



City of San Antonio  
**PUBLIC WORKS DEPARTMENT**

**ADDENDUM No. 2**

**REQUEST FOR COMPETITIVE SEALED PROPOSALS (RFCSP)**

**PROJECT NAME: District 9 Senior Center – #042920DR**

**DATE: June 8, 2020**

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This addendum is separated into sections for convenience; however, all respondents, and other parties shall be responsible for reading the entire addendum. The failure to list an item or items in all affected sections of this addendum does not relieve any party affected from performing as per instructions, providing that the information is set forth one time any place in this addendum. These documents shall be attached to and become part of the Contract Documents for this project. The respondent shall be required to acknowledge the receipt of this addendum.

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**GENERAL:**

1. The following changes and/or additions to the Contract Documents, via this addendum, shall apply to proposals made for and to the execution of the various parts of the work affected thereby.
2. Careful note of the Addendum shall be taken by all interested parties and all trades affected shall be fully advised in their performance of the work involved.

**GENERAL COMMENTS:**

**1. Item 2.01 – Mechanical Revisions**

Refer to attached Mechanical coversheet from CNG Engineering, and replacement sheets detailing ducting, unit & control revisions.

**ADDITIONAL QUESTIONS FROM PROSPECTIVE RESPONDENT:**

**Received Question:**

- 1. Question** – Will electronic locks in conjunction with perimeter access control be considered as an alternate for this project?  
**Response** – Provide pricing as indicated on the construction documents.

- 2. Question** – Please clarify whether our steel subcontractors need to be AISC certified or just that their work is to be completed to AISC standards. If the Certification is required, it will reduce subcontractor participation. Please advise. Thank you.

**Response** – Steel fabrications are required to meet all AISC standards as noted in the specifications. Steel subcontractors shall be AISC Certified or shall pass an inspection of fabricators as required by the IBC.

**3. Question –**

1. For the FSR FL500 floor boxes, is the AVC or EC to provide the FSR FL-GRD4 pour pans?
2. On sheet TA4.0, detail 8, keynote 1 says recessed display back box is by Div 26. The adjacent detail 9, keynote 1 says Div 27 to provide this box to Div 26. Please clarify who is to provide and who is to install. If provided by AVC, please specify manufacturer and model.
3. "FPD2" (NEC E905) is EOL. What should its replacement be? The two closest, current NEC displays are the C861Q (86") and C981Q (98").
4. The flat-panel displays are all 4K-capable (assuming FPD2 is changed to a 4K display, per question above), but the Crestron DM-RMC-SCALER-C is not 4K-capable. Should it be changed to the DM-RMC-4KZ-SCALER-C?
5. Which displays and mounts need to conform to ADA protrusion limits, if any? As currently specified, the NEC 55" and 90" plus Chief Fusion-series fixed mounts all protrude beyond 4". This may be fine depending on furniture plans, however.
6. The signal flow diagram on sheet TA5.0 for Fitness shows "EQ2" as the rack location. Should this be "EQ3" instead?

7. The signal flow diagram on sheet TA5.0 for Fitness shows a 5-port POE Cisco SG350, but as there is no 5-port SG350, what is the desired make/model? Since it's listed elsewhere in the project, we assume the Cisco SG350-10P is a good choice as it is managed (to support Dante/AES67) and has sufficient PoE for the Attero-Tech devices, but would rather confirm than guess.

8. What is the manufacturer and model of the owner-furnished CATV box? We want to ensure we have the space and the correct accessories for mounting it behind displays, where required.

9. Where there are DM-TX200-C-2G-W-Ts, are any portable/"user" VGA cables needed? Only HDMI cables are listed in the specs.

10. Who is responsible for providing and installing the plywood backboard in room AV 130?

11. Spec sections 1.1.C.8.e and 1.1.C.8.i mention "Wireless Digital Media Player", but we have not found this elsewhere in the spec or drawings. What manufacturer and model is this, or is it no longer relevant/needed?

Thank you for your time and consideration.

**Response –**

1. Delineation of this scope is the responsibility of the GC.

2. Division 274100 contractor shall furnish the following box to Division 26: Chief PAC526FWP4

3. 86" model is an acceptable replacement

4. 4K is not an owner requirement. Either scaler is acceptable.

5. All FPD1 shall extrude no more than 4" from the wall. Provide appropriate mount to meet requirement, such as Chief THINSTALL

6. Yes

7. Confirmed. QCS NS-1108P is also acceptable.

8. Unknown. Successful bidder to coordinate with Owner during construction

9. Only portable HDMI cables are needed.

10. Delineation of this scope is the responsibility of the GC.

11. No wireless digital media players are needed.

**4. Question –** Is there a Civil CAD file available at this time?

**Response –** A Civil CAD file will be provided upon request to the successful bidder..

**5. Question –** A3.1 - no wall type for AV room 130 listed, can you please provide?

**Response –** AV room 130 walls are type B1. Reference view 4/A3.3.

**6. Question –** A3.1 - No wall type for demising wall between stage 131 / rooms 125, 126, 127 listed, can you please provide?

**Response –** Reference view 4/A3.3.

**7. Question –** A3.1 - No wall type for interior wall separating room 134/140 and 134/132 listed, can you please provide?

**Response –** Wall between Warming Kitchen 134 and Storage 140 is type A10. Reference view 3/A3.3.

**8. Question –** Is TPO a suitable alternate to modified bitumen that is called out in the specification?

**Response –** Please submit a formal substitution request per Specification Section 002600.

**9. Question –** Is the tapered portion going to be framed or will we need to frame with tapered ISO?

**Response –** This will be tapered insulation.

**10. Question –** Discrepancy in Quantity of Item Detailed to Quantity Specified. The AV series drawing TA2.0, Divisible Classroom 115 116, details a quantity of three multi-media wall plates, MM1, on the north wall. Whereas the AV series drawing TA5.1 detail number 2, Divisible Classroom – Audio-Video Signal Flow Diagram details a quantity of two MM1 wall plates. Please confirm the correct quantity of MM1 wall plates required. If more than the two wall plates detailed on the AV schematic line drawings are required for the AV system, please provide additional information regarding the integration of this equipment into the AV systems?

**Response –** The AV signal flow correctly identifies the quantity of MM1 input plates.

Multimedia Plate behind rack EQ2 in Divisible Classroom 115 should be MM2 with keynote #9.

**11. Question –** Discrepancy in Item Specified to Item Detailed. Section 2.17, item C.8.a-d specifies an uninterruptible power supply manufactured by Triplite, APC, Vertive, or an approved equivalent manufacturer. The AV series drawing TA5.1 detail number 2, Divisible Classroom – Audio-Video Signal Flow Diagram specifies an uninterruptible power supply manufactured by Middle Atlantic, who is not listed as an approved manufacturer. Please confirm that Middle Atlantic is an approved manufacturer for this power supply?

**Response –** Middle Atlantic UPS-2200-R-IP establishes the basis-of-design. Equals from Triplite, APC, or Vertiv shall meet or exceed the performance specifications of the Middle Atlantic model.

**12. Question** – Request substitution request for YKK instead of Kawneer entrances and storefront. I am seeking a product substitution for YKK in place of Kawneer for cost savings and time savings. YKK's anodized finish comes standard Class 1 with no additional fee for 10 year warranty.

**Response** – Please submit a formal substitution request per Specification Section 002600.

**ATTACHMENTS**

MEP coversheet narrative

Mechanical Sheets: M1.1, M4.1, M5.1, M6.1

**ISSUED BY**



06.08.20

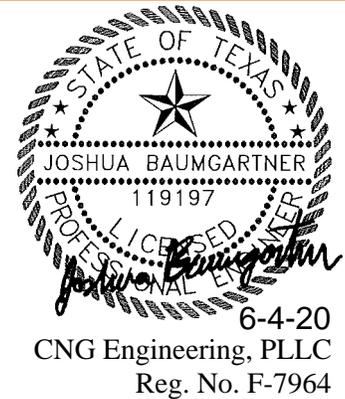
Cory Hawkins, AIA

**Beaty Palmer** Architects, Inc.

**END OF ADDENDUM No. 2**



Date: June 4, 2020  
Project: CoSA District 9 Senior Center  
CNG Project No.: 18-0010  
From: CNG Engineering, PLLC  
1917 N New Braunfels Ave. Ste. 201  
San Antonio, Texas 78208



To: All Sub-Contractors and others to whom Drawings and Specifications have been issued.

**Addendum:** This addendum is generally separated into sections for convenience; however, all contractors, subcontractors, material men, and all other parties shall be responsible for reading this entire addendum. The failure to list an item or items in all affected sections of this addendum does not relieve any party affected from performing as per instructions, providing that the information is set forth one time any place in this addendum. The addendum forms a part of the Contract Documents, modifying and superseding where it is inconsistent with them. All other conditions of the Contract Documents remain unchanged.

**CCD/PR/ASI/RFP:** This document is generally separated into sections for convenience; however, all contractors, subcontractors, material men, and all other parties shall be responsible for reading this entire document. The failure to list an item or items in all affected sections of this document does not relieve any party affected from performing as per instructions, providing that the information is set forth one time any place in this document. This document is now considered part of the Contract Documents for the above mentioned project, modifying and superseding them where they are inconsistent. All other conditions of the Contract Documents remain unchanged.

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## CHANGES TO DRAWINGS AND SPECIFICATIONS

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### MECHANICAL

#### REPLACE DRAWING SHEET: M1.1 MECHANICAL FLOOR PLAN – LEVEL 1

Item 1: Revised duct serving Loading 135 to be fed from RTU-1 instead of VRFD-1.

#### REPLACE DRAWING SHEET: M4.1 MECHANICAL SCHEDULES

- Item 1: Revised DX Rooftop Unit Schedule.
- Item 2: Revised VRV Heat Recovery Schedule.

#### REPLACE DRAWING SHEET: M5.1 MECHANICAL VRV RISER DIAGRAM

Item 1: Revised VRFD-1 model number in pipe and wiring riser diagrams.

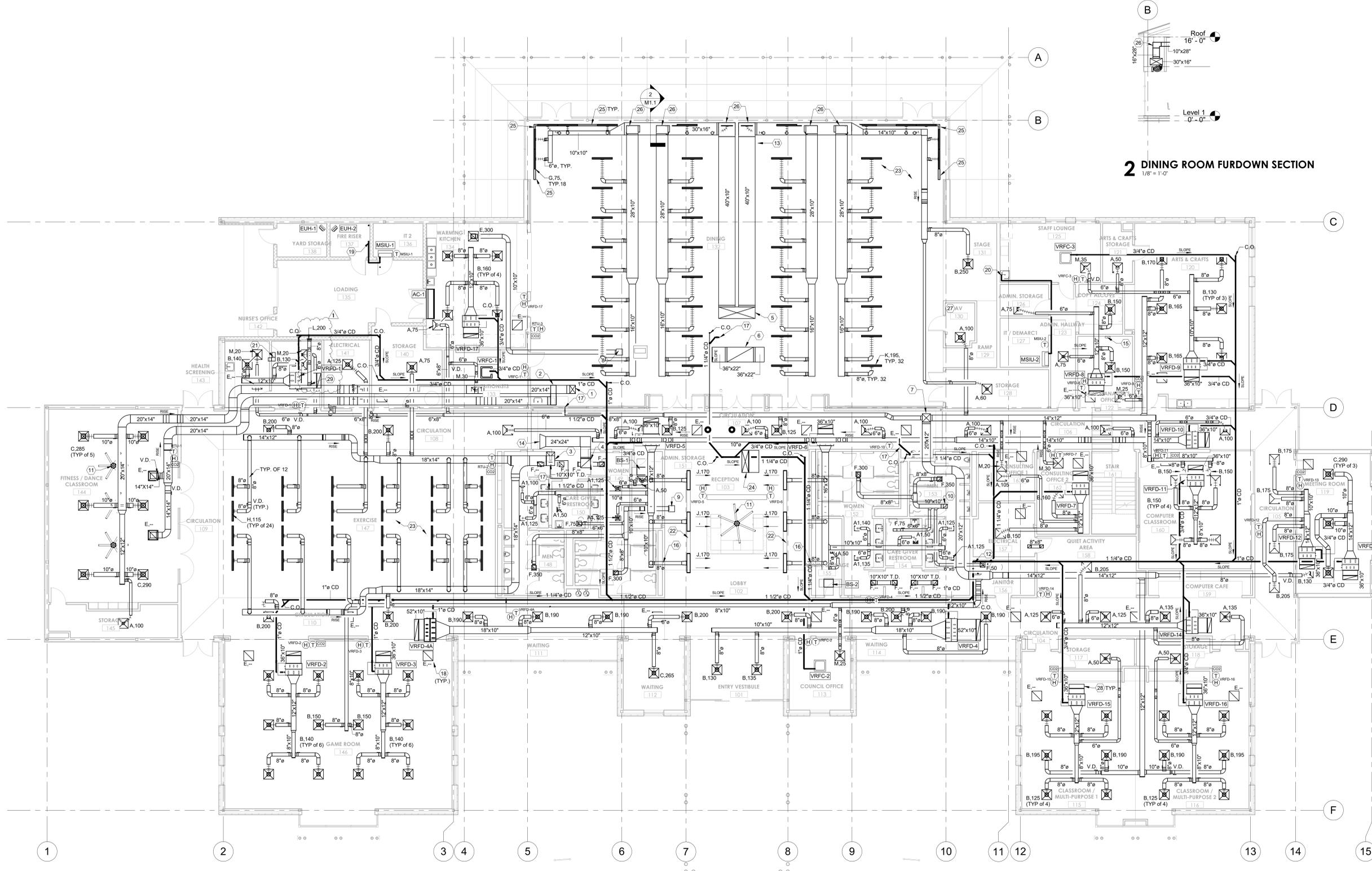
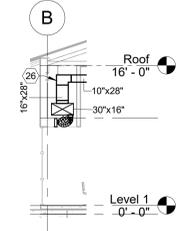
#### REPLACE DRAWING SHEET: M6.1 MECHANICAL CONTROLS

Item 1: Revised controls sequence for SZVAV RTUs.

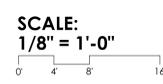
MECHANICAL KEYED NOTES - (SHEET M1.1)

- 20"x14" SUPPLY DUCT RISER DOWN FROM RTU-1. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 20"x14" RETURN DUCT RISER UP TO RTU-1. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 22"x22" SUPPLY DUCT RISER DOWN FROM RTU-2. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 24"x24" RETURN DUCT RISER UP TO RTU-2. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 88"x28" SUPPLY DUCT RISER DOWN FROM RTU-3. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 64"x36" RETURN DUCT RISER UP TO RTU-3. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES. DUCTWORK SHALL BE INTERNALLY LINED WITH MINIMUM 1" LINER FROM RTU TO OPEN ENDS. SECURE OPEN ENDS WITH HARDWARE CLOTH.
- 20"x20" SUPPLY DUCT RISER DOWN FROM OAU-1. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 12"x10" EXHAUST DUCT RISER UP TO EF-1. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 10"x10" EXHAUST DUCT RISER UP TO EF-2. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 8"x8" EXHAUST DUCT RISER UP TO EF-3. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- CEILING FANS BY DIVISION 26. REFER TO ELECTRICAL PLANS FOR INFORMATION.
- CONDENSATE DRAIN PIPING ROUTED DOWN TO MOP SINK LOCATED IN JANITORIAL CLOSET. TERMINATE PIPE 2" BELOW RIM OF MOP SINK AND TRANSITION PIPING AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- CONNECT SUPPLY AIR DUCT MAIN TO BRANCH DUCTWORK ROUTED IN FURR-DOWN (TYP). COORDINATE WITH STRUCTURAL, ARCHITECTURAL AND ALL OTHER TRADES.
- RETURN AIR DUCT WITH BELLMOUTH OPEN END. PROVIDE AND SECURE OPEN END WITH HARDWARE CLOTH AND SECURE. DUCTWORK SHALL BE INTERNALLY LINED WITH MINIMUM 1" LINER FROM RTU TO OPEN END.
- BUILDING VRF MULTI-ZONE CENTRAL CONTROLLER (I-TOUCH) SCREEN SYSTEM MANAGER CONTROL PANELS FOR HVAC EQUIPMENT.
- 8" SUPPLY AIR BRANCH DUCT W/ BALANCING DAMPER TAPPED INTO BOTTOM OF MAIN VRF UNIT DUCT ROUTED TO SIDE TAP OF INSULATED PLENUM. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- CONDENSATE DRAIN DOWN FROM MECHANICAL EQUIPMENT LOCATED ON ROOF. TRANSITION PIPING AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- RETURN AIR GRILLES ARE TO HAVE SOUND BOOTS. REFER TO 11M3.1.
- 3/4" CONDENSATE DRAIN PIPING ROUTED TO FLOOR DRAIN LOCATED IN FIRE RISER ROOM. TRANSITION PIPING AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 3/4" CONDENSATE DRAIN PIPING ROUTED TO SINK TAILPIECE LOCATED IN STAFF LOUNGE. TRANSITION PIPING AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES.
- 8"x8" TRANSFER DUCT THRU FULL HEIGHT WALL.
- PROVIDE CONTINUOUS SLOT DIFFUSER WITH BLANK OFFS (TITUS BLKS OR EQUAL) BETWEEN TAG "G" SUPPLY AIR INSULATED PLENUMS.
- CONTRACTOR SHALL PAINT ALL EXPOSED DUCTWORK AND AIR DEVICES TO MATCH EXPOSED STRUCTURE THROUGHOUT (TYP.). REFER TO ARCHITECTURAL FOR EXACT COLOR.
- 54"x16" RELIEF DUCT RISER UP TO RH-1. TRANSITION DUCTWORK AS REQUIRED AND COORDINATE ROUTING WITH ALL OTHER TRADES. SECURE OPEN END WITH HARDWARE CLOTH. DUCTWORK SHALL BE INTERNALLY LINED WITH MINIMUM 1" LINER FROM ROOF HOOD TO OPEN END.
- PROVIDE CONTINUOUS SLOT DIFFUSER WITH MITERED CORNERS (TITUS TYPE MC OR EQUAL) AND WITH BLANK OFFS (TITUS BLKS OR EQUAL) BETWEEN TAG "G" SUPPLY AIR INSULATED PLENUMS.
- PROVIDE TRANSITION-TYPE MITERED ELBOWS WITH TURNING VANES.
- LOCATE HVAC CONTROL PANELS IN AVY ROOM. COORDINATE CLEARANCE WITH ALL DISCIPLINES.
- INTERNALLY LINE RETURN DUCTWORK WITH MINIMUM 1" LINER AND TURN UP AT END, TYPICAL ALL VRF UNITS.
- 8" DIA. SUPPLY AIR BRANCH DUCT W/ STAND-OFF DAMPER CONNECTED TO RTU-1 MAIN SUPPLY DUCT.

2 DINING ROOM FURDOWN SECTION  
1/8" = 1'-0"



1 MECHANICAL FLOOR PLAN - LEVEL 1  
1/8" = 1'-0"



REVISION 1  
DESCRIPTION ADDENDUM #2  
DATE 06/04/2020



100% CONSTRUCTION DOCUMENTS  
**DISTRICT 9 SENIOR CENTER**  
SAN ANTONIO, TEXAS  
CITY OF SAN ANTONIO

project number 1768  
date 04/21/2020  
sheet description MECHANICAL FLOOR PLAN - LEVEL 1

down by OE  
checked by 11  
sheet number

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**M1.1**  
**BEATY PALMER ARCHITECTS**

ELECTRIC UNIT HEATER SCHEDULE								
DESIGNATION	LOCATION	ARRANGEMENT	MANUFACTURER	MODEL NUMBER	FAN DATA		HEATER DATA	
					CFM	VOLTAGE / PHASE	CAPACITY (KW)	
EUH-1	YARD STORAGE	SUSPENDED	REZNOR	EGEB	310	277 / 1	3.0	
EUH-2	FIRE RISER ROOM	SUSPENDED	REZNOR	EGEB	310	277 / 1	3.0	

NOTES:  
1. COLOR BY ARCHITECT.  
2. PROVIDE WITH INTERNAL UNIT THERMOSTAT. SET TO OPERATE WHEN ROOM TEMPERATURE IS BELOW 45 DEG. F.

ROOF HOOD SCHEDULE												
TAG	INTERLOCK WITH	LOCATION	TYPE	CAPACITY (CFM)	MAX S.P. DROP (IN WG)	THROAT AREA (SQ FT)	HOOD SIZE			WEIGHT (LBS)	REFERENCES SELECTION COOK MODEL (U.N.O.)	NOTES
							WIDTH (IN)	LENGTH (IN)	HEIGHT (IN)			
RH-1	-	ROOF	RELIEF	2,840	0.041	6.00	32	75	12	161	16X4GR	1,2,3,5

NOTES:  
1. FURNISH AND FACTORY FURNISHED ROOF CURB MIN. 18" HIGH FROM BASE TO TOP.  
2. PROVIDE ALUMINUM BIRD SCREEN ON ALL HOODS.  
3. ALL ALUMINUM CONSTRUCTION. MAXIMUM VELOCITY SHALL BE 500 FPM.  
4. PROVIDE MOTORIZED BACKDRAFT DAMPER WITHIN THE ROOF CURB. PROVIDE A DAMPER TRAY IN ROOF CURB.  
5. PROVIDE A BAROMETRIC, COUNTER-BALANCED DAMPER WITHIN THE ROOF CURB WITH ADJUSTABLE WEIGHTS FOR OPERATION FROM 0.01"-0.05" W.G. PROVIDE A DAMPER TRAY IN ROOF CURB.

AIR DEVICE SCHEDULE													
TAG	SELECTION REFERENCED IS TITUS MODEL (U.N.O.)	SUPPLY	RETURN	EXHAUST	MODULE SIZE (IN)	THROW FT. (@100 FPM)	CFM RANGE	INLET SIZE (IN)	# SLOTS	P.D. (" WG)	MAX N.C.	MATERIAL	NOTES
A	OMNI-AA	X			24" X 24"	3	10-120	6" Ø	-	0.04	-	ALUMINUM	1,2,4,5
A1	OMNI-AA	X			12" X 12"	5	10-120	6" Ø	-	0.04	12	ALUMINUM	1,2,4,5
B	OMNI-AA	X			24" X 24"	5	121-240	8" Ø	-	0.03	12	ALUMINUM	1,2,4,5
B1	OMNI-AA	X			12" X 12"	8	125-300	8" Ø	-	0.06	12	ALUMINUM	1,2,4,5
C	OMNI-AA	X			24" X 24"	5	241-320	10" Ø	-	0.04	20	ALUMINUM	1,2,4,5
D	OMNI-AA	X			24" X 24"	9	421-660	12" Ø	-	0.09	27	ALUMINUM	1,2,4,5
E	50F		X	X	24" X 24"	-	10-3000	22" X 22"	-	-	-	ALUMINUM	2,3,4,5
F	50F		X	X	12" X 12"	-	10-500	12" X 12"	-	-	15	ALUMINUM	2,3,4,5
G	ML-37	X			4 FT. LONG	9	75	6" Ø	2	0.08	19	ALUMINUM	1,2,4,5,6,8
H	ML-39	X			4 FT. LONG	9	110-175	8" Ø	2	0.04	21	ALUMINUM	1,2,4,5,6,7
J	ML-37	X			4 FT. LONG	15	125-175	8" Ø	4	0.14	25	ALUMINUM	1,2,4,5,6,8
K	ML-39	X			4 FT. LONG	9	0-195	8" Ø	4	0.08	23	ALUMINUM	1,2,4,5,6,7
L	300FS	X			9.75" X 9.75"	11	0-185	8"Ø"	-	0.07	25	ALUMINUM	1,2,4,5
M	TJD	X			24" X 24"	10	0-50	22" X 22"	-	0.40	28	ALUMINUM	1,2,4,5

NOTES:  
1. P.D. (" W.G.) IS AT MAX CFM.  
2. FURNISH AND INSTALL AIR DEVICE WITH LAY IN BORDER-FRAME FOR LAY IN CEILINGS OR SURFACE MOUNTING FRAME FOR MOUNTING IN GYP. BOARD CEILING, WALL OR ON DUCT.  
3. PROVIDE WITH 1/2"X1/2"X1/2" ALUMINUM CORE.  
4. FURNISH CABLE OPERATED VOLUME DAMPER FOR NON ACCESSIBLE GYP CEILINGS OR WALL INSTALLATIONS. VOLUME DAMPERS SHALL BE ADJUSTABLE WITH STANDARD TOOLS. PROVIDE POSITIVE POSITIVE BALANCING TO MAINTAIN DESIGN AIR FLOW AND NOISE CRITERIA.  
5. TRANSITION AS REQUIRED TO THE INLET SIZE OF THE AIR DEVICE. DUCT SIZES ARE SHOWN ON THE DRAWINGS WHERE THE AIR DEVICES ARE DUCTED.  
6. COORDINATE BORDER TYPE WITH ARCHITECT. IF INSTALLED ABOVE METAL BAFFLE OR WOOD SLAT CEILING, SUSPEND FROM STRUCTURE IN LIEU OF SURFACE MOUNTING.  
7. PROVIDE WITH MANUFACTURER FURNISHED TYPE MP-39 INSULATED PLENUM.  
8. PROVIDE WITH MANUFACTURER FURNISHED TYPE MP-37 INSULATED PLENUM.

AIR CURTAIN SCHEDULE										
MARK	LOCATION	ARRANGEMENT	MANUFACTURER	MODEL NUMBER	WIDTH (IN)	FAN DATA			ELECTRICAL DATA	
						CFM	MOTOR (HP)	VOLTAGE / PHASE	AMPS	
AC-1	WARMING KITCHEN	WALL-MOUNTED	MARS	LPV271-1UA-0B	72	1,800	1/8	115 / 1	2.6	

NOTES:  
1. COLOR BY ARCHITECT.  
2. BOTTOM OF UNIT SHALL BE MOUNTED 7'-6" A.F.F.

COOLING ONLY SPLIT SYSTEM SCHEDULE												
MARK	MODEL#	Manufacturer	Piping Limits	Unit Type	NOMINAL TONS	CFM	SEER	VOLT-PH	MCA	MOP	WEIGHT	
MSCU-1	RKN09KEVJUS	Daikin	Total Vertical	Outdoor	0.75	162-325	18	208/230-1	4.3	15A	66 lb	
MSIU-1	FTXN09KEVJUS	Daikin	49.2	Wall Mounted				Fed from outdoor	n/a	n/a	16 lb	
MSCU-2	RKN09KEVJUS	Daikin	Total Vertical	Outdoor	0.75	162-325	18	208/230-1	4.3	15A	66 lb	
MSIU-2	FTXN09KEVJUS	Daikin	49.2	Wall Mounted				Fed from outdoor	n/a	n/a	16 lb	

Outdoor Unit Notes:  
1. Provide Field Installed Coil Guard Accessory  
2. Units shall meet or exceed Min Scheduled IEER Values per AHRI 1230

Indoor Fan Coil Notes:  
1. Provide Indoor units without condensate pumps. Units will be gravity drained.

EXHAUST FAN SCHEDULE															
MARK	LOCATION	TYPE	MANUFACTURER AND MODEL	CFM	S.P. (" WG)	RPM	HP	V/PH	MAX SONES	DRIVE	INTERLOCK	WEIGHT (LBS)	NOTES		
EF-1	WARMING KITCHEN 134	ROOF-MOUNTED	COOK - 90C17DEC	300	0.5	1725	0.18	115/1	5.7	DIRECT	OA-1	58	1,2,3,4,5,6,7,8		
EF-2	MEN'S TR 148 & WOMEN'S TR 149	ROOF-MOUNTED	COOK - 101C17DEC	725	0.5	1725	0.25	115/1	9.5	DIRECT	OA-1	60	1,2,3,4,5,6,7,8		
EF-3	MEN'S TR 153 & WOMEN'S TR 152	ROOF-MOUNTED	COOK - 101C17DEC	775	0.5	1725	0.25	115/1	9.5	DIRECT	OA-1	60	1,2,3,4,5,6,7,8		

NOTES:  
1. PROVIDE WITH PRE-WIRED DISCONNECT.  
2. PROVIDE EXHAUST FAN WITH EC MOTOR AND MOTOR MOUNTED SPEED CONTROLLER.  
3. PROVIDE EXHAUST FAN WITH BACKDRAFT DAMPER.  
4. ROOF FANS SHALL BE FURNISHED WITH AN INTEGRAL DISCONNECT SWITCH AND AN 14" HIGH ROOF CURB.  
5. FAN SHALL INTERFACE WITH RTUs FOR ON/OFF OPERATION.  
6. STATIC PRESSURE DOES NOT ACCOUNT FOR PRESSURE DROP THROUGH BACKDRAFT DAMPER.  
7. WEIGHT INCLUDES ACCESSORIES.  
8. PROVIDE UNIT WITH HINGED UNIT BASE FOR SERVICE ACCESS.  
9. UNIT SHALL BE INTERLOCKED WITH LIGHT SWITCH SERVING SPACE FOR ON/OFF OPERATION.

COSA District 9 Senior Center																						
Daikin Heat Recovery Equipment Schedule																						
INDOOR AND OUTDOOR UNIT INFORMATION															BRANCH SELECTOR INFORMATION							
MARK NO.	MODEL NUMBER	TYPE OF UNIT	EAT DB/WB	TOTAL BTUH	SENSIBLE BTUH	HEAT BTUH	MIN. IEER	VOLTAGE	PHASE	CFM	MCA	MOCP	WEIGHT LBS	MARK NO.	MODEL NUMBER	PORT NUMBER	VOLTAGE	PHASE	MCA	MOCP	WEIGHT	
OUT UNIT	VRCU-1	REYQ456XAYDU	HEAT RECOVERY	105	430,560	N/A	412,980	16.7	460	3	N/A			N/A								
		REYQ168XAYDU	MODULE 1																			
		REYQ144XAYDU	MODULE 2																			
INDOOR UNITS	VRFD-09	FXM048PBVJU	DC DUCTED	75.0 / 63.0	8,188	5,824	10,574	N/A	208/230	1	317	0.3	15A	35.3	85-1	BS10Q54TVJ	208/230	1	1	15	101.4	1
	VRFD-09	FXM048PBVJU	DC DUCTED	75.0 / 63.0	41,284	30,450	53,978	N/A	208/230	1	1,377	3.4	15A	101.4								2
	VRFD-08	FXM012PBVJU	DC DUCTED	75.0 / 63.0	10,327	8,211	13,512	N/A	208/230	1	450	1.4	15A	61.7								3
	VRFD-10	FXM024PBVJU	DC DUCTED	75.0 / 63.0	20,642	15,993	26,989	N/A	208/230	1	688	1.8	15A	79.4								4
	VRFD-11	FXM036PBVJU	DC DUCTED	75.0 / 63.0	30,946	24,239	39,989	N/A	208/230	1	1,130	2.9	15A	101.4								5
	VRFD-12	FXM036PBVJU	DC DUCTED	75.0 / 63.0	25,794	20,116	33,984	N/A	208/230	1	1,094	2.8	15A	101.4								6
	VRFD-13	FXM036PBVJU	DC DUCTED	75.0 / 63.0	25,794	20,116	33,984	N/A	208/230	1	1,094	2.8	15A	101.4								7
	VRFD-14	FXM024PBVJU	DC DUCTED	75.0 / 63.0	20,642	15,993	26,989	N/A	208/230	1	688	1.8	15A	79.4								8
	VRFD-15	FXM036PBVJU	DC DUCTED	75.0 / 63.0	30,946	24,239	39,989	N/A	208/230	1	1,130	2.9	15A	101.4								9
	VRFD-16	FXM036PBVJU	DC DUCTED	75.0 / 63.0	30,946	24,239	39,989	N/A	208/230	1	1,130	2.9	15A	101.4								10
	VRFD-01	FXQ07TAVJU	2x2" CASSETTE	75.0 / 63.0	6,596	5,133	8,527	N/A	208/230	1	307	0.3	15A	35.3								1
	VRFD-09	FXM048PBVJU	2x2" CASSETTE	75.0 / 63.0	8,898	6,596	13,512	N/A	208/230	1	307	0.3	15A	35.3								2
	VRFD-01	FXM012PBVJU	DC DUCTED	75.0 / 63.0	10,327	8,211	13,512	N/A	208/230	1	450	1.4	15A	61.7								3
	VRFD-02	FXM024PBVJU	DC DUCTED	75.0 / 63.0	20,642	15,993	26,989	N/A	208/230	1	688	1.8	15A	79.4								4
	VRFD-03	FXM036PBVJU	DC DUCTED	75.0 / 63.0	25,794	20,116	33,984	N/A	208/230	1	1,094	2.8	15A	101.4								5
	VRFD-04	FXM048PBVJU	DC DUCTED	75.0 / 63.0	46,413	34,258	59,983	N/A	208/230	1	1,624	3.4	15A	103.6								6
	VRFD-04A	FXM048PBVJU	DC DUCTED	75.0 / 63.0	46,413	34,258	59,983	N/A	208/230	1	1,624	3.4	15A	103.6								7
VRFD-05	FXM036PBVJU	DC DUCTED	75.0 / 63.0	25,794	20,116	33,984	N/A	208/230	1	1,094	2.8	15A	101.4	8								
VRFD-06	FXM036PBVJU	DC DUCTED	75.0 / 63.0	25,794	20,116	33,984	N/A	208/230	1	1,094	2.8	15A	101.4	9								
VRFD-07	FXM009PBVJU	DC DUCTED	75.0 / 63.0	8,166	6,599	10,509	N/A	208/230	1	317	0.6	15A	55.1	10								
VRFD-17	FXM024PBVJU	DC DUCTED	75.0 / 63.0	20,642	15,993	26,989	N/A	208/230	1	688	1.8	15A	79.4	11								
														12								

Outdoor Unit Notes:  
1. Provide Field Installed Coil Guard Accessory  
2. Heat Recovery Units Shall provide continuous heating through the defrost cycle  
3. If continuous, heating through defrost is not available on VRF system, supplementary strip heat shall be provided by installing contractor  
4. Units shall meet or exceed Min Scheduled IEER Values per AHRI 1230

Indoor Fan Coil Notes:  
1. Provide field or factory mounted condensate pumps on all indoor units  
2. Provide BRCIE73 Navigation Stat for all FCU with Auto Change over and Dual Heat and Cool Setpoints  
3. Provide iTouch web accessible touch screen centralized controller.  
4. RTUs, including OA-1, shall communicate with the iTouch Manager via BACnet Client over IP - points to include:  
a. Off Unoccupied  
b. Unoccupied cooling  
c. Fan only mode of operation  
d. Cooling mode of operation  
e. Heating mode of operation  
f. Schedule occupancy operation  
g. Manual occupancy operation  
h. Discharge air temperature  
i. Discharge air temperature setpoint  
j. Current fan speed status(High/Medium Low)  
k. Manual fan speed control (High/Medium Low)  
l. Dirty filter status  
m. Alarm condition & Diagnosis  
5. If these OAU points cannot be monitored/controlled through the VRF controller, standalone RTU controllers shall be provided. Locate control panel(s) where shown on plan.

DX ROOF TOP UNIT SCHEDULE				
MARK	RTU-1	RTU-2	RTU-3	(RTU) OA-1
DESCRIPTION	SZ - VAV	SZ - VAV	SZ - VAV	100% OUTSIDE AIR
TOTAL AIR (CFM)	2,015	3,760	7,900	2,840
OUTSIDE AIR MIN./MAX. (CFM)	1,080	1,475	3,350	2,840
APPROX. EXTERNAL S.P. (" WG)	1.25	1.25	1.25	1.25
AMBIENT TEMP. (°F)	105/78	105/78	105/78	105/78
AREA SERVED	FITNESS	EXERCISE	DINING ROOM	VRV SYSTEM
TYPE	DX	DX	DX	DX
AIR TO COIL (CFM)	2,015	3,760	7,500	2,840
MAX. FACE VEL. (FPM)	500	500	500	500
ENT. AIR (DB / WB) °F	90.1 / 78.2	87.1 / 74.2	83.1 / 71.2	105.0 / 78.0
LVG. AIR (DB / WB) °F	56.2 / 56.2	53.8 / 53.8	53.9 / 53.2	54.7 / 53.8
TOTAL OUTPUT (MIN. MBH)	137.6	242.9	429.6	243.4
SENSIBLE OUTPUT (MIN. MBH)	71.1	129.1	239.2	160.3
LATENT OUTPUT (MIN. MBH)	66.5	113.8	190.4	83.1
COIL LOCATION / TYPE	RE-HEAT / ELECTRIC	RE-HEAT / ELECTRIC	RE-HEAT / ELECTRIC	RE-HEAT / ELECTRIC
CFM	1,080	1,475	5,350	2,840
ENT. AIR (DB) °F	30.0	30.0	30.1	25.0
LVG. AIR (DB) °F	86.2	89.0	89.0	75.0
OUTPUT (MIN. KW)	36.0	72.0	108.0	45.0
FLA	43.3	86.6	135.6	56.5
UNIT MCA	59.1	91.8	148.5	75.9
FAN MOTOR (MIN. HP / V / PH)	4 HP/460/3	3 HP/460/3	7.5 HP/460/3	3 HP/460/3
OVERCURRENT PROTECTION (MAX. AMP)	60	100	175	70
EFFICIENCY EER / IEER	11.2 / 17.6	10.4 / 19.5	10.1 / 17.5	11.1 / 17.5
MANUFACTURER	DAIKIN	DAIKIN	DAIKIN	DAIKIN
MODEL	DPS012A	DPS020A	MPS040F	DPS020A
SIZE (L" X W" X H") / WEIGHT (LBS)	(91"96.5"56.8") / 2,613 LBS.	(62.3"76.5"70.5") / 4,022 LBS.	(245.5"97.5"73.2") / 5,150 LBS.	(162.3"76.5"70.5") / 3,572 LBS.
NOTES:	1, 2, 4-9, 11-14	1, 2, 4-10, 12-14	1, 2, 4-10, 12-14	1-4, 6-10, 12-14

NOTE:  
1. EXTERNAL STATIC PRESSURE INCLUDES SYSTEM LOSSES. EXCLUDING ITEMS IN AHU ITSELF (COILS, CASINGS, DAMPERS, CLEAN FILTERS, ETC.)  
2. PROVIDE MODULATING HOT GAS RE-HEAT FOR HUMIDITY CONTROL.  
3. RTU SHALL BE 100% OUTSIDE AIR. PROVIDE MOTORIZED DAMPERS ON OUTSIDE AIR OPENING. DO NOT PROVIDE RETURN OR RELIEF DAMPERS OR OPENINGS.  
4. PROVIDE SMOKE DETECTORS AND LOCATE AS REQUIRED PER LATEST ADOPTED CODE.  
5. PROVIDE MOTORIZED DAMPERS ON RETURN AND OUTSIDE AIR OPENINGS. PROVIDE BAROMETRIC RELIEF DAMPER.  
6. PROVIDE SINGLE POINT OF POWER CONNECTION FOR ALL ROOF TOP UNITS.  
7. PROVIDE UNIT WITH 14 INCH HIGH ROOF CURB.  
8. PROVIDE WITH MANUFACTURER'S CONTROLS AND SENSORS. FREEZE/STATS SHALL BE FACTORY INSTALLED. PROVIDE WALL MOUNTED TOUCHSCREEN SYSTEM MANAGER.  
9. PROVIDE WITH VARIABLE CAPACITY SCROLL COMPRESSOR.  
10. PROVIDE UNIT WITH VFD.  
11. PROVIDE SUPPLY FAN WITH ECM MODULATING CONTROL.  
12. PROVIDE UNIT WITH STAINLESS STEEL DRAIN PANS  
13. PROVIDE MOTOR SHAFT GROUNDING FOR ALL ROOF TOP UNITS.  
14. PROVIDE UNIT WITH MERV 13 FILTRATION.



REVISION	DESCRIPTION	DATE
1	ADDENDUM #2	06/04/2020



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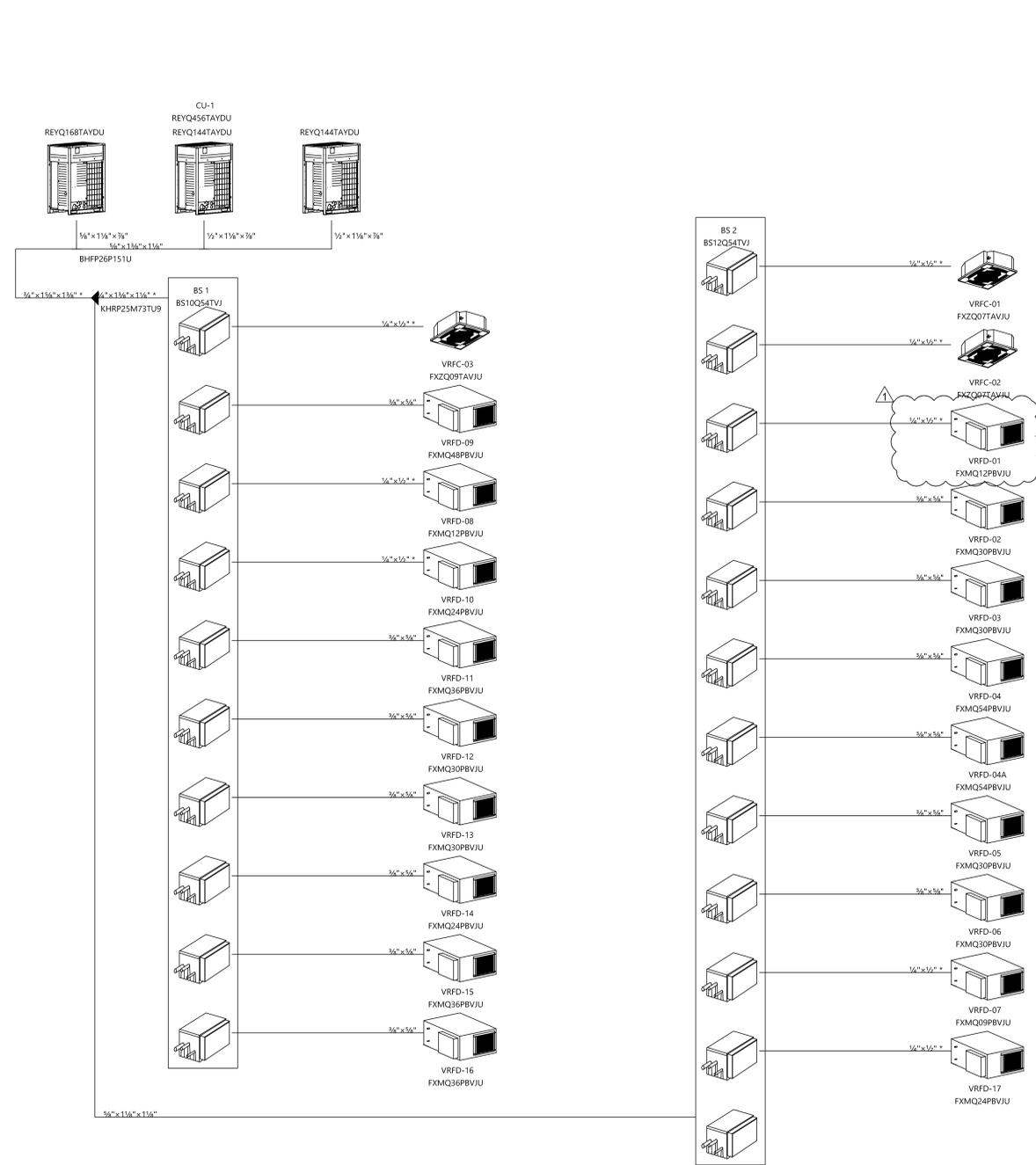
SAN ANTONIO, TEXAS  
CITY OF SAN ANTONIO

project number 1768  
date 04/21/20  
sheet description MECHANICAL SCHEDULES

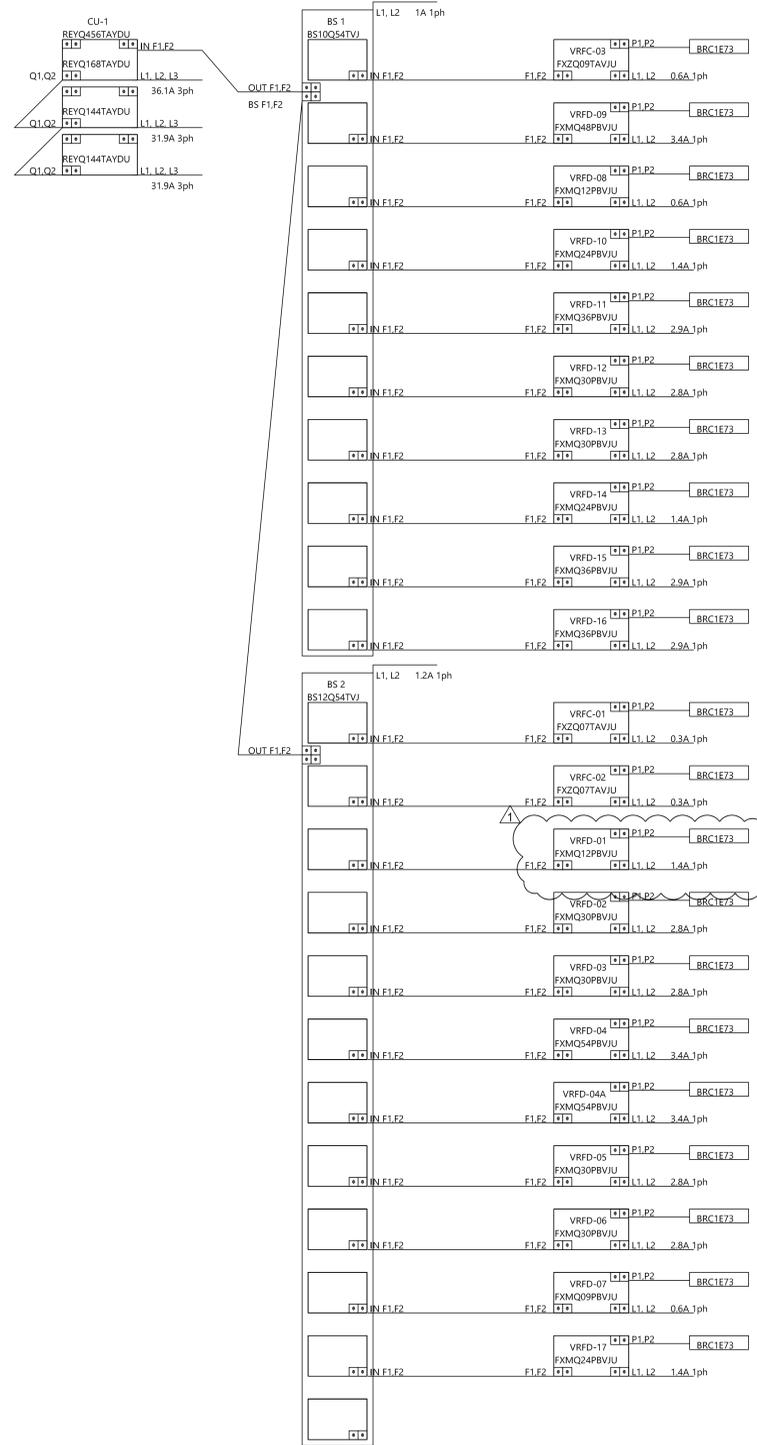
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checked by TI

sheet number **M4.1**

Beatty Palmer Architects, Inc.  
110 Broadway, Suite 6



**1 VRF PIPE RISER DIAGRAM**  
N.T.S.



**2 VRF WIRING RISER DIAGRAM**  
N.T.S.



REVISION	DESCRIPTION	DATE
1	ADDENDUM #2	06/04/2020



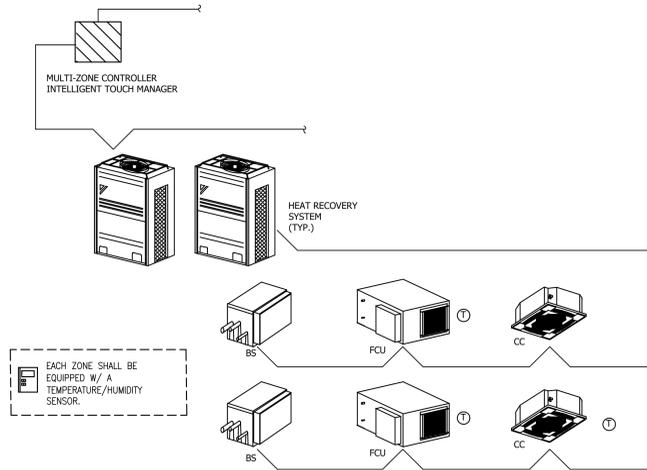
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project number 1768  
date 04/21/20  
sheet description MECHANICAL VRV RISER DIAGRAM  
sheet number M5.1

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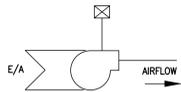
**1 VRV HEAT RECOVERY SYSTEM**  
M6.1 NOT TO SCALE

**SEQUENCE OF OPERATION FOR VRV HEAT RECOVERY SYSTEMS:**

HEAT RECOVERY SYSTEM SHALL CONSIST OF MODULAR OUTDOOR UNITS (CONDENSING UNITS), BRANCH SELECTORS, INDOOR UNITS (DUCTED FAN COILS, DUCTLESS CEILING CASSETTES) WITH ASSOCIATED ROOM CONTROLLER, AND VRV MULTI-ZONE CENTRAL CONTROLLER (TOUCH).

INDOOR UNITS SHALL OPERATE TO MAINTAIN SPACE TEMPERATURE SETPOINT CONTROLLED FROM ASSOCIATED CONTROLLER LOCATED IN THE ROOM. BRANCH SELECTORS SHALL OPERATE TO PROVIDE EITHER HEATING OR COOLING TO THE SPACE. OUTDOOR UNITS SHALL MODULATE ITS COMPRESSORS SPEED TO PROVIDE ADEQUATE COOLING/HEATING BASED ON BUILDING DEMAND.

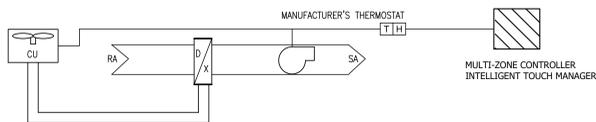
CENTRAL CONTROLLER (TOUCH) SHALL CONTROL ALL SYSTEM EQUIPMENT.



**2 EXHAUST FANS 1,2&3**  
M6.1 NOT TO SCALE

**SEQUENCE OF OPERATION FOR EF-1,2&3:**

EXHAUST FANS SHALL BE INTERLOCKED WITH OA-1.



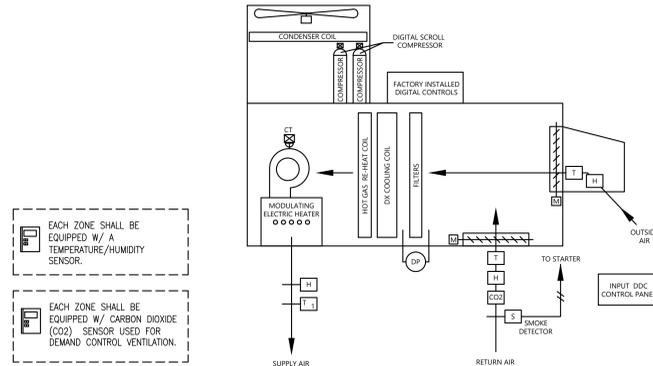
**3 MINI-SPLIT DX CONDENSING AND INDOOR UNIT**  
M6.1 NOT TO SCALE

**SEQUENCE OF OPERATION:**

**DX SPLIT-SYSTEM UNIT:**  
UNITS WILL HAVE CONTROLS PROVIDED BY EQUIPMENT MANUFACTURER TO SERVE IT ROOMS. THE CONTROLS CONTRACTOR SHALL PROVIDE INSTALLATION OF THE FACTORY PROVIDED CONTROLS AND ALL NECESSARY INTERLOCKS AND DRY CHAIN COMMUNICATIONS WIRING.

CENTRAL CONTROLLER (TOUCH) SHALL CONTROL ALL SYSTEM EQUIPMENT.

THE UNITS SHALL OPERATE PER THEIR OWN CONTROLS, SAFETIES, AND ALARMS TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 75°F (ADJ.) 24/7 AND ALARM AT 80°F (ADJ.).



**4 SINGLE ZONE VAV ROOF TOP UNITS 1,2&3**  
M6.1 NOT TO SCALE

**SINGLE ZONE VAV CONTROLS SEQUENCE FOR PACKAGED ROOFTOP UNIT:**

**SEQUENCE OF OPERATION SPECIFICATIONS:**

**UNIT CONTROLS:**  
UNIT SHALL BE PROVIDED WITH STAND ALONE CONTROLS CAPABLE OF SENSING TEMPERATURE AND HUMIDITY. IN ADDITION UNIT SHALL BE PROVIDED WITH CO2 SPACE SENSOR FOR (DCV) DEMAND CONTROL VENTILATION.

• **HEAD PRESSURE CONTROL:** THE CONDENSER HEAD PRESSURE WILL BE MONITORED BY THE UNIT CONTROLLER TO MAINTAIN HEAD PRESSURE AND THE COMPRESSOR OPERATING ENVELOPE AT ALL TIMES TO AVOID HIGH PRESSURE TRIPS ON HIGH LOAD DAYS. CONDENSER FANS WITH ECM MOTORS SHALL BE PROVIDED AS WELL AS FACTORY SENSORS TO PROVIDE THIS PROTECTION.

• **COMPRESSOR ENVELOPE CONTROL:** THE UNIT CONTROLLER WILL CONTINUALLY MONITOR THE SUCTION AND DISCHARGE PRESSURE AND TEMPERATURE CONDITIONS DURING COMPRESSOR OPERATION. THE UNIT WILL MODULATE THE COMPRESSOR, CONDENSER HEAD PRESSURE, AND ELECTRONIC EXPANSION VALVE TO MAINTAIN A SAFE COMPRESSOR OPERATING CONDITIONS TO ADD RELIABILITY, AND LIMIT UNIT SHUT DOWN DURING FRINGE OPERATING CONDITIONS.

**SCHEDULE:**  
• THE UNIT SHALL OPERATE IN OCCUPIED OR UNOCCUPIED MODE ACCORDING TO A USER-DEFINED SCHEDULE.

**SETPOINTS:**  
• THE UNIT CHANGE OVER SOURCE TEMPERATURE IS THE VARIABLE, OUTDOOR AIR TEMPERATURE (OAT), RETURN AIR TEMPERATURE (RAT), OR SPACE TEMPERATURE (ST), THAT DRIVES THE CHANGE OF UNIT STATES. THE UNIT STATE WILL CHANGE FROM COOLING, FAN ONLY OR HEATING BASED ON THE CHANGEOVER HEATING OR COOLING SETPOINTS. RTU-1 AND RTU-2 SHALL USE SPACE TEMPERATURE. RTU-3 SHALL USE RETURN AIR TEMPERATURE.  
• COOLING SETPOINT SHALL BE 75 DEG F (ADJ.) IN OCCUPIED MODE AND 85 DEG F (ADJ.) IN UNOCCUPIED MODE.  
• HEATING SETPOINT SHALL BE 70 DEG F (ADJ.) IN OCCUPIED MODE AND 55 DEG F (ADJ.) IN UNOCCUPIED MODE.

**SUPPLY FAN:** THE RTU WILL BE FACTORY SUPPLIED WITH A DIRECT DRIVE SUPPLY FAN.  
• SINGLE ZONE VAV: WHEN THE UNIT IS RUNNING, THE SUPPLY FAN WILL OPERATE CONTINUOUSLY BETWEEN A SPECIFIED MINIMUM AND MAXIMUM SPEED. THE UNIT WILL MODULATE THE SUPPLY FAN BETWEEN THE MINIMUM AND MAXIMUM BASED ON HOW NEAR OR FAR THE CONTROL TEMPERATURE (TYPICALLY SPACE OR RETURN TEMP) IS AWAY FROM SETPOINT.

• **OCCUPIED MODE:** THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY.  
• **UNOCCUPIED MODE:** THE SUPPLY FAN SHALL CYCLE AS NEEDED TO MAINTAIN UNOCCUPIED TEMPERATURE AND HUMIDITY SETPOINTS.

**OUTSIDE AIR DAMPER CONTROL:**  
• **PROPORTIONAL DAMPER RESET:** THE UNIT CONTROLLER WILL PROPORTIONALLY MODULATE THE OUTSIDE AIR DAMPERS OPEN AND CLOSED AS THE SUPPLY FAN SPEED CHANGES TO PROVIDE A CONSTANT VOLUME OF FRESH OUTSIDE AIR.

• **OUTDOOR AIR MONITOR:** THE UNIT CONTROLLER WILL MODULATE THE OUTSIDE AIR DAMPER AS REQUIRED TO MAINTAIN THE OUTSIDE AIR CFM SETPOINT AS MEASURED BY THE FACTORY PROVIDED FLOW STATION

• **DEMAND CONTROL VENTILATION (DCV):** SPACE CO2 SENSOR WILL SUPPLY A PPM READING TO THE UNIT CONTROLLER. THE UNIT CONTROLLER WILL OPEN THE OA DAMPER TO PROVIDE MORE VENTILATION AIR AS REQUIRED BY THE CO2 PPM READING.

• **EXTERNAL RESET:** AN EXTERNAL 0-10 VDC OR 4-20 MA SIGNAL CAN BE WIRED TO THE UNIT CONTROLLER TO CONTROL THE OA DAMPER POSITION BY A THIRD PARTY.  
• **UNOCCUPIED MODE:** THE OUTSIDE AIR DAMPER SHALL BE CLOSED.

**COOLING:**  
• **DISCHARGE AIR CONTROL:** IN THE COOLING MODE, THE UNIT CAPACITY WILL MODULATE THE VARIABLE SPEED COMPRESSOR TO MAINTAIN THE UNIT COOLING DISCHARGE AIR SET POINT. THE COOLING DAT SET POINT WILL BE ADJUSTABLE AT THE UNIT CONTROLLER. UNIT CAPACITY WILL BE MODULATED BY THE VARIABLE SPEED COMPRESSOR OPERATION.

• **COOLING DAT RESET:** THE COOLING DAT SETPOINT WILL BE RESET BY THE SPACE TEMP (RTU-1, RTU-2) OR RETURN TEMP (RTU-3). A LINEAR RELATIONSHIP BETWEEN THE DAT AND THE RESET VARIABLE WILL BE CREATED FOR THE MINIMUM AND MAXIMUM DAT SETPOINTS. AS THE RESET VARIABLE CHANGES THE DAT WILL ADJUST ACCORDING TO THE RELATIONSHIP. MINIMUM DAT SHALL BE 54 DEG F (ADJ.), MAXIMUM COOLING DAT SHALL BE 60 DEG F (ADJ.).

• **ECONOMIZER:** A COMPARATIVE ENTHALPY ECONOMIZER SHALL BE ENGAGED WHENEVER THE OUTDOOR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY TO UTILIZE OUTSIDE AIR FOR COOLING. OUTSIDE AIR AND RETURN AIR DAMPERS SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SET POINT. COMPRESSOR WILL MODULATE AS NORMAL IF ECONOMIZER IS UNABLE TO MAINTAIN SUPPLY AIR TEMPERATURE SET POINT ON ITS OWN.

**MODULATING HOT GAS REHEAT (DEHUMIDIFICATION):**  
• DEHUMIDIFICATION WILL BE ACTIVATED WHEN THE RELATIVE HUMIDITY IN THE RETURN AIR DUCT (RTU-3) OR SPACE (RTU-1, RTU-2) RISES ABOVE THE DEHUMIDIFICATION SET POINT OF 60% RH (ADJ.). SETPOINT SHALL NOT CHANGE BETWEEN OCCUPIED AND UNOCCUPIED MODES.

• THE UNIT IS PROVIDED WITH FULLY MODULATING, SUB COOLING, HOT GAS REHEAT COIL. THE CONTROL SEQUENCE USED FOR DEHUMIDIFICATION IN A REBEL UNIT USES TWO SEPARATE POINTS OF CONTROL. THE FIRST POINT IS THE LEAVING COIL TEMPERATURE SENSOR (LCT), AND THE SECOND POINT IS THE DISCHARGE AIR TEMPERATURE SENSOR (DAT).

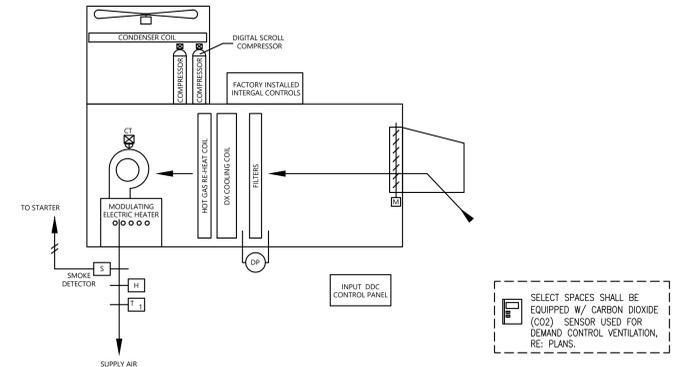
• DURING DEHUMIDIFICATION, THE REFRIGERATION CIRCUIT CONTROLS THE COMPRESSOR(S) TO MAINTAIN THE LCT SETPOINT OF 54 DEG F (ADJUSTABLE) AND THE REHEAT COIL IS CONTROLLED TO MAINTAIN THE SUPPLY AIR REHEAT SETPOINT. THE SUPPLY AIR REHEAT SETPOINT CHANGES BASED ON THE WHETHER THERE IS A CALL FOR BOTH COOLING AND DEHUMIDIFICATION OR A CALL FOR DEHUMIDIFICATION ONLY.

• WHEN A CALL FOR BOTH COOLING AND DEHUMIDIFICATION IS MADE, THE REHEAT SETPOINT IS SET AS THE COOLING DAT SETPOINT.

• DURING A CALL FOR DEHUMIDIFICATION ONLY, THE REHEAT SETPOINT IS RESET IN A LINEAR MANNER BETWEEN TWO ENDPOINTS REFERRED TO AS THE MIN AND MAX REHEAT SETPOINTS (ADJUSTABLE). THIS RESET IS BASED ON THE COOLING AND HEATING SETPOINTS FOR THE RTU. THIS LOGIC WILL SEND WARMER SUPPLY AIR WHEN THE SPACE IS APPROACHING THE HEATING CHANGEOVER SETPOINT AND COOLER SUPPLY AIR WHEN THE SPACE IS APPROACHING COOLING CHANGEOVER SETPOINT. THIS LOGIC PREVENTS UNNECESSARY FLUCTUATIONS BETWEEN COOLING AND HEATING STATES.

**ELECTRIC HEAT**

• **SCR ELECTRIC HEAT:** THE SCR ELECTRIC HEAT WILL BE MODULATED BY THE UNIT CONTROLLER TO MAINTAIN THE HEATING DAT SET POINT TO MAINTAIN SPACE OR RETURN AIR HEATING SET POINT. MINIMUM HEATING DAT SHALL BE 75 DEG (ADJ.), MAXIMUM HEATING DAT SHALL BE 90 DEG (ADJ.). HEATING DAT SETPOINT SHALL BE RESET BY SPACE TEMP (RTU-1, RTU-2) OR RETURN TEMP (RTU-3). A LINEAR RELATIONSHIP BETWEEN THE DAT AND THE RESET VARIABLE WILL BE CREATED FOR THE MINIMUM AND MAXIMUM DAT SETPOINTS. AS THE RESET VARIABLE CHANGES, THE DAT WILL ADJUST ACCORDING TO THE RELATIONSHIP.



**5 DEDICATED OUTDOOR AIR PACKAGE UNIT OA-1**  
M6.1 NOT TO SCALE

**CONTROLS SEQUENCE FOR DEDICATED OUTDOOR AIR PACKAGED UNIT (OA-1):**

**A. GENERAL:**  
THE OUTSIDE AIR UNIT SHALL BE FURNISHED WITH FACTORY INSTALLED (INTEGRAL) CONTROLS. THE UNIT CONTROLLER SHALL BE EQUAL TO DAKIN (I-TOUCH) CENTRAL CONTROLLER. ADDITIONALLY, THE DIGITAL COMPRESSOR, TO ACHIEVE THE SPECIFIED SEQUENCE OF OPERATION, THE MANUFACTURER SHALL VERIFY THAT ALL THE INTEGRAL CONTROLS CAN COMMUNICATE WITH EACH OTHER. UNITS SHALL BE FURNISHED WITH A MOTORIZED OUTSIDE AIR DAMPER FOR 0 OR 100% OUTSIDE AIR, DX COOLING COIL, CONDENSER COIL, COMPRESSORS, MODULATING ELECTRIC HEAT AND SUPPLY FAN. THE UNIT SHALL BE PROVIDED WITH ALL TEMPERATURE & HUMIDITY SENSORS, CONTROLLERS, WIRING RELAYS, ETC. TO PROVIDE THE SEQUENCE OF CONTROL. ONE OF THE COMPRESSORS SHALL HAVE DIGITAL CONTROL FOR FULL MODULATION. THE UNITS MAKE-UP AIR UNIT CONTROLS SHALL CONTROL THE UNIT TO MAINTAIN THE SCHEDULED UNIT LEAVING AIR CONDITIONS. AN OUTSIDE AIR TEMPERATURE SENSOR AND RELATIVE HUMIDITY SENSOR SHALL PROVIDE INPUTS TO THE CONTROLLER TO DETERMINE THE SPECIFIC MODE IN WHICH TO OPERATE. WITH THE CORRECT MODE DETERMINED, THE UNIT DISCHARGE AIR TEMPERATURE SENSOR AND RELATIVE HUMIDITY SENSOR SHALL OPERATE THE UNIT AS DESCRIBED BELOW. THE UNIT SHALL CALCULATE THE DEW POINT FROM THE TEMPERATURE AND RELATIVE HUMIDITY INPUTS.

IF THE MANUFACTURER CONTROLS CANNOT POLL ALL CO2 SENSORS, THE MECHANICAL CONTRACTOR SHALL PROVIDE SUPPLEMENTARY DDC CONTROLS (NOT A FRONT END OR BUILDING AUTOMATION SYSTEM) TO POLL THE CO2 SENSORS AND PROVIDE THE CRITICAL CO2 LEVEL TO THE MANUFACTURER'S CONTROLLER. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER AS NEEDED TO VERIFY THE NECESSARY POINT(S) ARE COMMUNICATED.

**B. SEQUENCE OF OPERATION:**  
• **UNIT ON/OFF:** THE UNIT SHALL BE ENABLED/DISABLED BY PRISM TIME CLOCK FUNCTION.  
• **OCCUPIED MODE, UNIT ON:** OA DAMPER IS OPEN, FAN IS ON.  
• **UNOCCUPIED MODE & OVERRIDE, UNIT OFF:** OA DAMPER IS CLOSED, FAN IS OFF.  
• **COOLING MODE (OA TEMP >70°F & OA DEW POINT <53°F):** BASED UPON THE OUTDOOR AIR TEMPERATURE SENSOR, WHEN ENTERING COOLING MODE THE OUTSIDE AIR DAMPER SHALL OPEN, THE SUPPLY FAN SHALL BE ENERGIZED, AND THE COMPRESSORS MODULATED WHILE THE CONDENSER FANS ARE CYCLED TO MAINTAIN A 55°F UNIT LEAVING AIR TEMPERATURE.

• **DEHUMIDIFICATION MODE (OA DEW POINT > 53°F):** BASED UPON THE OUTDOOR AIR TEMPERATURE THE SUPPLY FAN SHALL BE ENERGIZED, AND THE COMPRESSORS SHALL BE ENABLED AND MODULATED TO MAINTAIN A COIL TEMPERATURE OF 45°F AS MEASURED BY THE SUCTION PRESSURE TRANSDUCER AND HOT GAS REHEAT SHALL BE MODULATED TO MAINTAIN A SUPPLY AIR TEMPERATURE OF 55°F.

• **HEATING MODE (OA TEMP. < 51°):** THE OUTSIDE AIR DAMPER SHALL OPEN, THE SUPPLY FAN SHALL BE ENERGIZED, GAS HEATER SHALL MODULATE TO MAINTAIN A 55°F LEAVING AIR TEMPERATURE.

• **THE OA TEMPERATURE & DEW POINT SET POINTS AND THE UNIT LAT CONDITIONS SHALL BE ADJUSTABLE THRU THE UNIT CONTROLLER. ALL NECESSARY INTERFACE HARDWARE AND SOFTWARE FOR SET POINT ADJUSTMENTS SHALL BE PROVIDED WITH THE UNIT.**

• **SUPPLY FAN CONTROL (DCV):** THE SUPPLY FAN WILL OPERATE CONTINUOUSLY BETWEEN A SPECIFIED MINIMUM AND MAXIMUM SPEED. THE UNIT WILL MODULATE THE SUPPLY FAN BETWEEN THE MINIMUM AND MAXIMUM TO MAINTAIN CRITICAL SPACE CO2 SETPOINT OF 1000 PPM (ADJ.).

**C. SYSTEM START-UP:**  
AT THE INITIAL OUTSIDE AIR UNIT FIELD START-UP AND FOR OWNER TRAINING, A MANUFACTURER'S REPRESENTATIVE THAT IS FAMILIAR WITH THE CONTROL SYSTEMS SHALL BE REQUIRED TO ATTEND. THE REPRESENTATIVE SHALL VERIFY THAT THE UNIT IS OPERATING CORRECTLY, AS PER THIS SEQUENCE OF OPERATION. THE CONTROLS CONTRACTS REPRESENTATIVE SHALL PROGRAM THE UNITS OPERATING SCHEDULE AT THE BMS FRONT END, AS DIRECTED BY THE OWNER. COORDINATE STARTUP, TESTING AND PROGRAMMING WITH COMMISSIONING AGENT.



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1	ADDENDUM #2	06/04/2020



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**DISTRICT 9 SENIOR CENTER**

SAN ANTONIO, TEXAS

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project number 1768  
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