	ABBREVIATIONS	P	IPING FLOWSTREAM ID		OUCTWORK SYMBOLS	GENERAL NOTES	2021 IEC
ABBREVIATION	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION		
AC AD	AIR CONDITIONING UNIT ACCESS DOOR	— D — — CD —	DRAIN LINE CONDENSATE DRAIN	• 12x8 •	RECTANGULAR DUCT, WIDTH x DEPTH (INCHES)	A. ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN FURRED CHASES OR SUSPENDED CEILINGS, UNLESS OTHERWISE NOTED.	A. DESIGN HEATING AND COOL TRANE TRACE 700 USING PR
AFF AI	ABOVE FINISHED FLOOR	SCD	SECONDARY CONDENSATE DRAIN	12"Ø	ROUND DUCT (INCHES)	B. PROVIDE ACCESS PANELS OR DOORS IN UNACCESSIBLE CEILINGS AND/OR CHASES FOR ALL	B. ALL EQUIPMENT AND SYSTE
AMP	AMPERE (AMPS)	— CWS — — CWR —	CONDENSER WATER SUPPLY CONDENSER WATER RETURN	12x8	OVAL DUCT (INCHES)	VALVES, TRAPS, DAMPERS, CLEANOUTS, COILS, FANS, CONTROLS, ETC. ACCESS DOOR RATING SHALL MATCH CLASSIFICATION OF WALL AND CEILING FIRE RATING.	MEET CALCULATED LOADS.
AP	ACCESS PANEL	— CHWS — — CHWR —	CHILLED WATER SUPPLY CHILLED WATER RETURN		FLEXIBLE DUCT	C. COORDINATE THE LOCATION OF ALL DIFFUSERS, GRILLES, REGISTERS, ACCESS DOORS, ETC., WITH THE ARCHITECTURAL REFLECTED CEILING PLAN(S)	D. FACH HEATING OR COOLING
BF BHD			HOT WATER SUPPLY	12x8 <u>W/1</u> "AL }	ACOUSTICAL DUCT LINING	D. ALL ROUND RUNOUTS AND DROPS TO DIFFUSERS SHALL BE THE SAME NOMINAL SIZE AS THE	TEMPERATURE CONTROL DE
BOD	BOTTOM OF DUCT	— HWR — — RL —	REFRIGERANT LIQUID		FLEXIBLE CONNECTION	SCHEDULED DIFFUSER NECK SIZE.	E. THE PROGRAMMABLE THERM 55 DEGREES F DURING HEAT
BOP BTU	BOTTOM OF PIPE BRITISH THERMAL UNIT	— RS —	REFRIGERANT SUCTION		SUPPLY DUCT - SECTION/ END VIEW	E. THE FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF FACE SHOWN OR INDICATED. ALL DUCT SIZES SHOWN ON DRAWINGS ARE NET INSIDE DIMENSIONS.	CAPABLE OF AUTOMATICALL UNOCCUPIED HOURS USING
BTUH	BTU PER HOUR	— v —	VENT		RETURN DUCT - SECTION/ END VIEW	F. PROVIDE TURNING VANES IN ALL SQUARE ELBOWS. EXCEPT TRANSFER AIR SOUND ELBOWS.	HOURS, HAVE A BATTERY BA AT LEAST 10 HOURS WITHOU
BD	Backurafi Damper				EXHAUST DUCT - SECTION/ END VIEW	G. THE CFM OF EACH DIFFUSER, REGISTER, ETC., IS INDICATED IN THE SYMBOL DESIGNATION ON THE DRAWINGS.	ON THERMOSTATS THAT CON SUCH AS THE ELEVATOR EQU
C CI	CELSIUS CAST IRON				CRUSS SECTION THROUGH ROUND DUCT	H. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL FIRE RATED AND/OR	F. OUTDOOR-AIR SUPPLY SYSTI
CFM	CUBIC FEET PER MINUTE				WITH VANES EXCEPT TRANSFER AIR SOUND ELBOW)	SMOKE RATED WALLS AND ASSEMBLIES. PROVIDE APPROVED FIRE AND FIRE/SMOKE DAMPERS IN ALL REQUIRED PENETRATIONS FOR DUCTWORK, GRILLES, REGISTERS AND DIFFUSERS. ALL PIPE AND DUCTWORK PENETRATIONS OF FIRE SMOKE AND FULL HEIGHT WALLS SHALL BE	WHILE EQUIPMENT IS NOT C
CO CONT.	CLEANOUT CONTINUATION					CAULKED AIRTIGHT TO THE ADJACENT STRUCTURE BY MEANS OF U.L. APPROVED FIRE PROOF CAULKING MATERIAL.	G. OUTSIDE VENTILATION HAS MECHANICAL CODE.
D	ΠΡΑΙΝ					I. CONTRACTOR SHALL COORDINATE ALL DUCTWORK, PIPING, PLUMBING AND FIRE PROTECTION	H. ALL SUPPLY AND RETURN AI
Db	DECIBEL				SMALL RADIUS ELBOW	PIPING WITH STRUCTURAL AND ELECTRICAL SYSTEMS AND SHALL PROVIDE NECESSARY OFFSETS TO AVOID CONFLICTS AND TO MAINTAIN EQUIPMENT ACCESS AND SERVICEABILITY.	MINIMUM THICKNESS DUCT
DB DBT	DRY BULB DRY BULB TEMPERATURE				RETURN AIR CEILING GRILLE AND RETURN AIR CEILING GRILLE WITH SOUND BOOT	J. CONTRACTOR SHALL FURNISH ALL NECESSARY STRUCTURES, INSERTS, SLEEVES, AND HANGING DEVICES FOR INSTALLATION OF MECHANICAL AND PLUMBING EQUIPMENT, DUCTWORK AND	I. ALL JOINTS, LONGITUDINAL MUST BE SECURELY SEALED
DIA. DX	DIAMETER DIRECT EXPANSION		ANCHOR		CEILING DIFFUSERS (ARROWS DENOTE THROW PATTERN IF THROW	PIPING, ETC. CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR AND ALL BUILDING TRADES TO AVOID CONFLICTS AND TO MAINTAIN EQUIPMENT ACCESS AND	GASKETS, OR MASTICS, MESI MASTICS MUST BE LISTED AN
DA	DIRECTERIANSION	<u>4</u>	ANCHOR, WALL		IS SOMETHING OTHER THAN 4-WAY)	SERVICEABILITY.	J. MECHANICAL FASTENERS AN
EFF ENT	EFFICIENCY ENTERING	⊢	BLIND FLANGE		EXHAUST CEILING REGISTER OR GRILLE	K. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY MISCELLANEOUS ANGLES, CHANNELS, UNISTRUT, ETC., AS MAY BE REQUIRED TO ADEQUATELY SUPPORT THE MECHANICAL PIPING, DUCTWORK, AND FOUIPMENT IN A MANNER APPROVED BY THE	MULTIPLE-ZONE TERMINAL U
EXH	EXHAUST	G	DROP AT END			ARCHITECT WHICH WILL NOT OVERLOAD THE BUILDING STRUCTURAL SYSTEM.	K. OPERATOR AND MAINTENAN INCLUDES EQUIPMENT INPU
LMCS			DROP AT MID		LINEAR DIFFUSER	L. CONTRACTOR SHALL PROVIDE RETURN AIR OR TRANSFER AIR OPENINGS IN FULL HEIGHT WALLS SIZED AT 500 FPM (UNLESS OTHERWISE SPECIFICALLY SHOWN ON THE DRAWINGS) TO	ACTIONS, EQUIPMENT OPER MAINTENANCE AND CALIBRA
°F FB	DEGREES FAHRENHEIT FLAT BOTTOM	U	TOP CONNECTION, 45° OR 90°		SIDEWALL EXHAUST OR RETURN AIR GRILLE	DAMPERS SHALL BE PROVIDED IN SUCH OPENINGS WHERE REQUIRED BY NOTE "H".	SCHEMATICS, AND CONTROL SET POINTS MUST BE PERMA
FCO	FLOOR CLEANOUT	-	BOTTOM CONNECTION, 45° OR 90°			M. SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, DUCT WALL PENETRATIONS AND FITTING CONNECTIONS ON ALL DUCT SYSTEMS.	NARRATIVE OF HOW EACH S
FD	FLOOR DRAIN	<u></u>	TEE CONNECTION			N. THE MECHANICAL CONTRACTOR SHALL, PRIOR TO ORDERING AND INSTALLATION, VERIFY ALL	L. EACH SUPPLY AIR OUTLET O ACCEPTABLE BALANCING DE
FD F.G.	FIRE DAMPER FILTER GAUGE	()	CAPPED OUTLET		POINT OF NEW CONNECTION TO EXISTING	HVAC AMPERAGES, PHASES AND VOLTAGES AGAINST ELECTRICAL PLAN REQUIREMENTS AND NOTIFY ENGINEER/ARCHITECT OF ANY DISCREPANCIES. FAILURE TO VERIFY AND NOTIFY ENCINEER (ARCHITECT DRIVE TO ORDERING OR INSTALLATION SHALL DESULT IN THE	DUCTWORK AND SUPPLY AIR
FLEX	FLEXIBLE	[PIPE CAP		CO2 SENSOR	MECHANICAL CONTRACTOR ASSUMING RESPONSIBILITY FOR DESIGN AND INSTALLATION REQUIREMENTS.	2021
FPM FPS	FEET PER SECOND	0	RISE IN PIPE		ROOM THERMOSTAT	O. THE MECHANICAL CONTRACTOR SHALL INSURE FINAL COORDINATION OF THE	
FS FT	FLOOR SINK FLAT TOP		PIPE GUIDES	Ś	ROOM TEMPERATURE SENSOR	MANUFACTURER'S RECOMMENDED FUSE SIZES AND DISCONNECT FOR THE INSTALLED MECHANICAL EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO INSTALLATION.	ALL MECHANICAL EQUIPMENT AN RESTRAINTS FOR THE SEISMIC D
FT.	FEET	⋈	PIPE PLUG		ROOM THERMOSTAT W/ LOCKABLE	ADVISE ENGINEER IF CHANGES IN THE FINAL SELECTION OF MECHANICAL EQUIPMENT HAVE IMPACTED DISCONNECT SWITCH, BREAKER OR CONDUCTOR SIZES.	IMPORTANCE FACTOR (SEE STRU DETERMINATION) IN ACCORDAN
FSD	FIRE/SMOKE DAMPER	<u> </u>	FLEX CONNECTION			ΟΟΕ ΙΝΕΟΡΜΔΤΙΟΝ	EARTHQUAKE LOADS, ASCE 7-10 INTERNATIONAL BUILDING CODE DESIGN OF SYSTEM AND ALL SUB
GA	GAUGE	\ _	FLEX PIPE		DUCT SMOKE DETECTOR (PROBE TYPE DSD)		SEALED BY A PROFESSIONAL ENG EMPLOYED BY THE SEISMIC REST
GPM	GALLONS PER MINUTE	\oslash —	PRESSURE GAUGE W/O COCK	R	AUTOMATIC SHUTDOWN RELAY	A. 2021 IBC, 2021 IMC, 2021 IECC, 2021 IFC.	RESTRAINTS SHALL BE SUBMITTI INDUSTRIES INC. OR AN APPROV
GPH HB	Gallons per hour Hose BIBB		PRESSURE GAUGE W/ COCK		ACCESS DOOR	ALL SYSTEMS SHALL BE IN COMPLIANCE WITH THE ABOVE CODES AS ADOPTED BY THE CITY OF	COMPLETED AND ACCOMPANYIN MANUFACTURER'S APPROVED RE
HD HOP7	HAND DAMPER (VOLUME DAMPER)		REDUCER OR INCREASER		MANUAL VOLUME DAMPER (VD)	COLORADO SPRINGS.	INFORMATION.
HP	HORSEPOWER		ECCENTRIC REDUCER		FIRE DAMPER (FD) THROUGH WALL/ FLOOR	AND TABLE 403.3.	DF
HR	HOUR(S)		STRAINER		FIRE/SMOKE DAMPER (FSD) THROUGH WALL/ FLOOR	C. ALL ROOFTOP EQUIPMENT SHALL BE PERMANENTLY IDENTIFIED AS TO THE AREA SERVED WITH A RUST-PROOF METAL NAMEPLATE PER 2021 IMC.	
IN	INCHES		STRAINER, FLANGED		SMOKE DAMPER (SD)	D. UNITS 5 TONS AND LESS: DUCT SMOKE DETECTORS ARE NOT REQUIRED BY 2021 IMC SECTION	SUMMER DESIGN: 90.9°F DRY BUI
KVA	KILOVOLT-AMPERE	P	SWITCH, PRESSURE		MOTOR OPERATED DAMPER	100 FOR SYSTEMS WITH A DESIGN CAPACITY OF 2,000 CFM OR LESS AND HAVE ENTIRELY INDEPENDENT DUCT SYSTEMS.	WINTER DESIGN: 1.4°F DRY BULE INDOOR DESIGN: 75°F DRY BULE
KW KWH	KILOWATT KILOWATT HOUR	₽	SWITCH, TEMPERATURE		CONNECT NEW DUCT TO EXISTING DUCT	E. <u>UNITS LARGER THAN 5 TONS:</u> DUCT SMOKE DETECTORS REQUIRED BY 2021 IMC SECTION 606 SHALL BE INSTALLED IN THE RETURN AIR DUCT PRIOR TO THE CONNECTION OF OUTSIDE AIR	
		t	TEST & PRESSURE (T&P) FITTING	E==3	EXISTING DUCT (ON NEW FLOOR PLAN)	PER IMC 606.2.1, 606.22, AND 606.3. DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 606.3 AND NFPA 72. IF A FIRE ALARM SYSTEM IS AVAILABLE, THAT THE DUCT SMOKE	VENTIL
LDS	POUNDS	<u> </u>	THERMOMETER		EXISTING DUCT TO BE REMOVED (ON DEMO FLOOR PLAN)	DETECTOR(S) SHALL BE CONNECTED TO THE FIRE ALARM SYSTEM (IMC 606.4.1) AND IF A FIRE ALARM SYSTEM IS NOT AVAILABLE, PROVIDE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY SUPERVISED LOCATION TRIGGERED BY THE ACTIVATION OF A DUCT SMOKE	
MAX MA	MAXIMUM MAIN AIR (CONTROLS)		UNION		OF ARROW	DETECTOR. INCLUDE THE AIR DUCT DETECTOR TROUBLE INDICATOR (LED AT THE CEILING BELOW THE DUCT DETECTOR) AS REQUIRED BY IMC 606.4.1. EXCEPTION 2.	AN AIR BALANCE REPORT SHOWI INSPECTOR FOR FINAL INSPECTIO
MCC	MOTOR CONTROL CENTER		ORIFICE UNION			F. ACCESS TO ROOF MOUNTED EQUIPMENT COMPLIES WITH IMC. SEE ARCHITECTURAL DRAWINGS	APPROVED METHOD. A BALANCE CAPABLE OF SUPPLYING AIRFLOW
MIN	MINIMUM		FLANGED UNION		DUCT TRANSITION FROM RECTANGULAR TO ROUND	FOR ROOF ACCESS DETAILS.	405.3.1.3).
N/A NC-	NOT APPLICABLE NOISE CRITERIA		SLOPE IN DIRECTION SHOWN (DOWN)	L		G. EQUIPMENT AND APPLIANCES SHALL BE INSTALLED AS REQUIRED BY THE TERMS OF THEIR APPROVAL, IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING, THE MANUFACTURERS INSTALLATION INSTRUCTIONS AND THIS CODE. MANUFACTURERS INSTALLATION	
NIC	NOT IN CONTRACT		DIRECTION OF FLOW			INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION PER IMC SECTION 304.1.	
#,NO. NO	NUMBER (QUANTITY) NORMALLY OPEN		NEW PIPING				
NC	NORMALLY CLOSED		EXISTING PIPING TO REMAIN				
CIVI	NOT TO JUALE				DINGLE LINE DUCTWORK	MATERIALS SPECIFICATIONS	
OA OBD	OUTSIDE AIR OPPOSED BLADE DAMPER			SYMBOL N	DESCRIPTION		
עמט /				E	EXISTING	1. ALL DUCTWORK SHALL BE CONSTRUCTED FROM NEW HOT DIPPED GALVANIZED SHEET IRON OR STEEL, ASTM A-120, IN ACCORDANCE WITH THE IMC, ASHRAE GUIDE, AND SMACNA STANDARDS FOR GAGE AND RETNEORCEMENT, ALL LOW VELOCITY AND CONDUCTONING CURRENT AND	
PSI	POUNDS PER SQUARE INCH		ΔΝΝΟΤΔΤΙΩΝΙ ΣΥΜΡΩΙ Σ	R IIII	RELOCATED	RETURN AIR DUCTWORK SHALL BE 2-INCH DUCT CONSTRUCTION. CONSTRUCT AND ERECT DUCTWORK IN ACCORDANCE WITH THE CURRENT ISSUES OF THE IMC, SMACNA STANDARDS	
PSIG PD	POUNDS PER SQUARE INCH GAUGE PRESSURE DROP	SYMBOI			NEW SUPPLY DIFFUSER, NECK SIZE, AND BALANCE AIR AS INDICATED	AND ASHRAE HANDBOOKS. DUCTS SHALL CONFORM TO DIMENSIONS ON THE DRAWINGS UNLESS LOCATION OF STRUCTURAL MEMBERS PROHIBITS. IN CASE OF CHANGE IN	
OTV	ΟΠΑΝΤΙΤΑ	*	KEYED NOTE		NEW RETURN GRILLE WITH BOOT	DIMENSIONS, CRUSS SECTIONAL AREAS SHALL BE MAINTAINED.	
QUAD	QUADRANT	XXX	ROOM NUMBER			AIR SHEET METAL DUCTWORK INTERNALLY WITH JOHNS-MANVILLE SPIRACOUSTIC PLUS (ROUND DUCT) OR LINACOUSTIC RC (RECTANGULAR DUCT) FIBERGLASS DUCT LINFR WITH	
RA	RETURN AIR		HEX SYMBOL INDICATES EQUIPMENT		EXISTING RETURN GRILLE WITH BOOT	REINFORCED COATING SYSTEM, THICKNESS 1.5" (R-6.0 INSTALLED) AND DENSITY 1.5 PCF. ALL OTHER SUPPLY AND RETURN AIR DUCTWORK SHALL BE INSULATED WITH 2.33" THICK (R=6.0	
REQ RH	REQUIRED RELATIVE HUMIDITY		NUMBER REFERS TO SPECIFIC EQUIPMENT - IDENTIFIED IN EQUIPMENT SCHEDULE		RELOCATED EXISTING GRILLE OR DIFFUSER	INSTALLED) JOHNS-MANVILLE MICROLITE DUCT WRAP WITH FSK VAPOR BARRIER AND DENSITY 0.75 PCF.	
RM	ROOM		REVISION TRIANGLE		RELOCATED ROOM THERMOSTAT, ELECTRIC	3. EXPOSED DUCTWORK (ANY DUCTS VISIBLE TO VIEW FROM THE OCCUPANT LEVEL): INSULATE SUPPLY AIR AND ALL RETURN AIR SHEET METAL DUCTWORK INTERNALLY WITH	
КРМ	REVOLUTIONS PER MINUTE		+ REVISION NUMBER		ROOM THERMOSTAT, ELECTRIC	JOHNS-MANVILLE SPIRACOUSTIC PLUS (ROUND DUCT) OR LINACOUSTIC RC (RECTANGULAR DUCT) FIBERGLASS DUCT LINER WITH REINFORCED COATING SYSTEM. THICKNESS 1.5" (R-6.0	
SA SCD	SUPPLY AIR SMOKE CONTROL DAMPER		DETAIL NUMBER DETAIL SYMBOL DRAWING WHEEPE DETAIL ADDEADS		1-1/2 X BRANCH DUCT FROM SIDE OF MAIN	INSTALLED) AND DENSITY 1.5 PCF FOR THE ENTIRE LENGTH. CONTRACTOR SHALL PUT A BEAD OF SILVER/GREY CAULKING ON THE INSIDE OF THE SLIP JOINT ON ALL DUCTS AND ON THE	
S.DPR.	SMOKE DAMPER		- DRAWING WHERE DETAIL APPEARS		SQUARE ELBOW WITH TURNING VANES	CORNERS OF THE RECTANGULAR DUCT WHERE THE DRIVE IS BENT OVER THE TOP AND BOTTOM S LOCKS. AFTER APPLYING THE CAULK MAKE SURE ALL EXCESS IS WIPED FROM THE	
SPEC	SPECIFICATION		- SECTION LETTER		RADIUS TYPE 90° ELBOW	4. CONDENSATE DRAIN PIPING SHALL BE ASTM B-88. TYPE "M" HARD DRAWN COPPER WITH WPOT	
SQ SDVV	SQUARE SINGLE DUCT VARIABLE VOLUME		T SECTION CUT SYMBOL		DUCT TRANSITION	COPPER FITTINGS AND SOLDERED JOINTS, 50/50 SOLDER. INSULATE WITH 1/2" THICK FLEXIBLE CLOSED CELL FOAMED PLASTIC PIPE INSULATION, ARMSTRONG ARAMFLEX, OR EQUAL	
ST	SOUND TRAP				ACCESS PANEL (AP)	FOR ENTIRE LENGTH. FITTINGS FIELD FABRICATED OF NESTING SIZES, SECURED WITH ADHESIVE.	
TEMP TSTAT	TEMPERATURE THERMOSTAT		SECTION LETTER SECTION CUT SYMBOL	s s	EXISTING DUCTWORK	5. FLEXIBLE DUCTS SHALL BE THERMAFLEX II TYPE M-KE, FACTORY FABRICATED ASSEMBLY,	
ТР тур	TOTAL PRESSURE (INCHES OF WATER)	XXX +	DRAWING WHERE SECTION APPEARS	\$//////	EXISTING DUCT TO BE REMOVED	SPIKAL CUNSTRUCTION, FIBERGLASS BLANKET INSULATION (R=6.0), AND MYLAR SHEATH. FLEXIBLE DUCTS UL LISTED FOR CLASS 0 DUCT AND COMPLY WITH NFPA-90A.	
UC	UNDER CUT		NORTH ARROW	s~~~~s	FLEXIBLE DUCT	6. REFRIGERANT SUCTION AND LIQUID LINES SHALL BE TYPE "L" HARD DRAWN ABOVE GROUND AND TYPE "K" BELOW GRADE WITH WROUGHT COPPER FITTINGS AND BRAZED JOINTS	
V VAC	VOLTS					INSULATE WITH 1" THICK FLEXIBLE CLOSED CELL FOAMED PLASTIC PIPE INSULATION, ARMSTRONG ARAMFLEX, OR EQUAL FOR THE ENTIRE LENGTH. FITTING FIELD FABRICATED OF	
VAC VAV	VARIABLE AIR VOLUME	$\mathbf{\Theta}$	POINT OF NEW CONNECTION TO EXISTING			NESTING SIZES, SECURED WITH ADHESIVE. ALL REFRIGERANT PIPING LOCATED OUTDOORS SHALL BE PROVIDED WITH METAL JACKETING OR PROVIDED WITH AN APPROVED UV COATING.	
VEL VERT	VELOCITY VERTICAL		FLOW ARROWS			METAL JACKET SHALL BE 0.016-INCH EMBOSSED ALUMINUM BACKED WITH A 60-POUND KRAFT VAPOR BARRIER.	
VTR	VENT THRU ROOF	<u>(V12)</u> ←	OVAL SYMBOL INDICATES A CONTROL VALVE			SYMROI S Ι ΤΩΤ ΝΟΤΕς	
WB	WET BULB		V-NUMBER REFERS TO A SPECIFIC VALVE IDENTIFIED IN THE CONTROL VALVE SCHEDULE				
WCO WH	WALL CLEANOUT WALL HYDRANT					1. SYMBOLS LISTS, NOTES, ABBREVIATIONS, ETC. ARE FOR GENERAL REFERENCE ONLY THE	
Z	ZONE					PRESENCE OF SYMBOLS, NOTES, ABBREVIATIONS, ETC. DOES NOT IMPLY ITS USE ON THIS PROJECT. REFER TO DRAWINGS FOR SPECIFIC SYMBOLS, NOTES, ABBREVIATIONS, ETC. USED.	
			1				I

CC COMPLIANCE NOTES

LING LOADS FOR THE BUILDING HAVE BEEN CALCULATED USING ROCEDURES RECOMMENDED BY ASHRAE.

EMS HAVE BEEN SIZED TO BE NO GREATER THAN NEEDED TO

HAVE NOT BEEN PROVIDED ON THIS PROJECT.

NG SYSTEM ZONE HAS BEEN PROVIDED WITH ITS OWN DEVICE.

RMOSTATS SHALL BE CAPABLE OF SETTING BACK TEMPERATURE TO ATING AND SETTING UP TO 85 DEGREES F DURING COOLING, LLY SETTING BACK OR SHUTTING DOWN SYSTEMS DURING G 7-DIFFERENT DAY SCHEDULES, HAVE A ACCESSIBLE MANUAL ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 BACK-UP CAPABLE OF MAINTAINING PROGRAMMED SETTINGS FOR

OUT POWER. A SETBACK OR SHUTOFF CONTROL IS NOT REQUIRED OUT POWER. A SETBACK OR SHUTOFF CONTROL IS NOT REQUIRED ONTROL SYSTEMS SERVING AREAS THAT OPERATE CONTINUOUSLY QUIPMENT ROOM AND ELECTRICAL ROOMS IF APPLICABLE.

IS MUST HAVE DAMPERS THAT ARE AUTOMATICALLY CLOSED OPERATING IF APPLICABLE.

AIR DUCTS MUST BE INSULATED WITH A MINIMUM OF R-6 (2.33" T WRAP OR 1-1/2" WHEN DUCT IS LINED). ALL DUCTS LOCATED IUST BE INSULATED WITH A MINIMUM OF R-8.

AL AND TRANSVERSE SEAMS, AND CONNECTIONS IN DUCTWORK ED USING WELDMENTS, MECHANICAL FASTENERS WITH SEALS, ESH AND MASTIC SEALING SYSTEMS, OR TAPES. TAPES AND AND LABELED IN ACCORDANCE WITH UL 181A OR UL 181B.

AND SEALS, MASTICS, OR GASKETS MUST BE USED WHEN ANS AND OTHER AIR DISTRIBUTION EQUIPMENT, INCLUDING _ UNITS.

ANCE DOCUMENTATION MUST BE PROVIDED TO THE OWNER THAT PUT AND OUTPUT CAPACITY AND REQUIRED MAINTENANCE ERATION AND MAINTENANCE MANUALS, HVAC SYSTEM CONTROL RATION INFORMATION, INCLUDING WIRING DIAGRAMS, OL SEQUENCE DESCRIPTIONS. DESIRED OR FIELD DETERMINED MANENTLY RECORDED ON THE CONTROL DRAWINGS, AT CONTROL L CONTROL SYSTEMS, IN PROGRAMMING COMMENTS. A COMPLETE SYSTEM IS INTENDED TO OPERATE.

OR DIFFUSER MUST HAVE ITS OWN BALANCING DEVICE. DEVICES INCLUDE ADJUSTABLE DAMPERS LOCATED WITHIN THE AIR DIFFUSERS.

IBC SEISMIC NOTE

AND DISTRIBUTION SYSTEMS SHALL BE PROVIDED WITH SEISMIC C DESIGN CATEGORY IN WHICH THE BUILDING IS LOCATED AND RUCTURAL DRAWINGS AND STRUCTURAL SPECIFICATIONS FOR ANCE WITH THE 2021 INTERNATIONAL BUILDING CODE SECTION 1631 10 CHAPTER 13 (FORMULAS 13.3-1, 13.3-2, AND 13.3-3), AND THE 2021 DDE CHAPTER 17 STRUCTURAL TESTS AND SPECIAL INSPECTIONS. SUBMITTAL DATA TO INCLUDE SEISMIC CALCULATIONS CERTIFIED AND ENGINEER LICENSED IN THE STATE OF PROJECT LOCATION AND ESTRAINT MANUFACTURER. SHOP DRAWINGS OF ALL SEISMIC TTED FOR APPROVAL. SEISMIC RESTRAINTS SHALL BE BY MASON OVED EQUAL. INSPECTION OF ALL SEISMIC RESTRAINTS SHALL BE 'ING CERTIFICATION OF INSTALLATION SHALL BE PROVIDED BY REPRESENTATIVE. SEE SPECIFICATIONS FOR ADDITIONAL

ESIGN CRITERIA

ULB, 58.7°F WET BULB LB LB, 62.5°F WET BULB

ATION VERIFICATION

VING FRESH AIR COMPLIANCE IS REQUIRED BY THE MECHANICAL FION APPROVAL. VENTILATION SYSTEMS SHALL BE BALANCED BY AN E REPORT SHALL VERIFY THAT THE VENTILATION SYSTEM IS DW RATES REQUIRED BY SECTION 403.3 (2021 IMC SECTION





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Case #·	
Case #.	
Plan Check #	
Case #: Plan Check #:	

Date:

Revisions:

10/15/24

Project Number:	
	20068.100
Drawn By:	REO
Titler	

MECHANICAL, SYMBOLS, LEGEND AND NOTES







SHOWROOM PLAN - MECHANICAL ALE: 1" = 20'-0



Butler Design Group Inc. architects & planners 5017 East Washington St. #107

Phoenix, Arizona 85034 Phone 602-957-1800



, notes and



-	BUILDING KEY PLAN	

MECHANICAL KEY NOTES

ROOF AND PROVIDE CONCENTRIC DIFFUSERS WITH FULL

MOUNTED ON COLUMN NEXT TO THERMOSTAT

(2) SEE ENLARGED DRAWINGS NOTED FOR THIS AREA

SAFETY, AND THE MANUFACTURER'S STRICTEST RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT

(C) ALL WORK SHALL BE LOCATED TO PROVIDE ADEQUATE CLEARANCE FOR ARCHITECTURAL DESIGN AND PROPER

(E) FIRE SPRINKLERS AND LIGHTS TAKE PRECEDENCE OVER DIFFUSERS. CONTRACTOR TO VERIFY LOCATIONS WITH

(G) REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL

OPERATION AND SERVICE OF EQUIPMENT.

THERMOSTAT LOCATION WITH ARCHITECT.

APPLICATION AND INSTALLATION.

JURISDICTION.

ARCHITECT.

TERMINATION.

INFORMATION.

CONCENTRIC KIT. MOUNT BTM. OF DIFFUSER AT 34'-0" A.F.F.

1) EXTEND SUPPLY AND RETURN AIR DUCTS FROM UNIT DOWN THRU

EXTEND 1" COIL CONDENSATE LINE FROM UNIT DOWN THRU ROOF AND ROUTE AS SHOWN. FACTORY PROVIDED AND MOUNTED DUCT SMOKE DETECTOR MOUNTED IN RETURN AIR DUCT REQUIRES LIFE SAFETY TESTING, SEE SHEET M001 FOR MORE

INFORMATION. PROVIDE REMOTE TEST STATION FOR DETECTOR

GENERAL NOTES

(A) ALL WORK SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, LAWS, ACTS AND AUTHORITIES HAVING

(B) THE COMPLETED INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE INDUSTRY STANDARD OF GOOD PRACTICE AND

(D) THERMOSTAT SHALL BE LOCATED 48" A.F.F. DIRECTLY ABOVE OR NEXT TO LIGHT SWITCH IF APPLICABLE. COORDINATE FINAL

(F) CONDENSATE SHALL BE 3/4" FOR ALL UNITS UNLESS OTHERWISE NOTED AND SLOPED AT A MINIMUM 1/8" PER FOOT TO POINT OF

(H) DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL MAKE ANY

REROUTING REQUIRED TO COMPLETE THE INSTALLATION.

MINOR MODIFICATIONS, INCLUDING ALL OFFSETS, TURNS AND



Kraemer Consulting Engineers, PLLC. Mechanical and Electrical Engineers 2050 West Whispering Wind Dr., Suite 158 Phoenix, Arizona 85085-2864 (602) 285-1669 (602) 285-9450 - fax JOB # 21-120A

Project Number: 20068.100 Drawn By:

10/15/24

Case #: Plan Check #:

Date:

Revisions:

Title: PARTIAL SHOWROOM FLOOR PLAN MECHANICAL





(1)





5017 East Washington St. #107 Phoenix, Arizona 85034 Phone 602-957-1800







MOUNTED ON COLUMN NEXT TO THERMOSTAT

ROOF AND PROVIDE CONCENTRIC DIFFUSERS WITH FULL

CONCENTRIC KIT. MOUNT BTM. OF DIFFUSER AT 34'-0" A.F.F.

EXTEND 1" COIL CONDENSATE LINE FROM UNIT DOWN THRU ROOF AND ROUTE AS SHOWN. FACTORY PROVIDED AND MOUNTED DUCT SMOKE DETECTOR MOUNTED IN RETURN AIR DUCT REQUIRES LIFE SAFETY TESTING, SEE SHEET M001 FOR MORE

INFORMATION. PROVIDE REMOTE TEST STATION FOR DETECTOR

- D THERMOSTAT SHALL BE LOCATED 48" A.F.F. DIRECTLY ABOVE OR NEXT TO LIGHT SWITCH IF APPLICABLE. COORDINATE FINAL THERMOSTAT LOCATION WITH ARCHITECT.
- E FIRE SPRINKLERS AND LIGHTS TAKE PRECEDENCE OVER DIFFUSERS. CONTRACTOR TO VERIFY LOCATIONS WITH ARCHITECT.
- (F) CONDENSATE SHALL BE 3/4" FOR ALL UNITS UNLESS OTHERWISE NOTED AND SLOPED AT A MINIMUM 1/8" PER FOOT TO POINT OF TERMINATION.
- G REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- (H) DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL MAKE ANY MINOR MODIFICATIONS, INCLUDING ALL OFFSETS, TURNS AND REROUTING REQUIRED TO COMPLETE THE INSTALLATION.





Kraemer Consulting Engineers, PLLC. Mechanical and Electrical Engineers 2050 West Whispering Wind Dr., Suite 158 Phoenix, Arizona 85085-2864 (602) 285-1669 (602) 285-9450 - fax JOB # 21-120A Project Number:

Case #: Plan Check #:

Date:

Revisions:

Drawn By:

20068.100

10/15/24

Title: PARTIAL SHOWROOM FLOOR PLAN MECHANICAL







5017 East Washington St. #107 Phoenix, Arizona 85034 Phone 602-957-1800

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PRELIMINARY NOT FOR CONSTRUCTION

	MECHANICAL KEY NOTES
1	EXTEND SUPPLY AND RETURN AIR DUCTS FROM UNIT DOWN THRU ROOF AND PROVIDE CONCENTRIC DIFFUSERS WITH FULL CONCENTRIC KIT. MOUNT BTM. OF DIFFUSER AT 34'-0" A.F.F. EXTEND 1" COIL CONDENSATE LINE FROM UNIT DOWN THRU ROOF AND ROUTE AS SHOWN. FACTORY PROVIDED AND MOUNTED DUCT SMOKE DETECTOR MOUNTED IN RETURN AIR DUCT REQUIRES LIFE SAFETY TESTING, SEE SHEET M001 FOR MORE INFORMATION. PROVIDE REMOTE TEST STATION FOR DETECTOR MOUNTED ON COLUMN NEXT TO THERMOSTAT
2	PROVIDE SMART SENSE VARIABLE SPEED CONTROLLER FOR NEAREST INDUSTRIAL CEILING FAN. CONNECT TO EMS FOR CONTROL SCHEDULE.
(3)	DECK. PROVIDE 1/4" METAL SCREEN AT DUCT OPENING.
4	LOCATION OF HVLS FAN SHALL BE COORDINATED SUCH THAT THE HUBS (CENTER OF FANS) ARE LOCATED CENTERED BETWEEN FOUR (4) SPRINKLER HEADS AND SUPPORTED BETWEEN (2) JOISTS. SUPPORT FAN BETWEEN (2) JOISTS PER MANUFACTURE INSTALLATION REQUIREMENTS AND DETAILS. FAN SHALL BE INSTALLED AT AN ELEVATION TO ENSURE THE FAN BLADES HAVE A VERTICAL MINIMUM CLEARANCE OF 36" FROM ALL SPRINKLER DEFLECTORS (INSTALL AS HIGH AS POSSIBLE AFTER MEETING THIS REQUIREMENT). COORDINATE INTERFACE OF FANS WITH FIRE ALARM TO DEACTIVATE UPON FIRE ALARM PER NFPA 72. HVLS FANS INSTALLATION SHALL COMPLY WITH NFPA 13 2013 SECTION 11.1.7.
	GENERAL NOTES
A	ALL WORK SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, LAWS, ACTS AND AUTHORITIES HAVING JURISDICTION.
B	THE COMPLETED INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE INDUSTRY STANDARD OF GOOD PRACTICE AND SAFETY, AND THE MANUFACTURER'S STRICTEST RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION.
C	ALL WORK SHALL BE LOCATED TO PROVIDE ADEQUATE CLEARANCE FOR ARCHITECTURAL DESIGN AND PROPER OPERATION AND SERVICE OF EQUIPMENT.
D	THERMOSTAT SHALL BE LOCATED 48" A.F.F. DIRECTLY ABOVE OR NEXT TO LIGHT SWITCH IF APPLICABLE. COORDINATE FINAL THERMOSTAT LOCATION WITH ARCHITECT.
E	FIRE SPRINKLERS AND LIGHTS TAKE PRECEDENCE OVER DIFFUSERS. CONTRACTOR TO VERIFY LOCATIONS WITH ARCHITECT.
F	CONDENSATE SHALL BE 3/4" FOR ALL UNITS UNLESS OTHERWISE NOTED AND SLOPED AT A MINIMUM 1/8" PER FOOT TO POINT OF TERMINATION.
G	REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
H	DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL MAKE ANY MINOR MODIFICATIONS, INCLUDING ALL OFFSETS, TURNS AND REROUTING REQUIRED TO COMPLETE THE INSTALLATION.





	Case #: Plan Check #:
	Date: 10/15/24
	Revisions:
<u>}</u>	
	Project Number:
	Drawn By:
	Title:
	PARTIAL WAREHOUSE
rs, PLLC.	
158	M117









5017 East Washington St. #107 Phoenix, Arizona 85034 Phone 602-957-1800

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CONSTRUCTION

OWNERSHIP OF INSTRUMENTS OF SERVICE All reports, plans, specifications, computer files, field data, notes and other documents and instruments prepared by the design professional as instruments of service shall remain the property of the design professional. The design professional shall retain all common law, statutory and other reserved rights, including the copyright thereto.

	MECHANICAL KEY NOTES
1	EXTEND SUPPLY AND RETURN AIR DUCTS FROM UNIT DOWN THRU ROOF AND PROVIDE CONCENTRIC DIFFUSERS WITH FULL CONCENTRIC KIT. MOUNT BTM. OF DIFFUSER AT 34'-0" A.F.F. EXTEND 1" COIL CONDENSATE LINE FROM UNIT DOWN THRU ROOF AND ROUTE AS SHOWN. FACTORY PROVIDED AND MOUNTED DUCT SMOKE DETECTOR MOUNTED IN RETURN AIR DUCT REQUIRES LIFE SAFETY TESTING, SEE SHEET M001 FOR MORE INFORMATION. PROVIDE REMOTE TEST STATION FOR DETECTOR MOUNTED ON COLUMN NEXT TO THERMOSTAT
2	SEE ENLARGED DRAWINGS NOTED FOR THIS AREA
3	EXTEND FULL SIZE EXHAUST DUCT DOWN TO 12" BELOW ROOF DECK. PROVIDE 1/4" METAL SCREEN AT DUCT OPENING.
4	PROVIDE SMART SENSE VARIABLE SPEED CONTROLLER FOR NEAREST INDUSTRIAL CEILING FAN. CONNECT TO EMS FOR CONTROL SCHEDULE.
5	12"Ø EXHAUST DUCT UP TO <u>EF-21</u> ON ROOF
6	8"Ø DROP TO ABOVE BATTERY CHARGING STATION
7	LOCATION OF HVLS FAN SHALL BE COORDINATED SUCH THAT THE HUBS (CENTER OF FANS) ARE LOCATED CENTERED BETWEEN FOUR (4) SPRINKLER HEADS AND SUPPORTED BETWEEN (2) JOISTS. SUPPORT FAN BETWEEN (2) JOISTS PER MANUFACTURE INSTALLATION REQUIREMENTS AND DETAILS. FAN SHALL BE INSTALLED AT AN ELEVATION TO ENSURE THE FAN BLADES HAVE A VERTICAL MINIMUM CLEARANCE OF 36" FROM ALL SPRINKLER DEFLECTORS (INSTALL AS HIGH AS POSSIBLE AFTER MEETING THIS REQUIREMENT). COORDINATE INTERFACE OF FANS WITH FIRE ALARM TO DEACTIVATE UPON FIRE ALARM PER NFPA 72. HVLS FANS INSTALLATION SHALL COMPLY WITH NFPA 13 2013 SECTION 11.1.7.
	GENERAL NOTES
A	ALL WORK SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, LAWS, ACTS AND AUTHORITIES HAVING JURISDICTION.
B	THE COMPLETED INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE INDUSTRY STANDARD OF GOOD PRACTICE AND SAFETY, AND THE MANUFACTURER'S STRICTEST RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION.
C	ALL WORK SHALL BE LOCATED TO PROVIDE ADEQUATE CLEARANCE FOR ARCHITECTURAL DESIGN AND PROPER OPERATION AND SERVICE OF EQUIPMENT.
D	THERMOSTAT SHALL BE LOCATED 48" A.F.F. DIRECTLY ABOVE OR NEXT TO LIGHT SWITCH IF APPLICABLE. COORDINATE FINAL THERMOSTAT LOCATION WITH ARCHITECT.
E	FIRE SPRINKLERS AND LIGHTS TAKE PRECEDENCE OVER DIFFUSERS. CONTRACTOR TO VERIFY LOCATIONS WITH ARCHITECT.
F	CONDENSATE SHALL BE 3/4" FOR ALL UNITS UNLESS OTHERWISE NOTED AND SLOPED AT A MINIMUM 1/8" PER FOOT TO POINT OF
	TERMINATION.
G	TERMINATION. REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.





Kraemer Consulting Engineers, PLLC. Mechanical and Electrical Engineers 2050 West Whispering Wind Dr., Suite 158 Phoenix, Arizona 85085-2864 (602) 285-1669 (602) 285-9450 - fax JOB # 21-120A



Drawn By:

Case #: Plan Check #:

Date:

Revisions:

20068.100

Title: PARTIAL WAREHOUSE FLOOR PLAN MECHANICAL



Furniture Warehouse	<i>r</i>ULIFESTYLE FURNITURE <i>Store</i>	GHTS & TUTT BOULEVARD DLORADO SPRINGS, CO	
	Your 📙	S HEIGHT COLO	





SCALE: 1/8" = 1'-0'













	MECHANICAL KEY NOTES
1	10x10 EXHAUST DUCT UP TO <u>EF-1</u> ON ROOF
2	8x8 EXHAUST DUCT UP TO <u>EF-2</u> ON ROOF
3	12x12 EXHAUST DUCT UP TO <u>EF-3</u> ON ROOF
4	PROVIDE CHROMALOX CEILING MOUNTED CABINET
5	10x10 EXHAUST DUCT UP TO <u>EF-5</u> ON ROOF
6	10x10 EXHAUST DUCT UP TO <u>EF-6</u> ON ROOF
7	8x8 EXHAUST DUCT UP TO <u>EF-19</u> ON ROOF
8	SIDEWALL EXHAUST FAN <u>EF-20</u> , MOUNT AT 8'-0" A.F. EXTERIOR LOUVER SELECTED BY ARCHITECT
9	MOUNT 30x18 RETURN AIR GRILLE ON FACE OF SOF MOUNTING HEIGHT IN FIELD.
10	24x12 RETURN DUCT OPEN TO ROOM
(11)	6"Ø EXHAUST DUCT TO EXTERIOR WALL VENT
(12)	18x12 TRANSFER GRILLE EQUIPPED WITH FIRE/SMC MOUNT GRILLE AT 24" A.F.F.
(13)	ROUTE, SIZE AND CONNECT REFRIGERANT PIPING I INDOOR AND OUTDOOR UNIT PER MANUFACTURER RECOMMENDATIONS. EXTEND 3/4" COIL CONDENSA FROM INDOOR UNIT ABOVE LAY-IN CEILING LEVEL T POINT OF TERMINATION. EXTEND TO MOP SINK AS
(14)	14x14 RETURN AIR GRILLE MOUNTED HIGH IN DELI A PLENUM, CONNECT TO <u>AC-4</u> .
(15)	14x16 SUPPLY DUCT AND 14x14 RETURN DUCT UP T SHAFT

- 14x20 SUPPLY DUCT AND 10x12 RETURN DUCT UP T SHAFT
- (17) PROVIDE QMARK RECESSED WALL CABINET HEATE

S	GENERAL NOTES
	(A) ALL WORK SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, LAWS, ACTS AND AUTHORITIES HAVING JURISDICTION.
T HEATER	B THE COMPLETED INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE INDUSTRY STANDARD OF GOOD PRACTICE AND SAFETY, AND THE MANUFACTURER'S STRICTEST RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION.
	C ALL WORK SHALL BE LOCATED TO PROVIDE ADEQUATE CLEARANCE FOR ARCHITECTURAL DESIGN AND PROPER OPERATION AND SERVICE OF EQUIPMENT.
F.F., PROVIDE DFFIT. VERIFY	D THERMOSTAT SHALL BE LOCATED 48" A.F.F. DIRECTLY ABOVE OR NEXT TO LIGHT SWITCH IF APPLICABLE. COORDINATE FINAL THERMOSTAT LOCATION WITH ARCHITECT.
	E FIRE SPRINKLERS AND LIGHTS TAKE PRECEDENCE OVER DIFFUSERS. CONTRACTOR TO VERIFY LOCATIONS WITH ARCHITECT.
OKE DAMPER.	F CONDENSATE SHALL BE 3/4" FOR ALL UNITS UNLESS OTHERWISE NOTED AND SLOPED AT A MINIMUM 1/8" PER FOOT TO POINT OF TERMINATION.
BETWEEN RS	G REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
ATE LINE UP TO SLOPE TO SHOWN. AREA, OPEN TO	(H) DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL MAKE ANY MINOR MODIFICATIONS, INCLUDING ALL OFFSETS, TURNS AND REROUTING REQUIRED TO COMPLETE THE INSTALLATION.
TO ROOF IN	
TO ROOF IN	
ER	



Butler Design Group Inc. architects & planners 5017 East Washington St. #107 Phoenix, Arizona 85034 Phone 602-957-1800





Case #: Plan Check #:	
)ate:	10/15/24
Revisions:	

Project Number: Drawn By:

20068.100

Title: ENLARGED FLOOR PLANS MECHANICAL











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PRELIMINARY NOT FOR CONSTRUCTION

FURNITURE

LIFESTYLE

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EIGHTS & TUTT BOULEVAF COLORADO SPRINGS, CO

MECHANICAL KEY NOTES architects & planners (1) 12x12 EXHAUST DUCT UP TO EF-14 ON ROOF 5017 East Washington St. #107 Phoenix, Arizona 85034 (2) 10x10 EXHAUST DUCT UP TO EF-15 ON ROOF Phone 602-957-1800 (3) EXTEND 34"Ø EXHAUST DUCT FROM PAINT BOOT UP THRU ROOF TO EXHAUST VENT (SEE ROOF PLAN). MAINTAIN CLEARANCE PER IFC 1504.7.6 (4) 16x16 EXHAUST DUCT UP TO <u>EF-16</u> ON ROOF (5) 22x22 EXHAUST DUCT UP TO EF-17 ON ROOF (6) EXTEND 10"Ø DRYER EXHAUST DUCT UP THROUGH ROOF TO APPROVED ROOF CAP. (7) 36x14 RETURN DUCT OPEN TO PLENUM (8) EXTEND 10"Ø EXHAUST DUCT DOWN WALL WITH VOLUME DAMPER AND TERMINATE AT WORK STATION HEIGHT. COVER DUCT OPENING WITH HARDWIRE CLOTH SCREEN AND BALANCE OWNERSHIP OF INSTRUMENTS OF SERVICE All reports, plans, specifications, computer files, field data, notes and other documents and instruments prepared by the design professional as instruments of service shall remain the property of the design professional. The design professional shall retain all common law, statutory and other reserved rights, including the copyright thereto. FOR CFM SHOWN. (9) ROUTE, SIZE AND CONNECT REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT PER MANUFACTURERS RECOMMENDATIONS. EXTEND 3/4" COIL CONDENSATE LINE UP FROM INDOOR UNIT ABOVE LAY-IN CEILING LEVEL TO SLOPE TO POINT OF TERMINATION. EXTEND TO MOP SINK AS SHOWN. (10) LAGUNA 5 HP CYCLONE DUST COLLECTOR W/ 10" DIA. INLET (11) 8" DIA. TRUNK LINE - SUSPENDED BELOW THE LOWEST TRUSS POINT AND RUN LEVEL THROUGHOUT WITH METAL DUCT STRAPPING. REQUIRED STAPPING TO DROP FROM EVERY TRUSS OR EVERY 60" WHEN FOLLOWING A TRUSS. (12) 4" DIAMETER EXHAUST DROP TO SLIDE GATE MOUNTED 48" ABOVE FINISH FLOOR. MOUNT DROPS TO WALL AND BRACE WITH UNISTRUT AND 4" UNISTRUT PIPE CLAMPS. (13) PROVIDE SMART SENSE VARIABLE SPEED CONTROLLER FOR NEAREST INDUSTRIAL CEILING FAN. CONNECT TO EMS FOR CONTROL SCHEDULE. (14) NO DUCTWORK TO BE INSTALLED IN "OPEN" AREA OF CEILING IN THIS AREA **GENERAL NOTES** (A) ALL WORK SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, LAWS, ACTS AND AUTHORITIES HAVING JURISDICTION. (B) THE COMPLETED INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE INDUSTRY STANDARD OF GOOD PRACTICE AND SAFETY, AND THE MANUFACTURER'S STRICTEST RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION. (C) ALL WORK SHALL BE LOCATED TO PROVIDE ADEQUATE CLEARANCE FOR ARCHITECTURAL DESIGN AND PROPER OPERATION AND SERVICE OF EQUIPMENT. D THERMOSTAT SHALL BE LOCATED 48" A.F.F. DIRECTLY ABOVE OR NEXT TO LIGHT SWITCH IF APPLICABLE. COORDINATE FINAL THERMOSTAT LOCATION WITH ARCHITECT. (E) FIRE SPRINKLERS AND LIGHTS TAKE PRECEDENCE OVER DIFFUSERS. CONTRACTOR TO VERIFY LOCATIONS WITH ARCHITECT. F) CONDENSATE SHALL BE 3/4" FOR ALL UNITS UNLESS OTHERWISE NOTED AND SLOPED AT A MINIMUM 1/8" PER FOOT TO POINT OF TERMINATION. (G) REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.









Mechanical and Electrical Engineers 2050 West Whispering Wind Dr., Suite 158 Phoenix, Arizona 85085-2864 (602) 285-1669 (602) 285-9450 - fax JOB # 21-120A





5017 East Washington St. #107 Phoenix, Arizona 85034 Phone 602-957-1800

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OWNERSHIP OF INSTRUMENTS OF SERVICE All reports, plans, specifications, computer files, field data, notes a other documents and instruments prepared by the design professi as instruments of service shall remain the property of the design professional. The design professional shall retain all common law, statutory and other reserved rights, including the copyright theretor

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	MECHANICAL KEY NOTES
1	10x10 EXHAUST DUCT UP TO EF-18 ON ROOF
2	ROUTE, SIZE AND CONNECT REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT PER MANUFACTURERS RECOMMENDATIONS. EXTEND 3/4" COIL CONDENSATE LINE UP FROM INDOOR UNIT ABOVE LAY-IN CEILING LEVEL TO SLOPE TO POINT OF TERMINATION. EXTEND TO MOP SINK AS SHOWN.
3	PROVIDE SMART SENSE VARIABLE SPEED CONTROLLER FOR NEAREST INDUSTRIAL CEILING FAN. CONNECT TO EMS FOR CONTROL SCHEDULE.
	GENERAL NOTES
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G	REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
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H DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL MAKE ANY MINOR MODIFICATIONS, INCLUDING ALL OFFSETS, TURNS AND REROUTING REQUIRED TO COMPLETE THE INSTALLATION.

BUILDING KEY PLAN



Kraemer Consulting Engineers, PLLC. Mechanical and Electrical Engineers 2050 West Whispering Wind Dr., Suite 158 Phoenix, Arizona 85085-2864 (602) 285-1669 (602) 285-9450 - fax JOB # 21-120A



Case #: Plan Check #:	
Date:	10/15/24
Revisions:	
Project Number:	20068 100
Drawn By:	20000.100
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BUILDING KEY PLAN













	EXHAUST FAN SCHEDULE														
SYMBOL	MANUFACTURER	MODEL #	ТҮРЕ	CFM	ES.P.	RPM	DRIVE		MOTOR		MAX SONES	REMARKS			
								HP	WATTS	VOLT / PH					
EF - 1	GREENHECK	G-090-VG	CENTRIFUGAL ROOF	550	0.25"	1420	DIRECT	1/6	-	120 / 1	6.4	1,2,9			
EF - 2	GREENHECK	G-095-VG	CENTRIFUGAL ROOF	300	0.25"	1481	DIRECT	1/6	-	120 / 1	6.4	1,2,9			
EF - 3	GREENHECK	G-095-VG	CENTRIFUGAL ROOF	595	0.25"	1420	DIRECT	1/6	-	120 / 1	6.4	1,2,9			
EF - 4	EF - 4 GREENHECK SP-A90 CEILING 75 0.10" 724 DIRECT - 8 120 / 1 0.3 1,3,8														
EF - 5	GREENHECK	G-095-VG	CENTRIFUGAL ROOF	500	0.25"	1420	DIRECT	1/6	-	120 / 1	6.4	1,2,9			
EF - 6	GREENHECK	G-095-VG	CENTRIFUGAL ROOF	550	0.25"	1420	DIRECT	1/6	-	120 / 1	6.4	1,2,9			
EF - 7 THRU 13						NOT L	JSED	1							
EF - 14	GREENHECK	G-095-VG	CENTRIFUGAL ROOF	550	0.25"	1420	DIRECT	1/6	-	120 / 1	6.4	1,2,9			
EF - 15	GREENHECK	G-075-VG	CENTRIFUGAL ROOF	200	0.20"	1461	DIRECT	1/6	-	120 / 1	4.4	1,2,8			
EF - 16	GREENHECK	GB-180	CENTRIFUGAL ROOF	2000	0.25"	730	BELT	1/4	-	120 / 1	11.1	1,2,7			
EF - 17	GREENHECK	GB-220	CENTRIFUGAL ROOF	4000	0.25"	540	BELT	1/3	-	120 / 1	9	1,2,7			
EF - 18	GREENHECK	G-075-VG	CENTRIFUGAL ROOF	300	0.20"	1461	DIRECT	1/6	-	120 / 1	4.4	1,2,8			
EF - 19	GREENHECK	G-095-VG	CENTRIFUGAL ROOF	300	0.25"	1461	DIRECT	1/6	-	120 / 1	6.4	1,2,9			
EF - 20	GREENHECK	SBE-1H24	SIDEWALL PROPELLER	2100	0.25"	715	BELT	1/4	-	120 / 1	13.2	1,2,10			
EF - 21	GREENHECK	G-080-VG	CENTRIFUGAL ROOF	450	0.10"	1555	DIRECT	1/6	-	120 / 1	7.3	1,2,4,6			
1. UL LISTED							6. FAN SHA	Ll RUN CO	NTINUOUSL`	Y AND INTERLO	OCKED WITH THE BA	TTERY CHARGING CIRCUIT			

2. PROVIDE WITH 12" ROOF CURB, BIRD SCREEN, SPEED CONTROLLER AND BACK DRAFT DAMPER

7. CONTROLLED BY LOCAL WALL SWITCH

3. PROVIDE WITH 16" ROOF CURB AND CAP, BIRD SCREEN, SPEED CONTROLLER AND BACK DRAFT DAMPER

4. NON-SPARKING CONSTRUCTION

5. CONTROLLED BY LINE VOLTAGE THERMOSTAT SET FOR 85 DEGREES F

8. FAN SHALL RUN CONTINUOUSLY

9. CONTROLLED BY TIME CLOCK (PROVIDED BY ELECTRICAL) THRU EMS

10. CONTROLLED BY BY TIME CLOCK (PROVIDED BY ELECTRICAL) WITH MANUAL OVERRIDE

		INDUS	TRIA	۱L	CEIL	ING	F/	AN S	Cł	HEDUL	E						DUC	TLESS		
SVMBOI	SYMBOL MANUFACTURER MODEL # TYPE SIZE CFM E.S.P. RPM DRIVE MOTOR LOCATION WEIGHT REMARKS														MODEL #					
STINDOL	WANDFACTUREN			3120	CEM	E3.F.		DRIVE	HP	MAX AMP / FUSE	VOLT / PH	LOCATION	[LBS]			SYMBOL MANUFACTURER		INDOOR UNIT		
IF - 1 THRU 5, 8 THRU 15	BAF	ESSENCE	HVLS	10'-0"	-	0"	107	DIRECT	1.0	10 A	208 / 1	WAREHOUSE	85	1 THRU 5		FC/CU - 4	LG	LCN098HV4		
IF - 6,7, 16 THRU 19	BAF	ESSENCE	HVLS	8'-0''	-	0"	158	DIRECT	1.0	10 A	208 / 1	WAREHOUSE	75	1 THRU 5						
															1.	1. BUILT IN LOW AMBIENT DOWN TO 14 DEG F				

1. PROVIDE WITH VARIABLE SPEED WALL CONTROLLER. VERIFY MOUNTING LOCATION WITH TENANT PRIOR TO INSTALLATION. 2. NFPA COMPLIANT AND WIRED INTO FIRE A LARM

3. PROVIDE WITH UNIVERSAL MOUNT. VERIFY MOUNTING HEIGHT WITH TENANT PRIOR TO INSTALLATION

	GAS UNIT HEATER SCHEDULE													
SYMBOL MANUFACTURER MODEL # CFM GAS-NG ELECTRICAL WEIGHT REN														
	INPUT MBH OUTPUT MBH STAGES FLA MCA MOCP VOLT / PH [LBS]													
GUH - A	REZNOR	UDXC	1345	100	64.0	1	4.3	-	15	115 / 1	-	1 THRU 7		
GUH - B	REZNOR	UDXC	769	60	38.4	1	2.4	-	15.0	115 / 1	-	1 THRU 7		
1. DISCONN	DISCONNECT PROVIDED BY ELECTRICAL 5. A LUMINIZED STEEL HEAT EXCHANGER													

2. PROVIDE WITH 24 VOLT RELAY WITH TRANSFORMER FOR WALL MOUNTED THERMOSTAT

3. PROVIDE WITH WALL MOUNT BRACKET

4. PROVIDE LOW VOLTAGE ELECTRONIC SEVEN DAY PROGRAMMABLE THERMOSTAT

	ELE	CTR	IC UN	NIT HE	ATEF	R SCH	HEDU	JLE	
SYMBOL	MANUFACTURER	MODEL #	CFM	MBH	ĸw	VOLT/PH	AMPS	WEIGHT [LBS]	REMARKS
UH - 1	REZNOR	EGHB-3	510	10	3	208 / 1	14.4	50	1,2,3,4
UH - 2	REZNOR	EGHB-15	1400	51	15	480 / 3	18.0	85	1,2,3,4

1. DISCONNECT PROVIDED BY ELECTRICAL

2. PROVIDE WITH 24 VOLT RELAY WITH TRANSFORMER FOR WALL MOUNTED THERMOSTAT

3. PROVIDE WITH WALL MOUNT BRACKET

4. PROVIDE LOW VOLTAGE ELECTRONIC SEVEN DAY PROGRAMMABLE THERMOSTAT

		ELECT	RIC	W	A	LL HEA	TE	R			
	SYMBOL	MANUFACTURER	MODEL #	BTUH	кw	VOLT / PH	AMPS	WEIGHT LBS	REMARKS		
	WH - 1	REZNOR	EHC-1	5120	1.5	120 / 1	12.5	25	1 THRU 5		
1	. UL LISTED				4. PROVIDE SURFACE MOUNTING BOX						
2	. PROVIDE WITH I	INTEGRAL THERMOS	ТАТ		5. MC	OUNT AT 24" A.F.F.					

3. DISCONNECT SWITCH

PACKAGED AIR CONDITIONING UNIT WITH GAS HEAT SCHEDULE AIR CAPACITIES ELECTRICAL DATA MIN ARI MANUFACTURER | MODEL # | TOTAL | O.S.A. | O.S.A. | E.S.P. | BHP | FLA | MCA | MOCP | VOLT / PH EFFICIENCY SYMBOL CFM MIN. CFM MAX. CFM RTU - 1 THRU 15 AV25N 2,245 0.75" 10.0 64.0 72.2 90 10.0 EER / 13.8 IEER YORK 10,000 930 460 / 3 AV25N | 10,000 | 1175 | 1175 | 0.75" | 7.5 | 61.2 | 69.4 | 80 RTU - 16 THRU 28 YORK 460 / 3 10.0 EER / 13.8 IEER AC - 1,2,4,6,8,10,13,14,15 YORK
 ZYG04
 1,200
 SEE PLANS
 SEE PLANS
 0.5"
 3/4
 10.3
 11.8
 15
 15.0 SEER 460 / 3 AC - 9 YORK
 ZYG05
 1,600
 SEE PLANS
 SEE PLANS
 0.5"
 1.0
 11.5
 13.1
 460 / 3 15.4 SEER 15

2,000 SEE PLANS SEE PLANS 0.5" 1.0 12.9 14.7

ZYG08 3,000 SEE PLANS SEE PLANS 0.5" 1 1/2 17.9 19.9 25

1. TWO-STAGE COOLING CAPACITY CONTROL AND BELT DRIVE EVAPORATOR FAN MOTOR WITH INTELLISPEED

ZYG06

YORK

YORK

2. LOW AMBIENT KIT FOR COOLING OPERATION CAPABILITY DOWN TO -20 DEG F AMBIENT

3. 2" FILTER RACK WITH 2" PLEATED MERV 8 FILTER

4. CONDENSER COIL LOUVERED HAIL GUARD

5. PROVIDE SINGLE POINT ELECTRICAL POWER ENTRY KIT, MCA VALUE LISTED IS TOTAL UNIT MCA

6. 14" ADJUSTABLE PITCH ROOF CURB

AC - 3,5,11,12,17

AC - 7

	MAKE-UP AIR UNIT SCHEDULE																			
SYMBOL	AMBOL MANUFACTURER MODEL TYPE CFM E.S.P. RPM DRIVE MOTOR ELECTRICAL HEATING											LOCATION	WEIGHT	SONES	REMARKS					
								HP	WATTS	VOLT / PH	FLA	MCA	моср		OUTPUT MBH	STAGES				
MAU-1	GREENHECK	IGX-P127-H32-MF3-S	CENTRIFUGAL	12,750	0.5"	1433	BELT	20	-	460 / 3	-	36.2	60.0	1050.0	672.0	2.0	PAINT BOOTH	2,800 LBS	32.0	1 THRU 9
MAU-2	GREENHECK	IGX-P115-H12-MF-G	CENTRIFUGAL	2,450	0.5"	1420	BELT	3/4	-	208 / 1	-	11.5	15.0	200.0	130.0	2.0	DUST COLLECTOR	1,100 LBS	14.8	1 THRU 8,10

1. PROVIDE WTH CONTROL PANEL FOR MAKEUP AIR FAN CONTROL AND INTERLOCK

2. PROVIDE WITH WEATHER HOOD AND INTEGRAL FILTER MODULE TO HOUSE 2" ALUMINUM MESH FILTERS

3. PROVIDE WITH MOTORIZED INLET DAMPER IN BLOWER MODULE

4. DOWN DISCHARGE WITH 4-WAY DIFFUSER

5. PROVIDE WITH NEOPRENE BLOWER VIBRATION ISOLATION

4. GEARLESS DIRECT DRIVE MOTOR WITH REVERSE FAN OPERATION

5. PROVIDE WITH STANDARD ANODIZED ALUMINUM FAN BLADES

6. HIGH ELEVATION PRESSURE SWITCH

7. CONCENTRIC VENT KIT

2. INDOOR UNIT POWERED FROM OUTDOOR UNIT

3. INVERTER COMPRESSOR

4. CONDENSATE SENSOR CONNECTION

5. PROVIDE WITH VENTILATION KIT

6. CONDENSER COIL HAIL GUARD

		WAL	L M	IOUNTI	ED S	SPL	IT S	SYS
0/4/00		MODEL	.#	MODEL #	¢ I		INDOOR	
STMBOL	MANUFACIURER	INDOOR UNIT	WEIGHT	OUTDOOR UNIT	WEIGHT	TOTAL CFM	WATTS	VOLT /
FC/CU - 1,2,3	LG	LSN090HSV5	20 LBS	LSU090HSV5	75 LBS	459	-	-

1. BUILT IN LOW AMBIENT DOWN TO 14 DEG F

2. INDOOR UNIT POWERED FROM OUTDOOR UNIT

3. INVERTER COMPRESSOR

4. CONDENSATE SENSOR CONNECTION

SYMBOL	MANUEACTUDED	MODEL			SUPF	PLY FAN					EXHA	UST FAN				ELECT	RICAL DA	ATA	OPERATING	
STHBOL		MODEL	CFM	E.S.P.	HP	EAT	LAT	EFFICIENCY	CFM	E.S.P.	НР	EAT	LAT	EFFICIENCY	FLA	MCA	моср	VOLT/PH	WEIGHT	REPARIO
ERV - 1	GREENHECK	SYNC-110	20	0.4"	1/8	100	81.25	75%	20	0.4"	1/8	75	93.75	75%	1.4	5	15	120 / 1	35 LBS	1,2,3

1. PROVIDE WITH PRECISION SYNC CONTROL

2. PROVIDE WITH MERV 6 FILTERS

3. INTERLOCK OPERATION TO START/STOP WITH START/STOP OF FC-4

460 / 3

460 / 3

20

9. INTERLOCK WITH PAINT BOOTH

INDOOR UNIT MODE OSA WATTS VOLT / I WEIGHT OUTDOOR UNIT CFM LUU090HV 85 LBS 300 35 LBS 15 9. INTERNAL CONDENSATE PUMP

10. VARIABLE SPEED INDOOR FAN

CEILING CASSET											
	MODEL #	ŧ									
WEIGHT	OUTDOOR UNIT	WEIGHT	TOTAL CFM	Ö Ü							

		7
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		ç
		1

MIN ARI				COOLIN	G			HEATING		UNIT		
EFFICIENCY	REFRIG.	ENT.	. AIR	AMBIENT	САРА	CITY	ŀ	HIGH GAS - NG		HEIGHT	UNIT	REMARKS
		DB	WB	DB	тмвн	SMBH	INPUT MBH	OUTPUT MBH	STAGES	W/O CURB		
10.0 EER / 13.8 IEER	R-410A	78.7	62.3	95.0	271.6	271.6	400	324	2	56.5"	3,000 LBS	1 THRU 12
10.0 EER / 13.8 IEER	R-410A	77.4	62.6	95.0	271.6	271.6	400	324	2	56.5"	3,000 LBS	1 THRU 12
15.0 SEER	R-410A	80.0	63.0	95.0	39.4	33.4	112	90	2	32.5"	800 LBS	2 THRU 9,11
15.4 SEER	R-410A	80.0	63.0	95.0	53.4	47.6	142	116	2	40.6"	900 LBS	2 THRU 9,11
15.2 SEER	R-410A	80.0	63.0	95.0	62.7	61.4	145	116	2	40.6"	950 LBS	2 THRU 9,11
12.0 EER / 14.0 IEER	R-410A	80.0	63.0	95.0	97.9	91.2	220	176	2	48.6"	1250 LBS	1 THRU 9,11

7. SMART WI-FI COMMERCIAL THERMOSTAT OR CONNECT TO BAS IF REQUIRED BY OWNER

8. 100% ENTHALPY ECONOMIZER WITH FACTORY MODULATING POWERED EXHAUST

9. PROVIDE FACTORY MOUNTED DUCT SMOKE DETECTOR IN RETURN AIR DUCT

10. CO2 SENSOR WITH DEMAND CONTROLLED VENTILATION SEQUENCE

11. HIGH ALTITUDE KIT FOR NATURAL GAS

12. POWERED CONVENIENCE OUTLET POWERED THRU UNIT PRIOR TO LOAD LINE

6. HIGH ALTITUDE KIT, DIRTY FILTER SWITCH, HINGED ACCESS PANELS

7. PROVIDE WITH INTEGRAL 12" ROOF CURB - SET FAN LEVEL

8. STAINLESS STEEL HEAT EXCHANGER

10. INTERLOCK WITH DUST COLLECTOR

TE SPLIT SYSTEM HEAT PUMP UNIT SCHEDULE

		OU	TDOOR	UNIT	MINIMUM ARI			COOLING						
PH	RLA	МСА	МОСР	VOLT / PH	SEER2	ENT	AIR	AMBIENT	CAPA	CITY	AM BIENT	ENT. AIR	CAPACITY	REMARKS
						DB	WB	DB	тмвн	SMBH	DB	DB	тмвн	
	9.2	11.9	15	208 / 1	20.2	76.0	63.0	95	8.4	7.4	0	70	4.8	1 THRU 11

7. SELF CLEANING INDOOR COIL WITH DUST FILTER

8. PROVIDE WITH LG 7 DAY WIRD PROGRAMMABLE THERMOSTAT (PREMTBVC3) WITH BACNET CONNECTIVITY

11. PROVIDE IN-LINE CONDENSATE OVERFLOW SAFETY SWITCH LITTLE GIANT MODEL #ACS-4 INSTALLED IN SECONDARY CONDENSATE LINE AND CONNECTED TO AN

A UDIBLE/VISUAL A LARM MOUNTED IN A CONSPICIOUS LOCATION TO A LERT OCCUPANTS THAT THERE IS A TROUBLE CONDITION

STEM HEAT PUMP UNIT SCHEDULE HEATING OUTDOOR UNIT COOLING ENT. AIR AMBIENT CAPACITY AMBIENT ENT. AIR CAPACITY REMARKS / PH | RLA | MCA | MOCP | VOLT / PH | SEER2 DB WB DB TMBH SMBH DB DB TMBH 1 THRU 7 8.3 10.0 15 208 / 1 23.2 74.5 62.5 95 8.3 6.9 5.7 0 70

5. SELF CLEANING INDOOR COIL

6. PROVIDE WITH LG 7 DAY PROGRAMMABLE (WIRED)

7. PROVIDE WITH CONDENSATE PUMP

8. COOLING ONLY FUNCTION

ENERGY RECOVERY VENTILATOR SCHEDULE



Butler Design Group Inc. architects & planners 5017 East Washington St. #107 Phoenix, Arizona 85034 Phone 602-957-1800







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Title

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MECHANICAL SCHEDULE



			VENT	ILATION S	CHEDULE			
AREA DESCRIPTION	OCCUPANCY TYPE	FT ²	AIRFLOW [CFM / FT ²]	AIRFLOW REQUIRED [CFM]	DIST. EFFECTIVENESS Ez	ADJUSTED AIRFLOW [CFM]	AIRFLOW SUPPLIED [CFM]	EXHAUST AIR FLOW [CFM]
AC - 12								
211 BREAKROOM	BREAK ROOMS	802	0.25	201	0.8	251	255	-
TOTAL CFM REQUIRED				201			255	-
AC - 13								
219 PARTS	STORAGE ROOMS	576	0.12	69	0.8	86	90	-
TOTAL CFM REQUIRED				69			90	-
AC - 14								
226 ESH/ONBOARD	OFFICE SPACE	951	0.085	81	0.8	101	105	-
TOTAL CFM REQUIRED				81			105	-
AC - 15								
225 CONFERENCE	CONFERENCE/MEETING	940	0.31	291	0.8	364	365	-
TOTAL CFM REQUIRED				291			365	-
AC - 16								
200 OPEN OFFICE	OFFICE SPACE	1501	0.085	128	0.8	159	160	-
TOTAL CFM REQUIRED				125			160	-
AC - 17								
218 OFFICE	OFFICE SPACE	350	0.085	30	0.8	37	40	-
TOTAL CFM REQUIRED				30			40	-
TOTAL CFM PROVIDED				41,741			52,220	4,945
NOTES:	· ·				'			

1. OUTSIDE AIR CALCULATIONS BASED ON 2021 IMC CHAPTER 4, SECTION 403 AND TABLE 403.3.1.1

	DIF	FUSER	, GRIL	LE & REG	ISTER S	SCł	IEDI	JLE		
SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	FRAME	STYLE	THROW	MATERIAL	FINISH	0.B.D.	REMARKS
CD-1	CEILING DIFFUSER	PRICE	SMD	SURFACE MOUNTED	MODULAR	-	STEEL	WHITE	YES	
CD-2	CEILING DIFFUSER	PRICE	SCD	24"x24" LAY-IN	SQUARE CONE	-	STEEL	WHITE	NO	
CD-3	CEILING DIFFUSER	PRICE	SMD	SURFACE MOUNTED	MODULAR	-	STEEL	WHITE	YES	
CD-4	CEILING DIFFUSER	PRICE	RCD	SURFACE MOUNTED	ROUND CONE	-	STEEL	WHITE	YES	
RG-1	RETURN GRILLE	PRICE	530	24"x24" LAY-IN	45 DEG FIXED BARS	-	STEEL	WHITE	NO	
RG-2	RETURN GRILLE	PRIĆE	530	12"x24" LAY-IN	45 DEG FIXED BARS	-	STEEL	WHITE	NO	
RG-3	RETURN GRILLE	PRICE	530	24"x24" SURFACE MOUNTED	45 DEG FIXED BARS	-	STEEL	WHITE	YES	
RG-4	RETURN GRILLE	PRICE	530	SURFACE MOUNTED	45 DEG FIXED BARS	-	STEEL	WHITE	YES	
SR-1	SUPPLY REGISTER	PRICE	520	10"x10" SURFACE MOUNTED	DOUBLE DEFLECTION	-	STEEL	WHITE	YES	
SG-1	SUPPLY REGISTER	PRICE	520	14"x14" SURFACE MOUNTED	DOUBLE DEFLECTION	-	STEEL	WHITE	YES	
EF-1	EXHAUST GRILLE	PRICE	530	10"x10" SURFACE MOUNTED	45 DEG FIXED BARS	-	STEEL	WHITE	YES	
DG-1	DOOR GRILLE	PRICE	STG	SURFACE MOUNTED	FLAT BOTH SIDES	-	STEEL	PRIME	NO	

M / FT ²]	AIRFLOW REQUIRED [CFM 1	DIST. EFFECTIVENESS Ez	ADJUSTED AIRFLOW [CFM 1	AIRFLOW SUPPLIED [CFM 1	EXHAUST AIR FLOW [CFM]
-					
;	26,934	0.8	33,668	13,905 / 33,670	-
	26,934			13,905 / 33,670	-
	12,204	0.8	15,255	15,255	-
	12,204			15,255	-
	8	0.8	10	10	300
	20	0.8	24	25	-
EXHAUST	250 EXHAUST	0.8	-	-	250
EXHAUST	250 EXHAUST	0.8	-	-	250
ST	47 EXHAUST	0.8	-	-	50
	28			35	850
	17	0.8	21	25	-
	9	0.8	11	11	-
	13	0.8	16	16	-
	7	0.8	8	8	300
EXHAUST	200 EXHAUST	0.8	-	-	200
ST .	52 EXHAUST	0.8	-	-	75
EXHAUST	300 EXHAUST	0.8	-	-	200
EXHAUST	75 EXHAUST	0.8	-	-	120
	46			60	895
	12	0.8	15	15	_
	25	0.8	31	31	_
	101	0.8	126	129	-
	137			175	-
	285	0.8	356	357	
	2	0.8	3	3	
	287			360	_
	294	0.8	367	370	
	294		367	370	_
SH EXHAUST	120 EXHAUST	0.8			250
ST	62 EXHAUST	0.8			100
XHAUST	200 EXHAUST	0.8		_	200
	30	0.8	38	40	
	47	0.8	59	59	
	9	0.8	11	11	
	87	0.0	109	110	550
	337	0.8	421	425	2100
	337	0.0	72 1	425	2100
				720	2100
	20	<u>Λ</u> 8	36	26	
	23	0.0 	50	50	-
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	12			90	-
	52	<u> </u>	66	23	
	101	0.0	00	00	-
	224	0.0		221	-
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	40		16	16	
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		υ.σ	-	-	200
		υ.8	-	-	50
H EXHAUST	1/U EXHAUST	0.8	-	-	250
	9	0.8	11	11	-
	25	0.8	32	32	-
	8	0.8	10	10	-
	29	0.8	36	36	-
	84			105	550
	201	0.8	251	255	-
	201			255	-

			VENT	LATION S	CHEDULE			
AREA DESCRIPTION	OCCUPANCY TYPE	FT ²	AIRFLOW [CFM / FT ²]	AIRFLOW REQUIRED [CFM]	DIST. EFFECTIVENESS Ez	ADJUSTED AIRFLOW [CFM]	AIRFLOW SUPPLIED [CFM]	EXHAUST AIR FLOW [CFM]
RTU - 1 THRU 15								
SHOWROOM	RETAIL SALES	115,847	0.2325	26,934	0.8	33,668	13,905 / 33,670	_
TOTAL CFM REQUIRED				26,934			13,905 / 33,670	-
RTU - 16 THRU 28								
WAREHOUSE	WAREHOUSE	203.400	0.06	12.204	0.8	15.255	15.255	
				12 204		,	15 255	_
AC - 1				,			,	
		133	0.06	9	0.8	10	10	300
		100	0.00		0.8	24	10	
				20	0.8	24	25	-
		5 FIX TURES	50 CFM/ FIXTURE EXHAUST		0.8	-	-	250
123 WOMENS RR		5 FIX TURES	50 CFM7 FIX TURE EXHAUST	250 EXHAUST	0.8	-	-	250
124 MOP CLOSET	JANITOR CLOSET	47	1.0 EXHAUST	47 EXHAUST	0.8	-	-	50
TOTAL CFM REQUIRED				28			35	850
AC - 2								
102 BULLPEN	OFFICE SPACE	195	0.085	17	0.8	21	25	-
103 PHONE ROOM	OFFICE SPACE	108	0.085	9	0.8	11	11	-
104 CASH WRAP	OFFICE SPACE	153	0.085	13	0.8	16	16	-
105 ELEC. ROOM	ELEC. EQUIP. ROOMS	113	0.06	7	0.8	8	8	300
106 MENS RR	TOILETS	4 FIXTURES	50 CFM / FIXTURE EXHAUST	200 EXHAUST	0.8	-	-	200
107 MOP CLOSET	JANITOR CLOSET	52	1.0 EXHAUST	52 EXHAUST	0.8	-	-	75
108 WOMENS RR	TOILETS	4 FIXTURES	50 CFM / FIXTURE EXHAUST	300 EXHAUST	0.8	-	-	200
109 FAMILY RR	TOILETS	1 FIXTURE	50 CFM / FIXTURE EXHAUST	75 EXHAUST	0.8	-	-	120
TOTAL CFM REQUIRED				46			60	895
AC - 3								
112 ONLINE SALES	OFFICE SPACE	137	0.085	12	0.8	15	15	_
116 DRY STORAGE	STORAGE ROOMS	206	0.12	25	0.8	31	31	_
117 FUTURE DELI	BREAK ROOMS	404	0.25	101	0.8	126	129	_
TOTAL CFM REQUIRED				137			175	_
AC - 4								
110 SALES LOCKERS	BREAK BOOMS	1138	0.25	285	0.8	356	357	
	STORAGE ROOMS	20	0.12	200	0.8	3	3	
		20	0.12	2	0.0		360	
				207			300	-
		4000	0.0005	004		207	070	
	RETAIL SALES	1263	0.2325	294	0.8	367	370	-
				294		367	370	-
AC - 6								
127 WOMENS RR	TOILETS	2 WC, 1 SH	50 CFM / WC, 20 CFM SH EXHAUST	120 EXHAUST	0.8	-	-	250
128 MOP CLOSET	JANITOR CLOSET	62	1.0 EXHAUST	62 EXHAUST	0.8	-	-	100
129 MENS RR	TOILETS	4 FIXTURES	50 CFM / FIXTURE EXHAUST	200 EXHAUST	0.8	-	-	200
130 BLD. MT STORAGE	STORAGE ROOMS	254	0.12	30	0.8	38	40	-
131 PARTS OFFICE	OFFICE SPACE	557	0.085	47	0.8	59	59	-
132 OFFICE	OFFICE SPACE	107	0.085	9	0.8	11	11	-
TOTAL CFM REQUIRED				87		109	110	550
AC - 7								
132 MAINTENANCE	STORAGE ROOMS	2807	0.12	337	0.8	421	425	2100
TOTAL CFM REQUIRED				337			425	2100
AC - 8								
202 INVENTORY	OFFICE SPACE	336	0.085	29	0.8	36	36	-
203 DELIVERY	OFFICE SPACE	512	0.085	44	0.8	54	54	-
TOTAL CFM REQUIRED				72			90	-
AC - 9								
204 EHS	OFFICE SPACE	617	0.085	52	0.8	66	68	-
201 EXERCISE	WEIGHT ROOM	697	0.26	181	0.8	227	227	-
TOTAL CFM REQUIRED				234			295	-
AC - 10								
206 DATA MANAGER	OFFICE SPACE	155	0.085	13	0.8	16	16	
208 MENS PR		3.WC 1 CH	50 CEM / WC. 20 CEM SH EYHAUST		0.8			250
		45			0.0 N.8	_		50
					0.0	-	-	250
		3 VVC, T SH			0.0	-	-	200
212 ELEC.		145	0.06	9	0.8	11	11	-
213 LAUNDRY		149	0.17	25	0.8	32	32	-
214 MANAGER OFFICE	OFFICE SPACE	94	0.085	8	0.8	10	10	-
215 BREAKOUT ROOM	CONFERENCE/MEETING	92	0.31	29	0.8	36	36	-
TOTAL CFM REQUIRED				84			105	550
AC - 11								
211 BREAKROOM	BREAK ROOMS	802	0.25	201	0.8	251	255	-
TOTAL CFM REQURIED				201			255	-



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