

EANES INDEPENDENT SCHOOL DISTRICT

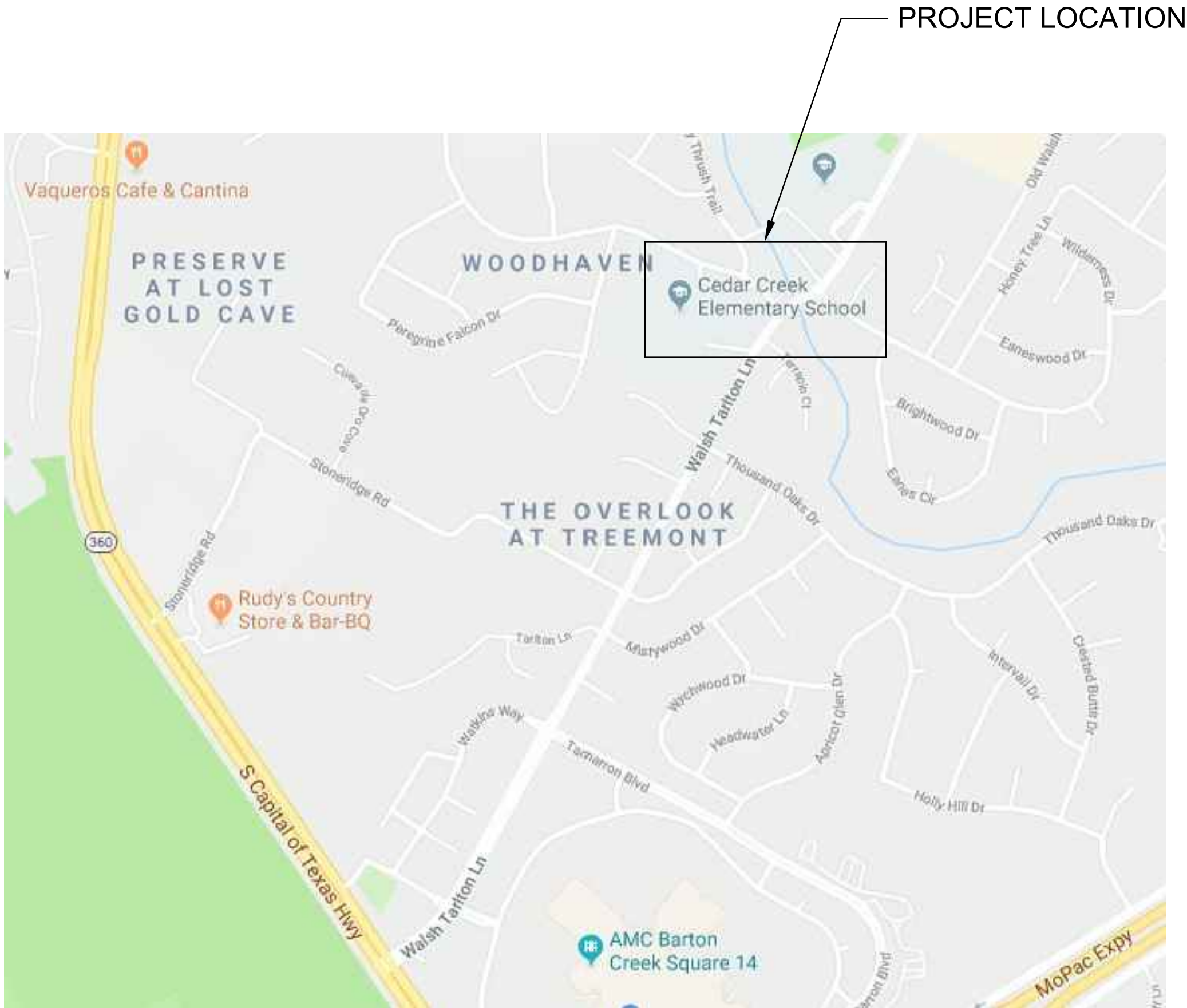
CEDAR CREEK ELEMENTARY SCHOOL
 HVAC RENOVATION

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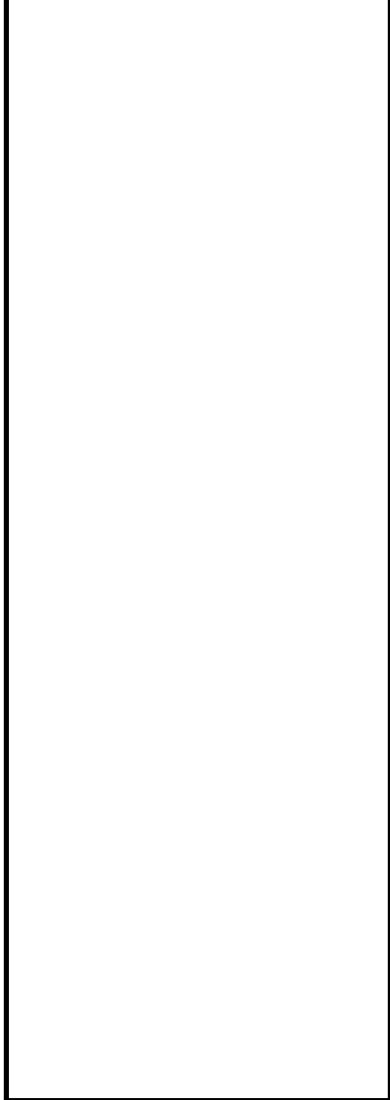
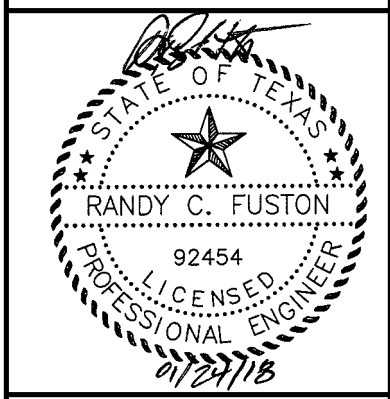
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EANES INDEPENDENT SCHOOL DISTRICT
CEDAR CREEK ELEMENTARY - HVAC RENOVATION
 3301 PINNACLE ROAD, AUSTIN, TX 78746

DATE	REVISION

DRAWN BY: SL
 PROJECT NO.: 39605
 DATE: 01/24/2018
 CHECKED BY: RCF
 SHEET:

CVR

LEGEND (NOTE: ALL SYMBOLS SHOWN ARE NOT NECESSARILY USED ON DRAWINGS.)				ABBREVIATIONS			
	EXISTING EQUIPMENT OR PIPE TO BE REMOVED.		POINT OF CONNECTION, NEW TO OLD DUCTWORK OR PIPE	A	AMPERES	H	HIGH, HEIGHT
	EXISTING DUCTWORK AND/OR AIR DEVICE TO BE REMOVED.		GATE VALVE	ABV	ABOVE	HW	DOMESTIC HOT WATER
			GLOBE VALVE	AD	ACCESS DOOR	HWR	DOMESTIC HOT WATER RETURN
	EXISTING EQUIPMENT OR PIPE TO REMAIN.		CHECK VALVE	AD	AUXILIARY DRAIN	HWR/HWS	HEATING WATER RETURN / SUPPLY
			BUTTERFLY VALVE	AFF	ABOVE FINISHED FLOOR	IN	INCHES
	EXISTING DUCTWORK AND/OR AIR DEVICE TO REMAIN.		BALL VALVE	AFG	ABOVE FINISHED GRADE	INSUL	INSULATION, INSULATE
			PLUG VALVE	ALUM	ALUMINUM	L	LONG, LENGTH
	DUCTWORK AND TRANSITION. 1ST DIMENSION NOTED IS VISIBLE DIMENSION.		CIRCUIT SETTER / BALANCING VALVE	ARCH	ARCHITECT, ARCHITECTURAL	LDB	LEAVING DRY BULB
			PRESSURE REDUCING VALVE	AV	ACID VENT	LWT	LEAVING WATER TEMPERATURE
	DUCTWORK SPLITTER DAMPER.		MOTOR/SOLENOID OPERATED VALVE	AW	ACID WASTE	LWB	LEAVING WET BULB
			STRAINER W/ BLOWDOWN GATE VALVE	BA VA	BALL VALVE	MAX	MAXIMUM
	BRANCH TAKEOFF FROM DUCT W/VOLUME DAMPER AT EA TAKEOFF. EVEN IF VOLUME DAMPER IS NOT SHOWN.		VALVE IN VERTICAL	BAS	BUILDING AUTOMATION SYSTEM	MIN	MINIMUM
			TEMPERATURE/ PRESSURE RELIEF VALVE	BF VA	BUTTERFLY VALVE	MTD	MOUNTED
	DUCTWORK: CEILING S/A DIFFUSERS. THROW IS FOUR-WAY UON.		DOMESTIC COLD WATER	BFF	BELOW FINISHED FLOOR	MTG HT	MOUNTING HEIGHT
			DOMESTIC HOT WATER	BLW	BELOW	MVD	MOTORIZED VOLUME DAMPER
	ELBOW UP OR DOWN IN DUCTWORK.		DOMESTIC HOT WATER RETURN	BTUH	BRITISH THERMAL UNITS / HOUR	OA	OUTSIDE AIR
			EXISTING DOMESTIC COLD WATER	CFM	CUBIC FEET PER MINUTE	OBD	OPPOSED BLADE DAMPER
	DUCTWORK: RISE OR FALL		EXISTING DOMESTIC HOT WATER	CHR/CHS	CHILLED WATER RETURN / SUPPLY	OH	OVERHEAD
			EXISTING DOMESTIC HOT WATER RETURN	CO	CLEANOUT	NIC	NOT IN CONTRACT
	HVAC EQUIPMENT.		SANITARY SEWER	CO2	CARBON DIOXIDE	NTS	NOT TO SCALE
			EXISTING SANITARY SEWER	CONT	CONTINUATION	PH	PHASE
	FLEXIBLE CONNECTIONS.		SANITARY VENT	COORD	COORDINATE	RA	RETURN AIR
			EXISTING SANITARY VENT	CW	DOMESTIC COLD WATER	RH	RELATIVE HUMIDITY
	WALL SUPPLY AIR REGISTER.		REFER TO ABBREVIATIONS FOR CONTENTS (E.G. CHS = CHILLED WATER SUPPLY)	CWR/CWS	CONDENSER WATER RETURN / SUPPLY	RD	ROOF DRAIN, ROOF DRAIN LEADER
			DIRECTION OF FLOW	D	CONDENSATE DRAIN LINE, EQUIP. DRAIN	RED	REDUCER
	WALL RETURN AIR GRILLE.		PIPE SIZE REDUCER	DEG F	DEGREES FAHRENHEIT	RELOC	RELOCATE, RELOCATED
			CLEANOUT	DIA	DIAMETER	REQ'D	REQUIRED
	CEILING SUPPLY AIR DIFFUSER.		P-TRAP	DN	DOWN	RPZ	REDUCED PRESSURE ZONE
			FLANGE CONNECTION	DFCO	DOUBLE FLOOR CLEANOUT	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
	CEILING RETURN OR EXHAUST AIR DEVICE.		UNION	DYCO	DOUBLE YARD CLEANOUT	SA	SUPPLY AIR
			DIRT LEG (6" LONG)	ETR	EXISTING TO REMAIN	SAN	SOIL & WASTE MAIN, SITE
	SUPPLY OR OUTSIDE AIR DUCTWORK SECTION.		TRAP	EDB	ENTERING DRY BULB TEMPERATURE	SEER	SEASONAL ENERGY EFFICIENCY RATIO
			DROP AT 45° ANGLE	EDF	ELECTRIC DRINKING FOUNTAIN	SD	SMOKE DAMPER W/ AD; STORM DRAIN
	RETURN AIR DUCTWORK SECTION.		ELBOW TURNING DOWN	EER	ENERGY EFFICIENCY RATIO	S/D	SPLITTER DAMPER
			ELBOW TURNING UP	EFF	EFFICIENCY	SM	GALVANIZED SHEET METAL
	EXHAUST AIR DUCTWORK SECTION.		HORIZONTAL FIRE DAMPER W/ ACCESS DOOR.	ELEC	ELECTRICAL	SP	STATIC PRESSURE, IN. H2O
			VERTICAL FIRE DAMPER W/ ACCESS DOOR.	EOD	EMERGENCY OVERFLOW DRAIN	SS	SANITARY SEWER BELOW GRADE
	COMB. FIRE/SMOKE DAMPER W/ACCESS DOOR.		MOTORIZED SOLENOID (24 VOLT UON) AND DAMPER	EQUIP	EQUIPMENT	SS	STAINLESS STEEL
			CO2 SENSOR	ESD	EMERGENCY STORM DRAIN	SW	SOFT WATER
	DUCT MOUNTED SMOKE DETECTOR. FURNISHED BY ELECTRICAL CONTRACTOR. INSTALLED BY THIS CONTRACTOR.		TEMPERATURE SENSOR	ESP	EXTERNAL STATIC PRESSURE	T&P	TEMPERATURE / PRESSURE RELIEF VALVE
			HUMIDITY SENSOR	EWB	ENTERING WET BULB TEMPERATURE	TEMP	TEMPERATURE
	AIR DEVICE MARK, CFM. SEE SCHEDULE.		HORIZONTAL FIRE DAMPER W/ ACCESS DOOR.	EWT	ENTERING WATER TEMPERATURE	THK	THICK, THICKNESS
			VERTICAL FIRE DAMPER W/ ACCESS DOOR.	EXH	EXHAUST AIR	TSTAT	THERMOSTAT
	COMB. FIRE/SMOKE DAMPER W/ACCESS DOOR.		MOTORIZED SOLENOID (24 VOLT UON) AND DAMPER	EXIST	EXISTING	TP	TRAP PRIMER
			CO2 SENSOR	F&I	FURNISH AND INSTALL	TW	TEMPERED WATER
	DUCT MOUNTED SMOKE DETECTOR. FURNISHED BY ELECTRICAL CONTRACTOR. INSTALLED BY THIS CONTRACTOR.		TEMPERATURE SENSOR	FCO	FLOOR CLEANOUT	TYP	TYPICAL
			HUMIDITY SENSOR	FD	FIRE DAMPER W/ AD	UF	UNDER FLOOR
	AIR DEVICE MARK, CFM. SEE SCHEDULE.		HORIZONTAL FIRE DAMPER W/ ACCESS DOOR.	FD	FLOOR DRAIN	UG	UNDER GROUND
			VERTICAL FIRE DAMPER W/ ACCESS DOOR.	FDC	FIRE DEPARTMENT CONNECTION	UON	UNLESS OTHERWISE NOTED
	COMB. FIRE/SMOKE DAMPER W/ACCESS DOOR.		MOTORIZED SOLENOID (24 VOLT UON) AND DAMPER	FHC	FIRE HOSE CONNECTION	V	SANITARY VENT
			CO2 SENSOR	FHV	FIRE HOSE VALVE	V	VOLT
	DUCT MOUNTED SMOKE DETECTOR. FURNISHED BY ELECTRICAL CONTRACTOR. INSTALLED BY THIS CONTRACTOR.		TEMPERATURE SENSOR	FLEX	FLEXIBLE DUCT	VD	VOLUME DAMPER
			HUMIDITY SENSOR	FSD	COMB. FIRE/SMOKE DAMPER W/ AD	W	WATT
	AIR DEVICE MARK, CFM. SEE SCHEDULE.		HORIZONTAL FIRE DAMPER W/ ACCESS DOOR.	FT	FEET	W	WIDE, WIDTH
			VERTICAL FIRE DAMPER W/ ACCESS DOOR.	G	GAS	W	SANITARY SOIL/WASTE
	COMB. FIRE/SMOKE DAMPER W/ACCESS DOOR.		MOTORIZED SOLENOID (24 VOLT UON) AND DAMPER	GL VA	GLOBE VALVE	W/	WITH
			CO2 SENSOR	GA VA	GATE VALVE	WCO	WALL CLEANOUT
	DUCT MOUNTED SMOKE DETECTOR. FURNISHED BY ELECTRICAL CONTRACTOR. INSTALLED BY THIS CONTRACTOR.		TEMPERATURE SENSOR	GR/GS	GLYCOL RETURN / SUPPLY	WG	WATER GAGE
			HUMIDITY SENSOR	GSH	GROSS SENSIBLE HEAT	WHA	WATER HAMMER ARRESTOR
	AIR DEVICE MARK, CFM. SEE SCHEDULE.		HORIZONTAL FIRE DAMPER W/ ACCESS DOOR.	GLH	GROSS LATENT HEAT	W/IN	WITHIN
			VERTICAL FIRE DAMPER W/ ACCESS DOOR.	GTH	GROSS TOTAL HEAT	W/OUT	WITHOUT
	COMB. FIRE/SMOKE DAMPER W/ACCESS DOOR.		MOTORIZED SOLENOID (24 VOLT UON) AND DAMPER	GV	GREASE VENT	YCO	YARD CLEANOUT
			CO2 SENSOR	GW	GREASE WASTE		

GENERAL NOTES - MECHANICAL

1. GENERAL NOTES APPLY TO ALL MECHANICAL SHEETS.
2. NORMAL DESIGN CONDITIONS:
SUMMER : OUTSIDE: 98°F DB/WB INSIDE: 75/63 DB/WB
WINTER : OUTSIDE: 25°F INSIDE: 70°F
3. INSTALL THE WORK IN ACCORDANCE WITH APPROVING AUTHORITY: CITY OF AUSTIN, TX
4. IN ANY CASE WHERE A PIPE OR DUCT SHOWN ON A PLAN SHEET DIFFERS FROM THAT SHOWN IN A SCHEMATIC OR DETAIL, USE THE LARGER OF THE TWO SIZES SHOWN.
5. PIPING AND DUCTWORK SHOWN ON EACH PLAN IS RUN ABOVE THE CEILING ON THE FLOOR WHERE IT IS SHOWN UNLESS, EXCEPT SANITARY PIPING IS RUN BELOW THE FLOOR WHERE IT IS SHOWN UNLESS.
6. THE DRAWINGS ARE DIAGNOSTIC ONLY, DO NOT SCALE. COORD. W/ OTHER TRADES AND W/ EXIST. CONDITIONS. DO NOT INSTALL OR FABRICATE ANY WORK SHOWN UNTIL ALL SUCH WORK IS FULLY COORDINATED. NOT ALL OFFSETS AND FITTINGS ARE SHOWN. F&I OFFSETS AND FITTINGS AS REQ'D BY FIELD CONDITIONS AS PART OF THE WORK.
7. ALL DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS. CONSTRUCT ALL DUCTWORK OWNING TO SMACNA 2 IN. PRESSURE CLASSIFICATION. SEAL ALL DUCTWORK TO SMACNA TYPE A SEAL CLASS.

GENERAL NOTES - HVAC DEMOLITION

1. GENERAL NOTES APPLY TO ALL DEMOLITION VIEWS.
2. REFER TO DRAWINGS FOR THE EXTENT OF WALL & CEILING DEMOLITION INCLUDED IN THE SCOPE OF WORK. REFER TO DETAIL SHEETS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
3. REMOVE ALL ITEMS NORMALLY INSTALLED BY THIS TRADE IN WALLS TO BE DEMOLISHED & AS OTHERWISE REQUIRED BY THE SCOPE OF WORK. PATCH ANY OPENINGS IN FLOORS, WALLS, ROOF, ETC. CREATED AS A RESULT OF THIS DEMOLITION, TO MATCH SURROUNDING CONSTRUCTION.
4. REMOVE ALL UNNEEDED AND/OR ABANDONED MATERIAL & EQUIPMENT BACK TO THE LIMITS OF CONTROL AREA. REMOVE ALL MATERIAL AT WHICH THE ITEM IS REQUIRED TO REMAIN IN SERVICE. CAP AS APPLICABLE. REINSULATE DUCTWORK WHEREVER INSULATED DUCTWORK IS PATCHED, CAPPED, ETC.
5. REFER TO THE LEGEND SHEET FOR LEGEND, ABBREVIATIONS, & GENERAL ABREVIATIONS, NOTATION, AND DIMENSIONS TO DIVISION 23 SPECIFICATIONS.
6. HEAVY LINES INDICATE NEW WORK; LIGHT LINES INDICATE APPROXIMATE EXISTING CONDITIONS. FIELD VERIFY PRIOR TO BIDDING.
7. COORDINATE ALL WORK SCHEDULING WITH ARCHITECT PRIOR TO BIDDING TO DETERMINE THE EXTENT OF AFTER-HOURS WORK, 4:30 P.M. TO 6:00 P.M. ON SUNDAY AND MONDAY WORK.
8. USE GALVANIZED STEEL FOR ALL DUCTWORK, WITH 2 IN. THICK, 3/4 LB. DENSITY BLANKET WRAP INSULATION UNLESS OTHERWISE INDICATED. DO NOT INSULATE EXHAUST DUCTWORK UNLESS OTHERWISE INDICATED.
9. COORDINATE LOCATION OF WALL-MOUNTED CONTROLS WITH ARCHITECT PRIOR TO ROUGH-IN.
10. MOUNT WALL SENSORS AS IN AFF. TO, TO ONE SIDE OF LIGHT SWITCHES WHERE BOTH OCCUR IN THE SAME LOCATION UNLESS OTHERWISE INDICATED.
11. DO NOT RUN AIR HANDLERS OR FANS UNTIL ALL INTERIOR CLEANING & PAINTING IS COMPLETE. CLEAN OR REPLACE ANY EQUIPMENT, DUCTWORK, ETC., WHICH IS FOULED DUE TO PAINT OR CONSTRUCTION DEBRIS.
12. WHERE WORK IS ADJACENT TO OCCUPIED SPACE, KEEP CONSTRUCTION AREA AT A NEGATIVE PRESSURE RELATIVE TO SUCH SPACES, & FILTER DISCHARGE AIR AS REQUIRED TO CONTAIN DUST.

GENERAL NOTES - HVAC

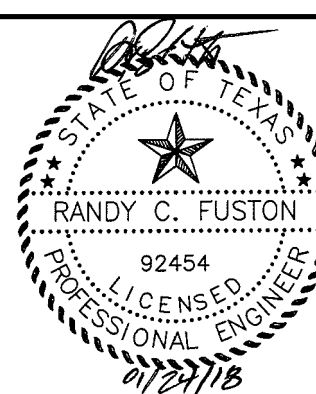
1. GENERAL NOTES APPLY TO ALL RENOVATION VIEWS.
2. REFER TO DIVISION 23 SPECIFICATIONS. REFER TO DETAIL SHEETS FOR ADDITIONAL INSTALLATION INSTRUCTIONS.
3. ALL DUCT DIMENSIONS INDICATED ARE CLEAR INSIDE DIMENSIONS. PRESSURE CLASSIFICATION FOR TERMINAL UNITS TO SMACNA 2 IN. CONSTRUCTURE CLASSIFICATION, AND ALL UPSTREAM OF TERMINAL UNITS TO SMACNA 6 IN. PRESSURE CLASSIFICATION UNLESS OTHERWISE INDICATED. SEAL ALL JOINTS TO 150 IN. HG. SEE SECTION 23.05.00 FOR FURTHER DETAILS. UNLESS NOTED OTHERWISE.
4. COORDINATE LOCATION OF WALL-MOUNTED CONTROLS WITH ARCHITECT PRIOR TO ROUGH-IN AND INSTALL PER DETAIL UNLESS OTHERWISE INDICATED.
5. DO NOT RUN AIR HANDLERS OR FANS UNTIL ALL INTERIOR CLEANING IS COMPLETE. CLEAN OR REPLACE ALL FILTERS PRIOR TO START. DUCTWORK, ETC., WHICH IS FOULED DUE TO PAINT OR CONSTRUCTION DEBRIS.

GENERAL NOTES - PLUMBING DEMOLITION

1. REFER TO DRAWINGS FOR THE EXTENT OF WALL & CEILING DEMOLITION INCLUDED IN THE SCOPE OF WORK. DASHED LIGHT LINES INDICATE PLUMBING WORK TO BE REMOVED.
2. REMOVE ALL ITEMS NORMALLY INSTALLED BY THIS TRADE IN WALLS TO BE DEMOLISHED & AS OTHERWISE REQUIRED BY THE SCOPE OF WORK. PATCH ANY OPENINGS IN FLOORS, WALLS, ROOF, CEILING, ETC. AS A RESULT OF THIS DEMOLITION TO MATCH SURROUNDING CONSTRUCTION.
3. REMOVE EXISTING FIXTURES, TRIM, ETC. AS INDICATED BY THE DRAWINGS AND AS REQUIRED BY THE SCOPE OF WORK. SALVAGE ALL FIXTURES TO BE REUSED AS PART OF THE SCOPE OF WORK AND SEND SAME FOR REFINISHING. ALL OTHERS ARE TO BE REMOVED AND NOT RETURNED TO THE OWNER, IF THE OWNER DOES NOT WANT THE REMOVED AND DISPOSED OF PROPERLY.
4. REMOVE ALL UNNEEDED AND/OR ABANDONED MATERIALS & EQUIPMENT BACK TO THE LIMITS OF CONSTRUCTION OR THE NEAREST POINT AT WHICH THE ITEM IS REQUIRED TO REMAIN IN SERVICE. CAP AS APPROPRIATE. REINSULATE ALL EXISTING PIPING WHERE INSULATION IS DISTURBED BY THE DEMOLITION.
5. OFFER ANY EQUIPMENT TO BE REMOVED OWNERS OWN AT LEAST TWO WEEKS PRIOR TO REMOVAL. PREPARE ANY SPECIAL EQUIPMENT WHICH OWNER WANTS TO RETAIN FOR REMOVAL BY OWNER. SO IT IS READY TO BE HOISTED OR MOVED.

GENERAL NOTES - PLUMBING

1. REFER TO LEGEND SHEET FOR LEGEND, ABBREVIATIONS, & GENERAL MECHANICAL NOTES, RE SPECIFICATIONS.
2. REFER TO THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR PIPING TO INDIVIDUAL FIXTURES. MINIMUM CW & HW PIPE SIZE IS 3/4". VENT IS 2", & WASTE IS 4" UNLESS OTHERWISE INDICATED.
3. AS SOON AS POSSIBLE AFTER AWARD OF CONTRACT, LAY OUT EXACT ROUGH-IN LOCATIONS OF ALL FIXTURES, DRAINS, WALL & FLOOR PENETRATIONS, ETC. PRIOR TO BEGINNING CUTTING OR CORING OPERATIONS. MAKE ADJUSTMENTS AS REQUIRED TO CLEAR STRUCTURAL OR OTHER OBSTRUCTIONS.
4. HEAVY LINES INDICATE NEW WORK; LIGHT LINES INDICATE APPROXIMATE EXISTING CONDITIONS. FIELD VERIFY EXISTING CONDITIONS PRIOR TO ROUGH-IN.

[illegible]

SINGLE PACKAGED AIR CONDITIONING UNIT - GAS HEAT SCHEDULE																																	
MARK (RTU)	SERVING	NOMINAL TONS	REFRIG.	VOLTS/ PH	MCA / MOCP	EER / SEER	COMPRESSOR		CONDENSER		FAN					COOLING COIL						HEATING (NATURAL GAS)			WEIGHT LB	EXISTING UNIT MODEL #	REMARKS						
							NO.	MAX. SUCTION °F	MAX. COND °F	EAT °F	TOTAL CFM	OA CFM	EXT SP IN. H ₂ O	MOTOR HP	DRIVE TYPE	EDB °F	EWB °F	MIN. GSH BTUH	MIN. GLH BTUH	MIN. GTH BTUH	MIN. # ROWS	INPUT BTUH	MIN. EFFIC.	MIN. # STAGES									
A1	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A2	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,800	360	0.75	1	BELT	75°	63°	39,839	10,161	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,11						
A3	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A4	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A5	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,200	360	0.75	1	BELT	75°	63°	27,722	9,778	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A6	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A7	CLASSROOM	5	R-410	208/3	25 / 35	11.8 / 14	1	50°	125°	105°	1,350	390	0.75	1	BELT	75°	63°	40,453	21,447	61,900	3	108,000	80%	2	700	TRANE YHC060	LENNOX KGB060S4B, NOTES 1,2,3,5,11						
A8	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,800	360	0.75	1	BELT	75°	63°	39,839	10,161	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,11						
A9	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	375	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A10	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A11	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A12	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A13	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A14	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,800	360	0.75	1	BELT	75°	63°	39,839	10,161	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,11						
A15	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,560	375	0.75	1	BELT	75°	63°	36,224	13,776	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,11						
A16	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,800	450	0.75	1	BELT	75°	63°	39,839	10,161	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,11						
A17	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A18	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,700	360	0.75	1	BELT	75°	63°	38,281	11,719	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,11						
A19	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,800	360	0.75	1	BELT	75°	63°	39,839	10,161	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,11						
A20	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,700	360	0.75	1	BELT	75°	63°	38,281	11,719	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,11						
A21	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,800	360	0.75	1	BELT	75°	63°	39,839	10,161	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,11						
A22	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	375	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,11						
A23	ENTRIES	10	R-410	208/3	43 / 50	12 / 13	1	50°	125°	105°	4,000	90	0.75	2	BELT	75°	63°	88,500	29,500	118,000	3	108,000	80%	2	1,200	TRANE YHC120	LENNOX KGB120H4B, NOTES 1,2,3,5,11						
A24	COMMONS	10	R-410	208/3	46 / 50	12 / 13	1	50°	125°	105°	4,000	780	0.75	2	BELT	75°	63°	87,500	24,700	112,200	3	108,000	80%	2	1,200	TRANE YHC120	LENNOX LGH120H4B, NOTES 1,2,3,5,6,11						
A25	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	255	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,5,11						
A26	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,800	360	0.75	1	BELT	75°	63°	39,839	10,161	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,10,11						
A27	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,800	360	0.75	1	BELT	75°	63°	39,839	10,161	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,10,11						
A28	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,5,9,10,11						
A29	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,5,9,10,11						
A30	CLASSROOM	4	R-410	208/3	21 / 30	11.5 / 14	1	50°	125°	105°	1,800	360	0.75	1	BELT	75°	63°	39,839	10,161	50,000	3	65,000	80%	1	600	TRANE YHC048	LENNOX KGB048S4B, NOTES 1,2,3,5,9,10,11						
A31	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,350	360	0.75	1	BELT	75°	63°	29,887	7,613	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,5,9,10,11						
A32	CLASSROOM	3	R-410	208/3	18 / 25	12.5 / 14	1	50°	125°	105°	1,200	500	0.75	1	BELT	75°	63°	27,722	9,778	37,500	3	65,000	80%	1	600	TRANE YHC036	LENNOX KGB036S4B, NOTES 1,2,3,5,9,11						
RTU-1	MEDIA CENTER	7.5	R-410	208/3	39 / 45	12.5 / 13	1	50°	125°	105°	2,500	500	0.75	2	BELT	80.4°	66°	63,940	20,000	83,940	3	130,000	80%	1	1,100	CARRIER 48HJD008	LENNOX LGH092H4B, NOTES 1,2,4,5,6,8,11						
RTU-2	MEDIA CENTER	7.5	R-410	208/3	39 / 45	12.2 / 12.9	1	50°	125°	105°	2,850	400	0.75	2	BELT	79.1°	66°	65,990	20,110	86,100	3	130,000	80%	1	1,100	CARRIER 48HJD009	LENNOX LGH102H4B, NOTES 1,2,4,5,6,8,11						
RTU-3	MEDIA CENTER	7.5	R-410	208/3	39 / 45	12.2 / 12.9	1	50°	125°	105°	2,850	465	0.75	2	BELT	79.5°	66°	65,990	20,110	86,100	3	130,000	80%	1	1,100	CARRIER 48HJD009	LENNOX LGH102H4B, NOTES 1,2,4,5,6,8,11						
RTU-4	ADMIN AREA	5	R-410	208/3	28 / 40	12.8 / 17.6	1	50°	125°	105°	1,500	300	0.75	1	BELT	79.3°	66°	40,200	15,670	55,870	3	65,000	80%	1	600	CARRIER 48HJD005	LENNOX LGH048S4B, NOTES 1,2,4,5,6,8,11						
RTU-5	KITCHEN	6	R-410	208/3	32 / 45	12 / 13.5	1	50°	125°	105°	2,200	100	0.75	1	BELT	76°	64°	52,540	16,135	68,675	3	65,000	80%	1	700	CARRIER 48HJD007	LENNOX LGH072S4B, NOTES 1,2,5,6,7,8,11						

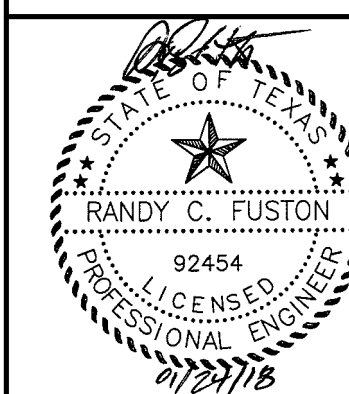
- NOTES:
1. FURNISH WITH FACTORY INSTALLED DISCONNECT SWITCH. PROVIDE STAINLESS STEEL HEAT EXCHANGER AND OVERFLOW DRAIN PAN SWITCH.
2. CAPACITIES AT NET A.R.I. CONDITIONS.
3. PROVIDE WITH CUSTOM ROOF CURB ADAPTOR. EXISTING UNITS ARE TRANE YCH.
4. PROVIDE WITH CUSTOM ROOF CURB ADAPTOR. EXISTING UNITS ARE CARRIER 48HJ.
5. PROVIDE UNIT WITH FACTORY MOUNTED SINGLE STAGE SENSIBLE ECONOMIZER.
6. PROVIDE UNIT WITH HOT GAS REHEAT COIL.
7. PROVIDE WITH CUSTOM ROOF CURB ADAPTOR. EXISTING UNITS ARE CARRIER 48TJD.
8. PROVIDE UNIT WITH FACTORY MOUNTED OUTSIDE AIR HOOD AND DAMPER.
9. RTU IN HORIZONTAL DISCHARGE POSITION.
10. RTU TO BE REPLACED IN PHASE 2.
11. FURNISH UNIT WITH FACTORY INSTALLED, NON-POWERED, WEATHER RESISTANT, WEATHER-PROOF GFCI RECEPTACLE.

VALENT HEAT RECOVERY UNIT SCHEDULE - PHASE 2																																						
MARK	MANUFACTURES Model #	CONFIG.	AIR PATH	FAN						ELECTRICAL			HP ENTHALPY CORE RECOVERY EXCHANGER						COOLING COIL (DX)						HOT GAS REHEAT COIL					HEATING NATRAL GAS					NOTES			
				CFM	RETURN AIR	SUPPLY AIR	EXT. SP IN. H2O	DRIVE TYPE	MOTOR BHP	MOTOR HP	VOLTS/ PH	FLA	MCA	MOCP	EDB °F	EWB °F	LDB °F	LWB °F	EDB °F	EWB °F	LDB °F	LWB °F	MBH TOTAL	MBH SENSIBLE	ROW	SP IN. H2O	FACE VEL	EDB °F	EWB °F	LDB °F	LWB °F	CAP MBH	MBH INPUT	MBH OUTPUT		TEMP RISE °F	TURN DOWN	APPROX. WEIGHT
ARTU-1	VPRC-352-30F-601-A-1GD	DOWN FLOW	OA EXH	4100 3800	5800 -	9900	0.75 0.75	DIRECT DIRECT	3 @ 2.03 2 @ .77	3 @ 3 2 @ 1	208/3	134	171	175	98 75	78 63	78.5 -	65.7 -	78.5	65.7	55.3	54.2	351.5	252.2	4	0.3	440	55.3	54.2	74	61.7	175	600	480	56	10:01	11,120	1,2,3,4,5,6,7,8,9,10,11



1. GENERAL NOTES APPLY TO ALL DEMOLITION VIEWS.
2. REFER TO DRAWINGS FOR THE EXTENT OF WALL & CEILING DEMOLITION INCLUDED IN THE SCOPE OF WORK. REFER TO DETAIL SHEETS FOR ADDITIONAL INSTALLATION INSTRUCTIONS.
3. REMOVE ALL ITEMS NORMALLY INSTALLED BY THIS TRADE IN WALLS TO BE DEMOLISHED & AS OTHERWISE REQUIRED BY THE SCOPE OF WORK. PATCH ANY OPENINGS IN FLOORS, WALLS, ROOF, ETC. CREATED AS A RESULT OF THIS DEMOLITION, TO MATCH SURROUNDING CONSTRUCTION.
4. REMOVE ALL UNNEEDED AND/OR ABANDONED MATERIALS & EQUIPMENT BACK TO THE LIMITS OF CONSTRUCTION. REMOVE MATERIAL AT WHICH THE ITEM IS REQUIRED TO REMAIN IN SERVICE. CAP AS APPROPRIATE. REINSTATE CEILING DUCTWORK WHEREVER INSULATED DUCTWORK IS PATCHED, CAULKED, ETC.
5. REFER TO THE LEGEND SHEET FOR LEGEND, ABBREVIATIONS, & GENERAL MECHANICAL NOTATIONS. REFER TO DIVISION 25 FOR DETAILS.
6. HEAVY LINES INDICATE NEW WORK. LIGHT LINES INDICATE APPROXIMATE EXISTING CONDITIONS. FIELD VERIFY PRIOR TO BIDDING.
7. COORDINATE ALL WORK SCHEDULING WITH ARCHITECT PRIOR TO BIDDING TO DETERMINE THE EXTENT OF AFTER-HOURS WORK REQUIRED, & INCLUDE SUCH AFTER-HOURS WORK IN THE BIDDING PRICE.
8. USE GALVANIZED STEEL FOR ALL DUCTWORK, WITH 2 IN. THICK, 34 LB. DENSITY BLANKET WRAP INSULATION UNLESS OTHERWISE INDICATED. DO NOT INSULATE EXHAUST DUCTWORK UNLESS OTHERWISE INDICATED.
9. COORDINATE LOCATION OF WALL-MOUNTED CONTROLS WITH ARCHITECT PRIOR TO ROUGH-IN.
10. MOUNT WALL SENSORS 48 IN. AFF. 8 IN. TO ONE SIDE OF LIGHT SWITCHES WHERE BAU IS OCCUR IN THE SAME LOCATION, UNLESS OTHERWISE INDICATED.
11. DO NOT RUN AIR HANDLERS OR FANS UNTIL ALL INTERIOR CLEANING & PAINTING IS COMPLETE. CLEAN OR REPLACE ANY EQUIPMENT, DUCTWORK, ETC., WHICH IS FOULED DUE TO PAINT OR CONSTRUCTION DEBRIS.
12. WHERE WORK IS ADJACENT TO OCCUPIED SPACE, KEEP CONSTRUCTION AREA AT ALL TIMES UNDER POSITIVE PRESSURE RELATIVE TO SUCH SPACES, & FILTER DISCHARGE AIR AS REQUIRED TO CONTAIN DUST.

1. REMOVE TEMPERATURE SENSOR.
2. EXISTING TEMPERATURE SENSOR AND HUMIDITY SENSOR TO REMAIN
3. EXISTING TEMPERATURE SENSOR TO BE REMOVED IN PHASE 2.



DATE	REVISION

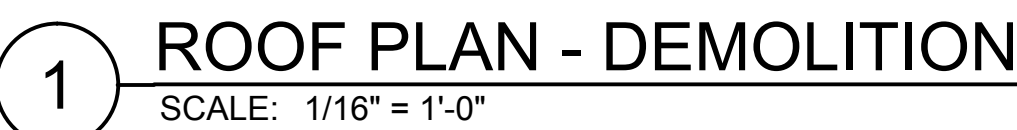
DRAWN BY: SL

PROJECT NO.: 39605

DATE: 01/24/2018

CHECKED BY: RCF

SHEET:



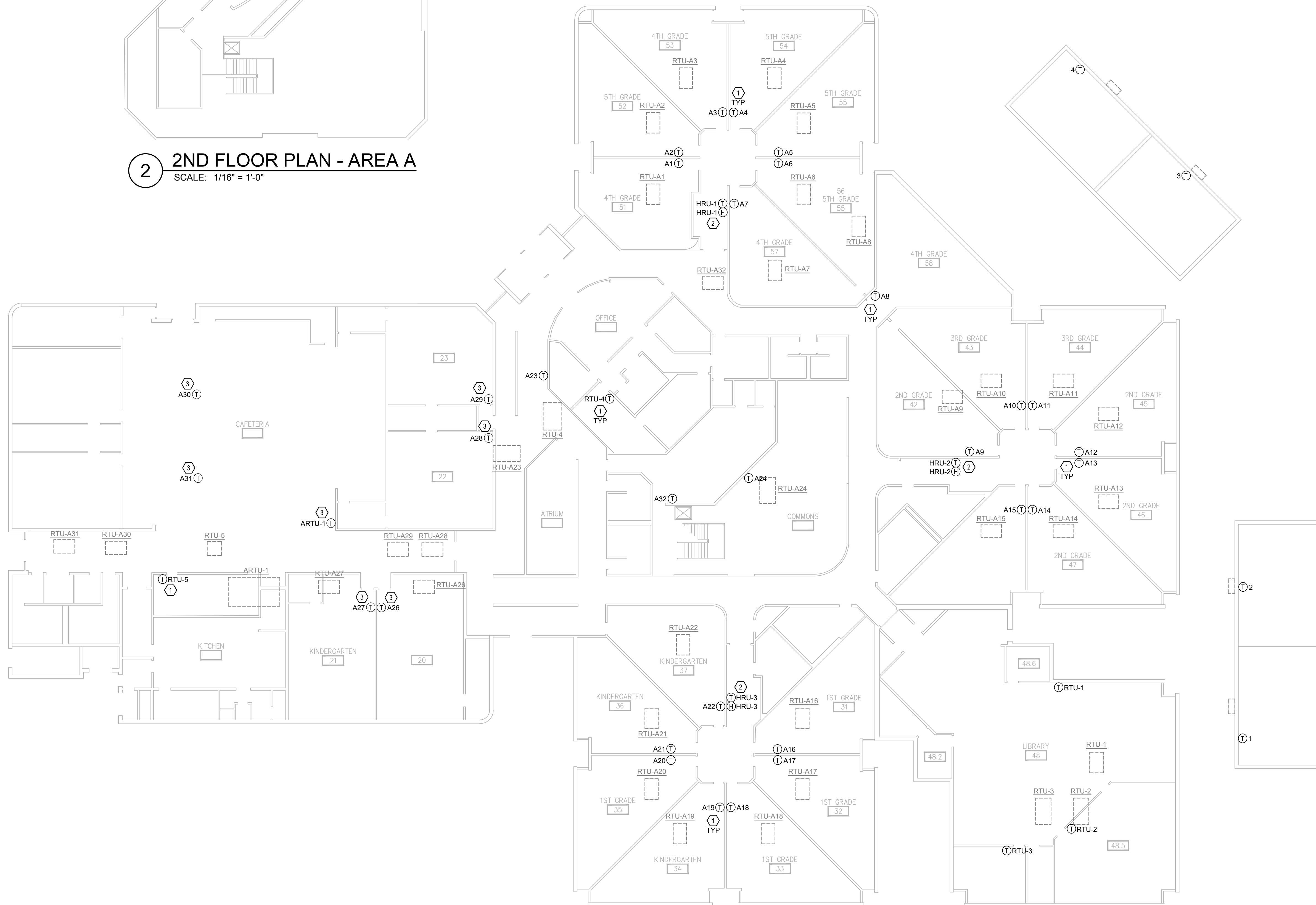
1. GENERAL NOTES APPLY TO ALL DEMOLITION VIEWS.
2. REFER TO DRAWINGS FOR THE EXTENT OF WALL & CEILING DEMOLITION INCLUDED IN THE SCOPE OF WORK. REFER TO DETAIL SHEETS FOR ADDITIONAL INSTALLATION INSTRUCTIONS.
3. REMOVE ALL ITEMS NORMALLY INSTALLED BY THIS TRADE IN WALLS TO BE DEMOLISHED & AS OTHERWISE REQUIRED BY THE SCOPE OF WORK. PATCH ANY OPENINGS IN FLOORS, WALLS, ROOF, ETC. CREATED AS A RESULT OF THIS DEMOLITION, TO MATCH SURROUNDING CONSTRUCTION.
4. REMOVE ALL UNEEDED AND/OR ABANDONED MATERIALS & EQUIPMENT BACK TO THE LIMITS OF CONSTRUCTION. REMOVE MATERIAL AT WHICH THE ITEM IS REQUIRED TO REMAIN IN SERVICE. CAP AS APPROPRIATE. REINSTATE CEILING DUCTWORK WHEREVER INSULATED DUCTWORK IS PATCHED, CAULKED, ETC.
5. REFER TO THE LEGEND SHEET FOR LEGEND, ABBREVIATIONS, & GENERAL MECHANICAL NOTATIONS. REFER TO DIVISIONS FOR ADDITIONAL DETAILS.
6. HEAVY LINES INDICATE NEW WORK. LIGHT LINES INDICATE APPROXIMATE EXISTING CONDITIONS. FIELD VERIFY PRIOR TO BIDDING.
7. COORDINATE ALL WORK SCHEDULING WITH ARCHITECT PRIOR TO BIDDING TO DETERMINE THE EXTENT OF AFTER-HOURS WORK REQUIRED, & INCLUDE SUCH AFTER-HOURS WORK IN THE BIDDING.
8. USE GALVANIZED STEEL FOR ALL DUCTWORK, WITH 2 IN. THICK, 34 LB. DENSITY BLANKET WRAP INSULATION UNLESS OTHERWISE INDICATED. DO NOT INSULATE EXHAUST DUCTWORK UNLESS OTHERWISE INDICATED.
9. COORDINATE LOCATION OF WALL-MOUNTED CONTROLS WITH ARCHITECT PRIOR TO ROUGH-IN.
10. MOUNT WALL SENSORS 48 IN. AFF. 8 IN. TO ONE SIDE OF LIGHT SWITCHES WHERE BAU IS OCCUR IN THE SAME LOCATION, UNLESS OTHERWISE INDICATED.
11. DO NOT RUN AIR HANDLERS OR FANS UNTIL ALL INTERIOR CLEANING & PAINTING IS COMPLETE. CLEAN OR REPLACE ANY EQUIPMENT, DUCTWORK, ETC., WHICH IS FOULED DUE TO PAINT OR CONSTRUCTION DEBRIS.
12. WHERE WORK IS ADJACENT TO OCCUPIED SPACE, KEEP CONSTRUCTION AREA AT ALL TIMES UNDER POSITIVE PRESSURE RELATIVE TO SUCH SPACES, & FILTER DISCHARGE AIR AS REQUIRED TO CONTAIN DUST.

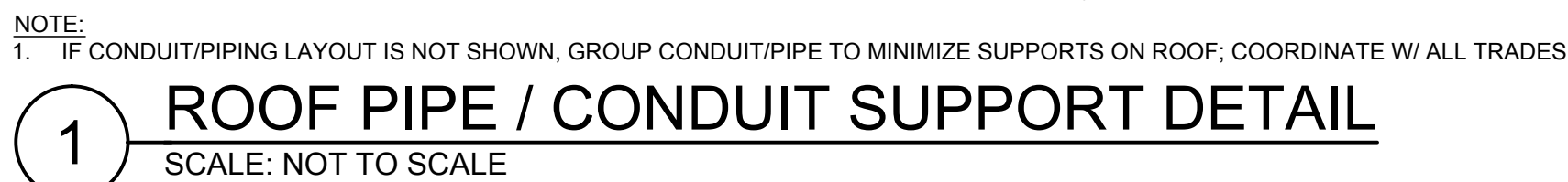
1. REFER TO DRAWINGS FOR THE EXTENT OF WALL & CEILING DEMOLITION INCLUDED IN THE SCOPE OF WORK. DASHED LIGHT LINES INDICATE PLUMBING WORK TO BE REMOVED.
2. REMOVE ALL ITEMS NORMALLY INSTALLED BY THIS TRADE IN WALLS TO BE DEMOLISHED & AS OTHERWISE REQUIRED BY THE SCOPE OF WORK. PATCH ANY OPENINGS IN FLOORS, WALLS, ROOF, ETC. CREATED AS A RESULT OF THIS DEMOLITION, TO MATCH SURROUNDING CONSTRUCTION.
3. REMOVE EXISTING FIXTURES, TRIM, ETC. AS INDICATED BY THE DRAWINGS AND AS REQUIRED BY THE SCOPE OF WORK. SALVAGE ALL FIXTURES TO BE REUSED AS PART OF THE SCOPE OF WORK, CLEAN AND STORE FOR REINSTALLATION. OBTAIN A RELEASE OF LIABILITY FROM THE ORIGINAL OWNER, IF THE OWNER DOES NOT WANT THEM. REMOVE AND DISPOSE OF WORK. PROPERLY.
4. REMOVE ALL UNNEEDED AND/OR ABANDONED MATERIALS & EQUIPMENT BACK TO THE LIMITS OF CONSTRUCTION OR THE NEAREST POINT AT WHICH THE ITEM IS OFFERED TO REMAIN IN SERVICE. CAP AS APPROPRIATE. REINSULATE ALL EXISTING INSULATION NEVER REUSED OR ABANDONED.
5. OFFER ANY EQUIPMENT TO BE REMOVED TO OWNER AT LEAST TWO WEEKS PRIOR TO REMOVAL. PREPARE ANY SUCH EQUIPMENT WHICH OWNER WANTS TO RETAIN FOR REMOVAL BY OWNER, SO IT IS READY TO BE HOISTED OR MOVED.

1. REMOVE EXISTING ROOF TOP UNIT, CAP GAS AND CONDENSATE PIPING FOR FUTURE RECONNECTION. PRESERVE ROOF CURB FOR FUTURE USE. SEAL DUCTS BELOW UNIT DURING DEMOLITION AND CONSTRUCTION PHASES.
2. EXISTING GAS PIPING TO REMAIN.
3. EXISTING HEAT RECOVERY UNIT AND ASSOCIATED CONDENSING UNITS TO REMAIN.
4. EQUIPMENT IN THIS AREA TO BE REPLACED IN PHASE 2.
5. AREA C IS NOT WITHIN THE SCOPE OF THIS CONTRACT.

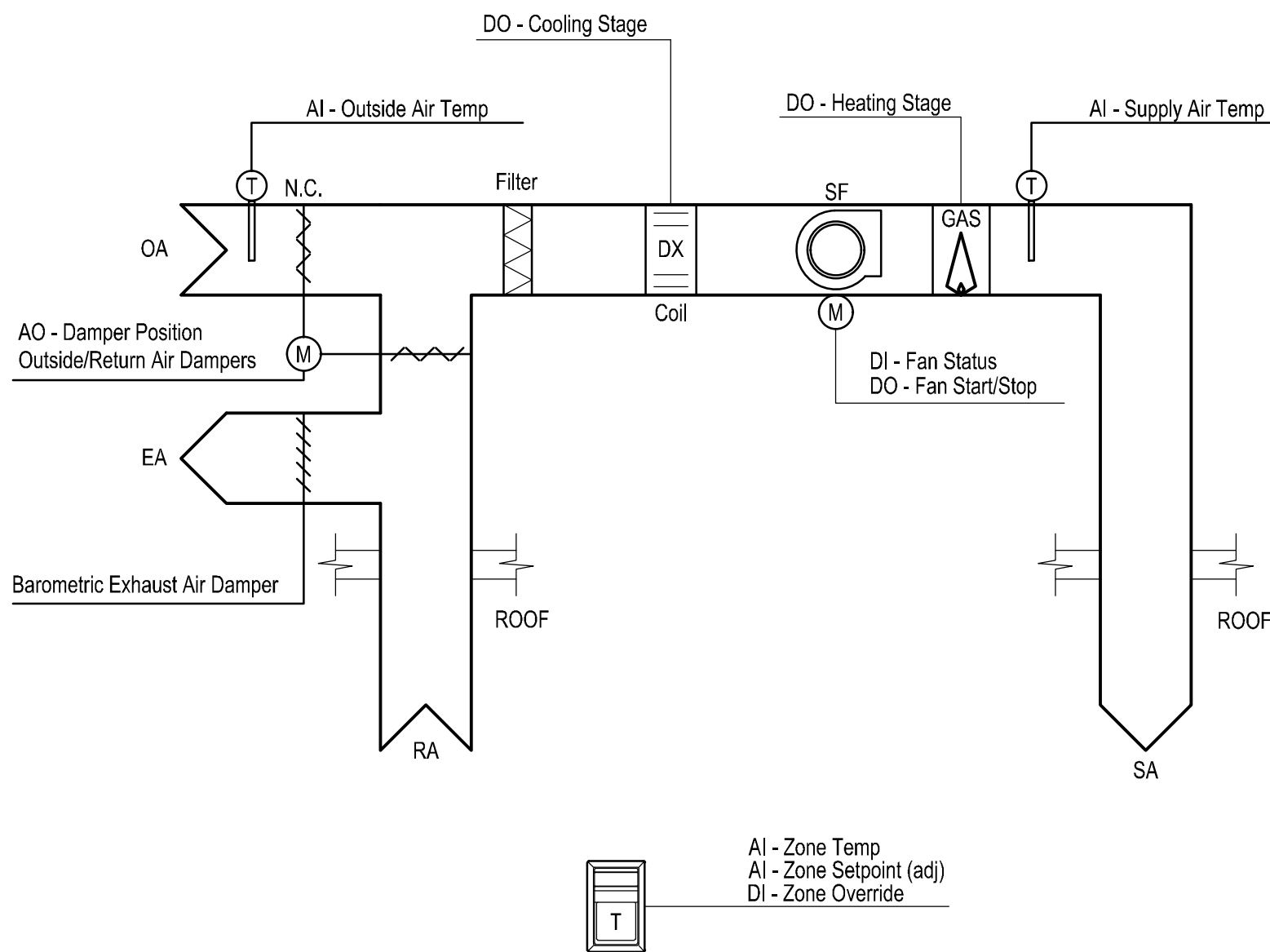


DATE	REVISION
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PROJECT NO.: 39605	
DATE: 01/24/2018	
CHECKED BY: RCF	
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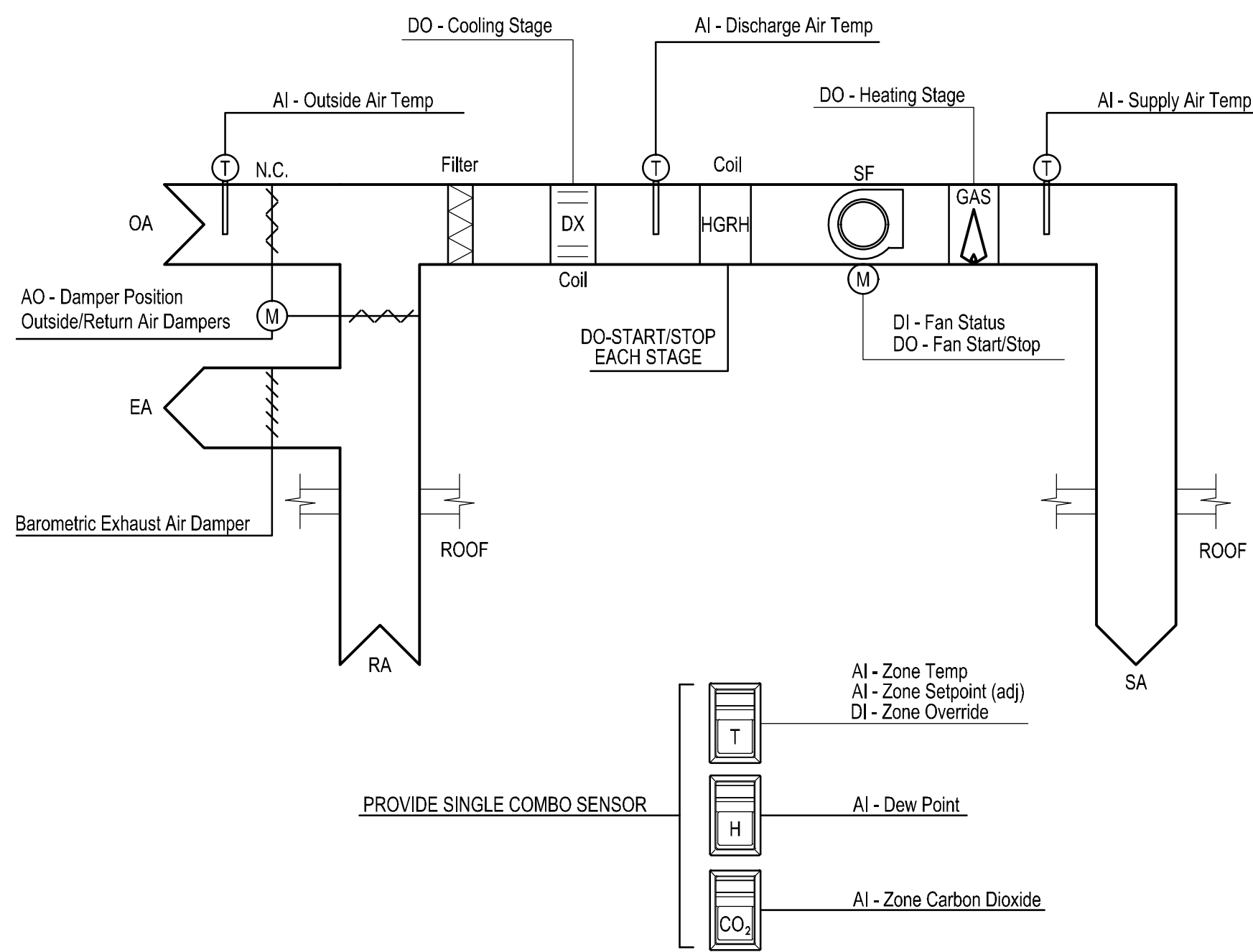




- PACKAGED RTU w/ GAS HEAT CONTROL SEQUENCE:
- Enable unit based on one or more of the following:
 - Occupancy schedule
 - Night setback/setup
 - Local override at zone thermostat.
 - Cooling Control
 - Enable cooling coil only if Supply Fan status is ON
 - Cycle DX cooling coil ON when the zone temperature is above the zone cooling setpoint.
 - Cycle DX cooling coil OFF when the zone temperature is 2°F below the cooling setpoint.
 - Heating Control
 - Enable gas heat only if Supply Fan status is ON
 - Cycle gas heat stages ON when the zone temperature is below the scheduled heating setpoint.
 - Cycle gas heat stages OFF when the zone temperature is 2°F above the heating setpoint.
 - Occupancy Schedule (determined by Owner)
 - Occupied Mode:
 - Cooling setpoint: 75°F (adj.)
 - Heating setpoint 68°F (adj.)
 - 4.1.2.1. Maintain a minimum deadband of 5°F between the cooling and heating setpoints.
 - 4.1.3. Optimum Start: Units shall begin morning start-up sequence to ensure that the zone temperature is reached by the occupied time.
 - Unoccupied Mode (Night Setback/Setup):
 - Cooling setpoint: 65°F (adj.)
 - Heating setpoint: 55°F (adj.)
 - Override Mode:
 - If the unit is in the Unoccupied Mode of operation, and the locally mounted pushbutton on the zone thermostat is pushed, run the unit in the Occupied Mode for 60 minutes (adj.)
 - Zone Setpoint Adjust
 - Thermostat setpoint adjustment shall raise or lower the cooling and heating setpoints simultaneously to maintain the deadband set via the BMS
 - Limit thermostat setpoint adjustment to +/-2°F (adj.).
 - Fan Control
 - Cycle fan with cooling coil or gas heat in all operating modes.
 - Economizer Control:
 - Command the Outside Air Damper to fully open (100%) under the following conditions:
 - Supply Fan is commanded on, AND
 - Outside air temperature is between 45°F and 55°F, AND
 - Zone temperature is higher than 2°F below the cooling setpoint.
 - Otherwise, command the Outside Air Damper to fully closed (0%). Ventilation air provided by a separate unit.
 - Return Air Damper shall be in reverse action to the Outside Air Damper.
 - Monitoring
 - Monitor the points listed in the equipment graphic.
 - Alarms:
 - Initiate and alarm if the zone temperature is more than 5°F (adj.) outside the control range.
 - Graphics Screen
 - Monitor the points shown in the Points Summary Table.
 - Alarm Shutdown
 - Shutdown unit via BMS
 - General Fire Alarm
 - Emergency Shutdown - via EPO switch

Points Summary Table												
Point Name	Hardware Points				Software Points					Show on Graphic	Notes	
	AI	DI	AO	DO	AV	BV	Loop	Sched	Trend			Alarm
Zone Temperature	X								X		X	
Zone Setpoint Adjust	X										X	
Zone Override		X								X		X
Supply Air Temperature	X								X		X	
Outside Air Temperature	X								X		X	
Fan Status		X							X		X	
Fan Start/Stop			X						X		X	1
Cooling Coil Stage			X						X		X	2
Gas Heat Stage			X						X		X	2
Outside Air Damper			X						X		X	
Occupied Zone Cooling Setpoint				X					X		X	
Unoccupied Zone Cooling Setpoint				X					X		X	
Occupied Zone Heating Setpoint				X					X		X	
Unoccupied Zone Heating Setpoint				X					X		X	
Zone Override Time (min)			X								X	
Occupancy Status							X	X				
Zone Temperature Alarm Setpoint (°F)				X								
High Zone Temperature										X		
Low Zone Temperature										X		
High Supply Air Temperature										X		
Low Supply Air Temperature										X		
Supply Fan Failure										X		
TOTALS	4	2	1	3	6	0	0	1	14	5		15

- NOTES:
- INTERLOCK SMOKE DETECTOR W/ SAFETY CONTROL.
 - VERIFY QUANTITY OF STAGES W/ UNIT SUPPLIED



- PACKAGED RTU w/ GAS HEAT AND HGRH CONTROL SEQUENCE:
- Enable unit based on one or more of the following:
 - Occupancy schedule
 - Night setback/setup
 - Local override at zone thermostat
 - Dehumidification control
 - Cooling Control
 - Enable cooling coil only if Supply Fan Status is ON
 - Cycle DX cooling coil ON when the zone temperature is above the zone cooling setpoint.
 - Cycle DX cooling coil OFF when the zone temperature is 2°F below the cooling setpoint.
 - Dehumidification Control (overrides Cooling Control if enabled)
 - Enable Dehumidification Control if zone dew point temperature rises above the zone dew point setpoint
 - Cycle DX cooling coil to maintain a discharge air temperature of 53°F (adj.)
 - Cycle HGRH coil ON if the zone temperature is 2°F below the zone cooling setpoint
 - Unoccupied Mode
 - Zone dew point setpoint: 57°F (adj.)
 - Cycle DX cooling coil to maintain a discharge air temperature of 53°F (adj.)
 - Cycle HGRH coil ON if the zone temperature is 2°F below the zone cooling setpoint
 - Heating Control
 - Enable gas heat only if Supply Fan Status is ON
 - Cycle gas heat stages ON when the zone temperature is below the scheduled heating setpoint.
 - Cycle gas heat stages OFF when the zone
 - Zone Setpoint Adjust
 - Thermostat setpoint adjustment shall raise or lower the cooling and heating setpoints simultaneously to maintain the deadband set via the BMS
 - Limit thermostat setpoint adjustment to +/-2°F (adj.).
 - Fan Control
 - Cycle fan with cooling coil or gas heat in all operating modes.
 - Damper Control
 - The Outside Air Damper position shall be set as the maximum of the command signals of the "Ventilation Control" section and the "Economizer Control" section.
 - Ventilation Control
 - In Occupied Mode, modulate the Outside Air Damper, via PID loop, between fully closed (0%) and fully open (100%) to maintain the zone CO₂ setpoint of 1,100 ppm (adj.).
 - In Unoccupied Mode, set the Outside Air
 - Economizer Control
 - Command the Outside Air Damper position to fully open (100%) if the following conditions are met:
 - Supply Fan is commanded on, AND
 - Outside air temperature is between 45°F and 55°F, AND
 - Zone temperature is higher than 2°F below the cooling setpoint.
 - Otherwise, command the Outside Air Damper to fully closed (0%).
 - Monitoring
 - Monitor the points listed in the equipment graphic.
 - Alarms:
 - Initiate an alarm if the zone temperature is more than 5°F (adj.) outside the control range.
 - Initiate an alarm if the zone dew point is more than 5°F (adj.) above the zone dew point setpoint.
 - Graphics Screen
 - Monitor the points shown in the equipment graphic.
 - Alarm Shutdown
 - Shutdown unit via BMS
 - General Fire Alarm
 - Emergency Shutdown - via EPO switch

Points Summary Table												
Point Name	Hardware Points				Software Points					Show on Graphic	Notes	
	AI	DI	AO	DO	AV	BV	Loop	Sched	Trend			Alarm
Zone Temperature	X								X		X	
Zone Setpoint Adjust	X										X	
Zone Override		X							X		X	
Zone Dew Point	X											
Zone Carbon Dioxide	X											
Supply Air Temperature	X								X		X	
Discharge Air Temperature	X											
Outside Air Temperature	X								X		X	
Fan Status		X							X		X	
Fan Start/Stop				X					X		X	1
Cooling Coil Stage				X					X		X	2
HGRH Coil Stage				X								2
Gas Heat Stage				X					X		X	2
Outside Air Damper			X						X		X	
Occupied Zone Cooling Setpoint					X				X		X	
Unoccupied Zone Cooling Setpoint					X				X		X	
Occupied Zone Dew Point Setpoint					X							
Unoccupied Zone Dew Point Setpoint					X							
Occupied Zone Heating Setpoint					X				X		X	
Unoccupied Zone Heating Setpoint					X				X		X	
Zone Carbon Dioxide Setpoint (ppm)					X							
Zone Override Time (min)					X						X	
Occupancy Status								X	X			
										X		
Zone Temperature Alarm Setpoint (°F)					X							
Zone Dew Point Alarm Setpoint (°F)					X							
High Zone Temperature										X		
Low Zone Temperature										X		
High Supply Air Temperature										X		
Low Supply Air Temperature										X		
Supply Fan Failure										X		
TOTALS	7	2	1	4	10	0	0	1	14	6		15

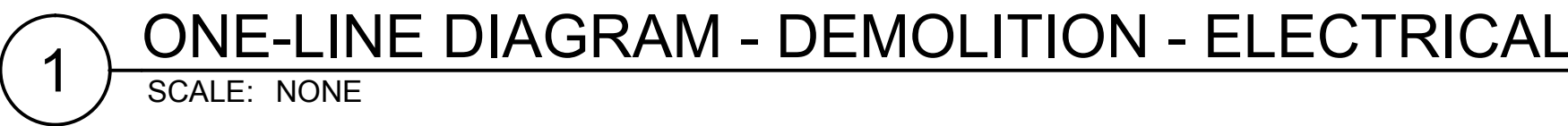
- NOTES:
- INTERLOCK SMOKE DETECTOR W/ SAFETY CONTROL.
 - VERIFY QUANTITY OF STAGES W/ UNIT SUPPLIED

(UNITS A1-A23, A25-32, AND RTU-5) PACKAGED RTU w/ GAS HEAT CONTROL DIAGRAM

SCALE: NONE

(UNITS A24 AND RTU-1,2,3,4) PACKAGED RTU w/ GAS HEAT AND HGRH CONTROL DIAGRAM

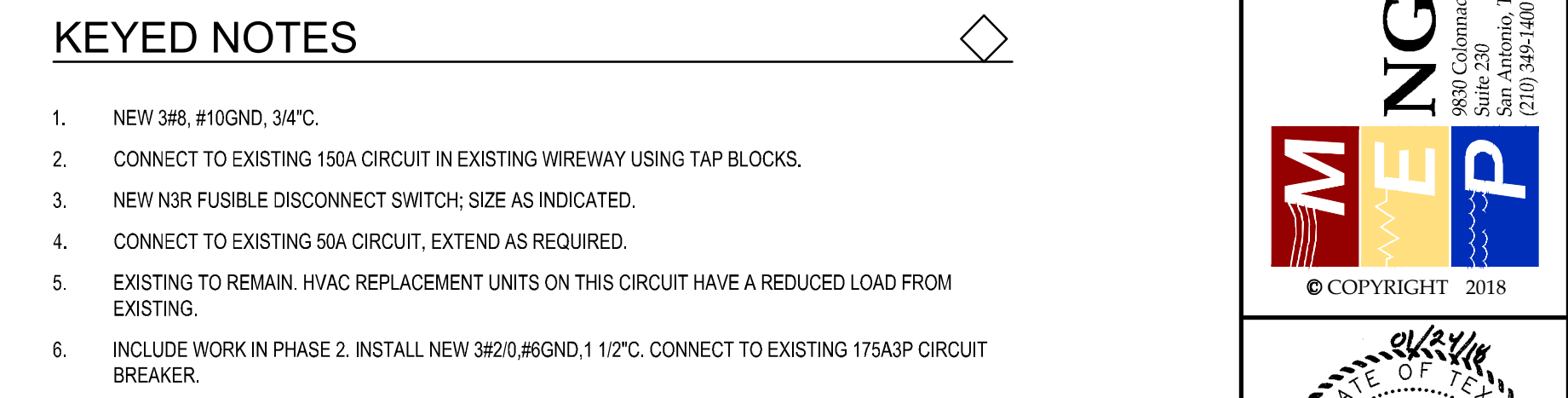
SCALE: NONE



1. THIN SOLID LINES INDICATE APPROXIMATE EXISTING CONDITIONS TO REMAIN, ION.
2. THICK, SHORT DASHED LINES INDICATE WORK TO BE REMOVED.
3. COORDINATE SCHEDULING OF WORK WITH GENERAL CONTRACTOR PRIOR TO BIDDING TO DETERMINE THE EXTENT OF AFTER-HOURS WORK REQUIRED, AND INCLUDE SUCH AFTER-HOURS WORK.
4. ELECTRICAL WORK SHOWN IS FOR INFORMATION ONLY AND IS NOT INTENDED TO INDICATE ALL EXISTING CONDITIONS, INFORMATION IS BASED ON EXISTING DRAWINGS AND/OR LIMITED FIELD OBSERVATION.
5. FIELD VERIFY.
6. MAINTAIN CONTINUITY OF EXISTING DEVICES OR CIRCUITS TO REMAIN IN OPERATION THAT MAY BE AFFECTED DURING THE RENOVATION, AND LEAVE THEM IN AN OPERATIONAL CONDITION.
7. REPAIR TO MATCH SURROUNDING CONSTRUCTION ANY OPENINGS IN CEILINGS, FLOORS, WALLS, ETC., CREATED AS A RESULT OF THIS RENOVATION.

1. DEMOLISH EXISTING CONNECTION TO UNIT AND ASSOCIATED DISCONNECT SWITCH. DEMOLISH DISCONNECT SWITCH, CONDUIT, AND CONDUCTORS BACK TO EXISTING WIREWAY (ON ROOF ADJACENT TO RTU'S).
2. DEMOLISH EXISTING CONNECTION TO UNIT AND ASSOCIATED DISCONNECT SWITCH. DEMOLISH DISCONNECT SWITCH, DEMOLISH CONDUIT AND CONDUCTORS BACK TO DISCONNECT SWITCH.
3. INCLUDE THIS WORK IN PHASE 2. DEMOLISH EXISTING CONNECTION TO UNIT. DEMOLISH CONDUIT AND CONDUCTORS BACK TO MDP1.

DATE	REVISION
DRAWN BY: BG	
PROJECT NO.: 39605	
DATE: 01/24/2018	
CHECKED BY: APS	
SHEET:	



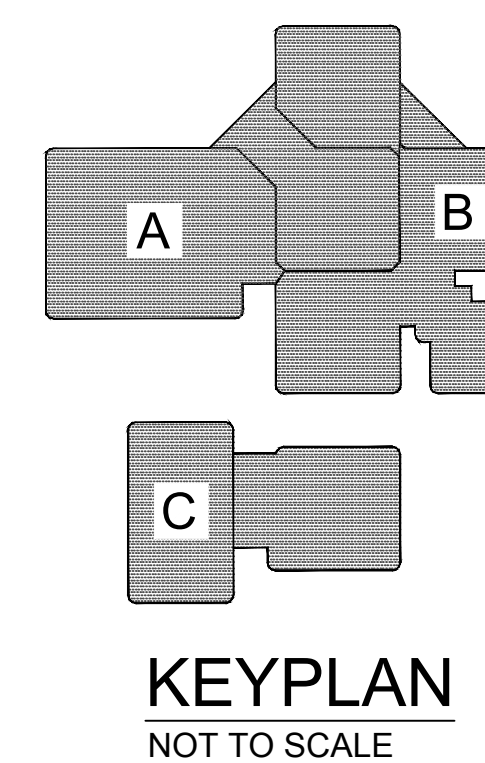
1 ONE-LINE DIAGRAM - NEW - ELECTRICAL
SCALE: NONE

EXISTING PANELBOARD AC-1											
VOLTAGE: 208Y120 VOLT 3 PHASE 4 WIRE						LOCATION: ROOF					
250A MAIN LUGS ONLY						MOUNTING: N3R SURFACE					
BUSES: MAIN - 250A NEUTRAL - 100% EQUIPMENT GROUND						IsC = 65,000 ARMS SYM AVAILABLE					
VAL	VAR	VAO	LOAD	BKR	CKT	CKT	BKR	LOAD	VAL	VAR	VAO
0	0	2328	RTU-A1	25/3	1	2	30/3	RTU-A2	0	0	2796
0	0	2328	"	"	3	4	"	"	0	0	2796
0	0	2328	"	"	5	6	"	"	0	0	2796
0	0	2328	RTU-A3	25/3	7	8	25/3	RTU-A4	0	0	2328
0	0	2328	"	"	9	10	"	"	0	0	2328
0	0	2328	"	"	11	12	"	"	0	0	2328
0	0	2328	RTU-A5	25/3	13	14	25/3	RTU-A6	0	0	2328
0	0	2328	"	"	15	16	"	"	0	0	2328
0	0	2328	"	"	17	18	"	"	0	0	2328
0	0	2796	RTU-A8	30/3	19	20	20/1	SPACE	0	0	0
0	0	2796	"	"	21	22	20/1	SPACE	0	0	0
0	0	2796	"	"	23	24	20/1	SPACE	0	0	0
0	1260	0	ROOF RECEPTACLES	20/1	25	26	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	27	28	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	29	30	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	31	32	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	33	34	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	35	36	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	37	38	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	39	40	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	41	42	20/1	SPACE	0	0	0
VAL (LIGHTING)				0 CONNECTED				0 DEMAND			
VAR (RECEPTACLES)				1260 CONNECTED				1260 DEMAND			
VAO (OTHER)				51696 CONNECTED				41367 DEMAND			
VA TOTAL				52956 CONNECTED				42617 DEMAND			
AMPS TOTAL				147 CONNECTED				118 DEMAND			
L R O				TOTAL							
0	0	1260	17232	VA CONNECTED TO A PHASE				154 AMPS CONNECTED TO A PHASE @ 120 VOLTS			
0	0	0	17232	VA CONNECTED TO B PHASE				144 AMPS CONNECTED TO B PHASE @ 120 VOLTS			
0	0	0	17232	VA CONNECTED TO C PHASE				144 AMPS CONNECTED TO C PHASE @ 120 VOLTS			
0	0	1260	51696	TOTAL				52956 VA			

EXISTING PANELBOARD AC-4											
VOLTAGE: 208Y120 VOLT 3 PHASE 4 WIRE						LOCATION: ROOF					
250A MAIN LUGS ONLY						MOUNTING: N3R SURFACE					
BUSES: MAIN - 250A NEUTRAL - 100% EQUIPMENT GROUND						IsC = 65,000 ARMS SYM AVAILABLE					
VAL	VAR	VAO	LOAD	BKR	CKT	CKT	BKR	LOAD	VAL	VAR	VAO
0	0	0	SPARE	45/3	1	2	60/3	SPARE	0	0	0
0	0	0	"	"	3	4	"	"	0	0	0
0	0	0	"	"	5	6	"	"	0	0	0
0	0	2328	RTU-A25	25/3	7	8	25/3	RTU-A32	0	0	2328
0	0	2328	"	"	9	10	"	"	0	0	2328
0	0	2328	"	"	11	12	"	"	0	0	2328
0	0	3000	RTU-A7	35/3	13	14	50/3	RTU-A24	0	0	5160
0	0	3000	"	"	15	16	"	"	0	0	5160
0	0	3000	"	"	17	18	"	"	0	0	5160
0	720	0	ROOF RECEPTACLES	20/1	19	20	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	21	22	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	23	24	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	25	26	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	27	28	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	29	30	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	31	32	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	33	34	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	35	36	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	37	38	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	39	40	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	41	42	20/1	SPACE	0	0	0
VAL (LIGHTING)				0 CONNECTED				0 DEMAND			
VAR (RECEPTACLES)				720 CONNECTED				720 DEMAND			
VAO (OTHER)				38448 CONNECTED				30758 DEMAND			
VA TOTAL				39168 CONNECTED				31478 DEMAND			
AMPS TOTAL				109 CONNECTED				87 DEMAND			
L R O				TOTAL							
0	0	720	12816	VA CONNECTED TO A PHASE				113 AMPS CONNECTED TO A PHASE @ 120 VOLTS			
0	0	0	12816	VA CONNECTED TO B PHASE				107 AMPS CONNECTED TO B PHASE @ 120 VOLTS			
0	0	0	12816	VA CONNECTED TO C PHASE				107 AMPS CONNECTED TO C PHASE @ 120 VOLTS			
0	0	720	38448	TOTAL				39168 VA			

EXISTING PANELBOARD AC-2											
VOLTAGE: 208Y120 VOLT 3 PHASE 4 WIRE						LOCATION: ROOF					
250A MAIN LUGS ONLY						MOUNTING: N3R SURFACE					
BUSES: MAIN - 250A NEUTRAL - 100% EQUIPMENT GROUND						IsC = 65,000 ARMS SYM AVAILABLE					
VAL	VAR	VAO	LOAD	BKR	CKT	CKT	BKR	LOAD	VAL	VAR	VAO
0	0	2328	RTU-A9	25/3	1	2	25/3	RTU-A10	0	0	2328
0	0	2328	"	"	3	4	"	"	0	0	2328
0	0	2328	"	"	5	6	"	"	0	0	2328
0	0	2328	RTU-A11	25/3	7	8	25/3	RTU-A12	0	0	2328
0	0	2328	"	"	9	10	"	"	0	0	2328
0	0	2292	"	"	11	12	"	"	0	0	2328
0	0	2328	RTU-A13	25/3	13	14	30/3	RTU-A14	0	0	0
0	0	2328	"	"	15	16	"	"	0	0	0
0	0	2328	"	"	17	18	"	"	0	0	0
0	0	2796	RTU-A15	30/3	19	20	20/1	SPACE	0	0	0
0	0	2796	"	"	21	22	20/1	SPACE	0	0	0
0	0	2796	"	"	23	24	20/1	SPACE	0	0	0
0	1260	0	ROOF RECEPTACLES	20/1	25	26	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	27	28	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	29	30	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	31	32	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	33	34	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	35	36	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	37	38	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	39	40	20/1	SPACE	0	0	0
0	0	0	SPACE	20/1	41	42	20/1	SPACE	0	0	0
VAL (LIGHTING)				0 CONNECTED				0 DEMAND			
VAR (RECEPTACLES)				1260 CONNECTED				1260 DEMAND			
VAO (OTHER)				43200 CONNECTED				34560 DEMAND			
VA TOTAL				44460 CONNECTED				35820 DEMAND			
AMPS TOTAL				123 CONNECTED				99 DEMAND			
L R O				TOTAL							
0	0	1260	14400	VA CONNECTED TO A PHASE				131 AMPS CONNECTED TO A PHASE @ 120 VOLTS			
0	0	0	14400	VA CONNECTED TO B PHASE				120 AMPS CONNECTED TO B PHASE @ 120 VOLTS			
0	0	0	14400	VA CONNECTED TO C PHASE				120 AMPS CONNECTED TO C PHASE @ 120 VOLTS			
0	0	1260	43200	TOTAL				44460 VA			

EXISTING PANELBOARD AC-7												LOCATION: ROOF		
VOLTAGE: 208Y120 VOLT 3 PHASE 4 WIRE						MOUNTING: N3R SURFACE						IsC = 65,000 A RMS SYM AVAILABLE		
250A MAIN LUGS ONLY														
BUSES: MAIN - 250A; NEUTRAL - 100% EQUIPMENT GROUND														
VAL	VAR	VAO	LOAD	BKR	CKT	CKT	BKR	LOAD	VAL	VAR	VAO			
0	0	2796	RTU-A26	30/3	1	2	30/3	RTU-A27	0	0	2796			
0	0	2796	"	"	3	4	"	"	0	0	2796			
0	0	2796	"	"	5	6	"	"	0	0	2796			
0	0	2328	RTU-A28	25/3	7	8	25/3	RTU-A29	0	0	2328			
0	0	2328	"	"	9	10	"	"	0	0	2328			
0	0	2328	"	"	11	12	"	"	0	0	2328			
0	0	"	SPARE	60/3	13	14	20/1	SPACE	0	0	"			
0	0	"	"	"	15	16	20/1	SPACE	0	0	"			
0	0	"	"	"	17	18	20/1	SPACE	0	0	"			
0	0	5160	RTU-A23	50/3	19	20	20/1	SPACE	0	0	"			
0	0	5160	"	"	21	22	20/1	SPACE	0	0	"			
0	0	5160	"	"	23	24	20/1	SPACE	0	0	"			
0	0	1440	ROOF RECEPTACLES	20/1	25	26	20/1	SPACE	0	0	"			
0	360	0	ROOF RECEPTACLES	20/1	27	28	20/1	SPACE	0	0	"			
0	0	0	SPACE	20/1	29	30	20/1	SPACE	0	0	"			
0	0	0	SPACE	20/1	31	32	20/1	SPACE	0	0	"			
0	0	0	SPACE	20/1	33	34	20/1	SPACE	0	0	"			
0	0	0	SPACE	20/1	35	36	20/1	SPACE	0	0	"			
0	0	0	SPACE	20/1	37	38	20/1	SPACE	0	0	"			
0	0	0	SPACE	20/1	39	40	20/1	SPACE	0	0	"			
0	0	0	SPACE	20/1	41	42	20/1	SPACE	0	0	"			
VAL (LIGHTING)				0 CONNECTED				0 DEMAND						
VAR (RECEPTACLES)				1800 CONNECTED				1800 DEMAND						
VAO (OTHER)				46116 CONNECTED				36893 DEMAND						
VA TOTAL				47916 CONNECTED				36893 DEMAND						
AMPS TOTAL				133 CONNECTED				107 DEMAND						
L	R	O				TOTAL								
0	1440	15372	VA CONNECTED TO A PHASE			16812 VA =			140 AMPS CONNECTED TO A PHASE @ 120 VOLTS					
0	360	16372	VA CONNECTED TO B PHASE			1331 VA =			131 AMPS CONNECTED TO B PHASE @ 120 VOLTS					
0	0	16372	VA CONNECTED TO C PHASE			15372 VA =			128 AMPS CONNECTED TO C PHASE @ 120 VOLTS					
0	1800	46116	TOTAL			47916 VA								



KEYPLAN
NOT TO SCALE

GENERAL NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR EXPLANATION OF CONSTRUCTION PHASING.
2. THIN SOLID LINES INDICATE APPROXIMATE EXISTING CONDITIONS TO REMAIN, UON.
3. THICK, SHORT DASHED LINES INDICATE WORK TO BE REMOVED.
4. COORDINATE SCHEDULING OF WORK WITH ARCHITECT PRIOR TO BIDDING TO DETERMINE THE EXTENT OF AFTER-HOURS WORK REQUIRED, AND INCLUDE SUCH AFTER-HOURS WORK.
5. ELECTRICAL WORK SHOWN IS FOR INFORMATION ONLY AND IS NOT INTENDED TO DETERMINE ALL EXISTING CONDITIONS. INFORMATION IS BASED ON EXISTING DRAWINGS AND/OR LIMITED FIELD OBSERVATION, FIELD VERIFY.
6. REMOVE DISCONNECTING MEANS AND BRANCH CIRCUITS FOR MECHANICAL EQUIPMENT SHOWN OR SCHEDULED FOR DEMOLITION ON THE MECHANICAL DRAWINGS, UON.
7. EXISTING CONDUIT AND CONDUCTORS MAY BE RE-USED AS PRACTICABLE, UON.
8. MAINTAIN CONTINUITY OF EXISTING DEVICES OR CIRCUITS TO REMAIN IN OPERATION THAT MAY BE AFFECTED DURING THE RENOVATION, AND LEAVE THEM IN AN OPERATIONAL CONDITION.
9. REPAIR TO MATCH SURROUNDING CONSTRUCTION ANY OPENINGS IN CEILINGS, FLOORS, WALLS, ETC. CREATED AS A RESULT OF THIS RENOVATION. WHERE STAINLESS STEEL DEVICES ARE LOCATED ON THE WALLS TO REMAIN OR ON WALLS TO REMAIN, INSTALL, MATCHED STEEL COVERPLATE ON EXISTING BACKBOX.

KEYED NOTES

1. DISCONNECT EXISTING MECHANICAL UNIT FROM CIRCUIT. EXTEND EXISTING CIRCUIT AS NECESSARY TO SERVE NEW HVAC UNIT, UON.
2. EXISTING TO REMAIN, UON.
3. DEMOLISH EXISTING SWITCH AND CONDUIT/CONDUCTORS; SEE ONE-LINE DIAGRAMS ON SHEETS E1.2 AND E1.3.
4. DEMOLISH CONNECTION TO UNIT BACK TO SOURCE PANEL; SEE ONE-LINE DIAGRAMS ON SHEETS E1.2 AND E1.3.
5. INCLUDE WORK IN PHASE 2.

