ORANGE COUNTY MAYOR **TERESA JACOBS**

DISTRICT 1 COMMISSIONER

S. SCOTT BOYD

DISTRICT 2 COMMISSIONER FREDERICK C. BRUMMER



PRIME CONSULTANT MATERN PROFESSIONAL ENGINEERING, INC.

ORANGE COUNTY, FLORIDA



DISTRICT 3 COMMISSIONER

PETE CLARKE

DISTRICT 4 COMMISSIONER

JENNIFER THOMPSON

DISTRICT 5 COMMISSIONER

TED B. EDWARDS

DISTRICT 6 COMMISSIONER TIFFANY MOORE RUSSELL

FIRE STATION #54 HVAC REPLACEMENT

06-17-14 **BID DOCUMENTS**

HVAC

M-0.1	LE
PH-1.1	Hλ
MD-1.1	FL
M-1.1	FL
M-2.1	CC
M-3.1	SC
M-4.1	DE
M-4.2	DE
E-1.1	FL

EGEND AND NOTES HVAC IVAC PHASING PLAN LOOR PLAN - HVAC - DEMOLITION LOOR PLAN - HVAC ONTROLS - HVAC CHEDULES - HVAC ETAILS - HVAC ETAILS II - HVAC LOOR PLAN - ELECTRICAL

	HVAC SYME	BOL LEG	END
24x12	DUCT-FIRST DIM. IS WIDTH DUCT-SECOND DIM. IS HEIGHT		DUCT TAKE-OFF W/ VOLUME DAMPER
×1	DUCT ELBOW DOWN	0	POINT OF CONNECTION NEW TO EXISTING WORK
X	DUCT ELBOW UP	@	POINT OF EXTENT OF REMOVAL OF EXISTING HVAC
R	DUCT RISE	Q	THERMOMETER
	DUCT DOWN	\oslash	PRESSURE GAUGE
SA 🔀	DUCT UNDER POSITIVE PRESSURE		UNION OR FLANGE
	DUCT UNDER NEGATIVE DA PRESSURE		BALL OR BUTTERFLY VALVE
R	ELBOW W/TURNING VANES		CHECK VALVE
	- TAKE-OFF W/EXTRACTOR		MODULATING CONTROL VALVE
	FLEXIBLE DUCT	<u> </u>	TWO POSITION CONTROL VALVE
	FLEXIBLE CONNECTION	\$	PLUG VALVE W/ MEMORY
	SUPPLY AIR TERMINAL ARROW INDICATES THROW		FLEXIBLE PIPE
	RETURN OR EXHAUST AIR		STRAINER
	LINEAR DIFFUSERS	A	MANUAL AIR VENT
	SIDE MOUNTED EHD	Å −	AUTOMATIC AIR VENT
	BOTTOM MOUNTED EHD		3/4" HOSE END DRAIN PIPE
	FIRE DAMPER	— CHWS —	CHILLED WATER SUPPLY
	SMOKE DAMPER	— CHWR —	CHILLED WATER SUPPLY
5/F 📫	SMOKE AND FIRE DAMPER	— HWS —	HOT WATER SUPPLY
/D == F	VOLUME DAMPER	— HWR —	HOT WATER RETURN
RVD F	REMOTE VOLUME DAMPER	—— RHG ——	REFRIGERANT HOT GAS
	MOTORIZED DAMPER		REFRIGERANT LIQUID
	BACKDRAFT DAMPER	— — RS — —	REFRIGERANT SUCTION
<u>s</u> —	SMOKE DETECTOR (DUCT MOUNTED)	D	CONDENSATE DRAIN
AD	CEILING ACCESS DOOR		PIPE ELBOW DOWN
AD	DUCT ACCESS DOOR		PIPE ELBOW UP
Ð	HUMIDITY SENSOR		PIPE ELBOW
<u> </u>	ROOM SENSOR		PIPE TEE DOWN
Ō	THERMOSTAT	<u> </u>	PIPE TEE UP
		ø	ROUND

AC
AHU
AFF
BDD
BHP
BMS
BTU
CF
CFM
CLG
CYC
COND
CC
CD
CG
DIM
DB
۴
DWG
EA
EAT
EG
EHC
EHD
EHU
EHW
ENT
ER
EWT
F
FCU
EF
EFG
FF
FPI
FPM
FR
SF
GPM

	0.T.0.1			07440400		- 070 00 4 04						(1)501141104		
ZONE IDENTIFIC	CATION			STANDARD	CASE: ASHRAE			n Raie Pr	-				· · · · · · · · · · · · · · · · · · ·	5.3
ZONE	OCCUPANCY CATEGORY	Az ZONE FLOOR AREA (SF)	Rp PEOPLE OUTDOOR AIR RATE (CFM/ PERSON)	Ra AREA OUTDOOR AIR RATE (CFM/ SF)	Pz Zone Population	BREATHING ZONE OUTDOOR AIR FLOW (CFM)	TABLE 6-2 Zone Air Distribution Effectiveness Ez		PRIMARY OUTDOOR AIR FRACTION Zp=Voz/Vpz	TABLE 6-3 SYSTEM VENTILATION EFFICENCY Ev	OUTDOOR		MEETS Standard	UNIT TAG
T. OFFICE 101	OFFICE SPACE	156	5.0	.06	2	20	1.0	20	.08	1.0	20	35	YES	AHU-1.1
FFICE 102	OFFICE SPACE	296	5.0	.06	3	33	1.0	33	.06	1.0	33	81	YES	AHU-1.1
FFICE 103	OFFICE SPACE	87	5.0	.06	2	16	1.0	16	.14	1.0	16	16	YES	AHU-1.1
OBBY 197	OFFICE LOBBY	191	5.0	.06	2	22	1.0	22	.08	1.0	22	42	YES	AHU-1.1
ORRIDOR 199A	GENERAL (CORRIDOR)	99		.06		6	1.0	6	.06	1.0	6	14	YES	AHU-1.1
OTAL											97	188		VENT CFM - 200
INING 104	GENERAL (MEETING)	690	5	.06	6	72	1.0	72	.10	1.0	72	84	YES	AHU-1.2
ITCHEN 105	FOOD SERVICE	225	7.5	.18	1	49	1.0	49	.12	1.0	49	51	YES	AHU-1.2
EADY ROOM 106	GENERAL (MEETING)	495	5.0	.06	6	60	1.0	60	.07	1.0	60	102	YES	AHU-1.2
DTAL											181	237		VENT CFM - 250
T. DORMATORY 108	SLEEPING AREA	125	5.0	.06	1	13	1.0	13	.07	1.0	13	44	YES	AHU-1.3
ORMATORY 109	SLEEPING AREA	312	5.0	.06	4	39	1.0	39	.12	1.0	39	77	YES	AHU-1.3
ORMATORY 111	SLEEPING AREA	700	5.0	.06	8	82	1.0	82	.10	1.0	82	178	YES	<u>AHU-1.3</u>
XERCISE AREA 111	WEIGHT ROOM	430	20	.06	3	85	1.0	85	.17	.9	95	112	YES	AHU-1.3
OCKERS 111A	GENERAL (STORAGE)	416		.12		50	1.0	50	.16	.9	56	72	YES	AHU-1.3
(ERCISE 111B	WEIGHT ROOM	155	20.0	.06	1	30	1.0	30	.15	1.0	30	44	YES	AHU-1.3
ECTRIC ROOM E100	GENERAL (STORAGE)	94		.12		12	1.0	12	.08	1.0	12	33	YES	AHU-1.3
DRRIDOR 199B	GENERAL (CORRIDOR)	210		.06		13	1.0	13	.06	1.0	13	55	YES	AHU-1.3
TOTAL											340	615		VENT CFM - 750

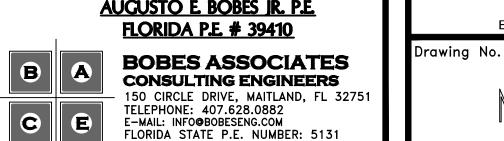
NOTE: DATA BASED ON ASHREA STANDARD 62.1–2004. ALL VENTILATION AIR IS PROVIDED TO EACH AHU BY 100% OUTDOOR AIR SYSTEM AHU–1.5/CU–1.5.

HVAC ABB	REVIATIC	DNS
AIR CONDITIONING	HD	HUB DRAIN
AIR HANDLING UNIT	HOA	HAND/OFF/AUTOMATIC
ABOVE FINISHED FLOOR	HP	HORSEPOWER
BACKDRAFT DAMPER	HVAC	HEATING, VENTILATING & AIR CONDITIONING
BRAKE HORSEPOWER	H20	WATER
BUILDING MANAGEMENT SYSTEM	INIT	INTITIAL
BRITISH THERMAL UNIT	KSU	KITCHEN AIR SUPPLY UNIT
CHEMICAL FEEDER	LAT	LVG. AIR TEMPERATURE
CUBIC FEET PER MINUTE	ĽĎ	LINEAR DIFFUSER
CEILING	LR	LINEAR RETURN
CYCLES	LVG	LEAVING
CONDENSATE	LWT	LVG. WATER TEMPERATURE
COOLING COIL	MAU	MAKE UP AIR UNIT (KITCHEN HOOD)
CEILING DIFFUSER	MBH	MEGA BTU PER HOUR
CEILING GRILLE	MD	MOTORIZED DAMPER
DIMENSION	NC	NOISE CRITERIA
DRY BULB	NIC	NOT IN CONTRACT
DEGREES FARENHEIT	AO	OUTSIDE AIR
DRAWING	OPER	OPERATING
EXHAUST AIR	OV	OUTLET VELOCITY
ENTERING AIR TEMPERATURE	PCF	PUMP, CHEMICAL FEED
EXHAUST AIR GRILLE	PCH	PUMP, CHILLED WATER
ELECTRIC HEATING COIL	PD	PRESSURE DROP
ELECTRIC HEATER, DUCT	РН	PHASE
ELECTRIC UNIT HEATER	RG	RETURN AIR GRILLE
ELECTRIC HEATER, WALL	ROT	ROTATION
ENTERING	RPM	REVOLUTION PER MINUTE
EXHAUST AIR REGISTER	RVD	REMOTE VOLUME DAMPER
ENT. WATER TEMPERATURE	SA	SUPPLY AIR
FILTER	SENS	SENSIBLE
FAN COIL UNIT	SD	SPLITTER DAMPER
EXHAUST FAN	SP	STATIC PRESSURE
EXHAUST FAN, GREASE	SR	SUPPLY AIR REGISTER
FLY FAN	TG	TRANSFER AIR GRILLE
FINS PER INCH	TEMP	TEMPERATURE
FEET PER MINUTE	UD	UNDERCUT DOOR
FAN, RETURN	VG	VENT, GRAVITY
SUPPLY FAN	W	WATTS
GALLONS PER MINUTE	WB	WET BULB
	W/	WITH

HVAC GENERAL NOTES

- 1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE 2010 FLORIDA BUILDING CODE, THE 2010 34. ALL FIRE/SMOKE DAMPERS ARE NORMALLY OPENED, 110 VOLTS. ALL DAMPERS SHALL CLOSE FLORIDA MECHANICAL CODE. THE 2010 FLORIDA ENERGY EFFICIENCY CODE AND THE ORANGE WHEN THE SMOKE DETECTOR IN THE AREA DETECTS SMOKE OR IF THE FIRE ALARM SYSTEM IS COUNTY BUILDING DEPARTMENT REQUIREMENTS AND ALL OTHER APPLICABLE CODES AND ACTIVATED. ONCE THE FIRE ALARM SYSTEM IS RESET, THE SMOKE DAMPERS SHALL RETURN STANDARDS. TO THE NORMALLY OPENED POSITION. 2. CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS IN THE FIELD FOR EQUIPMENT, 35. PROVIDE ACCESS DOORS (24"x24") FOR ALL FIRE/SMOKE DAMPERS AND FIRE DAMPERS IN DUCTWORK AND WALL OR ROOF PENETRATIONS. COORDINATE DUCTWORK DISTRIBUTION SYSTEM NON-ACCESSIBLE CEILINGS. WITH THE EXISTING VARYING HEIGHTS OF THE ROOF SUPPORT STRUCTURE,
- 3. REFER TO ARCHITECTURAL DRAWINGS FOR CLEARANCES WITHIN THE CEILING SPACE, MECHANICAL ROOMS, LOCATIONS AND SIZES OF BEAMS AND CEILING AND SOFFIT HEIGHTS. EXISTING ARCHITECTURAL DRAWINGS (PDF FORMAT) OF THE FIRE STATION #54 BUILDING CAN BE OBTAINED FROM ORANGE COUNTY FACILITIES DEPARTMENT.
- 4. DUCTWORK AND EQUIPMENT LOCATIONS AND CLEARANCES SHALL BE COORDINATED WITH GENERAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL CONTRACTORS. REFER TO EXISTING ARCHITECTURAL PLANS FOR BUILDING SECTIONS AND DETAILS.
- 5. CONNECTION TO ALL EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURERS CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR ALL EQUIPMENT FURNISHED.
- 6. COORDINATE DIFFUSER, REGISTER AND GRILLE LOCATION WITH LIGHTING, SPRINKLER AND ARCHITECTURAL CEILING PLANS. ALSO COORDINATE THE TYPE OF DIFFUSER FRAME WITH THE CEILING TYPE.
- 7. ALL EQUIPMENT SHALL BE PROPERLY SUPPORTED AND ISOLATED TO PREVENT NOISE AND VIBRATION TRANSMISSION. ALL AIR HANDLING EQUIPMENT SHALL BE SUPPORTED OR SUSPENDED WITH SPRING VIBRATION ISOLATORS PADS. ALL CONNECTIONS BETWEEN AIR HANDLING EQUIPMENT AND DUCTWORK SHALL BE CANVAS FLEXIBLE CONNECTORS.
- 8. ALL MECHANICAL EQUIPMENT SHALL BE LOCATED WITH RESPECT TO BUILDING CONSTRUCTION AND OTHER EQUIPMENT SO AS TO PERMIT ACCESS TO THE MECHANICAL EQUIPMENT IN CONFORMITY WITH ANY CLEARANCE WHICH MAY BE RECOMMENDED BY THE MANUFACTURER OF THE EQUIPMENT. SUFFICIENT CLEARANCE SHALL BE MAINTAINED FOR CLEANING COILS, MOTORS, BURNERS, AS WELL AS CHANGING FILTERS. ALL EQUIPMENT SHALL BE LOCATED WITHIN THE MECHANICAL ROOM AND CEILING SPACES WITH ADEQUATE CLEARANCES FOR REPAIR AND MAINTENANCE. ALL PIPING AND DUCTWORK SHALL BE INSTALLED TO PROVIDE ADEQUATE CLEARANCE FOR ACCESS TO ALL EQUIPMENT. INSTALLATION OF ALL MECHANICAL EQUIPMENT SHALL COMPLY WITH THE MANUFACTURERS SPECIFICATION AND CLEARANCE REQUIREMENT.
- 9. ALL DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS.
- 10. THE INSIDE OF ALL DUCTS VISIBLE THRU THE FACE OF DIFFUSERS, REGISTERS, AND GRILLES SHALL BE PAINTED FLAT BLACK WITH NON TOXIC PAINT.
- 11. ALL SUPPLY AIR, RETURN AIR, OUTSIDE AIR AND EXHAUST AIR DUCTWORK SHALL BE GALVANIZED STEEL SHEETS. FABRICATION AND INSTALLATION SHALL BE IN ACCORDANCE WITH LATEST EDITION OF SMACNA DUCT CONSTRUCTION STANDARDS. SUPPLY AIR, RETURN AIR, OUTSIDE AIR AND EXHAUST DUCTWORK FOR EXHAUST FANS EF-1 AND EF-2 SHALL BE RATED FOR A 2 INCH PRESSURE CLASSIFICATION. EXHAUST AIR DUCTWORK FOR RESTROOM EXHAUST FANS SHALL BE RATED FOR 1" PRESSURE CLASSIFICATION.
- 12. ALL DUCTWORK TRANSVERSE AND LONGITUDINAL SEAMS AND JOINTS SHALL BE SEALED WITH APPROVED MASTIC.
- 13. ALL GREASE DUCT CONSTRUCTION SHALL BE STAINLESS STEEL, MIN 18 GAGE, OR CARBON STEEL, MIN 16 GAGE, ALL WELDED, LIQUID TIGHT CONSTRUCTION AS PER NFPA 96 LATEST EDITION AND 2010 FBCM SECTION 506.
- 14. ALL GREASE DUCT TO HOOD COLLAR CONNECTIONS SHALL BE MADE AS SHOWN IN FIGURE 7.5.2.2, NFPA 96 LATEST EDITION.
- 15. GREASE EXHAUST DUCT SHALL BE WRAPPED IN A FIRE RATED WRAP THROUGH IT'S ENTIRE LENGTH. MAINTAIN MINIMUM CLEARANCE AS PER NFPA 96. LATEST EDITION. DUCT ENCLOSURE SHALL COMPLY WITH 2010 FBCM SECTION 506.2.10 DUCT ENCLOSURE.
- 16. FLEXIBLE DUCTWORK SHALL BE INSULATED VINYL TYPE (R-6) WITH WIRE SPIRAL SUPPORT. FLEXIBLE DUCTWORK SHALL BE RUN IN MAXIMUM LENGTHS OF 20'-0". FLEXIBLE DUCTWORK SHALL BE PROPERLY SUPPORTED WITH GALVANIZED STEEL STRAPS 1" WIDE AND SHALL BE RUN AS STRAIGHT AS POSSIBLE WITH NO KINKS OR BENDS TO RESTRICT AIRFLOW.
- 17. ALL DUCTWORK, EXCEPT THE EXHAUST SYSTEM, SHALL BE EXTERNALLY INSULATED WITH 2.2" THICK (R-6) FIBERGLASS BLANKET INSULATION WITH FOIL JACKETING UNLESS OTHERWISE NOTED. INSULATION R VALUE IS WITH 25% COMPRESSION IN ACCORDANCE WITH FBCM 604.7 IDENTIFICATION.
- 18. ALL FIBROUS GLASS INSULATION JOINTS, SEAMS AND CONNECTIONS SHALL BE CONSTRUCTED WITH PRESSURE SENSITIVE TAPE, FAB, STAINLESS STEEL STAPLES AND THEN SEALED WITH MASTIC. HEAT AND PRESSURE SENSITIVE TAPE ARE NOT ACCEPTABLE AS A FINAL CLOSURE.
- 19. PROVIDE HANGER STRAPS FOR ALL DUCTS MADE OF 1" WIDE, 22 GAGE GALVANIZED STEEL-SPACED ACCORDING TO SMACNA STANDARDS AND ALL OTHER APPLICABLE GOVERNING CODES AND STANDARDS.
- 20. BEVELED TAKE OFFS WITH MANUAL VOLUME DAMPERS SHALL BE INSTALLED IN ALL BRANCH DUCTWORK LEADING FROM MAIN TRUNK LINES, EQUAL TO CROWN PRODUCTS MODEL 3300-DS. DO NOT INSTALL MANUAL DAMPERS ON TAKE-OFFS TO INLETS OF VAV BOXES.
- 21. ALL SPLITTER DAMPERS SHALL BE BALANCED AND SET PRIOR TO THE INSTALLATION OF THE CEILING.
- 22. ALL DUCT BRANCH TAKE OFFS FROM MAIN DUCT FOR INDIVIDUAL AIR OUTLETS AND INLETS SHALL HAVE MANUAL BALANCING DAMPERS WITH OPERATING HANDLE OUTSIDE THE DUCT INSULATION.
- 23. ALL DAMPERS AND EXTRACTORS SHALL HAVE LOCKING QUADRANTS AND SHALL BE ACCESSIBLE
- 24. PROVIDE REMOTE VOLUME DAMPER (RVD) OPERATORS IN ALL NON-ACCESSIBLE CEILINGS. EQUAL TO YOUNG REGULATOR COMPANY MODEL 270-896C BOWDEN CABLE CONTROL UNIT OR METROPOLITAN AIR. CONTROL FOR EACH REMOTE VOLUME DAMPER SHALL BE LOCATED WITHIN THE DIFFUSER OR REGISTER BEING SERVED.
- 25. ALL DUCTWORK STORED ON SITE OR ALREADY INSTALLED SHALL HAVE ALL OPEN ENDS SEALED WITH VISQUINE TO PREVENT DUST AND DEBRIS FROM ACCUMULATING INSIDE OF THE DUCTWORK. INTERIORS OF ALL DUCTWORK SHALL BE THOROUGHLY CLEANED PRIOR TO INSTALLATION.
- 26. OUTSIDE AIR INTAKE HOODS ON ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY
- EXHAUST AIR DISCHARGE, COMBUSTION AIR DISCHARGE OR ANY PLUMBING VENT TERMINATION. 27. PROVIDE ADJUSTABLE PULLEYS WITH CONSTANT VOLUME AIR HANDLING UNITS AND BELT DRIVE FANS. FURNISH (2) EXTRA SETS OF FAN BELTS.
- 28. EXHAUST FAN OUTLETS SHALL BE INSTALLED A MINIMUM OF 10'-0" FROM FRESH AIR INTAKES OF MECHANICAL EQUIPMENT AS WELL AS ALL OPERABLE WINDOWS AND DOORS.
- 29. ALL FANS AND AIR HANDLING UNITS SHALL BE PROPERLY SUPPORTED AND ISOLATED TO PREVENT NOISE AND VIBRATION TRANSMISSION. ALL AIR HANDLING EQUIPMENT SHALL BE SUPPORTED OR SUSPENDED WITH SPRING ISOLATORS. ALL CONNECTIONS BETWEEN FANS OR AIR HANDLING UNITS AND DUCTWORK SHALL BE CANVAS FLEXIBLE CONNECTORS.
- 30. ALL EQUIPMENT LOCATED WITHIN THE CEILING SPACES SHALL HAVE ADEQUATE CLEARANCES FOR REPAIR AND MAINTENANCE. ALL PIPING AND DUCTWORK SHALL BE INSTALLED TO PROVIDE ADEQUATE CLEARANCE FOR ACCESS TO ALL EQUIPMENT.
- 31. SET ALL CONDENSING UNITS ON 4" THICK CONCRETE SERVICE PAD. THE SERVICE PAD SHALL BE A MINIMUM OF 4" LARGER THEN CONDENSING UNIT ON ALL SIDES OF THE UNIT. PROVIDE 1" THICK NEOPRENE CORK VIBRATION ISOLATION PADS UNDERNEATH CONDENSING UNIT. SECURE CONDENSING UNITS TO CONCRETE PAD, SEE DETAIL.
- 32. ALL AIR HANDLING UNITS SHALL BE MOUNTED ON A MINIMUM 24" TALL STEEL SKIDS OR CUSTOM BUILT AHU SUPPORT STAND. SEE DETAIL. PROVIDE AUXILIARY DRAIN PAN WITH FLOAT SWITCH UNDER EACH AHU LOCATED AT APPARATUS BAY MEZZANINE, AUXILIARY DRAIN PAN SHALL COMPLY WITH 2010 FBCM SECTION 307.2.3.
- 33. REFER TO MECHANICAL AND ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL FIRE AND SMOKE RATED PARTITIONS. ALL PENETRATIONS THROUGH FIRE RATED/SMOKE RATED PARTITIONS OR FLOORS AND CEILINGS SHALL HAVE FIRE/SMOKE DAMPERS. ALL FIRE WALL PENETRATIONS SHALL HAVE FIRE DAMPERS. PROVIDE ACCESS DOORS IN WALL OR HARD CEILING FOR THESE DAMPERS.

- 36. PROVIDE ACCESS PANELS IN DRYWALL CEILINGS AS REQUIRED FOR ACCESS TO MECHANICAL EQUIPMENT. COORDINATE WITH GENERAL CONTRACTOR TO PROVIDE WORK PLATFORMS AS REQUIRED FOR ALL EQUIPMENT LOCATED WITHIN THE CEILING SPACE.
- 37. FURNISH AND INSTALL INSULATED PVC CONDENSATE DRAINS WITH TRAPS FOR ALL COOLING COILS. MINIMUM DRAIN LINE SIZE SHALL MATCH THE OPENING OF THE AHU CONDENSATE DRAIN PAN. SLOPE CONDENSATE DRAIN PIPING 1/4" PER FOOT TOWARD DRAIN POINT OVER ITS ENERGIZE RUN.
- 38. ALL REFRIGERANT PIPING AND CONDENSATE PIPING SHALL BE FULLY SUPPORTED IT'S ENTIRE LENGTH AND SHALL BE ANCHORED TO PREVENT SWAY AND VIBRATION. PIPE SUPPORTS AND SUPPORT SPACING SHALL COMPLY WITH 2010 FBCM SECTION 305.
- 39. CONTRACTOR SHALL SUPPLY AND WIRE ALL SMOKE DETECTORS IN THE SUPPLY AIR DUCTWORK OF ALL AIR HANDLING UNITS 2000 CFM AND ABOVE TO SHUT DOWN THE FANS IN THE EVENT OF A FIRE. DUCT SMOKE DETECTOR SHALL BE OF PHOTOELECTRIC TYPE AND LOW VOLTAGE. DIVISION 15 CONTRACTOR SHALL INSTALL ALL SMOKE DETECTORS.
- 40. ALL WALL SENSORS, VARIABLE SPEED CONTROL SWITCHES, ON-OFF SWITCHES AND MOTOR STARTERS SHALL BE INDIVIDUALLY LABELED. LABELS SHALL INDICATED THE UNIT CONTROLLED. TYPE OF CONTROL AND AREA SERVED. THE LABELS SHALL BE PLASTIC LAMINATE, PERMANENT TYPE, WHITE WITH BLACK LETTERING, AND SHALL BE MOUNTED OUTSIDE OF THE COVER PLATE, OF THE CONTROL DEVICE.
- 41. FURNISH ALL DIRECT DRIVE EXHAUST FANS WITH SOLID STATE VARIABLE SPEED CONTROLLER. MOUNT CONTROLLER TO ROOF STRUCTURE IN CEILING SPACE NEAR FAN INTAKE DUCT. PROVIDE MOTOR STARTERS AND DISCONNECT SWITCHES FOR ALL NEW EXHAUST FANS.
- 42. FURNISH ALL EXHAUST FANS WITH BACK DRAFT DAMPERS.
- 43. COORDINATE ALL CONTROL DEVICES WITH THE ELECTRICAL CONTRACTOR.
- 44. ALL CONTROL WIRING, CONDUIT AND HARDWARE TO COMPLETE THE HVAC CONTROL SYSTEM SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 15 - MECHANICAL.
- 45. ALL CONTROL WIRING AND INTERLOCK WIRING LOCATED IN MECHANICAL ROOMS, INSIDE OF WALLS AND IN NON ACCESSIBLE CEILINGS SHALL BE IN CONDUIT.
- 46. THERMOSTAT OR TEMPERATURE SENSOR LOCATIONS ARE TENTATIVE. FINAL THERMOSTAT OR SENSOR LOCATIONS SHALL BE APPROVED BY THE OWNER PRIOR TO INSTALLATION. THERMOSTATS OR SENSORS SHALL BE LOCATED 48"-54" ABOVE THE FINISHED FLOOR IN ACCORDANCE WITH ADA REQUIREMENTS AND THE 2010 FLORIDA ACCESSIBILITY CODE.
- 47. AIR FILTERS SHALL BE 1" OR 2" PLEATED, MERV 7 OR MERV 8, 30% EFFICIENT (MIN.) OR EQUAL IN AIR HANDLING EQUIPMENT. FILTERS SHALL BE INSTALLED PRIOR TO UNIT START UP. REPLACED A MINIMUM OF ONCE PER MONTH DURING THE CONSTRUCTION PERIOD, REPLACED PRIOR TO TEST AND BALANCE, AND REPLACED MONTHLY UNTIL FINAL COMPLETION.
- 48. ALL REFRIGERANT LINES FOR SPLIT SYSTEM DX UNITS SHALL HAVE FILTER DRYERS AND SIGHT GLASSES. ALL REFRIGERANT PIPING RUN ABOVE THE CEILING OR EXPOSED IN APPARATUS BAY MEZZANINE SHALL BE INSULATED WITH 1" THICK CLOSED CELLULAR (ARMAFLEX) INSULATION WITH ALL INSULATION JOINTS SEALED WITH APPROVED MASTIC.
- 49. ALL REFRIGERANT PIPING EXPOSED TO OUTDOORS SHALL BE INSULATED WITH 1" THICK CLOSED CELL FOAM INSULATION (ARMAFLEX). REFRIGERANT PIPING RUN DOWN THE BUILDING EXTERIOR WALL SHALL BE ENCLOSED IN 20 GAGE SHEET METAL COVER FROM WALL PENETRATION TO WITH-IN 2 FEET OF FINISHED GRADE. CONTRACTOR MAY REUSE EXISTING REFRIGERANT PIPING METAL COVERS. REFRIGERANT PIPING RUN OUTSIDE THE EXTERIOR METAL COVERS SHALL ALSO BE WRAPPED WITH ALUMINUM JACKETING TO PROTECT THE PIPE INSULATION.
- 50. ALL ROOF MOUNTED EXHAUST VENTS AND ROOF MOUNTED INTAKES SHALL BE BOLTED DOWN TO THE ROOF CURB USING 1/4" STAINLESS STEEL BOLTS EVERY 12" INCHES. PROVIDE 1/4" THICK NEOPRENE GASKETS BETWEEN EQUIPMENT AND ROOF CURBS. INSTALLATION SHALL MEET 2010 FLORIDA BUILDING CODE HIGH VELOCITY WIND LOAD REQUIREMENTS. ALL ROOF FANS OR INTAKES SHALL HAVE BIRD SCREEN ON INLET OPENINGS.
- 51. ALL HVAC SYSTEM'S AIRFLOW SHALL BE BALANCED BASED ON THE ACTUAL INSTALLED STATIC PRESSURE OF THE SYSTEM. CONTRACTOR SHALL PROVIDE POSITIVE MEANS FOR BALANCING EACH INDIVIDUAL AIR OUTLET AND INLET.
- 52. THE CONTRACTOR SHALL HIRE AN INDEPENDENT TEST AND BALANCE FIRM TO TEST AND BALANCE ALL AIR CONDITIONING SYSTEMS-SEE SPECIFICATIONS. THE TEST & BALANCE CONTRACTOR SHALL BE CERTIFIED BY AABC, NEBB, NBCTAB, ITB OR EQUAL. T&B CONTRACTOR SHALL HAVE THE ENGINEER OF RECORD OR THEIR REPRESENTATIVE PRESENT DURING THE TEST AND BALANCE PROCEDURE OF THE HVAC SYSTEMS.
- 53. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR COORDINATING THEIR WORK WITH THE TEST AND BALANCE FIRM. PRIOR TO TEST AND BALANCE, THE CONTRACTOR SHALL START-UP, PRE-BALANCE THE SYSTEM, AND REPLACE ALL AIR FILTERS FOR EVERY AHU BEING TESTED. ALL DISCREPANCIES, DRIVE CHANGES, ETC. REPORTED BY ENGINEER OR THE TEST AND BALANCE FIRM SHALL BE CORRECTED BY THE CONTRACTOR WITHIN FIVE CALENDAR DAYS AT NO ADDITIONAL COST. PROVIDE (2) ADDITIONAL SEASONAL TEST AND BALANCE OF ALL HVAC SYSTEMS, COOLING & HEATING SEASON, AFTER FINAL ACCEPTANCE OF THE HVAC SYSTEM.
- 54. PROVIDE HAIL GUARDS OVER ALL GROUND MOUNTED CONDENSING UNITS CONDENSING COILS TO PROTECT CONDENSING COIL FROM EXTREME WEATHER.
- 55. CARBON MONOXIDE (CO) CONTROLLER/MONITOR SHALL BE AS MANUFACTURED BY MSA, Z GARD COMDO GAS MONITOR OR APPROVED EQUAL. CARBON MONOXIDE SENSORS SHALL BE MSA Z GARD S SENSOR OR APPROVED EQUAL. CO MONITOR SHALL BE RATED FOR 120 VOLTS, 60 HERTZ, .5 AMPS, WITH DIGITAL READOUT, LED STATUS DISPLAY AND RELAY CONTACTS. PROVIDE (7) ADDITIONAL REMOTE CO SENSORS CONNECTED TO CO MONITOR. CO EQUIPMENT AND SENSOR INFORMATION IS AVAILABLE AT WWW.MSAsafety.COM.
- 56. PROVIDE VANDAL PROOF CAPS ON ALL GROUND MOUNTED CONDENSING UNIT REFRIGERANT SERVICE VALVES TO PREVENT UNAUTHORIZED RELEASE OF REFRIGERANT.
- 57. CONTRACTOR SHALL LABEL ALL EQUIPMENT (FANS, AIR HANDLING UNITS AND CONDENSING UNITS) WITH ENGRAVED TYPE PHENOLIC LABELS PERMANENTLY AFFIXED TO THE EQUIPMENT. CONTRACTOR SHALL AN INSTALL ADDITIONAL PHENOLIC LABEL TO THE CEILING GRID TEE BELOW ANY CEILING MOUNTED EQUIPMENT LOCATED ABOVE ACOUSTICAL LAY-IN CEILINGS. CONTRACTOR SHALL INSTALL AN ADDITIONAL PHENOLIC LABEL TO THE CEILING ACCESS PANEL LOCATED BELOW ANY CEILING MOUNTED EQUIPMENT LOCATED ABOVE GYPSUM BOARD CEILINGS.
- 58. THE CONTRACTORS SHALL PROVIDE A WRITTEN GUARANTEE THAT SHALL WARRANT ALL WORKMANSHIP AND MATERIALS FOR ONE (1) YEAR DURING THE FIRST YEAR ALL SYSTEM MALFUNCTIONS SHALL BE REPAIRED AT NO EXPENSE TO THE OWNER. THE COMPRESSORS SHALL HAVE A 5 YEAR WARRANTY (LABOR & MATERIALS).
- ^{59.} OPERATION AND MAINTENANCE MANUALS SHALL INCLUDE AS A SEPARATE SUBMITTAL ITEM, PREVENTATIVE MAINTENANCE REQUIREMENTS ALONG WITH TIME SCHEDULE(S) FOR EACH ITEM. THE SEQUENCE OF OPERATION SHALL ALSO INCLUDE A DEFINITIVE SEQUENCE OF OPERATION OF THE MECHANICAL SYSTEM AND COMPONENTS AS THEY FUNCTION INTEGRALLY AND INDEPENDENTLY WITH THE SYSTEM.
- 60. THE CONTRACTOR SHALL PREPARE REDLINED AS-BUILT DRAWINGS OF THE HVAC SYSTEMS AT THE COMPLETION OF THE PROJECT CONSTRUCTION AND SHALL INCLUDE THOSE AS-BUILT DRAWINGS AT PROJECT CLOSEOUT ALONG WITH THE FINAL TEST & BALANCE REPORT AND THE O&M MANUAL.
- 61. CONTRACTOR SHALL PROVIDE TEMPORARY COOLING OR HEATING TO SPACES SERVED BY THE HVAC SYSTEM AS REQUIRED BY THE OWNER. CONTRACTOR SHALL REPAIR OR REPLACE ANY EXISTING INTERIOR OR EXTERIOR FINISHES (WALLS/FLOORS) DAMAGED DURING CONSTRUCTION AS DETERMINED BY THE OWNER, AT THEIR OWN COST.



Matern 130 Ca Maitlan PHONE THIS DRA ENGINEE CONTRA TRANSMI BY THE E ENG. BU ORA	Profession andace Drive d, FI 32751 (407) 740-5020 WING IS THE PROPE RING, INC. UNLESS CT. THE CONTENTS OF TITED TO ANY OTHER NGINEER. JS. No. EB-0005096 ANGE SESTA HV	-3331 FAX (407) 740-0365 RTY OF MATERN PROFESSIONAL OTHERWISE PROVIDED BY THE OF THIS DRAWING SHALL NOT BE R PARTY EXCEPT AS AGREED TO
Rev No.	isions _{Date}	Description
	Koy F	Plan
	Key F	
	ROJ#:201 red By: R	S=175
Drawn		
-	ed By: AE Date: 06,	
Drawir	ng Scale:	NO SCALE
Drawing	SEND	& NOTES /AC

S . 32751	
31	1.0

____ (

PHASING NOTES

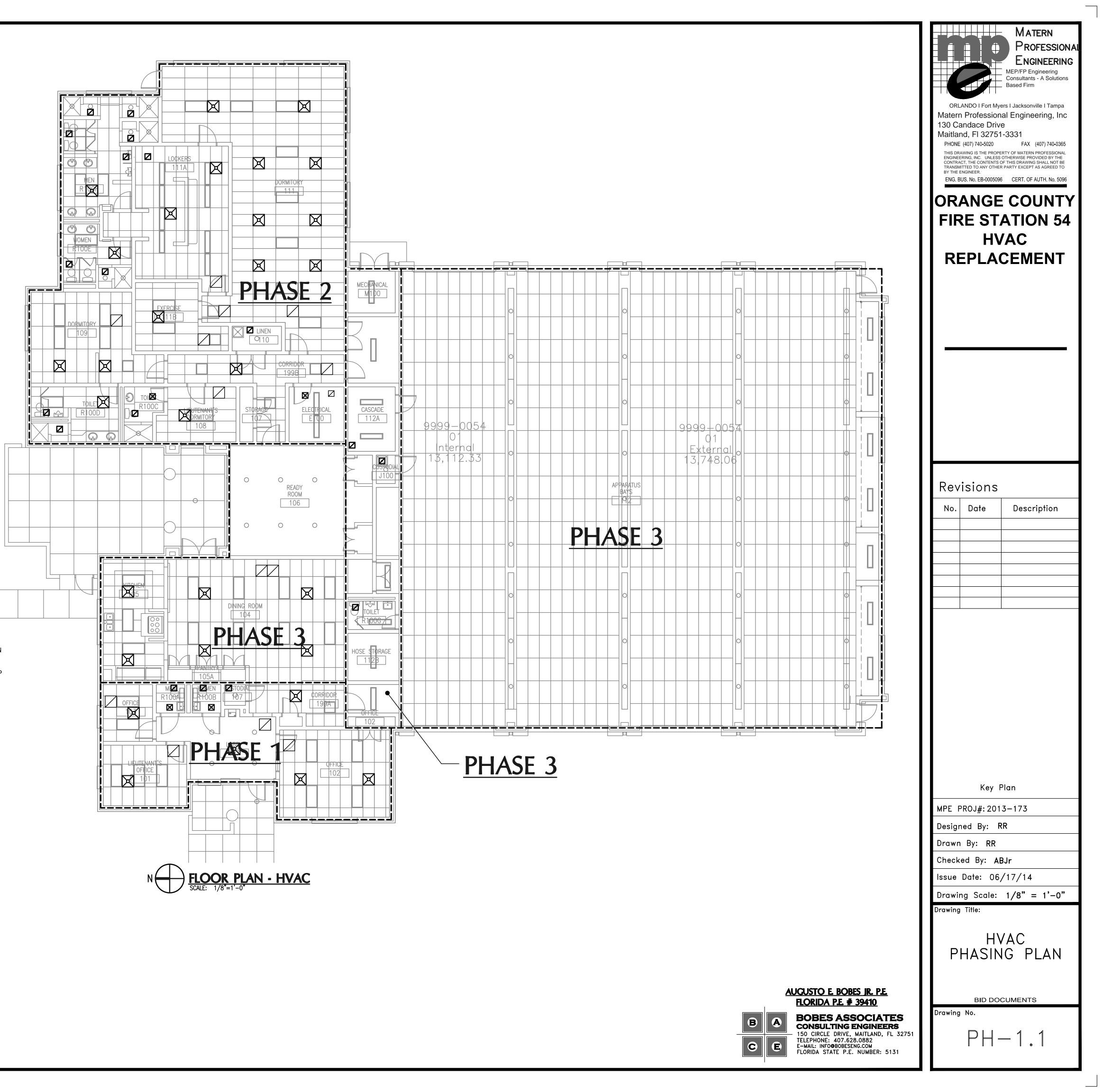
THE CONTRACTOR SHALL PERFORM WORK ON DAYS, NIGHTS AND WEEKENDS SO AS TO MINIMIZE THE IMPACT AND DOWNTIME OF THE FACILITY. THE FACILITY SHALL REMAIN FULLY OPERATIONAL THROUGHOUT CONSTRUCTION. THE PROJECT WILL BE BROKEN UP INTO PHASES AS FOLLOWS:

- PHASE 1REPLACE EXISTING AIR CONDITIONING EQUIPMENT,
RESTROOM EXHAUST FAN, SUPPLY AIR, RETURN AIR
AND EXHAUST AIR DUCTWORK AND CONTROLS
SERVING THIS PORTION OF THE BUILDING. LOCATE
NEW AIR HANDLING UNIT IN EXISTING MEZZANINE
MECHANICAL ROOM. LOCATE NEW INLINE EXHAUST
FAN ABOVE THE CEILING AND PROVIDE NEW ROOF
VENT IN SAME LOCATION AS REMOVED EXHAUST FAN.
PERFORM TEST AND BALANCE OF NEW AIR HANDLING
UNIT AND EXHAUST SYSTEM.
- PHASE 2 REPLACE EXISTING AIR CONDITIONING EQUIPMENT, SUPPLY AND RETURN AIR DUCTWORK AND CONTROLS SERVING THIS PORTION OF THE BUILDING. LOCATE NEW AIR HANDLING UNIT IN EXISTING MEZZANINE MECHANICAL ROOM. EXISTING HOOD EXHAUST FAN AND SUPPLY AIR FAN TO REMAIN, PROVIDE NEW INTAKE DUCTWORK ON ROOF FOR THE EXISTING SUPPLY FAN. PERFORM TEST AND BALANCE OF THE NEW AIR HANDLING UNIT.
- **PHASE 3** REPLACE EXISTING AIR CONDITIONING EQUIPMENT, EXHAUST SYSTEMS, SUPPLY AIR, RETURN AIR AND EXHAUST AIR DUCTWORK. AND CONTROLS SERVING THIS PORTION OF THE BUILDING. LOCATE NEW AIR HANDLING UNIT IN EXISTING MEZZANINE MECHANICAL ROOM.
 - REPLACE EXISTING ROOF MOUNTED RESTROOM EXHAUST FAN WITH NEW INLINE FAN DUCTED NEW ROOF VENT LOCATED AT REMOVED EXHAUST FAN LOCATION.
 - REPLACE EXISTING ROOF MOUNTED CASCADE ROOM EXHAUST FAN WITH NEW INLINE FAN DUCTED NEW ROOF VENT LOCATED AT REMOVED EXHAUST FAN LOCATION. PROVIDE NEW OUTDOOR AIR INTAKE DUCTWORK TO CASCADE ROOM.
 - REPLACE EXISTING ROOF MOUNTED TOILET ROOM R100G EXHAUST FAN WITH NEW INLINE FAN DUCTED NEW ROOF VENT LOCATED AT REMOVED EXHAUST FAN LOCATION.
 - REPLACE EXISTING (2) ROOF MOUNTED APPARATUS BAY EXHAUST FANS AND DUCTWORK WITH (2) NEW INLINE FANS DUCTED TO NEW WALL LOUVERS IN THE APPARATUS BAY. PROVIDE (2) NEW AIR INTAKE WALL LOUVERS WITH MOTORIZED DAMPERS FOR EXHAUST FAN MANKE-UP AIR.
 - INSTALL NEW 100% OUTDOOR AIR SPLIT SYSTEM DUCTED TO EACH NEW AIR HANDLING UNITS RETURN AIR DUCTWORK. CONNECT INTAKE DUCTWORK FOR OUTDOOR AIR UNIT TO NEW ROOF VENT LOCATED AT EXISTING REMOVED OUTDOOR AIR INTAKE AT ROOF.
- 1. UPON CONTRACT AWARD THE CONTRACTOR SHALL MEET WITH THE OWNER AND SHALL CONFIRM THE ORDER AND SCOPE OF THE PHASING AND SHALL MODIFY THE PROJECT PHASING PLAN AS PER OWNER REQUIREMENTS AT THE COMMENCEMENT OF CONSTRUCTION.
- 2. SEE ARCHITECTURAL, STRUCTURAL AND MECHANICAL/ELECTRICAL PLANS FOR A MORE COMPLETE AND DETAILED SCOPE DEFINITION.
- 3. CONTRACTOR SHALL NOT COMMENCE WORK ON PHASE 2 UNTIL THE PHASE 1 CONSTRUCTION IS COMPLETE AND THE SPACE IS TURNED OVER TO THE OWNER FOR THEIR USE. SAME FOR PHASE 3.

SCOPE OF WORK

THE SCOPE OF WORK FOR THIS PROJECT INCLUDES BUT IS NOT LIMITED TO ALL LABOR AND MATERIALS NECESSARY FOR THE FOLLOWING ITEMS:

- 1. CONTRACTOR SHALL REPLACE THE (3) EXISTING DX HEAT PUMP SPLIT SYSTEMS IN THE MEZZANINE OF THE APPARATUS BAY OF THE BUILDING WITH NEW DX HEAT PUMP SPLIT AIR CONDITIONING SYSTEMS. PROVIDE NEW 100% OUTDOOR SPLIT SYSTEM TO PROVIDE VENTILATION TO EACH SPLIT SYSTEM AIR HANDLING UNIT. SEE FLOOR PLANS AND SCHEDULES FOR MORE INFORMATION. ALL EXISTING EXHAUST FANS IN THE BUILDING (EXCEPT THOSE SERVING THE KITCHEN HOOD) SHALL BE REMOVED AND REPLACED WITH NEW FANS. EXISTING HOOD MAKE-UP AIR FAN SHALL SHALL REMAIN AND HAVE ITS INTAKE DUCTWORK REPLACED WITH NEW DUCTWORK.
- 2. PROVIDE NEW (3) NEW SPLIT SYSTEM AIR HANDLING UNITS ON THE EXISTING MEZZANINE OF THE APPARATUS BAY WITH NEW REFRIGERANT PIPING RUN TO ASSOCIATED HEAT PUMP UNITS AT GRADE. REPLACE ALL CONDENSATE DRAIN PIPING RUN TO EXISTING FLOOR DRAINS AT THE MEZZANINE LEVEL.
- 3. CONTRACTOR SHALL REPLACE ALL EXISTING SUPPLY AIR, RETURN AIR, OUTSIDE AIR AND EXHAUST AIR DUCTWORK WITH NEW DUCTWORK.
- 4. CONTRACTOR SHALL REPLACE ALL EXISTING VVT ZONE DAMPERS FROM AHU-1.3 WITH NEW VARIABLE AIR VOLUME BOXES (VAV).
- 5. CONTRACTOR SHALL FURNISH AND INSTALL NEW ELECTRICAL PROVISIONS AS REQUIRED FOR ALL NEW AND REPLACED HVAC EQUIPMENT.
- 6. CONTRACTOR SHALL REMOVE AND REPLACE ALL HARD CEILINGS IN THE BUILDING AS NECESSARY TO ACCOMPLISH THE WORK.
- 7. ALL EXISTING LAY-IN CEILING TILES AND GRID SHALL BE REMOVED AND REINSTALLED AS REQUIRED TO INSTALL NEW DUCTWORK ABOVE THE CEILING.
- 8. CONTRACTOR SHALL DISCONNECT, REMOVE, STORE AND REINSTALL ALL ELECTRICAL EQUIPMENT MOUNTED IN THE CEILING OR ON WALLS FOR AREAS TO BE RENOVATED AS NECESSARY TO ACCOMPLISH THE WORK. THIS INCLUDES LIGHTING FIXTURES, SPEAKERS, SMOKE DETECTORS, ETC. TEMPORARILY TERMINATE WIRES AND SUPPORT ALL CONDUIT FROM STRUCTURE THAT MAY BE RESTING ON THE CEILING.
- 9. CONTRACTOR SHALL PROTECT OR TEMPORARILY RELOCATE ALL FIXTURES, EQUIPMENT AND FURNITURE IN THE BUILDING THROUGHOUT CONSTRUCTION AS NECESSARY TO ACCOMMODATE THE WORK.
- 10. CONTRACTOR SHALL TEST AND BALANCE ALL OF THE NEW HVAC SYSTEMS AND AIR DISTRIBUTION SYSTEMS. THIS WORK ALSO INCLUDES THE TEST AND BALANCE OF THE NEW EXHAUST SYSTEMS. TEST & BALANCE HVAC SYSTEMS AFTER EACH PHASE IS COMPLETED AND PERFORM A FINAL TEST & BALANCE ON THE ENTIRE BUILDING INCLUDING HVAC AND EXHAUST SYSTEMS AFTER LAST PHASE IS COMPLETED.
- 11. THE FACILITY SHALL REMAIN FULLY OCCUPIED AND FUNCTIONAL THROUGHOUT THE PROJECT CONSTRUCTION. CONTRACTOR SHALL WORK DURING NON-OCCUPIED HOURS, EVENINGS, WEEKENDS AND HOLIDAYS TO PERFORM THE WORK.
- 12. CONTRACTOR SHALL REPLACE/REPAIR SECTIONS OF THE EXISTING DRYWALL/PLASTER CEILING OR WALL AS NECESSARY TO ACCOMPLISH THE WORK. THIS IS DIRECTED TO THE CEILINGS AND WALLS SURROUNDING EXHAUST FANS TO BE REPLACED.
- CONTRACTOR SHALL REPLACE THE EXISTING TRANE CONTROLS SYSTEM AND ALL THERMOSTATS AND TEMPERATURE SENSORS WITH A NEW DDC CONTROLS SYSTEM.
 CONTRACTOR SHALL PROVIDE TEMPORARY COOLING OR HEATING TO THE SPACES
- 14. CONTRACTOR SHALL PROVIDE TEMPORARY COOLING OR HEATING TO THE SPACES SERVED AS EACH HVAC SYSTEM IS BEING REPLACED, AS REQUIRED BY THE OWNER OR THEIR REPRESENTATIVE.
- 15. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY EXISTING INTERIOR OR EXTERIOR FINISHES (WALL/FLOORS) DAMAGED DURING CONSTRUCTION AS DETERMINED BY THE OWNER, AT THE CONTRACTORS COST.





AIR HANDLING UNIT AHU-3



AIR HANDLING UNIT AHU-2



AIR HANDLING UNIT AHU-1



EXHAUST FAN EF-4



EXHAUST FAN EF-3



APPARATUS BAY EXHAUST FAN EF-1 & EF-2



HEAT PUMP UNIT HP-3



HEAT PUMP UNIT HP-2



HEAT PUMP UNIT HP-1



KITCHEN HOOD SUPPLY & EXHAUST FAN



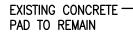
EXHAUST FAN EF-5 & O.A. INTAKE AHU-1 & 2

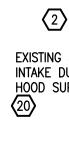


APPARATUS BAY O.A. INTAKE LOUVERS

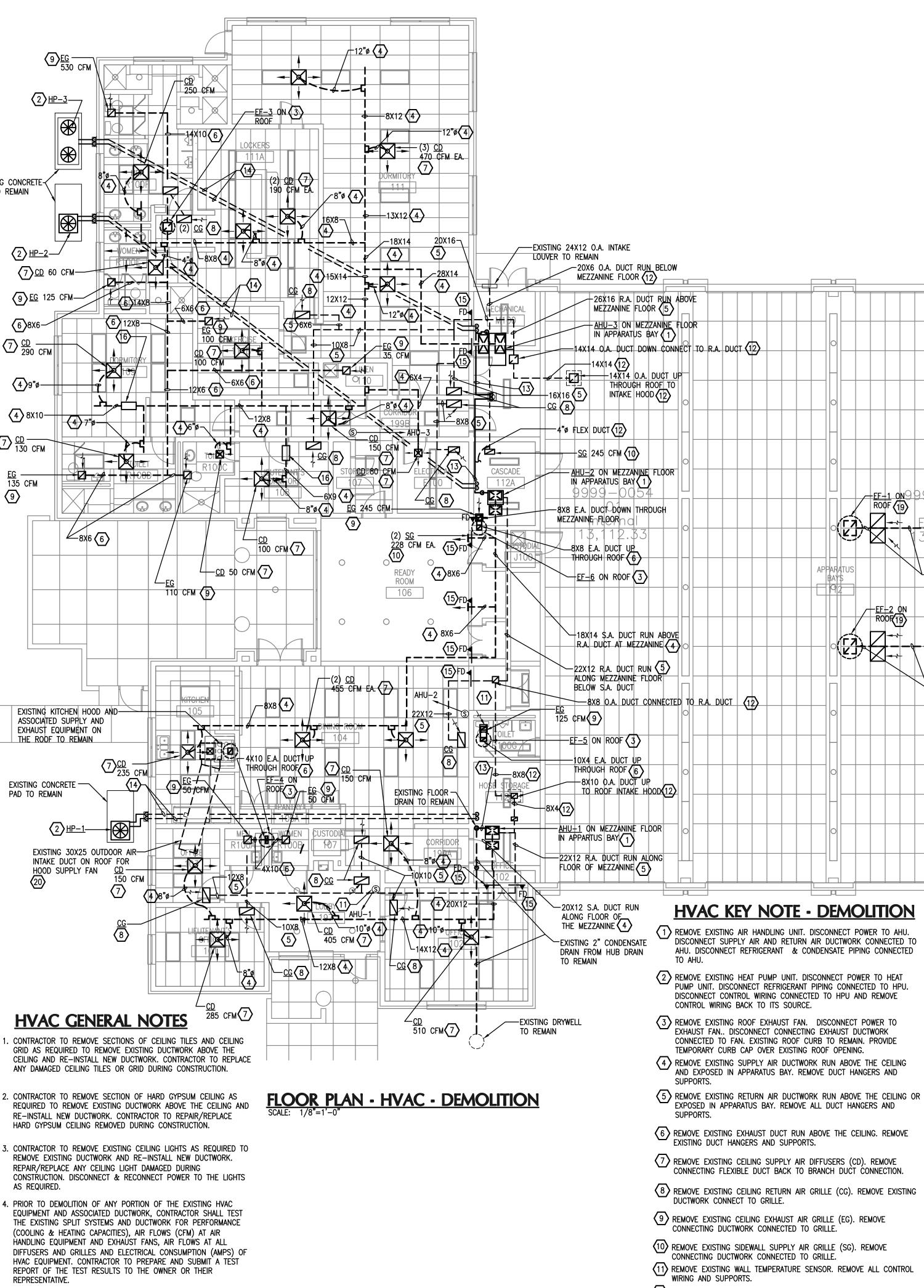
9	<u>}εα</u> 5
(2) <u>HF</u>	<u> </u>
	¢
	Ę
EXISTING CONCRETE PAD TO REMAIN	
	Ę
(2) <u>HP−2</u> −]
(7) <u>CD</u> 60	
9 <u>EG</u> 125	CF
<u>6</u> 8X6	
7 <u>CD</u> 290 CFM	
4 9″ø	
(4) 8X10-	
(7) <u>CD</u> 130 CFM	
EG 135 CFM (9)	
	+

ASSOCIATED SUPPLY AND EXHAUST EQUIPMENT ON THE ROOF TO REMAIN

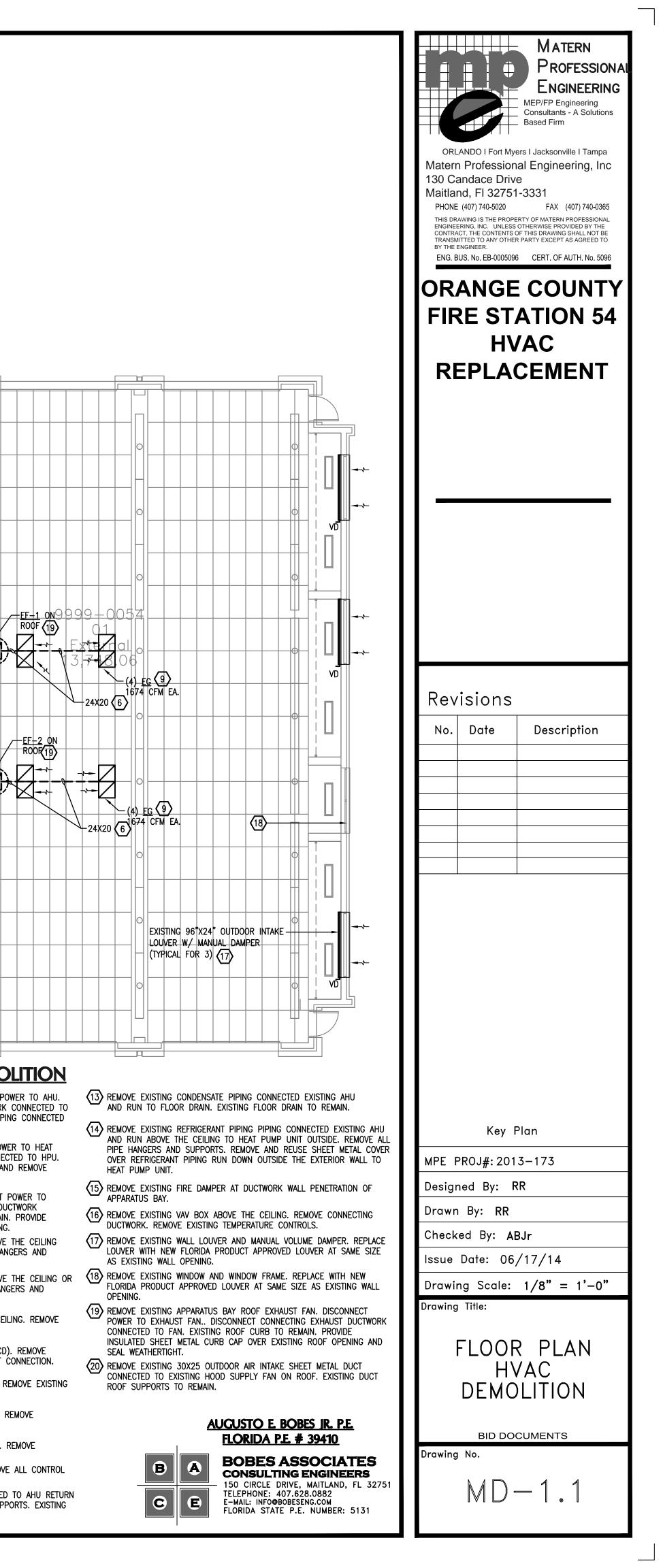


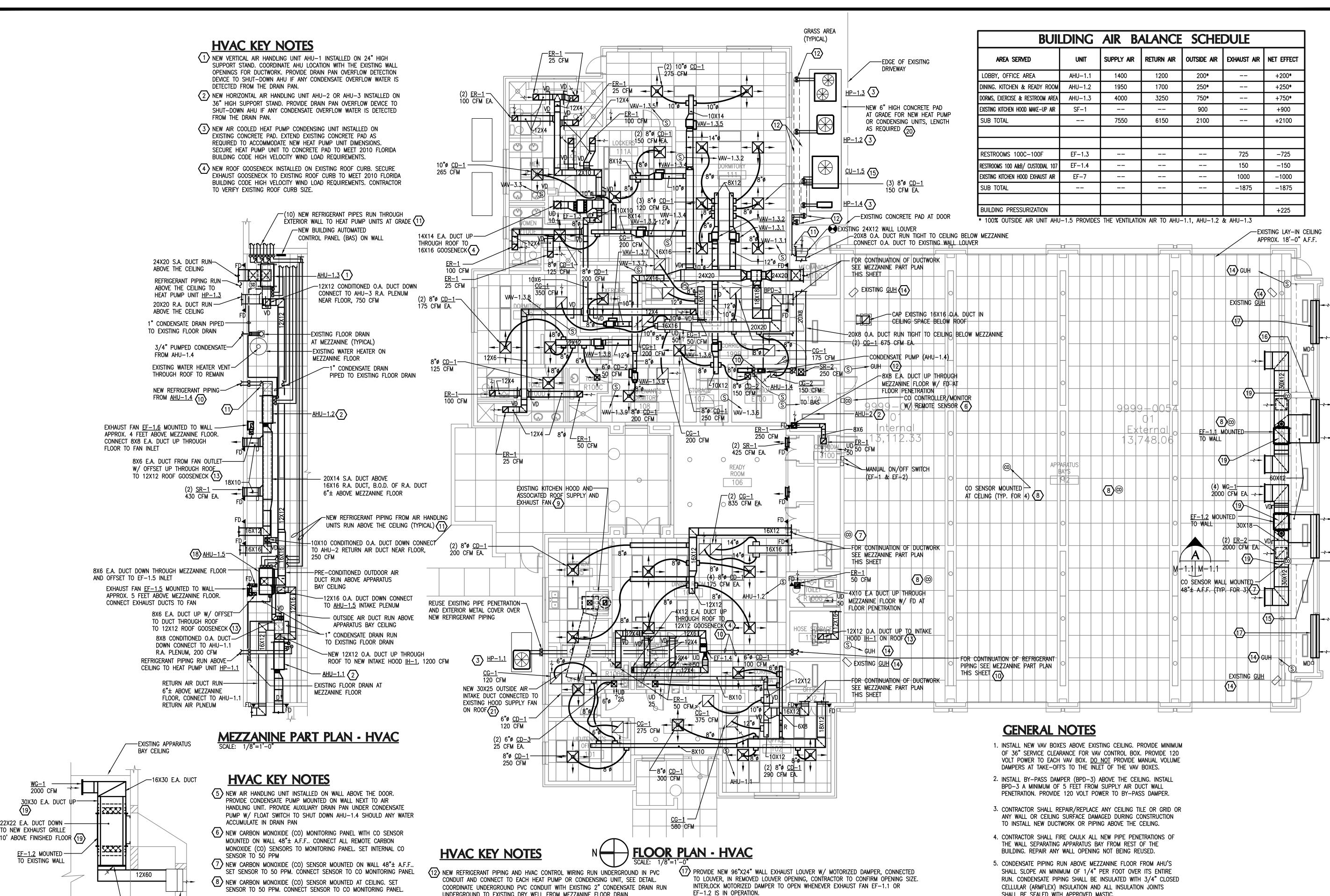


- AS REQUIRED.
- REPRESENTATIVE.



 $\langle 12 \rangle$ remove existing outdoor air ductwork connected to ahu return AIR DUCT. REMOVE EXISTING DUCT HANGERS AND SUPPORTS. EXISTING ROOF INTAKE HOOD AND ROOF CURB TO REMAIN.





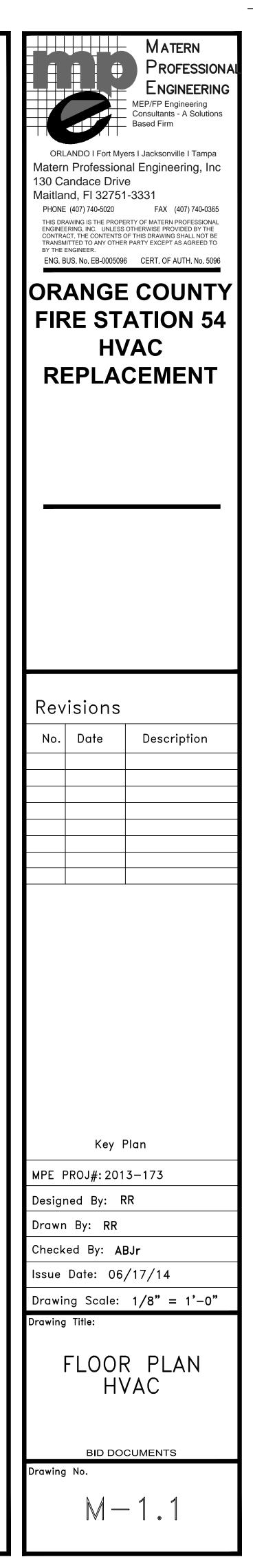
- (9) EXISTING KITCHEN HOOD AND ASSOCIATED SUPPLY FAN SF-1 AND EXHAUST FAN EF-7 TO REMAIN. EXISTING MANUAL FAN CONTROL AT HOOD TO REMAIN. EXISTING HOOD FIRE SUPPRESSION SYSTEM TO REMAIN.
- 10 NEW REFRIGERANT PIPING RUN ABOVE THE CEILING. SEAL PIPE PENETRATIONS OF APPARATUS BAY WALL WITH APPROVED FIRE CAULK.
- $\langle 11 \rangle$ New Refrigerant piping run above the apparatus bay ceiling. SEAL REFRIGERANT PIPE PENETRATION OF THE EXTERIOR WALL. PROVIDE NEW 20 GAGE SHEET METAL COVER OVER (12) EXPOSED REFRIGERANT PIPES RUN ALONG THE OUTSIDE OF THE EXTERIOR WALL. PIPE COVER SHALL EXTEND FROM WALL PENETRATION TO WITH-IN 2' ± OF FINISHED GRADE. REFRIGERANT PIPING WITH INSULATION RUN OUTSIDE METAL COVER TO UNDERGROUND PVC CONDUIT SHALL HAVE ALUMINUM JACKET OVER EXPOSED PIPING AND INSULATION .
- UNDERGROUND TO EXISTING DRY WELL FROM MEZZANINE FLOOR DRAIN
- REQUIREMENTS.
- CONTROL PANEL TO MONITOR ELECTRIC UNIT HEATER ON/OFF OPERATION. 15 PROVIDE NEW 96"X24" WALL EXHAUST AIR LOUVER W/ 1 FOOT DEEP SHEET METAL PLENUM. INSTALL LOUVER IN REMOVED WINDOW OPENING, CONTRACTOR TO CONFIRM OPENING SIZE. CONNECT 60X12 DISCHARGE DUCT FROM EF-1.2 TO PLENUM.
- (16) PROVIDE NEW 96"X24" WALL EXHAUST LOUVER W/ 1 FOOT DEEP SHEET METAL PLENUM IN REMOVED LOUVER OPENING, CONTRACTOR TO CONFIRM OPENING SIZE. CONNECT NEW 60X12 DISCHARGE DUCT FROM EF-1.1 TO PLENUM.

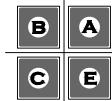
22X22 E.A. DUCT DOWN TO NEW EXHAUST GRILLE 10' ABOVE FINISHED FLOOR (19) 2000 CFM NEW 24"X96" WALL LOUVER W/ 1' DEEP PLENUM (15) M-1.1 M-1.

- (13) NEW OUTSIDE AIR INTAKE HOOD IH-1 INSTALLED ON EXISTING ROOF CURB. PROVIDE CURB ADAPTER AS REQUIRED. INTAKE HOOD SHALL BE LOREN COOK MODEL GI, 28X36 HOOD SIZE WITH 16X16 THROAT SIZE OR APPROVED EQUAL. SECURE HOOD TO ROOF CURB TO MEET 2010 FLORIDA BUILDING CODE HIGH VELOCITY WIND
- (14) EXISTING GAS UNIT HEATER GUH-1 BELOW THE CEILING TO REMAIN. PROVIDE NEW REMOTE TEMPERATURE SENSORS WITH FAN ON/OFF SWITCH, MOUNT SENSOR 48" A.F.F. TO CONTROL EACH ELECTRIC UNIT HEATER. CONNECT SENSOR TO NEW BAS
- (18) NEW VERTICAL AIR HANDLING UNIT AHU-1.5 (100% O.A.) INSTALLED ON 12" HIGH SUPPORT STAND. PROVIDE DRAIN PAN OVERFLOW DETECTION DEVICE TO SHUT-DOWN AHU IF ANY OVERFLOW WATER IS DETECTED FROM THE DRAIN PAN.
- (19) REMOVE EXISTING LIGHT FIXTURE HUNG BELOW APPARATUS BAY CEILING, APPROX. 12' AFF, WHERE NEW EXHAUST FAN DUCTWORK RISE AND E.A. DUCT DROP IS TO OCCUR. DISCONNECT POWER TO REMOVED LIGHT FIXTURE AND RE-WIRE AS REQUIRED TO MAINTAIN REMAINING LIGHT FIXTURES
- (20) LENGTH OF CONCRETE HOUSEKEEPING PAD SHALL ACCOMMODATE HEAT PUMP UNIT OR CONDENSING UNIT MANUFACTURERS REQUIRED SERVICE CLEARANCE OF EACH UNIT. CONTRACTOR OPTION TO PROVIDE INDIVIDUAL CONCRETE PAD FOR EACH HEAT PUMP OR CONDENSING UNIT.
- (21) PROVIDE NEW 30X25 SHEET METAL OUTDOOR AIR INTAKE DUCT CONNECTED TO EXISTING HOOD SUPPLY FAN ON ROOF. PROVIDE REMOVABLE BIRD SCREEN AT END OF INTAKE DUCT. REUSE EXISTING DUCT SUPPORT ON ROOF TO SUPPORT NEW DUCT ABOVE THE ROOF. PAINT EXTERIOR OF DUCT W/ 2 COATS OF RUST INHIBITING PAINT.

- SHALL BE SEALED WITH APPROVED MASTIC.
- APPARATUS BAY WALL.
- IN HARD GYPSUM CEILINGS

- 6. PUMPED CONDENSATE PIPING RUN ABOVE THE CEILING TO THE MEZZANINE SHALL BE INSULATED WITH 3/4" CLOSED CELLULAR (ARMAFLEX) INSULATION AND ALL INSULATION JOINTS SHALL BE SEALED WITH APPROVED MASTIC. FIRE CAULK PIPE PENETRATION OF
- 7. PROVIDE PLASTER FRAME FOR ALL DIFFUSER AND GRILLES LOCATED
- 8. EXISTING GAS PIPING RUN IN APPARATUS BAY FOR THE GAS FIRED UNIT HEATERS GUH TO REMAIN. PROTECT THIS GAS PIPING THROUGH-OUT CONSTRUCTION.





AUGUSTO E. BOBES JR. P.E. FLORIDA P.E. # 39410

TELEPHONE: 407.628.0882

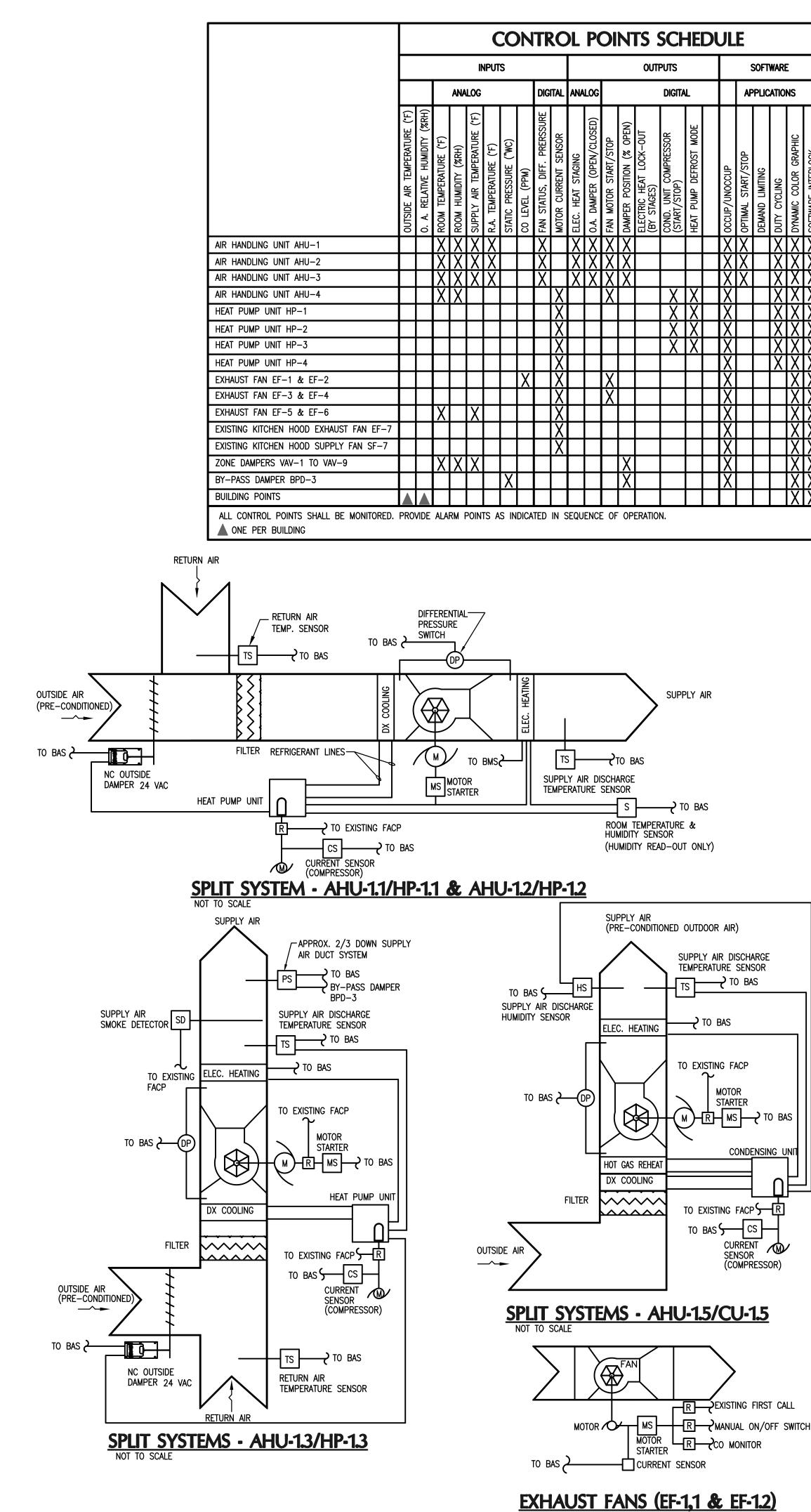
E-MAIL: INFO@BOBESENG.COM

BOBES ASSOCIATES

CONSULTING ENGINEERS

FLORIDA STATE P.E. NUMBER: 5131

150 CIRCLE DRIVE, MAITLAND, FL 32751



)	JL	E				
		Ś	SOFT	WARE	Ξ	
		AP	PLIC	ATIO	NS	
	CCUP/UNOCCUP	≪ 🔀 optimal start∕stop	DEMAND LIMITING	< 🔀 DUTY CYCLING	Karter Color Graphic	SOFTWARE INTERLOCK
	Ň	X		Ϋ́	Ϋ́	Ŷ
	Ň	X		X	X	X
	Ň	Х		X	Ň	Ň
	Ň			X	Ň	Ň
	Ň			X	X	X
	Ň			Ŷ	Ŷ	X
	X			X	X	X
	X			Х	X	X
	X				X	X
	X				X	X
	X				X	X
	X				X	X
	X				X	X
	X				X	X
	X				X	X
					X	X

SEQUENCE OF OPERATION

A. <u>GENERAL</u>:

- 1. THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) SHALL HAVE ALL SYSTEM CONTROLLERS, RELAYS, TIME CLOCK AND CONTROL POWER TRANSFORMER (120V/24V) IN AN NEMA 1 ENCLOSURE WITH DOOR LOCK. SEE SHEET M1.1 FOR LOCATION OF BAS CONTROL PANEL. CONTRACTOR SHALL PROVIDE ALL LOW VOLTAGE WIRING TO REMOTE CONTROLLERS, ZONE DAMPERS, EXHAUST FANS AND SENSORS FOR A COMPLETE AND WORKING HVAC CONTROL SYSTEM.
- 2. THE BAS SYSTEM SHALL BE A STAND ALONE SYSTEM SERVING ONLY THIS BUILDING. HOWEVER THE BAS SYSTEM SHALL HAVE A WEB BASE USER INTERFACE BASED ON MICROSOFT INTERNET EXPLORER. PROPRIETARY SOFTWARE IS NOT ALLOWED ON THIS PROJECT. COORDINATE WITH ORANGE COUNTY ISS DEPARTMENT FOR REMOTE ACCESS COMMUNICATION PORT.
- 3. THE BAS SHALL DETERMINE COOLING OR HEATING MODE BASED ON OUTDOOR AIR TEMPERATURE. THE COOLING MODE SHALL BE ACTIVATED WHENEVER OUTDOOR AIR TEMPERATURE IS 55'F OR HIGHER AND THE HEATING MODE SHALL BE ACTIVATED WHEN OUTDOOR AIR TEMPERATURE IS 50°F OR LOWER.
- B. <u>SPLIT_SYSTEM_AHU-1.1/HP-1.1 & AHU-1.2/HP-1.2 (CONSTANT_VOLUME)</u>
- 1. OCCUPIED:
- a. THE BUILDING IS OPEN AND OPERATIONAL 24 HOURS A DAY AND 7 DAYS A WEEK, THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) SHALL ACTIVATE THE AIR HANDLING UNITS AHU-1.1 AND AHU-1.2 AND HEAT PUMPS HP-1.1 AND HP-1.2 IN THE OCCUPIED MODE. THE DIFFERENTIAL PRESSURE SWITCH AT AHU-1.1 OR AHU-1.2 SHALL SIGNAL THE BAS TO ACTIVATE AN ALARM SHOULD ITS SUPPLY FAN FAIL TO RUN WHEN COMMANDED TO START. THE BAS SHALL PROVIDE AN "OFF NORMAL OPERATION" ADVISORY SIGNAL TO A REMOTE LOCATION.
- b. THE AIR HANDLING UNIT SUPPLY FAN SHALL START AND RUN CONTINUOUSLY AND OUTDOOR AIR DAMPER SHALL OPEN WHEN THE AHU FAN IS STARTED. HEAT PUMP COMPRESSOR SHALL START AND CYCLE ITS OPERATION IN THE COOLING OR HEATING MODE TO MAINTAIN SPACE TEMPERATURE.
- c. THE SPACE TEMPERATURE/HUMIDITY SENSOR CONTROLLING AHU-1.1/HP-1.1 OR AHU-1/2/HP-1.2 SHALL HAVE A COOLING SET-POINT TEMPERATURE OF 72°F (ADJUSTABLE) AND HEATING SET-POINT TEMPERATURE OF 70°F (ADJUSTABLE). PROVIDE A MINIMUM OF A 5°F DEAD BAND BETWEEN COOLING AND HEATING SYSTEM ACTIVATION SET-POINTS. PROVIDE A MINIMUM OF 5 MINUETS (ADJUSTABLE) RUN TIME FOR HEAT PUMP COMPRESSOR.

2. COOLING MODE:

a. THE HEAT PUMP COMPRESSOR SHALL BE ACTIVATED IN THE COOLING MODE WHENEVER SPACE TEMPERATURE IS 3'F ABOVE THE COOLING SET-POINT TEMPERATURE. THE HEAT PUMP COMPRESSOR SHALL CYCLE TO MAINTAIN SET-POINT TEMPERATURE. THE HEAT PUMP COMPRESSOR SHALL BE OFF WHEN SPACE TEMPERATURE IS AT OR BELOW COOLING SET-POINT TEMPERATURE.

4. HEATING MODE:

- a. THE HEAT PUMP COMPRESSOR SHALL BE ACTIVATED IN THE HEATING MODE WHENEVER SPACE TEMPERATURE IS 3'F BELOW HEATING SET-POINT TEMPERATURE. THE HEAT PUMP COMPRESSOR SHALL CYCLE TO MAINTAIN SET-POINT TEMPERATURE. THE HEAT PUMP COMPRESSOR SHALL BE OFF WHEN SPACE TEMPERATURE IS AT OR ABOVE THE HEATING SET-POINT TEMPERATURE.
- b. SHOULD THE HEAT PUMP COMPRESSOR INITIATE ITS DEFROST CYCLE THE ELECTRIC HEATER AT THE AIR HANDLING UNIT SHALL BE ACTIVATED TO MAINTAIN HEATING SET-POINT TEMPERATURE. WHEN DEFROST CYCLE IS COMPLETE THE ELECTRIC HEATER SHALL BE DE-ACTIVATED.
- c. SHOULD SPACE TEMPERATURE FALL 8'F BELOW SET-POINT TEMPERATURE THE ELECTRIC HEATER AT AHU-1 OR AHU-2 SHALL BE ACTIVATED TO MAINTAIN SPACE TEMPERATURE. THE ELECTRIC HEATER SHALL BE DE-ACTIVATED WHEN SPACE TEMPERATURE IS AT THE HEATING SET-POINT TEMPERATURE.

4. UNOCCUPIED:

- a. THERE IS NO UNOCCUPIED MODE FOR THIS HVAC SYSTEM.
- 5. NIGHT SET BACK:
- a. THERE IS NO NIGHT SET BACK MODE FOR THIS HVAC SYSTEM
- C. SPLIT SYSTEM AHU-1.3/HP-1.3 (VARIABLE AIR VOLUME)

1. OCCUPIED:

- a. THE BUILDING IS OPEN AND OPERATIONAL 24 HOURS A DAY AND 7 DAYS A WEEK, THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) SHALL ACTIVATE AHU-1.3 AND HEAT PUMP HP-1.3 IN THE OCCUPIED MODE. THE AIR HANDLING UNIT AHU-1.3 SUPPLY FAN SHALL START AND RUN CONTINUOUSLY. THE DIFFERENTIAL PRESSURE SWITCH AT AHU-1.3 SHALL SIGNAL AN ALARM TO THE BAS SHOULD THE SUPPLY FAN FAIL TO RUN WHEN COMMANDED TO START. THE BAS SHALL PROVIDE AND "OFF NORMAL OPERATION" ADVISORY TO A REMOTE LOCATION.
- b. THE OUTDOOR AIR DAMPER AT AHU-1.3 SHALL OPEN WHEN THE AHU SUPPLY FAN IS STARTED. HEAT PUMP COMPRESSOR SHALL CYCLE TO MAINTAIN SPACE TEMPERATURE IN THE COOLING OR HEATING MODE.

2. COOLING MODE:

a. THE HEAT PUMP COMPRESSOR SHALL BE ACTIVATED AND CYCLE TO MAINTAIN A 55°F LEAVING AIR TEMPERATURE IN COOLING MODE AT AIR HANDLING UNIT AHU-1.3.

3. HEATING MODE:

- a. THE HEAT PUMP COMPRESSOR SHALL BE ACTIVATED AND CYCLE TO MAINTAIN A 90°F DISCHARGE AIR TEMPERATURE AT AHU-3 IN THE HEATING MODE. SHOULD DISCHARGE TEMPERATURE FALL BELOW 85°F THE ELECTRIC HEATER AT AHU-3 SHALL BE ACTIVATED AND CYCLE TO MAINTAIN DISCHARGE TEMPERATURE.
- SHOULD THE HEAT PUMP COMPRESSOR INITIATE ITS DEFROST CYCLE THE ELECTRIC HEATER AT THE AIR HANDLING UNIT SHALL BE ACTIVATED TO MAINTAIN HEATING DISCHARGE TEMPERATURE. WHEN DEFROST CYCLE IS COMPLETE THE ELECTRIC HEATER AT AHU-3 SHALL BE DE-ACTIVATED.

4. UNOCCUPIED:

a. THERE IS NO UNOCCUPIED MODE FOR THIS HVAC SYSTEM.

5. **NIGHT SET BACK:**

- G. FOR ZONE DAMPERS VAV-1.3.1, VAV-1.3.2, VAV-1.3.8 AND VAV-1.3.9 SERVING DORM AREAS SHALL HAVE ITS SPACE TEMPERATURE RESET TO 68°F (ADJUSTABLE) DURING THE NIGHT TIME HOURS OF 7 PM TO 7 AM.
- b. FOR ALL OTHER ZONE DAMPERS THERE WILL BE NO NIGHT SET-BACK.
- D. ZONE DAMPERS VAV-1.3.1 TO VAV-1.3.9:

1. GENERAL:

a. ZONE DAMPERS SHALL BE ACTIVATED BY THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) WHENEVER THE BUILDING IS IN THE OCCUPIED MODE. THE ZONE VARIABLE VOLUME VAV DAMPER (NO) SHALL BE OPEN TO ITS FULL OPEN POSITION WHEN ACTIVATED.

2. COOLING MODE:

a. THE SPACE TEMPERATURE SENSOR SHALL MODULATE THE VAV ZONE DAMPER TOWARDS ITS MINIMUM POSITION TO MAINTAIN SPACE TEMPERATURE COOLING SET-POINT OF 72°F (ADJUSTABLE)

3. HEATING MODE:

a. THE SPACE TEMPERATURE SENSOR SHALL MODULATE THE VAV ZONE DAMPER TOWARDS ITS MINIMUM POSITION TO MAINTAIN SPACE TEMPERATURE HEATING SET-POINT OF 70°F (ADJUSTABLE)

E. <u>BY-PASS DAMPER BPD-3</u>;

1. THE BAS SHALL ACTIVATE THE BY-PASS DAMPER BPD-3 IN THE OCCUPIED MODE. A STATIC PRESSURE SENSOR MOUNTED 2/3 WAY DOWN THE SUPPLY AIR DUCT FROM AHU-1.3 SHALL MODULATE BY-PASS DAMPER (NC) OPERATION FROM FULLY CLOSED TO ITS MAXIMUM OPEN POSITION TO MAINTAIN A CONSTANT STATIC PRESSURE (ADJUSTABLE) IN THE SUPPLY AIR DUCT. PROVIDE FEEDBACK SIGNAL TO THE BAS TO INDICATE BY-PASS DAMPER POSITION.

F. SPLIT SYSTEM AHU-1.4/HP-1.4 (CONSTANT VOLUME)

OCCUPIED:

- g. THE BUILDING IS OPEN AND OPERATIONAL 24 HOURS A DAY AND 7 DAYS A WEEK, THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) SHALL ACTIVATE AHU-1.4 AND HEAT PUMP HP-1.4 IN THE OCCUPIED MODE. THE AIR HANDLING UNIT AHU-1.4 AND HEAT PUMP HP-1.4 SHALL CYCLE ITS OPERATION TO MAINTAIN A 72°F (ADJUSTABLE) SPACE TEMPERATURE IN THE ELECTRIC ROOM.
- b. PROVIDE AN ADDITIONAL TEMPERATURE SENSOR IN THE ELECTRIC ROOM TO ACTIVATE AN ALARM TO THE BAS SHOULD SPACE TEMPERATURE RISE TO 85°F (ADJUSTABLE). THE BAS SHALL SIGNAL A "OFF NORMAL OPERATION" ADVISORY TO A REMOTE LOCATION.

B. <u>SPLIT SYSTEM AHU-1.5/CU-1.5 (100% O.A., CONSTANT VOLUME)</u> 1. OCCUPIED:

- g. THE BUILDING IS OPEN AND OPERATIONAL 24 HOURS A DAY AND 7 DAYS A WEEK, THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) SHALL ACTIVATE THE AIR HANDLING UNITS AHU-1.5 AND CONDENSING UNIT CU-1.5 IN THE OCCUPIED MODE. THE DIFFERENTIAL PRESSURE SWITCH AT AHU-1.5 SHALL SIGNAL THE BAS TO ACTIVATE AN ALARM SHOULD ITS SUPPLY FAN FAIL TO RUN WHEN COMMANDED TO START. THE BAS SHALL PROVIDE AN "OFF NORMAL OPERATION" ADVISORY SIGNAL TO A REMOTE LOCATION.
- b. THE AIR HANDLING UNIT SUPPLY FAN SHALL START AND RUN CONTINUOUSLY. CONDENSING UNIT COMPRESSOR SHALL START AND CYCLE IT OPERATION IN THE COOLING OR HEATING MODE TO MAINTAIN SPACE TEMPERATURE.
- c. THE AHU DISCHARGE TEMPERATURE SENSOR SHALL MAINTAIN A 65'F LEAVING AIR TEMPERATURE IN COOLING MODE AND ALLOW TEMPERATURE TO FLUCTUATE IN THE HEATING MODE.
- 2. COOLING MODE: a. THE CONDENSING UNIT COMPRESSOR SHALL BE ACTIVATED IN THE COOLING MODE TO MAINTAIN COOLING COIL LEAVING AIR TEMPERATURE OF 55°F. HOT GAS REHEAT COIL

3. <u>DE-HUMIDIFCATION MODE:</u>

a. THE DISCHARGE HUMIDITY SENSOR SHALL ACTIVATE THE COOLING COMPRESSOR OR CONTINUE COMPRESSOR OPERATION SHOULD IT ALREADY BE RUNNING WHENEVER DISCHARGE HUMIDITY IS 5% RH ABOVE HUMIDITY SET-POINT OF 50% RH (ADJUSTABLE). THE COOLING COMPRESSOR SHALL CYCLE TO MAINTAIN HUMIDITY SET-POINT. PROVIDE A MINIMUM TIME DELAY OF 5 MINUETS BETWEEN COMPRESSOR START-UPS.

HEATING MODE:

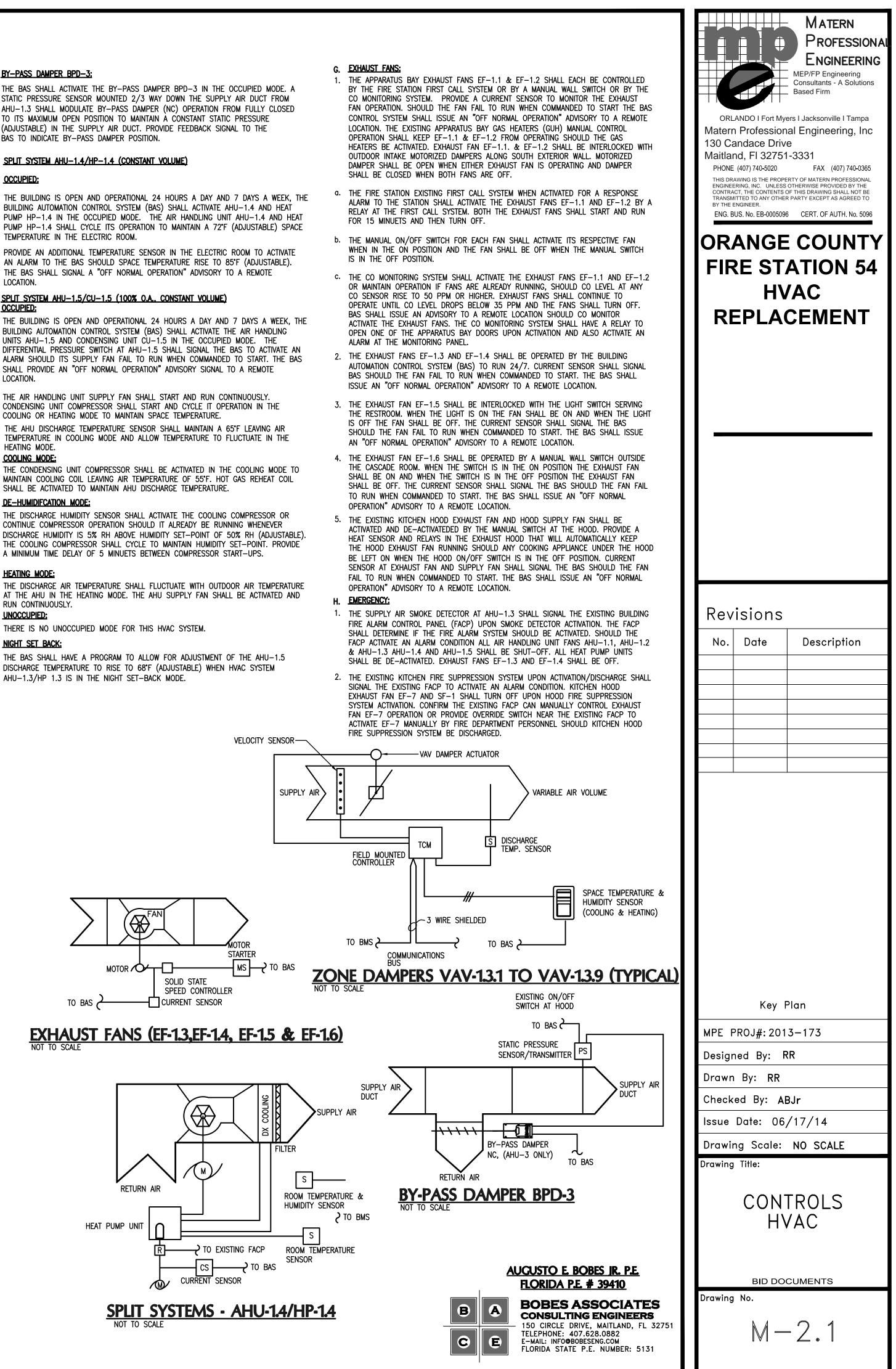
a. THE DISCHARGE AIR TEMPERATURE SHALL FLUCTUATE WITH OUTDOOR AIR TEMPERATURE AT THE AHU IN THE HEATING MODE. THE AHU SUPPLY FAN SHALL BE ACTIVATED AND RUN CONTINUOUSLY.

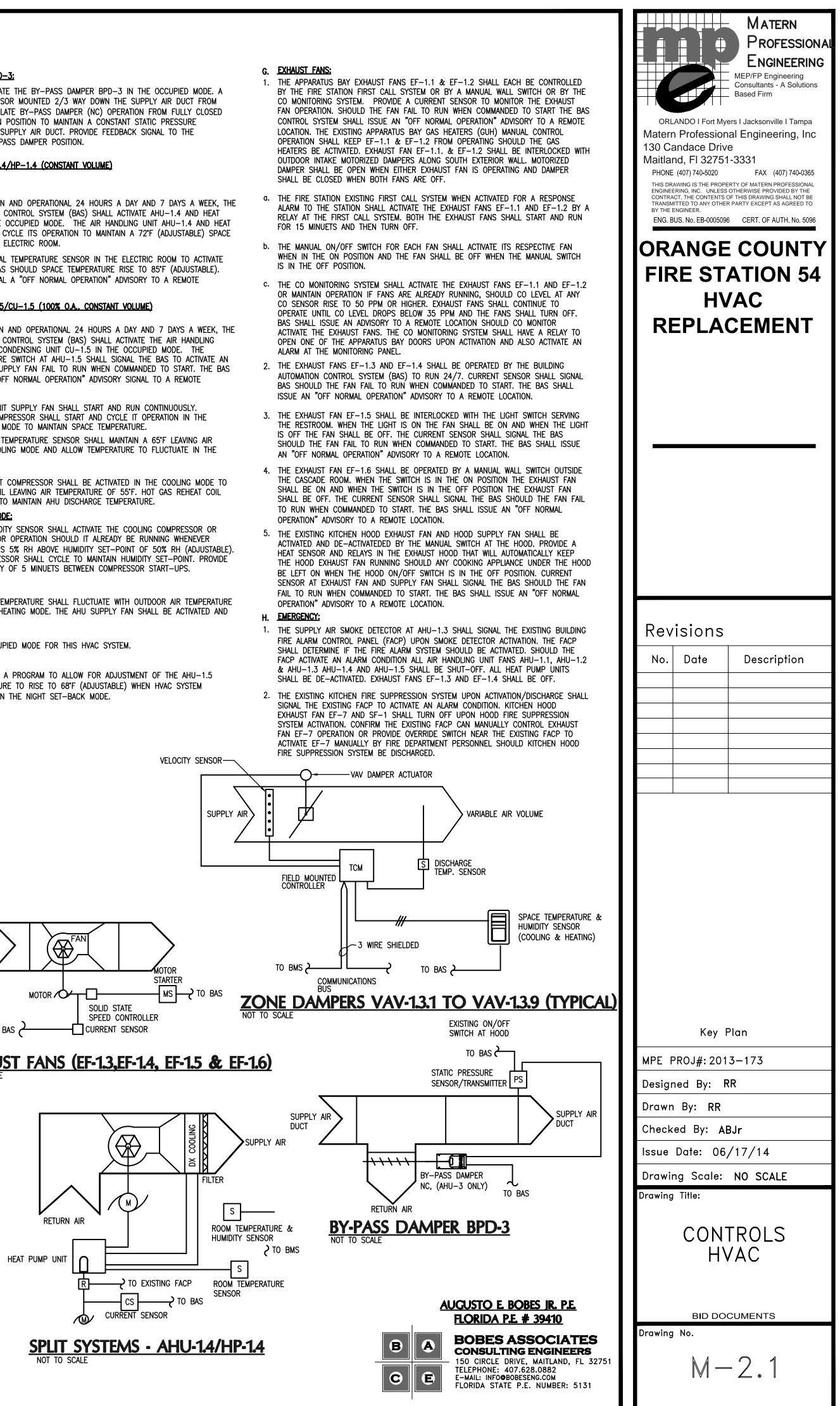
4. UNOCCUPIED:

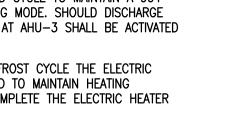
a. THERE IS NO UNOCCUPIED MODE FOR THIS HVAC SYSTEM.

5. NIGHT SET BACK:

a. THE BAS SHALL HAVE A PROGRAM TO ALLOW FOR ADJUSTMENT OF THE AHU-1.5 DISCHARGE TEMPERATURE TO RISE TO 68°F (ADJUSTABLE) WHEN HVAC SYSTEM AHU-1.3/HP 1.3 IS IN THE NIGHT SET-BACK MODE.







												ΑΙ	R	ΗA	NC		N	G	١U	ΤΙΝ	•	S C	ΗE	DU	LE										
	FAN DATA								DX. COOLING COIL DATA						HEATING DATA ELECTRIC HEATING COIL				ELECTRIC DATA			FILTER DATA													
UNIT NUMBER	NOMINAL CAPACITY TONS	LOCATION	AREA SERVED	outside Air	CFM	TOTAL STATIC IN. W.G.	MIN. Ext. Static In. W.G.	MAX. Outlet Vel. F.P.M.	RPM	BHP H	P EI DB	NT. AIR F WB	LVG. F DB	AIR ¹ WB	'otal se Mbh Mi	ENS. Bh F.P	I FACE	No. S ROWS	TATIC IN. W.G.	ENT. I AIR / DB	LVG. Air Db	HEATING MBH © 37°F	ENT. AIR F	LVG. Air F	. AMPS	5 VOLT	6 PHASE	E UNIT MCA	MOPD	TYPE	CLEAN P.D. IN. W.G.	NO./SIZE	SEER /EER	MANUFACTURER/MODEL	NOTES
AHU-1.1	4	MEZZANINE	LOBBY/ OFFICE ARE		1400		.5		HIGH	3/	′4 73. [·]	1 62.6	55.0	52.1	42.59 27	7.50 14.	5 7.42	3 -		65	92	40.78	70	85 9.0) 18.8	208	3	32.0	35	DISP.	.2"	21 1/2"x23 5/16"x1"	17.0/-	CARRIER FE4CNB006T00 OR APPROVED EQUAL	1
AHU-1.2	5	MEZZANINE	DINING/KITCHEN & READY ROOM ARE	a 250	1950		.5		HIGH	3/	4 73.3	3 62.7	56.9	53.3	53.54 34	1.57 14.	5 7.42	3 -		65	90	51.89	70	81 9.0) 18.8	208	3	32.0	35	DISP.	.2"	21 1/2"x23 5/16"x1"	16.0/-	CARRIER FE4CNB006T00 OR APPROVED EQUAL	1
AHU-1.3	7.5	MEZZANINE	BUNK & RESTROOM ARE	a 750	3375	1.17	1.0		899	1.78 2.	4 71.2	2 61.7	54.0	52.9	86.1 6	2.7 15	8.3	4 -		62 8	31.5	71.2	70	87 25.	0 52.1	208	3	71.7	80	DISP.	.2"	4/16"X24"X2"	-/11.0	CARRIER 40RUQA08A3A6 OR APPROVED EQUAL	2
AHU-1.4	1.0	ELEC. ROOM	ELECTRIC ROOM E10	0 0	353		.3		HIGH		- 72	60	51.0	50.9	12.0 8	3.3	-								·	208	1	1.2	15	CLEANABLE	E .2"		17.0/-	MITSUBISHI MU-A12WA OR APPROVED EQUAL	3
AHU-1.5	9.4	MEZZANINE	AIR HANDLING UNIT:	5 1200	1200		1.0			1/	2 95	78	51.6	51.2	109 5	58 12	8.0	3 -							·	208	3	3	15	DISP.	.2"	2/16"X25"X2" & 1/20"X25"X2"	-/10.6	ADDISON VCA-101 OR APPROVED EQUAL	4
2. AIR H	ANDLING UN	NT SHALL B	E HORIZONTAL CO E VERTICAL CONF NDENSATE PUMP	GURATION	WITH ELEC	CTRIC HE	AT AND	HAVE S	SINGLE	POINT P	OWER C	ONNECTIC	N.	UMP C	ONDENSI	NG UNIT																			

FUMF CUMDENSING UNI 4. AIR HANDLING UNIT TO BE 100% OUTDOOR AIR VERTICAL TYPE. PROVIDE MANUFACTURERS HOT GAS REHEAT COIL.

UNIT	F	PERFOR	MANCE	DATA		CONSTRUCTION	N DATA			MO	tor d/	ATA	ELECTRICAL			MANUFACTURER/MODEL	WEIGHT	NOTES
NŬMBER	CFM	SP	RPM	SONES	BHP	FAN TYPE	CLASS	ROT	DISCH	HP	WATTS	START TYPE	VOLTS	PHASE	CYCLES		(LBS)	
EF-1.1	6000	.50	1113		1.65	IN-LINE CENTRIFUGAL, BELT				2.0			208	1	60	LOREN COOK SQN-B 210 OR APPROVED EQUAL	250	1
EF-1.2	6000	.50	1113		1.65	IN-LINE CENTRIFUGAL, BELT				2.0			208	1	60	LOREN COOK SQN-B 210 OR APPROVED EQUAL	250	1
EF-1.3	725	.50	782	2.7		IN-CENTRIFUGAL, DIRECT					309		120	1	60	LOREN COOK GN-822 OR APPROVED EQUAL	74	2
EF-1.4	150	.50	1219	3.0		IN-CENTRIFUGAL, DIRECT					142		120	1	60	LOREN COOK GN-164 OR APPROVED EQUAL	20	2
EF-1.5	50	.375	785	1.2		IN-CENTRIFUGAL, DIRECT					49		120	1	60	LOREN COOK GN-122 OR APPROVED EQUAL	22	2
EF-1.6	300	.375	1100	2.7		IN-CENTRIFUGAL, DIRECT					171		120	1	60	LOREN COOK GN-520 OR APPROVED EQUAL	32	2
SF-1	900	.5				Roof centirfugaal, belt				1/4			120	1	60	EXISTING HOOD SUPPLY FAN		3
EF-7	1000	.75				ROOF CENTRIFUGAL, BELT				1/8			120	1	60	EXISTING HOOD EXHAUST FAN		3

1. MANUFACTURER TO PROVIDE BACKDRAFT DAMPER. PROVIDE MOTOR STARTER AND FURNISH (2) EXTRA SETS OF FAN BELTS. 2. MANUFACTURER SHALL PROVIDE BACKDRAFT DAMPER AND SOLID STATE VARIABLE SPEED CONTROLLER. PROVIDE MOTOR STARTER

3. EXISTING KITCHEN HOOD PACKAGED SUPPLY AND EXHAUST FAN, ROOF CURB AND CONTROLS TO REMAIN. EXISTING HOOD FIRE SUPPRESSION SYSTEM TO REMAIN.

	AIR GRILLE + REGISTER SCHEDULE													
unit Number	SERVICE	MOUNT	C.F.M. RANGE	SIZE L"xH"	N.C. Max	FRAME	MAX. P.D. IN. W.G.	PATTERN	DAMPER	GRID	CONSTRUCTION	FINISH	MANUFACTURER/MODEL	NOTES
CG-1	RETURN	CLG	SEE DWG	24x24	24	LAY-IN	0.054	EGG CRATE	NO	1/2"	ALUMINUM	WHITE	TITUS 50F/PRICE 80 OR APPROVED EQUAL	1 & 2
CG-2	RETURN	CLG	SEE DWG	12X12	20	SURFACE	0.073	EGG CRATE	NO	1/2"	ALUMINUM	WHITE	TITUS 50F/PRICE 80 OR APPROVED EQUAL	1&2
SR-1	SUPPLY	WALL	SEE DWG	18X10	20	SURFACE	0.073	DOUBLE DEFLECTION	NO		ALUMINUM	WHITE	TITUS 350FS/PRICE 620 OR APPROVED EQUAL	<u> </u>
SR-2	SUPPLY	WALL	SEE DWG	10X10	20	SURFACE	0.073	DOUBLE DEFLECTION			ALUMINUM	WHITE	TITUS 350FS/PRICE 620 OR APPROVED EQUAL	
ER-1	EXHAUST	CLG	SEE DWG	8X8	20	SURFACE	0.073	EGG CRATE	NO	1/2"	ALUMINUM	WHITE	TITUS 50F/PRICE 80 OR APPROVED EQUAL	1 & 2
ER-2	EXHAUST	CLG	SEE DWG	24X24	20	LAY-IN	0.073	EGG CRATE	NO	1/2"	ALUMINUM	WHITE	TITUS 50F/PRICE 80 OR APPROVED EQUAL	1 & 2

1. ALL GRILLES, REGISTERS AND DIFFUSERS SHALL HAVE A MAXIMUM FLAME SPREAD RATING OF 25 AND A MAXIMUM SMOKE DEVELOPED RATING OF 50 IN COMPLIANCE WITH SECTIONS 603.15 AND 603.15.1 OF THE FLORIDA BUILDING CODE.

2. PAINT FLAT BLACK INSIDE OF DUCTS BEHIND GRILLES.

AIR	HANDLING	UNIT	SCHEDULE
-----	----------	------	----------

HOT	GAS	REHEAT	COIL.	

	HEAT PUMP/CONDENSING UNIT UNIT SCHEDULE																	
UNIT	COOLING CAPACITY BTU/HR	SEER/	HEATING CAPACITY BTU/HR AT 47'F	HSPF		COMPRESSOR DATA			CON	idenser f	AN	ELECTRICAL						
NUMBER	BTU/HR AT ARI CONDITION	EER	AT 47°F	/IEER	NO.	HP/KW	RLA	LRA	NO.	HP/KW	FLA	MCA	FUSE	VOLTS	PHASE	CYCLE	MANUFACTURER/MODEL	NOTES
HP-1.1	46,500	17.0/-	48,000		1		26.2	104	1	1/5 HP	2.6	35.4	50	208	1	60	CARRIER 25VNA948A003 OR APPROVED EQUAL	1, 4, 5
HP-1.2	57,500	16.0/-	59,000		1		28.8	152.9	1	1/5 HP	2.4	38.4	60	208	1	60	CARRIER 25VNA960A003 OR APPROVED EQUAL	1, 4, 5
HP-1.3	89,000	-/11.0	87,000	-/11.8	1		25.0	164	2	1/4 HP	1.5 EA.	34.3	50	208	3	60	CARRIER 38AUQA08A0B5 OR APPROVED EQUAL	2&4
HP-1.4	12,000	17.0/-	13,600	8.3/-	1		7.8	9.2	1		.52	12	15	208	1	60	MITSUBISHI MUZ-A12NA OR APPROVED EQUAL	3 & 4
CU-1.5	112,000	-/11.3			1		30.1	225	1		5.4	41.6	70	208	3	60	ADDISON RCA-101 OR APPROVED EQUAL	6
<u>NOTES:</u>																		

1. MANUFACTURER SHALL PROVIDE THERMAL EXPANSION VALVE (TXV).

2. PROVIDE MANUFACTURERS SOLENOID VALVE, LOW AMBIENT CONTROL AND CONDENSING COIL HAIL GUARD.

3. POWER FOR AIR HANDLING UNIT IS PROVIDED FROM THE HEAT PUMP CONDENSING UNIT.

4. ALL HEAT PUMP UNITS SHALL UTILIZE REFRIGERANT R-410. 5. HEAT PUMP UNIT SHALL HAVE A VARIABLE SPEED DIGITAL SCROLL COMPRESSOR WITH THE ABILITY TO MODULATE FROM ITS MAXIMUM CAPACITY DOWN TO 40% CAPACITY.

6. PROVIDE HOT GAS REHEAT COIL FOR DEHUMIDIFICATION CYCLE.

				ZONE DAMPERS (ELEC.)								
				CFM	RANGE			INPUT	OUTPUT	TRAVEL	MANUFACTURER/ MODEL	NOTEC
UNIT LOC	CATION	AREA SERVED	INLET SIZE	MAX CFM	MIN CFM	MIN AP (IN W.G.)	Volts			TIME (SEC.)	MANOLACIONELY MODEL	NOTES
VAV-1.3.1 DOR	RM 111	DORM 111	10 " ø	450	150	0.04	24	2	35	15	CARRIER 35E-10 OR APPROVED EQUAL	1
VAV-1.3.2 DOR	RM 111	DORM 111	8 " ø	360	100	0.04	24	2	35	15	CARRIER 35E-08 OR APPROVED EUQAL	1
VAV-1.3.3 LOCKE	ERS 111A	RR 100E & 100F	8 " ø	400	400	0.07	24	2	35	15	CARRIER 35E-08 OR APPROVED EQUAL	1
VAV-1.3.4 LCOKE	ERS 111A	LOCKERS 111A	8"ø	300	100	0.04	24	2	35	15	CARRIER 35E-08 OR APPROVED EQUAL	1
VAV-1.3.5 DOR	RM 111	DORM 111	10 " ø	540	150	0.04	24	2	35	15	CARRIER 35E-10 OR APPROVED EQUAL	1
VAV-1.3.6 CORF	R 199B	CORR 199B & ELEC E100	8"ø	400	100	0.04	24	2	35	15	CARRIER 35E-08 OR APPROVED EQUAL	1
VAV-1.3.7 EXERC	CISE 111B	EXERCISE 111B	6 " ø	200	60	0.04	24	2	35	15	CARRIER 35E-06 OR APPROVED EQUAL	1
VAV-1.3.8 DORI	RM 109	DORM 109 & RR 100C & 100D	10 " ø	525	205	0.04	24	2	35	15	CARRIER 35E-10 OR APPROVED EQUAL	1
VAV-1.3.9 DORI	RM 111	DORM 111	6 " ø	200	60	0.04	24	2	35	15	CARRIER 35E-06 OR APPROVED EQUAL	1
BPD-3 DORI	RM 111	AHU-1.3	14 " ø	2050	0	0.04	24	2	35	15	CARRIER 35K-14 OR APPROVED EQUAL	2

1. MANUFACTURER TO PROVIDE 1" THICK FIBERGLASS LINER, HANGER BRACKETS AND 24V TRANSFORMER. 2 MANUFACTURER TO PROVIDE 1/2" THICK FIBERGLASS LINER AND 24V TRANSFORMER.

	DIFFUSER SCHEDULE												
MARK	FRAME	MOUNT	DIFFUSER SIZE	NECK SIZE	C.F.M. RANGE	N.C. Max	MAX. Pd In.w.g.	PATTERN	Damper	FINISH	SURFACE PANEL	CONSTRUCTION	MANUFACTURER/MODEL
CD-1	LAY-IN	CEILING	24x24	SEE DWG.	SEE DWG.	25	0.13	4-WAY	NO	WHITE	24x24	ALUMINUM	TITUS TMSA-AA OR APPROVED EQUAL
CD-2	SURFACE	CEILING	12x12	SEE DWG.	SEE DWG.	25	0.13	4-WAY	NO	WHITE		ALUMINUM	TITUS TMSA-AA OR APPROVED EQUAL
CD-3	SURFACE	CEILING	6X6	SEE DWG.	SEE DWG.	25	0.13	4-WAY	NO	WHITE		ALUMINUM	TITUS TDCA-AA OR APPROVED EQUAL
REMARKS	<u>S:</u>												

1. SEE ARCHITECTURAL CEILING PLAN FOR FRAME TYPE.

2. ALL DIFFUSERS AND REGISTERS SHALL HAVE A MINIMUM FLAME SPREAD RATING OF NOT OVER 25 AND A MINIMUM SMOKE DEVELOPED RATING OF NOT OVER 50 AND SHALL BE IN COMPLIANCE WITH SECTIONS 603.15 AND 603.15.1 OF THE FLORIDA BUILDING CODE, MECHANICAL.

	Rev	isions								
	No.	Date	Description							
		Key I	Plan							
	MPE F	PROJ#: 201								
	Desigr	ned By: F	R							
		By: RR								
		ed By: Al Date: 06								
			NO SCALE							
	Drawing	Title:								
	SCHEDULES									
		H١	/AC							
	Drawing		CUMENTS							
1			-3.1							
		∥ ₩ ∥								

MATERN

MEP/FP Engineering Consultants - A Solutions

Based Firm

ORLANDO I Fort Myers I Jacksonville I Tampa Matern Professional Engineering, Inc

PHONE (407) 740-5020 FAX (407) 740-0365 THIS DRAWING IS THE PROPERTY OF MATERN PROFESSIONAL ENGINEERING, INC. UNLESS OTHERWISE PROVIDED BY THE CONTRACT, THE CONTENTS OF THIS DRAWING SHALL NOT BE TRANSMITTED TO ANY OTHER PARTY EXCEPT AS AGREED TO

ENG. BUS. No. EB-0005096 CERT. OF AUTH. No. 5096

ORANGE COUNTY

FIRE STATION 54

HVAC

REPLACEMENT

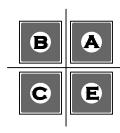
130 Candace Drive

BY THE ENGINEER.

Maitland, FI 32751-3331

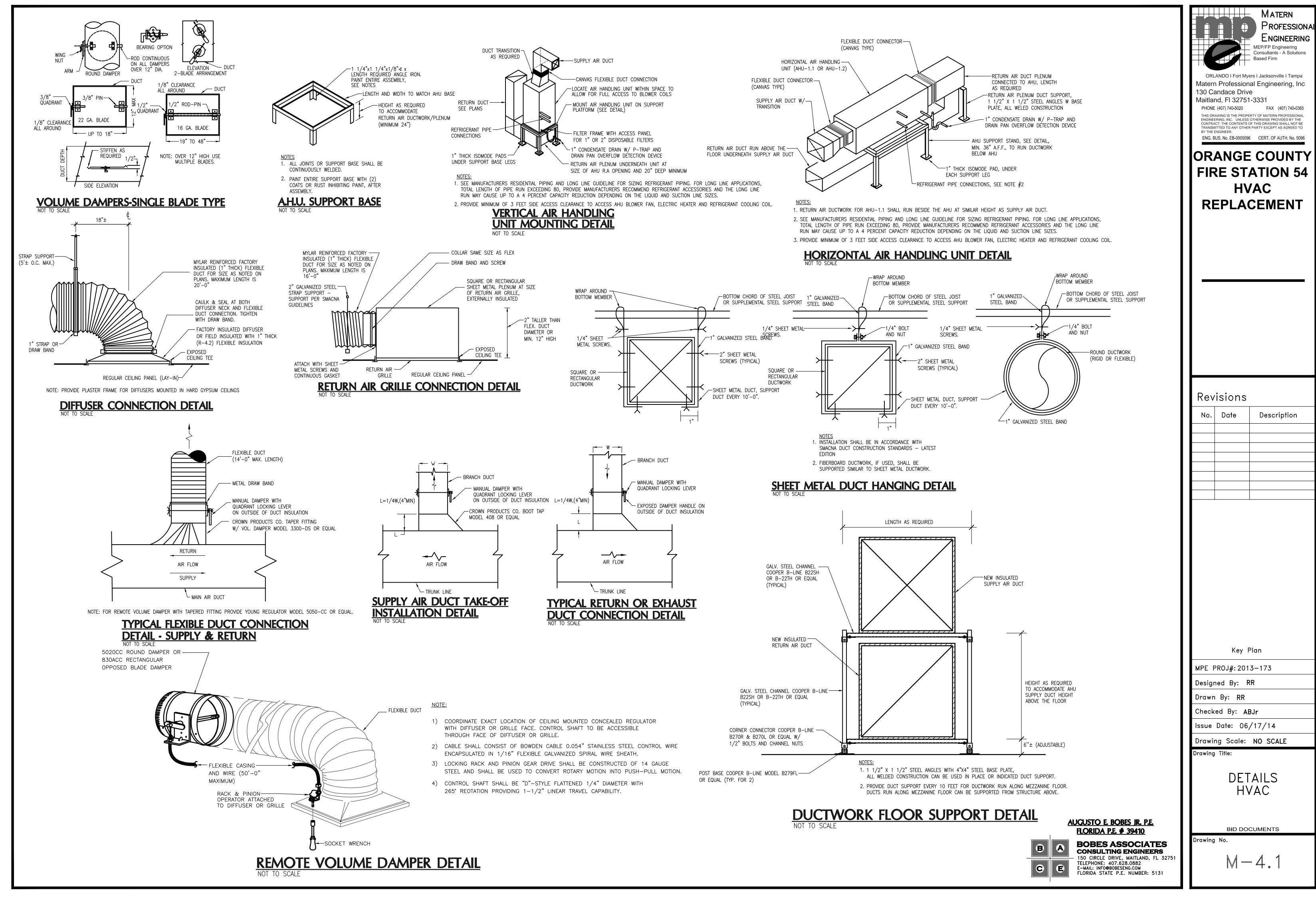
PROFESSIONAL

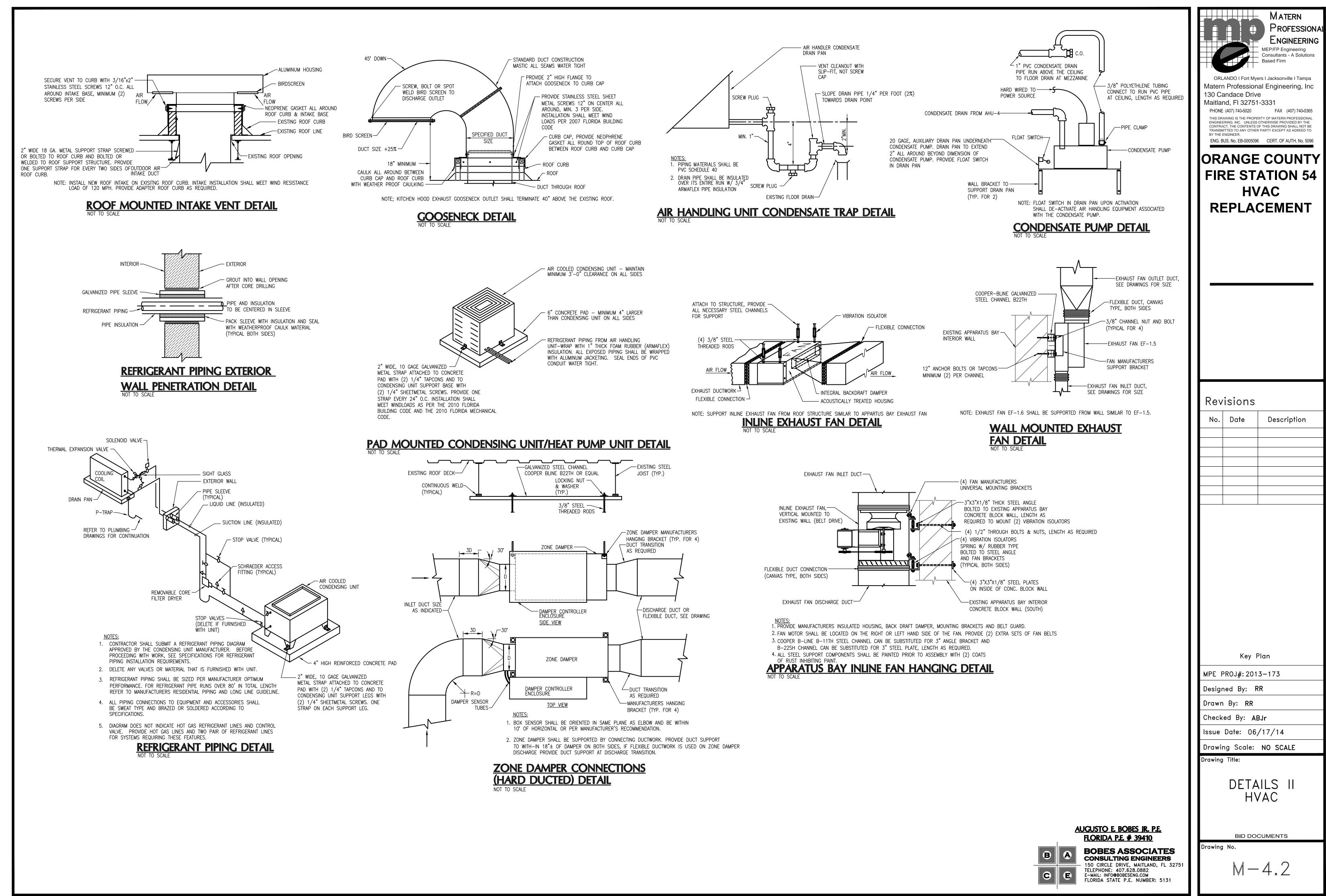
Engineering

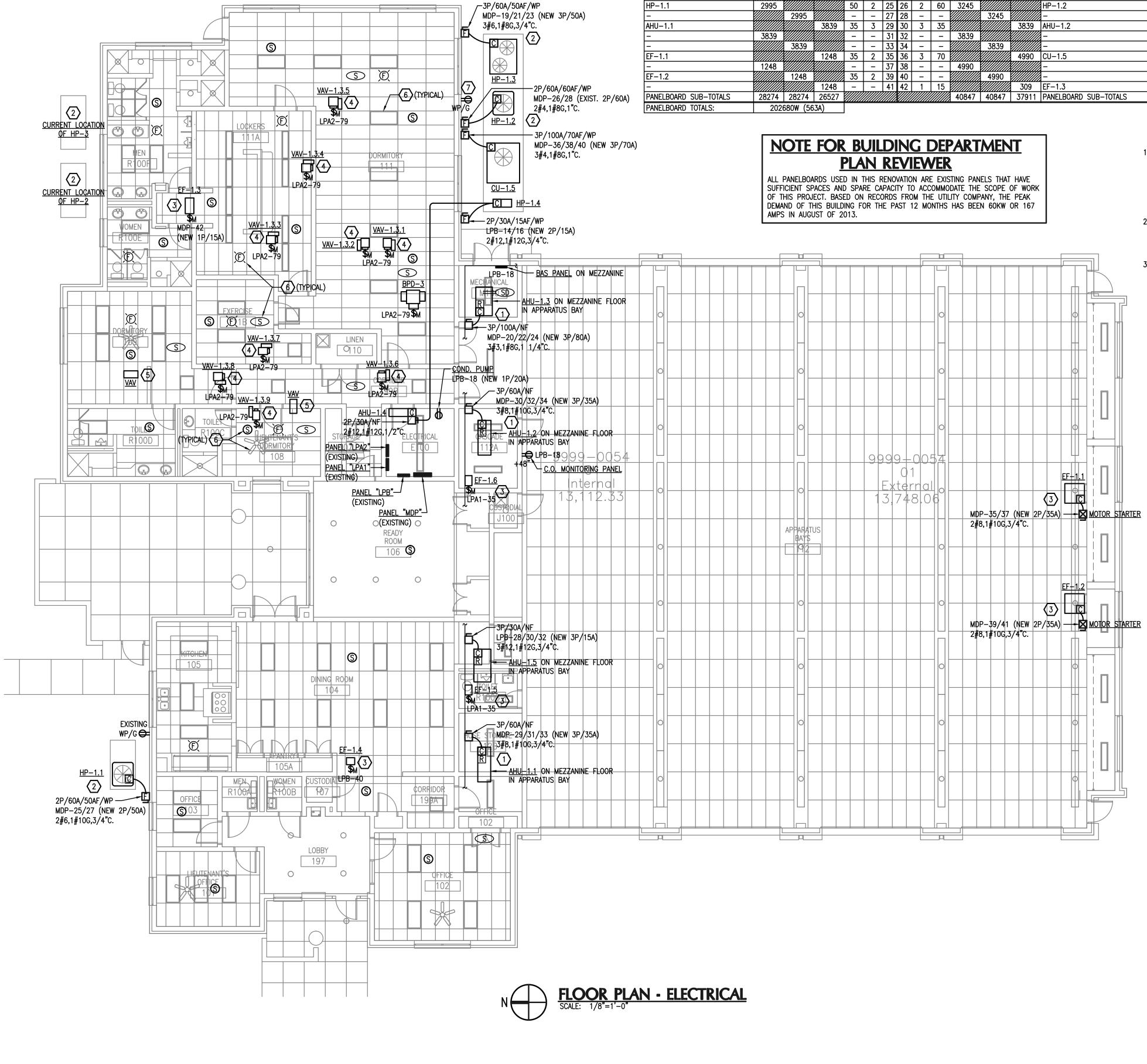


AUGUSTO E. BOBES JR. P.E. FLORIDA P.E. # 39410

BOBES ASSOCIATES CONSULTING ENGINEERS 150 CIRCLE DRIVE, MAITLAND, FL 32751 TELEPHONE: 407.628.0882 E-MAIL: INFO@BOBESENG.COM FLORIDA STATE P.E. NUMBER: 5131







PANEL LOCATION: ELECTRICAL R	RM E100	PANEL DESI	GNATION:	MDP	(EXISTI	NG)	VOLTAGE: 120/		AIC RATING: EXISTING]	SYMBOL LIS
PANEL FED FROM: UTILITY TRANS		PANELBOAR			•	_	MANUFACTURER		MOUNTING: SURFACE		
		MAINS: MAIN					<u>STYLE:</u> <u>SPP</u>		NEMA TYPE: 1		2X2 FLUORESCENT FIXTU
LOAD DESCRIPTION	WATTS PER F		R POLE	скт ск	T POLE	BKR	WATTS PER PH A PH	PHASE B PH C	LOAD DESCRIPTION		2X4 FLUORESCENT FIXTU
PANEL "LPA" (EXISTING)	13800	15	0 3	1 2	3	150			PANEL "LPB" (EXISTING)		
-	13800		-	34	-	-		33			1X4 FLUORESCENT FIXTU
-			_	56	_	-		12533		0	RECESSED DOWNLIGHT
SURGE PROTECTOR (EXISTING)		30) 3	7 8	-	40			LIFT STATION (EXISTING)		
-		-	_	9 10 11 12	_	-	263	9 2639	_		DISCONNECT SWITCH, "F
CASCADE SYSTEM (EXISTING)	3033	8) 3	13 14	_	70	5000		TRANSFORMER T4 (EXISTING)		MANUAL MOTOR STARTER
-	3033			15 16	_	-		0			CONNECTION TO EQUIPM
-		3033 -	· _	17 18	_	-		5000			DISTRIBUTION PANEL
HP-1.3	3359	50) 3	19 20		80	8601		AHU-1.3		
	3359			21 22	_	-	860	1		S S	CEILING MOUNTED SPEAK
-		3359 –	-	23 24		-		8601		S I	CEILING MOUNTED SMOK
HP-1.1	2995	50		25 26 27 28	_	60	- manual ma			SD	DUCT MOUNTED SMOKE
	2995	3839 35		29 30		35		5 3839	<u></u>	\$ м	MOTOR RATED DISCONNE
_	3839			31 32	_	-	3839		-	1	
_		- \		33 34		-		9	_	R XX	FIRE ALARM SHUTDOWN
EF-1.1		1248 35	5 2	35 36	3	70		4990) D	CEILING MOUNTED FIRE
-	1248		· _	37 38		-	4990		-		
EF-1.2	1248	3	5 2	39 40	_	-	499		-		CEILING FAN
				41 42	2 1	15		309	EF-1.3		
PANELBOARD SUB-TOTALS	28274 28274						40847 4084	·/ 3/911	PANELBOARD SUB-TOTALS	J	

<u>LIST</u>

- FIXTURE FIXTURE
- FIXTURE
- CH, "F" INDICATES FUSED
- STARTER EQUIPMENT
- SPEAKER SMOKE DETECTOR
- MOKE DETECTOR
- SCONNECT SWITCH DOWN RELAY
- FIRE ALARM DEVICE

EXISTING CONDITIONS NOTES

1. THIS DRAWING HAS BEEN PREPARED FROM FIELD INVESTIGATIONS AND BUILDING RECORD DRAWINGS. CONTRACTOR SHALL VISIT THE BUILDING AND TAKE SUCH OTHER STEPS AS MAY BE REASONABLY NECESSARY TO ASCERTAIN THE NATURE AND LOCATION OF WORK, AND THE GENERAL AND LOCAL CONDITIONS WHICH CAN AFFECT THE

WORK OR THE COST THEREOF.

SIMILAR TO THE DRAWING SHOWN.

OWNER.

- 2. EVERY EFFORT HAS BEEN MADE TO DETAIL EACH CONDITION. THE DRAWING MAY NOT DETAIL EVERY CONDITION OR LOCATION ENCOUNTER. MANY CONDITIONS ARE TYPICAL OR
- 3. CONFLICTS AND / OR PROBLEMS SHALL BE REPORTED PRIOR TO BIDDING FOR RESOLUTION. FAILURE TO REPORT THESE CONFLICTS PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AT NO ADDITIONAL COST TO THE

GENERAL NOTES

- 1. PROVIDE PROPER NUMBER OF WIRES IN EACH CONDUIT AS REQUIRED BY INDICATED CIRCUITRY AND SWITCHING.
- 2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND 2008 NATIONAL ELECTRICAL CODE (NEC).
- 3. COORDINATE ALL WORK DONE UNDER THIS DIVISION WITH WORK TO BE PERFORMED UNDER DIVISION 15.
- 4. COORDINATE WITH OTHER TRADES FOR EXACT LOCATIONS OF ALL MOTORS AND OTHER EQUIPMENT TO BE INSTALLED AND/OR WIRED UNDER THIS DIVISION BUT FURNISHED UNDER ANOTHER DIVISION.
- 5. TYPE AC CABLE AND ELECTRICAL NON-METALLIC TUBING SHALL NOT BE PERMITTED. TYPE MC CABLE IS PERMITTED AS LONG AS IT IS ACCEPTABLE TO THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ). 6. ALL CONDUITS ABOVE SLAB, WHETHER EXPOSED OR CONCEALED,
- SHALL BE EMT, IMC, OR RIGID GALVANIZED STEEL. 7. ALL BOXES, PLASTER RINGS, EXTENSION RINGS AND BOX COVERS SHALL BE METAL.
- 8. ALL CONDUITS SHALL BE PARALLEL AND PERPENDICULAR TO STRUCTURAL MEMBERS.
- 9. ALL BENDS SHALL BE MADE IN CONDUIT USING PROPER EQUIPMENT AND MEET NATIONAL ELECTRICAL CODE (NEC) REQUIREMENTS. 10. ALL WIRE, INCLUDING BUT NOT LIMITED TO FEEDERS AND BRANCH
- CIRCUIT WIRING, SHALL BE COPPER #12 AWG THWN MINIMUM. 11. ALL DEVICES SHALL BE COMMERCIAL OR SPECIFICATION GRADE.
- 12. ALL ELECTRICAL EQUIPMENT SHALL BE UL LISTED.
- 13. A GREEN INSULATED COPPER GROUND CONDUCTOR SHALL BE INSTALLED IN ALL RACEWAYS, SIZED PER REQUIREMENTS OF N.E.C..
- 14. GROUNDING SYSTEM SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250
- AND APPLICABLE REQUIREMENTS OF IEEE STANDARDS 142 AND 241. 15. CONDUCTORS ARE SIZED FOR VOLTAGE DROP PER N.E.C. ARTICLE 210.19(A)(1) FPN No. 4 AND F.B.C. 505.7.3.1&2. ELECTRICAL CONTRACTOR SHALL PERFORM VOLTAGE DROP CALCULATIONS IN ACCORDANCE WITH N.E.C. ARTICLE 210.19 (A)(1) FPN No. 4 AND F.B.C. 505.7.3.1&2 ON ANY CIRCUITS THAT ARE INSTALLED THAT DIFFER FROM THE DESIGN SHOWN IN THESE PLANS. FEEDER CONDUCTORS SHALL BE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2% AND BRANCH CIRCUIT CONDUCTORS 3% AT DESIGN LOAD.
- 16. LIGHT FIXTURES SUPPORTED BY CEILING GRID SHALL BE SUPPORTED AS PER FIELD TECHNICAL INFORMATION NO.40. LIGHT FIXTURES WEIGHING LESS THAN 10 POUNDS SHALL HAVE ONE 12 GAGE HANGER WIRE CONNECTED FROM THE FIXTURE TO THE STRUCTURE ABOVE. LIGHT FIXTURES WEIGHING MORE THAN 10 POUNDS SHALL HAVE TWO 12 GAGE WIRES ATTACHED AT OPPOSING CORNERS OF EACH LIGHT FIXTURE.

DEMOLITION AND RENOVATION KEY NOTES

- (1) AIR HANDLING UNIT IS TO BE REPLACED. DISCONNECT POWER FROM EXISTING AHU AND REMOVE DISCONNECT SWITCH, CONDUIT, WIRING AND ASSOCIATED EQUIPMENT (CONDUIT MAY BE REUSED IF CORRECT SIZE AND IN GOOD CONDITION). PROVIDE POWER FOR NEW AHU AS SHOWN ON PLAN AND PER INFORMATION ON NAMEPLATE OF NEW AHU. MAKE ALL CONNECTIONS TO AHU ACCORDING TO MANUFACTURER'S INSTRUCTIONS. PANEL AND CIRCUIT NUMBER WERE OBTAINED FROM FIELD INVESTIGATION AND MUST BE VERIFIED FOR ACCURACY BY CONTRACTOR AND ADJUSTED FOR ACTUAL FIELD CONDITION IF
- NECESSARY. PROVIDE NEW TYPED PANEL DIRECTORY INDICATING ALL LOADS. (2) HEAT PUMP UNIT IS TO BE REPLACED. DISCONNECT POWER FROM EXISTING HEAT PUMP AND REMOVE DISCONNECT SWITCH, CONDUIT, WIRING AND ASSOCIATED EQUIPMENT (CONDUIT MAY BE REUSED IF CORRECT SIZE AND IN GOOD CONDITION). PROVIDE POWER FOR NEW HEAT PUMP AS SHOWN ON PLAN AND PER INFORMATION ON NAMEPLATE OF UNIT. MAKE ALL CONNECTIONS TO HEAT PUMP ACCORDING TO
- MANUFACTURER'S INSTRUCTIONS. PANEL AND CIRCUIT NUMBER WERE OBTAINED FROM FIELD INVESTIGATION AND MUST BE VERIFIED FOR ACCURACY BY CONTRACTOR AND ADJUSTED FOR ACTUAL FIELD CONDITION IF NECESSARY. PROVIDE NEW TYPED PANEL DIRECTORY INDICATING ALL LOADS.
- $\overline{(3)}$ EXHAUST FAN IS TO BE REPLACED. DISCONNECT POWER FROM EXISTING FAN AND REMOVE DISCONNECT SWITCH, CONDUIT, WIRING AND ASSOCIATED EQUIPMENT (CONDUIT MAY BE REUSED IF CORRECT SIZE AND IN GOOD CONDITION). PROVIDE POWER FOR NEW EXHAUST FAN AS SHOWN ON PLAN AND PER INFORMATION ON NAMEPLATE OF FAN AND INSTALL NEW FEEDER TO A NEW DISCONNECT SWITCH TO BE MOUNTED NEAR EXHAUST FAN. MAKE ALL CONNECTIONS TO EXHAUST FA ACCORDING TO MANUFACTURER'S INSTRUCTIONS. PANEL AND CIRCUIT NUMBER WERE OBTAINED FROM FIELD INVESTIGATION AND MUST BE VERIFIED FOR ACCURACY BY COI AND ADJUSTED FOR ACTUAL FIELD CONDITION IF NECESSARY. NEW TYPED PANEL DIRECTORY INDICATING ALL LOADS.
- 4 INSTALL A 1P, 20A CIRCUIT BREAKER AT SPACE INDICATED AN PROVIDE 120V TO NEW VAV BOXES FOR CONTROL POWER. UF PANEL DIRECTORY WITH A LEGIBLE DESCRIPTION OF NEW LOAI
- 5 disconnect and remove any power from existing vav b BE DELETED.
- $\langle 6 \rangle$ contractor shall remove and reinstall any lighting f SPEAKERS, FIRE ALARM DEVICES, CEILING FANS, ETC. THAT M INTERFERE WITH THE INSTALLATION OF NEW MECHANICAL EQUI DUCT WORK. COORDINATE WITH MECHANICAL CONTRACTOR. CC SHALL REPLACE ANY EQUIPMENT DAMAGED DURING CONSTRUC
- $\langle 7 \rangle$ INSTALL A WEATHERPROOF GFCI RECEPTACLE FOR HVAC EQUIF MAINTENANCE AND CONNECT TO NEAREST RECEPTACLE CIRCUIT BUILDING.

B

С

E

ECTIONS TO EXHAUST FAN RUCTIONS. BTAINED FROM FIELD FOR ACCURACY BY CONTRACTOR INDITION IF NECESSARY. PROVIDE ING ALL LOADS.	
AT SPACE INDICATED AND DR CONTROL POWER. UPDATE SCRIPTION OF NEW LOAD.	
R FROM EXISTING VAV BOXES TO	
NSTALL ANY LIGHTING FIXTURES, ING FANS, ETC. THAT MAY NEW MECHANICAL EQUIPMENT AND	MPE PRO
ANICAL CONTRACTOR. CONTRACTOR AGED DURING CONSTRUCTION.	Designed
PTACLE FOR HVAC EQUIPMENT EST RECEPTACLE CIRCUIT IN THE	Drawn B
	Checked
	Issue Do
	Drawing
	Drawing Ti
	Fl E
AUCUSTO E. BOBES JR. P.E. FLORIDA P.E. # 39410	
BOBES ASSOCIATES CONSULTING ENGINEERS 150 CIRCLE DRIVE, MAITLAND, FL 32751 TELEPHONE: 407.628.0882 E-MAIL: INFO@BOBESENG.COM FLORIDA STATE P.E. NUMBER: 5131	Drawing N

<image/> <image/> <image/> <image/> <text><text><text><text><text><text></text></text></text></text></text></text>
Revisions No. Date Description
Key Plan MPE PROJ#:2013-173 Designed By: WMC Drawn By: WMC
Checked By: ABJr Issue Date: 06/17/14 Drawing Scale: 1/8" = 1'-0" Drawing Title:
FLOOR PLAN ELECTRICAL
BID DOCUMENTS Drawing No. E - 1 1