

GENERAL NOTES - REMOVALS	
A.	ALL WORK IS SHOWN DIAGRAMMATIC, AND ACTUAL SITE CONDITIONS MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORK.
B.	REMOVE ALL EQUIPMENT, PIPING, AND DUCTWORK SHOWN DASHED.
C.	THIS CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED TO COMPLETE THIS WORK UNLESS OTHERWISE NOTED. ALL PATCHING AND PAINTING MUST EXACTLY MATCH EXISTING CONDITIONS.
D.	EVERY EFFORT HAS BEEN MADE TO INDICATE ALL EQUIPMENT THAT IS BEING REMOVED THROUGH EXISTING DRAWINGS AND FIELD OBSERVATIONS, HOWEVER THE CONTRACTOR IS TO VISIT THE SITE PRIOR TO BIDDING AND VERIFY ALL REMOVALS, SOME DIFFERENCES MAY OCCUR.
E.	THIS CONTRACTOR SHALL FIELD VERIFY ALL EXISTING EQUIPMENT AND PIPING LOCATIONS, PIPE SIZES, AND COORDINATE WITH ALL OTHER TRADES.
F.	RE-USE EXISTING FLOOR/WALL/ROOF PENETRATIONS WHERE POSSIBLE. PROVIDE NEW PENETRATIONS AS REQUIRED. ALL OPEN PENETRATIONS THROUGH FLOOR AND OR WALLS SHALL BE SEALED OR PATCHED.
G.	THIS CONTRACTOR SHALL REMOVE ALL PIPING, VALVES, SPECIALTIES AND CONTROLS ASSOCIATED WITH EACH PIECE OF EQUIPMENT TO BE REMOVED.
H.	IF EXISTING HV UNIT, UNIT VENTILATOR, OR ANY OTHER MECHANICAL SYSTEM IS TO BE REMOVED, MC WILL REMOVE ALL ACCESSORIES, HANGERS, SUPPORTS AND EXISTING ROOM SENSORS/THERMOSTATS AND TERMINATE ALL EXISTING WIRES NOT USED IN JUNCTION BOX. ANY HOLES/OPENINGS OF OLD ROOM SENSORS SHALL BE COVERED WITH BLANK STAINLESS STEEL PLATES.
I.	THIS CONTRACTOR SHALL REMOVE AND RE-INSTALL ALL CEILINGS AS REQUIRED TO COMPLETE HIS WORK. ANY DAMAGE TO THE EXISTING CEILING AS A RESULT OF THIS WORK SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
J.	ALL EQUIPMENT REMOVED IS PROPERTY OF THE OWNER. IF THE OWNER DEEMS EQUIPMENT "UNSAVAGEABLE" THE CONTRACTOR IS TO DISPOSE OF IT IN A PROPER MANNER.
K.	ALL EQUIPMENT TO BE REMOVED SHALL HAVE ALL ACCESSORIES AND SUPPORTS REMOVED WITH IT, WHETHER INDICATED OR NOT. IN ADDITION, UNLESS OTHERWISE NOTED, ANY REFRIGERANT CONTAINING EQUIPMENT THAT IS SHOWN FOR REMOVAL SHALL HAVE ALL REFRIGERANT EVACUATED FROM THE SYSTEM AND PROPERLY DISPOSED OF AND ALL REFRIGERANT PIPING REMOVED FROM THE SITE.
GENERAL INSTALLATION NOTES	
A.	ALL WORK IS SHOWN DIAGRAMMATIC. FIELD VERIFY ALL EXISTING SITE CONDITIONS, PIPING, DUCTWORK, UNIT LOCATIONS ETC. PRIOR TO THE COMMENCEMENT OF WORK.
B.	THIS CONTRACTOR TO VISIT JOB SITE BEFORE BID DATE TO VERIFY ALL EXISTING CONDITIONS INDICATED. IT IS THE RESPONSIBILITY OF THE MC TO VERIFY ALL EXISTING QUANTITIES FOR REPLACEMENT/RECONDITIONING ETC. COORDINATE ALL DUCTWORK, PIPING AND EQUIPMENT LOCATIONS WITH ALL OTHER TRADES.
C.	INSTALL NEW SUPPLY DIFFUSERS, REGISTERS, AND EXHAUST GRILLES INTO NEW CEILING GRID AVOIDING LIGHTS, AT APPROXIMATE LOCATIONS SHOWN.
D.	ALL RECTANGULAR DUCTWORK BRANCH CONNECTIONS TO HAVE A 45 DEGREE CINCH COLLAR WITH AN INTEGRAL VOLUME DAMPER. ALL ROUND DUCTWORK BRANCH CONNECTIONS TO HAVE A HIGH EFFICIENCY FITTING WITH AN INTEGRAL VOLUME DAMPER.
E.	PROVIDE TURNING VANES IN ALL SUPPLY DUCTS COMING OUT OF ROOF-TOP UNITS AND ALL 90 DEG ELBOWS, WHETHER SHOWN OR NOT.
F.	PROVIDE ACCESS DOORS FOR ALL FIRE DAMPERS AND DUCT COILS UNLESS OTHERWISE NOTED.
G.	PROVIDE A MINIMUM SIZE ACCESS DOOR OF 24"x24" ON ALL FIRE AND FIRE/SMOKE DAMPERS UNLESS NOT PERMITTED BY DUCT SIZE.
H.	RE-USE EXISTING FLOOR/SLAB/ROOF PIPING PENETRATIONS WHEREVER POSSIBLE. MC RESPONSIBLE FOR ENLARGING OR MODIFYING EXISTING PENETRATIONS AS REQUIRED TO ACCOMMODATE NEW PIPING.
I.	ALL NEW PENETRATIONS FOR PIPING, DUCTWORK OR TO COMPLETE HIS WORK ARE BY THE MC. ALL OPENINGS THAT ARE BY THE GC ARE NOTED ON THESE DRAWINGS OR THE GC DRAWINGS.
J.	PROVIDE ADDITIONAL STRUCTURAL STEEL AND HANGERS AS REQUIRED TO INSTALL AND SUPPORT HVAC EQUIPMENT.
K.	IN GENERAL, ALL DUCTWORK IS TO BE TIGHT TO JOISTS AND MC IS TO COORDINATE DUCTWORK ELEVATIONS WITH ALL OTHER TRADES.
L.	THIS CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING, PATCHING AND PAINTING REQUIRED TO COMPLETE THIS WORK UNLESS OTHERWISE NOTED. ALL PATCHING AND PAINTING MUST EXACTLY MATCH EXISTING CONDITIONS.
M.	ALL AREAS WHERE PIPING IS REMOVED AND NOT REPLACED, THIS CONTRACTOR SHALL PATCH THE AREAS TO MATCH EXISTING CONDITIONS.
N.	REFER TO PIPING SCHEMATICS FOR DETAILED PIPING INFORMATION FOR BOTH THE HEATING AND DOMESTIC HOT WATER SYSTEMS.
O.	NO VALVES SHALL BE PLACED ABOVE/BEHIND DUCTWORK OR IN AN INACCESSIBLE LOCATION.
P.	ALL WORK IS SHOWN DIAGRAMMATIC, IF OFFSETS OR TRANSITIONS IN DUCTWORK ARE REQUIRED FOR SITE CONDITIONS, TO MAINTAIN ARCHITECTS CEILING HEIGHTS AND/OR COORDINATION WITH OTHER TRADES IT IS THE RESPONSIBILITY OF THE MC. ADDITIONALLY, IF A TRANSITION FROM ANY TYPE OF AIR HANDLING UNIT TO THE DUCTWORK SIZE INDICATED IS REQUIRED, IT IS THE RESPONSIBILITY OF THE MC, WETHER THE TRANSITION IS SHOWN OR NOT.
Q.	REFER TO STRUCTURAL DRAWINGS FOR FINAL LOCATIONS OF UNITS AND PENETRATIONS THROUGH DECKS. STRUCTURAL DRAWINGS ARE TO TAKE PRECEDENCE OVER DUCTWORK DRAWINGS FOR LOCATIONS. ANY OFFSETS OR TRANSITIONS IN DUCTWORK REQUIRED FOR COORDINATION WITH STEEL IS THE RESPONSIBILITY OF THE MC.
R.	IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL AIR VENTS OR DRAINS ON THE PIPING SYSTEMS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL NECESSARY AIR VENTS AT HIGH POINTS WHICH COULD ACCUMULATE AIR WHICH WOULD PREVENT THE PROPER OPERATION OF THE HWS&R AND CHWS&R PIPING. DRAINS SHALL BE PROVIDED AT LOW POINTS IN THE SYSTEM TO FACILITATE THE DRAINING OF HWS&R AND CHWS&R PIPING.
S.	ALL WORK IS SHOWN DIAGRAMMATIC, IF ELBOWS OR CHANGES IN PIPING ELEVATION ARE REQUIRED FOR SITE CONDITIONS, TO MAINTAIN ARCHITECTS CEILING HEIGHTS AND/OR COORDINATION WITH OTHER TRADES IT IS THE RESPONSIBILITY OF THE MC.
T.	UNLESS NOTED ON THE EC OR TC DRAWINGS, THIS CONTRACTOR IS FULLY RESPONSIBLE TO PROVIDE ALL WIRING OR ANY FINAL CONNECTIONS FOR ANY MECHANICAL EQUIPMENT TO MAKE THAT UNIT FULLY OPERATIONAL.
U.	INSTALLATION OF ROOF TOP DUCTWORK SHALL BE ACCORDING TO SPECIFICATION SECTION 233330, ITEM 2.15. DUCT LINER INSTALLATION SHALL BE ACCORDING TO SPECIFICATION SECTION 233330 ITEM 2.11. ALSO REFER TO SECTION 230005, ITEM 1.17 FOR STORAGE OF MATERIALS.
GENERAL NOTES - TEMPERATURE CONTROLS	
A.	ALL WORK SHOWN SHALL BE BY TEMPERATURE CONTROLS CONTRACT UNLESS NOTED OTHERWISE (TYPICAL FOR ALL TC DRAWINGS).
B.	WIRE ALL LOW VOLTAGE, LINE VOLTAGE CONTROL, AND COMMUNICATIONS CABLING FOR A COMPLETE FULLY OPERATIONAL SYSTEM. COORDINATE WITH HEATING CONTRACTOR & ELECTRIC CONTRACTOR WHERE REQUIRED FOR ALL INTERFACES.
C.	CONTROL PANELS ARE NOT SHOWN ON THE DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROPER QUANTITIES OF PANELS TO MEET I/O SCHEDULE & DIAGRAM I/O. RISER DIAGRAMS ARE FOR INFORMATION ONLY & MAY NOT INDICATE ALL PANELS. ADDITIONALLY, SOME JOBS MAY HAVE LINE VOLTAGE POWER PROVIDED BY THE EC IN POSSIBLE PANEL LOCATIONS. THE TC SHALL REVIEW THESE PRIOR TO BID AND SHALL PROVIDE ANY ADDITIONAL LOCATIONS FOR POWER UNDER HIS CONTRACT AND WITHIN THE TC BID.
D.	LOCATE ALL BUILDING CONTROLLERS ON THE SUBMITTAL SO THAT C.C. CAN FURNISH A DATA DROP IN THAT SPACE. T.C. TO COORDINATE WITH E.C..
E.	IN ROOMS THAT HAVE A HARD CEILING TC SHALL PROVIDE RACEWAY FOR HIS WIRING. THERE SHALL BE NO EXPOSED CONTROL WIRING IN A OCCUPIED SPACE.
F.	TEMPERATURE CONTROL VALVES: SIZE VALVES PER CHART IN SPECIFICATION SECTION WITH MAXIMUM DELTA P OF 3PSI.
G.	WHERE ANY THERMOSTAT THAT IS REMOVED, THE WALL SHALL BE PATCHED AND PAINTED TO MATCH THE EXISTING.

GENERAL	
	REMOVE / CONNECT TO
	REMOVAL NOTE TAG
	INSTALLATION NOTE TAG
	PIPING BREAK
	EDGE BREAK LINE
	OFFSET FOR CLARITY
	DUCT WORK ELEVATION

DUCTWORK AND FITTINGS	
	DUCTWORK W / INTERNAL LINER
	DUCTWORK UNLINED
	TURNING VANES
	SQUARE TO ROUND TRANSITION
	HIGH EFFICIENCY TAKE-OFF W / INTEGRAL DAMPER
	VOLUME DAMPER
	FIRE DAMPER W / ACCESS DOOR
	FIRE/SMOKE DAMPER W / ACCESS DOOR
	DUCT ACCESS DOOR
	FLEXIBLE DUCTWORK (6" MAX)
	FLEXIBLE COLLAR
	RECTANGULAR DUCT DESIGNATION
	ROUND DUCT DESIGNATION
	FLAT OVAL DUCT DESIGNATION
	ROOF MOUNTED EXHAUST FAN
	4 - WAY SUPPLY DIFFUSER
	2 - WAY SUPPLY DIFFUSER
	RETURN AIR GRILLE
	BACKDRAFT DAMPER (BD-1,2)
	SMOKE DETECTOR FURNISHED AND WIRED BY EC, INSTALLED BY MC

FITTINGS & ACCESSORIES	
	PIPE ELBOW DOWN
	PIPE ELBOW UP
	PIPE TEE DOWN
	PIPE UNION
	PIPE REDUCER
	CAP - SCREWED
	PIPE FLANGE
	PIPE STRAINER W / BLOW DOWN
	PIPE ANCHOR
	MANUAL AIR VENT
	PRESSURE GAUGE W / SNUBBER
	TEMPERATURE GAUGE
	PIPE ISOLATION JOINT
	RELIEF VALVE (RV)

PIPING	
	PIPING BEING REMOVED
	EXISTING PIPING TO REMAIN
	HOT WATER SUPPLY
	HOT WATER RETURN
	PROPYLENE GLYCOL HOT WATER SUPPLY
	PROPYLENE GLYCOL HOT WATER RETURN
	LOW PRESSURE STEAM
	CONDENSATE RETURN
	CONDENSATE DRAIN (GRAVITY)
	CONDENSATE DRAIN (PUMPED)
	REFRIGERANT SUCTION LINE
	REFRIGERANT LIQUID LINE
	HOT GAS BYPASS REFRIGERANT LINE

VALVES	
	BALL VALVE(BV)
	BUTTERFLY OR WAFER VALVE(WV)
	GATE VALVE(GV)
	GLOBE VALVE(GLV)
	CHECK VALVE(CKV)
	CONTROL VALVE (2-WAY)
	CONTROL VALVE (3-WAY)
	BALANCING VALVE(CBV)
	TRIPLE DUTY VALVE (TDV)
	FLOW CONTROL VALVE(FCV)
	DRAIN VALVE ASSEMBLY(SS)

PIPE SIZING	
0-2 GPM	3/4" COPPER
3-5 GPM	1" COPPER
6-8 GPM	1-1/4" COPPER
9-14 GPM	1-1/2" COPPER
15-30 GPM	2" COPPER
31-50 GPM	2-1/2" STEEL
51-90 GPM	3" STEEL
91-200 GPM	4" STEEL
201-500 GPM	6" STEEL

TEMP CONTROL SYMBOLS	
	LINE VOLTAGE BY T.C.
	LOW VOLTAGE WIRING BY T.C.
	WIRING BY DIV #26(EC)
	CONDUCTORS
	CURRENT FLOW SWITCH (STATUS)CFS-1
	CONTROL RELAY CR-1
	CARBON DIOXIDE SENSOR CDS-1, CDS-2
	DUCT SENSOR, SPS-1
	DAMPER - OPPOSED BLADE D-1
	DAMPER - PARALLEL BLADE D-2
	DAMPER ACTUATOR ME-1,2,3
	DIFFERENTIAL PRESSURE SWITCH - DPT-1,1A
	END SWITCH ES-1
	FLOW SWITCH FS-1
	HORN
	HUMIDITY SENSOR DUCT MOUNTED HSR
	HUMIDITY SENSOR HSTS
	LOW TEMPERATURE CUT OUT MANUAL RESET LC-1
	MOTOR STARTER
	MOTION SENSOR MS-1, MDS-1, MDS-2
	MOTOR
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	PROGRAM CLOCK
	PILOT LIGHT
	START PUSH BUTTON
	STOP PUSH BUTTON
	STATIC PRESSURE FILTER ALARM - DPS-1
	STATIC PRESSURE NETWORK SENSOR SPNL-1
	STATIC PRESSURE SENSOR SPS-1
	SWITCH
	TWO WAY VALVE CVF, CVT
	THREE WAY VALVE CVM, CVT, CVZM
	TEMPERATURE SENSOR ITS, ITS-1
	TEMPERATURE SENSOR AVERAGING TSDA
	TEMPERATURE SENSOR TSD
	TEMPERATURE CONTROL POINT
	TEMPERATURE CONTROL PANEL TCP
	TRANSFORMER - XT-1
	THERMOSTAT W / GUARD TSB, TSR
	VARIABLE AIR VOLUME MODULAR ASSEMBLY VMA
	VARIABLE FREQUENCY DRIVE

ABBREVIATIONS	
A	AIR OR COMPRESSED AIR
AC	AIR CONDITIONING
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP AUTOMATIC
ATC	TEMPERATURE CONTROL
ATM	ATMOSPHERE
ACCU	AIR COOLED CONDENSING UNIT
ADJ	ADJUSTABLE
BD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BMS	BUILDING MANAGEMENT SYSTEM
BC	BOOKCASE
CH	CABINET HEATER
CFM	CUBIC FEET PER MINUTE
CT	COOLING TOWER
CH	CABINET UNIT HEATER
CD	CONTROL DAMPER
DB	DRY BULB
DEGREE	DEGREE
DDC	DIRECT DIGITAL CONTROL
DP	DIFFERENTIAL PRESSURE
DAC	DUCTLESS SPLIT A/C UNIT
DCU	DUCTLESS SPLIT CONDENSING UNIT
DHU	DEHUMIDIFYING UNIT
DS	DUCT SILENCER
EA	EXHAUST AIR
EC	ELECTRICAL CONTRACTOR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
EWI	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXR	EXISTING TO REMAIN
ERU	ENERGY RECOVERY UNIT
EG	EXHAUST GRILL
F	FAHRENHEIT
FA	FREE AREA
FCU	FAN COIL UNIT
FRD-B/A	FIRE DAMPER
FRD-S	FIRE/SMOKE DAMPER
FLL	FULL LOAD AMPS
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOW SWITCH
FTR	FIN TUBE RADIATION
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HV	HEATING & VENTILATING UNIT
HD	HEAD
HP	HORSEPOWER
HRTU	HEAT RECOVERY UNIT
HTG	HEATING
HP	HEAT PUMP UNIT
HZ	HERTZ (CYCLES PER SECOND)
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MBH	1000 BTU/HR
MCA	MECHANICAL CONTRACTOR
MUA	MAKE UP AIR
MCA	MINIMUM CIRCUIT AMPACITY
MOP/ MOCP	} MAXIMUM OVERCURRENT PROTECTION
NC	
NO	NORMALLY CLOSED
NOM	NORMALLY OPEN NOMINAL
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
ODP	OPEN DRIP PROOF
OV	OPEN VELOCITY
OAT	OUTSIDE AIR TEMPERATURE
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQ IN
RESR	ROOF EQUIPMENT SUPPORT RAIL
RH	ROOF HOOD
RTU	ROOFTOP UNIT
RA	RETURN AIR
RET	RETURN
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SAT	SUPPLY AIR TEMPERATURE
SF	SUPPLY FAN
SCV	SELF CONTAINED VALVE
SA	SUPPLY AIR
SP	STATIC PRESSURE
SG	SUPPLY GRILL
T	TEMPERATURE OR THERMOSTAT
TEMP	TEMPERATURE
TON	12,000 BTUH (COOLING CAPACITY)
TSB	TEMPERATURE SENSOR BUTTON TYPE
TSR	TEMPERATURE SENSOR WIDISPLAY
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
TC	TEMPERATURE CONTROL CONTRACTOR
UV	UNIT VENT
UH	UNIT HEATER
UC	UTILITY COMPARTMENT
V	VOLTS
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VFC	VARIABLE REFRIGERANT FAN COIL
WB	WET BULB TEMPERATURE
WG	WATER GAGE
WPD	WATER PRESSURE DROP

Architect:

Hamlin Design Group
915 Broadway, Suite 101A
Albany, New York 12207
Tel: 518.724.5159
Fax: 518.320.8633
Web: hamlindesigngroup.com

Hazardous Material Consultant:

Ambient Environmental, Inc.
Comprehensive Building Science solutions
NYS/NES Certified WBE
E SBA EDW058 & DBE

MEP Engineer:

Engineered Solutions
646 Plank Road #104
Clifton Park, NY 12061
phone: (518) 280-2410
fax: (518) 280-2481
www.engineered-solutions.net

Electrical

Communications

Mechanical

ES # 19071

Client:

Peekskill City School District
1031 Elm St.
Peekskill, NY 10566

Peekskill Reconstruction

SED Project: 66-15-00-01-0-005-020
HDG Project: 201
Oakside Elementary
200 Decatur Ave.,
Peekskill, NY 10566

SED Project: 66-15-00-01-0-008-017
HDG Project: 203
Woodside Elementary
612 Depew St.,
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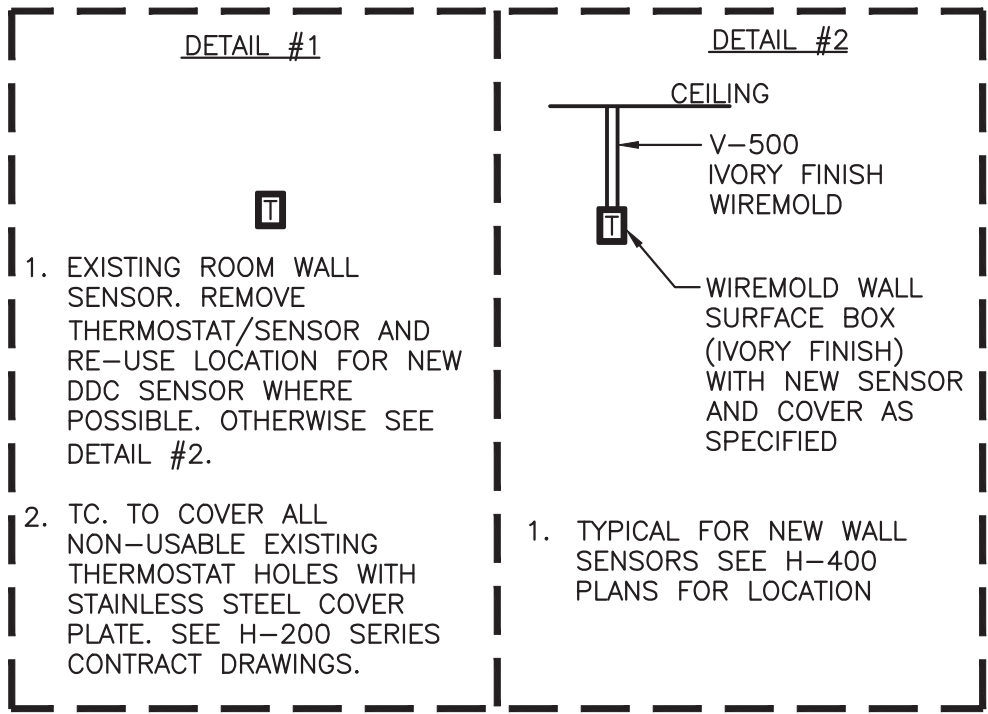
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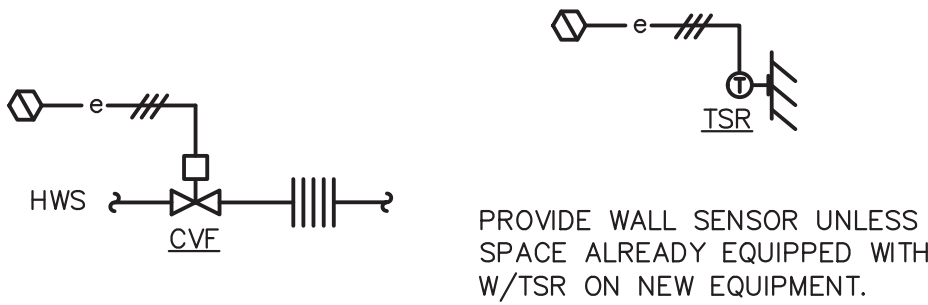
DESCRIPTION

Notes and Symbols

M.001.00



POINT NAME	DEVICE NAME	HARDWARE POINTS				SOFTWARE POINTS					GRAPHIC
		AI	AO	DI	DO	AV	BV	SCHED	TREND	ALARM	
HEATING VALVE	CVF		X						X		X
SPACE TEMPERATURE	TSB/TSR	X						X	X		X



2

PERIMETER RADIATION CONTROLS DIAGRAM

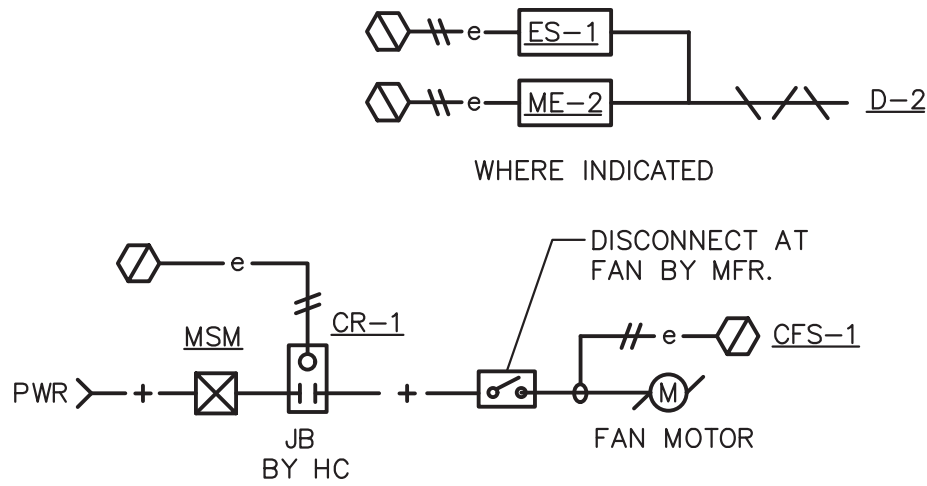
SCALE : NONE

NOTES:

1. TYPICAL FOR ALL UNITS W/O SELF CONTAINED CONTROL VALVE.

A. FIN RADIATION/RADIANT PANEL CONTROL SEQUENCE: FIN RADIATION/PANEL RADIATION WILL BE CONTROLLED BY ROOM SENSOR OR SEQUENCE WITH HVAC EQUIPMENT SERVICING INDIVIDUAL ROOM BY MEANS OF A CONTROL VALVE.

POINT NAME	DEVICE NAME	HARDWARE POINTS				SOFTWARE POINTS					GRAPHIC
		AI	AO	DI	DO	AV	BV	SCHED	TREND	ALARM	
FAN START/STOP	CR-1				X			X	X		X
FAN STATUS	CFS-1			X					X	X	X
DAMPER OPEN/CLOSE	ME-2				X			X	X		X
END SWITCH	ES-1				X			X	X		X



3

EXHAUST FAN CONTROLS DIAGRAM

SCALE : NONE

BMS SYSTEM SEQUENCE:

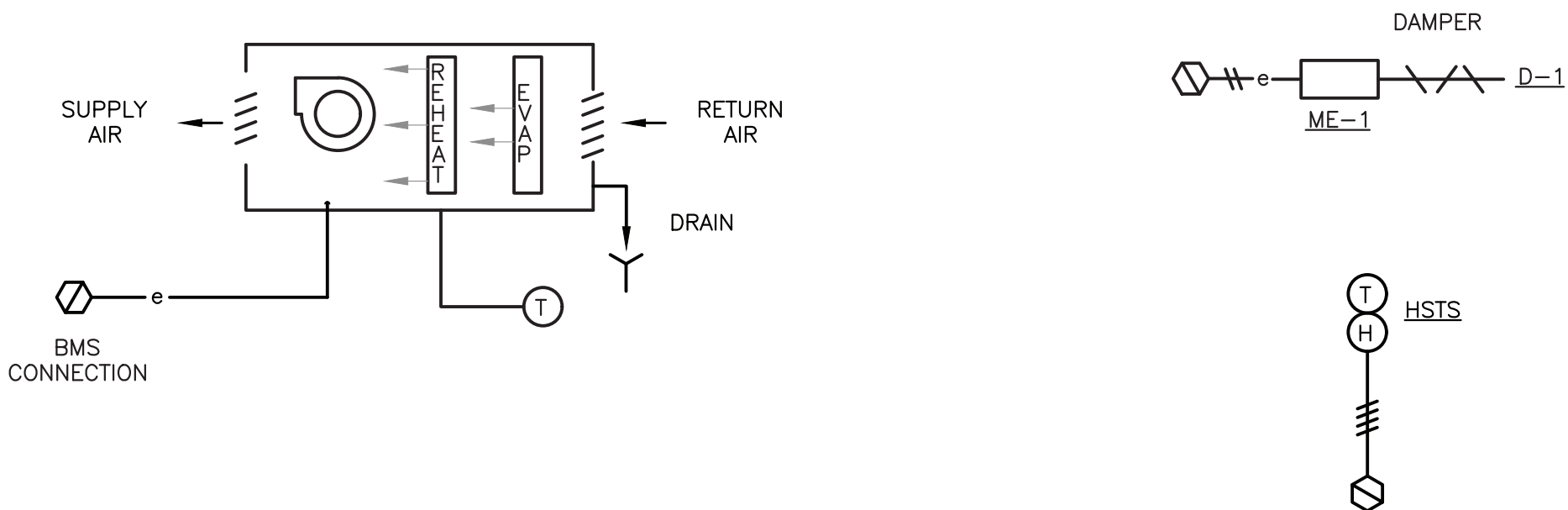
- THE EXHAUST FAN SHALL OPERATE WHEN THE OUTSIDE AIR DAMPER ON THE DEHUMIDIFIER IS OPEN OR BASED ON A SCHEDULE. THE SCHEDULE SHALL BE 9AM TO 5PM (adj). THE OPERATOR SHALL BE ABLE TO SWITCH BETWEEN THE 2 MODES.

BMS POINT LIST

POINT NAME	DEVICE NAME	HARDWARE POINTS				SOFTWARE POINTS					GRAPHIC
		AI	AO	DI	DO	AV	DV	SCHED	TREND	ALARM	
CRAWL SPACE TEMP/HUMIDITY	HSTS	X							X		X
BACNET INTERFACE											X
HIGH SPACE TEMPERATURE										X	
DAMPER	ME-1				X			X	X		X

BMS SYSTEM SEQUENCE:

- WHEN DEHUMIDIFIER IS IN OPERATION, AND THE OUTSIDE AIR TEMPERATURE IS ABOVE 40F AND BELOW 50% RH, THE OUTSIDE AIR DAMPER SHALL BE OPEN.



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CRAWL SPACE DEHUMIDIFIER CONTROL DIAGRAM

SCALE : NONE

THE UNIT SHALL COME WITH MANUFACTURERS CONTROLS. THE BMS SHALL INTERFACE WITH THE UNIT AND DISPLAY THE UNITS OUTPUTS GRAPHICALLY.

A. THE UNIT SHALL FOLLOW THE MANUFACTURERS SEQUENCE (ABBREVIATED HERE):

- WHEN THE UNIT IS STARTED, THE FAN SHALL START AND RUN CONTINUOUSLY TO MAINTAIN DESIRED HUMIDITY LEVELS.
- IF THE FREEZE/STAT IS TRIPPED, THE UNIT WILL SHUT DOWN.

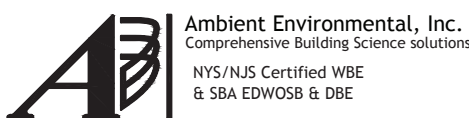
DECTRON POINT NAME	WRITEABLE FUNCTION	SHOWN ON BMS GRAPHIC
ON/OFF	Y	X
RETURN AIR HUMIDITY	N	X
RETURN AIR TEMPERATURE	N	X
SUPPLY AIR TEMPATURE	N	X
DEHUMIDIFICATION ON/OFF	N	X
FAN ON/OFF	N	X
COMPRESSOR ON/OFF	N	X
SYSTEM RESTART	Y	X

NOTES:
1. BMS CONNECTION AT UNIT. ALL FUNCTIONS AND OPERATION WILL GO THROUGH THE UNIT BACnet CONNECTION.

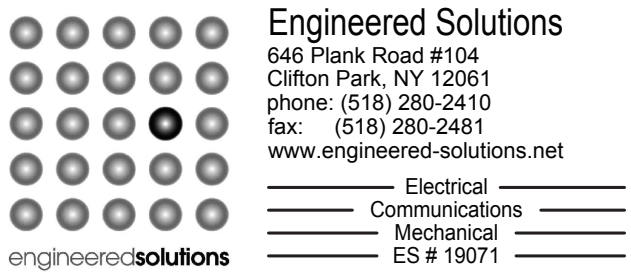


Architect:
Hamlin Design Group
915 Broadway, Suite 101A
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Tel: 518.724.5159
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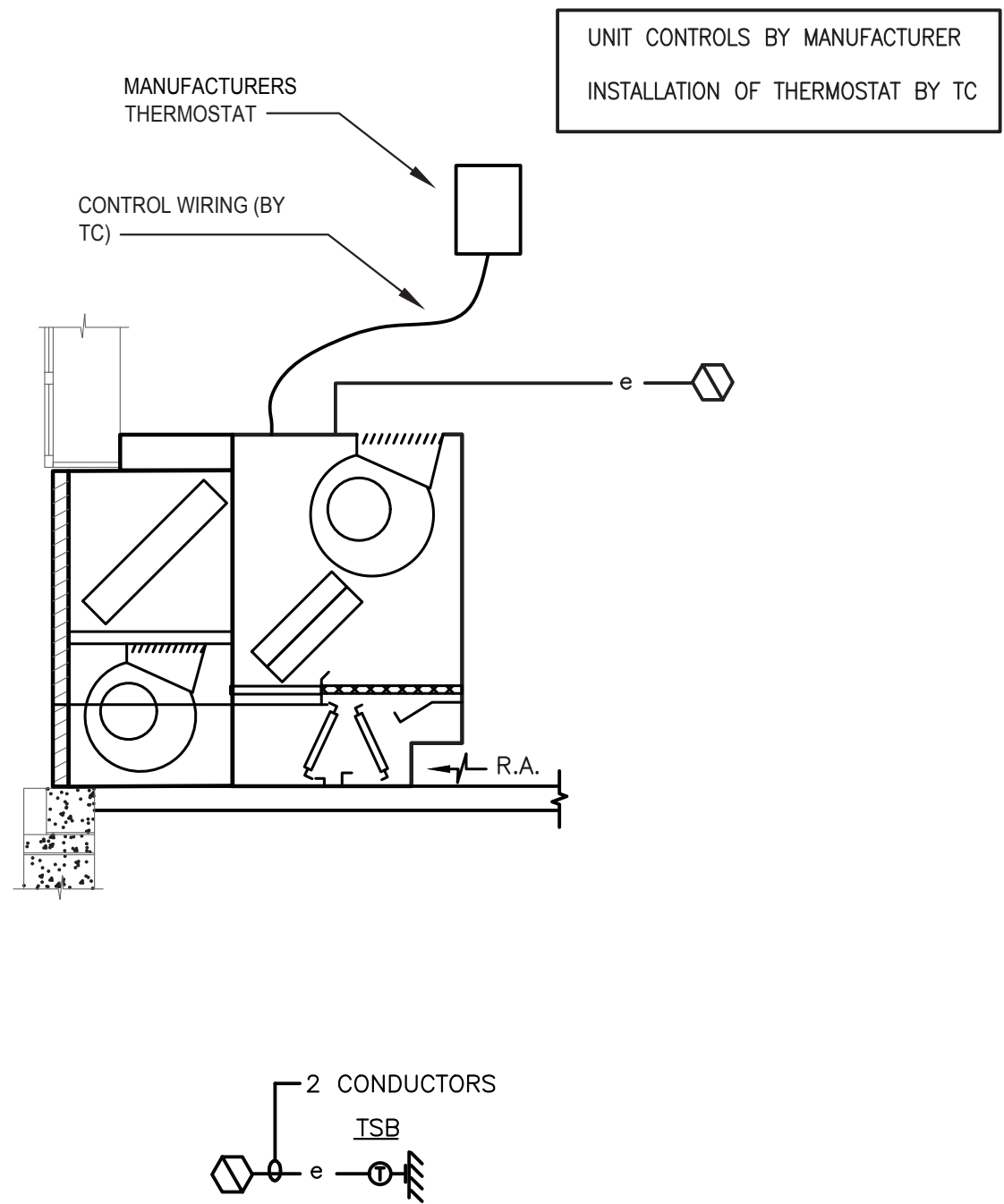
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DESCRIPTION
Temperature Controls

M.701.00



POINT NAME	DEVICE NAME	HARDWARE POINTS				SOFTWARE POINTS					GRAPHIC
		AI	AO	DI	DO	AV	DV	SCHED	TREND	ALARM	
SUPPLY FAN		--									
FAN START/STOP	CR-1				X				X		X
FAN STATUS	CFS-1			X					X		X
FAN FAILURE										X	
O.A. DAMPER	ME-1		X						X		X
R.A. DAMPER	ME-1		X						X		X
RELIEF DAMPER	ME-1		X						X		X
FACE AND BYPASS	ME-1		X						X		X
MIXED AIR TEMPERATURE	TSB	X							X		X
FREEZESTAT	LC-1			X						X	X
COOLING STAGES				X					X		X
DISCHARGE AIR TEMPERATURE	TSB	X							X		X
HIGH DISCHARGE TEMPERATURE										X	
LOW DISCHARGE TEMPERATURE										X	
SPACE TEMPERATURE	TSB	X							X		X
HIGH SPACE TEMPERATURE										X	
LOW SPACE TEMPERATURE										X	
SPACE TEMP. SETPOINT						X			X		
SCHEDULE								X			

POINTS LIST BY UNIT MANUFACTURER.

ITEMS SHOULD BE SHOWN ON GRAPHIC INTERFACE

- A. UNIT VENTILATOR:
- GENERAL: WHEN SUPPLY FAN IS OFF, OA (OUTSIDE AIR) DAMPER IS CLOSED, MA (MIXED AIR) DAMPER IS FULL OPEN. WHERE APPLICABLE.
 - WHEN SPACE OR LOCAL ZONE SWITCHES TO OCCUPIED CYCLE, FAN SHALL START AND RUN CONTINUOUSLY. OA AND MA DAMPERS OPEN TO MINIMUM POSITION. RELIEF DAMPER IS OPEN.
 - HEATING:
 - GENERAL: OA DAMPER SHALL BE SET AT A MINIMUM POSITION. OA DAMPER AND RELIEF DAMPER SHALL CONTINUOUSLY ALLOW INTRODUCTION OF FRESH AIR REGARDLESS OF OUTSIDE AIR TEMPERATURE. FAN DISCHARGE SENSOR WILL MAINTAIN A MINIMUM TEMPERATURE OF 60°F (ADJUSTABLE).
 - COIL:
 - CHANGES IN SPACE TEMPERATURE BELOW SETPOINT WILL CAUSE CONTROLLER TO INDEX DISCHARGE TEMPERATURE ACCORDING TO A PRESET SCHEDULE. CONTROLLER WILL MODULATE FACE AND BYPASS DAMPER TO MAINTAIN DESIRED TEMPERATURE.
 - IF HEATING COIL LEAVING AIR TEMPERATURE FALLS BELOW 35°F, LOW LIMIT CONTROLLER (LC-1) SHALL STOP FAN, CLOSE OAD, OPEN FACE DAMPER AND SIGNAL ALARM CONDITION TO SYSTEM.
 - SPACE TEMPERATURE SETPOINT SHALL BE AN ADJUSTABLE BIAS LIMITED TO ±2°F SPACE SENSOR, NORMAL SETPOINT SHALL BE ADJUSTABLE FROM MAIN CONSOLE ONLY.
 - ON RISE IN SPACE TEMPERATURE ABOVE SETPOINT AND OA TEMPERATURE IS BETWEEN 55°F (adj) AND 75°F (adj), FACE AND BYPASS DAMPER CLOSES TO COIL, OA DAMPER OPENS FULLY, RA DAMPER CLOSES FULLY TO PROVIDE ECONOMIZER COOLING.
 - WHEN OAT UNABLE TO PROVIDE COOLING, OAD, RELIEF DAMPER SHALL CLOSE TO MINIMUM POSITION, FACE AND BYPASS DAMPER OPENS TO COOLING COIL WITH AUXILIARY SWITCH ON ACTUATOR PROVIDING POSITIVE PROOF OF POSITION.
 - IF OAT FALLS BELOW SETPOINT (50°F), LTCO SHALL LOCK OUT CONDENSER UNITS.
 - IF HOT WATER/DX COIL DISCHARGE SENSOR TEMPERATURE FALLS BELOW 50°F WHEN CONDENSER IS OPERATING, ALARM DDC SYSTEM IMMEDIATELY.
 - UNOCCUPIED CYCLE:
WHEN ZONE SWITCHES TO NIGHT CYCLE, CLOSE OAD, RELIEF DAMPER AND FULLY OPEN RA DAMPER. WHERE APPLICABLE, HEAT CONTROL VALVE OPENS TO COIL AND/OR FACE DAMPER OPENS TO COIL.
 - FAN SHALL RUN INTERMITTENTLY TO MAINTAIN A LOWER NIGHT SETPOINT.
 - COOLING SHALL BE LOCKED OUT, I.E. CONDENSER UNIT IS OFF.
 - NIGHT OVERRIDE SHALL BE BY PB ON TEMPERATURE SENSOR OR BY MAIN CONSOLE.

SEQUENCE BY UNIT MANUFACTURER.

1 SELF CONTAINED UNIT VENTILATOR DETAIL

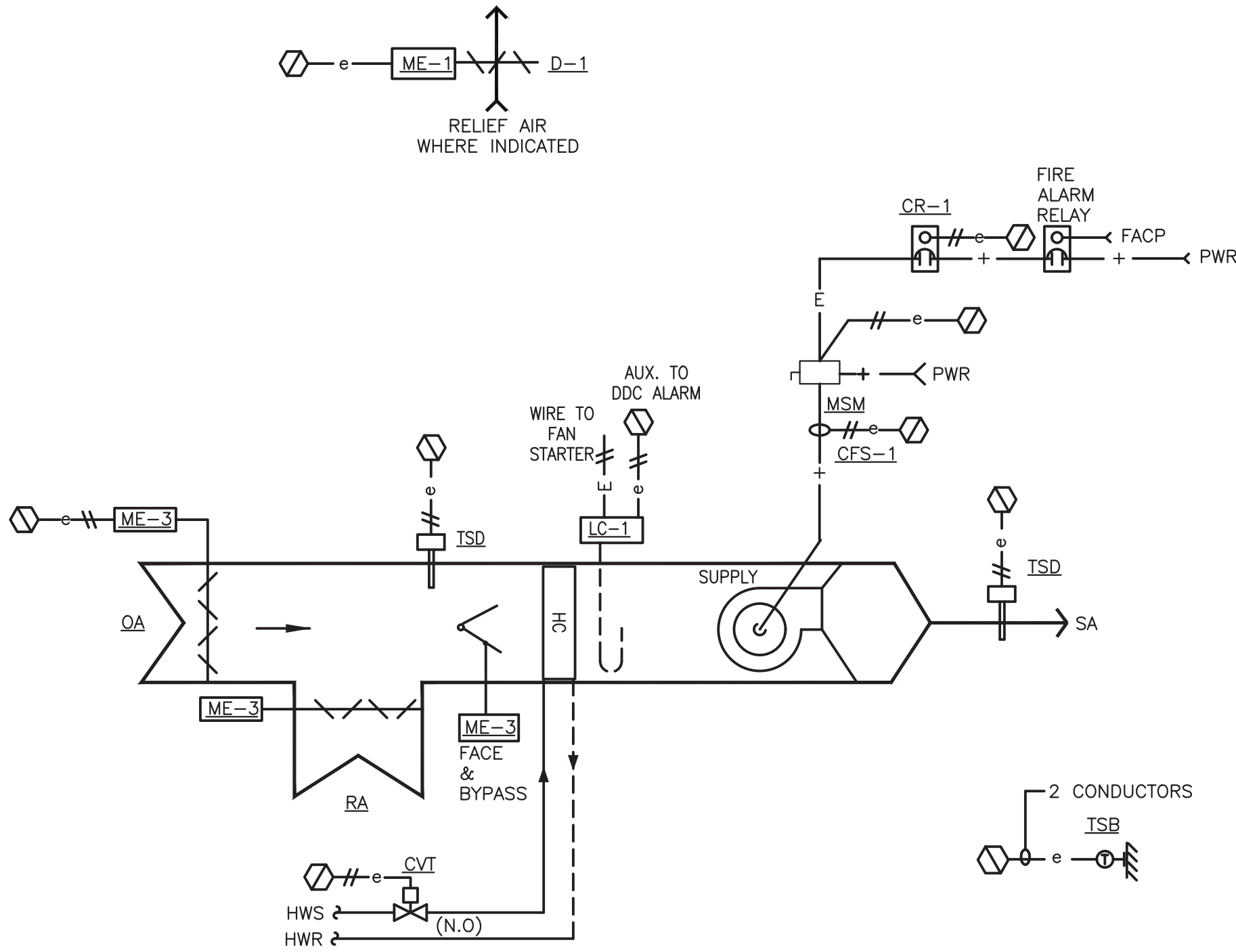
SCALE: NONE

CONTROLS FOR A SELF CONTAINED UNIT VENTILATOR ARE BY THE UNIT MANUFACTURER.

- THROUGH THE DDC INTERFACE, THE BMS CAN:
- CHANGE THE UNIT STATUS (OCCUPIED/UNOCCUPIED)
 - ADJUST TEMPERATURE SETPOINT
 - CHANGE THE UNIT FROM HEATING TO COOLING
 - CHANGE FAN SPEED
 - CHANGE THE OUTSIDE AIR DAMPER SETTING

POINT NAME	DEVICE NAME	HARDWARE POINTS				SOFTWARE POINTS					GRAPHIC
		AI	AO	DI	DO	AV	DV	SCHED	TREND	ALARM	
SUPPLY FAN		--									
FAN START/STOP	CR-1				X				X		X
FAN STATUS	CFS-1			X					X		X
FAN FAILURE										X	
O.A. DAMPER	ME-3		X						X		X
R.A. DAMPER	ME-3		X						X		X
FACE AND BYPASS	ME-3		X						X		X
MIXED AIR TEMPERATURE	TSB	X							X		X
HEATING VALVE	CVT		X						X		X
FREEZESTAT	LC-1			X						X	X
DISCHARGE AIR TEMPERATURE	TSB	X							X		X
SCHEDULE								X			

- A. UNIT VENTILATOR SEQUENCE (HEATING):
- GENERAL: WHEN SUPPLY FAN IS OFF, OUTDOOR AIR AND RELIEF AIR DAMPERS ARE CLOSED. RETURN AIR DAMPER IS OPEN. WHERE APPLICABLE, HEATING COIL VALVE IS OPEN TO COIL AND/OR FACE DAMPER IS OPEN TO COIL. HEATING VALVE WILL MODULATE WITH FACE AND BYPASS DAMPER WHEN OUTDOOR AIR TEMPERATURE IS ALMOST 38°F. WHEN OUTDOOR AIR TEMPERATURE IS BELOW 35°F CONTROL VALVE IS OPEN AND ONLY FACE AND BYPASS DAMPER IS USED. WATER VALVE REMAIN UNDER CONTROL OF ROOM SENSOR.
 - OCCUPIED CYCLE:
 - WHEN SPACE OR LOCAL ZONE SWITCHES TO DAY CYCLE, FAN SHALL START AND RUN CONTINUOUSLY.
 - OUTSIDE AIR DAMPER AND RELIEF DAMPER OPENS TO MINIMUM POSITION REGARDLESS OF OUTDOOR AIR TEMPERATURE. MINIMUM POSITION TO BE SET FROM SCHEDULE.
 - AS SPACE TEMPERATURE FALLS, RADIATOR VALVE SHALL MODULATE OPEN, A CONTINUED DROP IN ROOM TEMPERATURE WILL MODULATE COIL VALVE AND FACE AND BYPASS DAMPER AS NOTED ABOVE OPEN TO MAINTAIN DESIRED ROOM CONDITIONS.
 - SPACE TEMPERATURE SETPOINT OF 70°F (ADJUSTABLE) SHALL BE AN ADJUSTABLE BIAS LIMITED TO ±2°F AT SPACE SENSOR, NORMAL SETPOINT SHALL BE ADJUSTABLE FROM LOCAL ROOM SENSOR OR MAIN CONSOLE.
 - IF SAT FALLS BELOW 35°F, LOW LIMIT CONTROLLER (LC-1) SHALL STOP FAN. SHUT DOWN INCLUDES CLOSE OAD, STOP SUPPLY AIR FAN, OPEN CONTROL VALVE.
 - OUTSIDE AIR DAMPER AND RELIEF DAMPER SHALL CONTINUOUSLY ALLOW INTRODUCTION OF FRESH AIR REGARDLESS OF OUTSIDE AIR TEMPERATURE.
 - ON RISE IN SPACE TEMPERATURE, UV COIL VALVE, FACE AND BYPASS DAMPER AND RADIATOR VALVE WILL CLOSE IN SEQUENCE, OAD AND RELIEF DAMPER WHERE REQUIRED WILL MODULATE OPEN TO PROVIDE ECONOMIZER COOLING. LOW LIMIT THERMOSTAT SHALL PREVENT DISCHARGE AIR FROM FALLING BELOW SETPOINT (SET AT 60°F).
 - ECONOMIZER MODE: CONTROLLER SHALL MODULATE OA DAMPER IN SEQUENCE TO MINIMUM VALUE AT 68°F LAT (ADJUSTABLE). IF OUTSIDE AIR TEMP RISES ABOVE 72°F, THEN OUTSIDE AIR DAMPERS SHALL BE POSITIONED FOR MAXIMUM VALUE AND HEATING IS OFF. WHEN OUTSIDE AIR TEMP GOES ABOVE 78°F (ADJUSTABLE) OUTSIDE AIR DAMPER SHALL RETURN TO MINIMUM VALUE.
 - UNOCCUPIED CYCLE:
 - WHEN ZONE SWITCHES TO NIGHT CYCLE, CLOSE OAD, RELIEF DAMPER AND FULLY OPEN RA DAMPER.
 - FAN SHALL RUN INTERMITTENTLY TO MAINTAIN A LOWER NIGHT SETPOINT OF 55°F.
 - NIGHT OVERRIDE SHALL BE BY PB ON TEMPERATURE SENSOR OR BY MAIN CONSOLE.

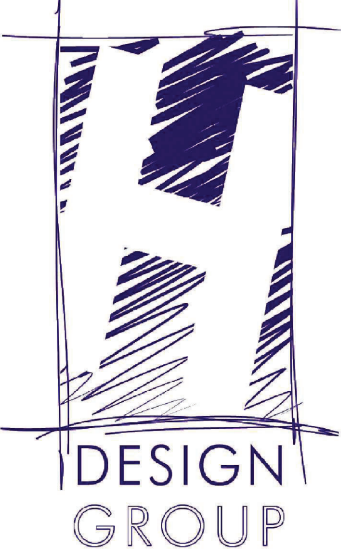


2 UV CONTROLS HEATING ONLY

SCALE: NONE

NOTE: ALL UNIT VENTS TO HAVE FACE AND BYPASS CONTROL AND VALVE CONTROL.

HAMLIN



Architect:

Hamlin Design Group

915 Broadway, Suite 101A

Albany, New York 12207

Tel: 518.724.5159

Fax: 518.320.8633

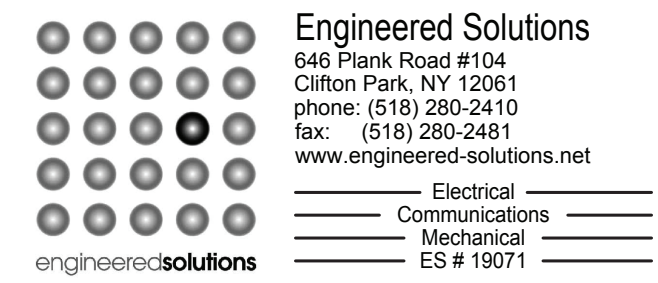
Web: hamlindesigngroup.com

Hazardous Material Consultant:



Ambient Environmental, Inc.
Comprehensive Building Science solutions
NYS/NES Certified WBE
E SBA EDW058 & DBE

MEP Engineer:



Engineered Solutions
648 Plank Road #104
Clifton Park, NY 12061
phone: (518) 280-2410
fax: (518) 280-2481
www.engineered-solutions.net

Electrical
Communications
Mechanical
ES # 19071

Client:



Peekskill City School District

1031 Elm St.

Peekskill, NY 10566

Peekskill Reconstruction

SED Project: 66-15-00-01-0-005-020

HDG Project: 201

Oakside Elementary

200 Decatur Ave.,

Peekskill, NY 10566

SED Project: 66-15-00-01-0-008-017

HDG Project: 203

Woodside Elementary

612 Depew St.,

Peekskill, NY 10566

DRAWN BY:

MLB

ISSUE: 03/19/2021



DESCRIPTION

Temperature Controls

M.702.00