	MECHANICAL	SYMBOL LIS	ST T
	NOTE: THIS IS A MASTER SCHEDULE. NOT ALL SYMBOLS	S CONTAINED HEREIN MAY	APPEAR ON THE DRAWINGS.
	ITEM TO BE REMOVED	—	CHILLED WATER RETURN PIPING
⊕ ♦	POINT OF CONNECTION/DISCONNECTION	—CHS—	CHILLED WATER SUPPLY PIPING
#	SHEET NOTE	——CR——	CONDENSER WATER RETURN PIPING
*	REVISION NUMBER	cs	CONDENSER WATER SUPPLY PIPING
TAG		——HWR——	HEATING WATER RETURN PIPING
UNIT	EQUIPMENT MARK	——HWS——	HEATING WATER SUPPLY PIPING
TAG CFM	DIFFUSER TAG	——RL——	REFRIGERANT LIQUID PIPING
$\overline{\square}$	ACCESS PANEL	——RS——	REFRIGERANT SUCTION PIPING
	SUPPLY AIR DUCT UP/DOWN	——CD——	CONDENSATE DRAIN PIPING
	RETURN AIR DUCT UP/DOWN	——PC——	PUMPED CONDENSATE DRAIN PIPING
	EXHAUST AIR DUCT UP/DOWN	——————————————————————————————————————	CIRCUIT SETTER
	RETURN GRILLE	————	2-WAY ELECTRONIC CONTROL VALVE
	EXHAUST GRILLE		3-WAY ELECTRONIC CONTROL VALVE
		── ♣──	2-WAY PNEUMATIC CONTROL VALVE
	4-WAY BLOW SUPPLY DIFFUSER		3-WAY PNEUMATIC CONTROL VALVE
	3-WAY BLOW SUPPLY DIFFUSER		SOLENOID VALVE
	2-WAY BLOW SUPPLY DIFFUSER		BUTTERFLY VALVE
	1-WAY BLOW SUPPLY DIFFUSER	———	PLUG VALVE
l	AIRFLOW DIRECTION	&	BALL VALVE
"	ROUND DUCTWORK (INCHES)	 5	CHECK VALVE
"X"	RECTANGULAR DUCTWORK (INCHES)	──	GATE VALVE
\sim	ROUND FLEXIBLE DUCT	—— ⋈ I	HOSE END DRAIN VALVE
→	SQUARE TO ROUND TRANSITION	——————————————————————————————————————	PRESSURE REDUCING VALVE
—	SINGLE LINE RIGID DUCT	₹	RELIEF VALVE
	SINGLE LINE RIGID DUCT (ACOUSTICALLY LINED)	₽	TEMPERATURE PRESSURE RELIEF VALVE
	DOUBLE LINE RIGID DUCT	— <u> </u>	THERMOMETER
	DOUBLE LINE RIGID DUCT (ACOUSTICALLY LINED)	<u> </u>	PRESSURE GAUGE WITH GAUGE COCK
	EXISTING DUCTWORK	<u> </u>	MANUAL AIR VENT
FD	FIRE DAMPER	<u>T</u>	PRESSURE TEMPERATURE PORT
SD——	SMOKE DAMPER	'8'	Y-STRAINER WITH BLOWDOWN
FSD	FIRE/SMOKE DAMPER		PIPE GUIDE
	MOTORIZED DAMPER (OPPOSED BLADE TYPE)	——-II——	UNION
□ ////	MOTORIZED DAMPER (PARALLEL BLADE TYPE)		PIPE ANCHOR
•///	BACKDRAFT DAMPER		FLEXIBLE CONNECTOR
<u> </u>	MANUAL VOLUME DAMPER	 3	PIPE CAP/STUB-OUT
RVD -	REMOTE VOLUME DAMPER	_	DIRECTION OF FLOW
® —	SMOKE DETECTOR	 ə	PIPE DOWN
①	THERMOSTAT	 •	PIPE UP
ூ	HUMIDISTAT		PIPE TEE UP
S	SENSOR		PIPE TEE DOWN
©	CARBON DIOXIDE SENSOR		
C	CARBON MONOXIDE SENSOR		
◎ →	DOOR UNDERCUT		
<u> </u>			

FLOW SWITCH

MECHANICAL ABBREVIATIONS NOTE: THIS IS A MASTER SCHEDULE. NOT ALL ABBREVIATIONS CONTAINED HEREIN MAY APPEAR ON THE DRAWINGS. GRADE CLEANOUT PRESSURE DROP AMERICAN AIR BALANCE COUNCIL GREASE INTERCEPTOR PRV PRESSURE REDUCING VALVE AUTOMATIC CONTROL DAMPER ABOVE FINISHED FLOOR GALLONS PER FLUSH PSI POUNDS PER SQUARE INCH GPM GALLONS PER MINUTE POUNDS PER SQUARE INCH ABSOLUTE ACCESS PANEL AMERICAN SOCIETY OF HEATING, GLYCOL RETURN POUNDS PER SQUARE INCH REFRIGERATION, AND AIR GLYCOL SUPPLY DIFFERENTIAL POUNDS PER SQUARE INCH GAUGE **GREASE WASTE** CONDITIONING ENGINEERS AMERICAN SOCIETY OF PLUMBING (R) EXISTING TO BE RELOCATED HORSEPOWER RETURN AIR **ENGINEERS** HIGH PRESSURE GAS RELATIVE HUMIDITY ACID VENT REFRIGERANT LIQUID/SUCTION ACID WASTE HSPF HEATING SEASONAL PERFORMANCE RPM REVOLUTIONS PER MINUTE BACKFLOW PREVENTION DEVICE FACTOR RPPA REDUCED PRESSURE PRINCIPAL BRAKE HORSEPOWER HOT WATER BRITISH THERMAL UNIT PER HOUR ASSEMBLY HEATING HOT WATER RETURN REMOTE VOLUME DAMPER HWR CONDENSATE DRAIN CUBIC FEET PER MINUTE HEATING HOT WATER SUPPLY SUPPLY AIR SMOKE DAMPER CHARACTERISTICS INTERNATIONAL BUILDING CODE INVERT ELEVATION SEER SEASONAL ENERGY EFFICIENCY RATIO CHILLED WATER RETURN SOI CHILLED WATER SUPPLY INTERNATIONAL MECHANICAL CODE SAND OIL INTERCEPTOR STATIC PRESSURE (INCHES OF W.C.) INTERNATIONAL PLUMBING CODE CLEANOUT CONDENSER WATER RETURN KILOWATT SPECS **SPECIFICATIONS** LEAVING AIR TEMPERATURE CONDENSER WATER SUPPLY SQUARE LBS SQFT SQUARE FEET POUNDS COLD WATER LWT LEAVING WATER TEMPERATURE STAINLESS STEEL DRY BULB TEMPERATURE MAX MAXIMUM TEMPERATURE MBH ONE THOUSAND BTUH TEST AND BALANCE REPORT DIRECT DIGITAL CONTROL TSP DIAMETER MINIMUM CIRCUIT AMPS TOTAL STATIC PRESSURE TW MINIMUM TEMPERED WATER DOWN MOCP MAXIMUM OVERCURRENT PROTECTION TYPICAL DIRECT EXPANSION EXISTING TO REMAIN MPG MEDIUM PRESSURE GAS UNIFORM BUILDING CODE MANUAL VOLUME DAMPER UNIFORM MECHANICAL CODE MVD EXHAUST AIR UON UPC UNLESS OTHERWISE NOTED ENTERING AIR TEMPERATURE NOT APPLICABLE NORMALLY CLOSED UNIFORM PLUMBING CODE ELECTRICAL CONTRACTOR

VOLTAGE/PHASE/HERTZ

VENT THROUGH ROOF

WALL CLEANOUT

WIRE MESH SCREEN

WATER GUAGE

WET BULB TEMPERATURE

EXISTING TO BE REMOVED

VFD

VTR

WCO

WG

VARIABLE FREQUENCY DRIVE

ACD

ASHRAE

AFF

CFM

CHS

DDC

ESP

EWT

FCO

FSD

ENERGY EFFICIENCY RATIO

EXTERNAL STATIC PRESSURE

ENTERING WATER TEMPERATURE

EFFICIENCY

ELECTRICAL

FAHRENHEIT

FIRE DAMPER

FLOOR CLEANOUT

FEET PER MINUTE

GAGE OR GAUGE

GALLONS

FIRE / SMOKE DAMPER

NEBB

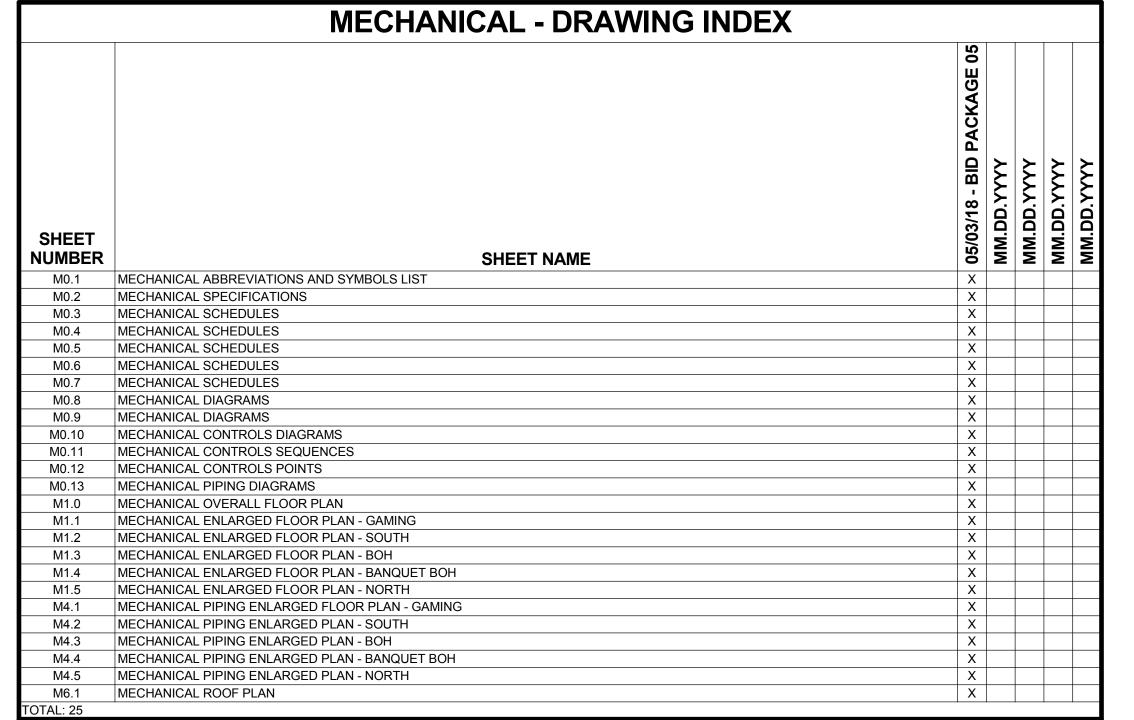
OAT

OBD

OED

OFCI

DIA



NATIONAL ENVIRONMENTAL

NATIONAL ELECTRIC CODE

NATIONAL FIRE PROTECTION

OUTSIDE AIR TEMPERATURE

OWNER FURNISHED, CONTRACTOR

OPPOSED BLADE DAMPER

BALANCING BUREAU

ASSOCIATION

NOT IN CONTRACT

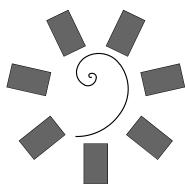
NORMALLY OPEN

OPEN END DUCT

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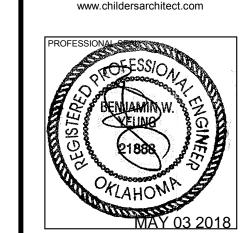
OUTSIDE AIR

INSTALLED

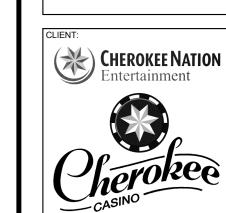


James R. Childers Architect, Inc. 45 South 4th Street

Fort Smith, AR 72901 479-783-2480







TERTAINMI ASINO IATION EN

PROJECT PHASE: BID PACKAGE 05

	-	REVISIONS
#	DATE	DESCRIPTION

05/03/18 17-06

MECHANICAL ABBREVIATIONS AND SYMBOLS LIST

GENERAL NOTES

PART ONE - GENERAL

- 1. THE OWNER HAS CONTRACT LANGUAGE THAT NEEDS TO BE READ PRIOR TO BID SUBMISSION AS THERE ARE ITEMS THAT MAY SUPPLEMENT OR SUPERSEDE ITEMS NOTED HEREIN. THE OWNER'S CONTRACT DOCUMENTS HAS INFORMATION ON HOW WORK IS TO BE PERFORMED, HOW DOCUMENT SUBMITTALS ARE PROVIDED, RECORD DOCUMENTS ARE SUBMITTED, ETC. SEE THE ARCHITECTURAL DOCUMENTS FOR ADDITIONAL DIVISION 1 INFORMATION.
- CODE USED IN DESIGN: IBC 2012, IMC 2012, IPC-2012, UMC-2012, UPC-2012, IECC-2012, IFGC 2012
- 3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF THE APPLICABLE INTERNATIONAL BUILDING CODE (IBC), LOCAL MECHANICAL CODE (UMC, IMC, ETC.), LOCAL PLUMBING CODE (UPC, IPC, ETC.), NATIONAL ELECTRIC CODES (NEC) AND ALL OTHER APPLICABLE FEDERAL, STATE, AND LOCAL
- 4. THE CONTRACTOR MUST ARRANGE A VISIT TO THE WORK SITE PRIOR TO BID SUBMISSION TO FULLY UNDERSTAND THE EXISTING CONDITIONS. THE DRAWINGS ARE DIAGRAMMATIC AND SHOW THE WORK INTENT BUT NOT NECESSARILY ALL EXISTING OBSTRUCTIONS, PIPE OR DUCT BENDS. DETERMINING SITE CONDITIONS AND ADJUSTING THE INSTALLATION IS THE RESPONSIBILITY OF THE CONTRACTOR
- THE CONTRACTOR SHALL PROVIDE THE WORK SHOWN ON THE DRAWINGS AND SPECIFIED FOR THEIR INDIVIDUAL SECTIONS OF WORK. THE WORD "WORK" SHALI MEAN ALL LABOR, TRANSPORTATION, MATERIAL, EQUIPMENT, TOOLS, INSTALLATION, SUPERVISION AND ANY OTHER INCIDENTAL ITEMS OR SERVICES NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE COMPLETE SYSTEMS, WHICH SHALL BE PROVIDED WHETHER OR NOT SPECIFICALLY INDICATED OR NOTED.
- 6. ALL GENERAL CONDITIONS, SPECIAL REQUIREMENTS OR GENERAL REQUIREMENTS OF THE CONSTRUCTION SPECIFICATIONS ARE MADE PART OF THIS SPECIFICATION AND HAVE THE SAME FORCE AND AFFECT AS IF COMPLETELY REPRODUCED.
- . THE WORD "PROVIDE" SHALL MEAN FURNISH AND INSTALL, MAKE ALL FINAL CONNECTIONS AND LEAVE IN AN APPROVED COMPLETE OPERATING CONDITION.
- 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYING ALL FEES AND OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR THE WORK.
- 9. THE CONTRACTOR SHALL CAREFULLY EXAMINE ALL CONTRACT DOCUMENTS. THE CONTRACTOR SHALL COORDINATE THE WORK WITH ALL OTHER TRADES INCLUDING. BUT NOT LIMITED TO, THE CONTRACT DOCUMENTS, SHOP DRAWINGS, ETC. FOR ALL GENERAL CONSTRUCTION, STRUCTURAL, MECHANICAL, ELECTRICAL AND SPECIALTY CONTRACTOR WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER FITTING OF MATERIAL INTO THE BUILDING AS PLANNED, WITHOUT INTERFERENCE WITH OTHER WORK, AND SHALL MAKE REASONABLE MODIFICATIONS IN THE LAYOUTS NEEDED TO PREVENT CONFLICT WITH OTHER TRADES, TO PROVIDE ACCESS AND FOR THE PROPER EXECUTION OF THE WORK
- 0. DRAWINGS ARE DIAGRAMMATIC AND SCHEMATIC IN NATURE, AND INDICATE THE TYPE, SIZE, ARRANGEMENT AND LOCATION OF MATERIALS AND EQUIPMENT. WORK INCLUDES CERTAIN COMPONENTS, APPURTENANCES AND RELATED SPECIALTIES THAT MAY NOT BE SHOWN. CONTRACTOR SHALL PROVIDE ALL NECESSARY ITEMS TO COMPLETE THE WORK ACCORDING TO INDUSTRY STANDARDS. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS TO CALL OUT FOR FINISHED WORK, TESTED AND READY FOR OPERATION. DO NOT SCALE DRAWINGS. ARRANGEMENT OF EQUIPMENT AND ROUTING OF PIPES AND DUCTWORK, ETC. INDICATED ON DRAWINGS SHALL BE ROUTED PLUMB AND AT RIGHT ANGLES TO BUILDING CONSTRUCTION AND MAY REQUIRE MODIFICATION DUE TO UNFORESEEN CONDITIONS AND REQUIRE ON SITE REVISIONS DURING CONSTRUCTION. (SEE ALSO
- 11. ALL WORK REQUIRED FOR IDENTICAL/SIMILAR ITEMS SHOWN ON THE DRAWINGS SHALL BE PROVIDED, ALTHOUGH EACH SPECIFIC IDENTICAL/SIMILAR ITEM MAY NOT BE SHOWN IN DETAIL
- 12. THE CONTRACTOR SHALL SUBMIT ELECTRONIC PDF SHOP DRAWINGS AND TECHNICAL DATA SHEETS FOR ALL EQUIPMENT AND MATERIALS SPECIFIED HEREIN TO THE ENGINEER. THE ENGINEER SHALL REVIEW SHOP DRAWINGS AND TECHNICAL DATA SHEETS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS AND ISSUE A WRITTEN ASSESSMENT TO THE OWNER PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENGINEERING FEES NECESSARY TO CHANGE PERMIT DOCUMENTS BASED ON ALTERNATE SUBMITTAL
- 13. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER FOR CONSIDERATION PRIOR TO BIDDING. THE OWNER'S REPRESENTATIVE SHALL PREAPPROVE ANY PROPOSED SUBSTITUTION IN WRITING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS ASSOCIATED WITH SUBSTITUTED EQUIPMENT OR MATERIALS WITH OTHER BUILDING TRADES, INCLUDING ALL ELECTRICAL, STRUCTURAL, OR ARCHITECTURAL ELEMENTS. (SHOP DRAWING REVIEW DOES NOT RELIEVE THE CONTRACTOR FROM SUBSTITUTE EQUIPMENT COORDINATION REQUIREMENTS.) SUBSTITUTED EQUIPMENT, ANYTHING DIFFERENT FROM SPECIFIED ON THE DOCUMENTS, MUST BE IDENTIFIED AS SUCH DURING THE SUBMITTAL PROCESS. THE CONTRACTOR SHALL IDENTIFY AND ANNOTATE ALL REVISED REQUIREMENTS PER BUILDING TRADE ON THE SHOP DRAWINGS. THE CONTRACTOR SHALL ALSO IDENTIFY ALL COST DEBITS OR CREDITS IN WRITING FOR THE PROPOSED CHANGES PER BUILDING TRADE.
- 14. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL SUPPLY THE ENGINEER WITH AN ELECTRONIC CAD AND PDF SET OF AS-BUILT DOCUMENTS ACCURATELY SHOWING THE MATERIALS AND EQUIPMENT AS INSTALLED.
- 15. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A MINIMUM OF ONE (1) YEAR FROM DATE OF ACCEPTANCE BY OWNER. REFRIGERATION COMPRESSORS SHALL BE GUARANTEED FOR A MINIMUM OF FIVE (5) YEARS FROM DATE OF OWNER'S ACCEPTANCE. IN ADDITION, THE CONTRACTOR SHALL GUARANTEE THAT THE INSTALLATION WHEN OPERATED IN ACCORDANCE WITH THE CONTRACTOR'S INSTRUCTIONS WILL DEVELOP CAPACITY AND CHARACTERISTICS AS SPECIFIED AND WILL FULFILL EACH AND EVERY REQUIREMENT OF THE DRAWINGS AND SPECIFICATIONS. SHOULD THE INSTALLATION IN ANY WAY FAIL TO DO SO, THE CONTRACTOR WILL, WITHOUT DELAY OR WITHOUT COST TO THE OWNER, PROVIDE WHATEVER ADDITIONAL EQUIPMENT, MATERIAL, AND LABOR REQUIRED TO CORRECT THE DEFICIENCY AND COMPLY WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.
- 16. CONTRACTOR SHALL CHECK AND VERIFY ALL SIZES, DIMENSIONS, AND CONDITIONS BEFORE STARTING ANY WORK. ANY DEVIATIONS OR PROBLEMS SHALL BE TRANSMITTED TO THE ENGINEER FOR REVIEW.
- 17. PROVIDE BASE AND COUNTER FLASHING FOR ITEMS PENETRATING THE ROOF OR EXTERIOR WALLS.
- 18. STARTERS, VFDs DISCONNECT SWITCHES AND CONTROLS FOR MOTORS IF NOT UNIT MOUNTED AND/OR SUPPLIED BY THE EQUIPMENT MANUFACTURER, UNLESS NOTED SPECIFICALLY OTHERWISE SHALL FOLLOW:
- 18.1. VFDs TO BE SUPPLIED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR. FINAL LOCATIONS COORDINATED WITH THE ENGINEER. WIRING BETWEEN THE VFD AND THE MOTOR SHALL BE SHIELDED POWER CABLE DESIGNED FOR VFD APPLICATIONS, GROUNDED AT BOTH
- 18.2. UNLESS NOTED OTHERWISE, LOOSE MOTOR STARTERS, COMBINATION STARTERS, DISCONNECT SWITCHES, MOTOR RATED SWITCHES, TOGGLE SWITCHES, ETC. TO BE SUPPLIED AND INSTALLED BY THE ELECTRICAL
- 18.3. CONTROL AND INTERLOCKING WIRING SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR PERFORMING CONTROLS WORK. (SEE AUTOMATIC TEMPERATURE CONTROLS SECTION FOR ADDITIONAL INFORMATION WITH REGARD TO THIS WIRING RULE.)
- 19. ALL WORK SHOWN IS NEW UNLESS NOTED OTHERWISE.
- 20. MAINTAIN OCCUPANCY AND FIRE WALL SEPARATION INTEGRITY AS REQUIRED. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS OF ALL OCCUPANCY/FIREWALL SEPARATIONS AND SPECIFIC DETAILS FOR CONSTRUCTION. PROVIDE ALL NECESSARY FIRE AND SMOKE FIRE DAMPERS, ACCESS DOORS, CAULKING, ETC. FOR APPROVED INSTALLATION.
- 21. IECC COMPLIANCE: THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH AND PERFORMING ALL REQUIREMENTS AND WORK SET FORTH IN THE IECC COMPLIANCE CERTIFICATE THAT IS INCLUDED IN THESE DOCUMENTS.

COORDINATION DRAWINGS

 THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CREATING "ALL TRADES" COORDINATION DRAWINGS. THIS WORK APPLIES TO ABOVE CEILINGS, IN SHAFTS AND ON THE ROOF. THESE DRAWINGS ARE TO BE PREPARED IN 3D OR REVIT. 2D AUTOCAD DRAWINGS WILL BE AVAILABLE FROM THE DESIGN TEAM AND CAN BE UTILIZED TO ASSIST IN THE PREPARATION OF THE COORDINATION DRAWINGS. THESE DRAWINGS SHALL BE COMPLETED PRIOR TO WORK BEING INSTALLED IN THE FIELD FOR THE LOCATIONS NOTED ABOVE. AS-BUILT DOCUMENTS ARE NOT AVAILABLE FOR THE WORK LOCATION. THE CONTRACTOR WILL NEED TO PERFORM FIELD WORK TO LOCATE STRUCTURAL CONSTRAINTS AND EXISTING SERVICES THAT ARE REQUIRED TO REMAIN SO THAT ACCURATE DOCUMENTS CAN BE CREATED. THE ENGINEER WILL ASSIST WHERE NEEDED TO HELP IDENTIFY EQUIPMENT THAT NEEDS TO STAY WITHIN THE CEILING SPACE TO SERVICE OTHER SPACES. EACH TRADE INVOLVED IS TO PROVIDE THEIR DOCUMENTS, IN AUTOCAD FORMAT, TO THE MECHANICAL CONTRACTOR FOR INSERTION TO THE COMMON FILE. (DURING THE BID PROCESS THE MECHANICAL CONTRACTOR IS TO ENSURE THE GC IS AWARE OF THIS WORK WHERE THEY HAVE RESPONSIBLE CHARGE.) THE OWNER MAY PRE-PURCHASE THE SERVICES OF A FIRE SPRINKLER AGENCY, BUT THE INSTALLATION OF THE SPRINKLER PIPING WITH REGARD TO SCHEDULE, LOCATION AND INSTALLATION WILL FALL UNDER THE DIRECTION OF THE GC AND SPRINKLER PIPING MUST BE INCLUDED IN THE COORDINATION DOCUMENTS. AT A MINIMUM THE FOLLOWING TRADES ARE TO BE INVOLVED IN THE COORDINATION DRAWINGS: MECHANICAL, PLUMBING ELECTRICAL, LOW VOLTAGE, BAS, SPRINKLER, CARPENTRY, ANY OTHER TRADE THAT WILL WORK IN THE AFFECTED AREAS.

- 1. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS. THE CONTRACTOR SHALL COMPARE THE WORK SPECIFIED IN THE CONTRACT DOCUMENTS WITH THE EXISTING CONDITIONS. THE CONTRACTOR SHALL IDENTIFY AND NOTATE ALL WORK OR CONDITIONS THAT ARE DIFFERENT FROM THE CONTRACT DOCUMENTS OR THEIR INTENT. THE CONTRACTOR SHALL, UPON DISCOVERY, IMMEDIATELY NOTIFY AND REPORT, IN WRITING, ANY DISCREPANCIES TO THE ENGINEER. NO EXTRAS OR CHANGE ORDERS WILL BE ALLOWED FOR FAILURE TO PERFORM THE PRE-BID SITE
- . BASE PROPOSAL ON MANUFACTURER NAMES LISTED UNLESS "OR EQUAL" IS INDICATED. PROVIDE SUBSTITUTION REQUESTS A MINIMUM OF FIVE (5) BUSINESS DAYS PRIOR TO BID DATE CLOSING TO ALLOW TIME FOR DUE CONSIDERATION OF PROPOSED ALTERNATE. DETERMINATION OF SUBSTITUTION OF EQUALITY RESTS SOLELY WITH THE ENGINEER.

PART TWO - PRODUCTS

HVAC EQUIPMENT

1. PROVIDE HVAC EQUIPMENT AS SPECIFIED AND/OR SCHEDULED HEREIN AND IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS. EQUIPMENT SHALL OPERATE ACCORDING TO THE MANUFACTURER'S "OWNER'S OPERATING AND MAINTENANCE MANUAL" TROUBLE-FREE PRIOR TO STARTING TEST AND BALANCE (TAB) WORK.

DUCTWORK

- 1. DUCTWORK, UNLESS LISTED OTHERWISE IN THIS SECTION, SHALL BE ASTM A653/A653M GALVANIZED SHEET METAL, LOCK-FORMING QUALITY HAVING A ZINC COATING OF 0.90 OZ PER SQ. FT. (G90) EQUALLY APPLIED TO EACH SURFACE, TESTED PER ASTM A90. DUCTWORK IS TO BE INSTALLED ACCORDING TO ASHRAE RECOMMENDATIONS AND SMACNA DUCT CONSTRUCTION STANDARDS. NO SHEETMETAL DUCTWORK TO BE LESS THAN 26 GA.
- 2. ROUND DUCTWORK: 8"Ø AND UNDER CAN BE SPIRAL OR SNAP-LOCK, >8"Ø TO BE SPIRAL CONSTRUCTION.
- PROVIDE MANUAL VOLUME DAMPERS WITH LOCKING QUADRANTS AND IDENTIFYING RIBBONS AT DAMPER HANDLES FOR AIR BALANCING EACH BRANCH DUCT TAKE-OFF OR PIECE OF AIR DISTRIBUTION EQUIPMENT. NOT ALL DAMPERS MAY BE INDICATED ON THE DOCUMENTS.
- 4. SEAL ALL DUCT PENETRATIONS THROUGH WALLS, FLOOR AND ROOF. SEAL ALL TRANSVERSE DUCT SEAMS WITH APPROVED MASTIC. DUCT TAPES SHALL NOT BE ALLOWED FOR RIGID DUCTWORK.
- 5. SUPPLY, OUTSIDE AIR AND RETURN DUCTWORK SHALL BE INSULATED WITH FLEXIBLE GLASS FIBER INSULATION MEETING ANSI/ASTM C612, MAXIMUM 'K' VALUE OF 0.29 AT 75°F, WITH FOIL-KRAFT FLAME RESISTANT VAPOR BARRIER, 3/4 #/CUFT. DENSITY:
 - A. ATTIC SPACE (VENTILATED OR UNVENTILATED ABOVE A CEILING) MINIMUM
 - B. INTERIOR SPACES SUPPLY MINIMUM R-8.
 - C. INTERIOR RETURN DUCTWORK, IN RETURN AIR PLENUM SPACE NONE. D. EXTERIOR DUCTWORK TO BE INSULATED WITH URETHANE OR POLYSTYRENE
 - FOIL FACED RIGID BOARD MINIMUM R-8, TOP OF DUCT TO HAVE A WATERSHED DESIGN, A WEATHER PROOF COVER IS TO BE APPLIED USING MFM FLEXCLAD-400 (ALUMINIUM).
- 6. ALL DUCTWORK SIZES SHOWN ARE FREE AREA DIMENSIONS. EXHAUST DUCTWORK SHALL BE UNINSULATED.
- 7. THE INTERIOR OF SUPPLY AND RETURN DUCTWORK VISIBLE BEHIND DEVICES
- (GRDs), SHALL BE PAINTED FLAT BLACK. 8. LINE DUCTWORK FIFTEEN FEET UPSTREAM AND DOWNSTREAM OF ALL FANS (EXCEPT
- FOR TYPE I KITCHEN HOOD, TYPE II DISHWASHER EXHAUST OR EVAPORATIVE COOLING) AND WHERE INDICATED WITH 1" THICK, 1.5# DENSITY DUCT LINER. LINING SHALL BE APPLIED TO DUCTWORK WITH FIRE RESISTANT ADHESIVES, (FOSTER 85-10 OR EQUAL) AND COPPER OR CADMIUM PLATED MECHANICAL FASTENERS, (GRAHAM, OMARK OR EQUAL). ALL DUCT SIZES INDICATED ARE CLEAR INSIDE.
- 9. FLEXIBLE DUCTWORK WHERE INDICATED ON THE DRAWINGS SHALL BE INSULATED, WITH PLASTIC VAPOR BARRIER AT INTERIOR AND EXTERIOR, STEEL WIRE COIL REINFORCED. JOINTS SHALL BE BAND-CLAMPED, MASTIC-DUCT SEALER AND TAPE SEALED TO MAINTAIN INTEGRITY OF VAPOR BARRIER. FLEXIBLE INSTALLATION SHALL BE SUPPORTED TO ELIMINATE SAGS. FLEXIBLE GLASS FIBER INSULATION SHALL HAVE A MAXIMUM 0.23 K VALUE AT 75°F. INSTALLATION SHALL MEET ASHRAE & SMACNA STANDARDS. UNLESS NOTED OTHERWISE MAXIMUM LENGTH IS 5'-0" AND TWO 45° BENDS.
- 10. FIRE DAMPERS SHALL BE DYNAMIC (RATED FOR SYSTEM VELOCITY) AND MEET UL 555 AND SHALL HAVE BLADES OUT OF AIR STREAM IN COILED POSITION. FUSIBLE LINK SHALL BE RATED AT 165°F.
- 11. COMBINATION FIRE/SMOKE DAMPERS SHALL BE DYNAMIC (RATED TO SYSTEM VELOCITY) MEET UL 555S.
- 12. TYPE I, HOOD EXHAUST DUCT SHALL BE MINIMUM 16 GAUGE CARBON STEEL WITH CONTINUOUS EXTERNAL WELDED JOINTS. MITERED ELBOWS NOT ALLOWED -R/D=1.5 FABRICATE AND INSTALL IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS, LOCAL MECHANICAL CODE AND ASTM A569. PRE-MANUFCTURED/LISTED GREASE DUCT ASSEMBLIES MAY BE APPROVED UPON REQUEST. GREASE DUCT MUST BE ENCLOSED IN A 2 HR RATED ASSEMBLY PER ASTM E 2336. (EXTERIOR APPLICATIONS - IF 18" CLEAR TO COMBUSTIBLES CAN BE MAINTAINED, NO ENCLOSURE REQUIRED. OTHERWISE PROTECT INSULATION WITH A WEATHERPROOF, STUCCO EMBOSSED ALUMINUM ENCLOSURE). ON HORIZONTAL DUCTS, AT LEAST ONE 20"X20" OPENING SHALL BE PROVIDED FOR PERSONNEL ENTRY. WHERE AN OPENING OF THIS SIZE IN NOT POSSIBLE, OPENINGS LARGE ENOUGH TO PERMIT THOROUGH CLEANING SHALL BE PROVIDED AT 12 FT INTERVALS. SUPPORT SYSTEMS FOR HORIZONTAL GREASE DUCT SYSTEMS 24 IN. AND LARGER IN ANY CROSS-SECTIONAL DIMENSION SHALL BE DESIGNED FOR THE WEIGHT OF THE DUCTWORK PLUS 800 LBS AT ANY POINT IN THE DUCT SYSTEMS. ON VERTICAL DUCTWORK WHERE PERSONNEL ENTRY IS POSSIBLE, ACCESS SHALL BE PROVIDED AT THE TOP OF THE VERTICAL RISER TO ACCOMMODATE DESCENT. WHERE PERSONNEL ENTRY IS NOT POSSIBLE, ADEQUATE ACCESS FOR CLEANING SHALL BE PROVIDED ON EACH FLOOR. OPENINGS ON VERTICAL AND HORIZONTAL GREASE DUCT SYSTEMS SHALL BE PROVIDED WITH SAFE ACCESS AND A WORK PLATFORM WHEN NOT EASILY ACCESSIBLE FROM A 10 FT STEPLADDER. ON NONLISTED DUCTWORK, THE EDGE OF THE OPENING SHALL BE NOT LESS THAN 1 1/2" FROM ALL OUTSIDE EDGES OF THE DUCT OR WELDED SEAMS. (INSTALLATION MUST COMPLY WITH THE REQUIREMENTS OF NFPA 96).

- 12.1. KITCHEN TYPE I SHUTDOWN SEQUENCES (UNLESS OTHERWISE DIRECTED BY A FIRE PROTECTION REPORT, A MANUFACTURER'S LISTING OR THE LOCAL
- 12.1.1. ACTIVATION OF THE KITCHEN HOOD SUPPRESSION SYSTEM:
- 12.1.1.1. TO CAUSE AUTOMATIC FUEL SHUT-OFF UNDER THE HOOD AND REMOVAL OF ELECTRIC POWER UNDER THE HOOD, INCLUDING HOOD LIGHTS. 12.1.1.2. MAKE-UP AIR TO THE HOODS TO BE STOPPED. (UNLESS DIRECTED
- OTHERWISE BY THE AHJ, KITCHEN HVAC SYSTEMS CAN REMAIN OPERATIONAL.)
- 12.1.1.3. KEF OR PCU REMAINS ON (IF OFF, TURN ON ASK AHJ TO CLARIFY). 12.1.2. ACTIVATION OF THE PCU OR GREASE EXHAUST DUCT SUPPRESSION SYSTEM 12.1.2.1. TO CAUSE AUTOMATIC FUEL SHUT-OFF UNDER THE HOOD AND REMOVAL

OF ELECTRIC POWER UNDER THE HOOD, INCLUDING HOOD LIGHTS.

12.1.2.2. MAKE-UP AIR TO THE HOODS TO BE STOPPED. (UNLESS DIRECTED OTHERWISE BY THE AHJ, KITCHEN HVAC SYSTEMS CAN REMAIN OPERATIONAL.)

12.1.2.3. KEF OR PCU TURNS OFF.

- 13. TYPE II, EXHAUST DUCT SHALL BE A304 STAINLESS STEEL, WHERE CONCEALED, AND SATIN FINISH 316 STAINLESS STEEL WHERE EXPOSED. COORDINATE FINISH WITH ARCHITECT. PROVIDE CONTINUOUS EXTERNAL WELDED JOINTS. FABRICATE IN ACCORDANCE WITH ASTM A240, A276, A480 AND SMACNA DUCT CONSTRUCTION STANDARDS. MITERED ELBOWS NOT ALLOWED - R/D=1.5
- 14. DUCTWORK TO BE CONSTRUCTED TO SMACNA AND ASHRAE DUCT CONSTRUCTION

DUCTWORK SYSTEMS: (4)		SMACNA CL	ASS	LEAKAGE (CLASS (5)
	PRESSURE	(3) SEAL	ROUN	ND RECT.	
CONSTANT VOLUME	2	В	4	8	
VARIABLE VOLUME (1)	1	В	4	8	
VARIABLE VOLUME (2)	3	В	4	8	
RETURN	2	С	8	16	
EXHAUST	2	В	4	8	
TYPE 1 (GREASE)	3	WELDE	ED 2	3	
TYPE II	2	WELDE	D 2	3	
SUPPLY/RETURN - LEED O	R 3	Α	2	4	

PRESSURE CLASS OPTIONS: 1/2", 1", 2", 3", 4", 6" 10"

GREEN GLOBES

- NOTE (1): DOWNSTREAM OF VAV BOX
- NOTE (2): UPSTREAM OF VAV BOX
- NOTE (3): THESE ARE MINIMUMS, REFER TO EQUIPMENT SCHEDULES & SUBMITTAL DOCUMENTS, IF ESP MEETS OR EXCEEDS THESE FIGURES, INCREASE PRESSURE CLASS TO NEAREST CLASS THAT IS 0.5" W.C. OVER THE LISTED ESP. WHERE INFORMATION IS NOT PROVIDED THE CONTRACTOR MUST SUBMIT A RFI.
- NOTE (4): WHEN USED AS PART OF A SMOKE CONTROL OR REMOVAL SYSTEM SHALL, AT A MINIMUM, BE SMACNA PRESSURE CLASS 3, SEAL CLASS A NOTE (5): LEAKAGE CLASS IS CFM LEAKAGE/100 SQ.FT. @ 1" H₂0

DUCTWORK ELE	BOWS:			MI	NIMUM		
ROUND:	F	PM	[DIA/RAI	DIUS RA	OITA	
	TO	1000		0	.75		
	1,001	TO 1,50	0		1		
	1,	500+		1.	5(2)		
		ASPEC	T RAT	IO, W/D	1		
RECTANGULAR:	R/D	0.25	0.5	1	2	3	4
	0.0 (3)	(1)	(1)	(1)	(1)	(1)	(1)
	0.5	(1)	(1)	(1)	(1)	(1)	(1)
	1	(1)	(1)	(1)	(1)	(1)	(1)
	1.5 (2), (5)	(1)	(1)	(4)	(4)	(4)	(4)

3 (1) (4) (4) (4) (4) NOTE (1):MUST HAVE AIRFOIL TURNING VALVES

- NOTE (2):STANDARD/DEFAULT CENTERLINE RADIUS
- NOTE (3):MITRED ELBOW
- NOTE (4):TURNING VANES NOT REQUIRED
- NOTE (5):THIS R/D MUST BE USED FOR TYPE I GREASE DUCTS, TURNING VANES NOT MECHANICAL PRODUCTS

2 (1) (4) (4) (4) (4)

- DIFFUSERS, REGISTERS AND GRILLES: MAXIMUM SOUND PRESSURE LEVELS SHALL NOT EXCEED NC 30. COORDINATE FINISH AND MOUNTING TYPE WITH ARCHITECT.
- ACCEPTABLE MANUFACTURERS: TITUS, NAILOR, KRUEGER, TUTTLE AND BAILEY, PRICE
- 2. CONTROL DAMPERS: LEAKAGE CLASS 1A/1. EQUAL TO RUSKIN CD-60 (CD-50 IN WET LOCATIONS)
- 3. PIPE HANGERS: PIPE SIZES 1/2" TO 1 1/2": MALLEABLE IRON, CARBON STEEL, ADJUSTABLE SWIVEL, SPLIT RING. PIPE SIZES OVER 2" (UNLESS NOTED OTHERWISE): CARBON STEEL, ADJUSTABLE, CLEVIS. PIPE SIZES CHILLED WATER 8" AND OVER, HEATING WATER 6" AND OVER, STEAM (SUPPLY & CONDENSATE) 4" AND OVER: ADJUSTABLE STEEL YOKE, CAST IRON ROLL, DOUBLE HANGER.
- PIPING: HYDRONIC WATER PIPING (ABOVE GROUND) SCHEDULE 40 STEEL (ASTM A53), MALLEABLE IRON OR FORGED STEEL WELDED TYPE FITTINGS, SCREWED OR WELDED JOINTS; OR TYPE L HARD DRAWN COPPER TUBING (ASTM B88), CAST BRASS OR SOLDER WROUGHT COPPER FITTINGS, SOLDER GRADE 95TA JOINTS. PIPING OVER 2" SHALL BE STEEL WITH WELDED JOINTS. EQUIPMENT DRAIN OVERFLOWS SHALL BE TYPE M HARD DRAWN COPPER.
- 5. VALVES: PROVIDE THE NAME OF MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON VALVE BODIES AND BE BY SINGLE MANUFACTURER FOR SIMILAR TYPE. ACCEPTABLE MANUFACTURERS: BRAY, MILWAUKEE, STOCKHAM, NIBCO, APOLLO.
- 2. THE MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL, IN ACCORDANCE WITH THE NEC AND THIS PROJECT ELECTRICAL SPECIFICATIONS, ALL CONDUIT, WIRE, JUNCTION BOXES, THERMOSTAT BACK BOXES AND CIRCUIT BREAKERS REQUIRED FOR A FULLY OPERATIONAL ATC SYSTEM. 120V POWER, IF NOT PROVIDED, SHALL BE OBTAINED FROM LOCATIONS PROVIDED ON THE ELECTRICAL DESIGN DOCUMENTS - IF NO INFORMATION IS PROVIDED THE CONTRACTOR MUST ISSUE AN RFI DURING THE BID PROCESS TO CLARIFY.
- . WHERE AN EXISTING OR NEW BAS SYSTEM IS UTILIZED THE CONTRACTOR SHALL PROVIDE A GUI PAGE FOR EACH SYSTEM. GRAPHICS MUST MATCH OR EXCEED THE EXISTING FOR DETAIL AND INFORMATION PROVIDED.
- SUBMIT SHOP DRAWINGS OF TEMPERATURE CONTROL WIRING, LOCATION OF DEVICES AND INSTALLATION DATA FOR REVIEW PRIOR TO INSTALLATION.

TEST AND BALANCE (TAB)

- 1. BALANCE ALL DUCTS, DIFFUSERS, AND GRILLES TO OBTAIN THE AIR QUANTITIES AS SHOWN ON PLANS. TEST AND BALANCE WORK SHALL BE PERFORMED BY AN INDEPENDENT, APPROVED, AND CERTIFIED AABC OR NEBB CONTRACTOR.
- THE CONTRACTOR IS RESPONSIBLE FOR ADJUSTING DIFFUSER THROWS. LINEAR DIFFUSERS IN A HORIZONTAL CEILING SYSTEM WILL GENERALLY THROW AIR HORIZONTAL - SEE DWGS FOR DIRECTION ARROW. IF NO DIRECTION ARROW IS ILLUSTRATED THE CONTRACTOR MUST DIRECT AN RFI TO THE ENGINEER TO OBTAIN
- PROPER THROW DIRECTIONS. 3. THE TEST AND AIR BALANCE (TAB) REPORT SHALL INCLUDE DESIGN AIR QUANTITIES AND AIR QUANTITIES AFTER ADJUSTMENTS. FURNISH OWNER'S REPRESENTATIVE WITH THREE (3) COPIES OF THE FINAL TAB REPORT.

6. PIPE INSULATION: GLASS FIBER INSULATION WITH A MAXIMUM K VALUE NOTED BELOW AT 75 DEGREES F. OUTDOOR INSULATION THICKNESS SHALL BE DOUBLE INDOOR THICKNESS WITH A MAXIMUM THICKNESS OF 3". INTERIOR APPLICATIONS SHALL HAVE KRAFT REINFORCED FOIL VAPOR BARRIER WITH ONE PIECE PREMOLDED PVC JACKETS FOR FITTINGS. EXTERIOR APPLICATIONS SHALL HAVE STUCCO EMBOSSED ALUMINUM JACKETS. ACCEPTABLE MANUFACTURERS: OWENS CORNING CERTAINTEED, JOHNS MANVILLE, KNAUF.

FLUID TEMP	INSUL. CONDUCTIVIT	Y	NOMIN	IAL PIPE SIZ	ZE (IN
RANGE °F	BTU-IN/(HR-SQ.FT°F)		<1.5	1.5 & >	
> 350	0.32	5		5	
251-350	0.29	4		4.5	
201-250	0.27	2	.5	3	
141-200	0.25	1	.5	2	
< 140 OUTER INSUL.	0.22 MINIMUM ALUMINUM .	1 JACKET	THICKN	1.5 IESS (INCHI	ES)
DIAMETER	RIGID INSULATION	NON-	RIGID I	NSULATION	l
≤ 8"	0.016	0.016			
> 8"-11"	0.016	0.020			
> 11"-24"	0.016	0.024	i		
> 24"-36"	0.020	0.032			

- > 36" 0.024 0.040 7. FANS: PROVIDE WITH ROOF CURB WHERE APPLICABLE, DISCONNECT SWITCH, BI -BELT DRIVEN OR DIRECT DRIVEN STEEL FAN, BACK DRAFT DAMPER AND CAST IRON OR STEEL DYNAMICALLY BALANCED VARIABLE OR ADJUSTABLE PITCH MOTOR
- SHEAVES. ACCEPTABLE MANUFACTURERS: GREENHECK, COOK, TWIN CITY, ACME. 8. PACKAGED ELECTRIC/GAS ROOFTOP UNITS(HEAT PUMPS INCLUDED): UNIT SHALL BE COMPLETE WITH HERMETICALLY SEALED COMPRESSOR WITH HIGH AND LOW PRESSURE CUT-OFFS, COILS, HEATING SECTION, AIR COOLED CONDENSER. CONDENSER BLOWER OR FAN, AUTOMATIC CONTROLS, CONTROL PANEL WITH STARTERS AND DISCONNECT SWITCH, RELAYS, ETC, FOR SINGLE POINT POWER CONNECTION. UNITS SHALL BE FURNISHED WITH 2 SETS OF 1" THROWAWAY PLEATED 30% FILTERS. UNITS SHALL BE COMPLETELY FACTORY WIRED FOR TERMINAL CONNECTIONS OF THERMOSTAT WITH A FAN-AUTO/MANUAL SWITCH AND A SYSTEM HEAT/OFF/COOL/AUTO SWITCH. UNITS TO BE INSTALLED AS PER MANUFACTURER RECOMMENDATIONS, WITH MANUAL OUTSIDE AIR DAMPER, 12" ROOF CURB, ITEMS AS SCHEDULED AND ALL NECESSARY ACCESSORIES REQUIRED FOR EFFICIENT AND PROPER OPERATION. ACCEPTABLE MANUFACTURERS: TRANE, LENNOX, DAIKIN, CARRIER.
- 11. AIR COOLED CONDENSER: PROVIDE COILS WITH INTEGRAL SUBCOOLING AND CASING WITH STAND. COILS SHALL BE ALUMINUM PLATE FINS ON COPPER TUBES (LEAK TESTED 150 PSIG, PRESSURE TESTED 420 PSIG). FANS SHALL BE DIRECT DRIVE PROPELLER WITH FAN GUARD. FAN SHAFT AND BLADES SHALL BE CORROSION PROTECTED. HEAD PRESSURE CONTROL SHALL BE BY FAN CYCLING. COMPRESSOR SHALL BE HERMETIC WITH EXTERNAL SPRING ISOLATORS AND UNLOAD IN RESPONSE TO SUCTION PRESSURE IN STEPS FOR PARTIAL LOAD OPERATION. ACCEPTABLE MANUFACTURERS: TRANE, CARRIER, YORK, DAIKIN.
- 12. SPLIT SYSTEM FAN COIL UNIT: UNITS SHALL HAVE GALVANIZED STEEL CABINET WITH FIBERGLASS INTERNAL LINER AND SERVICE PANELS. FAN SHALL BE CENTRIFUGAL FORWARD CURVE, STATICALLY AND DYNAMICALLY BALANCED, AND HAVE PERMANENTLY LUBRICATED OR BALL BEARING SHAFT BEARINGS. WATER OR DX COILS SHALL BE COPPER TUBES MECHANICALLY BONDED TO ALUMINUM FINS AND LEAK TESTED AT 350 PSIG. PROVIDE TWO OR THREE WAY WATER CONTROL VALVES AS REQUIRED. PROVIDE INTEGRAL ON WALL THERMOSTAT, 1" DISPOSABLE FILTERS, 3 SPEED MOTOR WITH SPEED SWITCH AND 18 GAUGE STEEL DRAIN PAN UNDER COILS. ACCEPTABLE MANUFACTURERS: TRANE, CARRIER, YORK, DAIKIN.
- 13. REFRIGERANT PIPING: PROVIDE PIPING BETWEEN AIR-COOLED CONDENSING UNIT AND FAN COIL UNIT OR HEAT PUMP. PROVIDE ALL NECESSARY AUXILIARIES AND APPARATUSES TO MAKE SYSTEM COMPLETE AND OPERABLE UNDER FULLY AUTOMATIC CONTROL. PIPING SHALL BE ACR COPPER TUBING MADE UP WITH WROUGHT COPPER FITTINGS USING SILVER SOLDER OF SIZES AS RECOMMENDED BY MANUFACTURER. SUCTION LINES, HOT GAS BYPASS AND OUTDOOR LIQUID LINES SHALL BE INSULATED WITH 3/4" THICK RIGID CLOSED CELL FOAM INSULATION. DO NOT RUN PIPE INSULATION IN RETURN AIR PLENUM.
- 14. VARIABLE AIR VOLUME TERMINAL BOXES: UNIT SHALL BE 22-GAGE GALVANIZED STEEL WITH 13/16", 4 LBS./CU. FT. FOIL FACED DUCT BOARD INSULATION INTERIOR LINER WITH AN R VALUE OF 3.5SQ.FT. °F HR/BTU @ 75°F, CODE COMPLIANCE WITH: UL 723 - FLAME/SMOKE (25/50), UL 181 AIR EROSION, MOLD GROWTH & HUMIDITY, ASTM 1338, G21, G22 FUNGI RESISTANCE. UNIT SHALL BE ARI 880 CERTIFIED. AIR VALVE SHALL HAVE A MULTIPLE POINT AVERAGING FLOW SENSING DEVICE. IF SCHEDULED, THE ELECTRIC HEATING COIL SHALL BE FACTORY INSTALLED WITH AIRFLOW SWITCH, THERMAL PRIMARY CUTOUT, MANUAL RESET, DISCONNECT SWITCH, AND MAGNETIC CONTACTOR. PROVIDE SPACE TEMPERATURE SENSOR CONTROL WIRING AND TRANSFORMER. ACCEPTABLE MANUFACTURERS: TRANE, TITUS, ENVIROTECH, PRICE.
- 15. C ONDENSATE DRAIN PIPING: TYPE "M" COPPER (ASTM B-88), WROUGHT FITTINGS (ASME B16.22), JOINTS: ANSI/ASTM B32, SOLDER: 95/5 TIN/ANTIMONY, 0.2% MAX
- 16. GAS PIPING: ABOVE GRADE SCHEDULE 40 BLACK IRON(ASME A-53), THREADED MALLEABLE FITTINGS INSIDE AND GALVANIZED FITTINGS AND PIPE WHERE EXPOSED, JOINT COMPOUND. PROVIDE ISOLATION VALVES AT ALL EQUIPMENT. BELOW GRADE GAS PIPING SHALL BE POLYETHYLENE (PE) GAS PIPING WITH BUTT FUSION JOINTS. PIPING SHALL BE LABELED GAS. GAS VALVE SHALL BE BRONZE BODY, BRONZE TAPERED PLUG, NON-LUBRICATED, TEFLON PACKING, THREADED
- 17. PIPE INSULATION: WHERE THE CLIMATE DICTATES, CONDENSATE DRAIN PIPING TO BE INSULATED. PROVIDE METAL SADDLES AND RIGID INSULATION AT HANGERS WHERE SYSTEM WEIGHT COMPRESSES INSULATION.
- 18. PIPE HANGERS: PIPE SIZES 1/2" TO 1 1/2": MALLEABLE IRON, CARBON STEEL, ADJUSTABLE SWIVEL, SPLIT RING. PIPE SIZES 2" TO 4": CARBON STEEL, ADJUSTABLE, CLEVIS. PIPE SIZES 6" AND OVER THAT ARE SUBJECT TO EXPANSION & CONTRACTION: ADJUSTABLE STEEL YOKE, CAST IRON ROLL, DOUBLE HANGER. SYSTEM LOAD (PIPE FULL OF DESIGN LIQUID OR GAS) ON HANGER MUST NOT EXCEED MORE THAN 85% OF HANGER CAPACITY.
- 19. DUCT MOUNTED SMOKE DETECTORS: 20. WHEN THE DUCT TYPE SMOKE DETECTOR IS REQUIRED TO BE PART OF THE DESIGN BUILD FIRE ALARM SYSTEM: SHALL BE FURNISHED BY THE FIRE ALARM
- CONTRACTOR, INSTALLED BY THE MECHANICAL CONTRACTOR AND WIRED BY THE FIRE ALARM CONTRACTOR 21.1. WHEN THE DUCT TYPE DETECTOR IS NOT PART OF THE FIRE ALARM SYSTEM: THE DUCT MOUNTED SMOKE DETECTORS SHALL BE FURNISHED, INSTALLED AND WIRED BY THE MECHANICAL CONTRACTOR. (NORMALLY PROVIDED AT
- 24 VAC.) 21.2. DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED ON AIR MOVING EQUIPMENT THAT EXCEEDS 2,000 CFM AND ON AIR MOVING EQUIPMENT
- UNDER 2,000 CFM THAT SUPPLIES A COMMON SPACE AND THE TOTAL CFM CAPACITY OF THE EQUIPMENT SERVING THE SPACE EXCEEDS 2,000 CFM. 21.3. DUCT MOUNTED DETECTORS SHALL BE WIRED TO SHUT DOWN THE

ASSOCIATED AIR MOVING EQUIPMENT ON ALARM.

- 21.4. DETECTORS TO BE MOUNTED IN THE (EDIT FOR CORRECT CODE. UMC 608) SUPPLY AIR DUCTWORK. (FOR THE IMC 606 -) RETURN AIR DUCTWORK UPSTREAM OF ANY FILTERS, EXHAUST OR OUTSIDE AIR CONNECTIONS.
- AUTOMATIC TEMPERATURE CONTROLS 1. THE MECHANICAL CONTRACTOR SHALL PROVIDE A COMPLETE SYSTEM OF AUTOMATIC TEMPERATURE CONTROLS(INTEGRATED INTO THE EXISTING) BUILDING AUTOMATION SYSTEM (BAS, BMS, ATC, DDC). THIS SYSTEM SHALL INCLUDE BUT NOT BE LIMITED TO: TEMPERATURE SENSORS, CONTROLLERS TRANSFORMERS, EQUIPMENT INTERFACE DEVICES AND ALL REQUIRED RELAYS, WIRING AND CONDUIT - REGARDLESS OF VOLTAGE.

 DIELECTRIC FITTINGS SHALL BE USED WHEREVER DISSIMILAR METALS ARE JOINED. 2. PROVIDE ACCESS PANELS IN CEILINGS & WALLS TO ACCESS MECHANICAL/PLUMBING EQUIPMENT AND APPURTENANCES WHERE REQUIRED. IN HARD CEILINGS PROVIDE GFRG OR BAUCO•PLUS II ACESS PANELS.

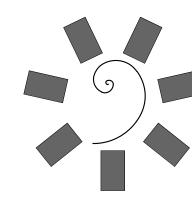
- 3. GAUGES: TEMPERATURE: INTERIOR WEISS VARI-ANGLE DIGITAL WITH 316 SS THERMOWELL, EXTERIOR WITH DCV-4 OUTDOOR WATERPROOF COVER. PRESSURE: WEISS DIGITAL DUGY3-xxx-2L (PG - RFI FOR RANGE PER APPLICATION)
- GAS REGULATORS SUPPLIED SHALL BE OF THE "LOCK UP" TYPE AND SHALL HAVE A STRAINER INSTALLED BEFORE THE REGULATOR. IN LOCATIONS WHERE SEISMIC OR BUILDING CODE REQUIREMENTS DICTATE AN EARTHQUAKE OR SIESMIC ACTUATED VALVE, THE CONTRACTOR SHALL PROVIDE AN ASCE/ANSI 25-06 LISTED SEISMIC ACTUATED VALVE JUST AFTER THE UTILITY COMPANY METER.
- 5. ALL EQUIPMENT SHALL BE RATED IN EXCESS OF THE AVAILABLE FAULT CURRENT AT THE POINT OF CONNECTION.
- 6. WHERE VFDs (VSDs) AND MOTORS ARE PROVIDED BY THE MECHANICAL OR PLUMBING CONTRACTOR: VFD DRIVES SHALL MEET THE FOLLOWING MINIMUM STANDARDS - PROVIDE WITH AN INTEGRAL FUSED DISCONNECT OR 100% RATED AIC CIRCUIT BREAKER. ALLOW FOR A/C POWER FLUCTUATIONS OF - SURGE TO 525V FROM 480V, SAG TO 375V FROM 480V, FREQUENCY DEVIATION FROM 50 TO 65Hz, VOLTAGE SPIKES UP TO 2X NORMAL INCOMING VOLTAGE FOR 1 MILLISECOND. ACCEPT A 2% VOLTAGE IMBALANCE. VFDs TO BE DANFOSS VLT6000, ABB ACH550, YASKAWA Z1000. ENCLOSURES TO BE RATED FOR THE INSTALLED LOCATION.
- ELECTRIC MOTORS MOTORS ON VFD SERVICE, OVER 10 HP, TO HAVE A SHAFT GROUNDING DEVICE, OVER 100 HP TO HAVE A SHAFT GROUNDING DEVICE AND AN INSULATED BEARING ON THE NON-DRIVEN END OF THE MOTOR. (OPPOSITE END OF THE MOTOR RELATIVE TO WHERE THE SHAFT GROUNDING DEVICE IS LOCATED.) MOTORS TO COMPLY WITH NEMA MG-1. MOTORS TO BE RATED FOR THE INSTALLED LOCATION.

PART THREE - EXECUTION

- 1. THE CONTRACTOR SHALL PROVIDE ALL SLEEVES, OPENINGS, CUTTING AND PATCHING NECESSARY FOR THE INSTALLATION OF THE WORK. CUTTING AND PATCHING SHALL BE DONE BY WORKMEN SKILLED IN THE TRADES REQUIRED AND PAID BY THE CONTRACTOR REQUIRING THE WORK COMPLETED. SYSTEMS PASSING THROUGH WATER PROOFING OR DAMP PROOFING SHALL BE WATER TIGHT. SYSTEMS PASSING THROUGH FIRE RATED CONSTRUCTION SHALL BE FIRE PROOFED WITHER MATERIAL APPROVED FOR THE FIRE AND TEMPERATURE RATING OF THE ASSEMBLY AND U.L. LISTED. (IF THE ARCHITECT HAS NOT PROVIDED A STANDARD DRAWING/ASSEMBLY FOR AN APPLICATION AND ONE IS NOT AVALIABLE, THE CONTRACTOR IS RESPONSIBLE TO OBTAIN AN "ENGINEERING JUDGEMENT" AND ASSOCIATED DRAWING FOR THE APPLICATION.)
- 2. THE CONTRACTOR SHALL PROVIDE ALL RIGGING, HANDLING OF MATERIALS AND EQUIPMENT, AND THE NECESSARY PROTECTION FOR MATERIALS AND EQUIPMENT.
- 3. THE CONTRACTOR WILL PROTECT THE WORK AND MATERIAL AGAINST DIRT, THEFT, INJURY OR DAMAGE UNTIL ACCEPTED BY OWNER. ALL WORK SHALL BE TURNED OVER TO OWNER CLEAN AND IN NEW CONDITION.
- 4. WHERE PIPES ARE INSTALLED THAT PASS THROUGH FLOORS THAT ARE NOT SLAB-ON-GRADE AND THE FLOOR IS A FIRE RATED ASSEMBLY, PER CODE, THE OPENING CREATED TO ACCEPT THE PIPING ASSEMBLY THROUGH THE FLOOR MUST USE A LISTED SYSTEM TO BE TEMPERATURE AND FIRE RATED TO MATCH THE RATING OF THE FLOOR (MIN 2 HOUR).
- 5. EQUIPMENT CONDENSATE DRAINS: FAN COIL, AHU AND OTHER SIMILAR EQUIPMENT CONDENSATE DRAINS MAY OR MAY NOT BE DOCUMENTED ON THE PROJECT DRAWINGS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE CONDENSATE DRAINS TO AN APPROVED RECEPTOR, SIZE DRAIN TO MATCH OR EXCEED CODE MINIMUMS. PROVIDE A CONDENSATE PUMP WHERE REQUIRED (IE: LITTLE GIANT NXTGEN)
- 6. EACH CONTRACTOR SHALL PROVIDE ALL FOUNDATIONS, HANGERS, AND SUPPORTS FOR ALL EQUIPMENT SUPPLIED AND/OR INSTALLED UNDER THEIR WORK. ANY EQUIPMENT WITH MOVING PARTS SHALL BE PROVIDED WITH VIBRATION ISOLATION AND FLEXIBLE CONNECTIONS TO PIPING AND OR DUCTWORK IF APPLICABLE. MISCELLANEOUS STEEL AND ANCHORS REQUIRED FOR THE INSTALLATION OF THE CONTRACTORS EQUIPMENT IS THE RESPONSIBILITY OF THE CONTRACTOR AND THE RETENTION OF A STRUCTURAL ENGINEER OR OTHER DESIGN DISCIPLINE TO COMPLETE THE WORK IS THE RESPONSIBILITY OF THE CONTRACTOR. EG: THE USE OF CONCRETE ANCHORS WILL REQUIRE DOCUMENTATION APPROVAL FROM A STRUCTURAL ENGINEER RETAINED BY THE CONTRACTOR.
- WHERE PIPES OR CONDUITS PASS THROUGH WALLS, FLOORS, OR CEILINGS IN FINISHED AREAS, THEY SHALL BE FURNISHED WITH ESCUTCHEON PLATES (COLOR
- PER ARCHITECT AND/OR INTERIOR DESIGNER). 8. PIPES AND/OR CONDUITS PASSING THROUGH WALL, FLOORS AND PARTITIONS SHALL BE PROVIDED WITH SLEEVES. SLEEVES PASSING THROUGH WATER PROOFING OR DAMP PROOFING SHALL BE WATER TIGHT. SLEEVES/PIPES PASSING THROUGH FIRE RATED CONSTRUCTION SHALL BE FIRE PROOFED WITH MATERIAL APPROVED FOR THE FIRE AND TEMPERATURE RATING OF THE ASSEMBLY AND U.L. LISTED. (IF THE ARCHITECT HAS NOT PROVIDED A STANDARD DRAWING/ASSEMBLY FOR AN APPLICATION AND ONE IS NOT AVAILABLE, THE CONTRACTOR IS RESPONSIBLE TO OBTAIN AN "ENGINEERING JUDGEMENT" AND ASSOCIATED DRAWING FOR THE
- 9. AT THE CONCLUSION OF THE JOB, EACH PIECE OF EQUIPMENT, VALVE, SWITCH, STARTER, PANEL, PIPE LINE, CONDUIT, DUCT, ETC., SHALL BE CLEARLY IDENTIFIED WHETHER EXPOSED OR CONCEALED, COVERED OR UNCOVERED, IN ACCORDANCE WITH OSHA AND ANSI REGULATIONS. IDENTIFY PIPES NEAR EACH VALVE WITH "BRANDY-PERMA' CODE PIPE TAPE" OR T. & B. WESTLINE "TEL-A-PIPE" INDICATING DIRECTION OF FLOW, SERVICE, ZONE, AND SIZE. TAPE SHALL BE APPLIED TO PIPE CONDUIT, OR COVERING. VALVES, CONTROLS, AND DAMPERS SHALL BE IDENTIFIED BY 2-INCH LACQUERED BRASS TAGS WITH STAMPED LETTERS FASTENED WITH "S" HOOKS OR CHAINS. EQUIPMENT IS TO BE IDENTIFIED AS TO FUNCTION AND PURPOSE BY MEANS OF PERMANENTLY ATTACHED LAMINATED ENGRAVED PHENOLIC NAMEPLATES WITH BEVELED EDGES, AND WHITE LETTERS ON BLACK BACKGROUND. (NO ADHESIVE LABELS ALLOWED).
- 10. AT THE CONCLUSION OF THE WORK, ALL EQUIPMENT AND SYSTEMS SHALL BE BALANCED, ADJUSTED, AND TESTED TO PROVIDE A QUIET-OPERATING, STABLE, AND SAFELY OPERATING SYSTEM(S). DEMONSTRATE OPERATION OF ALL SYSTEMS TO THE OWNER'S DESIGNATED REPRESENTATIVE. THE TEST AND BALANCE WORK SHALL BE PERFORMED IN ACCORDANCE WITH NEBB OR AABC STANDARDS, BY INDEPENDENT, APPROVED, AND CERTIFIED TEST AND BALANCE PERSONNEL.
- 11. IN LOCATIONS WHERE SEISMIC DESIGN REQUIREMENTS EXIST, THE MECHANICAL/PLUMBING CONTRACTOR IS RESPONSIBLE FOR RETAINING AND PAYING FOR THE DESIGN SERVICES OF A STRUCTURAL ENGINEER TO CREATE THE DESIGN AND INSTALLATION DRAWINGS FOR MECHANICAL/PLUMBING SYSTEMS SEISMIC RESTRAINT SUPPORT, PER THE PROJECT BUILDING CODE. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT MECHANICAL SYSTEMS SHOP DRAWINGS BASED UPON MULTI DISCIPLINE COORDINATION. INCLUDED WITH THE SHOP DRAWING SUBMISSION SHALL BE SEISMIC RESTRAINT DRAWINGS NOTING WHERE SEISMIC SUPPORT IS REQUIRED. FOR EACH AREA NOTED NEEDING SEISMIC SUPPORT FOR THE MECHANICAL SYSTEMS, THERE SHALL BE A SEISMIC DRAWING DETAILING THE REQUIRED SUPPORT. THE SEISMIC SUPPORT DRAWINGS SHALL BE SIGNED AND SEALED BY A REGISTERED STRUCTURAL ENGINEER IN THE SAME STATE AS THE PROJECT. IN ADDITION TO THE PROJECT DESIGN TEAM REVIEW, THE SEISMIC SUPPORT DRAWINGS WILL BE ISSUED TO THE LOCAL BUILDING DEPARTMENT FOR REVIEW AS PART OF A DEFERRED SUBMITTAL FOR THE BUILDING DOCUMENTS. COMMENCEMENT OF CONSTRUCTION PRIOR TO BUILDING
- 12. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN FOR
- EXACT LOCATION OF GRILLES, REGISTERS AND DIFFUSERS. 13. PIPE HANGERS: PIPE SIZES 1/2" TO 1 1/2" - 5'-0" MAX SPACING, 3/8" MIN. ROD DIAMETER; PIPE SIZES 2" TO 3" - 8'-0" MAX SPACING, 1/2" MIN. ROD DIAMETER;

DEPARTMENT REVIEW IS AT THE CONTRACTOR'S RISK.

- PIPE SIZES 4 TO 6"-10'-0" MAX SPACING, 5/8" MIN. ROD DIAMETER. 14. WATER PROOFING AND FLASHING OF PIPE PENETRATIONS THROUGH THE EXTERIOR WALL AND ROOF SHALL BE THE RESPONSIBILITY OF THE INSTALLING MECHANICAL/PLUMBING CONTRACTOR. THE CONTRACTOR SHALL COORDINATE LOCATIONS, MEANS AND METHODS WITH GENERAL CONTRACTOR/OWNER FOR THE VARIOUS BUILDING SYSTEMS. ROOFING MEMBRANE PENETRATIONS MUST BE PERFORMED BY A CONTRACTOR THAT IS WARRANTY APPROVED FOR THE SPECIFIC
- ROOFING SYSTEM. 15. CONTRACTOR SHALL OBTAIN FROM THE ARCHITECT THE EXACT LOCATION OF
- EQUIPMENT AND ANY OTHER APPARATUS SPECIFIED IN THESE DRAWINGS. 16. INSTALL CONDENSATE PIPING, WITH P-TRAP, FULL SIZE FROM EQUIPMENT TO FLOOR SINK, MOP SINK OR TAILPIECE (3/4" MAXIMUM CONDENSATE DRAIN LINE SIZE FOR TAILPIECE).



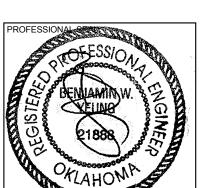
lames R. Childers Architect, Inc.

45 South 4th Street

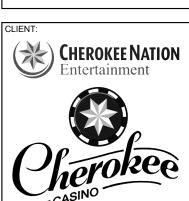
Fort Smith AR 72901

479-783-2480

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BID PACKAGE 05

	F	REVISIONS
#	DATE	DESCRIPTION

05/03/18 | 17-06

MECHANICAL SPECIFICATIONS

MODULAR CENTRAL PLANT SCHEDULE

				COMPONENT	S		ELI	ECTRICAL		INITIAL	FUTURE
MARK	MANUFACTURER	FLUID COOLERS	CW PUMPS	BOILER	HW PUMPS	EXPANSION TANK	V/PH/HZ	MCA	МОСР	WEIGHT (LBS)	WEIGHT (LBS)
MCP 1	DAIKIN	REFER TO SCHEDULE	REFER TO MA	NUFACTURE	ER'S	-	•				

- PROVIDE SINGLE POINT CONNECTION AT 460V. 3 PHASE. PROVIDE A BAS GUI INTERFACE INSIDE THE PLANT
- (32" 4K MONITOR). PROVIDE ALL RIGGING, INTERNAL PIPING, AND INTERNAL WIRING TO BE PERFORMED BY THE MANUFACTURERS OF THE
- PROVIDE BAC NET INTERFACE TO CONNECT TO OWNER BAS.
- PROVIDE FREEZE-LESS HOSE BIB. SINGLE POINT 460V-3-PHASE POWER CONNECTION WITH ALL REQUIRED TRANSFORMERS, WIRING, CONDUIT ETC TO SERVE
- ALL PACKAGED PLANT COMPONENTS EACH MODULE. FLUID COOLER AND SUPPORT STRUCTURE TO BE DESIGNED, PROVIDED, AND INSTALLED BY THE MCP MANUFACTURER'S FIELD PERSONNEL.

PROVIDE 5 PROBE ELECTRIC WATER LEVEL CONTROL.

PROVIDE HIGH EFFICIENCY INVERTER DUTY MOTOR AND VFD.

3. PROVIDE ACCESS LADDER WITH SAFETY CAGE, PLATFORM, AND HANDRAIL.

PROVIDE LOW SOUND FAN AND WATER SILENCERS.

4. PROVIDE VIBRATION CUT-OUT SWITCH.

- 8. SEE SPECIFICATIONS FOR BAS CONTROLS AND INTERFACE.
- 9. MINIMUM QTY (10) GFI OUTLETS SPACED THROUGHOUT THE PACKAGED PLANT.
- 10. REFRIGERANT LEAK DETECTION SYSTEM WITH VENTILATION FAN
- AND DAMPER, AUDIBLE ALARMS AND STROBES. 11. EXTERIOR EMERGENCY SHUTDOWN SWITCHES FOR BOILER SYSTEMS.
- 12. EMERGENCY EYEWASH/SHOWER STATION AND CHEMICAL WATER
- TREATMENT AREA. 13. PROVIDE FIRST YEAR CHEMICAL WATER TREATMENT EQUIPMENT,
- CHEMICALS AND SERVICE FOR OPEN LOOP COOLING TOWERS. 14. EMERGENCY LIGHTS AND EXIT SIGNS AT EACH MAIN ENTRY
- 15. ALL ACCESS DOORS TO BE PROVIDED WITH KEYED LOCKING
- HARDWARE.
- 16. PROVIDE EMERGENCY PANIC HARDWARE AT ALL DOORS TO ALLOW FOR EXIT WHEN DOOR IS LOCKED FROM OUTSIDE.
- 17. LABEL ALL ELECTRICAL, CONTROLS AND EQUIPMENT COMPONENTS WITH PERMANENT BLUE MECHANICALLY FASTENED PHENOLIC COATED NAMEPLATES.
- 18. PROVIDE ALL STAINLESS STEEL BOILER VENT MATERIAL REQUIRED TO COMPLETE INSTALLATION - MOUNTED BY FACTORY.
- 19. FACTORY TEST ALL ELECTRICAL, CONTROLS AND PIPING
- SYSTEMS PRIOR TO SHIPMENT. 20. PROVIDE INTERNAL LED LIGHTING FIXTURES.
- 21. PROVIDE FACTORY INSTALLED HEATING AND COOLING SYSTEMS TO CONDITION THE PACKAGED PLANT AND ELECTRICAL ROOMS.
- 22. PROVIDE MINIMUM 18"X18" STAINLESS STEEL FLOOR SINKS AND DRAINS WITH WALK-ON SAFETY GRATING AT ALL PUMPS, BOILERS, EMERGENCY EYEWASH LOCATIONS AND IN ANY OTHER
- AREA WHERE SPILLS MAY OCCUR. 23. ROUTE ALL AIR VENT AND PRESSURE RELIEF VALVE BLEED
- CONNECTIONS TO FLOOR DRAINS. 24. PROVIDE ALL PIPING SECTIONS WITH HIGH POINT TAPS WITH MANUAL VENTING BALL VALVES WITH HOSE END CAP.
- 25. PROVIDE WATER TREATMENT SYSTEMS. 26. PROVIDE MAKEUP WATER METERS FOR CS AND FLUID COOLER
- SYSTEMS.

(MBH)

1896

27. PROVIDE CORROSION COUPON RACKS FOR EACH SYSTEM. 28. PROVIDE CHEMICAL FILTER FEEDER - POT FEEDERS ON EACH

(MBH)

- 29. PROVIDE MAKEUP WATER BACKFLOW PREVENTERS, PRV'S
- STRAINERS AND BYPASS QUICK FILL LINES FOR EACH SYSTEM. 30. ALL COMPONENT WIRING MUST BE ROUTED IN CONDUIT AND
- RACE WAYS.
- 31. PROVIDE MINIMUM 4" WALLS, FLOOR AND CEILING
- CONSTRUCTION. 32. PROVIDE 12 GA GALVANIZED TREADPLATE INTERNAL FLOORS. 33. ALL THE MODULE RIGGING, ASSEMBLY AND FLASHING OF
- MODULES, AND ALL INTERNAL PIPING, WIRING, AND INSULATING WILL BE DONE BY THE FACTORY ON SITE.
- 34. PROVIDE 2-YEAR PARTS AND LABOR WARRANTY FROM STARTUP

AIR INLET SIZE

12"

12"

OUTLET

SIZE

MOCP

480/3/60

480/3/60

480/3/60

TURN DOWN

FOR ENTIRE CENTRAL PLANT.

WATER

SIZE

CONNECTION CONNECTION

SIZE

35. PROVIDE 2-YEAR MAINTENANCE AGREEMENT BY THE FACTORY FOR ENTIRE CENTRAL PLANT.

BOILER SCHEDULE

(%)

AIR SEPARATOR SCHEDULE	
------------------------	--

MARK MANUFACTURER TYPE SERVICE GPM CONNECTION MAX PD SIZE (IN) WEIGHT (LBS)	REMARKS
MODEL SERVICE GPW SIZE (IN) (FT) DIA HEIGHT	NEWANIO
AS SPIROTHERM VHR1600FA AIR ELIMINATOR CONDENSER WATER 5500 16 10 32 106 1740	1 ,2

PROVIDE ISOLATION VALVES. PROVIDE SUPPORTS.

FLUID COOLER SCHEDULE

									.		•		
	MANUFACTURER			EAT	EWT	LWT	F	ANS	ELE	CTRICAL	OPERATING	MAX DIM	
MARK	MODEL	TYPE	GPM	(WB)	(°F)	(°F)	NO.	CFM (TOTAL)	HP	V/PH/HZ	WEIGHT (LBS)	(LXWXH) (FT)	REMARKS
FC 1	EVAPCO ECO-ATWB 20-3N36-Z	CLOSED CIRCUIT	2200	80	95	85	4	453,189	160	460/3/60	131,520	21'X37'X17'	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
FC 2	EVAPCO ECO-ATWB 20-3N36-7	CLOSED CIRCUIT	2200	80	95	85	4	453,189	160	460/3/60	131,520	21'X37'X17'	1, 2, 3, 4, 5, 6, 7, 8, 9, 10

- - 6. SINGLE INLET CONNECTION.
 - 8. PROVIDE STAINLESS STEEL WATER TOUCH CONSTRUCTION.
 - 9. PROVIDE EACH CELL WITH ITS OWN MOTOR DAVIT (LESS WINCH). 10. PROVIDE PREMIUM EFFICIENT MOTOR.

- . PROVIDE 2-16KW HEATERS PER CELL WITH UNIT MOUNTED DISCONNECT AND TRANSFORMER.
 - - THE FIELD BY THE AIR/WATER BALANCE CONTRACTOR. ADJUST TO PROVIDE 10 PSI AT THE TOP OF THE

CLOSED LOOP.

SYSTEM

HEATING

HEATING

HEATING

MOUNT BOILERS ON A 4" HOUSEKEEPING PAD TO ACCOMMODATE THE

PROVIDE ELECTRONIC LOW WATER CUT OFF WITH MANUAL RESET.

MANUFACTURER

MODEL

DR(H)2000

CAMUS

DR(H)2000

DR(H)2000

CONDENSATE NEUTRALIZATION KIT.

MOTOR SHALL BE NON-OVERLOADING.

EXPANSION TANK SCHEDULE

4. NEUTRALIZATION KIT FOR CONDENSATE.

3. PROVIDE COMMUNICATION INTERFACE TO EMS.

5. ROUTE DRAINS TO CONDENSATE NEUTRALIZATION KIT.

(°F)

							1011						
MARK	MANUFACTURER	TYPE	SERVICE	TANK VOLUME	ACCEPTANCE VOLUME	SI	ZE (IN)	ASME RATED	SYSTEM	TEMP (^F)	SYSTEM PRESSURE @	OPERATING WEIGHT	REMARKS
	MODEL			(GAL)	(GAL)	DIA	HT/LEN	PRESSURE (PSI)	MIN.	MAX.	TANK MIN (PSI)	(LBS)	
ET 1	-	BLADDER	CONDENSER WATER	-	-	-	-	150	80	100	65	-	1, 2

SYSTEM UNDER STATIC CONDITIONS. FINAL SYSTEM PRESSURE TO BE DETERMINED IN

2. INSULATE TANK TO MIN. R-15 VALUE.

HYDRONIC PUMP SCHEDULE

4. PROVIDE OUTSIDE BALANCED SEALS.

REMARKS

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37

EWT

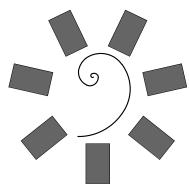
(°F)

133

133

		GENER	AL DATA			HEAD	EFF	NPSHR	IMPELLER		N	MOTOR		OPERATING	
RK	MANUFACTURER MODEL	LOCATION	TYPE	SERVICE	GPM	(FT)	(%)	(FT)	SIZE (IN)	ВНР	IP HP RPM		V/PH/HZ	WEIGHT (LBS)	REMARKS
<u> </u>	ARMSTRONG SERIES 4300	МСР	VERTICAL INLINE	CONDENSER WATER	2200	100	78	17.6	11.7	-	100	-	460/3/60	2300	1, 2, 3, 4, 5, 6
	ARMSTRONG SERIES 4300	МСР	VERTICAL INLINE	CONDENSER WATER	2200	100	78	17.6	11.7	-	100	-	460/3/60	2300	1, 2, 3, 4, 5, 6
\rightarrow	ARMSTRONG SERIES 4380	МСР	INLINE	BOILER	133	25	74	8.0	5.9	-	2	-	460/3/60	200	1, 2, 3, 4, 5, 6
<u> </u>	ARMSTRONG SERIES 4380	МСР	INLINE	BOILER	133	25	74	8.0	5.9	-	2	-	460/3/60	200	1, 2, 3, 4, 5, 6
<u> </u>	ARMSTRONG SERIES 4380	МСР	INLINE	BOILER	133	25	74	8.0	5.9	-	2	-	460/3/60	200	1, 2, 3, 4, 5, 6
'P	ARMSTRONG SERIES 4300	МСР	VERTICAL INLINE	HOT WATER	200	80	67	11.8	5.3	-	10	-	460/3/60	300	1, 2, 3, 4, 5, 6
P	ARMSTRONG SERIES 4300	МСР	VERTICAL INLINE	HOT WATER	200	80	67	11.8	5.3	-	10	-	460/3/60	300	1, 2, 3, 4, 5, 6

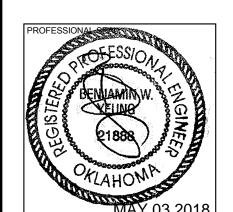
6. PROVIDE PREMIUM EFFICIENT MOTOR.



James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901

479-783-2480

www.childersarchitect.com



OPERATING

WEIGHT

(LBS)

1200

1200

1200

REMARKS

1, 2, 3, 4,

1, 2, 3, 4,

1, 2, 3, 4,





ROKEE NATION ENTERTAINM TAHLEQUAH CASINO

BID PACKAGE 05

05/03/18

								AIR	R HA	NDL	ING	UN	IT SCHEI	DULE	(WA	TER	SO	URO	CE H	EAT PU	MP)										
I	GENERA	L DATA			AIRFLOW CO	NDITIONS	<u> </u>					PPLY FAN						RETURN							MIXED	AIR DATA					
MARK	MANUFACTURER	LOCATION	055)//05	SUPPLY AII	MIN.	OA	RETURN		МС	TOR		ESP	TSP (W/	OUTLET		МО	TOR		ESP	TSP (W/	ENERGY	ENTERING	ı	RETURN AII	R	OUTSIDI	E AIR FROM	WHEEL	М	IXING POIN	ıΤ
	MODEL	LOCATION	SERVICE	(CFM)	OUTSIDE AIR (CFM)	(%)	AIR (CFM)	QTY	TYPE	RPM	НР	(IN)	DIRTY FILTERS) (IN)	VELOCITY (FPM)	QTY	TYPE	RPM	HP	(IN)	DIRTY FILTERS) (IN)	RECOVERY WHEEL	AIR TEMP	CFM	DB (°F)	WB (°F)	CFM	DB (°F)	WB (°F)	CFM	DB (°F)	WB (°F)
AHU 1	ANNEXAIR AHU-E-12-D-HR-WZ46	ROOF	BANQUET KITCHEN	13,000	2,000	15%	13,000	2	PLUG	1800	7.5	2.0	3.98	500	2	PLUG	1800	5	1.0	1.66	-	SUMMER WINTER	11,000	75 70	63 53	2,000	101 0	78 0	13,000	79.0 59.3	65.8
AHU 2	ANNEXAIR AHU-E-25-D-HR-WZ96	ROOF	BALLROOM	24,000	8,000	33%	24,000	4	PLUG	1800	7.5	2.0	3.98	500	4	PLUG	1800	5	1.0	1.66		SUMMER WINTER	16,000	75 70	63 53	8,000	101 0	78 0	24,000	83.7 46.7	68.7
AHU 3	ANNEXAIR AHU-E-25-D-HR-WZ96	ROOF	BALLROOM	24,000	8,000	33%	24,000	4	PLUG	1800	7.5	2.0	3.98	500	4	PLUG	1800	5	1.0	1.66		SUMMER WINTER	16,000	75 70	63 53	8,000	101 0	78 0	24,000	83.7 46.7	68.7
AHU 4	ANNEXAIR AHU-E-16-D-HR-WZ60	ROOF	DINING/ KITCHEN (VAV)	15,000	5,000	33%	15,000	4	PLUG	1800	7.5	2.0	3.98	500	4	PLUG	1200	5	1.0	1.66	-	SUMMER WINTER	10,000	75 70	63 53	5,000	101 0	78 0	15,000	83.7 46.7	68.7
AHU 5	ANNEXAIR AHU-E-16-D-HR-WZ60	ROOF	BALLROOM PREFUNCTION (VAV)	16,000	4,000	25%	16,000	2	PLUG	1800	7.5	2.0	3.98	500	2	PLUG	1800	5	1.0	1.66	-	SUMMER WINTER	12,000	75 70	63 53	4,000	101 0	78 0	16,000	81.5 52.5	67.3
AHU 6	ANNEXAIR ERP-E-25-EW-D-HR-2XWZ52	ROOF	CASINO	25,000	25,000	100%	25,000	1	PLUG	1800	7.5	2.0	4.81	500	1	PLUG	1800	5	1.0	2.49	ERW 1-6		-	-	-	-	-	-	-	-	-
AHU 7	ANNEXAIR ERP-E-25-EW-D-HR-2XWZ52	ROOF	CASINO	25,000	25,000	100%	25,000	1	PLUG	1800	7.5	2.0	4.81	500	1	PLUG	1800	5	1.0	2.49	ERW 1-7		-		-		-		-	-	-
AHU 8	ANNEXAIR AHU-E-16-D-HR-WZ60	ROOF	LOUNGE	16,000	4,000	25%	16,000	2	PLUG	1800	7.5	2.0	3.98	500	2	PLUG	1800	5	1.0	1.66	-	SUMMER WINTER	12,000	75 70	63 53	4,000	101 0	78 0	16,000	81.5 52.5	67.3
AHU 9	ANNEXAIR AHU-E-05-D-HR-WZ24	ROOF	BOH (VAV)	6,000	1,500	25%	6,000	2	PLUG	1200	10	2.0	3.98	500	2	PLUG	1200	7.5	1.0	1.66	-	SUMMER WINTER	4,500	75 70	63 53	1,500	101 0	78 0	6,000	81.5 52.5	67.3
AHU 10	ANNEXAIR AHU-E-09-D-HR-WZ46	ROOF	BOH (VAV)	8,000	2,000	25%	8,000	2	PLUG	1800	7.5	2.0	3.98	500	2	PLUG	1800	5	1.0	1.66		SUMMER WINTER	6,000	75 70	63 53	2,000	101 0	78 0	8,000	81.5 52.5	67.3
MAU 1	ANNEXAIR MAU-E-16-D-HR-WZ96	ROOF	DINING KITCHEN	15,500	15,500	100%	0	2	PLUG	1200	10	2.0	3.98	500			_ N	O RETURN	FANS		-		-	-	-	-	-	-	-	-	
MAU 2	ANNEXAIR MAU-E-07-D-HR-WZ52	ROOF	BANQUET KITCHEN	8,000	8,000	100%	0	2	PLUG	1800	5	1.5	3.48	500			_ N	O RETURN	FANS		-	-	-	-	-	-	-	-	-	-	-

												A	IR HAND	DLING	G UN	IIT SC	HE	DUL	E (WATI	ER SOUF	RCE H	IEAT PU	MP) (C	ONT.	.)					
		D	X COIL (WSH	IP - COOLING	G MODE	<u> </u>			П	HOT GAS	S REHEA	T COIL	DX COIL (WSHP	- HEATING	MODE)				WATER SOURCE	E HEAT PUMP DATA					UNIT E	LECTR	RICAL			OPERATING	
MARK	CFM	TONS	TOTAL MBH	SENSIBLE MBH	EAT (DB)		Γ LA (DE	T L	LAT WB)	CAPACIT' (MBH)	Y EAT (DB)		CAPACITY (MBH)	EAT (DB)	LAT (WB)	MODEL	QTY	TONS / UNIT		EWT / LWT (°F) HEATING MODE	GPM	NO. OF COMPRESSORS (VAR. SPEED)	GFI	LIGHTS	S V/PH/	HZ	FLA	MCA I		WEIGHT (LBS)	REMARKS
AHU 1	13,000	42.7	512	373	78.5	65.3	3 52	2	52	253	52	70	507	57.9	94	WZ-46	1	7 - 46	85 / 100	60 / 50	80	2	1	6	460/3/	60	104	112	125	9,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21
AHU 2	24,000	102.7	1232	822	83.7	68.7	7 52	2	52	467	52	70	1260	44.4	93	WZ-96	1	9 - 96	85 / 100	60 / 50	200	6	1	6	460/3/	60	208	213	225	14,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21
MHU 3	24,000	102.7	1232	822	83.7	68.7	7 52	2	52	467	52	70	1260	44.4	93	WZ-96	1	9 - 96	85 / 100	60 / 50	200	6	1	6	460/3/	60	208	213	225	14,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21
AHU 4	15,000	64.2	770	514	83.7	68.7	7 52	2	52	292	52	70	503	44.0	75	WZ-60	1	9 - 64	85 / 100	60 / 50	125	4	1	6	460/3/	60	165	171	175	10,500	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
NHU 5	16,000	61.8	741	510	81.5	67.3	3 52	2	52	312	52	70	837	39.6	88	WZ-60	1	9 - 64	85 / 100	60 / 50	125	4	1	6	460/3/	60	129	135	150	10,500	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
AHU 6	25,000	107.9	1294	810	82.0	68.8	3 52	2	52	486	52	70	1221	47.8	93	WZ-52	2	9 - 52	85 / 100	60 / 50	180	4	1	6	460/3/	60	186	192	200	19,300	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21
HU 7	25,000	107.9	1294	810	82.0	68.8	3 52	2	52	486	52	70	1221	47.8	93	WZ-52	2	9 - 52	85 / 100	60 / 50	180	4	1	6	460/3/	60	186	192	200	19,300	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21
HU 8	16,000	61.8	741	510	81.5	67.3	3 52	2	52	312	52	70	837	39.6	88	WZ-60	1	9 - 64	85 / 100	60 / 50	125	4	1	6	460/3/	60	129	135	150	10,500	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21
NHU 9	6,000	23.2	278	192	81.5	67.3	3 52	2	52	117	52	70	159	50.6	75	WZ-24	1	3 - 24	85 / 100	60 / 50	50	2	1	6	460/3/	60	91	95	110	5,500	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
NHU 10	8,000	31.0	371	256	81.6	67.3	3 52	2	52	156	52	70	178	54.4	75	WZ-30	1	5 - 32	85 / 100	60 / 50	60	2	1	6	460/3/	60	83	89	110	10,500	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
1	15,500	65.4	784	603	101	78	65	5	65	84	65	70	1256	0	75	WZ-96	1	9 - 96	85 / 100	60 / 50	200	6	1	6	460/3/	60	171	177	200	12,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21
AU 2	8,000	33.8	405	312	101	78	65	5	65	44	65	70	648	0	75	WZ-52	1	9 - 52	85 / 100	60 / 50	100	4	1	6	460/3/	60	99	105	125	7,500	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21

- 1. PROVIDE 2" DEEP, MERV 8 (CAMFIL FARR 30/30).
- 2. PROVIDE 18" CURB. 3. PROVIDE A VFD ON EACH SUPPLY FAN AND EXHAUST FAN TO BE INSTALLED IN A CONDITIONED SPACE WITHIN THE AHU, CONTROL KEYPAD TO BE IN EXTERNAL CONTROL ENCLOSURE MOUNTED AT FACTORY.
- 4. PROVIDE 2" DOUBLE WALL INSULATED CONSTRUCTION THERMALLY BROKEN, FACTORY EXTERIOR PAINT.
- 5. PROVIDE AIR FOIL BI DIRECT DRIVE FANS.
- PROVIDE SMOKE DETECTORS IN SUPPLY AND RETURN (BY FIRE ALARM CONTRACTOR).
 PROVIDE INSULATED PIPING VESTIBULE MADE OF SAME CABINET CONSTRUCTION AS MAIN AIR HANDLER. PIPING VESTIBULE SHALL HAVE HINGED ACCESS DOORS FOR
- EACH COIL SECTION MINIMUM DEPTH 30". 8. PROVIDE 2 YEAR WARRANTY.
- 9. PROVIDE LIGHTS AND CONVENIENCE OUTLETS, WIRED SEPARATE FROM MAIN UNIT POWER, ELECTRICAL CONTRACTOR TO PROVIDE 120V POWER CONNECTION.
 10. PROVIDE INSULATED STAINLESS STEEL DRAIN PAN.
- 11. ELECT CONNECTIONS SINGLE POINT: 480/3 , SINGLE POINT: 120/1.
 12. ALL FREEZE STATS SHALL BE LOCATED ON THE INSIDE OF ALL AIR HANDLERS UNITS. MIN 20' ELEMENT, MANUAL RESET-CONTROLLER LOCATED INSIDE UNIT.
- PROVIDED AND INSTALLED BY BAS CONTRACTOR.
- 13. EXTERNALLY MOUNTED DISCONNECT (BY CONTRACTOR).14. PROVIDE OUTSIDE AIR AIR-FLOW MEASURING STATION WITH CONTROL INTERFACE. BAS CONTRACTOR TO PROVIDE AND FIELD INSTALL.
- 15. PROVIDE SUPPLY AND EXHAUST FAN INLET AIR-FLOW MEASURING STATIONS. BAS CONTRACTOR TO PROVIDE AND INSTALL.16. PROVIDE A 16" ACCESS SECTION BETWEEN THE FIRST HEATING COIL AND THE COOLING COIL.
- 17. PROVIDE ENTIRE CONTROLS SYSTEM UNDER ONE WARRANTY.
 18. HEATING COIL TO BE LOCATED DOWNSTREAM OF THE COOLING COIL (IN REHEAT POSITION).
 19. COILS SHALL BE ACCESSIBLE AND REMOVABLE FROM THE TOP OF THE UNIT.
- 20. PROVIDE WITH ENTHALPY WHEEL. REFER TO ENERGY RECOVERY WHEEL SCHEDULE.21. PROVIDE WITH HOT GAS REHEAT.

						ENE	RGY R	ECOV	ERY V	WHEEL	_ SCHI	EDUL	E			
SIZE I				OUTSIDE AIR			SUPPLY AIR			EXHAUST AIR	2		RETURN AIR			
SIZE HP	SERVICE	CFM	EAT °F SUMMER DB/WB	EAT °F WINTER DB	CFM	LAT °F SUMMER DB/WB	LAT °F WINTER DB	CFM	LAT °F SUMMER DB/WB	LAT °F WINTER DB	CFM	EAT °F SUMMER DB/WB	EAT °F WINTER DB	FROST CONTROL	REMARKS	
25	1.0	AHU 6	26,316	101/78	0/0	25,000	82.1/68.8	47.8/39.6	26,316	93.9/73.3	22.2/22.2	25,000	75/73	70/53	VFD	1, 2, 3, 4, 5
25	1.0	AHU 7	26,316	101/78	0/0	25,000	82.1/68.8	47.8/39.6	26,316	93.9/73.3	22.2/22.2	25,000	75/73	70/53	VFD	1, 2, 3, 4, 5
	25	25 1.0	25 1.0 (AHU)	SIZE HP SERVICE CFM 25 1.0 AHU 6 26,316	25 1.0 SERVICE CFM SUMMER DB/WB 25 1.0 AHU 6 26,316 101/78	SIZE HP SERVICE CFM EAT °F SUMMER DB/WB DB 25 1.0 AHU 6 26,316 101/78 0/0	SIZE	SIZE	SIZE	SIZE HP SERVICE CFM EAT °F SUMMER DB CFM DB/WB DB CFM DB/WB CFM DB/WB CFM DB/WB CFM DB/WB CFM DB/WB CFM DB/WB DB CFM DB/WB CFM DB/WB DB CFM DB/WB DB/WB DB CFM DB/WB DB/WB	SIZE	SIZE HP SERVICE CFM EAT °F SUMMER DB WINTER DB/WB CFM LAT °F SUMMER DB/WB LAT °F SUMMER DB/WB WINTER DB/WB CFM DB/WB CFM DB/WB CFM DB/WB CFM DB/WB CFM DB/WB DB CFM DB/WB DB/WB DB CFM DB/WB DB/WB DB CFM DB/WB DB	SIZE HP SERVICE CFM CFM SUMMER DB DB DB DB DB DB DB DB	SIZE HP SERVICE CFM EAT °F SUMMER DB/WB CFM DB/WB LAT °F SUMMER DB/WB CFM DB/WB <td> SIZE HP SERVICE CFM EAT °F SUMMER DB DB/WB DB CFM DB/WB DB/WB</td> <td> SIZE HP SERVICE CFM EAT °F SUMMER DB DB/WB DB CFM DB/WB DB CFM DB/WB DB CFM DB/WB DB/WB </td>	SIZE HP SERVICE CFM EAT °F SUMMER DB DB/WB DB CFM DB/WB DB/WB	SIZE HP SERVICE CFM EAT °F SUMMER DB DB/WB DB CFM DB/WB DB CFM DB/WB DB CFM DB/WB DB/WB

ALUMINUM WHEEL.

3 ANGSTROM DESSICANT SYSTEM. WHEEL RETURN AIR LEADING EDGE SHALL BE TEFLON COATED. DATA SHOWN IS FOR A SINGLE (1) WHEEL, PROVIDE TWO (2) WHEELS PER AIR HANDLER.
 PROVIDE WHEEL MOTOR WITH VFD.

James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com







ROKEE NATION ENTERTAINM TAHLEQUAH CASINO

PROJECT PHASE: **BID PACKAGE 05**

	F	REVISIONS
#	DATE	DESCRIPTION

MECHANICAL

SCHEDULES

											W	ATE	R SC	UR	CE HE	AT P	UMP	UNIT	SCH	HED	ULE							
	MANUEAGTURER		OUDDLY	OUTDOOL						COOI	LING COIL								HE	ATING CO	DIL			l E	ECTRICA	AL	OPERATING	
MARK	MANUFACTURER MODEL	SERVICE	SUPPLY AIR CFM	OUTDOOF AIR CFM	R ESP (IN WG)	HP	TOTAL MBH	SENSIBLE MBH	EAT (DB)	EAT (WB)	LAT (DB)	LAT (WB)	EWT (°F)	GPM	MAX WATER PD (FT)	EER	TOTAL MBH	EAT (DB)	LAT (DB)	EWT (°F)	GPM	MAX WATER PD (FT)	СОР	V/PH/HZ			WEIGHT (LBS)	REMARKS
VSHP 1	CLIMATE MASTER TE-064	VESTIBULE	1600	0	0.5	-	64.0	44.0	80	67	54.3	48.7	85	12.8	10	16.3	69	70	107.7	85	12.8	10	4.5	480/3/60	15.0	20.0	500	1, 2, 3, 4, 5, 6
/SHP 2	CLIMATE MASTER TE-049	PLAYERS CLUB	1250	200	0.5	-	48.0	31.0	80	67	57.2	51.9	85	10.5	10	16.5	50	70	104.9	85	10.5	10	4.2	480/3/60	14.0	20.0	500	1, 2, 3, 4, 5, 6
SHP 3	CLIMATE MASTER TE-064	VESTIBULE	1600	0	0.5	-	64.0	44.0	80	67	54.3	48.7	85	12.8	10	16.3	69	70	107.7	85	12.8	10	4.5	480/3/60	15.0	20.0	500	1, 2, 3, 4, 5, 6
SHP 4	CLIMATE MASTER TE-064	RESTROOMS	2000	300	0.5	-	65.0	50.0	80	67	56.9	51.5	85	12.8	10	15.7	70	70	100.6	85	12.8	10	4.9	480/3/60	15.0	20.2	500	1, 2, 3, 4, 5, 6
SHP 5	CLIMATE MASTER TE-072	FIRE RISER	1800	0	0.5	-	71.0	48.0	80	67	55.4	49.9	85	14.2	10	14.9	75	70	106.6	85	14.2	10	4.2	480/3/60	16.6	25.0	500	1, 2, 3, 4, 5, 6
SHP 6	CLIMATE MASTER TE-038	EMERGENCY ELECTRICAL	800	0	0.5	-	37.0	22.0	80	67	55.5	50.0	85	7.9	10	17.7	39	70	112.0	85	7.9	10	4.5	480/3/60	10.3	15.0	400	1, 2, 3, 4, 5, 6
SHP 7	CLIMATE MASTER TE-064	ELECTRICAL	1600	0	0.5	-	64.0	44.0	80	67	54.3	48.7	85	12.8	10	16.3	69	70	107.7	85	12.8	10	4.5	480/3/60	15.0	20.0	500	1, 2, 3, 4, 5, 6
SHP 8	CLIMATE MASTER TE-038	ELEC 97C	800	0	0.5	-	37.0	22.0	80	67	55.5	50.0	85	7.9	10	17.7	39	70	112.0	85	7.9	10	4.5	480/3/60	10.3	15.0	400	1, 2, 3, 4, 5, 6
SHP 9	CLIMATE MASTER TE-038	ELEC 97A	800	0	0.5	-	37.0	22.0	80	67	55.5	50.0	85	7.9	10	17.7	39	70	112.0	85	7.9	10	4.5	480/3/60	10.3	15.0	400	1, 2, 3, 4, 5, 6
HP 0	CLIMATE MASTER TE-038	IDF 70	800	0	0.5	-	37.0	22.0	80	67	55.5	50.0	85	7.9	10	17.7	39	70	112.0	85	7.9	10	4.5	480/3/60	10.3	15.0	400	1, 2, 3, 4, 5, 6

	5.	PROVIDE TEMPERATURE SENSOR.	HANDLE), BANDED AND LABELED FOR CORRESPONDING HEAT PUMP.
-			

PT PORTS, HOSE KIT WITH MINIMUM 24" SS LINES, ISOLATION BALL VALVES (LEVER

												C	OMPL	JTE	R RC	ON	M AIR C	ONDIT	IONING	G UI	NIT														
	GENERAL	DATA			FANS							ECONO	COIL COIL						DX CO	OLING				ELECTRIC I	REHEAT	:		HUMIDI	FICATION	ELEC	CTRICAL			OPERATING	
MARK	MANUFACTURER MODEL	LOCATION	CFM	ESP (IN)	QUANTITY		OTOR BHP H		TAL IBH	SENS MBH	EAT (DB)	EAT LAT		WT L	LWT (°F) GPM	MIN	MAX WATER S PD (FT HD)	TOTAL MBH	SENS MBH	EAT (DB)	EAT LA (WB) (DE	T LAT		KW	EAT (DB)	LAT (DB)	STEPS	CAPACITY (LB/HR)	WATER CONN (IN)	V/PH/HZ	FLA	MCA	МОСР	WEIGHT (LBS)	REMARKS
CRAC 1	LIEBERT DS053DDA1EIA	MDF	8000	0.8	2	-	3.4 -		70.4	157.1	-		-	-	- 36.4		-	197.4	177.6	75	61 -	-	-		-	-	•	22	-	460/3/60	57.1	69.4	75	2200	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
CRAC 2	LIEBERT MMD96KNAHEH3	CASINO IDF	3750	0.5	1	-	- 2	8	2.2	76.8	-		-	-	- 17.6		-	92.7	84.9	75	61 -	-	-	-	-	-	•	8		460/3/60	21.0	26.3	30	800	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
CRAC 3	LIEBERT MMD60KNAHEH3	BALLROOM IDF	2500	0.5	1	-	- 11	2 5	55.6	51.5	-		-		- 12.0	-		62.7	55.8	75	61 -	-	- SUCTION LINES	-		-	-	8	-	460/3/60	19.8	24.8	25	650	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

1. PROVIDE REFRIGERANT LINES SIZED PER MANUFACTURER'S RECOMMENDATIONS. 2. PROVIDE CLEARANCE AROUND UNIT PER MANUFACTURER'S RECOMMENDATIONS.

PROVIDE P-TRAPS AND ARRANGE SLOPE OF REFRIGERANT PIPING FOR OIL RETURN.
 PROVIDE SAFETY CONTROLS.

4. SMOKE DETECTOR IN SUPPLY AIR DUCT.

- 5. PROVIDE BACNET IP CONTROL INTERFACE. VERIFY WHICH TO PROVIDE WITH CONTROLS CONTRACTOR
- PRIOR TO PRODUCTION. 6. PROVIDE SPACE TEMPERATURE SENSOR.

7. PROVIDE TRAPS IN REFRIGERANT/SUCTION LINES AS REQUIRED TO MEET

/CCU

CCU

PFH037A-AHN

LIEBERT

PFH067A-AHN

- MANUFACTURER'S OVERALL LENGTH REQUIREMENTS. 8. PROVIDE PREMIUM EFFICIENT MOTOR. 9. PROVIDE CONDENSATE PUMP.
- 10. PROVIDE HUMIDIFIER. 11. F/A CONTRACTOR TO PROVIDE SMOKE DETECTOR.

12. PROVIDE BAS INTERFACE, BACNET PROTOCOL.

	A	IR DIST	RIBUTI	ON S	CHEDU	ILE	
MARK	MANUFACTURER MODEL	AIRFLOW RANGE	SERVICE TYPE	MAX NC	NECK SIZE	PANEL SIZE	REMARKS
D-1 CFM	TITUS MCD	0-100	SUPPLY CEILING	30	6"X6"	24"X24"	1, 2, 3
D-2 CFM	TITUS MCD	101-200	SUPPLY CEILING	30	8"X8"	24"X24"	1, 2, 3
D-3 CFM	TITUS MCD	201-350	SUPPLY CEILING	30	10"X10"	24"X24"	1, 2, 3
D-4 CFM	TITUS MCD	351-500	SUPPLY CEILING	30	12"X12"	24"X24"	1, 2, 3
D-5 CFM	TITUS FL-25	400-600	SUPPLY LINEAR	30	12"Ø	4' LENGTH (2) 2 1/2" SLOTS	1, 2, 3
D-6 CFM	TROX FBA-3-V-KF-SM/200	80-95	FLOOR SUPPLY	30	-	24"X24"	1, 2, 3
D-7 CFM	TITUS TMR	1000	CEILING SUPPLY	30	8"	22"	
D-8 CFM	TITUS FL-25	0-300	SUPPLY LINEAR	30	12"Ø	2' LENGTH (2) 2 1/2" SLOTS	1, 2, 3
D-9 CFM	TITUS MCD	0-100	SUPPLY CEILING	30	6"X6"	12"X12"	1, 2, 3
D-10 CFM	TITUS MCD	101-200	SUPPLY CEILING	30	8"X8"	14"X14"	1, 2, 3
D-11 CFM	TITUS MCD	201-350	SUPPLY CEILING	30	10"X10"	16"X16"	1, 2, 3
D-12 CFM	TITUS MCD	800	SUPPLY CEILING	30	16"X16"	24"X24"	1, 2, 3

2. EXTENDED RANGE.

	AIR D	ISTRIB	JTION	SCHE	DULE ((CONT.)	
MARK	MANUFACTURER MODEL	AIRFLOW RANGE	SERVICE TYPE	MAX NC	NECK SIZE	PANEL SIZE	REMARKS
D-13 CFM	TITUS MCD	1750	SUPPLY CEILING	30	18"X18"	24"X24"	1, 2, 3
R-1 CFM	TITUS 50F	0-2000	RETURN CEILING	30	22"X22"	24"X24"	1
R-2 CFM	TITUS FL-25	0-560	RETURN LINEAR	30	12"Ø	4' LENGTH (2) 2 1/2" SLOTS	1, 4
R-4 CFM	TITUS 350FL	350-900	RETURN SIDEWALL	30	14"X14"	16"X16"	1, 3
R-5 CFM	TITUS 50F	0-150	RETURN CEILING	30	6"X6"	12"X12"	1
R-6 CFM	TITUS 350R	350-600	RETURN CEILING	30	18"X10"	20"X12"	1
EX-1 CFM	TITUS 50F	0-100	EXHAUST CEILING	30	6"X6"	24"X24"	1
EX-2 CFM	TITUS 50F	101-200	EXHAUST CEILING	30	8"X8"	24"X24"	1
EX-3 CFM	TITUS 50F	201-375	EXHAUST CEILING	30	10"X10"	24"X24"	1
EX-4 CFM	TITUS 50F	376-600	EXHAUST CEILING	30	12"X12"	24"X24"	1
4 0000				IONI VAZITI I AI	DOLUTECT		

1. COORDINATE BORDER, COLOR, FINISH AND EXACT LOCATION WITH ARCHITECT WHERE A BALANCING DAMPER IS SHOWN IN THE DUCTWORK TAKEOFF - NO OBD REQUIRED. PROVIDE SQUARE TO ROUND TRANSITION FROM FACTORY. 3.0" SLOT, 1 - SLOT 12" INLET.

NUFACTURER	INDOOR	LOCATION	NOMINAL CAPACITY	COI	NDENSER FA	ANS	OA AN	IBIENT ^F	ELEC	TRICAL		OPERATING WEIGHT	DEMARKS
MODEL	UNIT	LOCATION	(TONS)	NO.	HP (EA)	RPM	MIN	MAX	V/PH/HZ	MCA	МОСР	(LBS)	REMARKS
LIEBERT CL110E8AD	CRAC 1	ROOF	15	2	-	-	-10	105	460/3/60	6.3	15	1200	1, 2, 3, 4, 5, 6
LIEBERT FH067A-AHN	(CRAC)	ROOF	5	1	-		-10	105	460/3/60	14.2	20	550	1, 2, 3, 4, 5, 6

-10

-10

105

105

460/3/60

460/3/60

COMPUTER ROOM AIR COOLED CONDENSER UNIT SCHEDULE

PROVIDE REFRIGERANT LINES SIZED PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE CLEARANCE AROUND UNIT PER MANUFACTURER'S RECOMMENDATIONS.

PROVIDE P-TRAPS AND ARRANGE SLOPE OF REFRIGERANT PIPING FOR OIL RETURN.

 PROVIDE SAFETY CONTROLS.
 PROVIDE LOW AMBIENT KIT FOR UNIT OPERATION DOWN TO -20°F. 6. PROVIDE HOT GAS BY-PASS.

1, 2, 3, 4, 5, 6

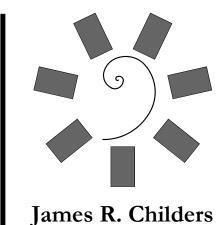
1, 2, 3, 4, 5, 6

			HE	ATING	WA	TER	R UN	IT HE	ATE	R SCI	HED	ULE	•			
						AIR		FI	ECTRIC	ΔΙ		HFATIN(WATER			
MARK	MANUFACTURER MODEL	LOCATION	TYPE	CAPACITY MBH	CFM	EAT (DB)	LAT (DB)	HP (W)	RPM	V/PH/HZ	GPM	EWT (°F)	LWT (°F)	PD (FT)	OPERATING WEIGHT (LBS)	REMARKS
HUH 1	REZNOR WS	LOADING DOCK	VERTICAL	50.0	1250	40.0	84.4	0.15	1600	120/1/60	3.0	140	100	0.12	70.0	1, 2
HUH 2	REZNOR WS	LOADING DOCK	VERTICAL	50.0	1250	40.0	84.4	0.15	1600	120/1/60	3.0	140	100	0.12	70.0	1, 2
HUH 3	REZNOR WS	LOADING DOCK	VERTICAL	50.0	1250	40.0	84.4	0.15	1600	120/1/60	3.0	140	100	0.12	70.0	1, 2
HUH 4	REZNOR WS	LOADING DOCK	VERTICAL	50.0	1250	40.0	84.4	0.15	1600	120/1/60	3.0	140	100	0.12	70.0	1, 2

- PROVIDE CEILING MOUNTED BRACKET.
- PROVIDE SENSOR AND WIRING UP TO UNIT HEATER.

6.1 GPM=1", LESS THAN 11.1 GPM=1.5"

- Y-BALL FLOWFLOW CONTROL VALVE, HAYS MESURFLO AUTOMATIC (2-80 PSID RANGE) WITH PT PORTS, HOSE KIT WITH MINIMUM 24" SS LINES, ISOLATION BALL VALVES (LÉVER
- HANDLE), BANDED AND LABELED FOR CORRESPONDING HEAT PUMP.
- PIPE SIZE TO COILS: LESS THAN 3.1 GPM=3/4", LESS THAN









CHEROKEE NATION ENTERTAINM TAHLEQUAH CASINO

BID PACKAGE 05

	F	REVISIONS
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
05/03/18	17-06
SHEET NUMBER:	
MO).5

						AHU-4 T	ERMINAL	BOX SCI	HED	ULE								
	MANUFACTURER	Al	R FLOW (CF	M)	INLET	VAV AIR PRESSURE	NC RATIN	G @ 1" SP			REHEAT	Γ COIL (H	IEATING	WATER)		OPERATING	
MARK	MODEL	MAX.	COOLING MIN.	HEATING MIN.	DIA (IN)	DROP (IN WG)	DISCHARGE	RADIATED	МВН	GPM	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	PD (FT)	ROWS	WEIGHT (LBS)	REMARKS
<u>VAV</u> 4-1	TITUS DESV	1000	600	600	10	0.3	20	22	19.2	2.6	65	95	140	100	0.5	2	25	1, 2, 3
VAV 4-2	TITUS DESV	1000	600	600	10	0.3	20	22	19.2	2.6	65	95	140	100	0.5	2	25	1, 2, 3
VAV 4-3	TITUS DESV	1000	600	600	10	0.3	20	22	19.2	2.6	65	95	140	100	0.5	2	25	1, 2, 3
VAV 4-4	TITUS DESV	1000	600	600	10	0.3	20	22	19.2	2.6	65	95	140	100	0.5	2	25	1, 2, 3
VAV 4-5	TITUS DESV	2000	1200	1200	14	0.3	17	22	38.4	4.2	65	95	140	100	0.8	2	25	1, 2, 3
VAV 4-6	TITUS DESV	1200	720	720	10	0.4	22	24	23.0	4.3	65	95	140	100	1.2	2	25	1, 2, 3
VAV 4-7	TITUS DESV	800	480	480	10	0.2	18	22	15.4	1.7	65	95	140	100	0.3	2	25	1, 2, 3
VAV 4-8	TITUS DESV	1500	900	900	12	0.4	21	23	28.8	3.8	65	95	140	100	1.1	2	25	1, 2, 3
VAV 4-9	TITUS DESV	1500	900	900	12	0.4	21	23	28.8	3.8	65	95	140	100	1.1	2	25	1, 2, 3
VAV 4-10	TITUS DESV	2200	1400	1400	14	0.4	17	22	44.8	6.3	65	95	140	100	1.7	2	25	1, 2, 3
VAV 4-11	TITUS DESV	2200	1400	1400	14	0.4	17	22	44.8	6.3	65	95	140	100	1.7	2	25	1, 2, 3
VAV 4-12	TITUS DESV	500	300	300	06	0.3	21	24	9.6	1.4	65	95	140	100	0.3	2	25	1, 2, 3

5. DUCT TO INLET - MIN ONE (EVEN) DUCT SIZE LARGER THAN LISTED INLET.

6. UNITS WITH HEATING WATER COIL, HAYS MESURFLO AUTOMATIC Y-BALL

SIZES LARGER.

IF OVER 15 FOOT RUN OR MORE THAN TWO 90° ELBOWS-MIN. TWO DUCT

FLOW CONTROL VALVE (2-80 PSID RANGE) WITH PT PORTS, HOSE KIET WITH

MINIMUM 24" SS LINES, ISOLATION BALL VALVES (LEVER HANDLE), BANDED

						AHU-5 T	ERMINAL	BOX SCI	HED	ULE								
	MANUFACTURER	A	R FLOW (CF	FM)	INLET	VAV AIR PRESSURE	NC RATIN	G @ 1" SP	<u> </u>		REHEA1			WATER)		OPERATING	
MARK	MODEL	MAX.	COOLING MIN.	HEATING MIN.	DIA (IN)	DROP (IN WG)	DISCHARGE	RADIATED	МВН	GPM	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	PD (FT)	ROWS	WEIGHT (LBS)	REMARKS
VAV 5-1	TITUS DESV	1100	700	700	10	0.4	20	23	22.4	4.0	65	95	140	100	1.0	2	25	1, 2, 3
VAV 5-2	TITUS DESV	2200	1350	1350	14	0.4	17	22	43.2	5.7	65	95	140	100	1.4	2	25	1, 2, 3
VAV 5-3	TITUS DESV	650	400	400	08	0.3	19	22	12.8	1.6	65	95	140	100	0.4	2	25	1, 2, 3
VAV 5-4	TITUS DESV	650	400	400	08	0.3	19	22	12.8	1.6	65	95	140	100	0.4	2	25	1, 2, 3
VAV 5-5	TITUS DESV	650	400	400	08	0.3	19	22	12.8	1.6	65	95	140	100	0.4	2	25	1, 2, 3
VAV 5-6	TITUS DESV	600	400	400	08	0.3	19	20	12.8	1.6	65	95	140	100	0.4	2	25	1, 2, 3
VAV 5-7	TITUS DESV	3000	1800	1800	24x16	0.3	24	34	57.1	5.1	65	95	140	100	1.7	2	25	1, 2, 3
VAV 5-8	TITUS DESV	775	500	500	08	0.4	21	23	16.0	3.1	65	95	140	100	1.3	2	25	1, 2, 3
VAV 5-9	TITUS DESV	3000	1800	1800	24x16	0.3	24	34	57.1	5.1	65	95	140	100	1.7	2	25	1, 2, 3
VAV 5-10	TITUS DESV	3000	1800	1800	24x16	0.3	24	34	57.1	5.1	65	95	140	100	1.7	2	25	1, 2, 3
VAV 5-11	TITUS DESV	775	500	500	08	0.4	21	23	16.0	3.1	65	95	140	100	1.3	2	25	1, 2, 3
VAV 5-12	TITUS DESV	500	300	300	06	0.3	21	24	9.6	1.4	65	95	140	100	0.3	2	25	1, 2, 3

WITH HANGER BRACKETS. 2. INSULATION LINER TO BE STERILOC.

WITH HANGER BRACKETS.

INSULATION LINER TO BE STERILOC.

CONTROLS AND ACTUATOR BY BAS CONTRACTOR.

4. MINIMUM 3 DUCT DIAMETERS OF STRAIGHT RIGID DUCT ON INLET.

3. CONTROLS AND ACTUATOR BY BAS CONTRACTOR.

4. MINIMUM 3 DUCT DIAMETERS OF STRAIGHT RIGID DUCT ON INLET.

- 5. DUCT TO INLET MIN ONE (EVEN) DUCT SIZE LARGER THAN LISTED INLET. IF OVER 15 FOOT RUN OR MORE THAN TWO 90° ELBOWS-MIN. TWO DUCT SIZES LARGER.
- 6. UNITS WITH HEATING WATER COIL, HAYS MESURFLO AUTOMATIC Y-BALL FLOW CONTROL VALVE (2-80 PSID RANGE) WITH PT PORTS, HOSE KIET WITH MINIMUM 24" SS LINES, ISOLATION BALL VALVES (LEVER HANDLE), BANDED
- AND LABELED FOR CORRESPONDING VAV BOX. 7. PIPE SIZES TO COILS: LESS THAN 3.1 GPM=3/4", LESS THAN 6.1 GPM=1", LESS

AND LABELED FOR CORRESPONDING VAV BOX.

THAN 11.1 GPM=1.25", LESS THAN 18.1 GPM=1.5".

8. MINIMUM INLET SP: 1"

9. MINIMUM DOWNSTREAM SP: 0.25".

7. PIPE SIZES TO COILS: LESS THAN 3.1 GPM=3/4", LESS THAN 6.1 GPM=1", LESS

- 9. MINIMUM DOWNSTREAM SP: 0.25".
- THAN 11.1 GPM=1.25", LESS THAN 18.1 GPM=1.5". 8. MINIMUM INLET SP: 1"

						AHU-1 T	ERMINAL	BOX SCI	HED	ULE	=							
	MANUFACTURER	Al	R FLOW (CF		INLET	VAV AIR PRESSURE	NC RATIN	G @ 1" SP			REHEAT	COIL (H	IEATING	WATER)		OPERATING	
MARK	MODEL	MAX.	COOLING MIN.	HEATING MIN.	DIA (IN)	DROP (IN WG)	DISCHARGE	RADIATED	МВН	GPM	EAT (°F)	LAT (°F)	(°F)	LWT (°F)	PD (FT)	ROWS		REMARKS
VAV 1-1	TITUS DESV	2200	1400	1400	14	0.4	17	22	44.8	6.3	65	95	140	100	1.7	2	25	1, 2, 3
VAV 1-2	TITUS DESV	2200	1400	1400	14	0.4	17	22	44.8	6.3	65	95	140	100	1.7	2	25	1, 2, 3
VAV 1-3	TITUS DESV	2200	1400	1400	14	0.4	17	22	44.8	6.3	65	95	140	100	1.7	2	25	1, 2, 3
VAV 1-4	TITUS DESV	2200	1400	1400	14	0.4	17	22	44.8	6.3	65	95	140	100	1.7	2	25	1, 2, 3
VAV 1-5	TITUS DESV	100	50	50	04	0.1	25	27	5.8	0.5	65	95	140	100	0.2	2	25	1, 2, 3
VAV 1-6	TITUS DESV	2000	1200	1200	14	0.3	17	22	38.4	4.2	65	95	140	100	0.8	2	25	1, 2, 3
VAV 1-7	TITUS DESV	2100	1350	1350	14	0.4	17	22	44.8	6.3	65	95	140	100	1.7	2	25	1, 2, 3

- WITH HANGER BRACKETS. INSULATION LINER TO BE STERILOC.
- CONTROLS AND ACTUATOR BY BAS CONTRACTOR.
- INSTALLATION NOTES: 4. MINIMUM 3 DUCT DIAMETERS OF STRAIGHT RIGID DUCT ON INLET.
- 5. DUCT TO INLET MIN ONE (EVEN) DUCT SIZE LARGER THAN LISTED INLET. IF OVER 15 FOOT RUN OR MORE THAN TWO 90° ELBOWS-MIN. TWO DUCT SIZES LARGER.
- 6. UNITS WITH HEATING WATER COIL, HAYS MESURFLO AUTOMATIC Y-BALL FLOW CONTROL VALVE (2-80 PSID RANGE) WITH PT PORTS, HOSE KIET WITH MINIMUM 24" SS LINES, ISOLATION BALL VALVES (LEVER HANDLE), BANDED
- AND LABELED FOR CORRESPONDING VAV BOX. 7. PIPE SIZES TO COILS: LESS THAN 3.1 GPM=3/4", LESS THAN 6.1 GPM=1", LESS THAN 11.1 GPM=1.25", LESS THAN 18.1 GPM=1.5".
- 8. MINIMUM INLET SP: 1" 9. MINIMUM DOWNSTREAM SP: 0.25".

AHU-9 TERMINAL BOX SCHEDULE

	MANUFACTURER	Al	R FLOW (CF		INLET	VAV AIR PRESSURE	NC RATIN	G @ 1" SP				COIL (H			•		OPERATING	
MARK	MODEL	MAX.	COOLING MIN.	HEATING MIN.	DIA (IN)	DROP (IN WG)	DISCHARGE	RADIATED	МВН	GPM	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	PD (FT)	ROWS	WEIGHT (LBS)	REMARKS
9-1	TITUS DESV	300	200	200	06	0.1	16	18	6.6	0.8	65	95	140	100	0.2	2	25	1, 2, 3
9-2	TITUS DESV	450	300	300	06	0.3	20	23	9.6	1.4	65	95	140	100	0.3	2	25	1, 2, 3
9-3	TITUS DESV	825	500	500	08	0.4	21	24	16.0	3.1	65	95	140	100	1.3	2	25	1, 2, 3
9-4	TITUS DESV	450	300	300	06	0.3	20	23	9.6	1.4	65	95	140	100	0.3	2	25	1, 2, 3
9-5	TITUS DESV	725	450	450	08	0.3	20	23	14.4	2.2	65	95	140	100	0.7	2	25	1, 2, 3
9-6	TITUS DESV	800	500	500	08	0.4	21	24	16.0	3.1	65	95	140	100	1.3	2	25	1, 2, 3
9-7	TITUS DESV	225	150	150	04	0.1	27	29	5.8	0.8	65	95	140	100	0.2	2	25	1, 2, 3
9-8	TITUS DESV	800	500	500	08	0.4	21	24	16.0	3.1	65	95	140	100	1.3	2	25	1, 2, 3
VAV 9-9	TITUS DESV	1000	600	600	10	0.3	20	22	19.2	2.6	65	95	140	100	0.5	2	25	1, 2, 3
9-10	TITUS DESV	500	300	300	06	0.3	21	24	9.6	1.4	65	95	140	100	0.3	2	25	1, 2, 3
9-11	TITUS DESV	200	150	150	04	0.1	25	27	5.8	0.8	65	95	140	100	0.2	2	25	1, 2, 3
9-12	TITUS DESV	400	250	250	06	0.2	18	22	8.0	1.1	65	95	140	100	0.2	2	25	1, 2, 3
1. W	ITH HANGER BRACK	ETS.				5. DUCT TO INLET - MIN ON	NE (EVEN) DUCT SIZE		D INLET		AND	LABELE	D FOR C	ORRES	PONDIN	G VAV BO	OX.	

- WITH HANGER BRACKETS.
- INSULATION LINER TO BE STERILOC. 3. CONTROLS AND ACTUATOR BY BAS CONTRACTOR.
- INSTALLATION NOTES:

4. MINIMUM 3 DUCT DIAMETERS OF STRAIGHT RIGID DUCT ON INLET.

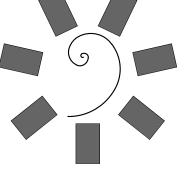
- IF OVER 15 FOOT RUN OR MORE THAN TWO 90° ELBOWS-MIN. TWO DUCT SIZES LARGER. 6. UNITS WITH HEATING WATER COIL, HAYS MESURFLO AUTOMATIC Y-BALL FLOW CONTROL VALVE (2-80 PSID RANGE) WITH PT PORTS, HOSE KIET WITH MINIMUM 24" SS LINES, ISOLATION BALL VALVES (LEVER HANDLE), BANDED
- AND LABELED FOR CORRESPONDING VAV BOX. 7. PIPE SIZES TO COILS: LESS THAN 3.1 GPM=3/4", LESS THAN 6.1 GPM=1", LESS THAN 11.1 GPM=1.25", LESS THAN 18.1 GPM=1.5".
- 8. MINIMUM INLET SP: 1" 9. MINIMUM DOWNSTREAM SP: 0.25".

AHU-10 TERMINAL BOX SCHEDULE

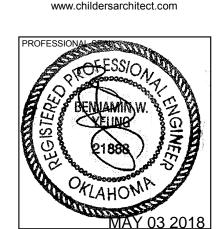
	_	ΔII	R FLOW (CF	M)	INLET	VAV AIR PRESSURE	NC RATIN	G @ 1" SP	T		REHEAT	COIL (F	IFATING	WATER	<u> </u>			
MARK	MANUFACTURER MODEL	MAX.	COOLING MIN.		DIA (IN)	DROP (IN WG)	DISCHARGE	RADIATED	МВН	GPM	EAT (°F)	LAT (°F)	EWT (°F)			ROWS	OPERATING WEIGHT (LBS)	REMARKS
VAV 10-1	TITUS DESV	725	450	450	08	0.3	20	23	14.4	2.2	65	95	140	100	0.7	2	25	1, 2 ,3
VAV 10-2	TITUS DESV	600	400	400	08	0.3	19	20	12.8	1.6	65	95	140	100	0.4	2	25	1, 2 ,3
VAV 10-3	TITUS DESV	400	250	250	06	0.2	18	22	8.0	1.1	65	95	140	100	0.2	2	25	1, 2 ,3
VAV 10-4	TITUS DESV	600	400	400	08	0.3	19	20	12.8	1.6	65	95	140	100	0.4	2	25	1, 2 ,3
VAV 10-5	TITUS DESV	900	550	550	08	0.5	22	25	17.6	4.5	65	95	140	100	2.7	2	25	1, 2 ,3
VAV 10-6	TITUS DESV	1075	650	650	10	0.3	20	23	20.8	3.2	65	95	140	100	0.7	2	25	1, 2 ,3
VAV 10-7	TITUS DESV	600	400	400	08	0.3	19	20	12.8	1.6	65	95	140	100	0.4	2	25	1, 2 ,3
VAV 10-8	TITUS DESV	2000	1200	1200	14	0.3	17	22	38.4	4.2	65	95	140	100	0.8	2	25	1, 2 ,3
VAV 10-9	TITUS DESV	2000	1200	1200	14	0.3	17	22	38.4	4.2	65	95	140	100	0.8	2	25	1, 2 ,3

- WITH HANGER BRACKETS.
- 2. INSULATION LINER TO BE STERILOC. 3. CONTROLS AND ACTUATOR BY BAS CONTRACTOR.
- **INSTALLATION NOTES:**
- 4. MINIMUM 3 DUCT DIAMETERS OF STRAIGHT RIGID DUCT ON INLET.

 MINIMUM 24" SS LINES, ISOLATION BALL VALVES (LEVER HANDLE), BANDED
- 5. DUCT TO INLET MIN ONE (EVEN) DUCT SIZE LARGER THAN LISTED INLET. IF OVER 15 FOOT RUN OR MORE THAN TWO 90° ELBOWS-MIN. TWO DUCT
- SIZES LARGER. 6. UNITS WITH HEATING WATER COIL, HAYS MESURFLO AUTOMATIC Y-BALL
- FLOW CONTROL VALVE (2-80 PSID RANGE) WITH PT PORTS, HOSE KIET WITH
- AND LABELED FOR CORRESPONDING VAV BOX. 7. PIPE SIZES TO COILS: LESS THAN 3.1 GPM=3/4", LESS THAN 6.1 GPM=1", LESS
- THAN 11.1 GPM=1.25", LESS THAN 18.1 GPM=1.5".
- 8. MINIMUM INLET SP: 1" 9. MINIMUM DOWNSTREAM SP: 0.25".



James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480







ROKEE NATION ENTERTAINM TAHLEQUAH CASINO

PROJECT PHASE:

BID PACKAGE 05

JOB NUMBER: 05/03/18 17-06 M0.6

		GENERAL DATA	4		F	AN			ELEC	CTRICAL		OPERATING	
MARK	MANUFACTURER MODEL	LOCATION	SERVICE	TYPE	CFM	ESP (IN WG)	RPM	ВНР	HP (W)	FLA	V/PH/HZ	WEIGHT (LBS)	REMARK
EF 1	GREENHECK GB-161-15	ROOF	RESTROOMS MENS 11 WOMENS 13	CENTRI- FUGAL	2900	0.75	1349	1.02	1 1/2	3	480/3/60	200	1, 2, 3, 4
EF 2	GREENHECK GB-101-3	ROOF	RESTROOMS MENS 73 WOMENS 74	CENTRI- FUGAL	700	0.5	1316	0.15	1/3	7.2	115/1/60	100	1, 2, 3, 4
EF 3	GREENHECK GB-101-3	ROOF	RESTROOMS TOILET 87 TOILET 88	CENTRI- FUGAL	500	0.5	1192	0.11	1/3	7.2	115/1/60	100	1, 2, 3, 4
EF 4	GREENHECK GB-131-5	ROOF	RESTROOMS MENS 90	CENTRI- FUGAL	1100	0.5	1218	0.23	1/2	9.8	115/1/60	100	1, 2, 3, 4
EF 5	GREENHECK GB-131-5	ROOF	RESTROOMS WOMENS 92	CENTRI- FUGAL	1200	0.5	1269	0.26	1/2	9.8	115/1/60	100	1, 2, 3, 4
EF 6	GREENHECK GB-101-5	ROOF	RESTROOMS WOMENS 22 MENS 24	CENTRI- FUGAL	800	0.5	1397	0.18	1/2	9.8	115/1/60	100	1, 2, 3, 4
EF 7	GREENHECK SP-B200	CEILING	RESTROOMS TOILET 82	CEILING	150	0.5	950	-	(172)	-	115/1/60	25	2, 3, 4

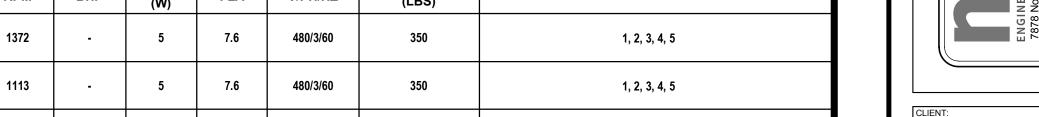
				AIR (CURTA	IN SC	CHED	ULE			
		GI	ENERAL DATA	<u> </u>	<u> </u>			ELECTRIC	AL	OPERATING	
MARK	MANUFACTURER MODEL	LOCATION	LENGTH	MAX CFM AT NOZZLE	MAX FPM AT NOZZLE	MOTOR RPM	НР	FLA	V/PH/HZ	WEIGHT (LBS)	REMARKS
ACU 1	MARS 48CHS	ENTRANCE	4'-0"	4000	4000	1750	1	2.0	460/3/60	85	1, 2
	IDE MICRO SWITCH AND		FOR AUTO ON	VOFF OPERAT	ION.						

		KITC	CHEN			RIII	DING	
UNIT	SUPPLY	RETURN	OUTSIDE	EXHAUST	SUPPLY	RETURN	OUTSIDE	EXHAUS
AHU-1	-	-	-	-		-	-	
AHU-2		-	-			-	-	-
AHU-3		-	-			-	-	-
AHU-4	-	-	-	-		-	-	-
AHU-5	-	-	-	-		-	-	-
AHU-6	-	-	-	-		-	-	-
AHU-7	-	-	-	-	-	-	-	-
AHU-8	-	-	-	-		-	-	-
AHU-9	-	-	-	-	-	-	-	-
AHU-10	-	-	-	-		-	-	-
MAU-1		-	-	-		-	-	-
MAU-2	-	-	-			-	-	-
EF-1	-	-	-	-		-	-	-
EF-2		-	-	-		-	-	-
EF-3	-	-	-	-		-	-	-
EF-4	-	-	-	-		-	-	-
EF-5	-	-	-	-		-	-	-
EF-6	-	-	-	-		-	-	-
EF-7	-	-	-	-		-	-	-
KEF-1	-	-	-	-		-	-	-
KEF-2	-	-	-	-		-	-	-
KEF-3	-	-	-	-		-	-	-
KEF-4	-	-	-	-		-	-	-
KEF-5	-	-	-	-	-	-	-	-
KEF-6	-	-	-	-		-	-	-
KEF-7	-	-	-	-		-	-	-
KEF-8	-	-	-	-		-	-	-
KEF-9	-	-	-	-	-	-	-	-
KEF-10	-	-	-	-			-	
TOTAL		-	-				-	-

						MAU-1 T	ERMINAL	BOX SCI	HEDULE		
	MANUFACTURER	Al	R FLOW (CF	M)	INLET	VAV AIR PRESSURE	NC RATING	G @ 1" SP	REHEAT COIL (HEATING WATER)	OPERATING	
MARK	MODEL	MAX.	COOLING MIN.		DIA (IN)	DROP (IN WG)	DISCHARGE	RADIATED	MBH GPM COPE COPE COPE COPE COPE COPE COPE COPE	WEIGHT (LBS)	REMARKS
MCV 1-1	TITUS DESV	3360	385	-	16	•	-	-	NO HEAT	•	1
MCV 1-2	TITUS DESV	1900	300	-	14			-	NO HEAT		1
MCV 1-3	TITUS DESV	2430	300	-	14		-	-	NO HEAT		1
MCV 1-4	TITUS DESV	1700	190	-	12		-		NO HEAT		1
MCV 1-5	TITUS DESV	2400	300	-	14				NO HEAT		1
MCV 1-6	TITUS DESV	1480	190	-	12		-		NO HEAT		1
MCV 1-7	TITUS DESV	2230	300	-	14	•	-	-	NO HEAT		1

INLET SIZE SHALL BE AS SCHEDULED UNLESS NOTED OTHERWISE.

						IEN EX		ST EA	M SC	LED	=		
					ПСП		ПАО	31 FF		,UED	OLE		
	GE	NERAL DATA			F	AN			ELE	CTRICAL	_	OPERATING	
MARK	MANUFACTURER MODEL	LOCATION	SERVICE	TYPE	CFM	ESP (IN WG)	RPM	ВНР	HP (W)	FLA	V/PH/HZ	WEIGHT (LBS)	REMARKS
KEF 1	GREENHECK CUBE-300XP-50	ROOF	BANQUET KITCHEN	UPBLAST CENTRIFUGAL	5150	1.75	1372	-	5	7.6	480/3/60	350	1, 2, 3, 4, 5
KEF 2	GREENHECK CUBE-240HP-50	ROOF	BANQUET KITCHEN	UPBLAST CENTRIFUGAL	4900	1.75	1113	-	5	7.6	480/3/60	350	1, 2, 3, 4, 5
KEF 3	GREENHECK CUBE-360XP-75	ROOF	FINE DINING KITCHEN	UPBLAST CENTRIFUGAL	6450	2.0	1146	-	7.5	11	480/3/60	500	1, 2, 3, 4, 5
KEF 4	GREENHECK CUBE-180HP-30	ROOF	FINE DINING KITCHEN	UPBLAST CENTRIFUGAL	2900	1.75	1490	-	3	4.8	480/3/60	250	1, 2, 3, 4, 5
KEF 5	GREENHECK CUBE-300XP-50	ROOF	GRAB-N-GO KITCHEN	UPBLAST CENTRIFUGAL	5000	2.0	1392	2.95	5	7.6	480/3/60	350	1, 2, 3, 4, 5
KEF 6	GREENHECK CUBE-240HP-30	ROOF	GRAB-N-GO KITCHEN	UPBLAST CENTRIFUGAL	4375	1.75	1066	2.09	3	4.8	480/3/60	300	1, 2, 3, 4, 5
KEF 7	GREENHECK CUBE-101HP-5	ROOF	GRAB-N-GO DISH	UPBLAST CENTRIFUGAL	600	1.0	2034	0.28	1/2	1.1	480/3/60	200	1, 2, 3, 4, 5
KEF 8	GREENHECK CUBE-141-7	ROOF	BANQUET DISH	UPBLAST CENTRIFUGAL	1100	1.0	1278	0.38	3/4	1.6	480/3/60	200	1, 2, 3, 4, 5
KEF 9	GREENHECK CUBE-101HP-5	ROOF	BANQUET DISH	UPBLAST CENTRIFUGAL	600	1.0	2034	0.28	1/2	1.1	480/3/60	200	1, 2, 3, 4, 5
KEF 10	GREENHECK CUBE-101HP-5	ROOF	FINE DINING DISH	UPBLAST CENTRIFUGAL	600	1.0	2034	0.28	1/2	1.1	480/3/60	200	1, 2, 3, 4, 5
2. PROVI	DE ROOF CURB. DE MOTOR WITH THE DE DISCONNECT SWI		DS.	4. UL 762 RATI 5. PROVIDE G		P WITH ABSOI	RBENT MAT	ERIAL.					





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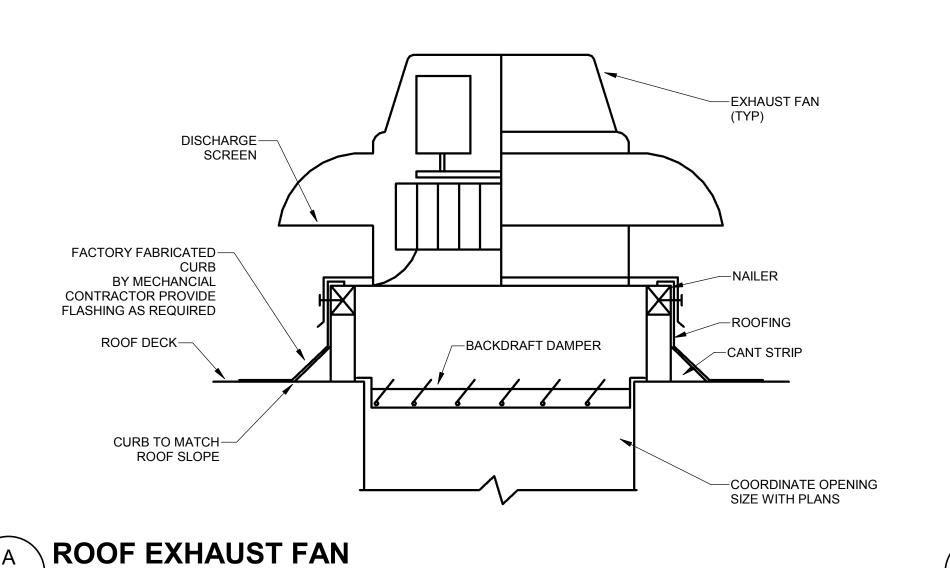
45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com

CHEROKEE NATION ENTERTAINMENT

TAHLEQUAH, OKLAHOMA

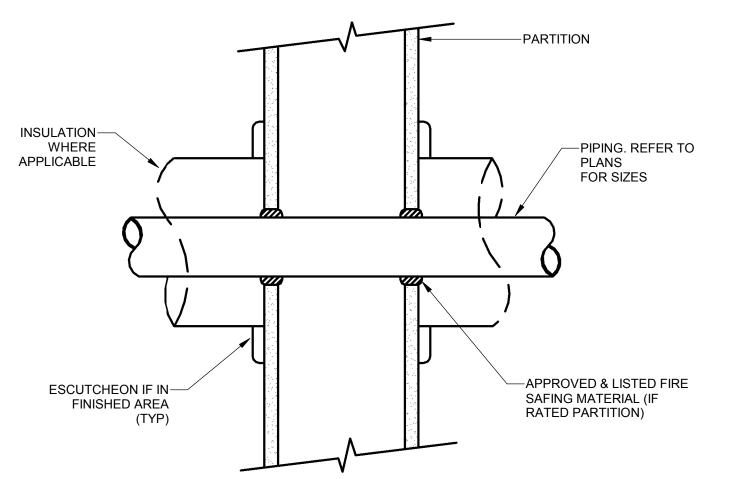
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05/03/18 17-06 M0.7

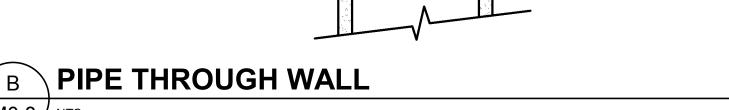


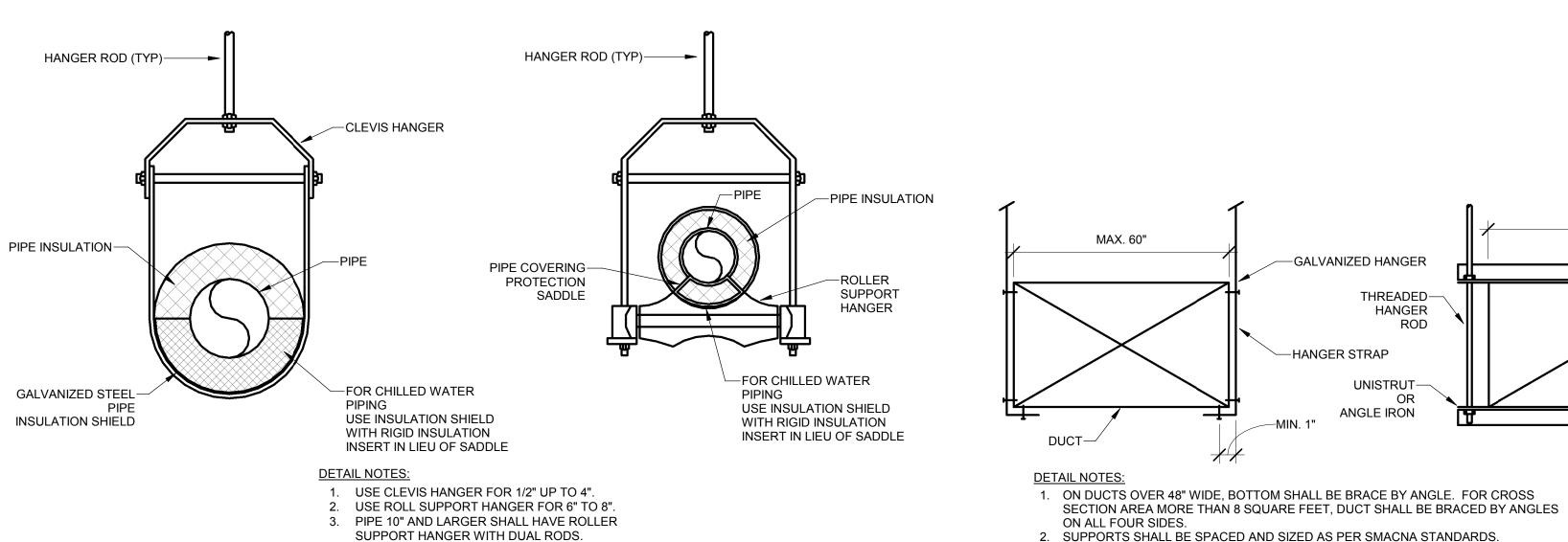
PIPE HANGER FOR INSULATED PIPING

M0.8 NTS



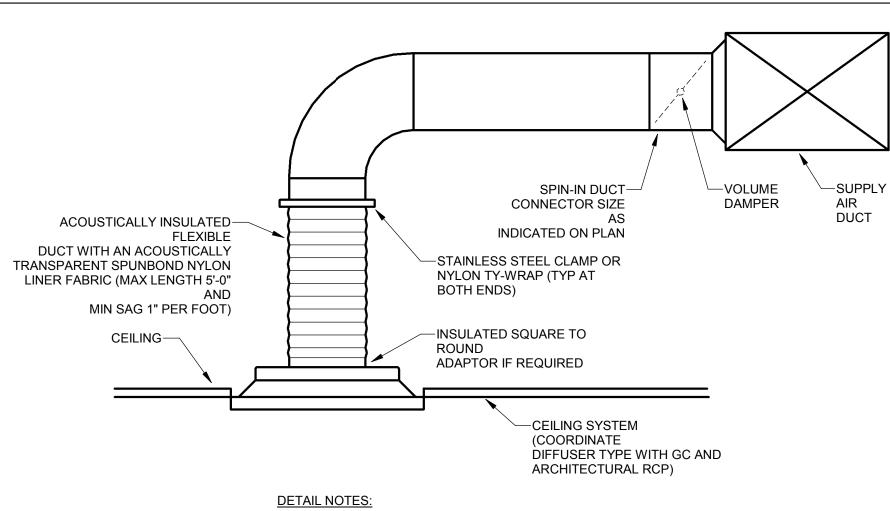
OVER 60"





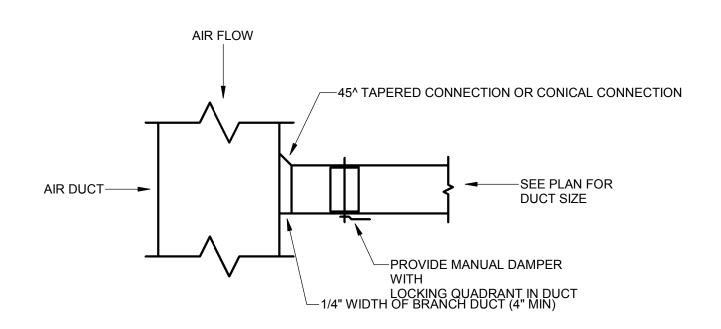


М0.8 итѕ

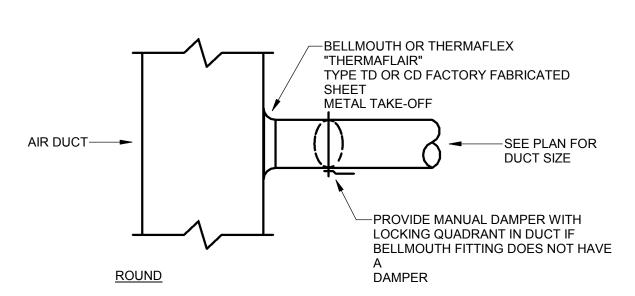


1. USE WORM DRIVE CLAMPS OR DRAW BANDS FOR CONNECTING FLEXIBLE AIR DUCT TO DIFFUSER AND BRANCH DUCT. SPLICES IN FLEXIBLE AIR DUCT SHALL NOT BE ALLOWED.

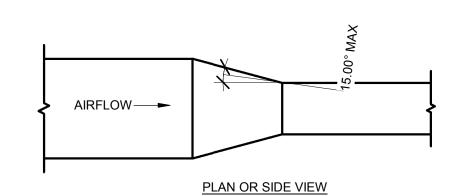
C CEILING DIFFUSER WITH FLEX DUCT

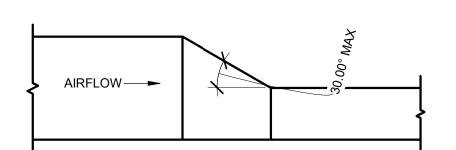


RECTANGULAR



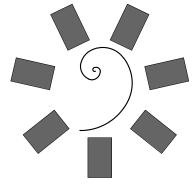
F TYPICAL BRANCH DUCT TAKE-OFF M0.8 NTS





PLAN OR SIDE VIEW





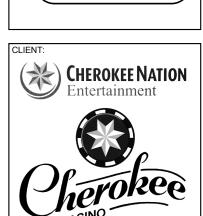
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SULTANT LOGO:



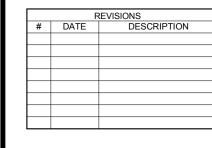


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CHEROKEE NATION ENTERTAINMENT

TAHLEQUAH, OKLAHOMA

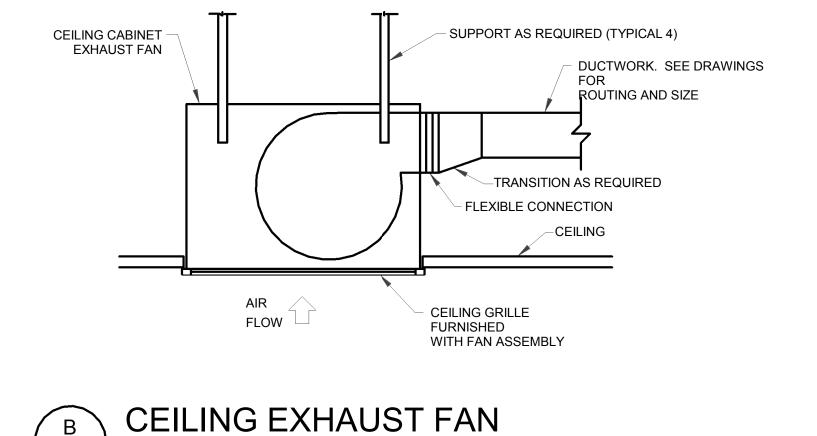
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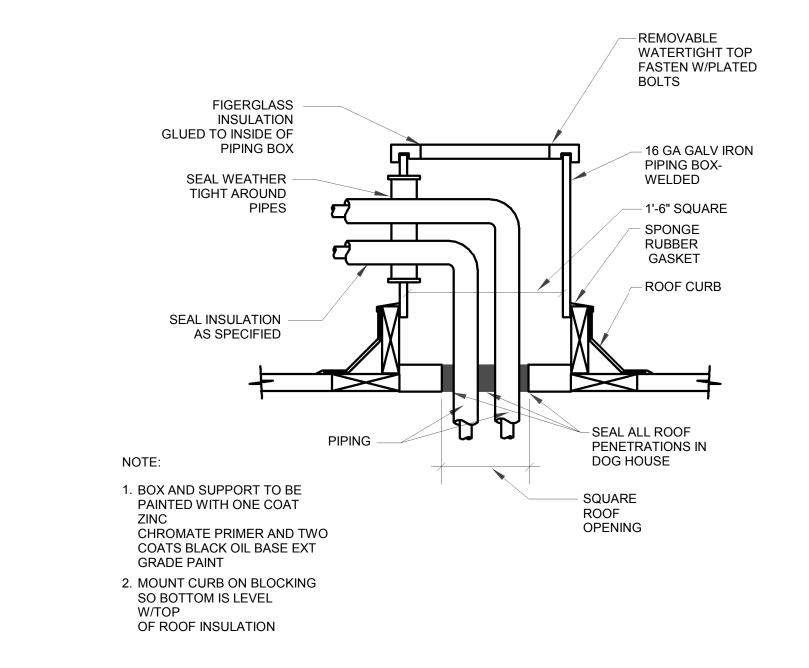


DATE: JOB NUMBER: 17-06
SHEET NUMBER:

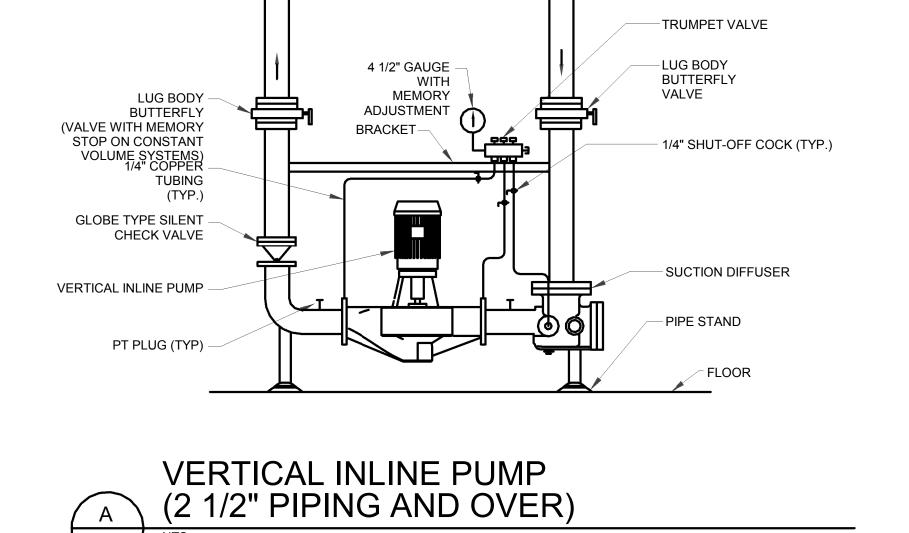
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MECHANICAL DIAGRAMS





PIPING DOG HOUSE

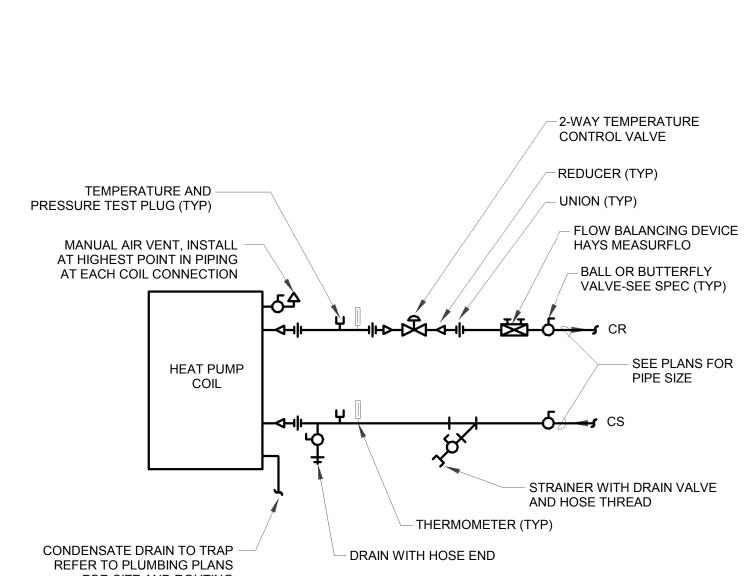


DISCHARGE

- SPRING HANGERS FOR FIRST

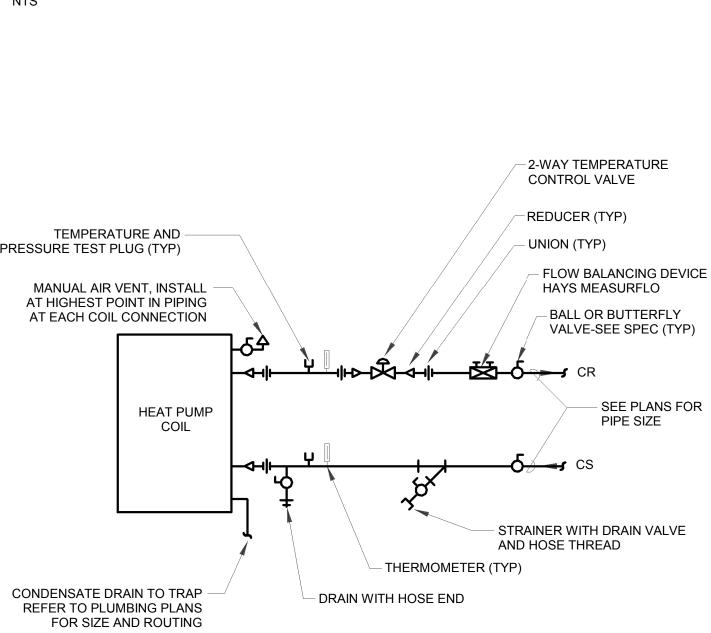
FEET OF HORIZONTAL PIPING (ADJUST FOR NO LOAD ON PIPE

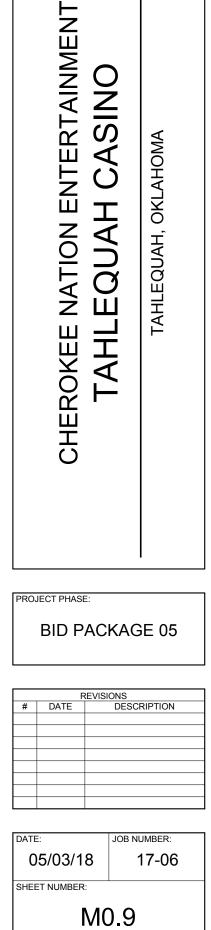
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2-WAY CONDENSER

COIL





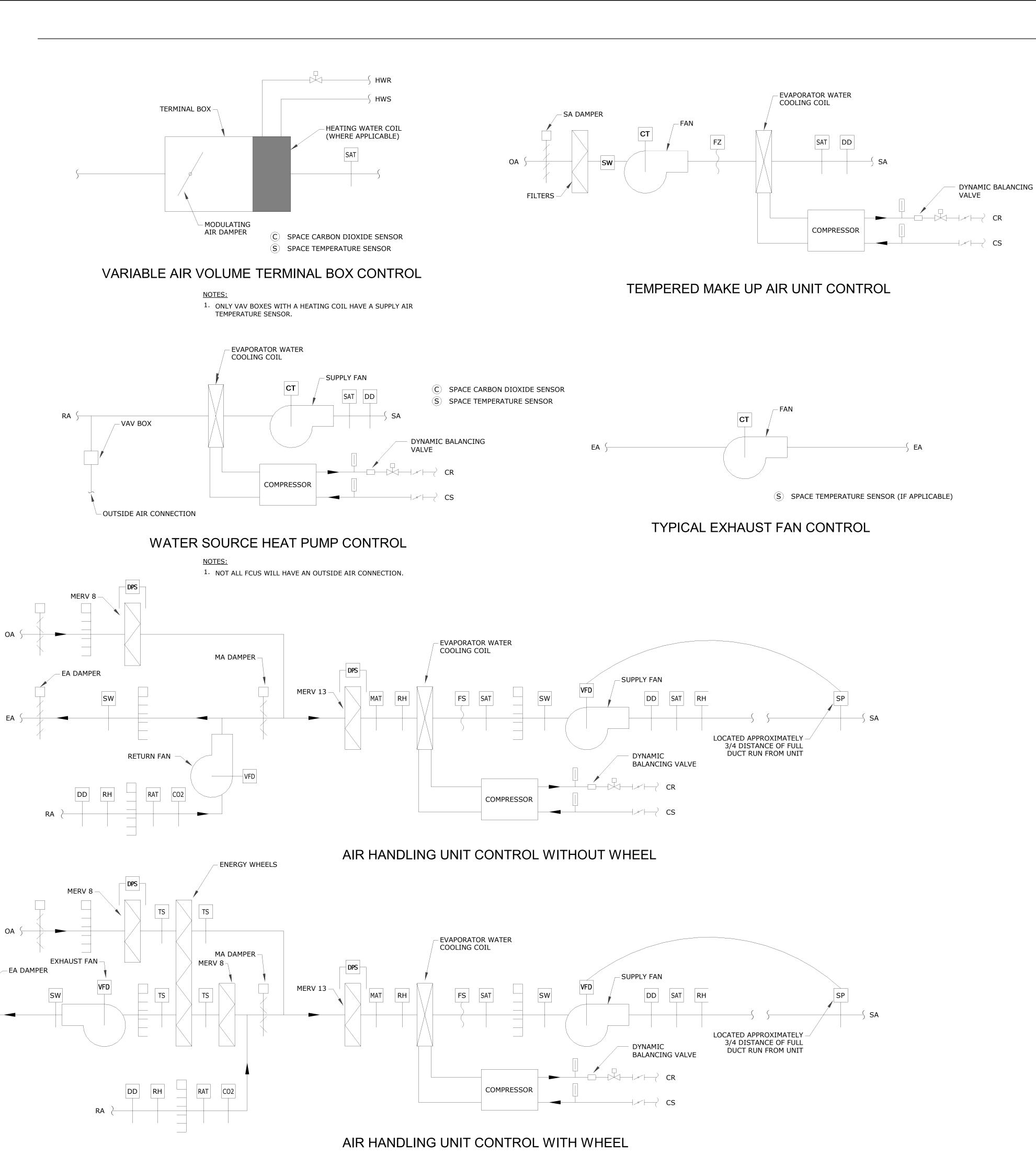
MECHANICAL DIAGRAMS

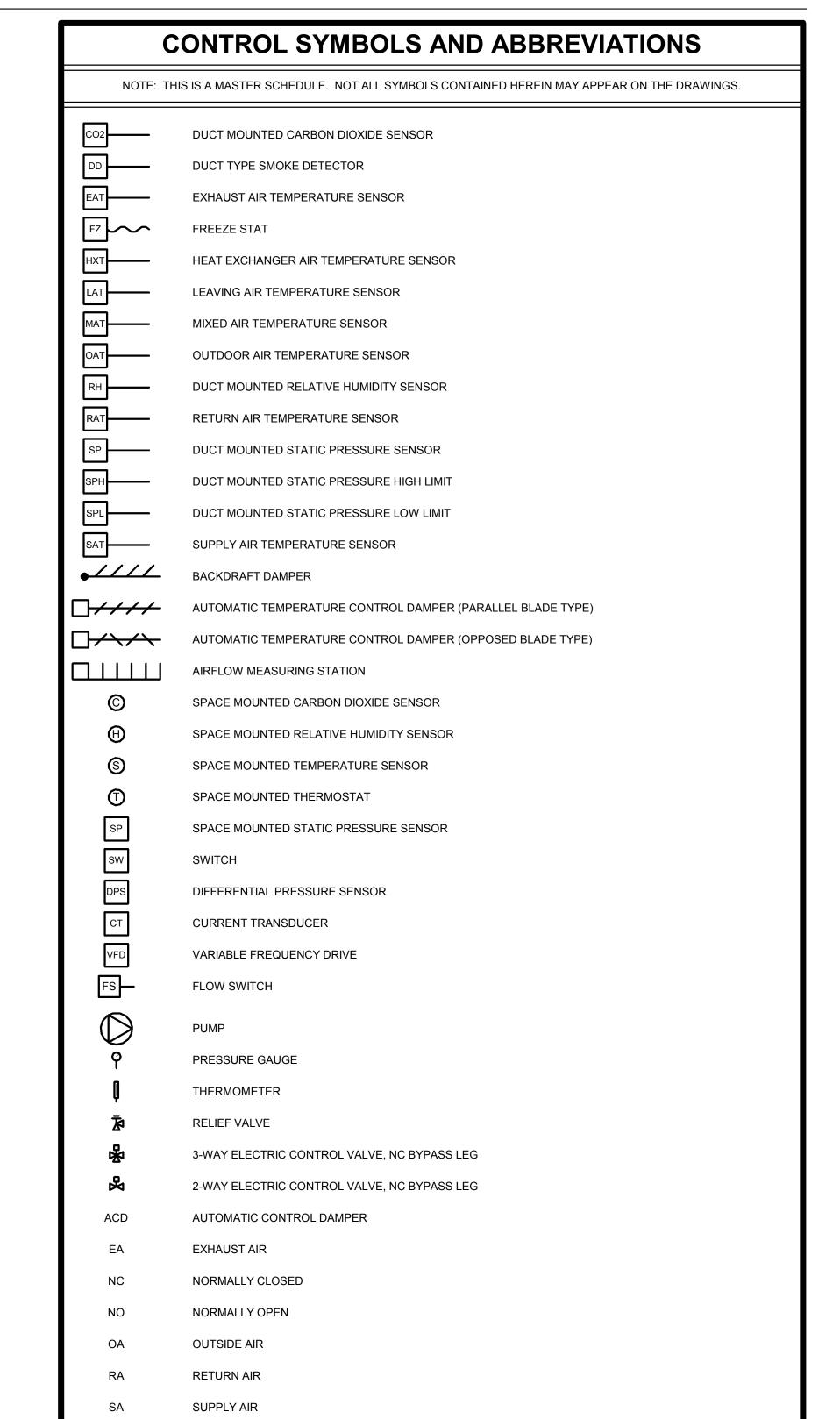
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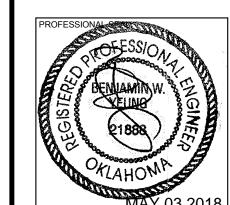
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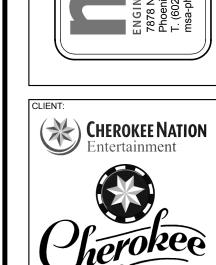




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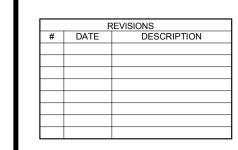






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TAHLEQUAH CASINO

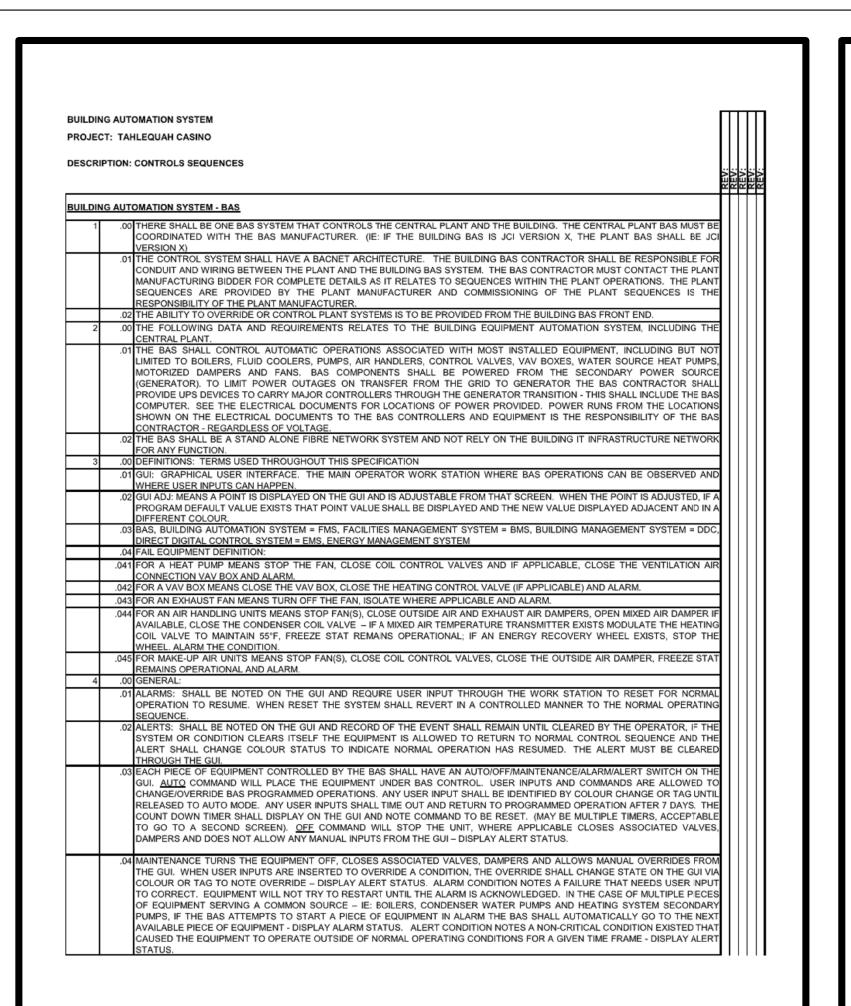
PROJECT PHASE:
BID PACKAGE 05



05/03/18 17-06
SHEET NUMBER:

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MECHANICAL CONTROLS DIAGRAMS



Page: - 1 of 4

BUILDING AUTOMATION SYSTEM PROJECT: TAHLEQUAH CASINO **DESCRIPTION: CONTROLS SEQUENCES** OPERATING CONDITION. CASINO FRONT AND BACK OF HOUSE EQUIPMENT OPERATING SCHEDULE WILL BE PROVIDED B' FACILITIES OR OWNER OPERATIONS DURING COMMISSIONING, OPTIONS ARE 24/7 OR A TIMED SETRACK SCHEDULE. INITIA EMPERATURE SET BACK, UNLESS NOTE BY THE OWNER WILL BE 5°F OFF SET POINT. INITIAL TEMPERATURE SET POINTS: CASING FLOOR - 72°F; RESTAURANTS - 75° COOLING, 70 HEATING; OFFICES AND MOST BOH SPACES - 75°F COOLING, 70° HEATING. TH CENTRAL PLANT IS A 24/7 OPERATION. SPACE SET POINTS WILL HAVE A STANDARD +/-2°F DEADBAND (ADJ PER SPACE) ALER' ANY SPACE 5°F ABOVE OR BELOW SET POINT FOR MORE THAN 30 MINUTES.

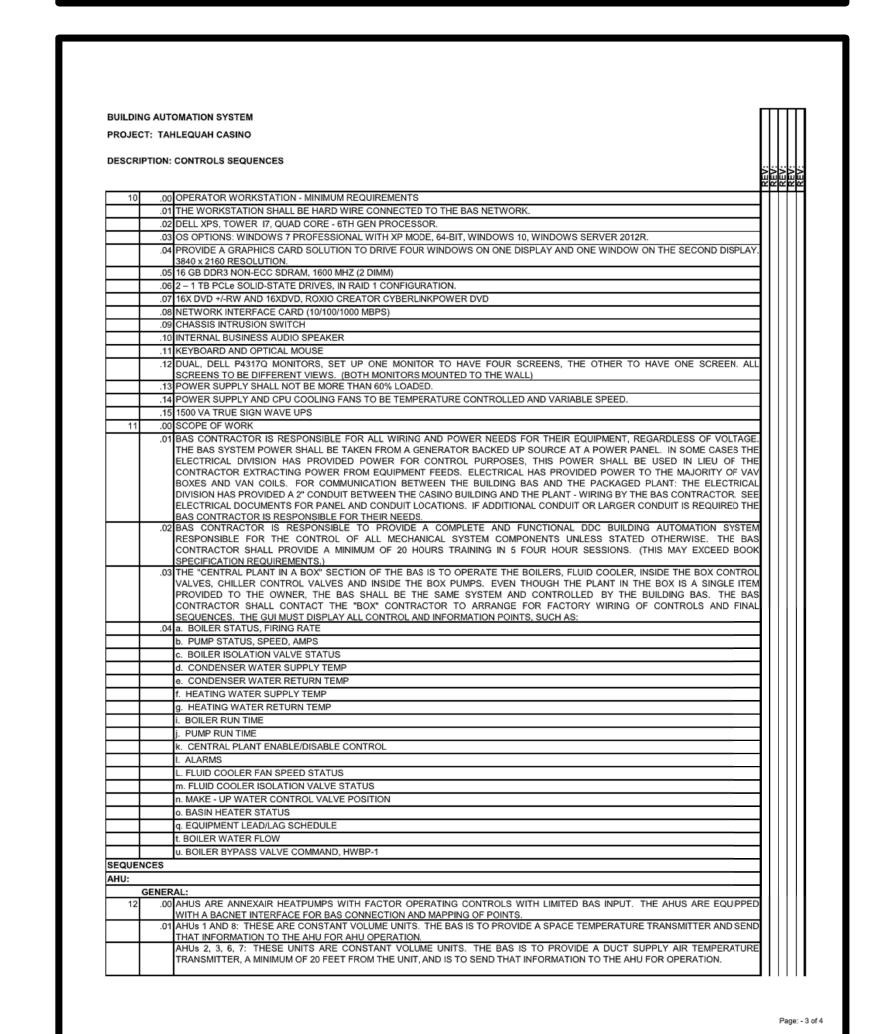
DURING AND AFTER COMMISSIONING THE CONTROLS CONTRACTOR SHALL ALLOW FOR UP TO 80 HRS TOTAL OF PROGRA CHANGES AS DIRECTED BY THE ENGINEER OR THEIR DESIGNATE.

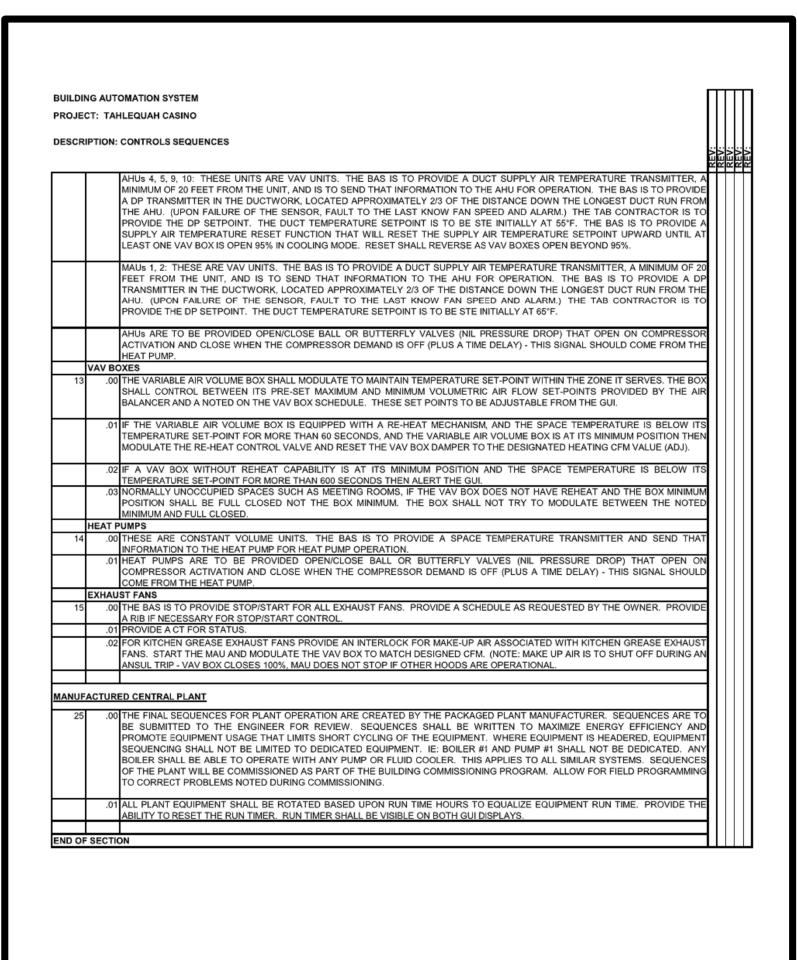
00 GLOBAL COMMANDS TO BE AVAILABLE FROM THE GUI .01 ENABLE/DISABLE CENTRAL PLANT CONDENSER WATER / CONDENSER COMPONENTS ENABLE/DISABLE CENTRAL PLANT HEATING WATER COMPONENTS .03 OPEN/CLOSE ALL VAV BOX CS/CR VALVES ASSOCIATED WITH EACH AHU 04 OPEN/CLOSE ALL VAV BOX HW VALVES ASSOCIATED WITH EACH AHU 5 OPEN CLOSE ALL VAV BOX DAMPERS ASSOCIATED WITH EACH AHL .06 OPEN CLOSE ALL VAV BOX HEATING COIL VALVES ASSOCIATED WITH EACH AHL 7 OPEN/CLOSE ALL FCU CS/CR WATER VALVES PER LEVE .08 OPEN/CLOSE ALL FCU HW WATER VALVES PER LEVEL 09 OPEN/CLOSE ALL AHU CS/CR WATER VALVES 10 OPEN/CLOSE ALL AHU HW WATER VALVES 00 THE BAS SHALL BE WEB ACCESSIBLE. THE BAS CONTRACTOR TO PROVIDE THE LINE TO THE INTERNET AND PAY FOR SERVIC FOR THE FIRST YEAR FROM SYSTEM ACCEPTANCE. THE BAS WEB ACCESS SHALL BE MADE AVAILABLE TO THE ENGINEER FOR THE CONTROL SYSTEM SHALL BE DESIGNED AND PROGRAMMED FOR THE ULTIMATE PLANT EQUIPMENT BUILD-OUT. EQUIPME NOT INSTALLED SHALL BE TAGGED AS OFF.

02 SPACE TEMPERATURE TRANSMITTERS SHALL HAVE A FIELD ADJUSTABLE SPACE TEMPERATURE AND BE CAPABLE TO DISPLA' THE SET POINT. ENABLE/DISABLE OF THE FIELD ADJUSTABLE TEMPERATURE CONTROL SHALL BE SET FROM THE GUI. TH RANGE OF ADJUSTABILITY SHALL BE SET FROM THE GUI. DEFAULT IS NO FIELD CONTROL. WHEN ENABLED, DEFAULT FIELD CONTROL IS DOWN TO 70°F, UP TO 80°F. THU TEMPERATURE SENSORS SHALL BE CAPILLARY TUBE TYPE AND THE CAPILLARY TUBE IS TO BE MINIMUM 1 FOOT LONG F EACH SQUARE FOOT OF COIL/DUCT OPENING.
7 .00 MISC GUI DISPLAY ITEMS: 1 OLITSIDE AIR TEMPERATURE .02 OUTSIDE AIR HUMIDITY .03 SPACE TEMPERATURE SET POINT
.04 SPACE TEMPERATURE
.05 SPACE HUMIDITY SET POINT .07 SPACE CO2 SET POINT (WHERE APPLICABLE) .10 DAMPERS SHALL NOTE "% OPEN"
.11 VFDS SHALL NOTE "%SPEED " OR "HZ 12 VFD DEVICES SHALL DISPLAY CURRENT DRAW DUCT DETECTOR STATUS FOR ASSOCIATED AIR HANDLER (AHU, MAU, FCU, FAN) 14 CASINO FLOOR BUILDING STATIC PRESSURE RELATIVE TO EXTERIOR .15 CASINO FLOOR PLENUM STATIC PRESSURE RELATIVE TO ABOVE THE FLOOR
.16 BUILDING POWER SOURCE – LOCAL UTILITY OR GENERATOR .17 CENTRAL PLANT MAIN EQUIPMENT HOUR METERS OF OPERATION - BOILERS, PUMPS 8 .00 CONTROL VALVES AND FLOW METERS 1 HEAT PUMP/AHUS ARE TO BE PROVIDED OPEN/CLOSE BALL OR BUTTERFLY VALVES (NIL PRESSURE DROP) THAT OPEN COMPRESSOR ACTIVATION AND CLOSE WHEN THE COMPRESSOR DEMAND IS OFF (PLUS A TIME DELAY)
FLOW METERS TO BE FLEXIM FLUXUS F704 WITH CLAMP ON TRANSDUCERS. METER IS ILLUSTRATED ON THE PLANT DIAGRAM, BI A STRAIGHT LENGTH OF PIPE MUST BE LOCATED FOR THE INSTALL - 10 STRAIGHT PIPE DIAMETERS BEFORE THE SENSORS AN CLOSE ATTENTION TO THE REQUIRED STRAIGHT PIPE DISTANCES REQUIRED FOR METERS TO OPERATE CORRECTLY. WHER MANUFACTURER RECOMMENDED STRAIGHT PIPE DISTANCES CANNOT BE MAINTAINED THE ULTRASONIC METER IS TO B REPLACED BY A MAGNETIC FLOW METER BY CADILLAC METER - CMAG, THAT DOES NOT REQUIRED ANY STRAIGHT PIPE LENGTH EFORE OR AFTER THE METER. .01 WHERE THERE IS INSUFFICIENT ROOM TO FIELD INSTALL A FREEZE STAT OR OTHER TEMPERATURE SENSOR DUE TO COILS BEIN TIGHT TOGETHER, AIR HANDLERS MAY BE PROVIDED WITH FACTORY DEVICES - COORDINATE WITH THE EQUIPMENT SUPPLIER T ENSURE COMMUNICATION WITH THE DEVICES. 2 DP TRANSMITTERS SHALL BE HARD WIRED BACK TO THE CONTROLLER UTILIZING THE DEVICE FOR INPUT SIGNAL. NETWOR CONNECTIONS ARE NOT ALLOWED.

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James R. Childers

Architect, Inc.

45 South 4th Street

Fort Smith AR 72901

479-783-2480

CONSULTANT LOGO:

www.childersarchitect.com

PROJECT PHASE: BID PACKAGE 05

REVISIONS
∈ DESCRIPTION

JOB NUMBER 05/03/18 17-06

MECHANICAL

CONTROLS **SEQUENCES**

e)	Building Automation System Points List (minimum)								
LIDE	Project: TAHLEQUAH CASINO		I/O ⁻	TYPI	Ε				
	Description: Controls Points List - All points are not necessarily defined here.	Al	АО	DI	DO	REV:	REV:	-/-	
1	CONSTANT OR VARIABLE AIR VOLUME AIR HANDLING UNIT WITH OR W/O ENERGY WHEEL AND I	<u> </u>	VIIDII	10.4	TION	П			
2	CONSTANT OR VARIABLE AIR VOLUME AIR HANDLING UNIT WITH OR W/O ENERGY WHEEL AND I	T	MIDIR	T	T	П			
	Duct Static Pressure Set-Point	+	Х	-	-	П			
	Duct Static Pressure	X	_	\vdash	\vdash	П			
	AHU-X SFan S/S	+	т	-	Х	Ш			
	AHU-X SFan Status or VFD Run Status			Х		П			
8	AHU-X SVFD Command Fan Speed		Х						
9	AHU-X SVFD Fan Speed	X							
	AHU-X SVFD Alarm		$ldsymbol{ldsymbol{ldsymbol{eta}}}$	Х		П			
	AHU-X EF OR RFan S/S (Each Fan)	_	╙	lacksquare	Х	П			
	AHU-X EF OR RFan Status or VFD Run Status (Each Fan)	_	L.,	Χ	▙	П			
	AHU-X EVFD OR RVFD Command Fan Speed (Each Fan)	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Х	\vdash	₩	П			
	AHU-X EVFD OR Speed (Each Fan) AHU-X EVFD OR RVFD Alarm (Each Fan)	X	\vdash	X	\vdash	П			
	AHU-X EVFD OR RVFD Alarm (Each Fan) AHU-X Supply Air Volume (Each Fan)	X	\vdash	^	\vdash				
	AHU-X Supply Air Volume (Each Fan) AHU-X Supply Air Volume Total	Ĉ	⊢	\vdash	\vdash	П			
18	AHU-X Return Air Volume (Each Fan)	X	\vdash	\vdash	\vdash	П			
	AHU-X Return Air Volume Total	Ĉ	т	\vdash	T	П			
	AHU-X Energy wheel S/S	+-	Н	\vdash	Х	П			
	AHU-X Energy Wheel Status or VFD Run Status			Х		П			
22	AHU-X Energy Wheel VFD Command speed		Х						
	AHU-X Energy Wheel VFD speed	Х							
	AHU-X Energy Wheel VFD Alarm		Щ	Х		П			
	AHU-X OSA Damper Command		Х	╙	_	П			
	AHU-X OSA Damper Position	Х	_	╙	╙	П			
	AHU-X RA Damper Command	.	Χ	⊢	⊢	П			
	AHU-X RA Damper Position	X	_	₩	₩	П			
	AHU-X EA Damper Command AHU-X EA Damper Position	X	Х	⊢	\vdash	П			
	AHU- X OAT before wheel	X	_	┼	 	П			
	AHU- X OAT belofe wheel	 \hat{x}	⊢	-	_				
	AHU-X Mixed Air Temperature - before cooling coil	X	\vdash	-	-	П			
	AHU-X Supply Air Temperature after heating coil	X	\vdash	\vdash	\vdash	П			
	AHU-X Supply Air Temperature after cooling coil	Х				П			
36	AHU-X Unit Discharge Air Temperature	Х							
	AHU-X Discharge Air Temperature Command		Х						
	AHU-X Return Air Temperature	Х	$ldsymbol{\square}$	lacksquare	$ldsymbol{oxed}$				
	AHU-X Exhaust Air Temp after wheel	X	⊢	ऻ	ऻ	П			
	AHU-X Space Humidity	X	⊢	\vdash	₩				
	AHULY Supply Air Humidity	X	\vdash	\vdash	\vdash	П			
	AHU-X Supply Air Humidity - 20 ft from unit. AHU-X Return air CO2	X	\vdash	\vdash	\vdash				
	AHU-X CW Valve Command	+^	Х	\vdash	\vdash	П			
	AHU-X Supply Air Duct Detector	+	<u> </u>	Х	\vdash	П			
	AHU-X Freeze Temp Detector	+	Т	X	1	П			
	AHU-X SA Fan Low static pressure alarm	\top	Т	Х		П			
	AHU-X Supply Air Filter #1 static pressure	Х				П			
19	AHU-X Supply Air Filter #2 static pressure	Х							
	AHU-X Return Air Filter static pressure	Х							
	AHU-X Status vs Command Alert	С				П			
52						П			
53									
	CONSTANT AIR VOLUME OR VAV AIR HANDLING			_					
55	ALILLY OF THE CITY	+-	⊢	\vdash		П			
	AHU-X SFan S/S AHU-X SFan or VFD Run Status	+-	⊢	~	X	П			
	AHU-X SFan or VFD Run Status AHU-X EFan S/S (Each Fan)	+-	⊢	Х	١	ı I			

Page 1 of 3

Project: TAHLEQUAH CASINO	SINO I/O TYPE	\Box		
Description: Controls Points List - All points are not necessarily defined here.		AO	_	_
	Al	AO	DI	DO
AHILY EFon VED Bun Status (Fach Fan)		⊢	Х	⊢
AHU-X EFan VFD Run Status (Each Fan)	-H	Х	^	⊢
AHU-X EFan VFD Command Fan Speed (Each Fan)	- x	^	\vdash	⊢
AHU-X EFan VFD Fan Speed (Each Fan)		⊢	V	⊢
AHU-X EFan VFD Alarm (Each Fan)	-H	$\overline{}$	Х	⊢
AHU-X OSA Damper Command		Χ	⊢	⊢
AHU-X OSA Damper Position	X	· ·	\vdash	⊢
AHU-X RA Damper Command	$-H_{\vee}$	Х	⊢	⊢
AHU-X RA Damper Position	X		├	⊢
AHU-X EA Damper Command	-	Х	-	⊢
AHU-X EA Damper Position	X	⊢	<u> </u>	┡
AHU-X Mixed Air Temperature - before heating	X	▙	├	┡
AHU-X Supply Air Temperature after heating coil	X	▙	├	┡
AHU-X Supply Air Temperature after cooling coil	X	⊢	<u> </u>	—
AHU-X Unit Discharge Air Temperature	X		—	—
AHU-X Discharge Air Temperature Command		Х	<u> </u>	—
AHU-X Return Air Temperature	X	⊢	<u> </u>	—
AHU-X Space Humidity	X	⊢	<u> </u>	<u> </u>
AHU-X Return Air Humidity	X	ऻ	<u> </u>	<u> </u>
AHU-X Space CO2	X		—	—
AHU-X CW Valve Command	$-\!\!+\!\!\!-$	Х		<u> </u>
AHU-X Supply Air Duct Detector	$-\!+\!\!-\!\!-$	▙	Х	<u> </u>
AHU-X Freeze Temp Detector	$-\!\!+\!\!\!-$	┞	Х	Ь.
AHU-X SA Fan Low static pressure alarm		┞	Х	Ь.
AHU-X Supply Air Filter static pressure	X	╙		_
AHU-X Status vs Command Alert	С	┖		_
	$-\!\!+\!\!\!-\!\!\!+$	╙	<u> </u>	Ь.
CONSTANT AIR VOLUME MAKE-UP AIR UNIT				_
MALLY OF LOID	-H	⊢	—	
MAU-X SFan S/S	$-\!+\!\!-\!\!-$	⊢		Х
MAU-X SFan Status	$-\!+\!\!-$	⊢	Х	⊢
MAU-X EFan VFD Run Status (Each Fan)	-H	⊢	<u> </u>	├
MAU-X EFan VFD Command Fan Speed (Each Fan)	-H		<u> </u>	┡
		Х	<u> </u>	┝
MAU-X OSA Damper Command	II X	⊢	<u> </u>	┝
MAU-X OSA Damper Position	_		<u> </u>	├
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil	X			⊢
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil	X	┡		ı
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature	X			-
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command	X X X	Х		
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity	X			
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command	X X X	X		
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector	X X X		X	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector	X X X		Χ	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm	X X X		_	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		Χ	
MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature MAU-X Unit Supply Air Humidity MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure MAU-X Status vs Command Alert	X X X		Χ	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		Χ	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure MAU-X Status vs Command Alert	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		Χ	
MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature MAU-X Unit Supply Air Humidity MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure MAU-X Status vs Command Alert	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		Χ	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure MAU-X Status vs Command Alert TERMINAL UNIT CONTROL - FANCOIL	X X X		Χ	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure MAU-X Status vs Command Alert TERMINAL UNIT CONTROL - FANCOIL	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	X	Χ	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure MAU-X Status vs Command Alert TERMINAL UNIT CONTROL - FANCOIL Space Temperature CW Valve command	X X X		X	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure MAU-X Status vs Command Alert TERMINAL UNIT CONTROL - FANCOIL	X X X	X	Χ	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure MAU-X Status vs Command Alert TERMINAL UNIT CONTROL - FANCOIL Space Temperature CW Valve command	X X X	X	X	
MAU-X OSA Damper Position MAU-X Supply Air Temperature after heating coil MAU-X Supply Air Temperature after cooling coil MAU-X Unit Discharge Air Temperature MAU-X Unit Discharge Air Temperature Command MAU-X Unit Supply Air Humidity MAU-X CW Valve Command MA-X Supply Air Duct Detector MAU-X Freeze Temp Detector MAU-X Low static pressure alarm MAU-X Supply Air Filter static pressure MAU-X Status vs Command Alert TERMINAL UNIT CONTROL - FANCOIL Space Temperature CW Valve command Fan Motor CT	X X X	X	X	X

Building Automation System Points List (minimum) Froject: TAHLEQUAH CASINO I/O TYPE Description: Controls Points List - All points are not necessarily defined here. 117 EXHAUST FAN 119 EFan S/S (Each Fan) 120 EFan Status (Each Fan) Motor CT 121 Status vs Command Alarm 126 Outside Air Temperature (Two Sensors) 127 Outside Air Humidity (Two Sensors) 128 Outside Air Enthalpy 129 Outside Air Dewpoint 130 Bldg Dif. Pres. Trans (Casino Lev) 131 Bldg Dif. Pres. Trans (Casino Lev) 132 Domestic Hot Water Circ Pump Status (Each Pump CT) 135 MANUFACTURED PLANT 137 DP transmitter 1 - condenser water system 138 DP transmitter 2 - condenser water system 139 DP transmitter 3 - condenser water system Х 140 DP transmitter 1 - heating water system 141 DP transmitter 2 - heating water system 142 DP transmitter 3 - heating water system 143 Condenser Water Supply Set Point 144 Heating Water Supply Set Point 145 Condenser Water Supply GPM 146 Fluid Cooler Fan Speed - Status (each) 147 Fluid Cooler enable/disable (each) 148 Boiler enable/disable (each) 149 Boiler rotation sequence 150 Condenser water pump rotation sequence151 Boiler HWP rotation sequence 152 Boiler HWP water heater rotation sequence 153 Cooling tower rotation sequence 154 Condenser water pump enable/disable (each) 155 Heating water pump enable/disable (each) 156 Fluid Cooler run time (each) 157 Boiler run time (each) 158 Condenser water pump run time (each) 159 Heating water pump run time (each) 160 Boiler run time (each) X 161 Electrical Switchgear load - BACNET interface X X X X 162 Lakos Separator Status 163 Make-up Water Control - Status - makeup valve position (each) 164 Fluid Cooler Basin Heaters - Status (Each) 165 Fluid Cooler Isolation Valve Supply - Status (each) X 166 Fluid Coooler Isolation Valve Return - Status (each) X 167 Make-up Water - meter input from Fluid Cooler basin & Condenser water/boiler systems. 169 SEE CONTROLS DRAWINGS FOR ADDITIONAL REQUIRED POINTS

X denotes physical I/O, C denotes calculated I/O

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TAHLEQUAH CASINO

James R. Childers

Architect, Inc.

45 South 4th Street Fort Smith, AR 72901 479-783-2480

www.childersarchitect.com

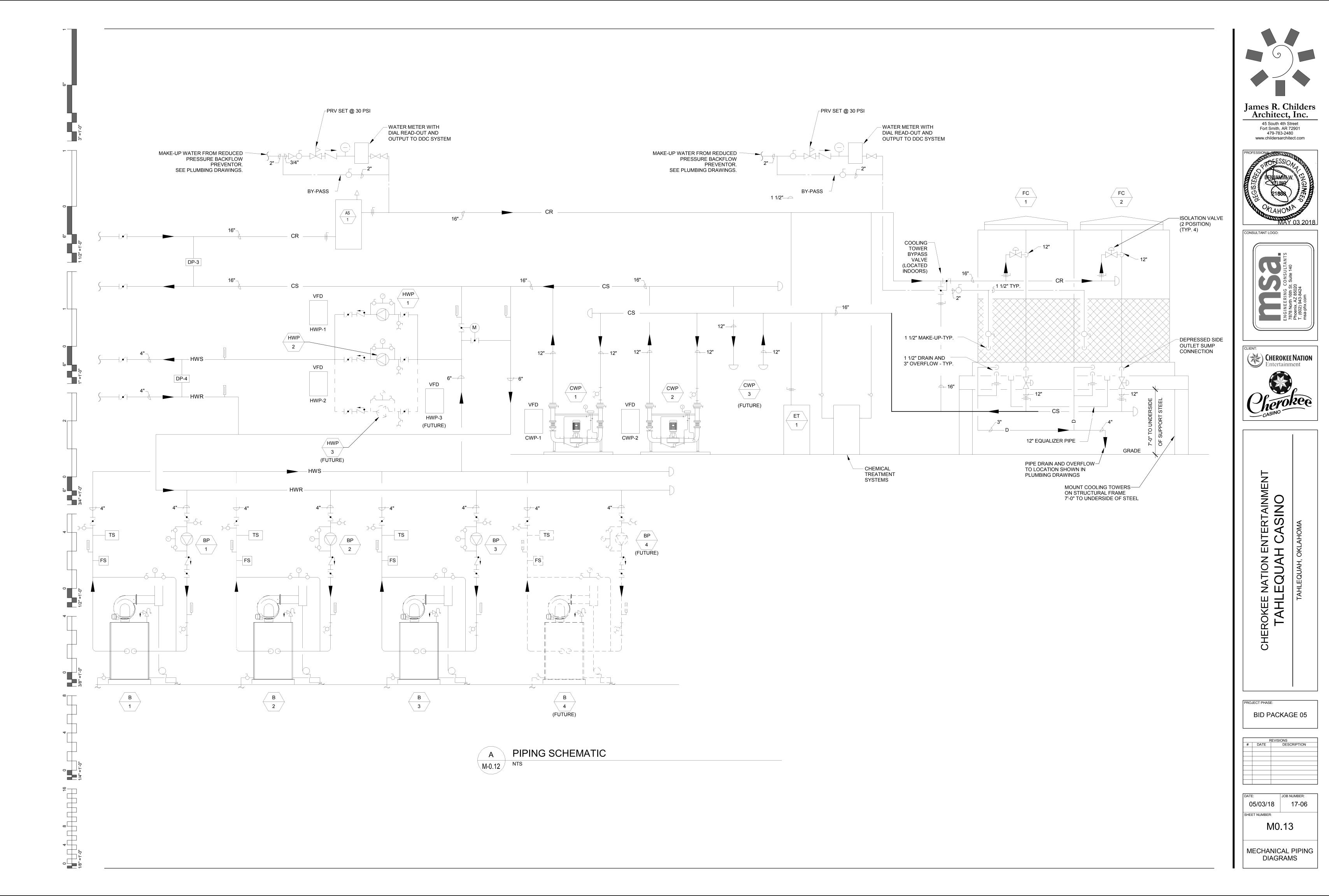
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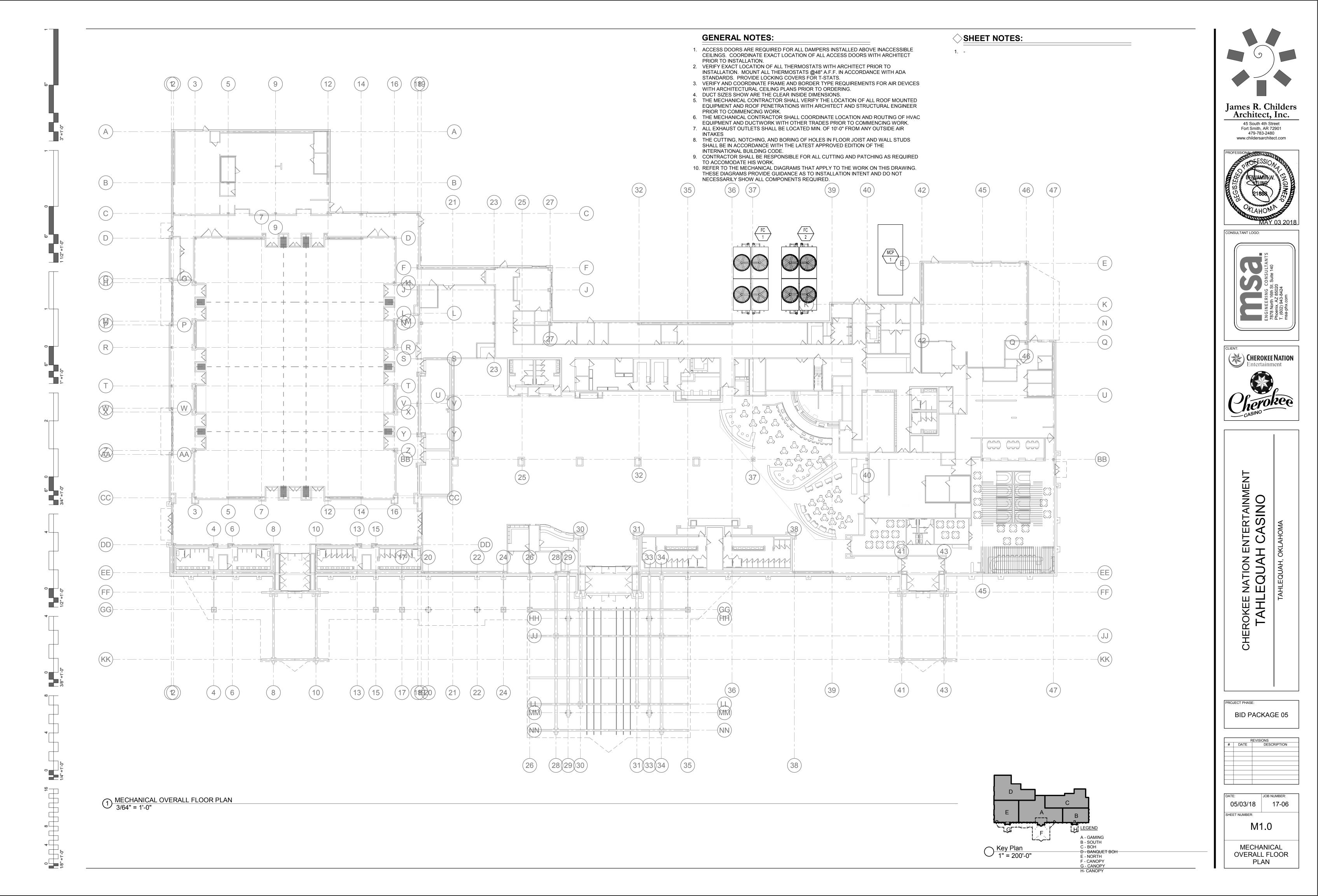
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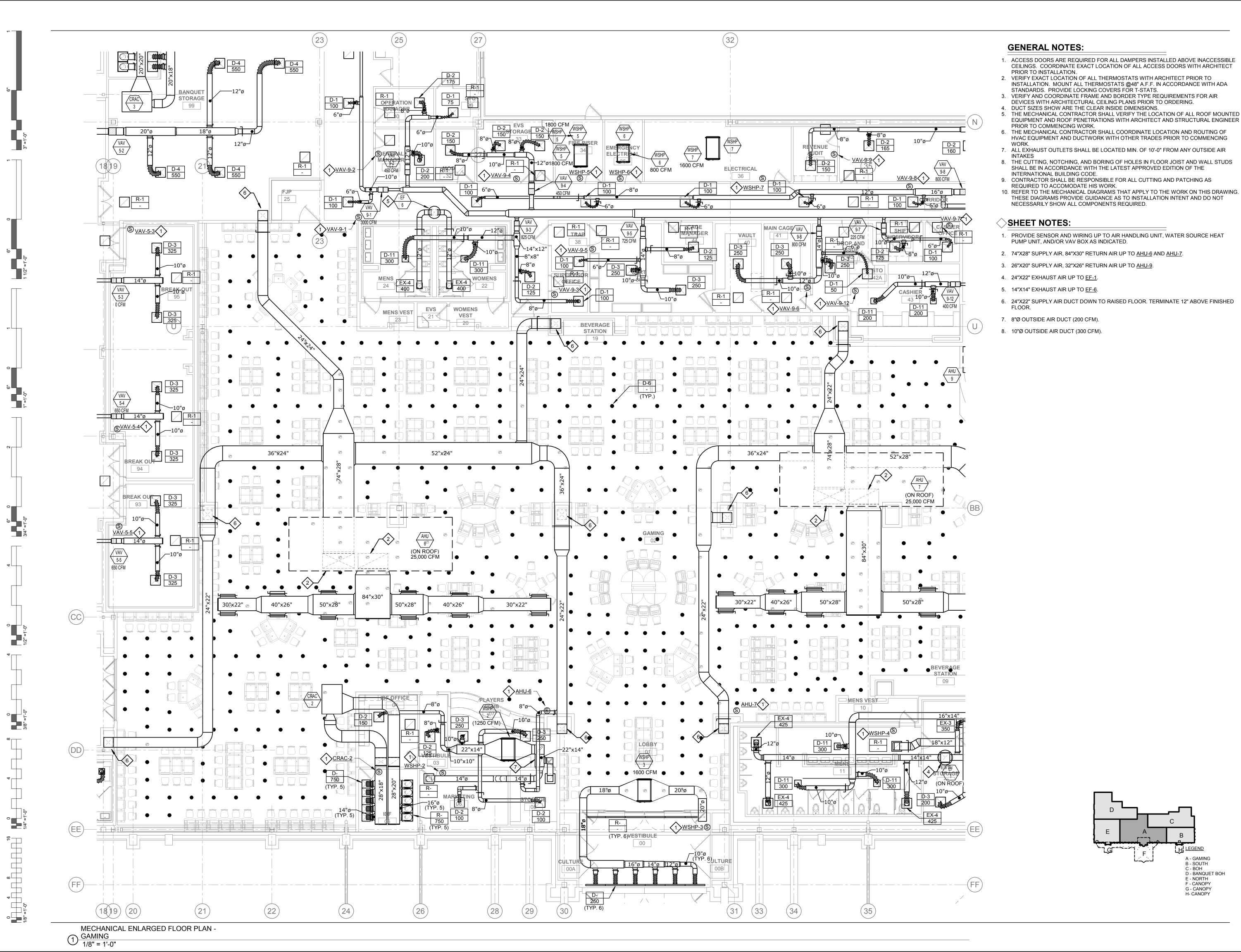
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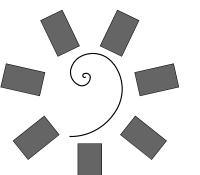
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MECHANICAL CONTROLS POINTS



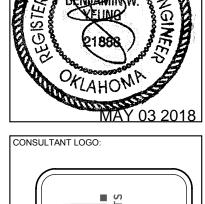






James R. Childers Architect, Inc.

45 South 4th Street Fort Smith, AR 72901 479-783-2480 www.childersarchitect.com



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Entertainment

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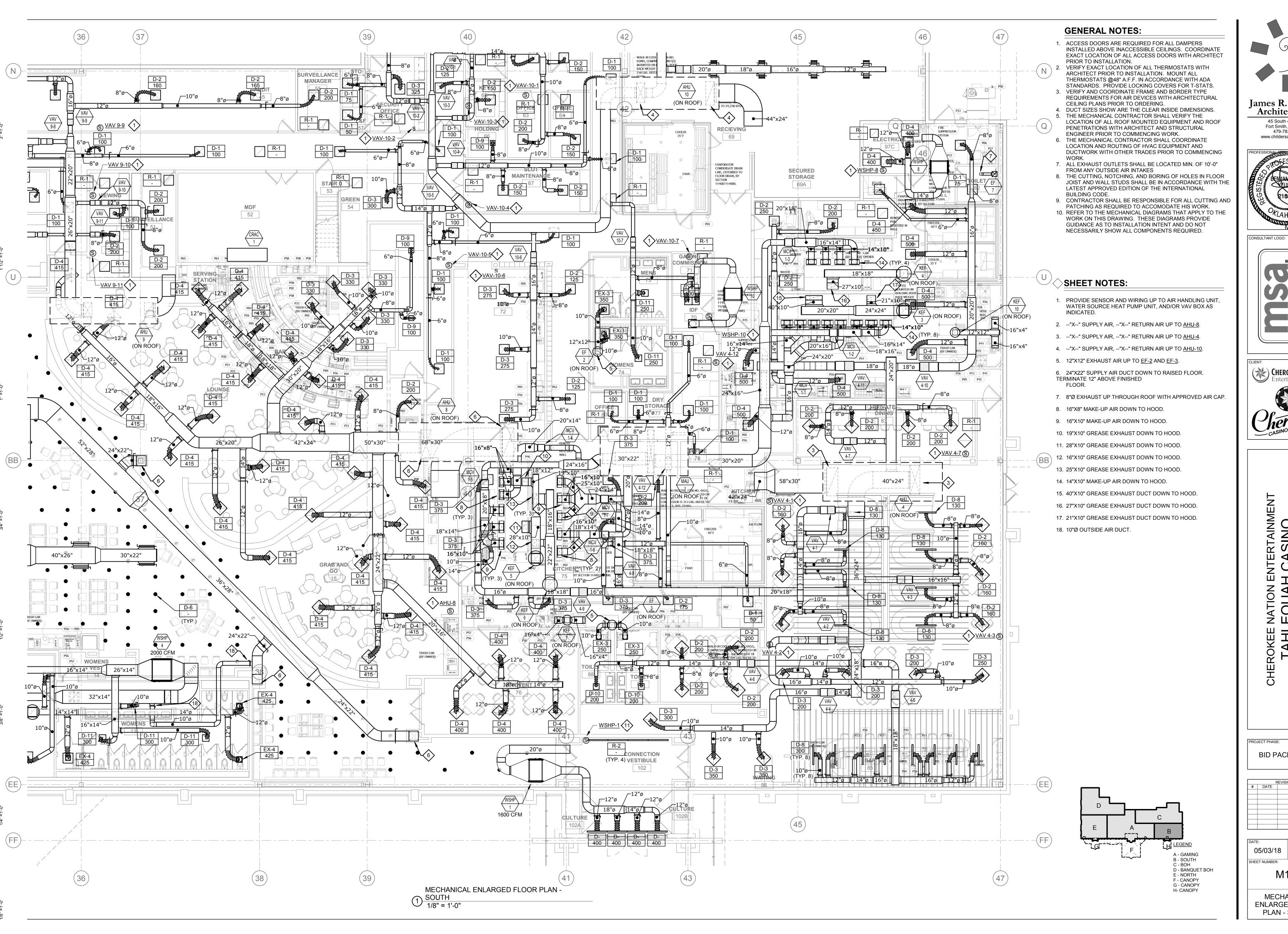
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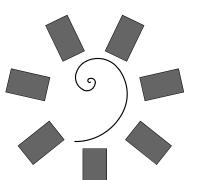
REVISIONS DESCRIPTION

05/03/18

A - GAMING
B - SOUTH
C - BOH
D - BANQUET BOH
E - NORTH
F - CANOPY
G - CANOPY
H- CANOPY

MECHANICAL ENLARGED FLOOR PLAN - GAMING





James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2480

www.childersarchitect.com

CHEROKEE NATION Entertainment

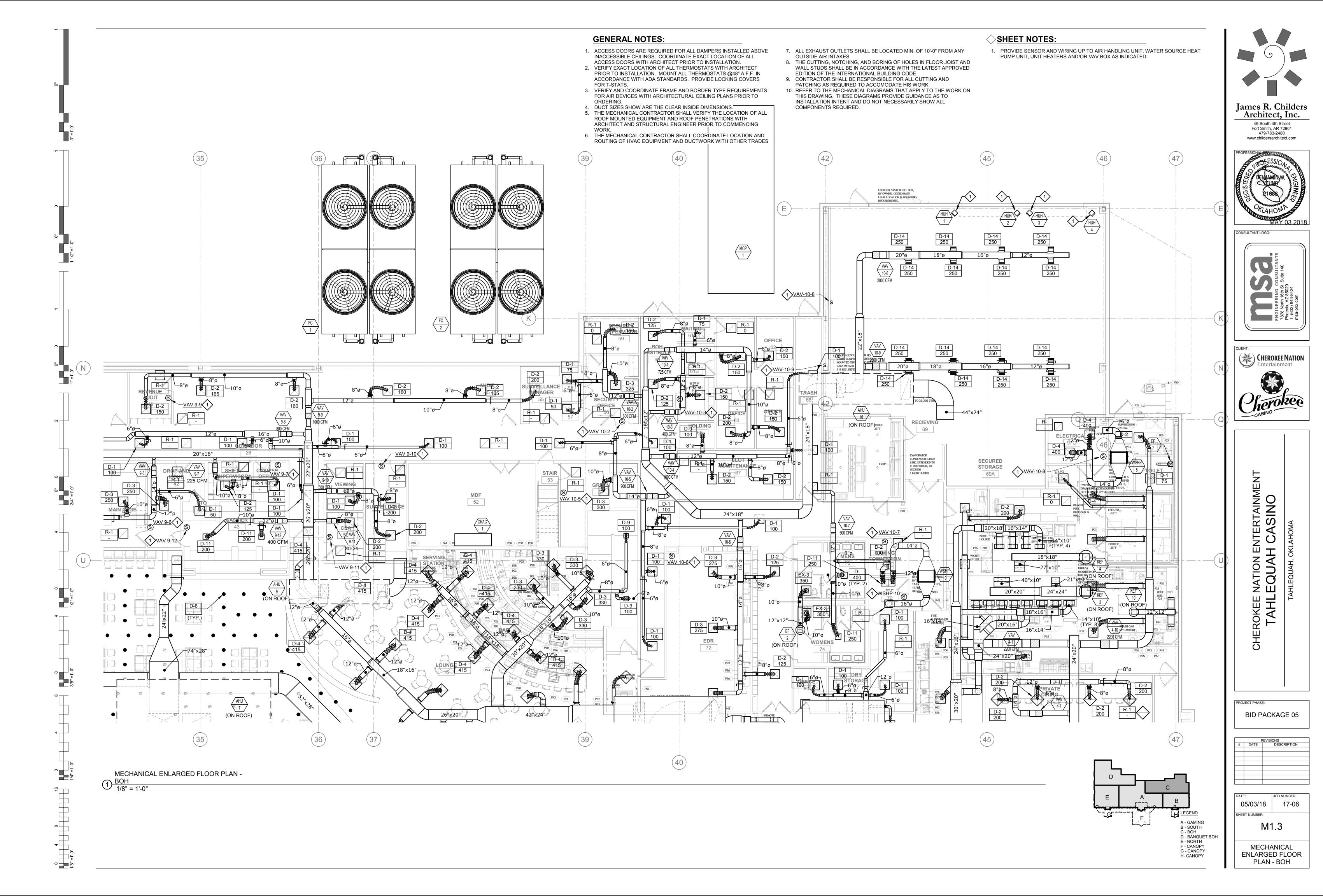
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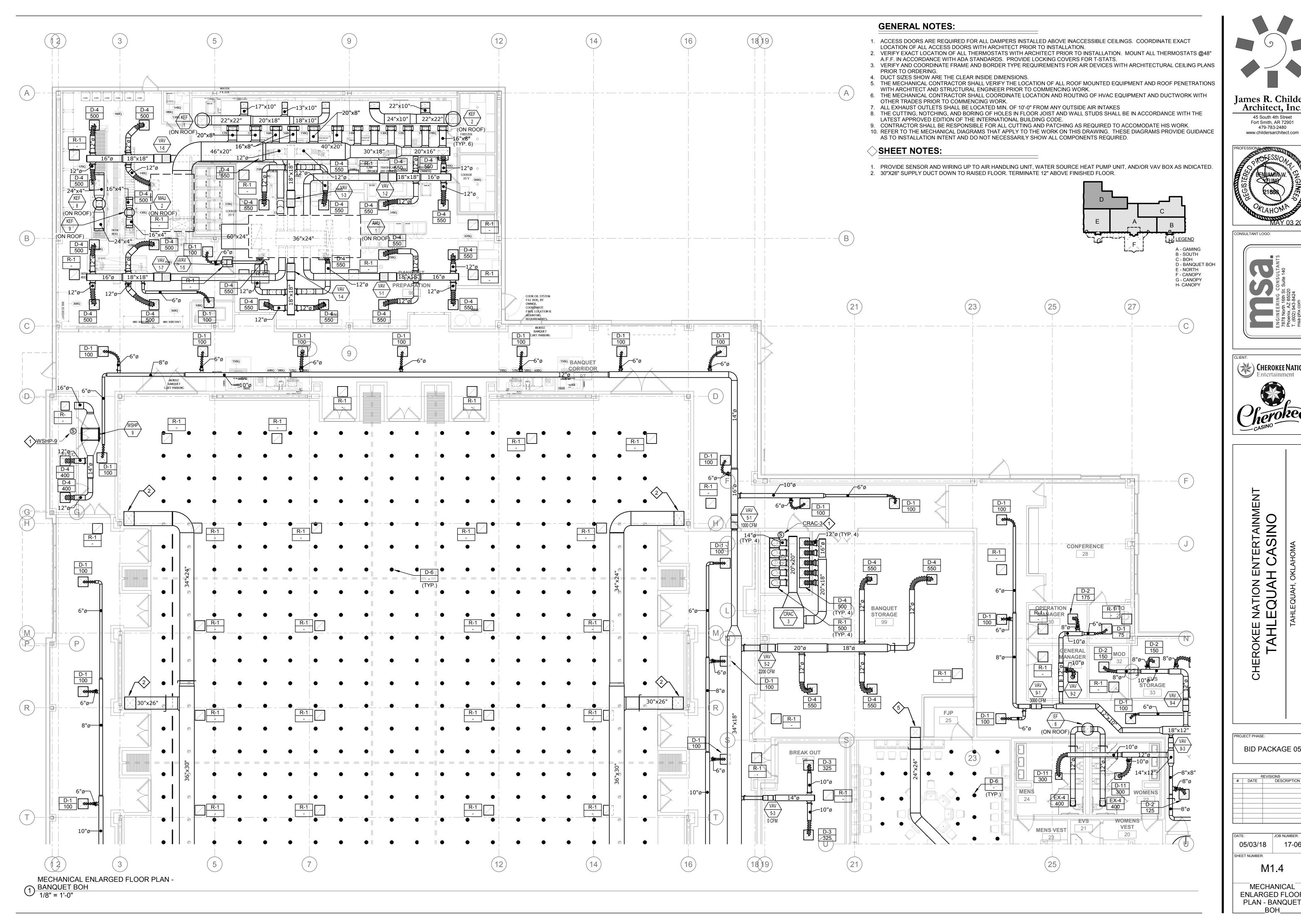
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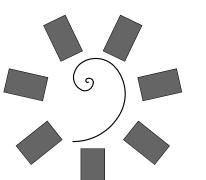
REVISIONS DESCRIPTION

05/03/18 M1.2

MECHANICAL ENLARGED FLOOR PLAN - SOUTH







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CONSULTANT LOGO:

CHEROKEE NATION
Entertainment

BID PACKAGE 05

05/03/18 17-06

MECHANICAL ENLARGED FLOOR PLAN - BANQUET

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CONSULTANT LOGO:

CHEROKEE NATION ENTERTAINM TAHLEQUAH CASINO

BID PACKAGE 05

05/03/18 M1.5

A - GAMING
B - SOUTH
C - BOH
D - BANQUET BOH
E - NORTH
F - CANOPY
G - CANOPY
H- CANOPY

MECHANICAL ENLARGED FLOOR PLAN - NORTH

GENERAL NOTES:

1. ACCESS DOORS ARE REQUIRED FOR ALL DAMPERS INSTALLED ABOVE INACCESSIBLE

- CEILINGS. COORDINATE EXACT LOCATION OF ALL ACCESS DOORS WITH ARCHITECT PRIOR TO INSTALLATION.
- 2. VERIFY EXACT LOCATION OF ALL THERMOSTATS WITH ARCHITECT PRIOR TO INSTALLATION. MOUNT ALL THERMOSTATS @48" A.F.F. IN ACCORDANCE WITH ADA STANDARDS. PROVIDE LOCKING COVERS FOR T-STATS.
- 3. VERIFY AND COORDINATE FRAME AND BORDER TYPE REQUIREMENTS FOR AIR DEVICES WITH ARCHITECTURAL CEILING PLANS PRIOR TO ORDERING. 4. DUCT SIZES SHOW ARE THE CLEAR INSIDE DIMENSIONS. 5. THE MECHANICAL CONTRACTOR SHALL VERIFY THE LOCATION OF ALL ROOF MOUNTED EQUIPMENT AND ROOF PENETRATIONS WITH ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO COMMENCING WORK.
- HVAC EQUIPMENT AND DUCTWORK WITH OTHER TRADES PRIOR TO COMMENCING
- 6. THE MECHANICAL CONTRACTOR SHALL COORDINATE LOCATION AND ROUTING OF
- 7. ALL EXHAUST OUTLETS SHALL BE LOCATED MIN. OF 10'-0" FROM ANY OUTSIDE AIR INTAKES 8. THE CUTTING, NOTCHING, AND BORING OF HOLES IN FLOOR JOIST AND WALL STUDS SHALL BE IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE
- INTERNATIONAL BUILDING CODE.
- 9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING AS REQUIRED TO ACCOMODATE HIS WORK. 10. REFER TO THE MECHANICAL DIAGRAMS THAT APPLY TO THE WORK ON THIS DRAWING. THESE DIAGRAMS PROVIDE GUIDANCE AS TO INSTALLATION INTENT AND DO NOT NECESSARILY SHOW ALL COMPONENTS REQUIRED.

SHEET NOTES:

5-3

5-5 650 CFM

⊚ 30"x26"

30"x26"

28"x22**|**🏻 🎧

17

1819 (20)

15

10"ø 10"ø

|30"x26" ⊚

30"x26"

7 20"x18"

8"ø–⁄

(CC)

DD

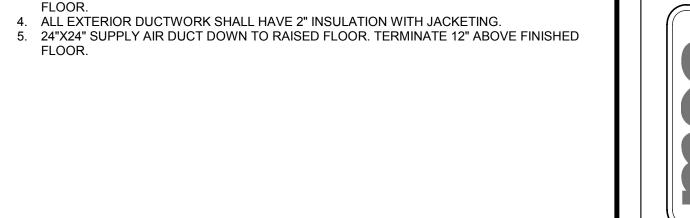
EE

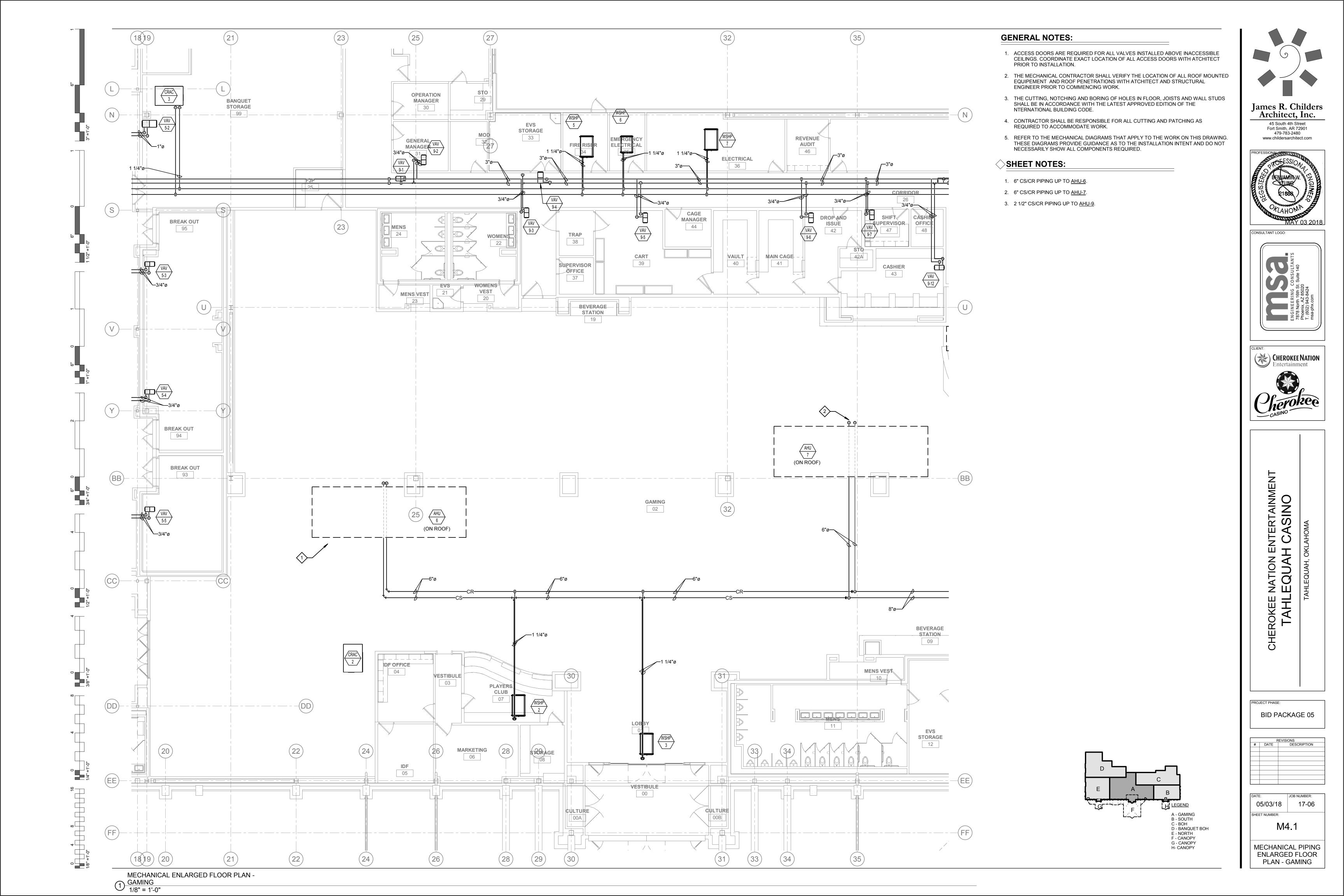
1 NORTH 1/8" = 1'-0"

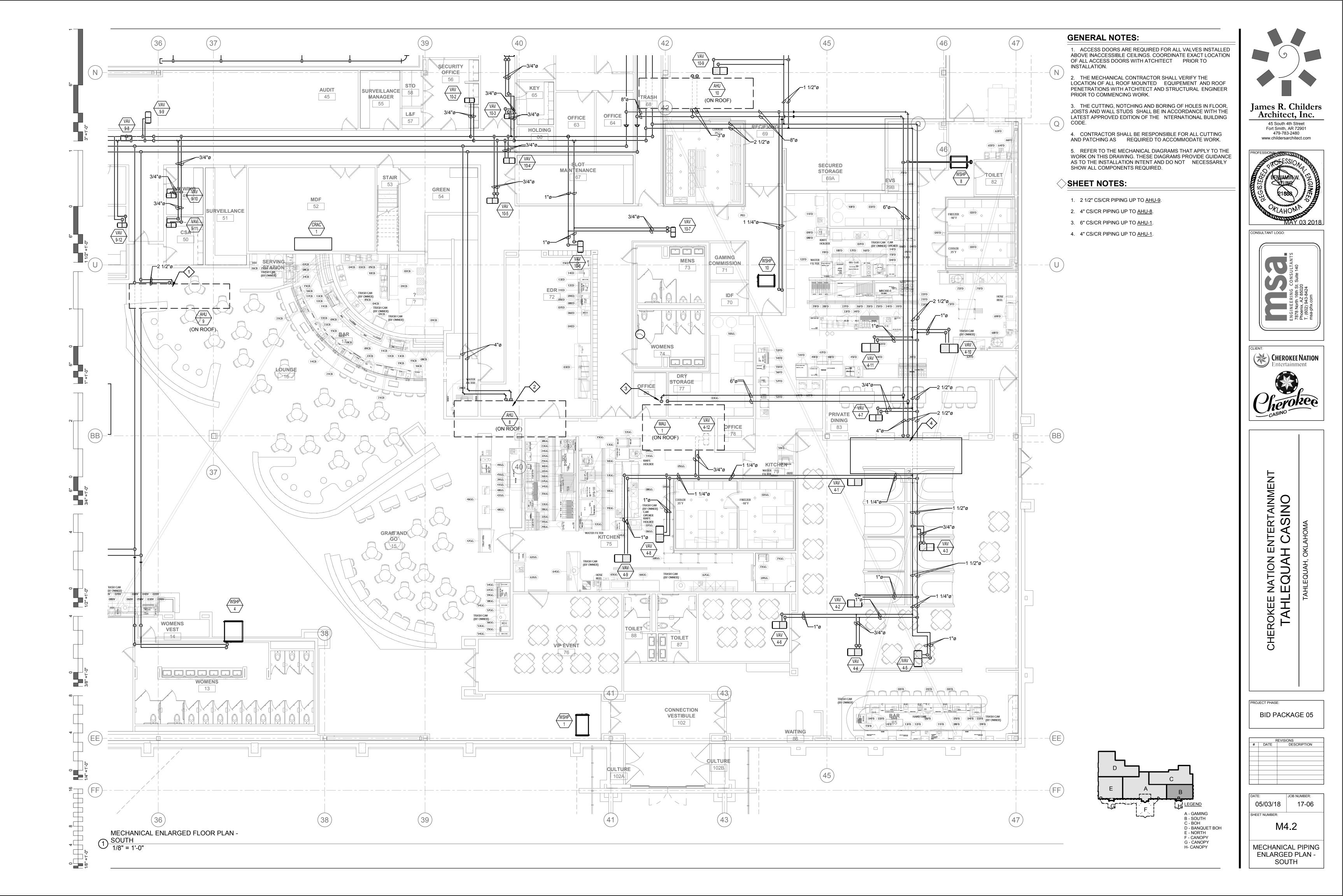
MECHANICAL ENLARGED FLOOR PLAN -

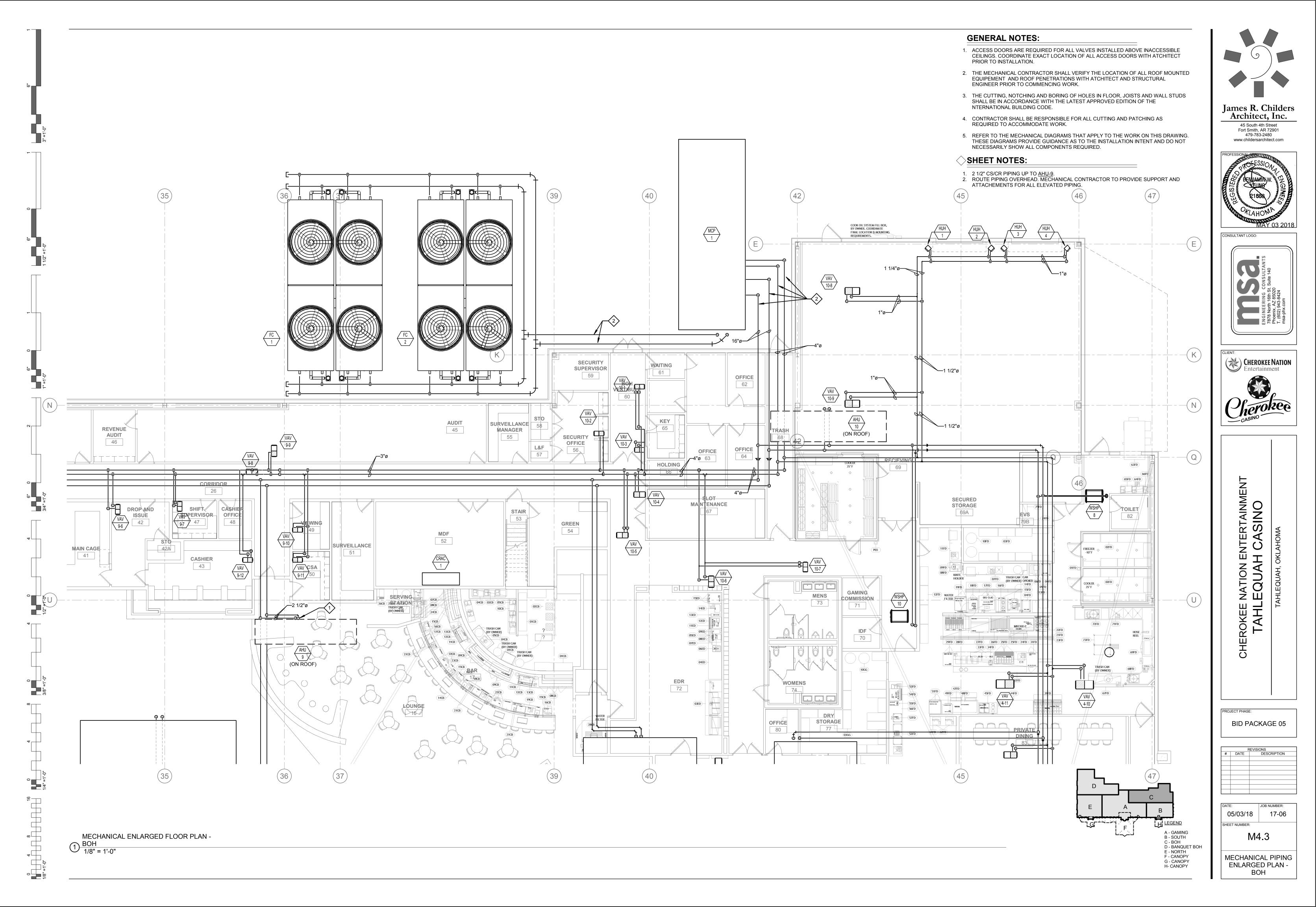
VAV 5-12 500 CFM

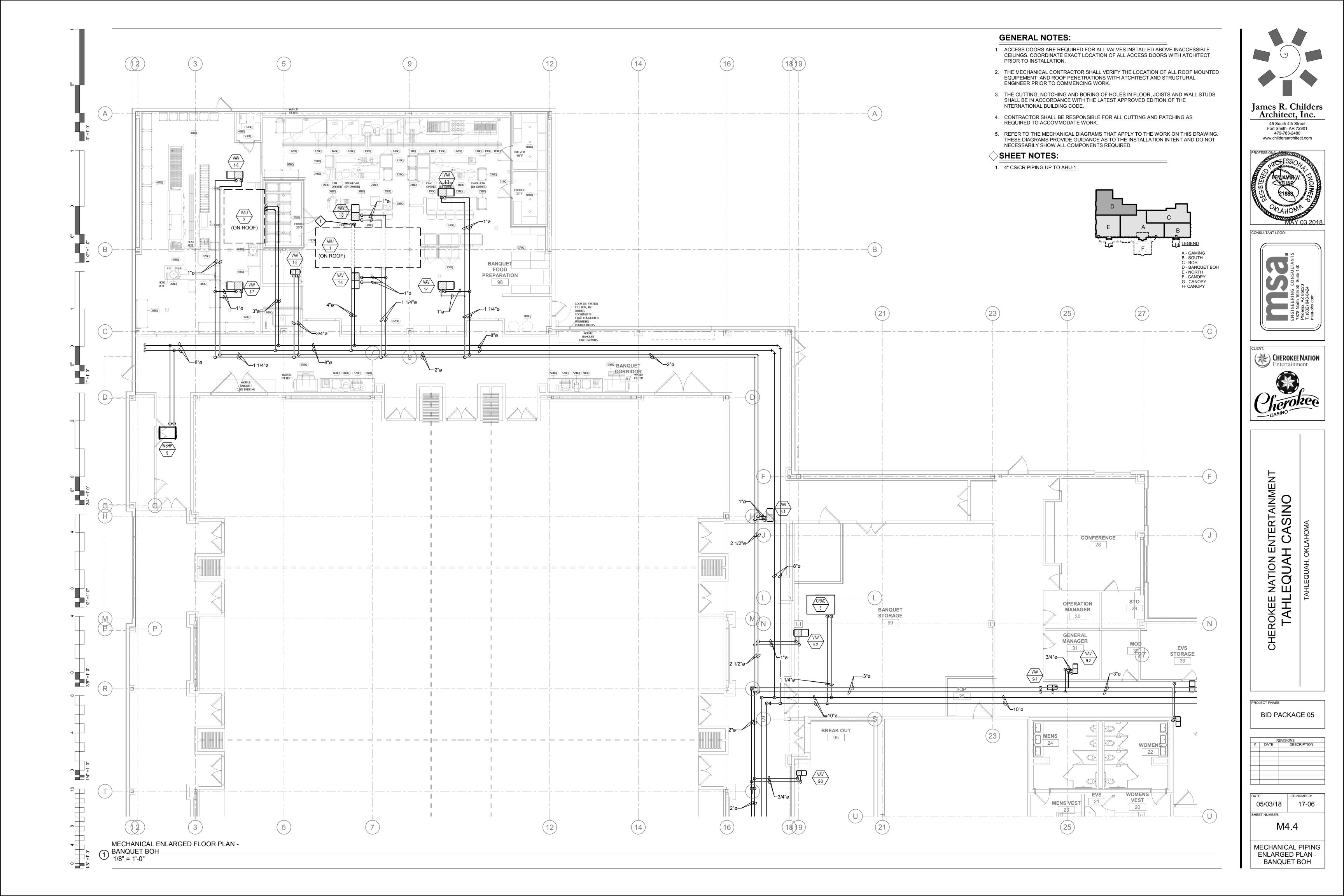
- 52"X30" SUPPLY AIR DUCT, 60"X30" RETURN AIR DUCT UP TO AHU-3.
 30"X26" SUPPLY AIR DUCT DOWN TO RAISED FLOOR. TERMINATE 12" ABOVE FINISHED
- 1. PROVIDE SENSOR AND WIRING UP TO AIR HANDLING UNIT, WATER SOURCE HEAT PUMP UNIT, AND/OR VAV BOX AS INDICATED.













James R. Childers

Architect, Inc.

45 South 4th Street Fort Smith, AR 72901 479-783-2480

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CHEROKEE NATION ENTERTAINMENT TAHLEQUAH CASINO

BID PACKAGE 05

05/03/18 M4.5

A - GAMING
B - SOUTH
C - BOH
D - BANQUET BOH
E - NORTH
F - CANOPY
G - CANOPY
H- CANOPY

MECHANICAL PIPING ENLARGED PLAN -NORTH

GENERAL NOTES:

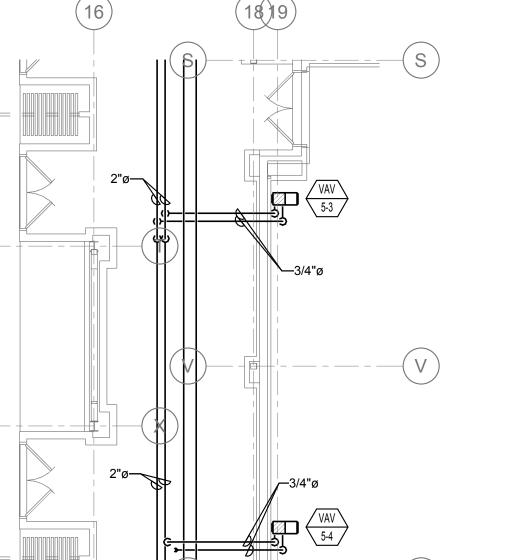
- 1. ACCESS DOORS ARE REQUIRED FOR ALL VALVES INSTALLED ABOVE INACCESSIBLE CEILINGS. COORDINATE EXACT LOCATION OF ALL ACCESS DOORS WITH ATCHITECT PRIOR TO INSTALLATION.
- 2. THE MECHANICAL CONTRACTOR SHALL VERIFY THE LOCATION OF ALL ROOF MOUNTED EQUIPEMENT AND ROOF PENETRATIONS WITH ATCHITECT AND STRUCTURAL ENGINEER PRIOR TO COMMENCING WORK.
- 3. THE CUTTING, NOTCHING AND BORING OF HOLES IN FLOOR, JOISTS AND WALL STUDS SHALL BE IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE NTERNATIONAL BUILDING CODE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING AS REQUIRED TO ACCOMMODATE WORK.
- 5. REFER TO THE MECHANICAL DIAGRAMS THAT APPLY TO THE WORK ON THIS DRAWING. THESE DIAGRAMS PROVIDE GUIDANCE AS TO THE INSTALLATION INTENT AND DO NOT

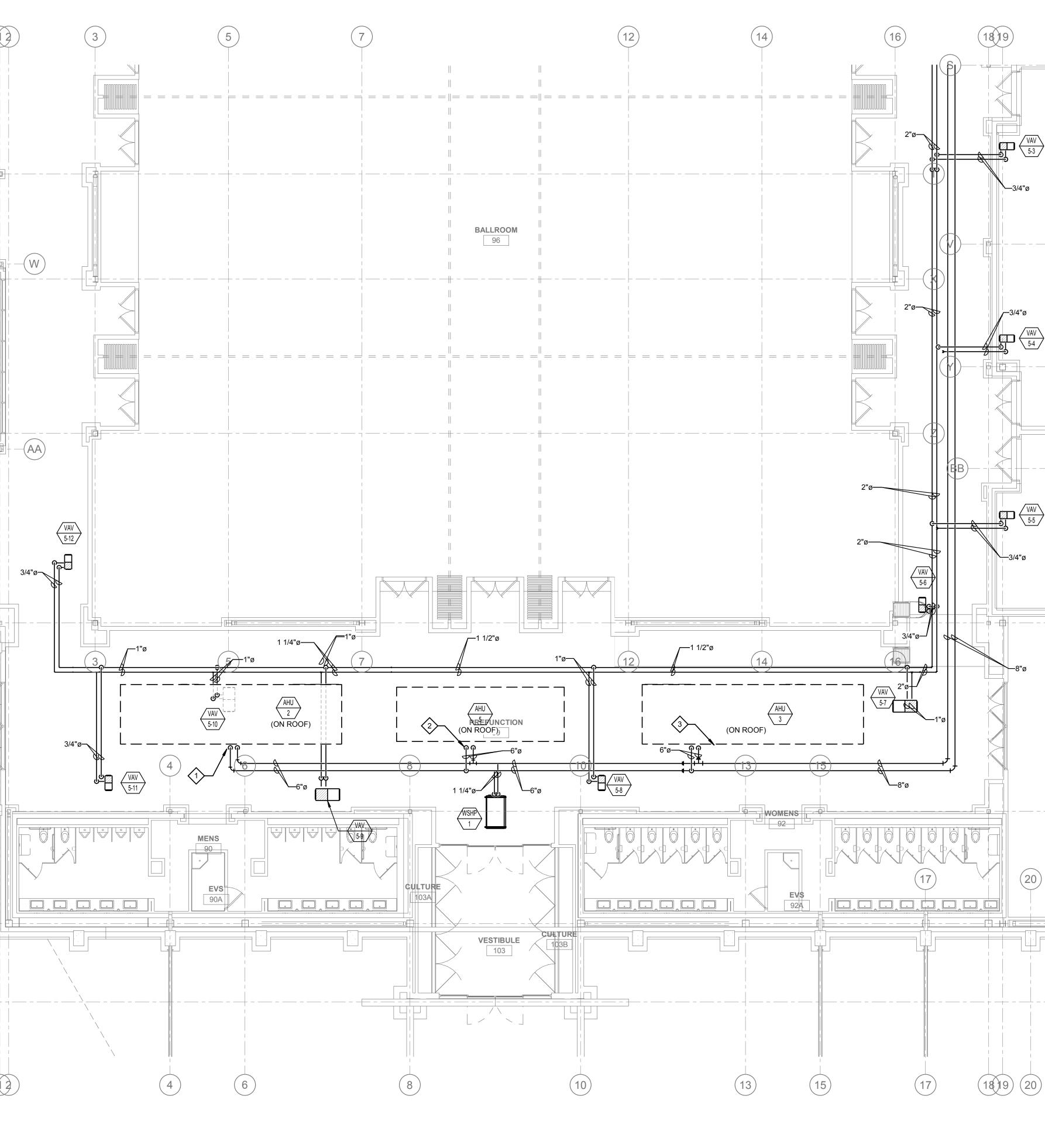
3. 6" CS/CR PIPING UP TO AHU-3.

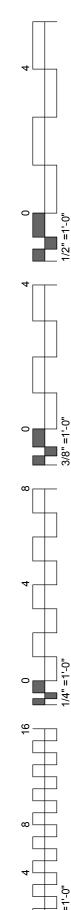
1. 6" CS/CR PIPING UP TO AHU-2. 2. 4" CS/CR PIPING UP TO AHU-5.

NECESSARILY SHOW ALL COMPONENTS REQUIRED.

SHEET NOTES:







(DD)-

MECHANICAL ENLARGED FLOOR PLAN -

1/8" = 1'-0"

