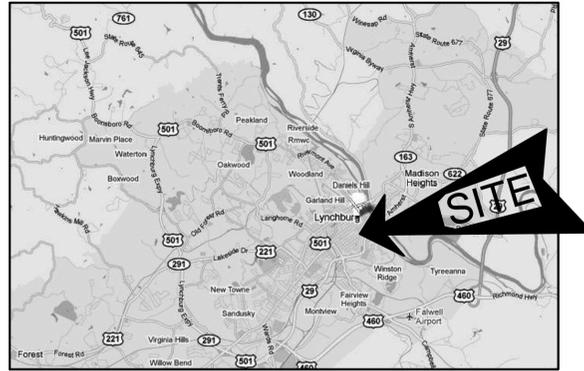


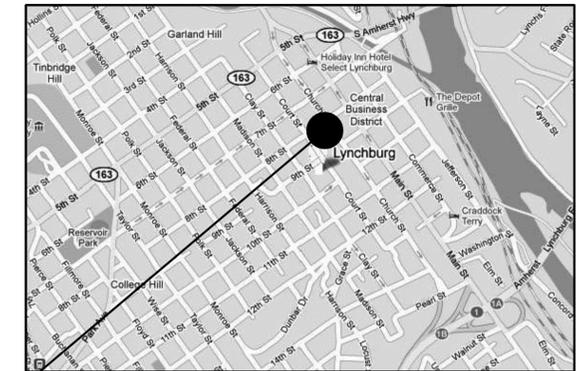
PUBLIC SAFETY BUILDING RTU REPLACEMENTS

CITY OF LYNCHBURG LYNCHBURG, VIRGINIA

PROJECT CODE: BM133
CONSTRUCTION DRAWINGS
FEBRUARY 13, 2015



VICINITY MAP



BUILDING LOCATION



PROJECT LOCATION MAP

GENERAL NOTES:

- THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED FOR USE AS FABRICATION DRAWINGS. THESE DRAWINGS INDICATE THE GENERAL AND APPROXIMATE SIZE AND LOCATION OF MATERIAL. FIELD VERIFY ALL DIMENSIONS AND LOCATIONS PRIOR TO BEGINNING WORK. ALL UTILITIES NOTED ON PLANS ARE APPROXIMATE AND CONTRACTOR SHALL FIELD VERIFY LOCATION.
- ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO, THE 2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE (JULY 14, 2014) AND ASSOCIATED CODES OF REFERENCE. REFER TO APPLICABLE CODES LIST THIS DRAWING.
- CONTRACTOR SHALL OBTAIN ALL BUILDING AND TRADE PERMITS FOR CONSTRUCTION; HOWEVER, THE CITY OF LYNCHBURG SHALL WAIVE ALL FEES REQUIRED FOR PERMITS.
- ALL MATERIAL SHALL BE NEW UNLESS OTHERWISE NOTED. MATERIALS ARE BASED ON THE INDICATED MANUFACTURERS/MODELS AND ARE INTENDED ONLY TO SHOW THE GENERAL SIZE, CONFIGURATION, LOCATION, CONNECTIONS, AND SUPPORT FOR INDICATED MATERIAL WITH RELATION TO OTHER BUILDING SYSTEMS. MATERIAL BY ANY MANUFACTURER THAT MEETS THE SCHEDULED CRITERIA IS ACCEPTABLE. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ACTUAL INSTALLED MATERIAL AND ASSOCIATED CHANGES.
- CONTRACTOR SHALL COORDINATE THE WORK WITH EXISTING CONDITIONS, INCLUDING BEAMS, COLUMNS, SITE FEATURES, AND OTHER OBSTRUCTIONS, WHETHER OR NOT SUCH IS SHOWN ON DRAWINGS.
- CONTRACTOR SHALL COORDINATE THE WORK BETWEEN ALL TRADES. MATERIAL LOCATIONS SHALL BE COORDINATED BETWEEN CIVIL, ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL, FIRE PROTECTION, AND DEMOLITION PLANS TO AVOID CONFLICTS.
- EXISTING MATERIAL TO BE REMOVED SHALL BE REMOVED CAREFULLY TO AVOID DAMAGING MATERIAL TO REMAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE THAT OCCURS TO EXISTING MATERIAL TO REMAIN OR TO BE RELOCATED DURING DEMOLITION AND CONSTRUCTION.
- ALL MATERIAL SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, MAINTAINING ALL REQUIRED CLEARANCES AND WITH ALL COMPONENTS ACCESSIBLE AND SERVICEABLE.
- CONTRACTOR SHALL PROVIDE MATERIAL DATA SUBMITTALS FOR ALL NEW MATERIAL. REFER TO INDIVIDUAL SHEETS FOR ADDITIONAL SUBMITTAL REQUIREMENTS. THE CONTRACTOR SHALL PROVIDE A SUBMITTAL SCHEDULE WITHIN 30 DAYS OF AWARD OF CONTRACT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ASSEMBLING OPERATION AND MAINTENANCE MANUALS CONTAINING ALL MATERIAL SUBMITTALS, INSTALLATION AND OPERATING INSTRUCTIONS, AND WARRANTY INFORMATION. THREE (3) COPIES OF O&M MANUALS SHALL BE SUBMITTED TO THE A/E AT THE TIME OF SUBSTANTIAL COMPLETION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A SET OF AS-BUILT DRAWINGS ON SITE WHICH INDICATE IN RED ALL DEVIATIONS FROM ORIGINAL CONSTRUCTION DOCUMENTS, INCLUDING APPROVED CONSTRUCTION CHANGE ORDERS. AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE A/E AT THE TIME OF SUBSTANTIAL COMPLETION. AS-BUILT DRAWINGS SHALL BE CLEARLY LEGIBLE AND COMPLETE.
- CONTRACTOR SHALL KEEP PUBLIC AREAS FREE OF TRASH AND CONSTRUCTION DEBRIS AND CLEAN ENTIRE WORK AREA ON A DAILY BASIS.
- TEMPORARY POWER AND WATER SERVICE ARE AVAILABLE ON SITE FOR THE CONTRACTOR'S USE. CONTRACTOR SHALL COORDINATE ACCESS WITH OWNER AND SHALL PROVIDE ANY REQUIRED TEMPORARY CONNECTIONS AND EXTENSIONS.
- CONTRACTOR SHALL PROVIDE A TEMPORARY TOILET FACILITY FOR USE BY CONTRACTOR'S PERSONNEL FOR THE DURATION OF THE PROJECT.
- CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH THE SCOPE OF WORK AND TO VERIFY EXISTING CONDITIONS PRIOR TO BIDDING THIS PROJECT. ANY DISCREPANCIES OR AMBIGUOUS ITEMS MUST BE REPORTED TO THE A/E AND THE OWNER FOR CLARIFICATION PRIOR TO BIDDING.
- CONTRACTOR IS TYPICALLY PERMITTED TO WORK BETWEEN 7:00 AM AND 6:00 PM MONDAY THRU FRIDAY. WORK OUTSIDE THESE HOURS SHALL BE COORDINATED WITH OWNER'S PROJECT MANAGER DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH OWNER AND BUILDING TENANTS FOR SPECIAL EVENTS.
- CONTRACTOR SHALL PROVIDE A DUST-PROOF BARRIER BETWEEN THE CONSTRUCTION ZONE AND OCCUPIED PORTIONS OF THE BUILDING. CONTRACTOR SHALL FILTER EXISTING HVAC GRILLES IN WORK AREA TO MITIGATE SPREAD OF DUST INTO OCCUPIED AREAS OF THE BUILDING.
- CONTRACTOR SHALL PROTECT THE BUILDING, ADJACENT FEATURES, ROADWAYS, WALKWAYS, SITE IMPROVEMENTS, EXTERIOR PLANTINGS, LANDSCAPING, ETC. AS REQUIRED FROM DAMAGE AND CORRECT DAMAGE RESULTING FROM CONSTRUCTION ACTIVITIES TO THE SATISFACTION OF THE OWNER.
- CONTRACTOR SHALL COLLECT DEMOLISHED MATERIALS AND PLACE IN APPROPRIATE DISPOSAL CONTAINERS. DEMOLISHED MATERIALS SHALL BE PROMPTLY REMOVED FROM THE OWNER'S PROPERTY AND DISPOSED OF LEGALLY.
- CONTRACTOR SHALL COORDINATE MATERIAL STORAGE AND DUMPSTER LOCATION WITH OWNER DURING CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE PRE-DEMOLITION PHOTOGRAPHIC OR VIDEOGRAPHIC DOCUMENTATION TO SHOW EXISTING CONDITIONS OF FINISHED SURFACES IN WORK AREA AND ADJOINING CONSTRUCTION INCLUDING SITE STORAGE AND ACCESS AREAS PRIOR TO PRE-CONSTRUCTION MEETING AND A MINIMUM OF 10 WORKING DAYS PRIOR TO COMMENCEMENT OF WORK.
- CONTRACTOR SHALL NOTIFY OWNER OF ANY INTERRUPTION OF UTILITIES INCLUDING BUT NOT LIMITED TO POWER, WATER, COMMUNICATIONS, ETC AND COORDINATE OUTAGE WITH OWNER AND ALL BUILDING TENANTS.
- ANY ROAD/PARKING LOT CLOSURE SHALL BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF THE VIRGINIA WORK AREA PROTECTION MANUAL.
- DEFINITIONS:
FURNISH: SUPPLY AND DELIVER TO PROJECT SITE FOR INSTALLATION BY OTHERS.
INSTALL: INSTALL ITEMS FURNISHED BY OTHERS, INCLUDING UNLOADING, TEMPORARILY STORING, UNPACKING, AND ASSEMBLY.
PROVIDE: FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.
REMOVE: DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF-SITE UNLESS INDICATED TO BE REMOVED AND SALVAGED OR REMOVED AND REINSTALLED.
REMOVE AND REINSTALL: DETACH ITEMS FROM EXISTING CONSTRUCTION, PREPARE FOR REUSE, AND REINSTALL WHERE INDICATED.
REMOVE AND SALVAGE: CAREFULLY DETACH FROM EXISTING CONSTRUCTION, IN A MANNER TO PREVENT DAMAGE, AND DELIVER TO OWNER.

DRAWING LIST:

DRAWING NO	TITLE
T1	TITLE SHEET
D1	ROOFTOP DEMOLITION PLAN
ME1	ELECTRICAL AND CONTROL LEGEND
ME2	ELECTRICAL SPECIFICATIONS
ME3	MECHANICAL LEGEND AND SPECIFICATIONS
ME4	ROOF TOP MECHANICAL PLAN
ME5	ROOF TOP MECHANICAL CONTROL DIAGRAM
ME6	ROOF TOP MECHANICAL CONTROL DIAGRAM
ME7	SEQUENCE OF OPERATION
ME8	CONTROL POINTS

GENERAL INFORMATION:

PROJECT INFORMATION: AGENCY: PROJECT TITLE: PROJECT CODE: ADDRESS:	CITY OF LYNCHBURG PUBLIC SAFETY BUILDING ROOFTOP UNIT REPLACEMENTS BM133 905 COURT ST, LYNCHBURG, VIRGINIA 24504
BUILDING INFORMATION: BUILDING NAME/NUMBER: WORK PERMITTED:	PUBLIC SAFETY BUILDING ROOFTOP HVAC UNIT REPLACEMENTS
APPLICABLE CODES & STANDARDS: BUILDING CODES:	2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE - VUSBC (EFFECTIVE JULY 14, 2014) VIRGINIA MECHANICAL CODE - VMC (2012) VIRGINIA REHABILITATION CODE - VRC (2012) VIRGINIA ENERGY CONSERVATION CODE - VECC (2012) VIRGINIA BUILDING AND FIRE CODE RELATED REGULATIONS - VBFCCR (2012) NATIONAL ELECTRICAL CODE - NFPA-70 (2011) NATIONAL FIRE ALARM CODE - NFPA-72 (2010)

ASBESTOS DISCLOSURE STATEMENT:

AN ASBESTOS INSPECTION WAS NOT PERFORMED. THE CONTRACTOR SHALL NOTIFY THE CITY'S PROJECT MANAGER OF ANY SUSPECTED MATERIALS FOR REMOVAL BY THE CITY OF LYNCHBURG.

LEAD PAINT DISCLOSURE STATEMENT:

AN INSPECTION TO IDENTIFY LEAD CONTAINING OR COATED BUILDING COMPONENTS HAS NOT BEEN CONDUCTED. ASSUME THAT ALL PAINTED SURFACES CONTAIN LEAD-BASED PAINT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL VIRGINIA OCCUPATIONAL SAFETY AND HEALTH (VOSH) REGULATIONS AS THEY PERTAIN TO EMPLOYEE EXPOSURES TO LEAD.

DISCLAIMER STATEMENT:

VIRGINIA A&E ASSUMES NO RESPONSIBILITY FOR THE ADEQUACY OR ACCURACY OF THE ASBESTOS AND LEAD BASED PAINT INFORMATION PROVIDED ABOVE BY THE OWNER. THE CONTRACTOR SHALL ADDRESS ANY RELATED QUESTIONS TO THE OWNER'S PROJECT MANAGER.

ROOF STATEMENT

EXISTING ROOF IS CARLISLE FULLY ADHERED 60 MIL EPDM SINGLE PLY MEMBRANE INSTALLED OVER A POLYISOCYANURATE INSULATION SYSTEM, REPLACED IN 2013 BY JOHN T. MORGAN ROOFING & SHEET METAL CO., INC. WITH A 20-YEAR WARRANTY. ROOF DECK IS METAL. RECORD DRAWINGS FOR THE 2013 ROOF REPLACEMENT ARE AVAILABLE FOR THE CONTRACTOR'S INFORMATION. WORK ON ROOF, INCLUDING ROOF PENETRATIONS, SHALL NOT NEGATE ANY EXISTING ROOF WARRANTY. CONTRACTOR'S ROOF SUBCONTRACTOR SHALL BE CERTIFIED TO CUT, PATCH, AND REPAIR EXISTING ROOF TO MAINTAIN WARRANTY IN EFFECT.

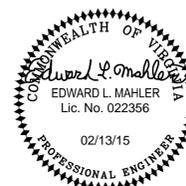
ALTERNATE SUMMARY

- ANY OR ALL ALTERNATES MAY BE SELECTED AT THE OPTION OF THE CITY OF LYNCHBURG.
- A LISTING OF ALTERNATES FOLLOWS:
BASE BID - REPLACEMENT OF RTU-1
ALTERNATE NO 1 - REPLACEMENT OF PAHU-1
ALTERNATE NO 2 - REPLACEMENT OF PAHU-2

VIRGINIA A&E, PLLC
1115 VISTA PARK DRIVE
FOREST, VA 24551
PHONE: (434) 316-6001



VAE PROJECT NO: 14112



Job No.: 14112

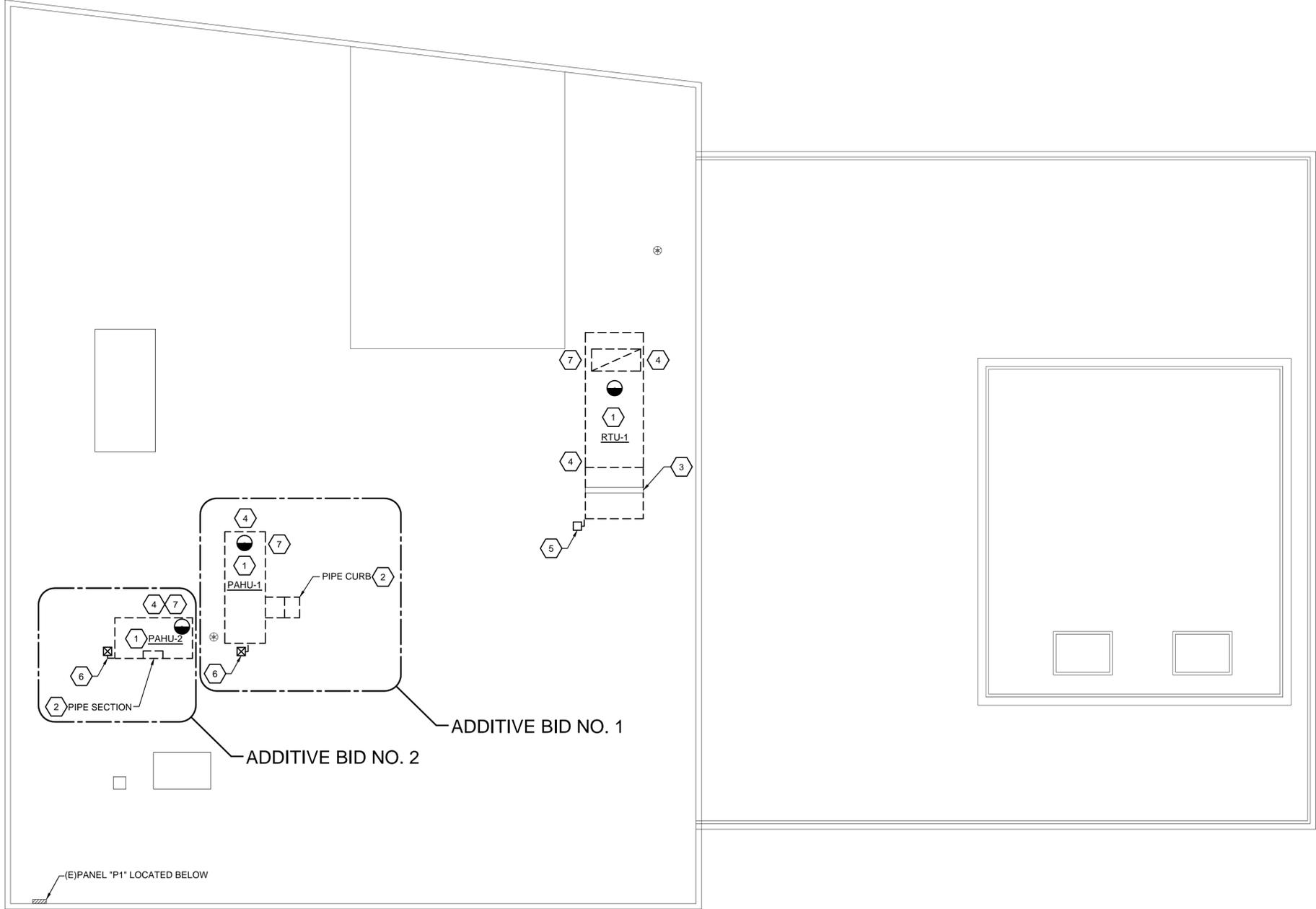
Drawing No.:

T1

EXISTING ROOFTOP AIR HANDLING UNIT SCHEDULE TO BE REPLACED

TAG	SERVING OR LOCATED	BASIS OF DESIGN (OR EQUAL)
RTU-1	ROOFTOP- WEST END 1ST FLOOR	TRANE MODEL SAHF03040K36F3AD3FO1BDEGRT8# SERIAL J96L73229
PAHU-1	ROOFTOP - SERVING GROUND FLOOR	TRANE MODEL PCCE - ADCGBHBOBAAAAGAAAAAAEA000AA00AA0000B0UGG9EA00000000000000000000 SERIAL K96M12989A
PAHU-2	ROOFTOP - SERVING GROUND FLOOR	TRANE MODEL PCCB-AAAGBHA0BAAAEEA0000000000AA0A000AA00000000000B0UHF7EA00000000000000000000 SERIAL K96M13378A

1. CONTRACTOR TO TAKE ALL NECESSARY MEASUREMENTS TO UTILIZE EXISTING CURB SUPPLY, RETURN, AND PIPING CURB OPENINGS.
 2. CONTRACTOR IS TO PRESERVE ELECTRICAL CONNECTIONS FOR USE WITH NEW WORK.
 3. CONTRACTOR TO REMOVE AND DISPOSE OF PROPERLY ALL OF THE EQUIPMENT BEING REPLACED AND PROVIDE NEW EQUIPMENT FOR REPLACEMENT.
 4. CONTRACTOR RESPONSIBLE FOR PROVIDING STATIC PRESSURE AND FLOW RATE OF OLD EQUIPMENT AT START OF PROJECT (PRIOR TO NEW EQUIPMENT SUBMITTAL PHASE)
 5. CONTRACTOR SHALL PROVIDE STATIC PRESSURE AND FLOW RATE FINDINGS REPORT TO A&E OF RECORD PRIOR TO NEW EQUIPMENT SUBMITTAL PHASE.
 6. CONTRACTOR TO CONFIRM THAT PAHU-1 IS CONFIGURED AS RETURN AND REPORT TO A&E OF RECORD FOR EXHAUST CONFIGURATION OR ANY OTHER CONFIGURATION.
 7. CONTRACTOR RESPONSIBLE FOR PROVIDING WATER SIDE PRESSURE AND FLOW READING OF OLD EQUIPMENT BEFORE REPLACEMENT AND PROVIDE REPORT TO A&E OF RECORD.



DEMOLITION SYMBOLS LEGEND:

- DEMOLITION NOTE
- LIMIT OF DEMOLITION

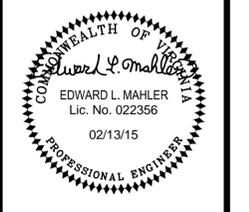
GENERAL NOTES:

1. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL DEMOLITION AND ALTERATION NOTES.
2. ANY EXISTING CONSTRUCTION THAT IS TO BE REMOVED SHALL BE REMOVED CAREFULLY SO AS NOT TO DAMAGE ANY EXISTING CONSTRUCTION THAT IS TO REMAIN. FLOORS, WALLS, AND CEILINGS ARE TO BE PATCHED (IN A RECTANGULAR PATTERN) TO MATCH EXISTING CONDITIONS AND MADE READY TO RECEIVE ANY NEW FINISHES WHERE APPLICABLE.
3. ALL EXISTING FIREPROOFING REMOVED DURING DEMOLITION SHALL BE PATCHED TO MATCH EXISTING.
4. CAP AND SEAL ROOF PENETRATION AIR-TIGHT.
5. PRIOR TO REPLACEMENT EQUIPMENT SUBMITTAL CONTRACTOR IS TO FIELD VERIFY EQUIPMENT LOCATION, DIMENSIONS AND PENETRATION LOCATIONS AND INCLUDE ANY REQUIRED PENETRATION OR CURB MODIFICATIONS AS PART OF THAT SUBMITTAL.
6. PRIOR TO REPLACEMENT EQUIPMENT SUBMITTAL THE CONTRACTOR IS TO VERIFY SUPPLY, RETURN, AND EXHAUST FAN NAMEPLATE INFORMATION FOR THE SCHEDULED UNITS AND REPORT FINDINGS TO A/E OF RECORD.

DEMOLITION NOTES:

1. REMOVE ROOFTOP UNIT.
2. REMOVE VALVES AND PIPING AND LEAVE CAPPED STUB INSIDE THE ROOF CURB TO PREPARE FOR NEW WORK. ROOF CURB TO REMAIN FOR RE-USE. SEE EXISTING EQUIPMENT SCHEDULE.
3. PEDESTAL TO REMAIN FOR RE-USE.
4. CONTRACTOR SHALL CONFIRM ALL LOCATIONS RELATED TO EXISTING CURB SIZE, SUPPLY, RETURN, AND PIPING CURB OPENINGS.
5. REMOVE DISCONNECT SWITCH, CABLE AND CIRCUIT BREAKER SERVING THIS UNIT. RETAIN CONDUIT FOR RE-USE.
6. REMOVE COMBINATION STARTER, CABLE AND CIRCUIT BREAKER SERVING THIS UNIT. RETAIN CONDUIT FOR RE-USE.
7. REMOVE DUCT SMOKE DETECTORS. PRESERVE WIRING AND PREPARE FOR NEW WORK.

NO.	BY	REVISIONS	DATE



**CITY OF LYNCHBURG
PUBLIC SAFETY BUILDING
RTU REPLACEMENT**

LYNCHBURG, VIRGINIA

ROOFTOP DEMOLITION PLAN

PROJECT NO.: 14112
DATE: 13 FEB 15

Full Scale Verification
0" | 1"

Drawing No.: **D1**

SYMBOLS		LEGEND		ABBREVIATIONS									
	SUPPLY/OA DUCT SECTION OR DIFFUSER/GRILLE		90° ELBOW UP		CONSTRUCTION NOTE		AIR VENT (AUTO)	A	AMPERE	FOS	FUEL OIL SUPPLY	NO	NORMALLY OPEN, NUMBER
	RETURN/EXHAUST DUCT SECTION OR DIFFUSER/GRILLE		90° ELBOW DOWN		CONNECT TO EXISTING		AIR VENT (MANUAL)	AFF	ABOVE FINISHED FLOOR	FT	FOOT, FEET	NOM	NOMINAL
	FIRE DAMPER IN FLOOR, CEILING OR ROOF		90° ELBOW WITH TURNING VANES (RECTANGULAR DUCT)		REVISION TRIANGLE		BACKFLOW PREVENTER	AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	G	GAS	NTS	NOT TO SCALE
	WALL MOUNTED THERMOSTAT OR TEMPERATURE SENSOR		90° RADIUS ELBOW (RECTANGULAR DUCT)		REVISION CLOUD		THERMOMETER	BHP	BRAKE HORSEPOWER	GA	GAGE	OA	OUTSIDE AIR
	DUCT SMOKE DETECTOR		45° RADIUS ELBOW (RECTANGULAR DUCT)		INDICATES NUMBER OF REVISIONS, CORRESPONDS WITH REVISION NOTE		PRESSURE GAUGE	BOD	BOTTOM OF DUCT	GAL	GALLONS	OD	OUTSIDE DIAMETER
	WALL MOUNTED HUMIDISTAT OR HUMIDITY SENSOR		AIRFLOW		TAG NO		PUMP	BOP	BOTTOM OF PIPE	GPH	GALLONS PER HOUR	%	PERCENT
	AIRFLOW		DIFFUSER/GRILL TAG		CFM		TEMPERATURE SENSOR	BTU	BRITISH THERMAL UNIT	GPM	GALLONS PER MINUTE	PD	PRESSURE DROP OR DIFFERENTIAL
			EQUIPMENT TAG X = NUMBER 1 & 2		AHU-X EQUIPMENT TAG X = NUMBER 1 & 2		GATE VALVE	BTUH	BRITISH THERMAL UNIT PER HOUR	H	HEIGHT	PH	PHASE
			EQUIPMENT TAG		RTU-X EQUIPMENT TAG		GLOBE VALVE	CA	COMPRESSED AIR	HD	HEAD	PRV	PRESSURE REDUCING OR REGULATING VALVE
			PIPE OR CONDUIT TURNING DOWN		BALL VALVE		BUTTERFLY VALVE	CF	CHEMICAL FEED, CUBIC FEET	HP	HORSEPOWER	PSIG	POUNDS PER SQUARE INCH GAGE
			PIPE OR CONDUIT TURNING UP		CALIBRATED BALANCING VALVE		CHECK VALVE	CFM	CUBIC FEET PER MINUTE	HR	HOUR(S)	PSV	PRESSURE SAFETY VALVE
			TEE DOWN		MOTORIZED 2-WAY VALVE		PLUG VALVE	CR	CONDENSER WATER RETURN	HWR	HEATING WATER RETURN	R12, R22	REFRIGERANT (12, 22, ETC.)
			PIPE CAP		MOTORIZED 3-WAY VALVE		BALL VALVE	CS	CONDENSER WATER SUPPLY	HWS	HEATING WATER SUPPLY	RH	RELATIVE HUMIDITY
			PIPE FLOW ARROW		SOLENOID VALVE		CHECK VALVE	CWR	CHILLED WATER RETURN	HZ	FREQUENCY	RPM	REVOLUTIONS PER MINUTE
			CONCENTRIC REDUCER		PRESSURE REDUCING VALVE		BALL VALVE	CWS	CHILLED WATER SUPPLY	ID	INSIDE DIAMETER	SEER	SEASONAL ENERGY EFFICIENCY RATIO
			ECCENTRIC REDUCER		SAFETY RELIEF VALVE		BALL VALVE	DIA, Ø	DIAMETER	IN	INCHES	SF	SQUARE FOOT, FEET
			PIPE FLANGE				BALL VALVE	DB	DRY BULB	INWG	INCHES WATER GAUGE	SHR	SENSIBLE HEAT RATIO
			UNION				BALL VALVE	DBA	DECIBELS, A WEIGHTED	L	LENGTH	SP	STATIC PRESSURE
			WYE STRAINER				BALL VALVE	DEG	DEGREE	LAT	LEAVING AIR TEMPERATURE	SPEC	SPECIFICATION
			FLEXIBLE CONNECTOR				BALL VALVE	DTR	DUAL TEMPERATURE WATER RETURN	LB	POUND(S)	SQ	SQUARE
							BALL VALVE	DTS	DUAL TEMPERATURE WATER SUPPLY	LF	LINEAR FEET	TD	TEMPERATURE DIFFERENTIAL
							BALL VALVE	DX	DIRECT EXPANSION	LPG	LIQUIFIED PETROLEUM GAS (PROPANE)	TEMP	TEMPERATURE
							BALL VALVE	DWG	DRAWING	LWT	LEAVING WATER TEMPERATURE	TOD	TOP OF DUCT
							BALL VALVE	(E)	EXISTING	MAX	MAXIMUM	TONS	TONS OF REFRIGERATION
							BALL VALVE	EAT	ENTERING AIR TEMPERATURE	MBH	THOUSAND BTU PER HOUR	TSP	TOTAL STATIC PRESSURE
							BALL VALVE	EER	ENERGY EFFICIENCY RATIO	MCA	MINIMUM CIRCUIT AMPACITY	T'STAT	THERMOSTAT
							BALL VALVE	EFF	EFFICIENCY	MCB	MAXIMUM CIRCUIT BREAKER	TYP	TYPICAL
							BALL VALVE	EL, ELEV	ELEVATION	MIN	MINIMUM	V	VOLTS
							BALL VALVE	ESP	EXTERNAL STATIC PRESSURE	MOCP	MAXIMUM OVERCURRENT PROTECTION	VAV	VARIABLE AIR VOLUME
							BALL VALVE	EWT	ENTERING WATER TEMPERATURE	N/A	NOT APPLICABLE	VTR	VENT THRU ROOF
							BALL VALVE	*F	DEGREES FAHRENHEIT	NIC	NOT IN CONTRACT	W	WATT, WIDTH
							BALL VALVE	FD	FIRE DAMPER	NC	NORMALLY CLOSED	WB	WET BULB
							BALL VALVE	FOR	FUEL OIL RETURN	NG	NATURAL GAS		

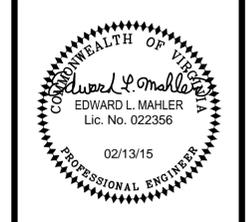
HVAC SPECIFICATIONS

- DRAWINGS DO NOT INDICATE PIPING SUPPORT LOCATIONS AND DETAILS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY PIPE SUPPORTS. SELECTIONS OF PIPE SUPPORT TYPES, SIZES, LOCATIONS, AND SPACING SHALL CONFORM TO MSS SP-69 OR TABLE BELOW, WHICHEVER IS MORE STRINGENT. PIPE HANGER MATERIAL, DESIGN, AND MANUFACTURE SHALL COMPLY WITH MSS SP-58.

PIPE SUPPORT (HORIZONTAL HANGER SPACING)	
PVC	4'0"
COPPER 1 1/4" AND SMALLER	6'0"
COPPER 1 1/2" AND LARGER	10'0"
STEEL 1" AND SMALLER	6'0"
STEEL 1 1/4" - 2"	9'0"
STEEL 2 1/2" AND LARGER	12'0"
CAST IRON	5'0"
- COMBUSTION AIR AND FLUE PIPE SHALL BE SCH 40 PVC, ASTM D 2665 PIPE, JOINED WITH ASTM F 656 PRIMER AND ASTM D 2564 SOLVENT CEMENT PER ASTM 2855, AND SUPPORTED EVERY 3 FT. PIPE HANGER MATERIAL, DESIGN, AND MANUFACTURE SHALL COMPLY WITH MSS SP-58.
- DUCT SIZES INDICATED ARE INSIDE DIMENSIONS. DUCTWORK SHALL BE G-90 GALVANIZED STEEL, FABRICATED, INSTALLED AND SUPPORTED PER SMACNA STANDARDS FOR +/- 2.0 INWG. PAINT INTERIOR OF METAL DUCTS THAT ARE VISIBLE THRU REGISTERS AND GRILLES. APPLY ONE COAT OF FLAT BLACK LATEX PAINT OVER A COMPATIBLE GALVANIZED STEEL PRIMER. APPLY ONE COAT OF FLAT BLACK LATEX PAINT OVER A COMPATIBLE GALVANIZED STEEL PRIMER. SUPPLY AND RETURN DUCTWORK SHALL BE INSULATED WITH 2-INCH-THICK, 1.5 LB/CF DENSITY MINERAL FIBER WITH FACTORY APPLIED FSK VAPOR BARRIER JACKET. APPLY TAPES, ADHESIVES, AND SEALANTS PER MANUFACTURER'S INSTRUCTIONS TO MAINTAIN VAPOR BARRIER INTEGRITY ACROSS JOINTS AND SEAMS. EXHAUST AND TRANSFER DUCT SHALL BE UNINSULATED. FLEXIBLE DUCTWORK SHALL BE INSULATED TYPE AND SHALL BE LIMITED TO 5 FEET PER SUPPLY DIFFUSER OR GRILLE. DO NOT USE FLEXIBLE DUCT ON RETURN GRILLES. INSULATE BACK SIDE OF SUPPLY DIFFUSERS. SEAL DUCTWORK TO ACHIEVE MINIMUM 95% TOTAL AIRFLOW.
- PROVIDE OPENINGS IN BUILDING CONSTRUCTION FOR PASSAGE OF DUCTWORK. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT PRIOR APPROVAL OF ENGINEER. X-RAY FLOOR SLAB AT PENETRATION LOCATIONS PRIOR TO PROCEEDING WITH WORK.
- PROVIDE FLEXIBLE CONNECTIONS BETWEEN EQUIPMENT AND CONNECTING DUCTWORK. FLEXIBLE CONNECTORS SHALL BE 3 - 1/2" GLASS FABRIC DOUBLE COATED WITH NEOPRENE ATTACHED TO GALVANIZED STEEL STRIPS.
- INTERIOR PIPING SHALL BE INSTALLED AS HIGH AS POSSIBLE AND ALL HYDRONIC PIPING SLOPED 1/8" PER FOOT BACK TOWARDS LOW POINT DRAINS. ALL PIPING SHALL BE CLEAN AND FREE OF DIRT AND SCALE AT TIME OF INSTALLATION.
- PROVIDE AIR VENTS AT HIGH POINTS AND DRAINS AT LOW POINTS IN HYDRONIC PIPING SYSTEMS.
- PIPING SHALL BE SLEEVED THROUGH WALL AND FLOOR PENETRATIONS WITH SCHEDULE 40 STEEL SLEEVES. ALL PENETRATIONS THROUGH FIRE BARRIERS SHALL BE SEALED WITH A RATED FIRE SYSTEM PROVIDING A MINIMUM 1-HOUR FIRE RATING.
- INSTALLATION OF FIELD MOUNTED CONTROL COMPONENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ALL CONTROL WIRING SHALL BE IN CONDUIT AND INSTALLED PER NEC.
- AN ASSOCIATED AIR BALANCE COUNCIL OR NATIONAL ENVIRONMENTAL BALANCING BUREAU CERTIFIED TESTING AND BALANCING CONTRACTOR SHALL BALANCE AIR AND WATER FLOWS AND SUBMIT REPORTS TO THE ENGINEER AND OWNER FOR APPROVAL.
- CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 PVC, ASTM D 1785, SAME SIZE AS EQUIPMENT CONNECTION.
- CHILLED WATER, HEATING WATER, STEAM, CHEMICAL FEED, AND VENT PIPING SHALL BE CARBON STEEL, ASTM A53, SCHEDULE 40. 2" AND SMALLER PIPING SHALL BE THREADED WITH MALLEABLE IRON FITTINGS. 2-1/2" AND LARGER PIPING SHALL BE FLANGED OR WELDED WITH CARBON STEEL FITTINGS.
- CHILLED WATER, HEATING WATER, AND CHEMICAL FEED PIPING INSULATION SHALL BE 2-INCH-THICK INORGANIC, INCOMBUSTIBLE, PRE-FORMED CELLULAR GLASS, ASTM C 552, TYPE II, CLASS 2, WITH FACTORY-APPLIED ASJ-SSL JACKET. INSULATE FITTINGS WITH PRE-MOLDED INSULATION SECTIONS WITH PVC COVER. APPLY TAPES, MASTICS, ADHESIVES, AND SEALANTS PER MANUFACTURER'S INSTRUCTIONS TO MAINTAIN VAPOR BARRIER INTEGRITY ACROSS JOINTS AND SEAMS
- HVAC HYDRONIC HEATING OR COOLING WATER CONTROL SYSTEM, FOR TWO AND THREE WAY WAY APPLICATIONS CONTROLLED BY TEMPERATURE, BUTTERFLY-STYLE VALVES, COMMERCIAL GRADE VALVE MATERIAL AND GRADE TO MATCH PIPE, TWO OR THREE WAY, PROVIDE WITH CORROSIVE-RESISTANT NAMEPLATE INDICATING FLOW ARROW, MANUFACTURER, MODEL AND SERIAL, BODY SIZE, BODY AND TRIM MATERIALS.

ACTUATORS FOR HYDRONIC CONTROL VALVES, CAPABLE OF CLOSING VALVE AGAINST SYSTEM PUMP SHUTOFF HEAD. TYPE: MOTOR OPERATED, WITH OR WITHOUT GEARS, ELECTRIC AND ELECTRONIC. VOLTAGE: TO MATCH HVAC EQUIPMENT MANUFACTURERS CONTROL VOLTAGE. DELIVER TORQUE REQUIRED FOR CONTINUOUS UNIFORM MOVEMENT OF CONTROLLED DEVICE FROM LIMIT TO LIMIT WHEN OPERATED AT RATED VOLTAGE. PROVIDE VALVE SUBMITTALS AND ACTUATION WITH CONTROLS SUBMITTAL.

NO.	BY	REVISIONS	DATE



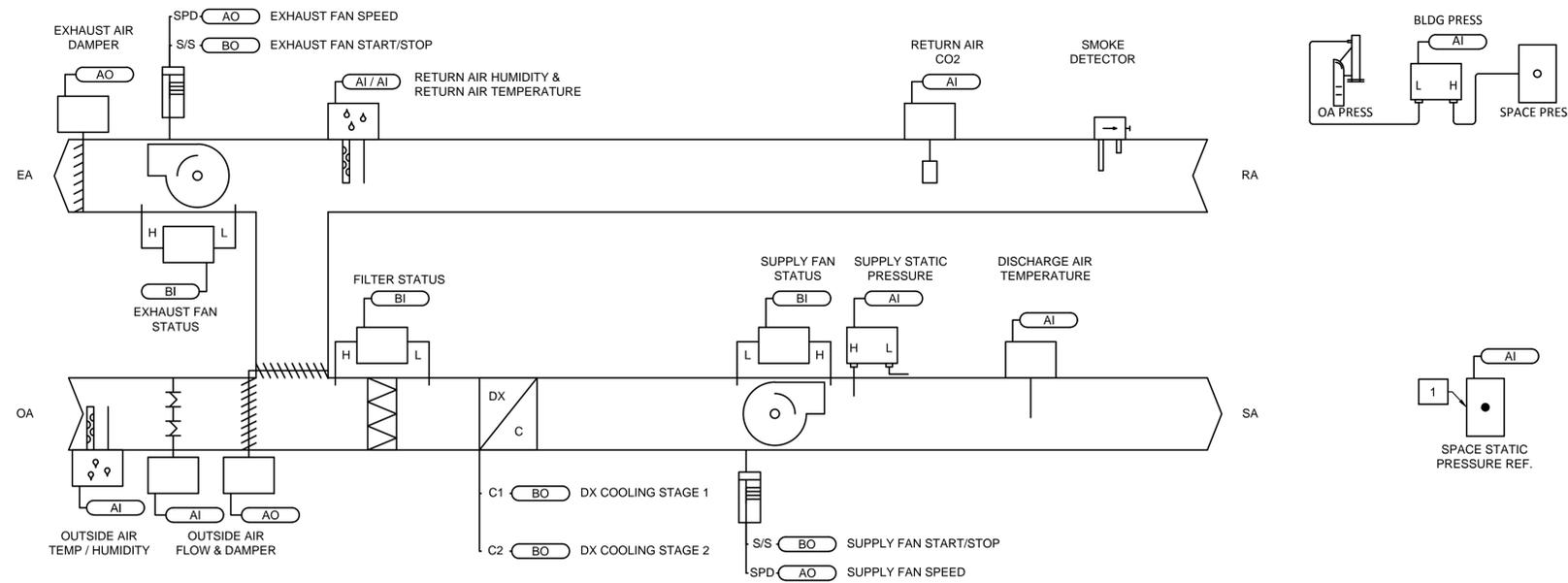
Virginia A & E
 VIRGINIA A&E, PLLC
 1115 VISTA PARK DRIVE
 FOREST, VIRGINIA 24551
 PHONE: (434) 316-6001

CITY OF LYNCHBURG
 PUBLIC SAFETY BUILDING
 RTU REPLACEMENT
 LYNCHBURG, VIRGINIA

MECHANICAL LEGEND
 AND SPECIFICATIONS

PROJECT NO.: 14112
 DATE: 10 FEB 15

Full Scale Verification
 0" 1"
 Drawing No.: **ME3**



GENERAL NOTES:

1. CONTRACTOR TO PROVIDE SUBMITTALS FOR CONTROLS INCLUDING CONTROL DIAGRAM AND POINTS LIST WITH DEVIATIONS HIGHLIGHTED. THE CONTROL DIAGRAM, POINTS LIST AND SEQUENCE OF OPERATION INDICATES EXPECTED POINTS FOR BASIS OF DESIGN EQUIPMENT. EQUIPMENT FROM OTHER MANUFACTURERS WOULD EXPECT TO HAVE VARIATIONS IN CONTROLS TO ACHIEVE THE EQUIVALENT SYSTEM.
2. CONTRACTOR TO MATCH EXISTING EQUIPMENT SEQUENCE OF OPERATION AND DERIVE MINIMUM DAMPER POSITIONS FROM EXISTING EQUIPMENT PRIOR TO NEW EQUIPMENT SUBMITTALS.
3. CONTRACTOR TO PROVIDE EQUIPMENT WITH SAME SEQUENCE OF OPERATION AS EXISTING EQUIPMENT AND UTILIZE THE VARIABLE FREQUENCY SPEED CONTROL TO BALANCE TO SAME CONDITIONS AS EXISTING. IN ADDITION, THE CONTRACTOR SHALL PROVIDE THE EQUIPMENT WITH CAPABILITY OF PROVIDING NEW SEQUENCE OF OPERATION AS GIVEN ON DRAWING ME7. SEE SYSTEM POINTS LIST ON DRAWING ME8.

XX CONSTRUCTION NOTES:

1. PROVIDE NEW SPACE STATIC PRESSURE REFERENCE FOR BUILDING PRESSURE CONTROL. COORDINATE WITH OWNER LOCATION.

WIRING NOTES:

ELECTRICAL CONTRACTOR FOR EQUIPMENT MANUFACTURER:

1. REFER TO DEVICE INSTALLATION MANUALS FOR SPECIFIC WIRING REQUIREMENTS.
2. FIELD WIRING MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, STATE AND LOCAL BUILDING CODES, AND APPLICABLE SECTIONS OF PROJECT SPECIFICATION.
3. TAG ALL CONTROL WIRING AT EACH END OF THE CABLE OR WIRE PER TAGS PROVIDED BY MANUFACTURER.
4. AVOID OVER TIGHTENING CABLE TIES AND OTHER FORMS OF CABLE WRAPS. THIS CAN DAMAGE THE WIRES INSIDE THE CABLES.
5. DO NOT CABLE TIE TO INSULATED WATER OR OTHER LINES.
6. IN OPEN PLENUMS, DO NOT RUN NEAR LIGHTING BALLASTS.
7. FLEXIBLE CONDUIT IS NOT TO EXCEED 24" IN LENGTH.
8. CONTROL PANELS ARE NOT TO BE USED AS JUNCTION BOXES OR RACEWAYS. WIRING THAT DOES NOT TERMINATE IN A CONTROL PANEL IS NOT TO BE RUN WITHIN THE PANEL.
9. BINARY INPUT LIMITS: 1000 FT (300 M).
10. 0-10 VDC ANALOG INPUT LIMITS: 300 FT (100 M).
11. 0-20 MA ANALOG INPUT LIMITS: 1000 FT (300 M).
12. VARIABLE RESISTANCE ANALOG INPUT LIMITS: 300 FT (100 M).
13. ANALOG OUTPUT LIMITS: 1000 FT (300 M).
14. BINARY OUTPUT LIMITS: 1000 FT (300 M).
15. WIRING POWER FROM THE AC OUT TERMINALS TO POWER ANALOG INPUT DEVICES WILL CAUSE IMMEDIATE CONTROLLER FAILURE IF INPUT DEVICE USES HALF-WAVE RECTIFICATION. WHEN UNSURE, USE A SEPARATE POWER SUPPLY FOR DEVICE.

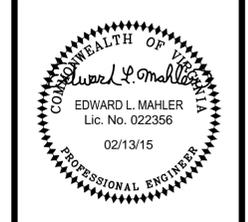
GENERAL COMMUNICATION GUIDE:

1. DO NOT RUN COMMUNICATION LINK WIRING IN THE SAME CONDUIT OR WIRE BUNDLE WITH AC-POWER WIRES (INCLUDING CONDUCTORS RUNNING FROM TRIAC-TYPE OUTPUTS). KEEP POLARITY CONSISTENT THROUGHOUT THE SITE. MAKE SURE THAT THE 24 VAC POWER SUPPLIES ARE CONSISTENT IN HOW THEY ARE GROUNDED. AVOID SHARING 24 VAC BETWEEN CONTROLLERS. USE ONLY ONE TYPE OF COMMUNICATION CABLE. DO NOT MIX CABLE. IF AN EXISTING JOB USED ALTERNATE CABLE, CONTINUE USING THE SAME CABLE AFTER APPROVAL FROM THE PROJECT MANAGER.
2. ALL CABLE MUST BE SHIELDED TWISTED PAIR, 18 AWG MINIMUM, STRANDED, TINNED COPPER CONDUCTORS. SHIELD MUST BE CONTINUOUS THROUGHOUT, ISOLATED FROM OTHER CONDUCTORS OR GROUND, AND GROUNDED AT THE SYSTEM CONTROLLER ONLY. MAXIMUM CAPACITANCE BETWEEN CONDUCTORS IS 24 PICOFARADS PER FOOT. MAXIMUM DISTANCE IS 4000 FT (1372 M).

RTU-1 CONTROL DIAGRAM

SCALE: NONE

NO.	BY	REVISIONS	DATE



**CITY OF LYNCHBURG
PUBLIC SAFETY BUILDING
RTU REPLACEMENT**
LYNCHBURG, VIRGINIA

**ROOFTOP MECHANICAL
CONTROL DIAGRAM**

Full Scale Verification
0" 1"

PROJECT NO.: 14112
DATE: 13 FEB 15

Drawing No.: **ME5**

RTU-1 - SYSTEM POINT LIST												
CONTROLLER: INTELLIPAK		POINT TYPE				ALARMS						
SYSTEM POINT DESCRIPTION		GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	DEFAULT VALUE	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	SENSOR FAIL	DIAGNOSTICS	NOTES:
CONSTANT VOLUME , (LCI) DX CLG, CO2 AND EXHAUST FAN (WITH DEHUMIDIFICATION)												
ZONE SENSOR	ZONE TEMPERATURE (THERM)	X	AI				X	X		X	SENSOR FAILURE	
	ZONE TEMPERATURE SETPOINT		AI							X	SENSOR FAILURE	NOTE 1
	ON/CANCEL											NOTE 1
	OUTDOOR AIR TEMPERATURE	X	AI							X	SENSOR FAILURE	
	OUTDOOR AIR HUMIDITY	X	AI				X	X		X	SENSOR FAILURE	
	FLOW STATION OUTSIDE AIR DAMPER W CONTROL	X	AI				X	X		X	SENSOR FAILURE	
	COOLING MODE SETPOINT	X	AI		X							
	RETURN AIR TEMPERATURE		AI				X	X		X	SENSOR FAILURE	
	RETURN AIR HUMIDITY		AI				X	X		X	SENSOR FAILURE	
	RETURN AIR CO2		AI				X	X		X	SENSOR FAILURE	
	DISCHARGE AIR TEMPERATURE		AI				X	X		X	SENSOR FAILURE	
	DISCHARGE AIR TEMPERATURE SETPOINT		AI									
	ECONOMIZER DAMPER POSITION		AI									
	ECONOMIZER MINIMUM POSITION		AI		X							
	BUILDING STATIC PRESSURE		AI				X	X		X	SENSOR FAILURE	
	SUPPLY AIR PRESSURE		AI				X	X		X	SENSOR FAILURE	
	SUPPLY AIR PRESSURE SETPOINT		AI		X							
	UNIT STATUS		AI									
	DIRTY FILTER		BI									
	SUPPLY FAN STATUS		BI									
	HIGH PRESSURE COMPRESSOR PROTECTION		BI									
	LOW PRESSURE COMPRESSOR PROTECTION		BI									
	EMERGENCY STOP		BI									
	EXTERNAL AUTO/STOP		BI									
	UNOCCUPIED/OCCUPIED MODE		BI									
	OCCUPANCY		BI									
	UNOCCUPIED MODE INDICATOR		BI									
	HEATING/COOLING MODE		BI									
	EFFECTIVE OCCUPANCY		BI									
	EXHAUST FAN STATUS		BI									
	AIRSIDE ECONOMIZER STATUS		BI									
	OUTSIDE AIR DAMPER POSITION			AO								
	SUPPLY FAN SPEED			AO								
	EXHAUST FAN SPEED			AO								
	SUPPLY FAN START/STOP			BO								
	EXHAUST FAN START/STOP			BO								
	COMPRESSOR 1 START/STOP			BO								
	COMPRESSOR 2 START/STOP			BO								
	SUPPLY FAN SPEED COMMAND	X		AO								
	EXHAUST FAN SPEED COMMAND	X		AO								
	CONDENSER FAN A START/STOP			BO								
	CONDENSER FAN B START/STOP			BO								
	AIRSIDE ECONOMIZER ENABLE/DISABLE			BO								
	HEATING & COOLING ENABLE/DISABLE			BO								
	OCCUPIED BYPASS TIMER				X	2.0 HRS						
	ZONE HEATING/COOLING SETPOINT				X							
	SUPPLY AIR HEATING/COOLING SETPOINT				X							
GENERAL NOTES:												
1. OPTIONAL FEATURE												

PAHU-1&2 - SYSTEM POINTS LIST															
CONTROLLER: UC600 - 1 EACH		POINT TYPE				ALARMS									
SYSTEM POINT DESCRIPTION		GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	HARDWARE INTERLOCK	DEFAULT VALUE	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS	NOTES:
	BUILDING STATIC PRESSURE LOCAL	X	AI					X	X			X		SENSOR FAILURE	
	DISCHARGE AIR TEMPERATURE LOCAL	X	AI					X	X			X		SENSOR FAILURE	
	MIXED AIR TEMP LOCAL	X	AI					X	X			X		SENSOR FAILURE	
	PRE-HEAT COIL LEAVING AIR TEMP	X	AI					X	X			X		SENSOR FAILURE	
	SUPPLY DUCT STATIC PRESSURE LOCAL	X	AI												
	PRIMARY FILTER STATUS LOCAL OPEN	X	BI								X			DIRTY FILTER	
	RETURN FAN HIGH STATIC CUTOUT LOCAL OPEN		BI			X									NOTE 1, NOTE 3
	RETURN FAN STATUS LOCAL OPEN	X	BI												
	SUPPLY FAN HIGH STATIC CUTOUT LOCAL OPEN		BI			X									NOTE 1
	SUPPLY FAN STATUS LOCAL OPEN	X	BI												
	CHILLED WATER COIL VALVE	X		AO											
	EXHAUST AIR DAMPER	X		AO											
	MIXED AIR DAMPER	X		AO											
	PREHEAT VALVE	X		AO											
	RETURN FAN SPEED	X		AO											NOTE 3
	SUPPLY FAN SPEED	X		AO											
	RETURN FAN START/STOP	X		BO											NOTE 3
	SUPPLY FAN START/STOP	X		BO											
	OCCUPIED COOLING SETPOINT				X	74.0 deg. F									
	OCCUPIED HEATING SETPOINT				X	70.0 deg. F									
	OCCUPIED STANDBY COOLING SETPOINT				X	80.0 deg. F									
	OCCUPIED STANDBY HEATING SETPOINT				X	65.0 deg. F									
	UNOCCUPIED COOLING SETPOINT				X	85.0 deg. F									
	UNOCCUPIED HEATING SETPOINT				X	60.0 deg. F									
	OCCUPIED BYPASS TIMER				X	2.0 HRS									
	DISCHARGE AIR TEMPERING SETPOINT				X	55.0 deg. F									
	DISCHARGE AIR TEMPERATURE CONTROL POINTS				X										
	BAS COMMUNICATION STATE	X			X							X			NOTE 2
	MAINTENANCE REQUIRED				X	600 HRS									
CONTROLLER SPARE HARDWARE POINTS															
	UNIVERSAL INPUT(S)		6												
	ANALOG OUTPUT(S)			4											
	BINARY OUTPUT(S)			2											
GENERAL NOTES		PROVIDE PAHU-1 AND PAHU-2 TO EACH HAVE INDIVIDUAL CONTROLLER. POINTS LISTS DIFFERS AS INDICATED													
		1. DEVICE IS HARDWARE INTERLOCKED, MANUAL RESET MAY BE REQUIRED													
		2. DISPLAYED AT THE BAS USER INTERFACE IF PRESENT													
		3. PAHU-2 WITHOUT THIS POINT SINCE NOT EQUIPPED WITH RETURN FAN.													

DATE	
REVISIONS	
BY	
NO.	
CITY OF LYNCHBURG PUBLIC SAFETY BUILDING RTU REPLACEMENT LYNCHBURG, VIRGINIA	
CONTROL POINTS	DATE: 13 FEB 15
PROJECT NO: 14112	DRAWING NO: 14112
Full Scale Verification 0" 1"	
ME8	