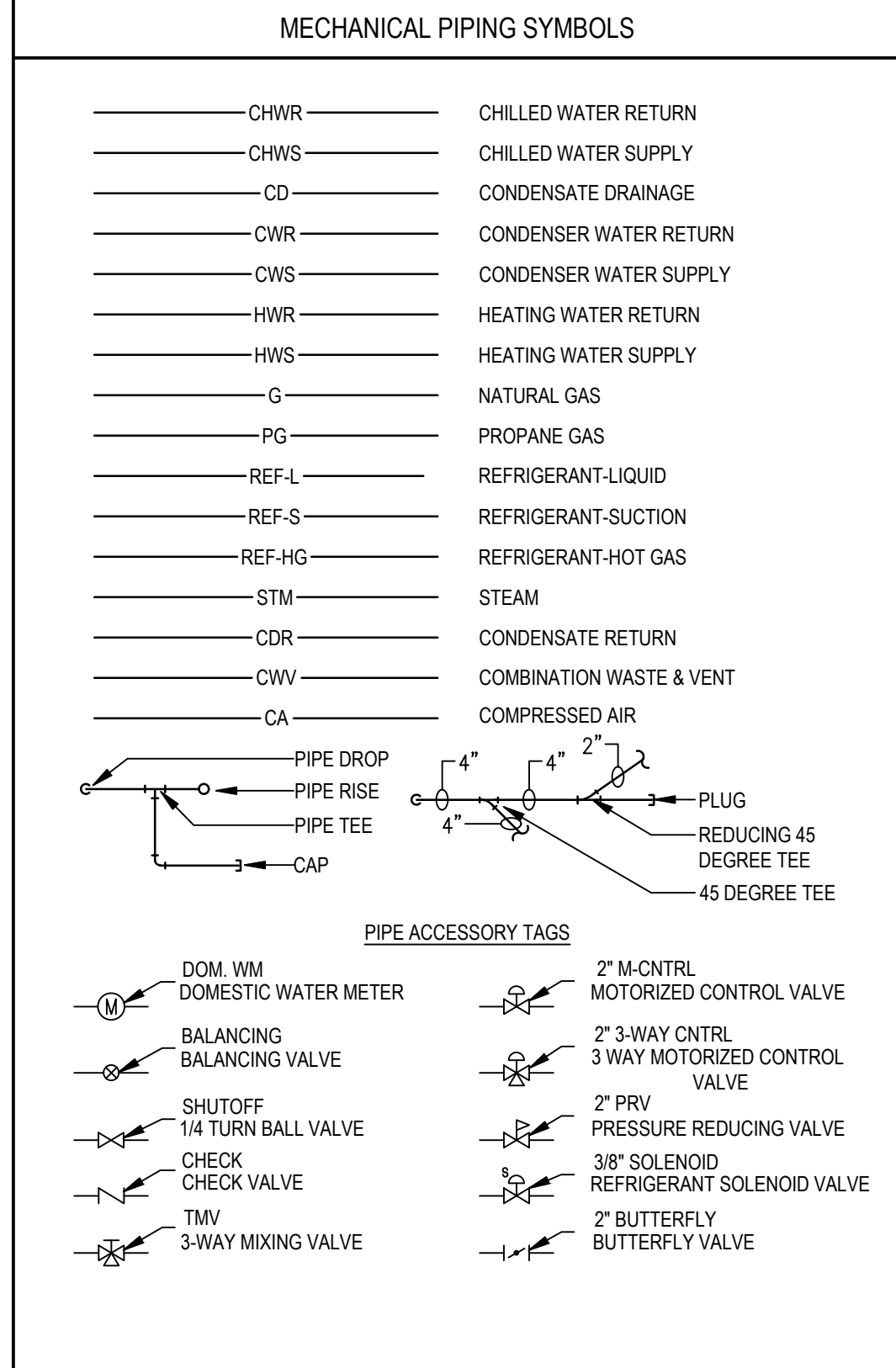
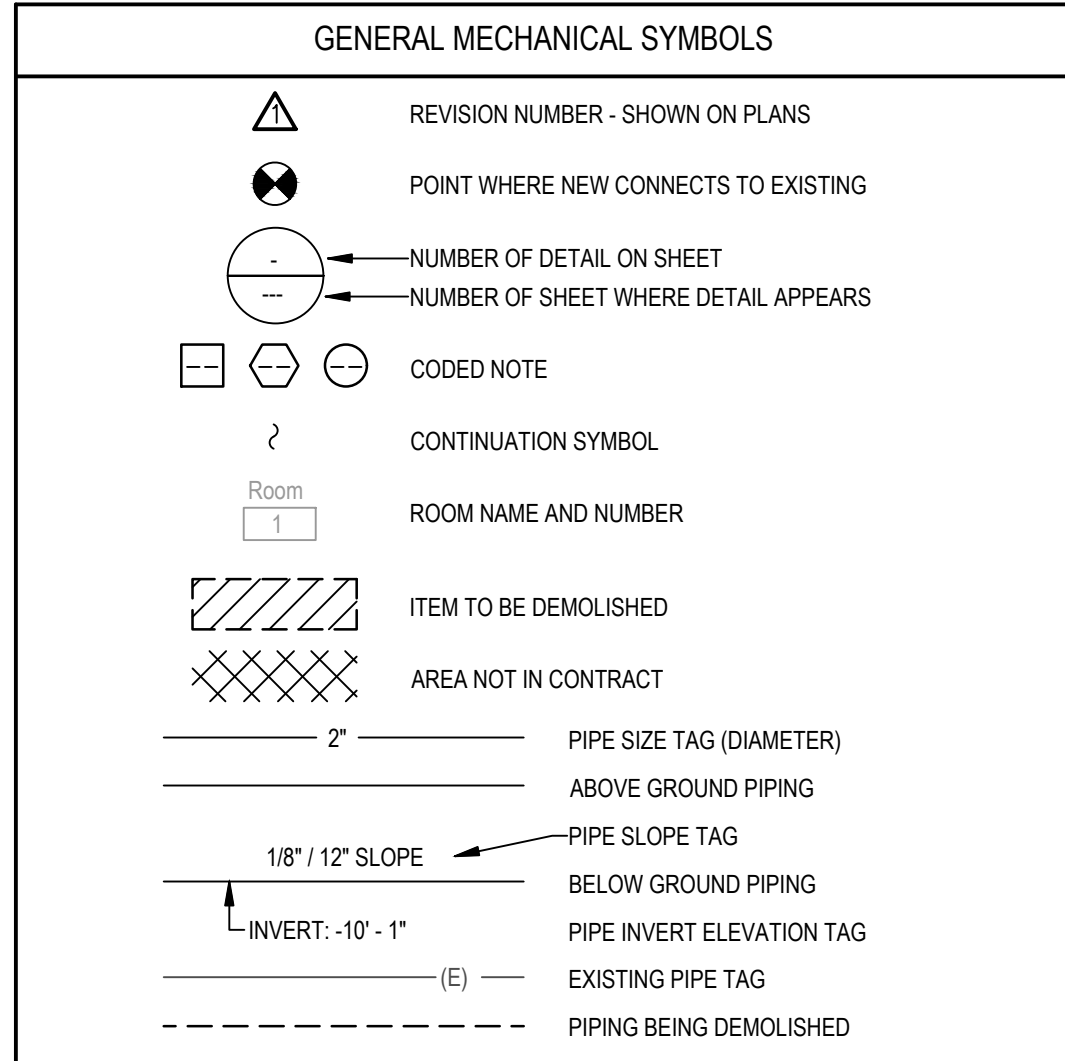


NOTE

ALL OF GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET. THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.



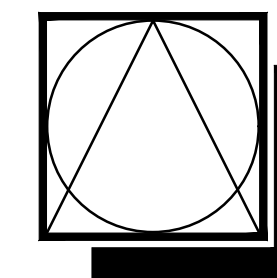
EQUIPMENT ABBREVIATIONS

AC	AIR CONDITIONING UNIT	ET	EXPANSION TANK
ABD	AUTOMATIC BALANCE DAMPER	EWH	ELECTRIC WATER HEATER
ACC	AIR COOLED CONDENSER	FCU	FAN COIL UNIT
ACCU	AIR COOLING CONDENSING UNIT	FP	FIRE PUMP
AHU	AIR HANDLING UNIT	GI	GREASE INTERCEPTOR
AS	AIR SEPARATOR	GRV	GRAVITY ROOF VENTILATOR
B	BOILER	HWP	HEATING WATER PUMP
CH	CHILLER	HX	HEAT EXCHANGER
CT	COOLING TOWER	HRU	HEAT RECOVERY UNIT
CUH	CABINET UNIT HEATER	PRV	POWER ROOF VENTILATOR
CWP	CONDENSER WATER PUMP	RE	RETURN/EXHAUST FAN
CHWP	CHILLED WATER PUMP	RTU	ROOFTOP UNIT
DBP	DOMESTIC WATER BOOSTER PUMP	SEP	SEWAGE EJECTOR PUMP
DC	DUCT MOUNTED COIL	SF	SUPPLY FAN
DCP	DOMESTIC WATER CIRCULATING PUMP	SP	SUMP PUMP
EF	EXHAUST FAN	UH	UNIT HEATER
EDC	ELECTRIC DUCT COIL	WH	WATER HEATER

ABBREVIATIONS

Ø	ROUND	LVR	LOUVER
ABD	AUTOMATIC BALANCE DAMPER	LWT	LEAVING WATER TEMPERATURE
ABV	ABOVE	M/A	MIXED AIR
AC	AIR CONDITIONING	MAX	MAXIMUM
AD	AREA DRAIN	MBH	ONE THOUSAND BTU PER HOUR
ADD	ADDENDUM	MCF	ONE THOUSAND CUBIC FEET
AFF	ABOVE FINISHED FLOOR	MD	MOTORIZED DAMPER
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MECH	MECHANICAL
ALT	ALTERNATE	MFR	MANUFACTURER
AP	ACCESS PANEL	MIN	MINIMUM
ARCH	ARCHITECT/ARCHITECTURAL	MISC	MISCELLANEOUS
BFF	BELOW FINISHED FLOOR	MTR	MOTOR
BLW	BELOW	MU/A	MAKE-UP/AIR
BTU	BRITISH THERMAL UNITS	NC	NOISE CRITERIA
BTUH	BRITISH THERMAL UNITS PER HOUR	NC	NORMALLY CLOSED
CAP	CAPACITY	NIC	NOT IN CONTRACT
CB	CATCH BASIN	NO	NUMBER
CFM	CUBIC FEET PER MINUTE	NO	NORMALLY OPEN
CLG	CEILING	NTS	NOT TO SCALE
CO	CLEAN OUT	O	OXYGEN
CW	COLD WATER	O/A	OUTSIDE AIR
D	DEGREE	ORD	OVERFLOW ROOF DRAIN
DB	DRY BULB	PD	PRESSURE DROP
DIA	DIAMETER	PIV	POST INDICATOR VALVE
DN	DOWN	PLBG	PLUMBING
DW	DISTILLED WATER	PRESS	PRESSURE
EA	EACH	PRV	PRESSURE REDUCING VALVE
EAT	ENTERING AIR TEMPERATURE	PSI	POUNDS PER SQUARE INCH
ELEC	ELECTRICAL	PSIG	POUNDS PER SQUARE INCH GAUGE
EQUIP	EQUIPMENT	PWR	POWER
EWC	ELECTRIC WATER COOLER	R	DUCT RISER
EWT	ENTERING WATER TEMPERATURE	RA	RETURN AIR
E/A	EXHAUST AIR	RCP	RADIANT CEILING PANEL
EXIST	EXISTING	RD	ROOF DRAIN
F	DEGREES FAHRENHEIT	REC	RECESSED
FCO	FLOOR CLEAN OUT	RED	REDUCER
FD	FLOOR DRAIN	RH	RELATIVE HUMIDITY
FD	FIRE DAMPER	RLA	RELIEF AIR
FDV	FIRE DEPARTMENT VALVE	RM	ROOM
FL	FLOOR	RRM	REVOLUTIONS PER MINUTE
FO	FUEL OIL	RW	RAIN WATER
FOV	FUEL OIL VENT	SF	SQUARE FOOT
FOR	FUEL OIL RETURN	S/A	SUPPLY AIR
FOS	FUEL OIL SUPPLY	SAN	SANITARY
FPM	FEET PER MINUTE	SF	SQUARE FOOT
FS	FLOOR SINK	SD	SMOKE DAMPER
FT	FOOT/FEET	SM	SURFACE MOUNT
FTR	FIN TUBE RADIATION	SP	STANDPIPE
GAL	GALLON	SP	STATIC PRESSURE
GC	GENERAL CONTRACTOR	STM	STEAM
GPM	GALLONS PER MINUTE	T	THERMOSTAT
GW	GREASE WASTE	TD	TEMPERATURE DROP
HB	HOSE BIB	TDR	TRENCH DRAIN
HP	HORSE POWER	TEMP	TEMPERATURE
HTG	HEATING	TYP	TYPICAL
HTR	HEATER	UG	UNDERGROUND
HW	HOT WATER	VAC	VACUUM
HYD	HYDRANT	V	VENT
ID	INDIRECT	VAV	VARIABLE AIR VOLUME
IN	INCH	VENT	VENTILATION
INV	INVERT	VTR	VENT THROUGH ROOF
LB	POUND	W	WASTE
LB/HR	POUNDS PER HOUR	WB	WET BULB
LAT	LEAVING AIR TEMPERATURE	WCO	WALL CLEAN OUT
LP	LOW PRESSURE	WH	WALL HYDRANT
LPG	LIQUEFIED PETROLEUM GAS		

- ### HVAC GENERAL NOTES
- HVAC GENERAL NOTES:
- ALL MECHANICAL EQUIPMENT AND INSTALLATIONS SHALL CONFORM WITH THE REQUIREMENTS OF THE VIRGINIA BUILDING CODE, VIRGINIA MECHANICAL CODE, VIRGINIA PLUMBING CODE, THE STATE ENERGY CODE, NFPA 90A, 101, AND ALL APPLICABLE CODES AND ORDINANCES.
 - CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL DRAWINGS PRIOR TO ORDERING EQUIPMENT OR SUBMITTING SHOP DRAWINGS, AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN THEREIN.
 - ALL MECHANICAL EQUIPMENT REQUIRING ELECTRICAL POWER SHALL BE INSTALLED WITH DISCONNECT SWITCHES AT EACH PIECE OF EQUIPMENT. COORDINATE SWITCH TYPE (FUSED OR NON-FUSED) WITH EQUIPMENT CHARACTERISTICS, MANUFACTURER'S RECOMMENDATIONS AND ELECTRICAL DRAWINGS. MECHANICAL CONTRACTOR SHALL PURCHASE ALL DISCONNECTS.
 - ALL REQUIRED CONTROL WIRING NOT SHOWN ON THE ELECTRICAL DRAWINGS SHALL BE INCLUDED AS PART OF THE MECHANICAL WORK.
 - UNLESS NOTED OTHERWISE, STARTERS, SMOKE DETECTORS, TRANSFORMERS, CONTROLS AND CONTROL WIRING REQUIRED FOR ALL MECHANICAL SYSTEMS SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
 - ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
 - DUCT SHALL BE SIZED AT 0.1"/100 FT STATIC PRESSURE DROP WHERE A SIZE IS NOT NOTED ON DRAWINGS. FLEXIBLE DUCTWORK SHALL BE INSTALLED AS STRAIGHT AS POSSIBLE, AND SHALL BE ROUTED AND SUPPORTED WITHOUT FORMING CRIMPS OR OTHER AIR FLOW RESTRICTIONS. PROVIDE SQUARE TO ROUND ADAPTERS OR BOOTS TO CONNECT TO AIR DEVICE NECK WHEN REQUIRED.
 - ROUND AND FLEXIBLE DUCTWORK SHALL BE CONNECTED TO MAIN DUCTS WITH SPIN-IN FITTINGS WITH BALANCING DAMPERS.
 - ALL WORK SHALL BE COORDINATED AND PERFORMED WITH PRIOR APPROVAL FROM THE OWNER TO SUIT HIS OPERATING CONDITIONS.
 - CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL MECHANICAL EQUIPMENT, DUCTWORK, ETC. TO FIT WITHIN THE SPACE ALLOWED BY THE ARCHITECTURAL AND STRUCTURAL CONDITIONS. CUTTING OR OTHERWISE ALTERING ANY STRUCTURAL MEMBERS SHALL NOT BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT. IN GENERAL, DUCTWORK SHALL BE ROUTED AS HIGH AS POSSIBLE. PROVIDE ALL OFFSETS REQUIRED TO MAINTAIN ARCHITECTURAL CEILING HEIGHTS AND OPEN SPACE CLEARANCES. THIS INCLUDES ANY OFFSETS NOT SPECIFICALLY SHOWN ON THE DRAWINGS. OFFSETS SHOWN ARE DIAGRAMMATIC AND ARE NOT MEANT TO INDICATE THE ONLY OFFSETS REQUIRED.
 - MOUNT THERMOSTATS 4' - 4" AFF UNLESS NOTED OTHERWISE. PROVIDE SPACE TEMPERATURE SENSORS FOR THERMOSTATS LOCATED IN CORRIDORS.
 - LOCATIONS OF GRILLES, REGISTERS, & DIFFUSERS SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE EXACT LOCATIONS WITH LIGHTS, CEILING GRID, ETC.
 - PROVIDE ACCESS PANELS IN NON-ACCESSIBLE CEILINGS AND IN WALL STRUCTURE TO ALLOW ADEQUATE ROOM FOR MAINTENANCE OF EQUIPMENT AND BALANCING OF SYSTEM.
 - ACCESS DOORS IN CEILINGS/WALLS SHALL BE A MINIMUM OF 12X12, HINGED, AND FIRE RATED TO MATCH CEILING/WALL RATING. DUCT ACCESS DOORS SHALL BE DOUBLE WALL IF INSTALLED ON SUPPLY DUCT, AND PROVIDED WITH THUMB LATCHES FOR AN AIR TIGHT FIT.
 - PROVIDE MVDs AT TAKE-OFFS, WHERE ACCESSIBLE CEILING (LAY-IN) IS PROVIDED, OF RUNOUTS TO DIFFUSERS AND WHERE SHOWN ON PLANS. WHERE BALANCING DAMPERS ARE ALSO PROVIDED AT THE SUPPLY GRILLE/DIFFUSER (SEE SCHEDULE), BALANCE THE SYSTEM WITH THE DAMPER AT THE TAKE-OFF (NOT AT GRILLE). GRILLE DAMPER SHOULD BE 100% OPEN AFTER TEST AND BALANCE.
 - DUCT ROUTING, OFFSETS AND LOCATIONS ARE DIAGRAMMATIC. EXACT LOCATIONS, ELEVATIONS, AND OFFSETS SHALL BE DETERMINED FROM COORDINATION DRAWINGS PRODUCED FROM A COMPOSITE OF ARCHITECTURAL, STRUCTURAL AND OTHER TRADE'S DRAWINGS. ROUTE DUCT HIGH AS POSSIBLE. SEE SPECIFICATIONS FOR COMPLETE MULTI TRADE COORDINATION DRAWING REQUIREMENTS.
 - PROVIDE FIRE DAMPERS AND FIRE/SMOKE DAMPERS IN RATED WALLS AS REQUIRED BY THE VIRGINIA CONSTRUCTION CODE AND VIRGINIA MECHANICAL CODE.



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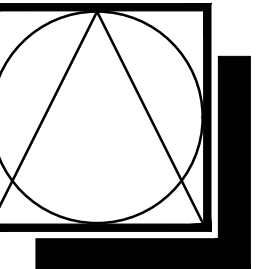
NEW 90 BED SKILLED NURSING FACILITY
SMITH MOUNTAIN LAKE HEALTH & REHAB CENTER
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Michael Thomas Denk
Lic. No. 402063288

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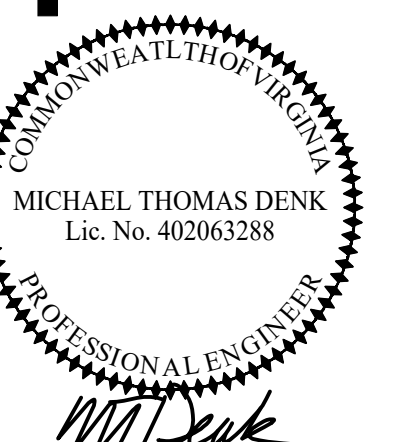




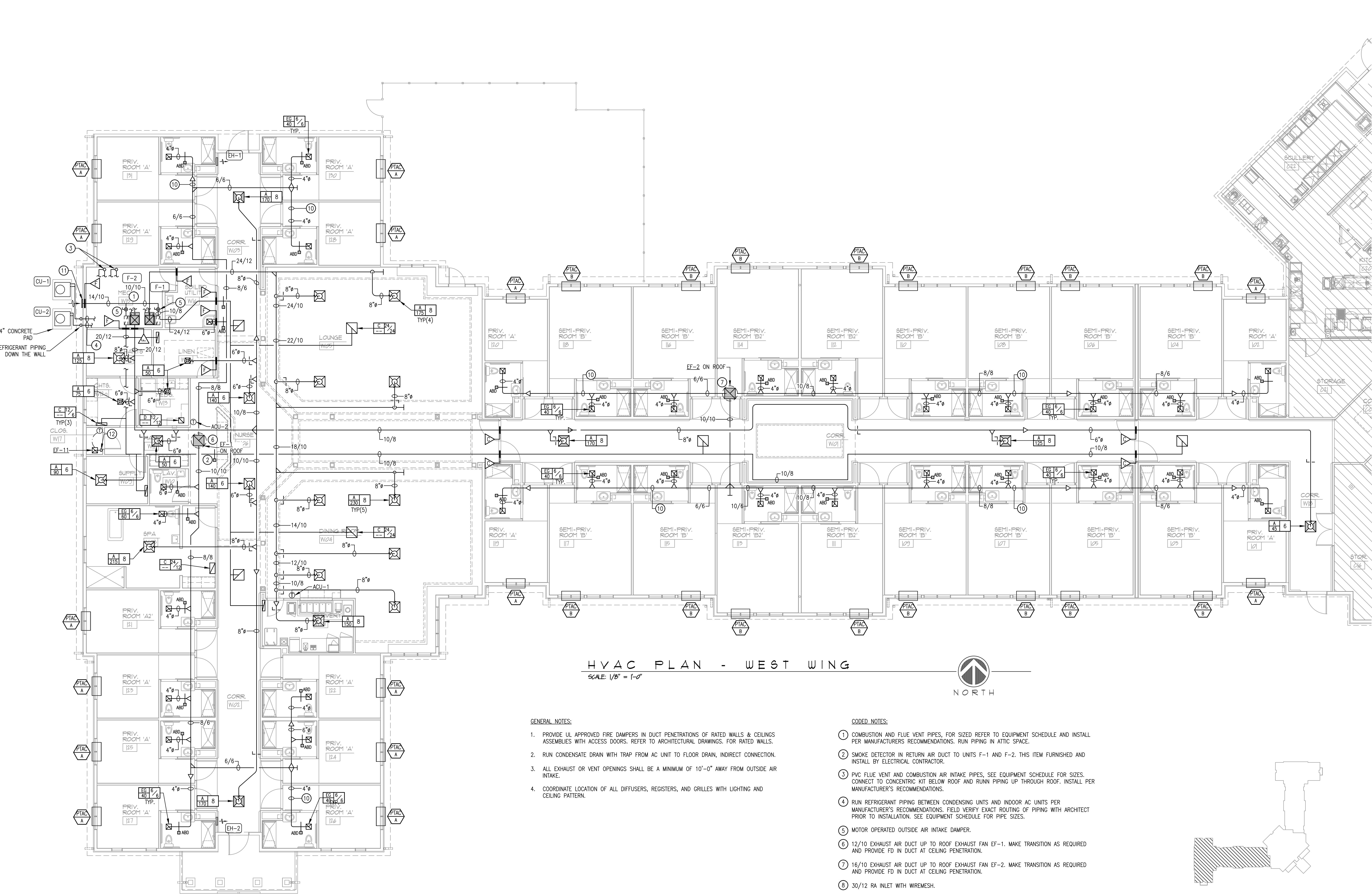
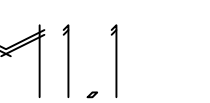
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NEW 90 BED SKILLED NURSING FACILITY
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HVAC PLAN - WEST WING

SCALE: 1/8" = 1'-0"

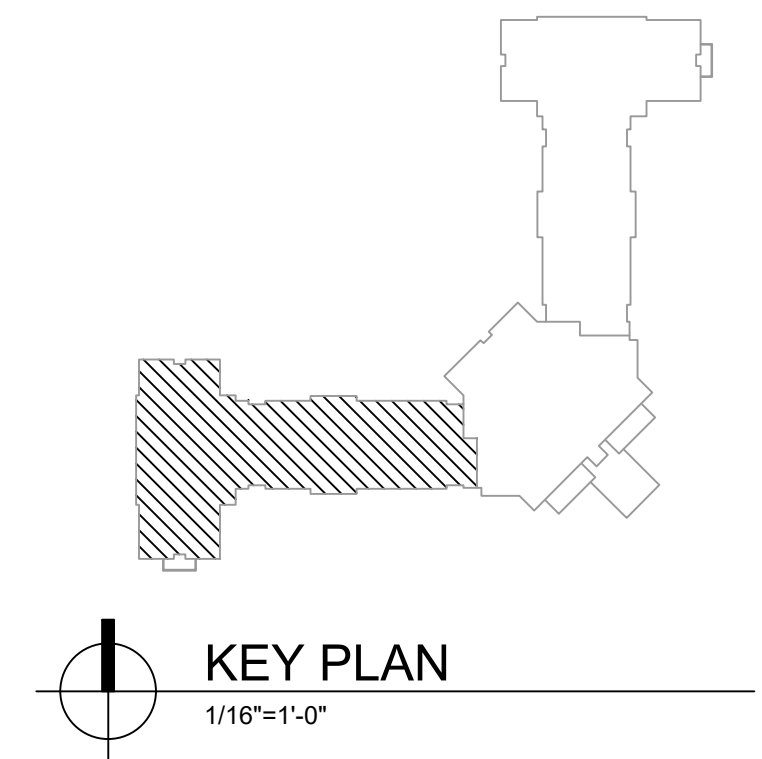


GENERAL NOTES:

1. PROVIDE UL APPROVED FIRE DAMPERS IN DUCT PENETRATIONS OF RATED WALLS & CEILINGS ASSEMBLIES WITH ACCESS DOORS. REFER TO ARCHITECTURAL DRAWINGS. FOR RATED WALLS.
2. RUN CONDENSATE DRAIN WITH TRAP FROM AC UNIT TO FLOOR DRAIN, INDIRECT CONNECTION.
3. ALL EXHAUST OR VENT OPENINGS SHALL BE A MINIMUM OF 10'-0" AWAY FROM OUTSIDE AIR INTAKE.
4. COORDINATE LOCATION OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH LIGHTING AND CEILING PATTERN.

CODED NOTES:

- ① COMBUSTION AND FLUE VENT PIPES, FOR SIZED REFER TO EQUIPMENT SCHEDULE AND INSTALL PER MANUFACTURERS RECOMMENDATIONS. RUN PIPING IN ATTIC SPACE.
- ② SMOKE DETECTOR IN RETURN AIR DUCT TO UNITS F-1 AND F-2. THIS ITEM FURNISHED AND INSTALL BY ELECTRICAL CONTRACTOR.
- ③ PVC FLUE VENT AND COMBUSTION AIR INTAKE PIPES, SEE EQUIPMENT SCHEDULE FOR SIZES. CONNECT TO CONCENTRIC KIT BELOW ROOF AND RUNN PIPING UP THROUGH ROOF. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
- ④ RUN REFRIGERANT PIPING BETWEEN CONDENSING UNITS AND INDOOR AC UNITS PER MANUFACTURER'S RECOMMENDATIONS. FIELD VERIFY EXACT ROUTING OF PIPING WITH ARCHITECT PRIOR TO INSTALLATION. SEE EQUIPMENT SCHEDULE FOR PIPE SIZES.
- ⑤ MOTOR OPERATED OUTSIDE AIR INTAKE DAMPER.
- ⑥ 12/10 EXHAUST AIR DUCT UP TO ROOF EXHAUST FAN EF-1. MAKE TRANSITION AS REQUIRED AND PROVIDE FD IN DUCT AT CEILING PENETRATION.
- ⑦ 16/10 EXHAUST AIR DUCT UP TO ROOF EXHAUST FAN EF-2. MAKE TRANSITION AS REQUIRED AND PROVIDE FD IN DUCT AT CEILING PENETRATION.
- ⑧ 30/12 RA INLET WITH WIREMESH.
- ⑨ 28/12 RA INLET WITH WIREMESH.
- ⑩ RUN EXHAUST DUCTWORK IN DROPPED CEILING.
- ⑪ 24/16 OA INTAKE LOUVER, 800 CFM.
- ⑫ RUN 6" EXHAUST DUCT UP TO ATTIC SPACE AND OPEN-ENDED WITH WIREMESH.



2025-01-17 - 18" = 1'-0"

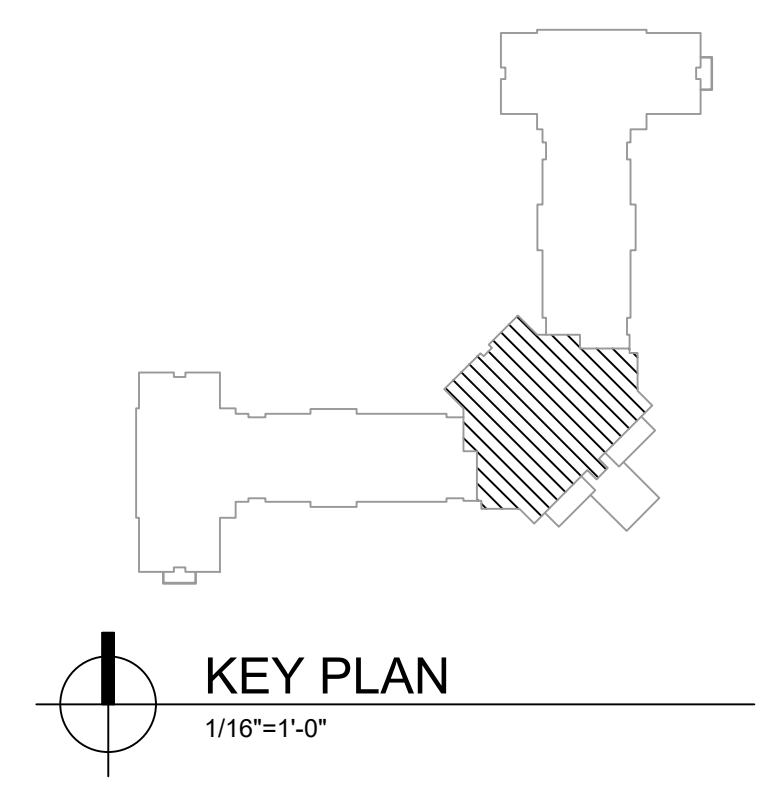


GENERAL NOTES:

1. PROVIDE UL APPROVED FIRE DAMPERS IN DUCT PENETRATIONS OF RATED WALLS & CEILINGS ASSEMBLIES WITH ACCESS DOORS. REFER TO ARCHITECTURAL DWGS. FOR RATED WALLS.
2. RUN CONDENSATE DRAIN WITH TRAP FROM AC UNIT TO FLOOR DRAIN, INDIRECT CONNECTION.
3. ALL EXHAUST OR VENT OPENINGS SHALL BE A MINIMUM OF 10'-0" AWAY FROM OUTSIDE AIR INTAKE.
4. COORDINATE LOCATION OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH LIGHTING AND CEILING PATTERN.
5. KITCHEN EXHAUST CONTRACTOR (KEC) SHALL FURNISH AND INSTALL EXHAUST HOODS. HVAC/MECHANICAL CONTRACTOR SHALL INSTALL KEC FURNISHED EXHAUST/MAKE-UP AIR FAN(S) AND CURBS. REFER KEC DWGS. FOR FURTHER KITCHEN EQUIPMENT DETAILS.
6. HVAC CONTRACTOR SHALL FURNISH AND INSTALL DUCTWORK BETWEEN EXHAUST HOOD COLLARS AND FAN(S). FINAL CONNECTION BY HVAC/MECHANICAL CONTRACTOR.

CODED NOTES:

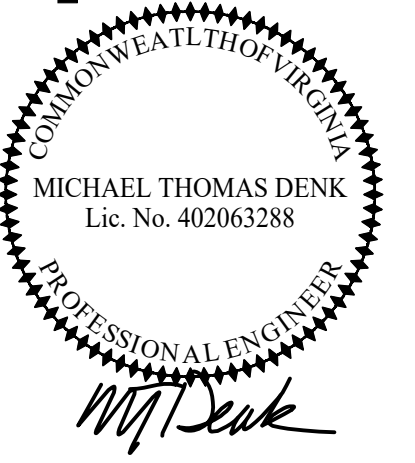
- ① 24/12 SA AND RA DUCTS UP TO RTU-1 ON ROOF. MAKE TRANSITION AS REQUIRED AND PROVIDE FLEXIBLE CONNECTION AT UNIT INLET.
- ② 22/12 SA AND RA DUCTS UP TO RTU-2 ON ROOF. MAKE TRANSITION AS REQUIRED AND PROVIDE FLEXIBLE CONNECTION AT UNIT INLET.
- ③ 30/12 SA AND RA DUCTS UP TO RTU-3 ON ROOF. MAKE TRANSITION AS REQUIRED AND PROVIDE FLEXIBLE CONNECTION AT UNIT INLET.
- ④ 34/12 SA AND RA DUCTS UP TO RTU-4 ON ROOF. MAKE TRANSITION AS REQUIRED AND PROVIDE FLEXIBLE CONNECTION AT UNIT INLET.
- ⑤ SMOKE DETECTOR IN RA DUCT FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
- ⑥ 8/6 EXHAUST AIR DUCT UP TO ROOF EXHAUST FAN EF-3. MAKE TRANSITION AS REQUIRED AND PROVIDE FD IN DUCT AT CEILING PENETRATION.
- ⑦ 10/8 EXHAUST AIR DUCT UP TO ROOF EXHAUST FAN EF-4. MAKE TRANSITION AS REQUIRED AND PROVIDE FD IN DUCT AT CEILING PENETRATION.
- ⑧ 18/12 EXHAUST AIR DUCT UP TO ROOF EXHAUST FAN EF-7. MAKE TRANSITION AS REQUIRED.
- ⑨ 8/6 EXHAUST AIR DUCT UP TO ROOF EXHAUST FAN EF-8. MAKE TRANSITION AS REQUIRED.
- ⑩ 24/10 SA DUCT DOWN, 513 CFM EA. (TYP. OF 4). CONNECT TO KITCHEN HOOD INLET.
- ⑪ 16" EXHAUST DUCT DOWN, 2625 CFM, CONNECT TO KITCHEN HOOD OUTLET.
- ⑫ 10" EXHAUST DUCT DOWN, 600 CFM, CONNECT TO DISHWASHER HOOD OUTLET.
- ⑬ 6/6 EG, 75 CFM.
- ⑭ 8" DRYER EXHAUST UP THRU ROOF INSTALL IN-LINE DUCT MOUNTED LINT STOPPER ENERGENICS GRIP MODEL AF-1-5 (SELF-CLEANING), 8" INLET AND 10" OUTLET AND RUN 10" EXHAUST DUCT UP THRU ROOF AND TERMINATE WITH GOOSENECK ABOVE ROOF.
- ⑮ 4" DRYER EXHAUST THRU ROOF AND TERMINATE ABOVE ROOF WITH VENT CAP.
- ⑯ OUTSIDE AIR INTAKE LOREN COOK MODEL GI THROAT AREA 16/18 (2 SQ. FT.) 29/36 HOOD WITH BIRDSCREEN. COMPLETE WITH ROOF CURB, BIRDSCREEN AND MOTORIZED DAMPERS. RUN 18/16 SUPPLY AIR DUCT. OPEN ENDED WITH BIRD SCREEN. INTERLOCK DRYERS WITH MOTORIZED DAMPER. DAMPER SHALL OPEN WHENEVER ONE DRYER IS OPERATING.
- ⑰ 18/10 TRANSFER AIR OPENING WITH FD ABOVE CEILING.
- ⑱ 40/14 RA INLET WITH WIRE MESH SCREEN.
- ⑲ 12/8 RAG IN WALL ABOVE CEILING. PROVIDE ONE ON EACH SIDE OF WALL.
- ⑳ 28/12 RA INLET INTAKE W/WIRE MESH SCREEN.



HVAC PLAN - CENTER
 SCALE: 1/8" = 1'-0"



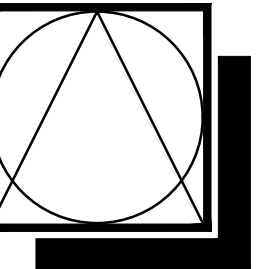
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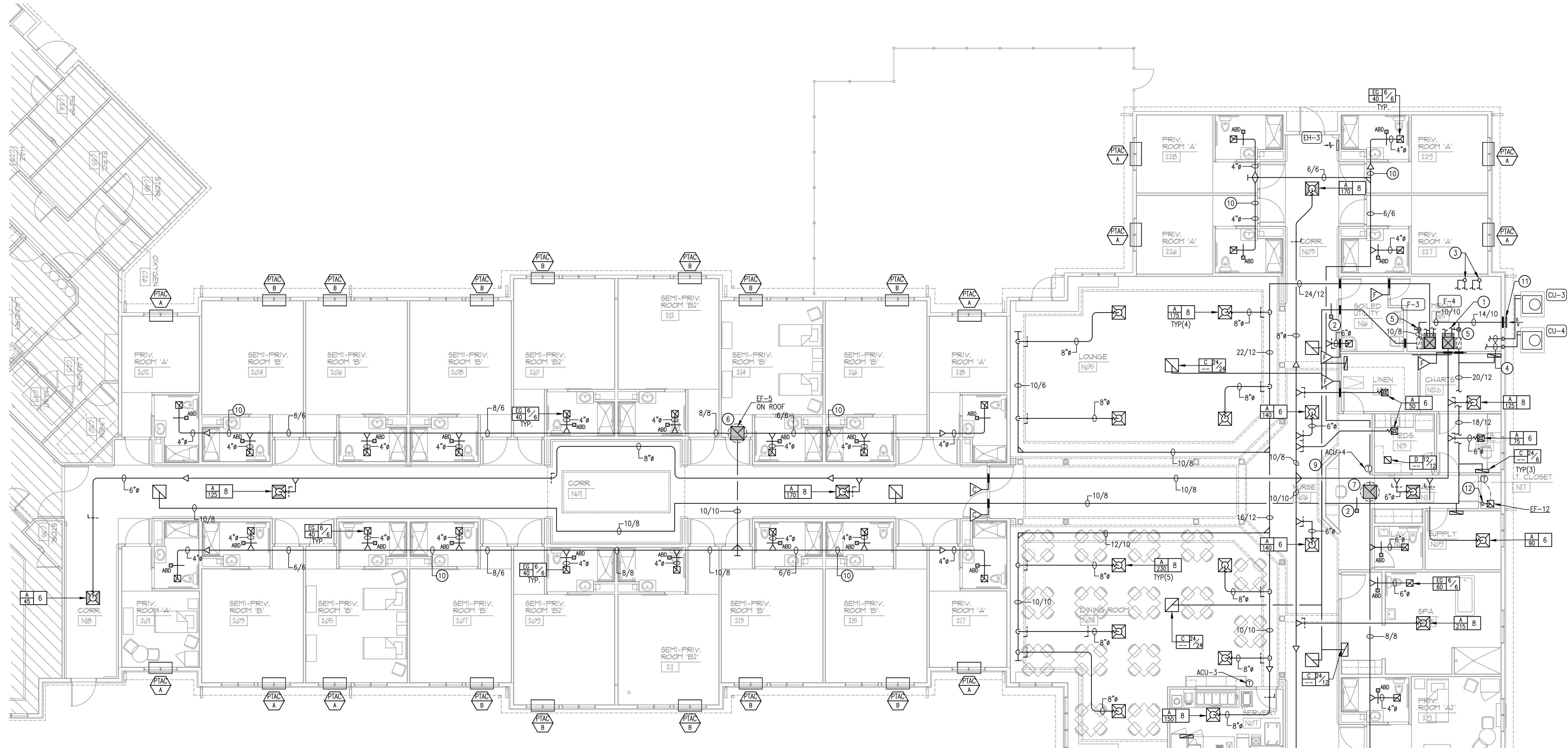
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HVAC PLAN - NORTH WING

SCALE: 1/8" = 1'-0"

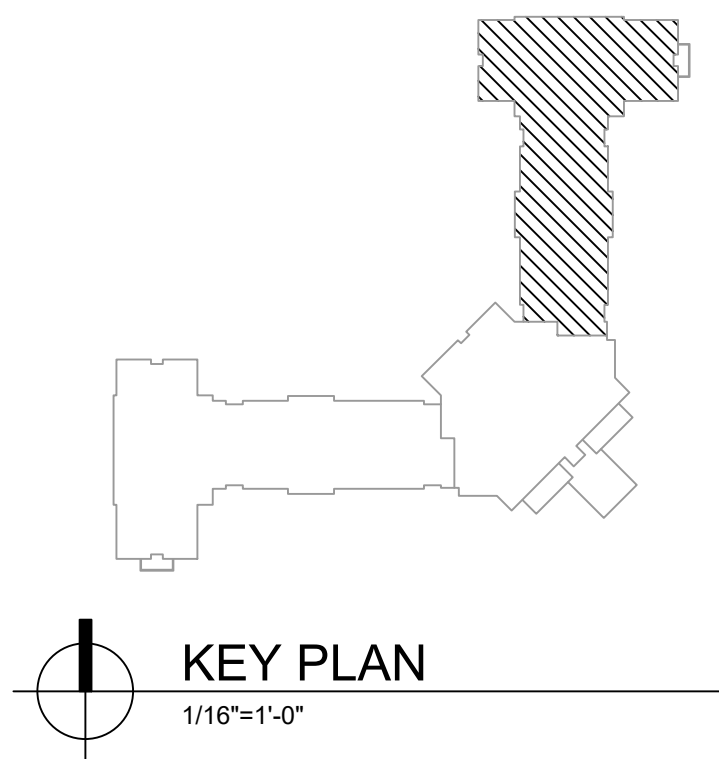


GENERAL NOTES:

1. PROVIDE UL APPROVED FIRE DAMPERS IN DUCT PENETRATIONS OF RATED WALLS & CEILINGS ASSEMBLIES WITH ACCESS DOORS. REFER TO ARCHITECTURAL DWGS. FOR RATED WALLS.
2. RUN CONDENSATE DRAIN WITH TRAP FROM AC UNIT TO FLOOR DRAIN, INDIRECT CONNECTION.
3. ALL EXHAUST OR VENT OPENINGS SHALL BE A MINIMUM OF 10'-0" AWAY FROM OUTSIDE AIR INTAKE.
4. COORDINATE LOCATION OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH LIGHTING AND CEILING PATTERN.

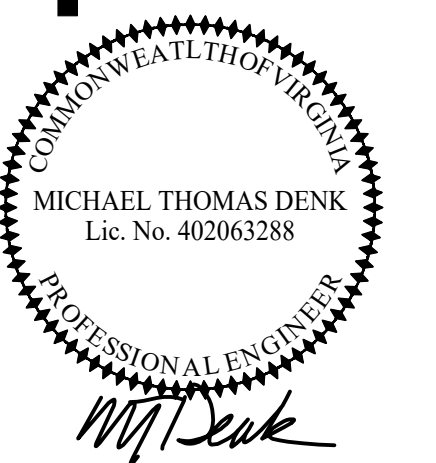
CODED NOTES:

- ① COMBUSTION AND FLUE VENT PIPES, FOR SIZED REFER TO EQUIPMENT SCHEDULE AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. RUN PIPING IN ATTIC SPACE.
- ② SMOKE DETECTOR IN RETURN AIR DUCT TO UNITS F-3 AND F-4. THIS ITEM FURNISHED AND INSTALL BY ELECTRICAL CONTRACTOR.
- ③ PVC FLUE VENT AND COMBUSTION AIR INTAKE PIPES. SEE EQUIPMENT SCHEDULE FOR SIZES. CONNECT TO CONCENTRIC KIT BELOW ROOF AND RUNN PIPING UP THROUGH ROOF. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
- ④ RUN REFRIGERANT PIPING BETWEEN CONDENSING UNITS AND INDOOR AC UNITS PER MANUFACTURER'S RECOMMENDATIONS. FIELD VERIFY EXACT ROUTING OF PIPING WITH ARCHITECT PRIOR TO INSTALLATION. SEE EQUIPMENT SCHEDULE FOR PIPE SIZES.
- ⑤ MOTOR OPERATED OUTSIDE AIR INTAKE DAMPER.
- ⑥ 12/10 EXHAUST AIR DUCT UP TO ROOF EXHAUST FAN EF-1. MAKE TRANSITION AS REQUIRED AND PROVIDE FD IN DUCT AT CEILING PENETRATION.
- ⑦ 16/10 EXHAUST AIR DUCT UP TO ROOF EXHAUST FAN EF-2. MAKE TRANSITION AS REQUIRED AND PROVIDE FD IN DUCT AT CEILING PENETRATION.
- ⑧ 30/12 RA INLET WITH WIREMESH.
- ⑨ 28/12 RA INLET WITH WIREMESH.
- ⑩ RUN EXHAUST DUCTWORK IN DROPPED CEILING.
- ⑪ 24/16 OA INTAKE LOUVER, 800 CFM.
- ⑫ RUN 6" EXHAUST DUCT UP TO ATTIC SPACE AND OPEN-ENDED WITH WIREMESH.



KEY PLAN
1/16"=1'-0"

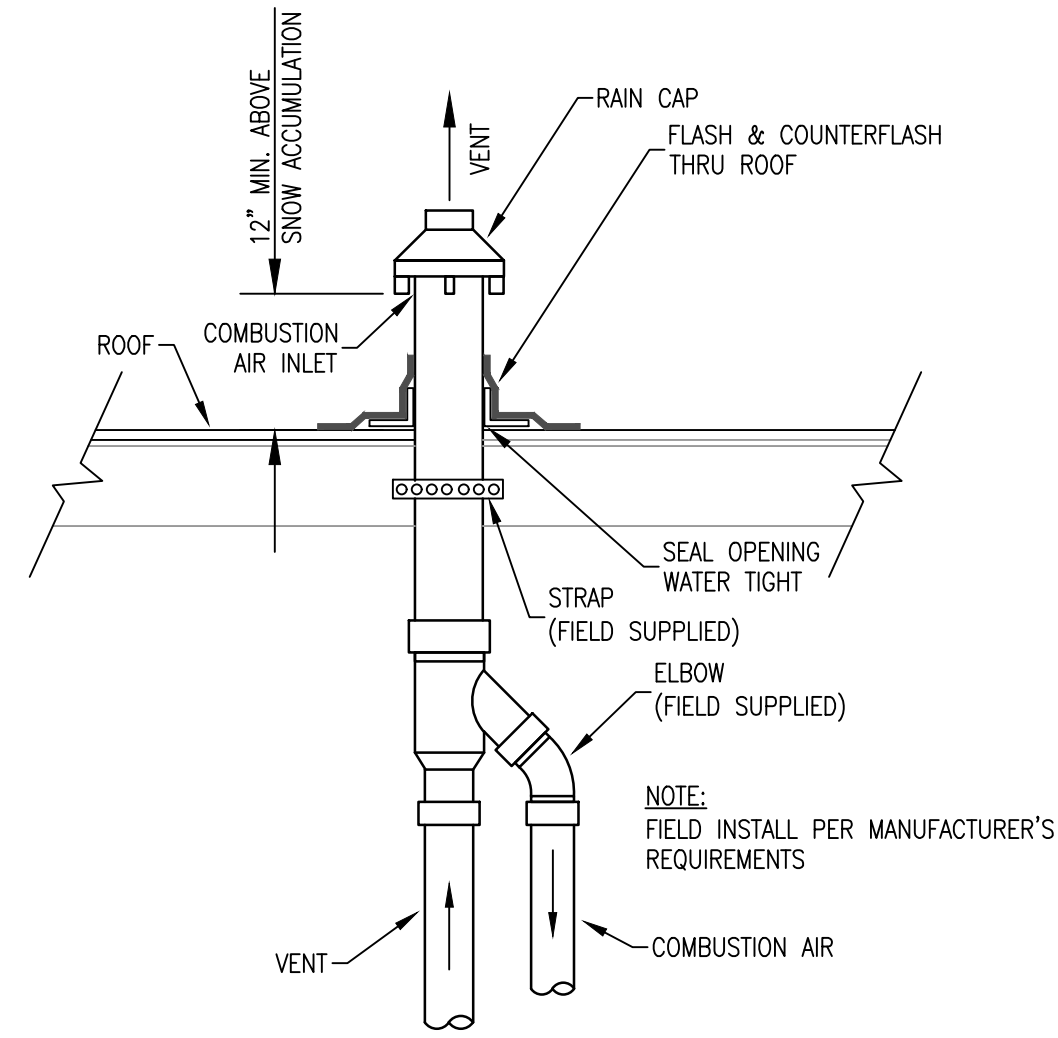
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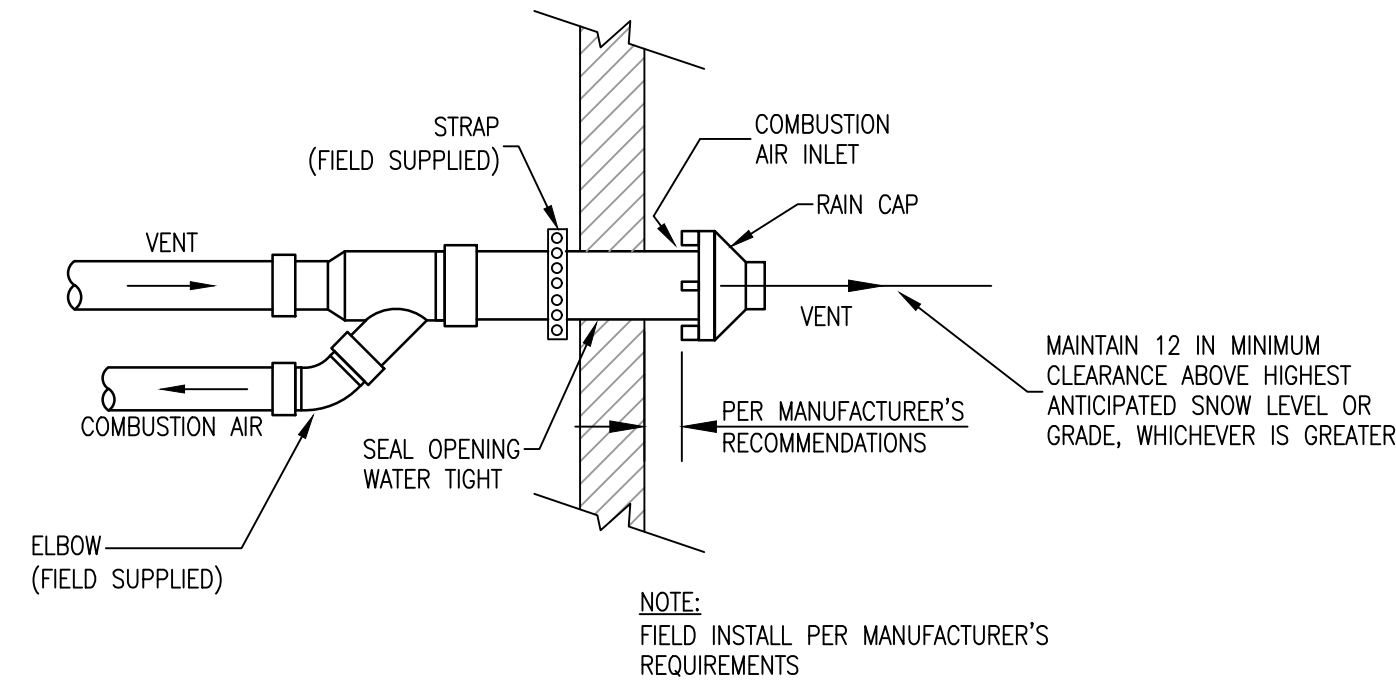
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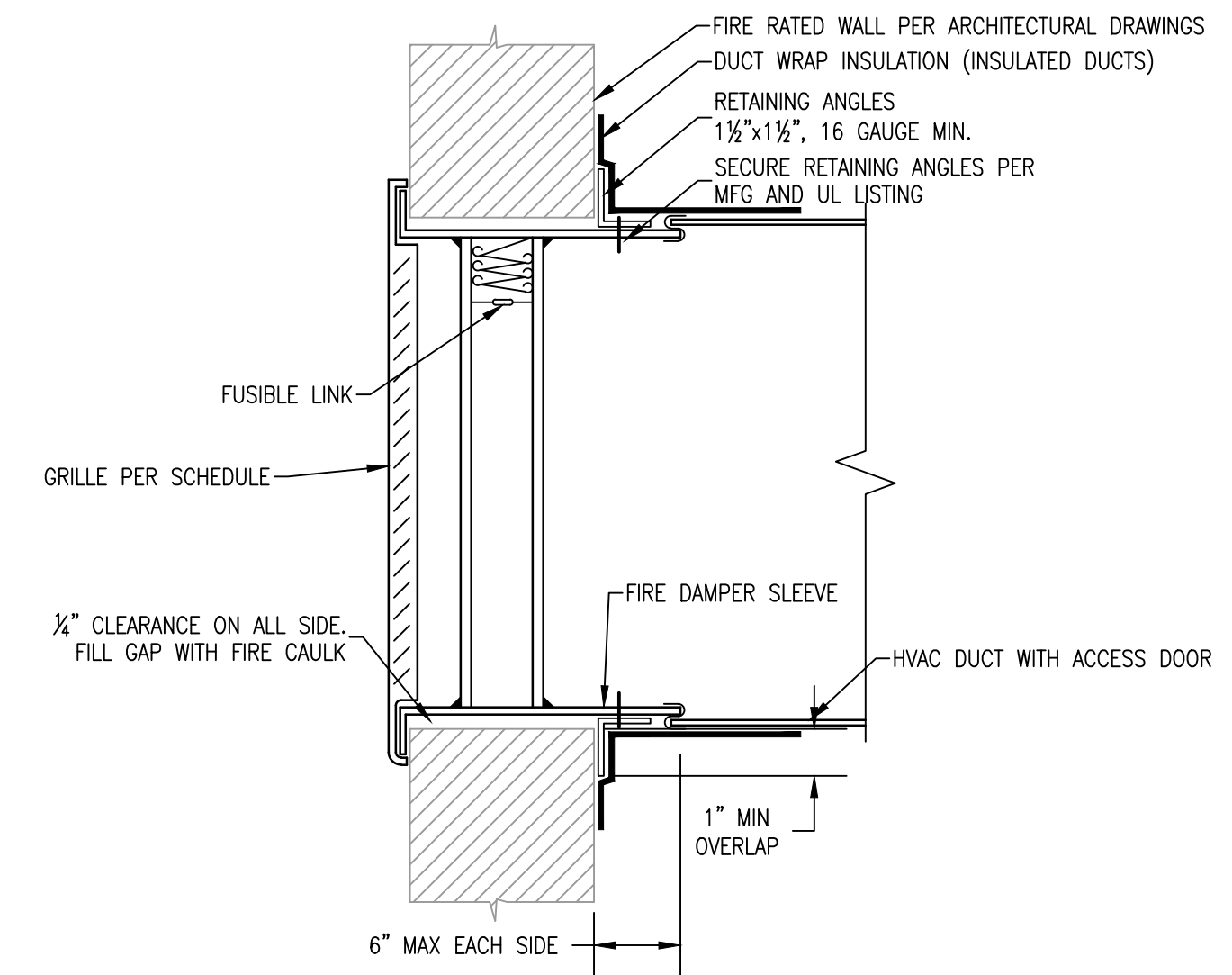
M1.3



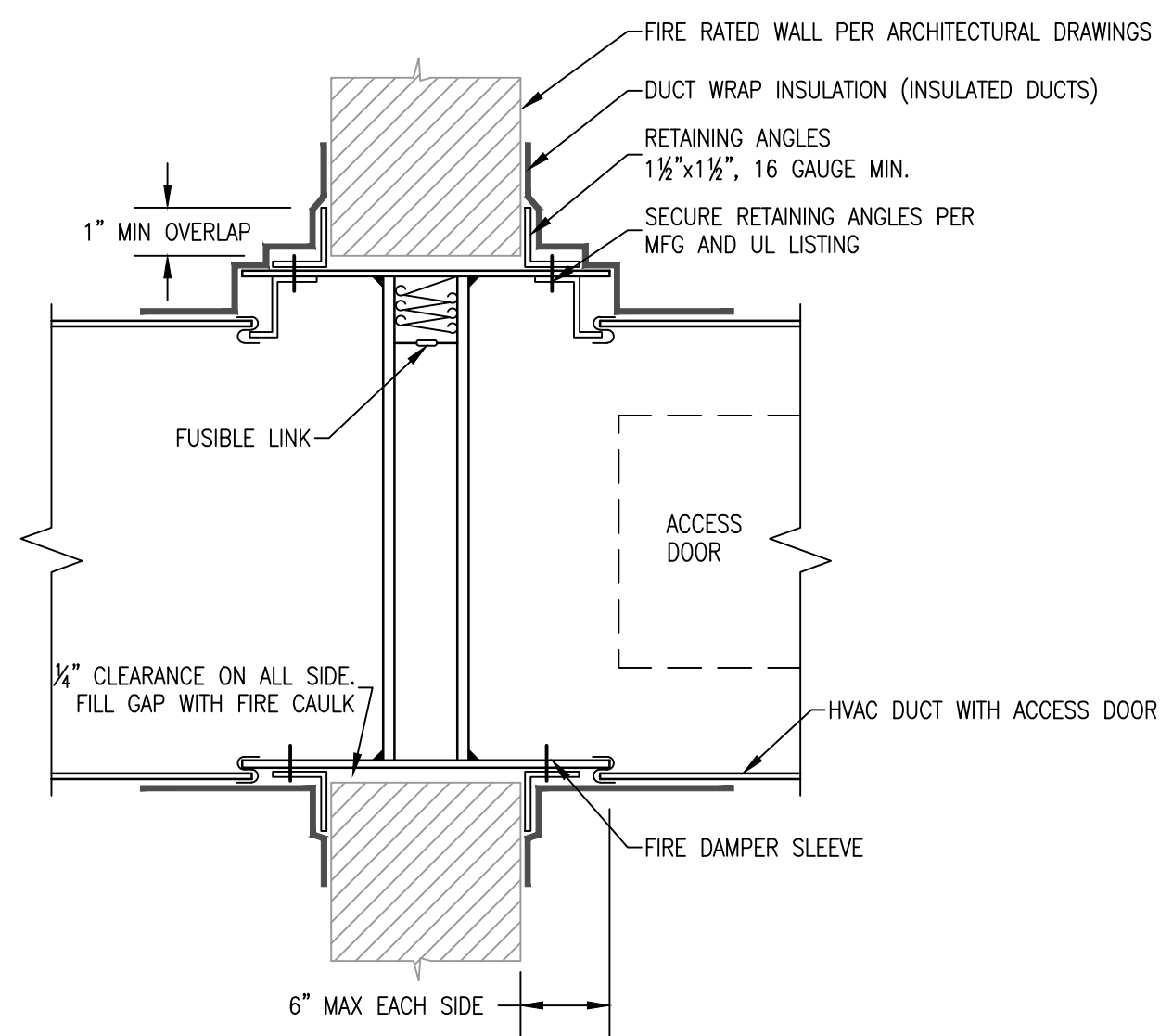
1 CONCENTRIC VENTING THROUGH ROOF - DETAIL
Scale: NTS



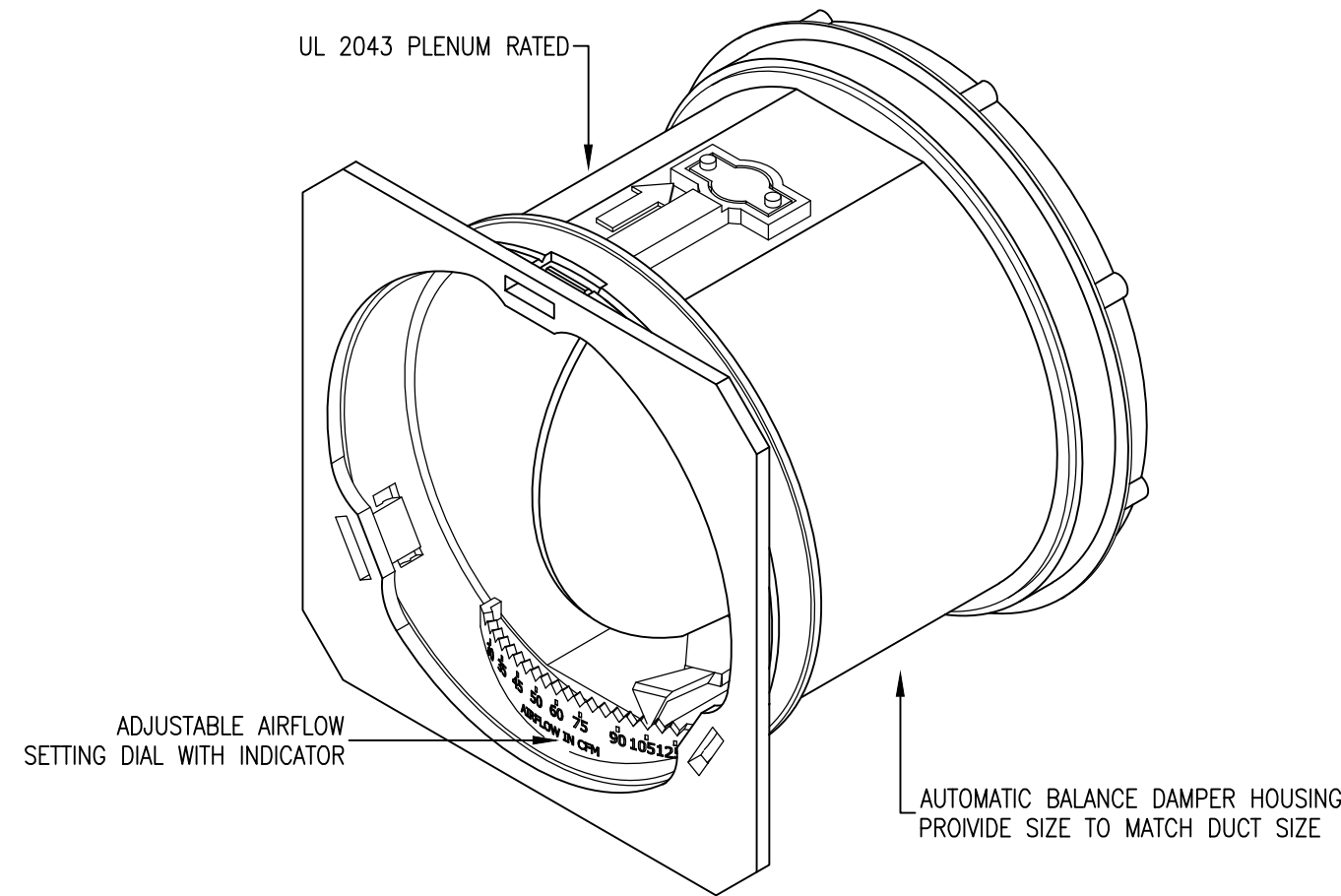
2 CONCENTRIC VENTING THROUGH WALL - DETAIL
Scale: NTS



3 FIRE DAMPER WITH GRILLE (VERTICAL MOUNTING)
Scale: NTS

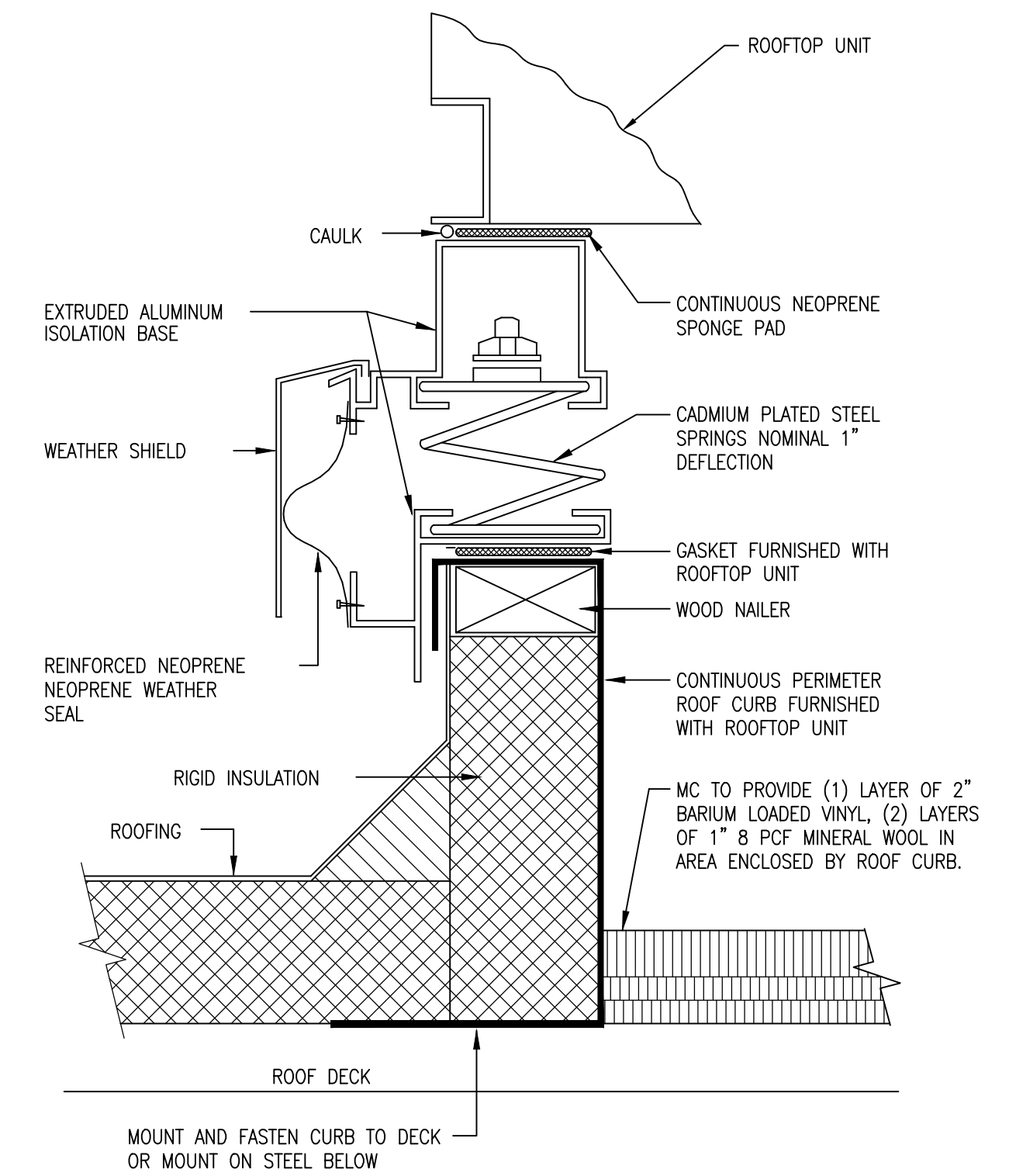


4 FIRE DAMPER VERTICAL MOUNTING
Scale: NTS

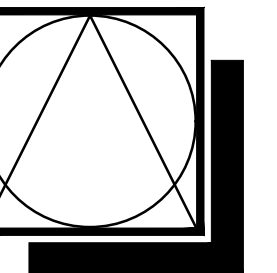


5 AUTOMATIC BALANCE DAMPER DETAIL
Scale: NTS

- NOTES:
1. GREENHECK ABD OR EQUIVARIANT
 2. PRESSURE RANGE 0.2in. wg - 2in. wg
 3. ADJUSTABLE AIR FLOW RANGE: 25 CFM-425 CFM
 4. UL 2043 CLASSIFIED
- PROVIDE AUTOMATIC BALANCE DAMPER (ABD) WHERE INDICATED ON DRAWINGS, ABD SHALL HAVE AN ADJUSTABLE AIR FLOW SETTING TO MAINTAIN THE REQUIRED AIRFLOW FROM THE MINIMUM TO MAXIMUM STATIC PRESSURE RANGE.



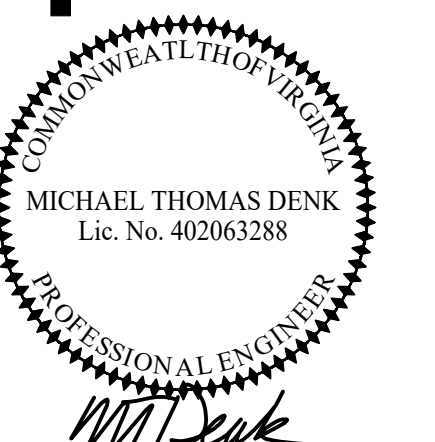
6 ROOFTOP AIR CONDITIONING UNIT MOUNTING DETAIL
Scale: None



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DATE:
PERMIT SET:
01/15/25

NEW 90 BED SKILLED NURSING FACILITY
SMITH MOUNTAIN LAKE HEALTH & REHAB CENTER
STATE RTE 616
MONETA, FRANKLIN COUNTY, VIRGINIA



MT Denk

DSCA PROJECT NO.
23046

M5.1

MAINTENANCE INFORMATION AND SYSTEM COMMISSIONING

GENERAL

THIS SECTION COVERS THE PROVISION OF MAINTENANCE INFORMATION AND THE COMMISSIONING OF, AND THE FUNCTIONAL TESTING REQUIREMENTS FOR, BUILDING SYSTEMS. MECHANICAL CONTRACTOR SHALL PROVIDE COMMISSIONING SERVICES IN ACCORDANCE WITH IECC SECTION C408.

BUILDING OPERATIONS AND MAINTENANCE INFORMATION

THE BUILDING OPERATIONS AND MAINTENANCE DOCUMENTS SHALL BE PROVIDED TO THE OWNER AND SHALL CONSIST OF MANUFACTURERS' INFORMATION, SPECIFICATIONS AND RECOMMENDATIONS, PROGRAMMING PROCEDURES AND DATA POINTS, NARRATIVES, AND OTHER MEANS OF ILLUSTRATING TO THE OWNER HOW THE BUILDING, EQUIPMENT AND SYSTEMS ARE INTENDED TO BE INSTALLED, MAINTAINED AND OPERATED. REQUIRED REGULAR MAINTENANCE ACTIONS FOR EQUIPMENT AND SYSTEMS SHALL BE CLEARLY STATED ON A READILY VISIBLE LABEL. THE LABEL SHALL INCLUDE THE TITLE OR PUBLICATION NUMBER FOR THE OPERATION AND MAINTENANCE MANUAL FOR THAT PARTICULAR MODEL AND TYPE OF PRODUCT.

Mechanical systems and service water-heating systems commissioning and completion requirements

Prior to the final mechanical and plumbing inspections, the approved agency shall provide evidence of mechanical systems commissioning and completion in accordance with the provisions of this section.

Copies of all documentation shall be given to the owner or owner's authorized agent and made available to the code official upon request.

Exceptions: The following systems are exempt:

1. Systems that serve individual dwelling units and sleeping units.

Commissioning plan

A commissioning plan shall be developed by the approved agency and shall include the following items:

1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.
2. A listing of the specific equipment, appliances or systems to be tested and a description of the tests to be performed.
3. Functions to be tested including, but not limited to, calibrations and economizer controls.
4. Conditions under which the test will be performed. Testing shall affirm winter and summer design conditions and full outside air conditions.
5. Measurable criteria for performance.

Systems adjusting and balancing

HVAC systems shall be balanced in accordance with generally accepted engineering standards. Air and water flow rates shall be measured and adjusted to deliver final flow rates within the tolerances provided in the product specifications. Test and balance activities shall include air system and hydronic system balancing.

Air systems balancing

Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of Chapter 6 of the International Mechanical Code. Discharge dampers used for air-system balancing are prohibited on constant-volume fans and variable volume fans with motors 10 hp and larger. Air systems shall be balanced in a manner to first minimize throttling losses then, for fans with system power of greater than 1 hp, fan speed shall be adjusted to meet design flow conditions.

Exception: Fans with fan motors of 1 hp or less are not required to be provided with a means for air balancing.

Hydronic systems balancing

Individual hydronic heating and cooling coils shall be equipped with means for balancing and measuring flow. Hydronic systems shall be proportionately balanced in a manner to first minimize throttling losses, then the pump impeller shall be trimmed, or pump speed shall be adjusted to meet design flow conditions. Each hydronic system shall have either the capability to measure pressure across the pump, or test ports at each side of each pump.

Exception: The following equipment is not required to be equipped with a means for balancing or measuring flow:

1. Pumps with pump motors of 5 hp (3.7 kW) or less.
2. Where throttling results in not greater than 5 percent of the nameplate horsepower draw above that required if the impeller were trimmed.

Functional performance testing

Functional performance testing shall be provided as indicated below.

Equipment

Equipment functional performance testing shall demonstrate the installation and operation of components, systems and system-to-system interfacing relationships in accordance with approved plans and specifications such that operation, function and maintenance serviceability for each of the commissioned systems are confirmed. Testing shall include all modes and sequence of operation, including under full-load, part-load and the following emergency conditions:

1. All modes as described in the sequence of operation.
2. Redundant or automatic back-up mode.
3. Performance of alarms.
4. Mode of operation upon a loss of power and restoration of power.
5. Exception: Unitary or packaged HVAC equipment that does not require supply air economizers.

Controls

HVAC and service water-heating control systems shall be tested to document that control devices, components, equipment and systems are calibrated and adjusted and operate in accordance with approved plans and specifications. Sequences of operation shall be functionally tested to document they operate in accordance with approved plans and specifications.

Economizers

Air economizers shall undergo a functional test to determine that they operate in accordance with the manufacturer's specifications.

Preliminary commissioning report

A preliminary report of commissioning test procedures and results shall be completed and certified by the approved agency and provided to the building owner or owner's authorized agent. The report shall be organized with mechanical and service hot water findings in separate sections to allow independent review. The report shall be identified as "Preliminary Commissioning Report," shall include the completed Commissioning Compliance Checklist, and shall identify:

1. Itemization of deficiencies found during testing required by this section that have not been corrected at the time of report preparation.
2. Deferred tests that cannot be performed at the time of report preparation because of climatic conditions.
3. Climatic conditions required for performance of the deferred tests.
4. Results of functional performance tests.
5. Functional performance test procedures used during the commissioning process, including measurable criteria for test acceptance.

Acceptance of report

Buildings, or portions thereof, shall not be considered as acceptable for a final inspection pursuant to IECC Section C105.2.6 until the code official has received the Preliminary Commissioning Report from the building owner or owner's authorized agent.

Copy of report

The code official shall be permitted to require that a copy of the Preliminary Commissioning Report be made available for review by the code official.

COMMISSIONING COMPLIANCE CHECKLIST

PROJECT INFORMATION: _____ PROJECT NAME: _____

PROJECT ADDRESS: _____

COMMISSIONING AUTHORITY: _____

COMMISSIONING PLAN (SECTION C408.2.1)

Commissioning plan was used during construction and includes all items required by Section C408.2.1

Systems Adjusting and Balancing has been completed.

HVAC Equipment Functional Testign has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _____

Economizer Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _____

Lighting Controls Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _____

Service Water Heating Systems Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _____

Manual, record documents and training have been completed or scheduled.

Preliminary Commissioning Report submitted to owner and includes all items required by Section C408.2.4

I hereby certify that the commissioning provider has provided me with evidence of mechanical, service water heating and lighting systems commissioning in accordance with the 2021 IECC.

Documentation requirements

The documents described in this section be provided to the building owner or owner's authorized agent within 90 days of the date of receipt of the certificate of occupancy.

System balancing report

A written report describing the activities and measurements completed in accordance with system adjusting and balancing noted above.

Final commissioning report

A report of test procedures and results identified as "Final Commissioning Report" shall be delivered to the building owner or owner's authorized agent. The report shall be organized with mechanical system and service hot water system findings in separate sections to allow independent review. The report shall include the following:

1. Results of functional performance tests.
2. Disposition of deficiencies found during testing, including details of corrective measures used or proposed.
3. Functional performance test procedures used during the commissioning process, including measurable criteria for test acceptance, provided herein for repeatability.
Exception: Deferred tests that cannot be performed at the time of report preparation due to climatic conditions.

Functional testing of lighting controls

Automatic lighting controls required by this code shall comply with this section.

Functional testing

Prior to passing final inspection, the approved agency shall provide evidence that the lighting control systems have been tested to ensure that control hardware and software are calibrated, adjusted, programmed and in proper working condition in accordance with the construction documents and manufacturer's instructions. Functional testing shall be in accordance with the applicable control type.

Occupant sensor controls

Where occupant sensor controls are provided, the following procedures shall be performed:

1. Certify that the occupant sensor has been located and aimed in accordance with manufacturer recommendations.
2. For projects with seven or fewer occupant sensors, each sensor shall be tested.
3. For projects with more than seven occupant sensors, testing shall be done for each unique combination of sensor type and space geometry. Where multiples of each unique combination of sensor type and space geometry are provided, not less than 10 percent and in no case fewer than one of each combination shall be tested unless the code official or design professional requires a higher percentage to be tested. Where 30 percent or more of the tested controls fail, all remaining combinations shall be tested. For occupant sensor controls to be tested, verify the following:
 - a. Where occupant sensor controls include status indicators, verify correct operation.
 - b. The controlled lights turn off or down to the permitted level within the required time.
 - c. For auto-on occupant sensor controls, the lights turn on to the permitted level when an occupant enters the space.
 - d. For manual-on occupant sensor controls, the lights turn on only when manually activated.
 - e. The lights are not incorrectly turned on by movement in adjacent areas or by HVAC operation.

Time-switch controls

Where time-switch controls are provided, the following procedures shall be performed:

1. Confirm that the time-switch control is programmed with accurate weekday, weekend and holiday schedules.
2. Provide documentation to the owner of time-switch controls programming including weekday, weekend, holiday schedules, and set-up and preference program settings.
3. Verify the correct time and date in the time switch.
4. Verify that any battery back-up is installed and energized.
5. Verify that the override time limit is set to not more than 2 hours.
6. Simulate occupied condition. Verify and document the following:
 - a. All lights can be turned on and off by their respective area control switch.
 - b. The switch only operates lighting in the enclosed space in which the switch is located.
7. Simulate unoccupied condition. Verify and document the following:
 - a. Nonexempt lighting turns off.
 - b. Manual override switch allows only the lights in the enclosed space where the override switch is located to turn on or remain on until the next scheduled shutoff occurs.
8. Additional testing as specified by the registered design professional.

Daylight responsive controls

Where daylight responsive controls are provided, the following shall be verified:

1. Control devices have been properly located, field calibrated and set for accurate setpoints and threshold light levels.
2. Daylight controlled lighting loads adjust to light level setpoints in response to available daylight.
3. The calibration adjustment equipment is located for ready access only by authorized personnel.

Documentation requirements

The documents described in this section be provided to the building owner or owner's authorized agent within 90 days of the date of receipt of the certificate of occupancy.

Drawings

Construction documents shall include the location and catalogue number of each piece of equipment.

Manuals

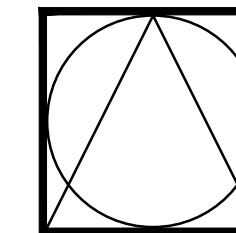
An operating and maintenance manual shall be provided and include the following:

1. Name and address of not less than one service agency for installed equipment.
2. A narrative of how each system is intended to operate, including recommended setpoints.
3. Submittal data indicating all selected options for each piece of lighting equipment and lighting controls.
4. Operation and maintenance manuals for each piece of lighting equipment. Required routine maintenance actions, cleaning and recommended relamping shall be clearly identified.
5. A schedule for inspecting and recalibrating all lighting controls.

Report

A report of test results shall be provided and include the following:

1. Results of functional performance tests.
2. Disposition of deficiencies found during testing, including details of corrective measures used or proposed.



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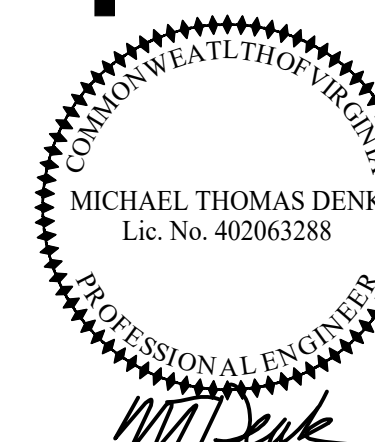
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NEW 90 BED SKILLED NURSING FACILITY
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MONETA, FRANKLIN COUNTY, VIRGINIA



Michael Thomas Denk
Lic. No. 402063288

DSCA PROJECT NO.
23.046

