December 16, 2015
BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
Addendum No. 3, IFB Y16-718-CC

MILDRED DIXON ACTIVITY CENTER HVAC REPLACEMENT

Bid Opening Date: January 5, 2016 at 2:00 p.m.

This addendum is hereby incorporated into the bid documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to, and shall take precedence over, the original documents. Underlining indicates additions, deletions are indicated by ~~strikethrough~~.

A. The bid opening date is January 5, 2016 at 2:00 p.m.

B. Attached with this addendum are changes to drawings sheets M-001, M-101, M-102, M-201 and E-101. A narrative explaining the changes is below:

Sheet	Description of Revision
M-001	-Added HVAC General Note #20
M-101	-Revised Key Note #7 -Located existing VFD to be replaced
M-102	-Revised Key Note #5 -Revised condensate lines to be two lines, one per AHU -Located new VFD to be provided
M-201	-Added Variable Frequency Drive to note #6 -Added note #8 to Split DX Indoor AHU Schedule -Revised Detail #4 for above ground refrigerant piping
E-101	-Added new Variable Frequency Drive to Key Note #7 and located new VFD and disconnect to electrical plan -Added Key Note #8 for HOA VFD control - Added Key Note #9 for new VFD coordination with existing building management system (Johnson Controls)

C. ACKNOWLEDGEMENT OF ADDENDA

1. The Bidder/Proposer shall acknowledge receipt of this addendum by completing the applicable section in the solicitation or by completion of the acknowledgement information on the addendum. Either form of acknowledgement must be completed and returned not later than the date and time for receipt of the bid or proposal.
2. All other terms and conditions of the IFB remain the same.
3. **Receipt acknowledged by:**

_____ _____
Authorized Signature Date Signed

_____

Title

_____
Name of Firm

HVAC SYMBOL LEGEND

SYMBOL	DESCRIPTION
	-CEILING RETURN
	-CEILING EXHAUST
	-RECTUNGULAR CEILING DIFFUSER OR FLOOR REGISTER
1 / M-1	-DETAIL REFERENCE: TOP-DETAIL#, BOTTOM-DRAWING# SHOWN ON
T	-THERMOSTAT/TEMPERATURE SENSOR
S	-WALL MOUNTED SWITCH
	-DUCT SMOKE DETECTOR
	-CONNECT TO EXISTING
	-DEMOLISH TO POINT INDICATED
M	-MOTORIZED CONTROL DAMPER
BD	-BACKDRAFT DAMPER
1	-SHEET NOTE CALLOUT
1	-SHEET NOTE CALLOUT
CD	-CONDENSATE
RL	-REFRIGERANT LIQUID
RS	-REFRIGERANT SUCTION
	-FLOW DIRECTION
	-CONNECTION, BOTTOM
	-CONNECTION, TOP
	-COUPLING
	-ELBOW, TURNED DOWN
	-ELBOW, TURNED UP
	-TEE, OUTLET DOWN
	-TEE, OUTLET UP

SYMBOL	DESCRIPTION
	-FIRE DAMPER (WITH ACCESS PANEL)
M	-MOTOR OPERATED CONTROL DAMPER (MOD)
	-MANUAL BALANCING DAMPER
	-DOOR GRILLE
UC	-UNDERCUT DOOR
M	-ACCESS DOORS, VERTICAL OR HORIZONTAL
	-FLEXIBLE CONNECTION
24x12	-NEW DUCTWORK, FIRST DIMENSION IS SIDE SHOWN
24x12	-EXISTING DUCTWORK TO REMAIN
24x12	-EXISTING DUCTWORK TO BE REMOVED
24x12 DOWN / UP W/IN FLOOR	-DUCT ELBOW, POSITIVE PRESSURE (SUPPLY), FIRST DIMENSION INDICATES SIDE TO WHICH ARROW IS POINTING
	-DUCT ELBOW, EXHAUST
	-DUCT ELBOW, NEGATIVE PRESSURE, RETURN
	-DUCT ELBOW UP THROUGH ROOF OR SLAB ABOVE

SYMBOL	DESCRIPTION
UP	-CHANGE OF ELEVATION
	-FLEXIBLE DUCT
	-TRANSITION, CONCENTRIC
	-TRANSITION, ECCENTRIC
10x8 RØ	-TRANSITION, SQUARE TO ROUND
	-SQUARE THROAT ELBOW W/TURNING VANES
	-RADIUS ELBOW
	-RECTANGULAR/ROUND BRANCH TAKE-OFF OR ROUND/ROUND BRANCH TAKE-OFF
	-RECTANGLE-TO-ROUND TAKE-OFF
	-STANDARD BRANCH TAKE-OFF
EQUIP.	- P-TRAP

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT

HVAC ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	-ABOVE FINISHED FLOOR	MBH	-THOUSAND BTUs PER HOUR
AHU	-AIR HANDLING UNIT	MCA	-MINIMUM CIRCUIT AMPS
AP	-ACCESS PANEL	MOCP	-MAXIMUM OVER CURRENT PROTECTION
BHP	-BRAKE HORSEPOWER	MOD	-MOTOR OPERATED CONTROL DAMPER (MOD)
BTU	-BRITISH THERMAL UNIT	NC	-NORMALLY CLOSED
℄	-CENTER LINE	NO	-NORMALLY OPEN
∱	-CFM (CUBIC FEET PER MINUTE)	NTS	-NOT TO SCALE
CD	-CEILING DIFFUSER	OA	-OUTSIDE AIR
CV	-CONSTANT AIR VOLUME	PSI	-POUNDS PER SQUARE INCH
ΔP	-CHANGE IN PRESSURE	PSIG	-PSI GAUGE
ΔT	-CHANGE IN TEMPERATURE	RA	-RETURN AIR
CFM	-CUBIC FEET PER MINUTE	RHC	-REHEAT COIL
CU	-CONDENSING UNIT	RPM	-REVOLUTIONS PER MINUTE
DDC	-DIRECT DIGITAL CONTROLS	RS/L	-REFRIGERANT SUCTION & LIQUID LINES
DN	-DOWN	SA	-SUPPLY AIR
EAT	-ENTERING AIR TEMPERATURE	SP	-STATIC PRESSURE
ESP	-EXTERNAL STATIC PRESSURE	TSP	-TOTAL STATIC PRESSURE
EWT	-ENTERING WATER TEMPERATURE	UNO	-UNLESS NOTED OTHERWISE
FCU	-FAN COIL UNIT	V/PH	-VOLTS/PHASE
FD	-FIRE DAMPER		
FLA	-FULL LOAD AMPS		
FPM	-FEET PER MINUTE		
GPM	-GALLONS PER MINUTE		
KW	-KILOWATT		
LAT	-LEAVING AIR TEMPERATURE		
LWT	-LEAVING WATER TEMPERATURE		

HVAC EQUIPMENT TAGS

TAG: A 200 — A = AIR DISTRIBUTION DEVICE, CFM = 200

AHU NUMBER: AHU-1 — AHU = AIR HANDLING UNIT

HVAC GENERAL NOTES

1. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
2. DIMENSIONS SHALL BE FIELD-VERIFIED AND COORDINATED PRIOR TO PROCUREMENT OR FABRICATION. COORDINATE THE WORK WITH OTHER TRADES INVOLVED. FIELD MODIFICATIONS SUCH AS OFFSETS IN PIPING OR DUCTWORK (INCLUDING DIVIDED DUCTWORK) NEEDED DUE TO OBSTRUCTIONS OR INTERFERENCES SHALL BE PROVIDED AT NO ADDITIONAL COST. FOR PROJECTS INVOLVING RENOVATION, COORDINATE NEW WORK WITH EXISTING ELEMENTS SUCH AS THE BUILDING STRUCTURE AND ARCHITECTURAL FEATURES, SPRINKLER PIPING, LIGHTS, PLUMBING, AND ELECTRICAL CONDUIT.
3. DUCT CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARD.
4. SEE SPECIFICATIONS FOR GAUGES, THICKNESS, BRACING, REQUIREMENTS, ETC., OF DUCTWORK.
5. DUCT SIZES AND ALL OPENINGS THROUGH BUILDING CONSTRUCTION SHALL SUIT EQUIPMENT FURNISHED.
6. ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED AND/OR SPECIFIED. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO PROVIDE A VIBRATION-FREE, RIGID INSTALLATION.
7. ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
8. DAMPERS AND INSIDES OF DUCTS VISIBLE THROUGH GRILLES, REGISTERS AND DIFFUSERS SHALL BE PAINTED FLAT BLACK.
9. REFER TO TYPICAL DETAILS FOR DUCT SUPPORTS AND INSTALLATION OF EQUIPMENT.
10. ACCESS PANELS IN DUCTWORK AND CEILINGS SHALL BE PROVIDED WHERE REQUIRED FOR OPERATION, BALANCING OR MAINTENANCE OF ALL MECHANICAL EQUIPMENT.
11. ALL DUCTWORK, PIPING AND EQUIPMENT IS SHOWN SCHEMATICALLY. PROVIDE ALL TRANSITIONS, TURNING VANES, ELBOWS, FITTINGS, ETC., TO ALLOW SMOOTH FLOWS.
12. PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL DUCTWORK CONNECTING TO EACH FAN AND AIR HANDLING UNIT.
13. INTERRUPTIONS TO EXISTING SERVICES SHALL BE SCHEDULED FOR TIMES OTHER THAN NORMAL OPERATING HOURS (SUCH AS NIGHTS AND WEEKENDS). SUCH INTERRUPTIONS TO SERVICES SHALL NOT BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER'S REPRESENTATIVE AND PROPER COORDINATION WITH OTHER TRADES. PRE-WORK SHALL BE PERFORMED TO MAKE THE SHUTDOWN PERIOD AS BRIEF AS POSSIBLE.
14. ALL EQUIPMENT, DUCTWORK, ETC., TO BE REMOVED SHALL REMAIN PROPERTY OF THE OWNER OR DISPOSED OF LEGALLY, AS DIRECTED BY OWNER.
15. MAINTAIN CLEARANCE OF A MINIMUM OF 6" BETWEEN DUCTWORK, PIPING, EQUIPMENT, ETC., AND ALL FIRE RATED AND FIRE/SMOKE RATED PARTITIONS, TO ALLOW FOR INSPECTIONS OF RATED WALLS.
16. SLEEVE AND SEAL ALL PIPING PENETRATIONS THROUGH BUILDING PARTITIONS.
17. LOCATE THERMOSTATS AND TEMPERATURE SENSORS AT 48" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. COORDINATE LOCATIONS WITH OTHER EQUIPMENT, FURNITURE, AND DOOR SWINGS.
18. TRAPPED CONDENSATE DRAINS FROM ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED FOR PROPER DRAINAGE TO SUIT EQUIPMENT FURNISHED.
19. PROVIDE CONCRETE HOUSEKEEPING PAD UNDER ALL FLOOR-MOUNTED EQUIPMENT.
20. (Δ1) THE CONTRACTOR SHALL PROVIDE TEMPORARY COOLING AND HEATING TO MAINTAIN SPACE TEMPERATURES BETWEEN 68°F AND 72°F FOR HEATING AND BETWEEN 74°F AND 78°F FOR COOLING DURING CONSTRUCTION.

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CONSULTANT:

CLIENT:

ORANGE COUNTY GOVERNMENT FLORIDA

PROJECT NAME:

Orange County Mildred Dixon Activity Center
HVAC Replacement
303 S West Crown Point Road Winter Garden, Fl 34787
100045179

No.	Date	Description
Δ1	12/14/2015	REVISION A

ISSUE LOG

PROFESSIONAL SEALS:

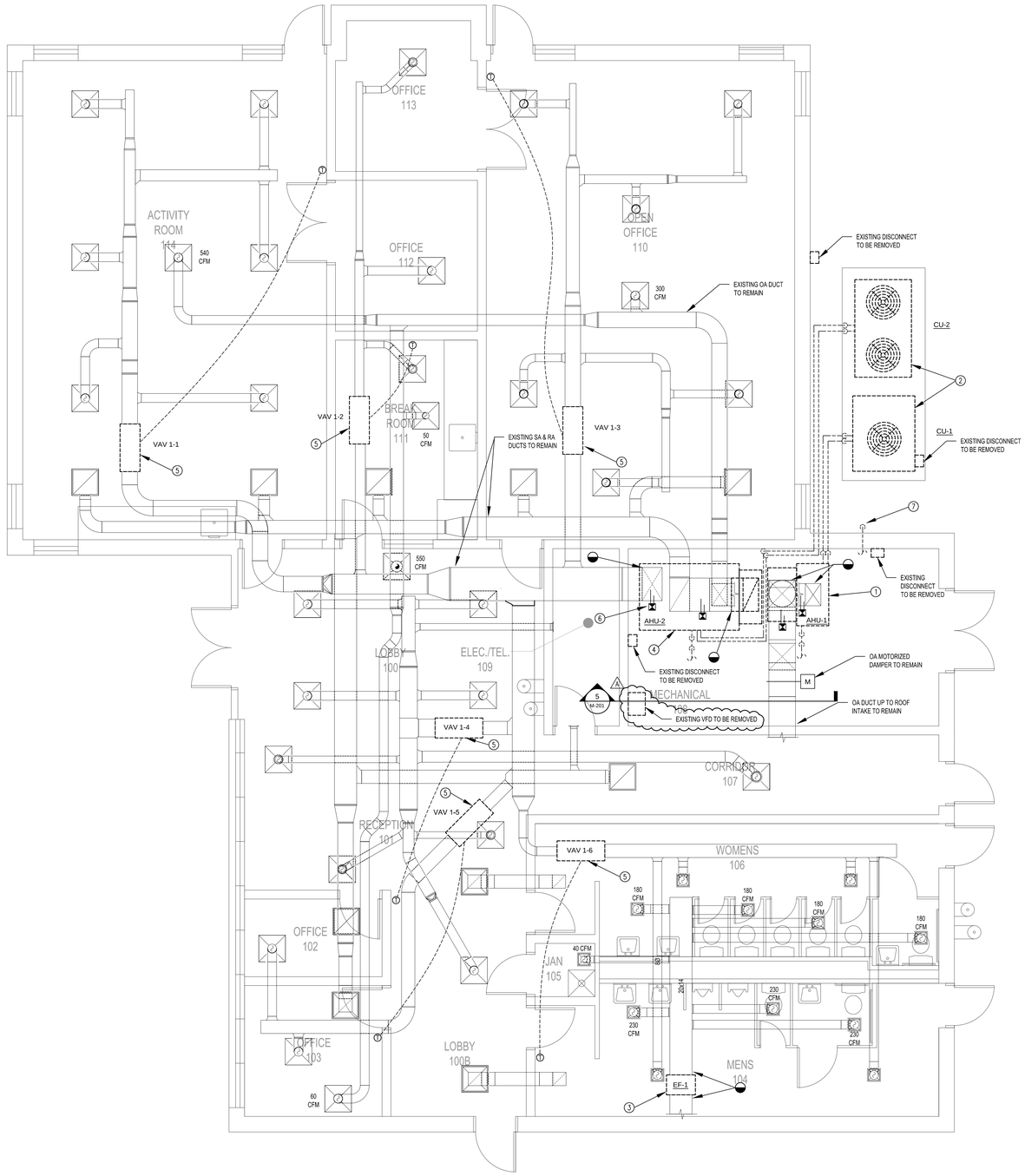
THOMAS J. FARMER, P.E.
FLORIDA REG NO. 58890

SHEET TITLE:

HVAC SYMBOLS LEGEND AND GENERAL NOTES

SHEET INFORMATION:

JOB No.	100045179	Date Issued:	NOVEMBER 5, 2015
Designed By:	KAR	Sheet Number:	M-001
Checked By:	DLH		
QC Review:	TJF		
Phase:			



A HVAC DEMOLITION PLAN

SCALE: 1/4" = 1'-0"

N

GENERAL NOTES

1. HEAVY HIDDEN LINE WEIGHT INDICATES EXISTING EQUIPMENT TO BE REMOVED/DEMOLISHED. LIGHT LINE WEIGHT INDICATES EXISTING EQUIPMENT TO REMAIN.
2. NOT ALL EXISTING DUCTWORK IS SHOWN. VENTILATION DUCTWORK SHOWN ONLY.

KEY NOTES

1. REMOVE EXISTING DEDICATED OUTDOOR AIR UNIT (AHU-1). DISCONNECT UNIT FROM EXISTING SA DUCT AND OA DUCT. REMOVE EXISTING OA PLENUM. REMOVE ASSOCIATED POWER FEED BACK TO SOURCE. DISCONNECT SWITCH AND BREAKER. ASSOCIATED SA AND OA DUCTS WITHIN THE MECHANICAL ROOM SHALL BE RE-USED TO THE GREATEST EXTENT POSSIBLE PROVIDED THEY ARE STRUCTURALLY SOUND AND FREE OF CORROSION AND LEAKS. DUCT SMOKE DETECTORS AND DAMPERS SHALL BE REUSED. REMOVE CONDENSATE DRAIN LINE.
2. REMOVE EXISTING CONDENSING UNITS AND ASSOCIATED REFRIGERANT LINES. REMOVE ASSOCIATED POWER FEED BACK TO SOURCE. REMOVE DISCONNECT SWITCH AND BREAKER. REFER TO ELECTRICAL DRAWINGS FOR POWER FEED REMOVAL.
3. REMOVE EXISTING INLINE EXHAUST FAN. EXISTING EA DUCT AND EXHAUST LOUVER SHALL REMAIN. REMOVE ASSOCIATED POWER FEED BACK TO SOURCE. REMOVE DISCONNECT SWITCH AND BREAKER. REFER TO ELECTRICAL DRAWINGS FOR POWER FEED REMOVAL.
4. REMOVE EXISTING FLOOR MOUNTED AIR HANDLING UNIT (AHU-2). DISCONNECT UNIT FROM EXISTING SA AND RA DUCTS. REMOVE EXISTING RA PLENUM. REMOVE ASSOCIATED POWER FEED BACK TO SOURCE. REMOVE DISCONNECT SWITCH AND BREAKER. REFER TO ELECTRICAL DRAWINGS FOR POWER FEED REMOVAL. ASSOCIATED SA AND RA DUCTS WITHIN THE MECHANICAL ROOM SHALL BE RE-USED TO THE GREATEST EXTENT POSSIBLE PROVIDED THEY ARE STRUCTURALLY SOUND AND FREE OF CORROSION AND LEAKS. DUCT SMOKE DETECTORS AND DAMPERS SHALL BE REUSED. REMOVE CONDENSATE DRAIN LINE.
5. REMOVE EXISTING VARIABLE AIR VOLUME BOXES (TYPICAL OF 6). SA DUCTS SHALL BE REUSED TO THE GREATEST EXTENT POSSIBLE PROVIDED THEY ARE STRUCTURALLY SOUND AND FREE OF CORROSION AND LEAKS. REMOVE ASSOCIATED WALL MOUNTED THERMOSTATS. REFER TO NEW HVAC PLAN SHEET M-102 FOR LOCATION OF NEW T-STATS. REFER TO ELECTRICAL DRAWINGS FOR POWER FEED REMOVAL.
6. EXISTING DUCT SMOKE DETECTORS TO REMAIN (TYP OF 4).
7. REMOVE EXISTING CONDENSATE DRAIN LINES. CAP AND ABANDON IN PLACE THE PORTION OF THE CONDENSATE DRAIN LINE ROUTED UNDER FOUNDATION.

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PROFESSIONAL SEALS:

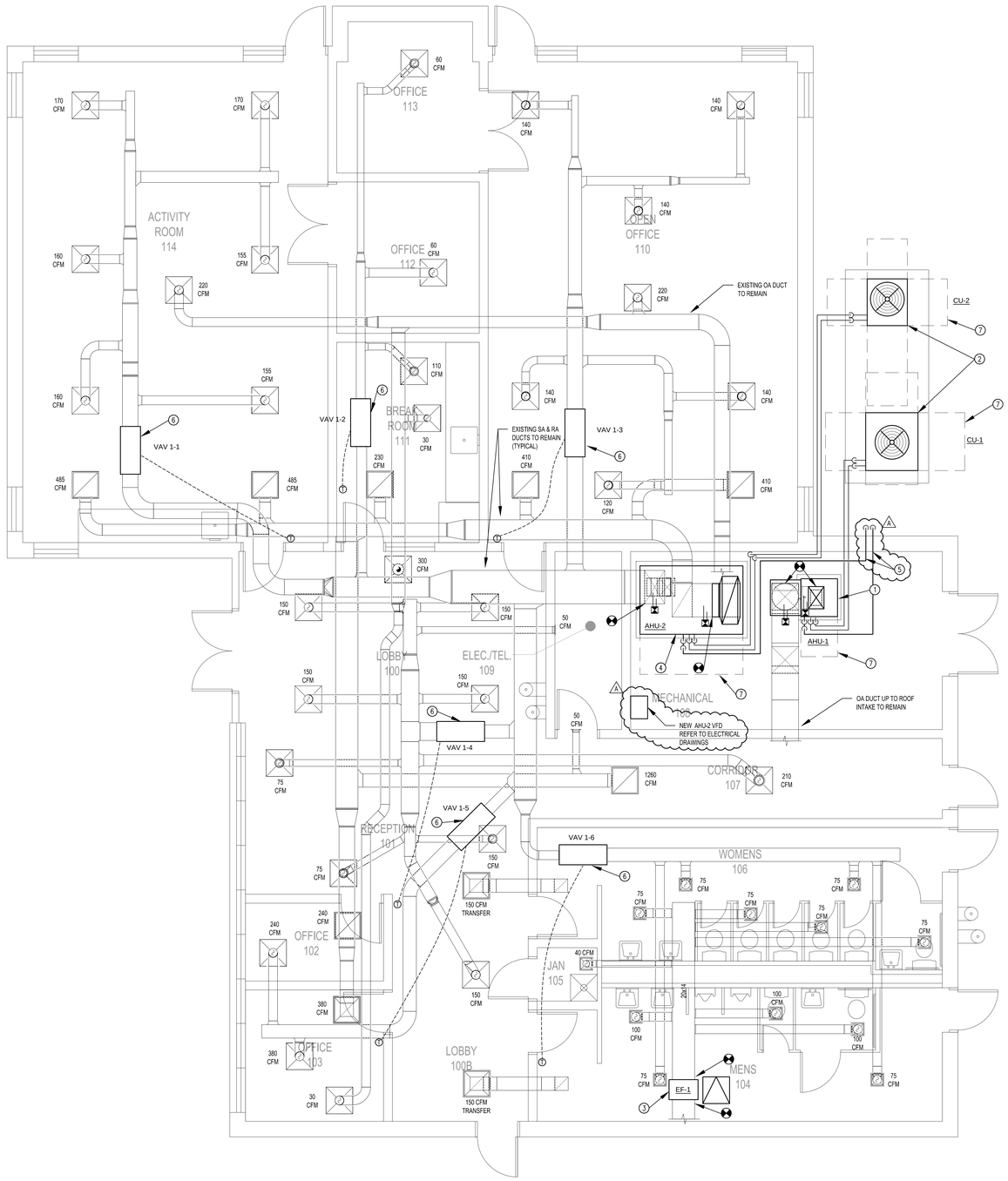
THOMAS J. FARMER, P.E.
FLORIDA REG NO. 58890

SHEET TITLE:

HVAC DEMOLITION PLAN

SHEET INFORMATION:

JOB No.	100045179	Date Issued:	NOVEMBER 5, 2015
Designed By:	KAR	Sheet Number:	M-101
Checked By:	DLH		
QC Review:	TJF		
Phase:			



A HVAC NEW WORK PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. CONTRACTOR SHALL REPAIR, PATCH AND OR REPLACE DUCTS AND INSULATION TO PROVIDE A LEAK FREE AND THERMALLY PROTECTED AIR-DISTRIBUTION SYSTEM.
2. THE EXISTING AIR DISTRIBUTION SYSTEM SHALL BE PROFESSIONALLY CLEANED. THIS INCLUDES ALL DUCTWORK, REGISTERS AND GRILLES. (REFER TO SPECIFICATIONS)
3. TEST AND BALANCE NEW SYSTEMS PER SPECIFICATIONS. DEDICATED OUTDOOR AIR UNIT AND EXHAUST FAN SHALL BE BALANCED TO NEW AIRFLOWS SHOWN ON PLANS.

KEY NOTES

1. NEW FLOOR MOUNTED VERTICAL DEDICATED OUTDOOR AIR UNIT (AHU-1). CONNECT TO EXISTING SA AND OA DUCT. EXISTING DUCT SMOKE DETECTORS TO REMAIN. PROVIDE NEW OA PLENUM AND CONNECT TO EXISTING OA DUCT. PROVIDE NEW POWER FEED BACK TO SOURCE AND PROVIDE NEW DISCONNECT AND BREAKER. REFER TO ELECTRICAL DRAWINGS FOR NEW POWER REQUIREMENTS. PROVIDE NEW 4" HOUSEKEEPING PAD, NEW CONDENSATE LINE, AND NEW REFRIGERANT LINES. BALANCE SYSTEM TO NEW AIRFLOWS INDICATED ON PLANS.
2. NEW CONDENSING UNITS CU-1 & CU-2 AND ASSOCIATED REFRIGERANT LINES. PROVIDE NEW POWER FEED BACK TO SOURCE AND PROVIDE NEW DISCONNECT AND BREAKER. REFER TO ELECTRICAL DRAWINGS FOR NEW POWER REQUIREMENTS. OUTDOOR ELECTRICAL EQUIPMENT SHALL BE NEMA 4.
3. NEW INLINE EXHAUST FAN. PROVIDE NEW 24x24 CEILING ACCESS PANEL WHERE INDICATED ON PLAN. NEW FAN SHALL BE INTERLOCKED WITH AHU-1. BALANCE SYSTEM TO NEW AIRFLOWS INDICATED ON PLANS. PROVIDE NEW POWER FEED BACK TO SOURCE AND PROVIDE NEW DISCONNECT AND BREAKER. REFER TO ELECTRICAL DRAWINGS FOR NEW POWER REQUIREMENTS.
4. NEW FLOOR MOUNTED AIR HANDLING UNIT (AHU-2). CONNECT TO EXISTING SA AND RA DUCTS. EXISTING DUCT SMOKE DETECTORS TO REMAIN. PROVIDE NEW POWER FEED BACK TO SOURCE AND PROVIDE NEW DISCONNECT AND BREAKER. REFER TO ELECTRICAL DRAWINGS FOR NEW POWER REQUIREMENTS. PROVIDE NEW 4" HOUSEKEEPING PAD, NEW CONDENSATE LINE, AND NEW REFRIGERANT LINES.
5. ROUTE NEW CONDENSATE LINES THRU WALL TO EXISTING DRYWELL. PROVIDE NEW P-TRAPS AND SLOPE DRAIN LINES TO DRYWELL.
6. PROVIDE NEW VARIABLE AIR TERMINAL UNITS WITH ELECTRIC HEAT (TYPICAL OF 6). CONNECT TO EXISTING SA DUCT. PROVIDE NEW THERMOSTAT AT LOCATION SHOWN ON PLAN. REFER TO ELECTRICAL DRAWINGS FOR NEW POWER REQUIREMENTS.
7. PROVIDE MANUFACTURER'S RECOMMENDED SERVICE CLEARANCES.

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PROFESSIONAL SEALS:

THOMAS J. FARMER, P.E.
FLORIDA REG NO. 58890

SHEET TITLE:

HVAC NEW WORK PLAN

SHEET INFORMATION:

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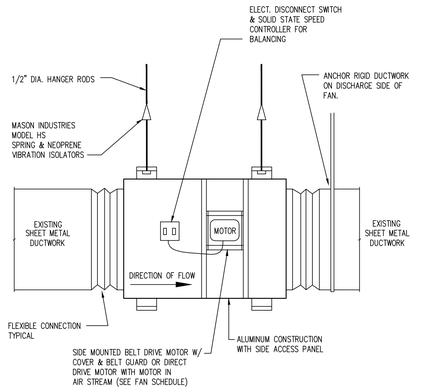
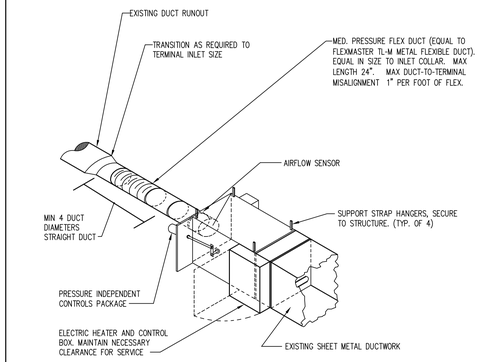
Phase:			



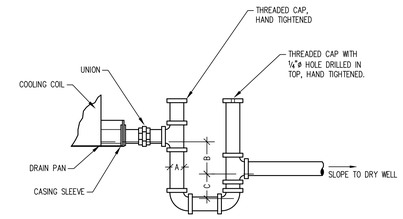
TYPICAL INLINE CENTRIFUGAL FAN DETAIL
No Scale

1



SINGLE DUCT TERMINAL UNIT W/ELECTRIC HEAT
No Scale

2



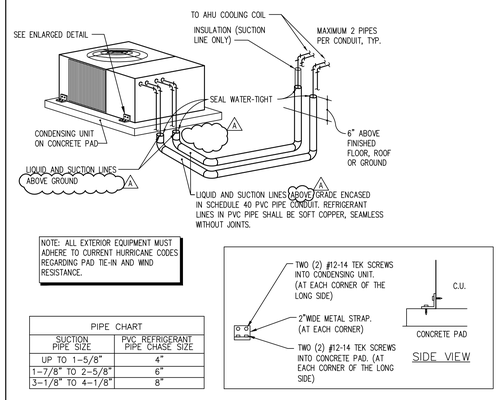
CONDENSATE DRAIN PIPING DIMENSIONS:

A = FULL SIZE OF UNIT DRAIN CONNECTION
B ≥ 1½ TIMES FAN SUCTION STATIC PRESSURE
C ≥ FAN DISCHARGE STATIC PRESSURE PLUS ½ INCH

COORDINATE MOUNTING/CURB HEIGHT AS REQUIRED TO PROVIDE PROPER CONDENSATE DRAINAGE.

AHU CONDENSATE DRAIN TRAP
No Scale

3

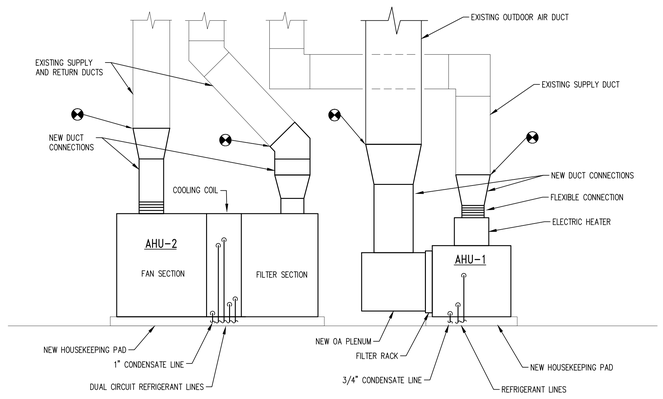


NOTE: ALL EXTERIOR EQUIPMENT MUST ADHERE TO CURRENT HURRICANE CODES REGARDING PAD TIE-IN AND WIND RESISTANCE.

PIPE CHART	
SUCTION PIPE SIZE	PVC REFRIGERANT PIPE CHASE SIZE
UP TO 1-5/8"	4"
1-7/8" TO 2-5/8"	6"
3-1/8" TO 4-1/8"	8"

CONDENSING UNIT DETAIL
No Scale

4



AIR HANDLING UNIT SECTION
No Scale

5

M-102

SPLIT DX INDOOR AIR HANDLING UNIT SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	COND. UNIT PLAN MARK	TOTAL SA CFM	OA CFM	EXT. S.P. (IN. WG)	FAN DATA				COOLING CAPACITY						ELECTRIC HEATING COIL				ELECTRICAL DATA			
							FAN HP	FAN RPM	FAN FLA	VFD	TOT. MBH	SENS. MBH	EAT DB	EAT WB	LAT DB	LAT WB	ROWS	KW	VOLT /PH	AMPS	STAGES	EAT DB	LAT DB	MCA	MOCP	VOLT/ PHASE
AHU-1	ADDISON	VCA071G	CU-1	800	800	0.8	0.5	1067	2.8	NO	59.3	35.1	94.0	76.0	54.5	54.5	4	11.3	208/3	31.4	SCR	35	79.6	42.7	45	208/3
AHU-2	TRANE	CSIA010	CU-2	4250	0	2.0	5.0	1482	16.8	YES	94.8	94.6	74.6	61.3	54.0	53.4	4	N/A	N/A	N/A	N/A	N/A	N/A	28.0	50	208/3

NOTES:
1. AHU-2 COOLING COIL SHALL BE SELECTED FOR MAXIMUM VELOCITY OF 421 FPM, A MINIMUM OF 4 ROWS AND DUAL CIRCUITS.
2. AIR HANDLING UNIT AND ASSOCIATED EXHAUST FAN SHALL SHUT DOWN UPON FIRE ALARM SIGNAL. DUCT SMOKE DETECTOR SENSING PRODUCTS OF COMBUSTION OR MANUAL ACTUATION OF AHU OR EXHAUST STARTER TO "OFF" POSITION.
3. PROVIDE MERV 13 EFFICIENCY FILTERS IN COMPLIANCE WITH ASHRAE STANDARD 52-76.
4. PROVIDE HOT GAS REHEAT FOR AHU-1.
5. PROVIDE SINGLE POINT ELECTRICAL CONNECTION. STARTER, RELAY, HEATING ELEMENT AND CONTROLS TO BE PART OF PACKAGED UNIT. (A)
6. CONNECT CONTROLS TO EXISTING JCI BUILDING AUTOMATION SYSTEM. PROVIDE NEW UNIT CONTROLLERS AND VARIABLE FREQUENCY DRIVE TO INTERFACE TO EXISTING JCI BAS.
7. BASIS OF DESIGN IS TRANE AND ADDISON. REFER TO SPECIFICATIONS FOR LIST OF APPROVED EQUIVALENT MANUFACTURERS.
8. PROVIDE NEOPRENE PAD AND 6" STEEL BASE RAILS UNDER AHUS. (A)

SPLIT DX OUTDOOR CONDENSING UNIT SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NO.	CAPACITIES					ELECTRICAL DATA						
			CLNG MIN. MBH	CLNG AMB. TEMP	REF. TYPE	REF. LBS	SYSTEM EER	NO. FANS	FAN MOTOR (HP)	FAN FLA	NO. COMP.	COMP. RLA(EA)	MCA	MOCP	VOLT/ PHASE
CU-1	ADDISON	RCA061G	59.3	105	R-410A	21.4	13.0	1	1	3.0	1	15.9	22.9	35	208/3
CU-2	TRANE	TTA090H	94.8	105	R-410A	14.6	12.4	1	0.5	3.1	2	14.6	36.0	50.0	208/3

NOTES:
1. REFRIGERANT PIPING SIZED BASED ON USING LONG RADIUS ELBOWS EXCEPT FOR SUCTION LINE TRAP AT CONDENSING UNIT.
2. BASIS OF DESIGN IS TRANE AND ADDISON. REFER TO SPECIFICATIONS FOR LIST OF APPROVED EQUIVALENT MANUFACTURERS.

FAN SCHEDULE

PLAN MARK	MODEL NO.	TYPE	CFM	ESP ("W.C.)	FAN RPM	MOTOR RPM	MOTOR KW	VOLT/ PHASE	DRIVE TYPE	FAN SERVICE	ACCESSORIES
EF-1	CSP-A700	INLINE CABINET	640	0.65	1100	1100	0.35	115/1	DIRECT	RESTROOM/JANITOR	1,4,7,8

NOTES:
1. MODEL NUMBERS AND FAN SELECTION ARE BASED ON GREENHECK. REFER TO SPECIFICATIONS FOR LIST OF APPROVED EQUIVALENT MANUFACTURERS.
2. INTERLOCK OPERATION WITH AHU-1.

ACCESSORIES:
1) BACKDRAFT DAMPER
2) THERMOSTAT
3) BIROSCREEN
4) DISCONNECT SWITCH
5) EQUIPMENT SUPPORTS
6) FILTERS
7) VIBRATION ISOLATORS
8) MOTOR COVER

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

PLAN MARK	SERVING	DESIGN CFM	MINIMUM CFM	INLET SIZE	ESP (IN WG)	HEATER COIL DATA			
						KW	EAT (°F)	LAT (°F)	HEATING CFM	VOLTS/ POLES
VAV-1-1	ACTIVITY ROOM	970	195	12	0.14	7	60	80	475	208/1
VAV-1-2	BREAK ROOM	230	65	6	0.13	2	60	80	130	208/1
VAV-1-3	OPEN OFFICE	820	195	12	0.09	6	60	80	410	208/1
VAV-1-4	LOBBY	1310	195	14	0.26	9	60	80	655	208/1
VAV-1-5	OFFICE	620	120	10	0.15	5	60	80	365	208/1
VAV-1-6	RESTROOMS	300	300	8	0.19	2	60	80	300	208/1

NOTES:
1. BASIS OF DESIGN: TRANE MODEL VCEF. REFER TO SPECIFICATIONS FOR LIST OF APPROVED EQUIVALENT MANUFACTURERS.
2. MAXIMUM AIR PRESSURE DROP ACROSS THE HEATING COIL SHALL BE 0.2 INCHES.
3. FURNISH TERMINAL UNITS WITH MANUFACTURER'S STEP DOWN TRANSFORMER TO 24 VOLTS.

AIR CONDITIONING DESIGN SCHEDULE

DESIGN AREA	SUMMER DESIGN				WINTER DESIGN		
	OUTSIDE		INSIDE		OUTSIDE	INSIDE	
	DB	WB	DB	% RH	DB	DB	% RH
WINTER GARDEN	94	76	75	55	35	70	35-50

SEQUENCE OF OPERATION

CONNECT CONTROLS TO EXISTING JCI BUILDING AUTOMATION SYSTEM. PROVIDE NEW UNIT CONTROLLERS TO INTERFACE TO EXISTING JCI BAS.

AHU-1/CU-1: 100% OUTDOOR AIR UNIT

GENERAL: AHU-1 IS A HEATING AND COOLING CONSTANT VOLUME DX SPLIT SYSTEM THAT SUPPLIES PRE-CONDITIONED VENTILATION AIR TO THE OCCUPIED BUILDING SPACES. COOLING AND HEATING MODES WILL BE DETERMINED BY THE TEMPERATURE AND HUMIDITY OF THE OUTDOOR AMBIENT AIR AS SENSED BY THE OUTDOOR SENSOR. THE UNIT'S SA FAN SHALL BE INTERLOCKED TO OPERATE AUTOMATICALLY AND CONTINUOUSLY WHEN AHU-2 IS IN OCCUPIED MODE. BATHROOM EXHAUST FAN (EF-1) SHALL BE INTERLOCKED TO OPERATE WHEN AHU-1 IS IN OPERATION.

OCCUPIED COOLING MODE: WHENEVER THE OUTDOOR TEMPERATURE IS GREATER THAN 60°F (ADJ.), THE COMPRESSOR SHALL BE ENERGIZED TO COOL AND DEHUMIDIFY THE OUTDOOR AIR. A HOT GAS REHEAT COIL RAISES THE TEMPERATURE OF THE VENTILATION AIR TO A NEUTRAL 70°F (ADJ.) BEFORE IT IS DELIVERED TO EACH SPACE.

OCCUPIED HEATING MODE: WHENEVER THE OUTDOOR TEMPERATURE IS LESS THAN 60°F (ADJ.), THE UNIT'S ELECTRIC HEATING COIL SHALL BE ENERGIZED TO MAINTAIN A 70°F (ADJ.) VENTILATION AIR SUPPLY TEMPERATURE.

UNOCCUPIED MODE: AHU-1 SHALL BE DE-ENERGIZED AND THE OA MOTORIZED DAMPER SHALL CLOSE. BAS SHALL DE-ENERGIZE INTERLOCKED EXHAUST FAN (EF-1).

SAFETIES

- PROVIDE TIME-DELAYS TO PREVENT SHORT CYCLING.
- UNITS SHALL BE EQUIPPED WITH HI-LOW LIMIT REFRIGERANT CIRCUIT PRESSURE SENSORS.
- PROVIDE CONDENSATE DRAIN PAN AND OR CONDENSATE PUMP SUMP FLOAT SWITCH FOR EMERGENCY SHUT-OFF.
- UNITS SHALL SHUT DOWN UPON UPON FIRE ALARM SIGNAL, DUCT SMOKE DETECTOR SENSING PRODUCTS OF COMBUSTION AND A SIGNAL SHALL BE SENT TO THE FIRE ALARM SYSTEM.

AHU-2/CU-2: RECIRCULATION UNIT

THE SPLIT-DX VAV UNIT SHALL BE CONTROLLED ON A SEVEN-DAY TIME SCHEDULE PROGRAMMED THROUGH THEIR RESPECTIVE THERMOSTATS. BOTH SYSTEMS SHALL PROGRAMMED TO OPERATE IN THE SAME OPERATIONAL MODE (OCCUPIED OR UNOCCUPIED)

OCCUPIED COOLING MODE: UPON A CALL FOR THE SYSTEM TO OPERATE, THE OUTDOOR UNIT FANS SHALL START AND RUN CONTINUOUSLY AND THE VFD FOR THE AHU SHALL BE ENERGIZED AND GRADUALLY RAMP UP TO SPEED. THE DDC CONTROLLER SHALL MONITOR THE STATUS OF THE AHU FAN THROUGH A DIFFERENTIAL AIR PRESSURE SWITCH ACROSS THE FAN. THE SPEED OF THE SUPPLY FAN SHALL BE MODULATED THROUGH THE VFD TO MAINTAIN A SUPPLY DUCT STATIC PRESSURE SETPOINT OF 3.0" AT THE SENSOR LOCATED 3/4 OF THE WAY DOWN THE LONGEST RUN FROM THE AHU. (ADJUSTABLE – AS DETERMINED BY T&B.) UPON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SET POINT OF 75°F (ADJ.) THE COMPRESSOR SHALL BE ENERGIZED. UPON A DROP IN SPACE TEMPERATURE BELOW SET POINT, THE COMPRESSOR SHALL BE DEACTIVATED.

OCCUPIED HEATING MODE: UPON A CALL FOR THE SYSTEM TO OPERATE, THE AHU FAN SHALL START AND RAMP UP TO THE MINIMUM AIRFLOW. UPON A DROP IN SPACE TEMPERATURE BELOW THE HEATING SET POINT OF 70°F (ADJ.) THE ZONE ELECTRIC HEAT AT THE VAV BOX SHALL BE ENERGIZED. UPON A RISE IN SPACE TEMPERATURE ABOVE SET POINT, THE ELECTRIC HEAT SHALL BE DEACTIVATED.

UNOCCUPIED MODE: THE SYSTEMS SHALL OPERATE ON THE ADJ. UNOCCUPIED SCHEDULE WITH COOLING SET POINT OF 80°F AND HEATING SET POINT OF 60°F.

SAFETIES: PROVIDE TIME-DELAYS TO PREVENT SHORT CYCLING. UNITS SHALL BE EQUIPPED WITH HI-LOW LIMIT REFRIGERANT CIRCUIT PRESSURE SENSORS. PROVIDE CONDENSATE DRAIN PAN AND OR CONDENSATE PUMP SUMP FLOAT SWITCH FOR EMERGENCY SHUT-OFF. UNITS SHALL SHUT DOWN UPON DUCT SMOKE DETECTOR SENSING PRODUCTS OF COMBUSTION AND A SIGNAL SHALL BE SENT TO THE FIRE ALARM SYSTEM.

VAV TERMINAL UNITS

EACH TERMINAL UNIT SHALL BE PRESSURE INDEPENDENT WITH INDEPENDENT COOLING MAXIMUM AND MINIMUM AIRFLOW LIMITS, AND AN INDEPENDENT HEATING AIRFLOW SETPOINT.

WHEN THE SPACE TEMPERATURE RISES ABOVE THE COOLING SETPOINT 75°F (ADJ), THE COMPRESSOR SHALL ENERGIZE AND THE VAV TERMINAL'S SHALL INDEX TO THE PRESET SUPPLY AIR COOLING MAXIMUM AS SCHEDULED. AS THE SPACE TEMPERATURE DROPS BELOW THE COOLING SETPOINT OF 75°F (ADJ.), THE VAV TERMINAL'S DDC CONTROLLER SHALL GRADUALLY REDUCE SUPPLY AIR VOLUME TO A PRESET COOLING MINIMUM (ADJ.) AS SCHEDULED.

UPON A FURTHER DROP IN SPACE TEMPERATURE, THE COMPRESSOR SHALL DE-ENERGIZE, THE TERMINAL UNIT SHALL BE INDEXED TO HEATING MODE AND THE SUPPLY AIR VOLUME SHALL BE RESET TO THE PRESET HEATING AIRFLOW SETPOINT (ADJ.) AS SCHEDULED. THE TERMINAL UNIT'S ELECTRIC HEAT SHALL SEQUENCE TO MAINTAIN THE HEATING SETPOINT OF 70°F (ADJ.).

DURING UNOCCUPIED PERIODS, THE DDC CONTROLLER SHALL MAINTAIN UNOCCUPIED ADJUSTABLE SETPOINTS OF 80°F COOLING AND 60°F HEATING.

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CONSULTANT:

CLIENT:

ORANGE COUNTY GOVERNMENT FLORIDA

PROJECT NAME:

Orange County Mildred Dixon Activity Center
HVAC Replacement
303 S West Crown Point Road Winter Garden, Fl 34787

100045179

No.	Date	Description
1	12/14/2015	REVISION A

ISSUE LOG

PROFESSIONAL SEALS:

THOMAS J. FARMER, P.E.
FLORIDA REG NO. 58890

SHEET TITLE:

HVAC CONTROLS DETAILS AND SCHEDULES

SHEET INFORMATION:

JOB No. 100045179		Date Issued: NOVEMBER 5, 2015	
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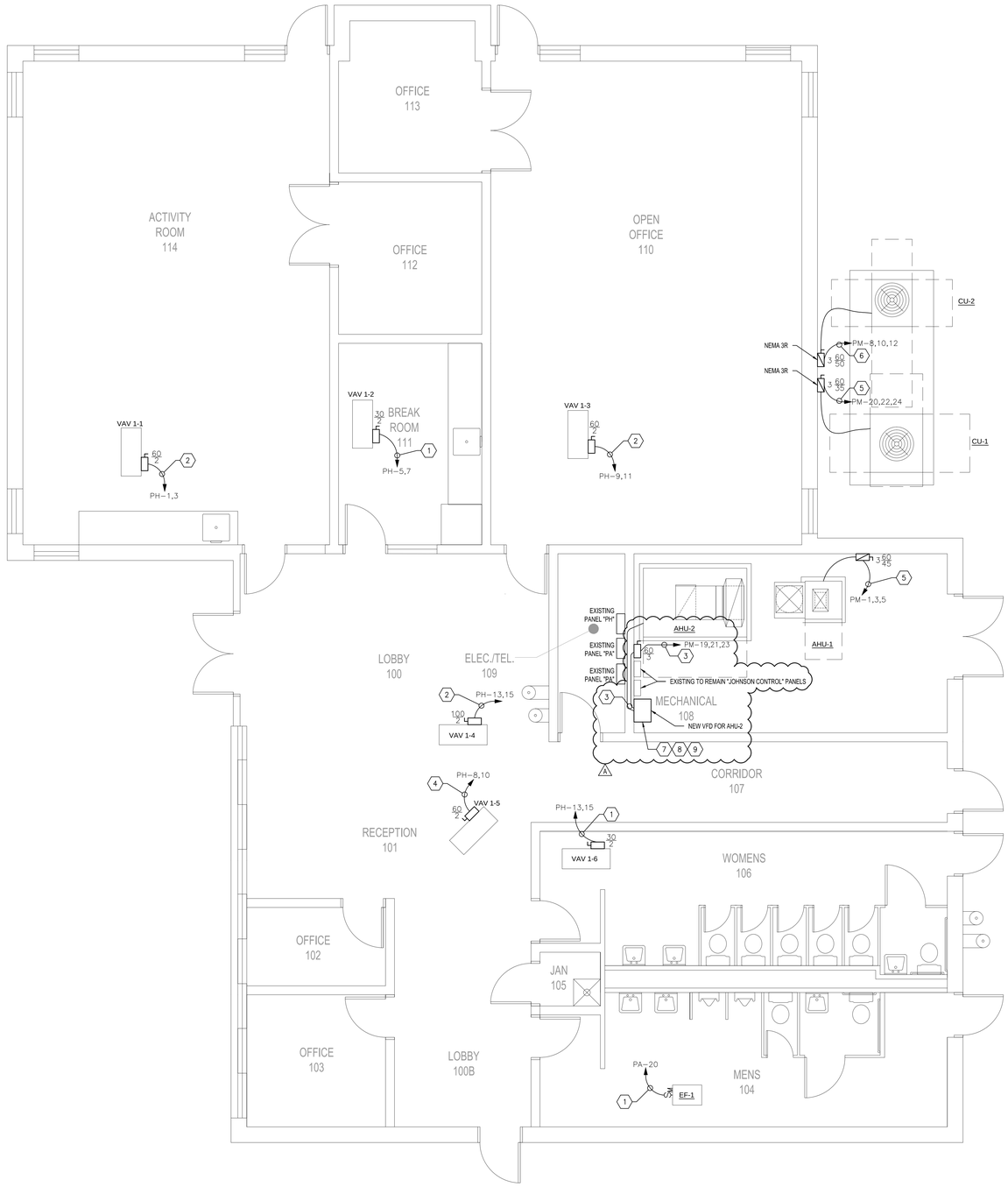

A ELECTRICAL - NEW WORK PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. THE WORK PRACTICES EMPLOYED ON THIS PROJECT SHALL AT ALL TIMES COMPLY WITH OR EXCEED THE LATEST ADOPTED EDITION OF THE NEC (NATIONAL ELECTRICAL CODE). ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED LABOR, MATERIAL, EQUIPMENT, INSURANCE, TOOLS, PERMITS, INSPECTIONS, ETC. TO PERFORM THE PROJECT ELECTRICAL WORK AS PER NEC, LOCAL AGENCIES, AND OWNER REQUIREMENTS.
2. A COPPER EQUIPMENT GROUNDING CONDUCTOR, SIZED AS PER TABLE 250-122 OF THE 2008 OR LATEST ADOPTED NEC, SHALL BE INSTALLED IN EVERY RACEWAY AND EFFECTIVELY TERMINATED AT EACH DEVICE. UNLESS NOTED OTHERWISE, MINIMUM WIRES SIZE FOR PHASE, NEUTRAL AND GROUND SHALL BE #12AWG AND MINIMUM CONDUIT SIZE SHALL BE 3/4".
3. CONDUCTORS SHALL BE STRANDED COPPER TYPE THHN/THWN-2 UNLESS NOTED OTHERWISE.
4. CONTRACTOR SHALL FIELD VERIFY LOCATION AND POWER NEEDS OF EQUIPMENT WITH OWNER'S REPRESENTATIVE (REVISE BRANCH CIRCUITS AS REQUIRED).
5. JUNCTION BOXES SHALL BE PROVIDED AS PER NEC REQUIREMENT ACCORDINGLY TO THEIR LOCATION.
6. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CUTTING AND PATCHING REQUIRED TO PERFORM THE ELECTRICAL WORK. OWNER/GENERAL CONTRACTOR SHALL BE NOTIFIED BEFORE STARTING ANY CUTTING AND PATCHING, AND SHALL BE DONE IN SUCH A MANNER THAT WILL NOT AFFECT THE BUILDING STRUCTURE. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE AS A RESULT OF THE CUTTING AND PATCHING AND SHALL PROVIDE A CODE COMPLIANCE SOLUTION TO RESTORE THE DAMAGED SYSTEMS AT NO EXTRA CHARGE.
7. ELECTRICAL CONTRACTOR SHALL FOLLOW OWNER/GENERAL CONTRACTOR, NATIONAL AND LOCAL AGENCIES, ETC. SAFETY REGULATIONS PROCEDURES. ELECTRICAL CONTRACTOR SHALL PROVIDE ADEQUATE EQUIPMENT AND WORKING AREA PROTECTION TO PREVENT INJURIES TO PEOPLE AND DAMAGE TO PROPERTY.
8. ELECTRICAL CONTRACTOR SHALL FULLY TEST ALL ELECTRICAL SYSTEMS UPON COMPLETION OF WORK.
9. IT IS THE BIDDER'S RESPONSIBILITY TO INSPECT THE PROJECT SITE AND CONSTRUCTION DOCUMENTS PRIOR TO BIDDING. FAILURE TO DO SO SHALL NOT RELIEVE THE ELECTRICAL CONTRACTOR TO COMPLY AND PERFORM IT IS WORK RESPONSIBILITIES UNDER THIS CONTRACT.
10. LABEL JUNCTION BOXES WITH SOURCE PANEL AND CIRCUIT NUMBER.
11. VERIFY PHASE ROTATION ON ALL THREE-PHASE EQUIPMENT (DISCONNECTS, RECEPTACLES, ETC.)
12. CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE. CIRCUIT BREAKERS PROTECTING POWER PANELS, TRANSFORMERS, AND MOTORS SHALL BE 100% RATED. CIRCUIT BREAKERS PROTECTING HEATING, AIR CONDITIONING AND REFRIGERATION EQUIPMENT SHALL BE HACR RATED.
13. POWER DISTRIBUTION CONDUITS AND HOME RUNS SHALL BE RUN ABOVE THE BOTTOM OF TRUSSES TO AVOID FIRE RATED WALL PENETRATIONS. IF A FIRE WALL PENETRATION IS REQUIRED, THE ELECTRICAL CONTRACTOR SHALL USE AND PROVIDE A WALL PENETRATION PROCEDURE AND INSTALLATION APPROVED BY THE A.H.J. FOR THE FIRE RATED WALL TO BE PENETRATED.
14. REPLACE EXISTING DISCONNECT SWITCHES, MOTOR RATED SWITCHES AND CIRCUIT BREAKERS WITH NEW.
15. REMOVE EXISTING BRANCH CIRCUIT WIRING BACK TO PANELBOARD AND PROVIDE NEW WIRING AS INDICATED ON PLAN. RE-USE EXISTING CONDUIT UNLESS OTHERWISE NOTED.

KEYED NOTES

1. NEW 2#12 & 1#12G IN EXISTING 3/4" CONDUIT.
2. NEW 2#6 & 1#10G IN EXISTING 3/4" CONDUIT.
3. NEW 4#4 & 1#10G IN NEW 1 1/4" CONDUIT.
4. NEW 2#8 & 1#10G IN EXISTING 3/4" CONDUIT.
5. NEW 3#8 & 1#10G IN NEW 1" CONDUIT.
6. NEW 4#4 & 1#6G IN EXISTING 1" CONDUIT.
7. NEW VFD WITH BY-PASS 208V, 3-φ.
   MANUFACTURER: ABB
   CATALOG NO.: ACH550-BCR-017A-2-B055+F267
   DIMENSIONS: 36.1" x 20.5" x 15.3" (H x W x D)
8. PROVIDE A HAND-OFF-AUTO SWITCH IN FRONT COVER OF THE NEW NEMA-12 VFD ENCLOSURE.
9. COORDINATE REPLACEMENT OF VFD WITH OWNER AND EXISTING BUILDING MANAGEMENT SYSTEM (JOHNSON CONTROL PANEL) REQUIREMENTS. CONTRACTOR TO PROVIDE AND ROUTE NEW CONTROL WIRING AND CONDUIT FROM VFD TO JOHNSON CONTROL PANEL AS REQUIRED FOR A COMPLETE AND FUNCTIONAL WORKING SYSTEM.

ELECTRICAL SYMBOLS

- 20A. MOTOR RATED SWITCH.
- 60 / 2 — NON-FUSED SAFETY SWITCH, 3 = NO. OF POLES, 60 = SWITCH SIZE. 600 V. UNLESS OTHERWISE NOTED.
- 3 / 60 / 50 — FUSED SAFETY SWITCH, 3 = NO. OF POLES, 60 = SWITCH SIZE, 50 = FUSES SIZE. 600 V. UNLESS OTHERWISE NOTED.

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PROFESSIONAL SEALS:

GEARY F. HEINRICH, P.E.
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ELECTRICAL NEW WORK PLAN

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