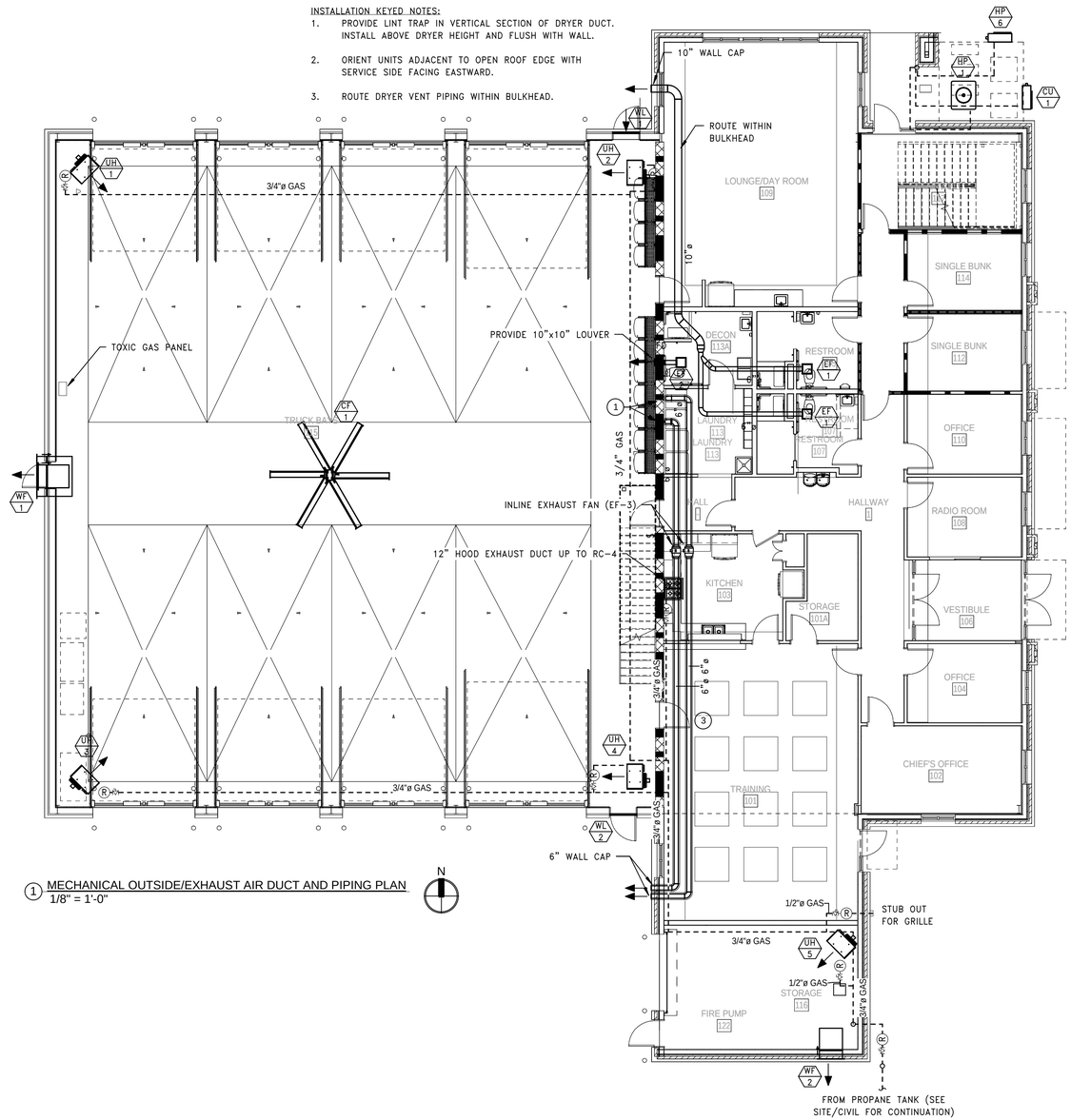
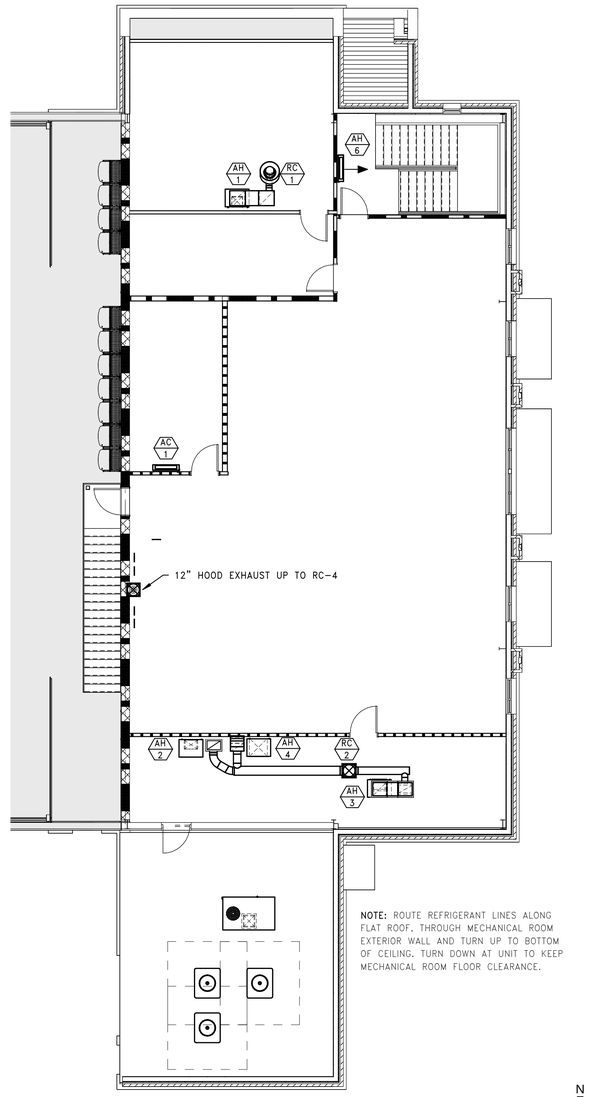
INSTALLATION KEYED NOTES:

1. PROVIDE LINT TRAP IN VERTICAL SECTION OF DRYER DUCT. INSTALL ABOVE DRYER HEIGHT AND FLUSH WITH WALL.
2. ORIENT UNITS ADJACENT TO OPEN ROOF EDGE WITH SERVICE SIDE FACING EASTWARD.
3. ROUTE DRYER VENT PIPING WITHIN BULKHEAD.



1 MECHANICAL OUTSIDE/EXHAUST AIR DUCT AND PIPING PLAN
1/8" = 1'-0"



2 MECHANICAL OUTSIDE/EXHAUST AIR DUCT AND PIPING PLAN - 2ND FLOOR (BASE BID)
1/8" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 31466 ENGINEER JAMES D. HAM 4/30/2025

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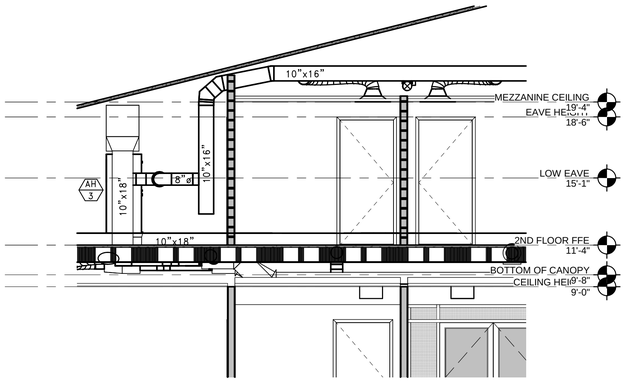
MECHANICAL OUTSIDE/EXHAUST AIR AND PIPING PLAN

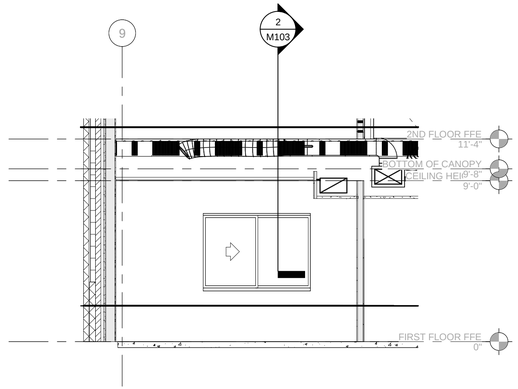
M102

INSTALLATION KEYED NOTES:

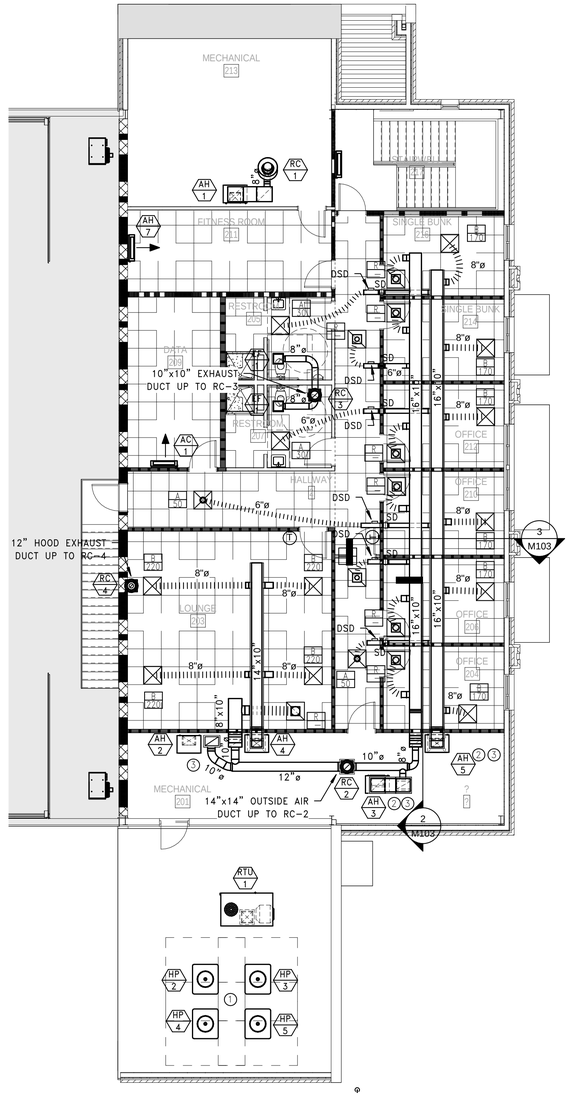
1. PROVIDE REFRIGERANT LINE TO 2ND FLOOR MECHANICAL ROOM FOR FUTURE UNIT IN FITNESS ROOM.
2. PROVIDE DUCT SMOKE DETECTOR ON RETURN DUCT FOR AH-3 AND AH-5.
3. ROUTE CONDENSATE TO FLAT ROOF.



2 MECHANICAL SECTION
1/4" = 1'-0"



3 MECHANICAL SECTION 2
1/4" = 1'-0"



1 MECHANICAL PLAN - MEZZANINE (ALTERNATE)
1/8" = 1'-0"

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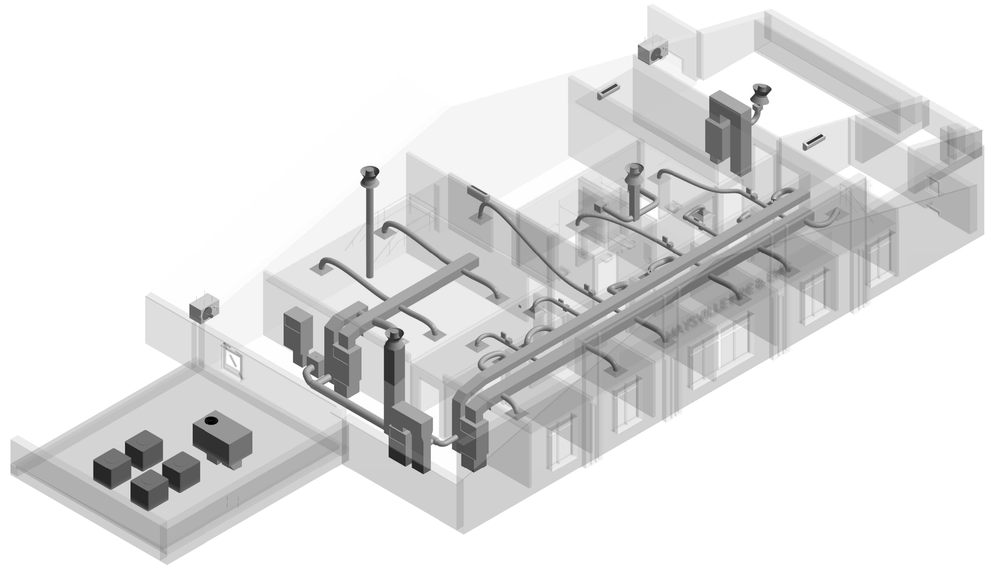
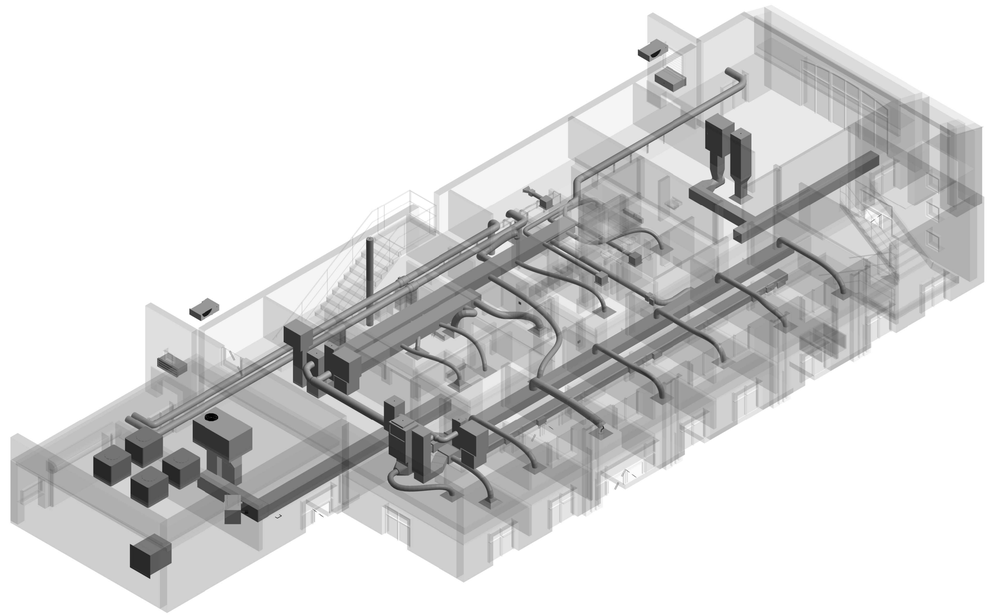
MECHANICAL OUTSIDE/EXHAUST AIR AND PIPING PLAN - MEZZANINE (ALTERNATE)

M103



2 MECHANICAL 2ND FLOOR 3D



1 MECHANICAL 1ST FLOOR 3D

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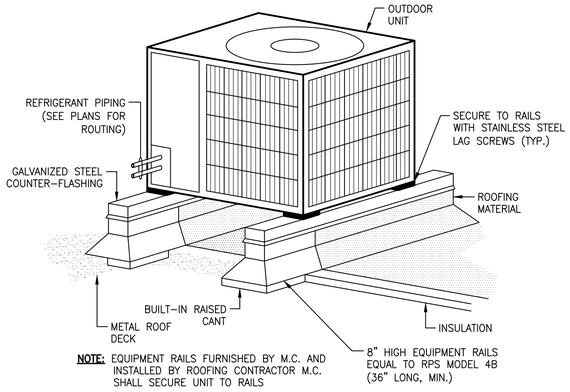
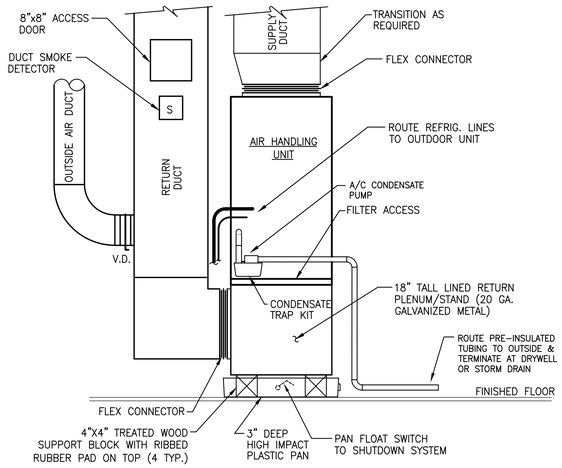
MECHANICAL 3D SECTION VIEWS

M104



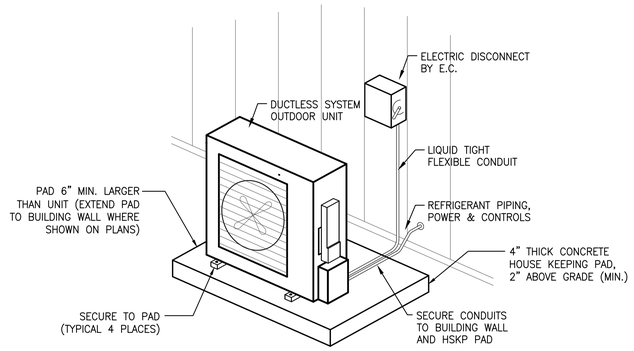
NOTE: EQUIPMENT RAILS FURNISHED BY M.C. AND INSTALLED BY ROOFING CONTRACTOR M.C. SHALL SECURE UNIT TO RAILS

1 ROOF MOUNTED HVAC UNIT DETAIL
SCALE: N.T.S.



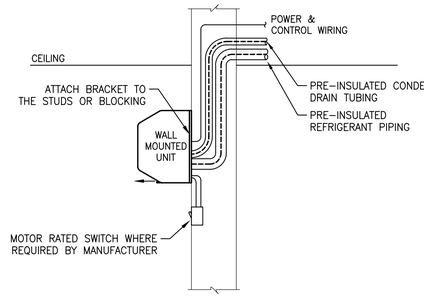
NOTES:
1. INSTALL A/C CONDENSATE PUMP IN DRAIN PAN OR PROVIDE SEPARATE PAN.
2. E.C. SHALL PROVIDE MOTOR RATED SWITCH ABOVE LAY-IN CEILING WITHIN 3' OF PUMP. M.C. SHALL COORDINATE EXACT LOCATIONS.

2 VERTICAL MOUNTED AIR HANDLING UNIT DETAIL
SCALE: N.T.S.



NOTE: MAINTAIN EQUIPMENT MANUFACTURER'S RECOMMENDED CLEARANCES FOR AIR FLOW AND SERVICE.

3 PAD MOUNTED CONDENSING UNIT DETAIL (DUCTLESS UNIT)
SCALE: N.T.S.



4 WALL MOUNTED UNIT (DUCTLESS UNIT) DETAIL
SCALE: N.T.S.

NOTES:
1. CONDENSATE TRAP KIT SHALL BE EQUAL TO EZ-TRAP EZT-113B.
2. PROVIDE SEALANT IF REQUIRED BY MANUFACTURER AROUND DRAIN LINES PASSING THROUGH PANEL.
3. PROVIDE WITH UL 508 WATER-LEVEL DETECTION DEVICE IN PRIMARY DRAIN PAN TO SHUT OFF EQUIPMENT IN THE EVEN DRAIN PAN BECOMES RESTRICTED.
4. INSTALL A/C CONDENSATE PUMP IN DRAIN PAN OR PROVIDE SEPARATE PAN.
5. E.C. SHALL PROVIDE MOTOR RATED SWITCH ABOVE LAY-IN CEILING WITHIN 3' OF PUMP. M.C. SHALL COORDINATE EXACT LOCATIONS.

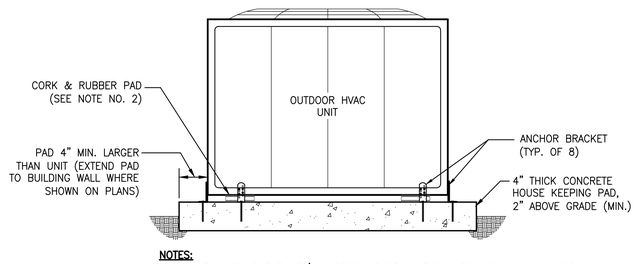
5 VERTICAL MOUNTED AIR HANDLING (AH-4) ON MEZZANINE UNIT DETAIL
SCALE: N.T.S.

6 CIRCULATION FAN DETAIL
SCALE: N.T.S.

NOTES:
1. SECURE ENDS OF FLEX WITH NYLON BANDS AND 3" WIDE METALIZED DUCT TAPE.
2. INSULATE & SEAL ALL GRILLE & DIFFUSER NECKS TO MAINTAIN VAPOR BARRIER AND ELIMINATE CONDENSATE.

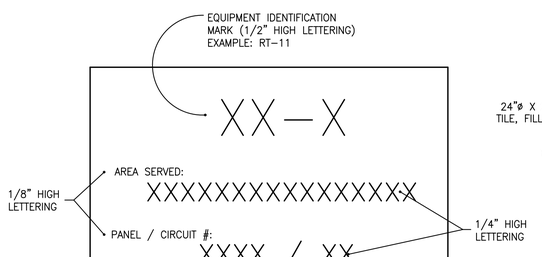
7 AIR DISTRIBUTION DETAIL
SCALE: N.T.S.

8 TRAPEZE HANGER DETAIL
SCALE: N.T.S.



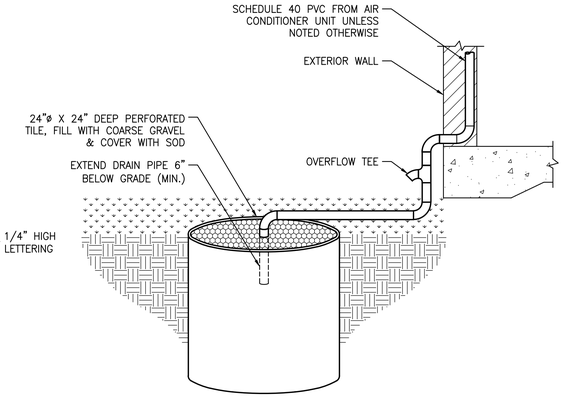
NOTES:
1. MAINTAIN EQUIPMENT MFG'S. RECOMMENDED CLEARANCES AND A MINIMUM OF 6" BEYOND SPLASH LINE OF ROOF OVERHANG.
2. CORK & RUBBER PADS ARE NOT REQUIRED WHEN UNITS HAVE INTEGRAL PLASTIC BASES.
3. PROVIDE ANCHOR KIT WITH 14 GAUGE/G-90 ASTM GALVANIZED STEEL SLOTTED "L" BRACKET. ANCHOR BRACKET TO CONCRETE WITH 1/4" DIAMETER ITW BUILDEX (OR EQUAL) CARBON STEEL TAPCON EMBEDDED 1 3/4" MINIMUM INTO CONCRETE WITH 2 1/2" MINIMUM EDGE DISTANCE. PROVIDE FOUR SHEET METAL SCREWS FOR UNIT TO BRACKET CONNECTION. SCREWS SHALL BE #10 (16 MIN THREADS PER INCH) ASTM F593 410 STAINLESS STEEL, OR EQUIVALENT. UTILIZE TWO CLIPS ON EACH SIDE OF THE UNIT, 3" MAXIMUM FROM THE CORNERS.

9 OUTDOOR HVAC UNIT DETAIL
SCALE: N.T.S.

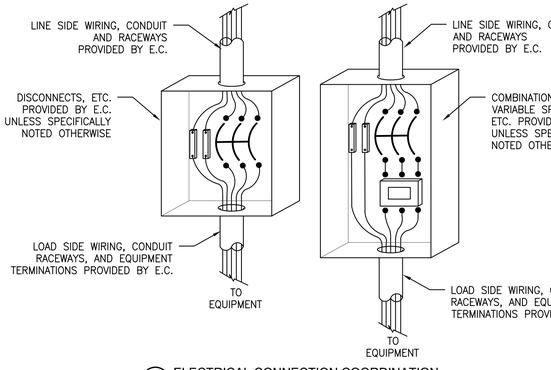


NOTES:
1. PROVIDE LABEL FOR ALL NEW & EXISTING ROOFTOP UNITS, COMPUTER ROOM UNITS AND CONDENSING UNITS.
2. LABELS SHALL BE 3"x5" PHENOLIC ENGRAVING STOCK WITH WHITE SURFACE AND BLACK LETTERING.

10 EQUIPMENT IDENTIFICATION LABELS DETAIL
SCALE: N.T.S.



11 DRYWELL (FRENCH DRAIN) DETAIL
SCALE: N.T.S.



12 ELECTRICAL CONNECTION COORDINATION
SCALE: N.T.S.

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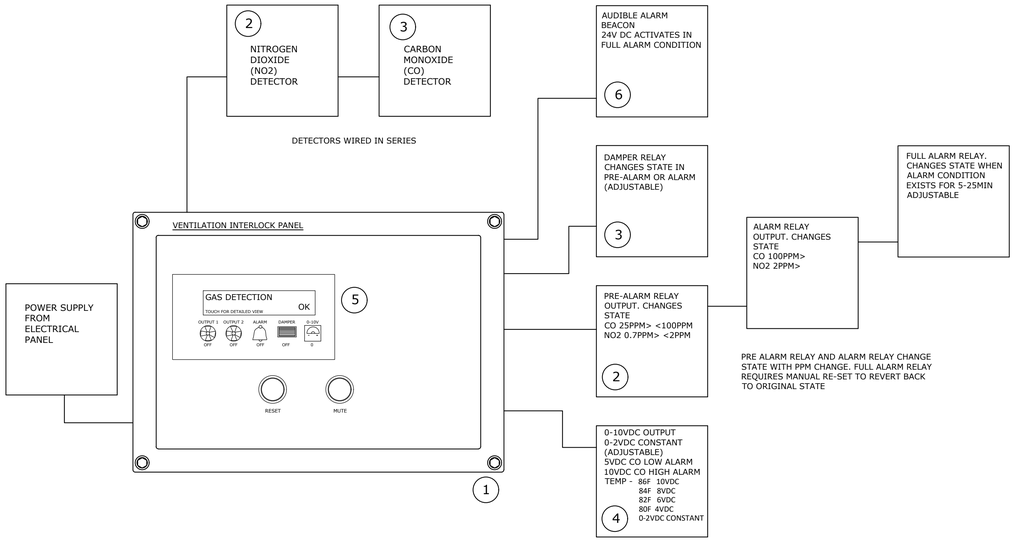
M2.01



1. VENTILATION CONTROL PANEL MODULATES FANS ON/OFF OR SPEED DEPENDING ON CONCENTRATIONS OF CO (CARBON MONOXIDE) AND NO2 (NITROGEN DIOXIDE) WITHIN THE STRUCTURE.
2. UNIT PROVIDES RELAY OUTPUTS FOR PRE-ALAM, ALARM AND FULL ALARM CONDITIONS. VOLT FREE NON LATCHING MAX 6A. OUTPUT 1 CHANGES STATE WHEN DETECTORS REACH PRE-ALARM CO >25PPM <100PPM NO2 >0.7PPM <2PPM OUTPUT 2 CHANGES STATE WHEN DETECTORS REACH ALARM CO 100>PPM NO2 >2PPM. FULL ALARM CHANGES STATE AFTER HIGH ALARM CONTINUES 1-5 MINUTES ADJUSTABLE.
3. DAMPER RELAY CHANGES STATE WITH PRE-ALARM OR ALARM OUTPUTS ADJUSTABLE. VOLT FREE NON LATCHING MAX 6A.
4. 0-10VDC OUTPUT. 0-2V CONSTANT ADJUSTABLE. 5V OUT ON LOW ALARM, AND 10V HIGH ALARM .
5. PANEL PROVIDES COLOR DISPLAY FOR ALARM CONDITIONS. GREEN-GOOD, YELLOW-PRE-ALARM, ORANGE-ALARM, AND RED-FULL ALARM. TOUCH SCREEN MENU PROVIDES ACCESS TO SETTINGS, SENSOR TYPE AND CONDITION. FAN AND RELAY STATE SHOWN VIA IMAGES.
6. AUDIBLE ALARM BEACON. ACTIVATES IN FULL ALARM CONDITION. LOCATE ADJACENT TO PANEL.

STAND-ALONE TOXIC AND COMBUSTIBLE GAS DETECTOR

1. GAS DETECTOR CONTROL PANEL EQUAL TO CGS PARKSAFE WITH REMOTE CGS PARKSAFE DETECTORS.
2. PROVIDING CONTINUOUS MONITORING IN AMBIENT AIR AND TWO FACTORY SET ALARM LEVELS AND OUTPUTS TO CONTROL EXHAUST FANS AND MOTORIZED DAMPERS.
3. CONTROL PANEL SHALL PROVIDE POWER TO REMOTE DETECTORS.
4. THE DETECTORS SHALL BE FACTORY CALIBRATED AND CERTIFIED TO THE TARGET GAS WITHOUT THE NEED FOR ON-SITE CALIBRATION OR PROGRAMMING.
5. THE DETECTOR SHALL PROVIDE A POWER, FAULT AND ALARM INDICATION LOCALLY.
6. THE DETECTORS SHALL BE CAPABLE OF OPERATING WITHIN A RELATIVE HUMIDITY RANGE OF 5-85% NON CONDENSING AND A TEMPERATURE RANGE OF -4 F TO 104 F.
7. THE CONTROL PANEL DISPLAY SHALL PROVIDE INDIVIDUAL DETECTOR PPM, ALARM LEVEL, FAULT, END OF LIFE AND SERVICE STATUS.
8. THE CONTROL PANEL SHALL PROVIDE ALARM RELAYS 6A MAX 250V AND 0-10V OUTPUT.
9. ALARM 1 - CO >25 PPM NO2 > 0.7 PPM
   ALARM 2 - CO >100 PPM NO2 > 2 PPM
10. CERTIFICATIONS: LISTED TO UL ICE 61010-1 AND CONFORMS TO UL2075.
11. AFTER INSTALLATION, TEST TO DEMONSTRATE OPERATION OF FUNCTION DESCRIBED ABOVE UNDER SEQUENCE OF OPERATION PER MANUFACTURERS INSTRUCTIONS.

1 CO & NO2 GAS DETECTION SYSTEM
SCALE: N.T.S.

SEQUENCE OF OPERATION

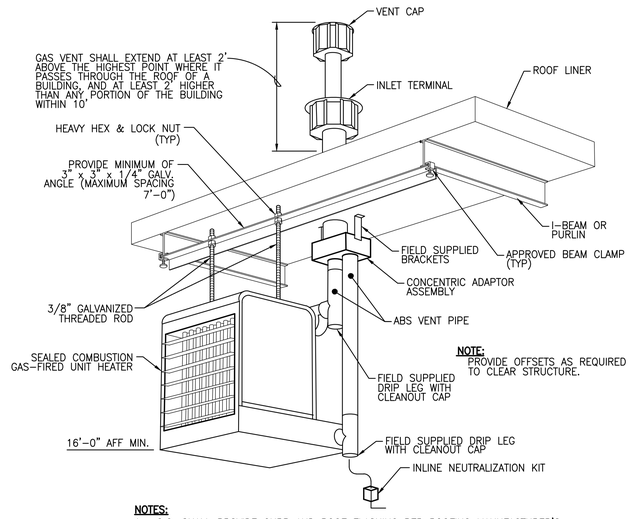
NORMAL — WHEN GASES REMAIN BELOW 25 PPM CO AND/OR 0.7 PPM NO2, 0-10V OUTPUT WILL SEND 0V OR 2V.

ALARM 1. — WHEN GASES ARE >25PPM CO AND/OR >0.7PPM NO2, 0-10V OUTPUT WILL SEND 5V TO THE VFD, AND OPENS MOTORIZED DAMPERS. WHEN LEVELS OF GAS DROPS BELOW ALARM 1 THRESHOLDS, CONTROL PANEL SIGNALS EF(S) TO STOP AND CLOSES MOTORIZED DAMPERS.

ALARM 2. — WHEN GASES ARE >100PPM CO AND/OR >2PMM NO2, 0-10V OUTPUT WILL SEND 10V TO EF(S) VFD AND DAMPER SHALL REMAIN OPEN. THE CONTROL PANEL SHALL INDICATE THE ALARM LEVEL WITH A VISUAL AND AUDIBLE ALARM.

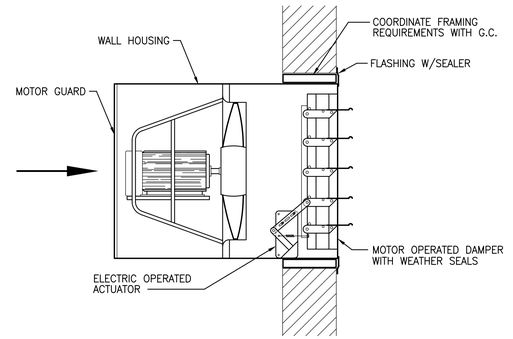
IF ALARM LEVEL 2 CONTINUES TO EXIST FOR A DESIRED AMOUNT OF TIME (5-25MIN ADJ.) THE CONTROL PANEL SHALL SIGNAL A REMOTE AUDIBLE AND VISUAL ALARM BEACON TO SOUND. THIS CONDITION REQUIRES A MANUAL RE-SET OF THE SYSTEM TO PLACE IT BACK INTO NORMAL OPERATION.

SENSOR LOCATION: CO - 60" AFF, NO2 - 48" AFF

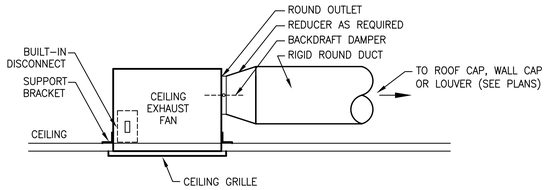


NOTES:
1. G.C. SHALL PROVIDE CURB AND ROOF FLASHING PER ROOFING MANUFACTURER'S INSTALLATION INSTRUCTIONS. M.C. SHALL ROUTE VENT PIPING PER UNIT HEATER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND NC GAS FUEL CODE.
2. PROVIDE FLEXIBLE GAS CONNECTION PER ASCE.
3. PROVIDE INLINE NEUTRALIZATION KIT AND DRAIN LINE TO NEAREST DRAIN LOCATION OR EXTERIOR SPACE.

2 SEALED COMBUSTION UNIT HEATER DETAIL
SCALE: N.T.S.

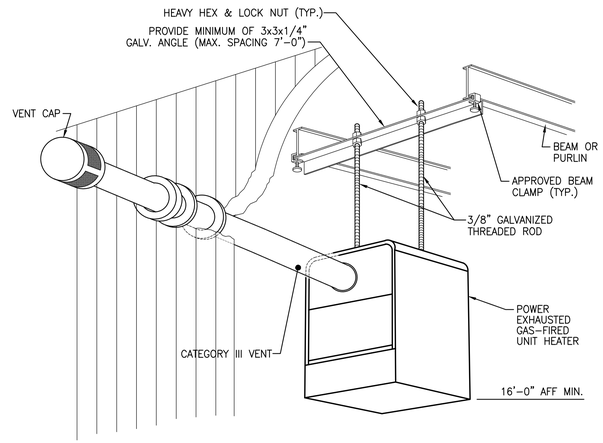


3 WALL PROPELLER FAN DETAIL
SCALE: N.T.S.



NOTE: E.C. SHALL PROVIDE GFCI BRANCH PROTECTED CIRCUIT WHEN LOCATED ABOVE TUB/SHOWER.

4 CEILING MOUNTED EXHAUST FAN DETAIL
SCALE: N.T.S.



NOTES:
1. G.C. SHALL PROVIDE FLASHING PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. M.C. SHALL ROUTE VENT PIPING PER UNIT HEATER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND N.C. FUEL GAS CODE.
2. THIS DETAIL APPLIES TO HEATER LOCATED IN STORAGE ROOM 116.

5 UNIT HEATER INSTALLATION WITH SIDE WALL VENTING DETAIL
SCALE: N.T.S.

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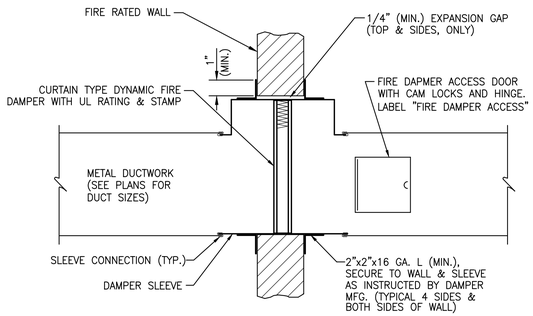
M2.02



NOTES:

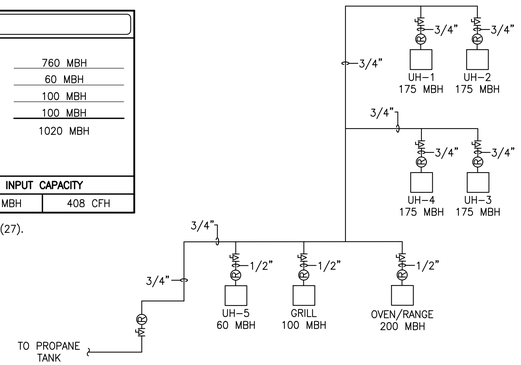
1. THIS DETAIL IS GENERIC FOR GENERAL GUIDANCE ONLY.
2. INSTALL FIRE DAMPER IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANY WAY. DO NOT FIRESTOP THE GAP BETWEEN THE FIRE DAMPER SLEEVE AND THE PENETRATION UNLESS SPECIFICALLY REQUIRED BY THE DAMPER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. APPLY SEALANT EQUAL TO DOW CORNING 999 AROUND RETAINING ANGLES & SLEEVE CONNECTIONS.
4. PROVIDE 2" THICK WRAP INSULATION AROUND EXPOSED DAMPER SLEEVE TO PREVENT CONDENSATION.
5. DYNAMIC DAMPER SHALL BE TESTED, COSTRUCTED AND LABELED IN ACCORDANCE WITH UL STANDARD 555. DAMPER SHALL HAVE A FIRE RATING OF 1 1/2 HOURS. PROVIDE WITH 165'F FUSIBLE LINK. DAMPER SHALL BE RATED FOR DYNAMIC CLOSURE TO A MINIMUM 200 FPM AND 4 INCHES W.G. AND RATED TO CLOSE WITH AIRFLOW IN EITHER DIRECTION.
6. EACH FIRE DAMPER SHALL INCLUDE A 12" LONG INTEGRAL ROLL FORMED STEEL SLEEVE & MOUNTING ANGLES FURNISHED BY THE DAMPER MANUFACTURER.
7. DAMPER ACCESS DOOR SIZES SHALL BE 8"X12" ON DUCTS SMALLER THAN 14", AND DUCT SIZE LESS 2" UP TO 24"X24" ON DUCTS 14" & LARGER.

1 VERTICAL FIRE DAMPER - STYLE B DETAIL
SCALE: N.T.S.

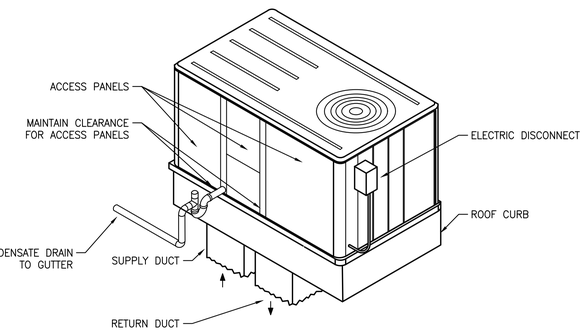
GAS PIPING DESIGN TABLE			
PIPING MATERIAL:	SCH 40 CS	BLDG HEATING EQUIP:	760 MBH
DEVELOPED LENGTH:	125 FT	GAS RANGE:	60 MBH
REQ'D HEADER SIZE:	3/4"	GAS OVENS:	100 MBH
		GAS GRILL:	100 MBH
		TOTAL CAPACITY:	1020 MBH

SERVICE TYPE	SYSTEM PRESSURE	PRESSURE DROP	INPUT CAPACITY	
PROPANE	2-PSI	1-PSI	1020 MBH	408 CFH

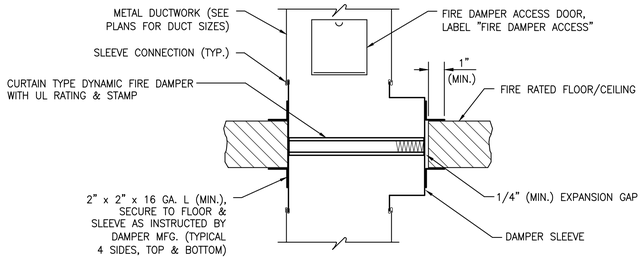
NOTE: GAS PIPING SIZED BASE ON NC FUEL GAS CODE, TABLE 402.4(27).



2 MECHANICAL GAS PIPING DIAGRAM
SCALE: N.T.S.



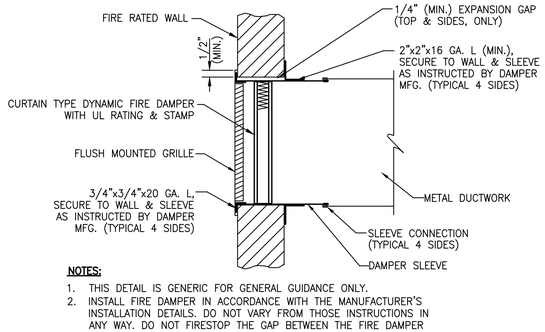
3 ROOFTOP UNIT DETAIL (ROOF MOUNTED)
SCALE: N.T.S.



NOTES:

1. THIS DETAIL IS GENERIC FOR GENERAL GUIDANCE ONLY.
2. INSTALL FIRE DAMPER IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANY WAY. DO NOT FIRESTOP THE GAP BETWEEN THE FIRE DAMPER SLEEVE AND THE PENETRATION UNLESS SPECIFICALLY REQUIRED BY THE DAMPER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. APPLY SEALANT EQUAL TO DOW CORNING 999 AROUND RETAINING ANGLES & SLEEVE CONNECTIONS.
4. PROVIDE 2" THICK WRAP INSULATION AROUND EXPOSED DAMPER SLEEVE TO PREVENT CONDENSATION.
5. DAMPER ACCESS DOOR SIZES SHALL BE 8" x 12" ON DUCTS SMALLER THAN 14" AND 12" x 12" ON DUCTS 14" & LARGER.

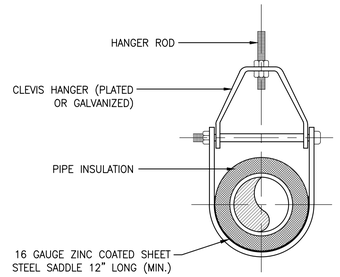
4 HORIZONTAL FIRE DAMPER - STYLE B DETAIL
SCALE: N.T.S.



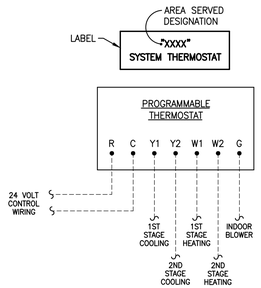
NOTES:

1. THIS DETAIL IS GENERIC FOR GENERAL GUIDANCE ONLY.
2. INSTALL FIRE DAMPER IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANY WAY. DO NOT FIRESTOP THE GAP BETWEEN THE FIRE DAMPER SLEEVE AND THE PENETRATION UNLESS SPECIFICALLY REQUIRED BY THE DAMPER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. APPLY SEALANT EQUAL TO DOW CORNING 999 AROUND RETAINING ANGLES & SLEEVE CONNECTIONS.
4. PROVIDE 2" THICK WRAP INSULATION AROUND EXPOSED DAMPER SLEEVE TO PREVENT CONDENSATION.
5. DYNAMIC DAMPER SHALL BE TESTED, CONSTRUCTED AND LABELED IN ACCORDANCE WITH UL STANDARD 555. DAMPER SHALL HAVE A FIRE RATING OF 1 1/2 HOURS. PROVIDE WITH 165'F FUSIBLE LINK. DAMPER SHALL BE RATED FOR DYNAMIC CLOSURE TO A MINIMUM 200 FPM AND 4 INCHES W.G. AND RATED TO CLOSE WITH AIRFLOW IN EITHER DIRECTION.
6. EACH FIRE DAMPER SHALL INCLUDE A 12" LONG INTEGRAL ROLL FORMED STEEL SLEEVE & MOUNTING ANGLES FURNISHED BY THE DAMPER MANUFACTURER.

5 SIDEWALL GRILLE WITH FIRE DAMPER DETAIL
SCALE: N.T.S.

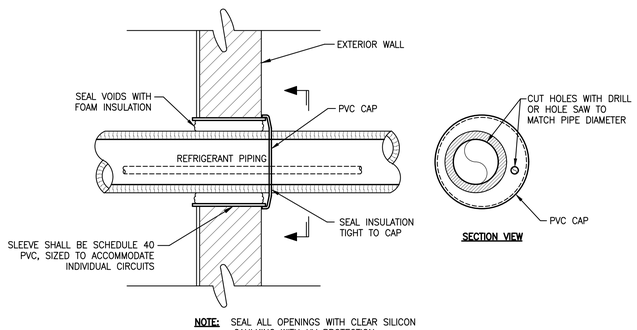


6 CLEVIS PIPE HANGER DETAIL
SCALE: N.T.S.



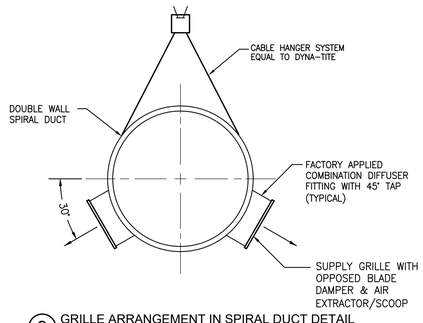
NOTE: LABEL T-STAT WITH PHENOLIC ENGRAVING STOCK WITH WHITE SURFACE AND RED 1/4" HIGH LETTERING.

7 THERMOSTAT INSTALLATION DETAIL
SCALE: N.T.S.

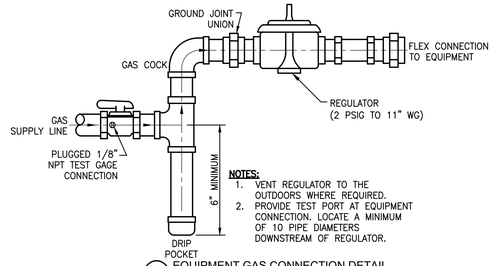


NOTE: SEAL ALL OPENINGS WITH CLEAR SILICON CAULKING WITH UV PROTECTION.

8 REFRIGERANT PIPE PENETRATION (EXTERIOR WALL) DETAIL
SCALE: N.T.S.



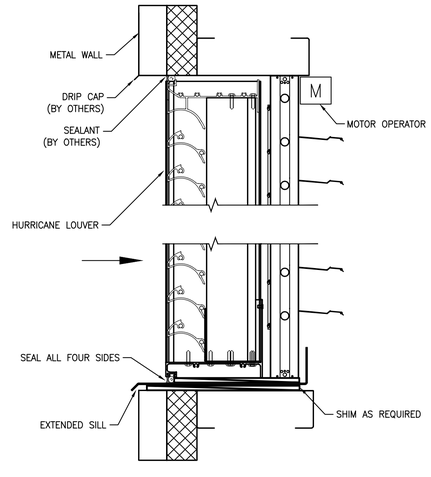
9 GRILLE ARRANGEMENT IN SPIRAL DUCT DETAIL
SCALE: N.T.S.



NOTES:

1. VENT REGULATOR TO THE OUTDOORS WHERE REQUIRED.
2. PROVIDE TEST PORT AT EQUIPMENT CONNECTION. LOCATE A MINIMUM OF 10 PIPE DIAMETERS DOWNSTREAM OF REGULATOR.

10 EQUIPMENT GAS CONNECTION DETAIL
SCALE: N.T.S.



11 HURRICANE LOUVER WITH DAMPER
SCALE: N.T.S.

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PROJECT NO. 224010 | PROJECT MGR. D. HAM | DRAWN BY D. HILL

NORTH CAROLINA PROFESSIONAL SEAL 31466 ENGINEER JAMES D. HAM
4/30/2025

REVISIONS:

#	DESC:	DATE

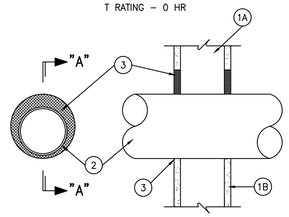
DRAWN BY: DEH
PROJECT #: 24008
ISSUE DATE: 04/30/2025
PHASE: CONSTRUCTION DOCUMENTS

SHEET NAME & NUMBER
MECHANICAL DETAILS

M2.03

UL SYSTEM NO. W-L-1108

F RATING – 1 HR
T RATING – 0 HR



SECTION "A-A"

1. WALL ASSEMBLY – THE FIRE–RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM. 2 BY 4 IN. LUMBER SPACED16 IN. O.C. STEEL STUDS TO BE MIN 2–1/2 IN. WIDE AND SPACED MAX 24 IN. O.C.
   B. WALLBOARD, GYPSUM* – ONE LAYER OF NOM 5/8 IN. THICK GYPSUM WALLBOARD, AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAXIMUM DIAMETER OF OPENING IS 11–3/4 IN.
2. THROUGH PENETRANTS – ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED.
   A. STEEL PIPE – NOM 10 IN. DIA. (OR SMALLER) SCHEDULE 20 (OR HEAVIER) STEEL PIPE. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
   B. IRON PIPE – NOM 10 IN. DIA. (OR SMALLER) CAST OR DUCTILE IRON PIPE. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
   C. CONDUIT – NOM 2 IN. DIA. (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR STEEL CONDUIT. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
   D. COPPER TUBING – NOM 2 IN. DIA. (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
   E. COPPER PIPE – NOM 2 IN. DIA. (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
3. FILL, VOID OR CAVITY MATERIAL*–CAULK– MIN 1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. AT THE POINT CONTACT LOCATION BETWEEN PIPE AND WALL, A MIN 1/4 IN. DIA. BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE WALL/PIPE INTERFACE ON BOTH SURFACES OF WALL.

*BEARING THE UL CLASSIFICATION MARKING

FIRESTOP MATERIALS BY 3M, RECTORSEAL AND SPECSEAL ARE ACCEPTABLE WHERE TESTED & ACCEPTED BY U.L. FOR THIS APPLICATION.

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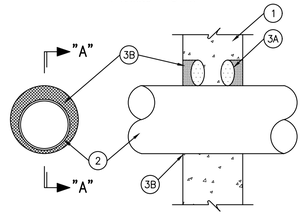
1 UL 1 HOUR GYPBOARD WALL PENETRATION DETAIL
SCALE: N.T.S.

UL SYSTEM NO. W-J-1038

F RATING – 2 HR
T RATING – 0 HR



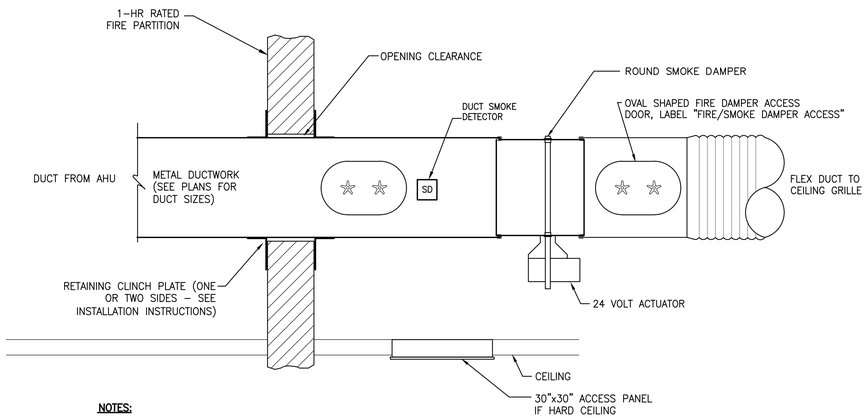
SECTION "A-A"

1. WALL ASSEMBLY – MIN 5 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100–150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIA. OF OPENING IS 11–3/4 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. THROUGH PENETRANTS – ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED.
   A. STEEL PIPE – NOM 10 IN. DIA. (OR SMALLER) SCHEDULE 20 (OR HEAVIER) STEEL PIPE. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
   B. IRON PIPE – NOM 10 IN. DIA. (OR SMALLER) CAST OR DUCTILE IRON PIPE. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
   C. CONDUIT – NOM 4 IN. DIA. (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR STEEL CONDUIT. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
   D. COPPER TUBING – NOM 2 IN. DIA. (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
   E. COPPER PIPE – NOM 2 IN. DIA. (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 1 IN.
3. FIRESTOP SYSTEM – THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
   A. PACKING MATERIAL – FOAM BACKER ROD FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
   B. FILL, VOID OR CAVITY MATERIAL*–CAULK– MIN 1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. AT THE POINT CONTACT LOCATION BETWEEN PIPE AND WALL, A MIN 1/4 IN. DIA. BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE WALL/PIPE INTERFACE ON BOTH SURFACES OF WALL.

THE RECTORSEAL CORP.–METACAULK 1000 *BEARING THE UL CLASSIFICATION MARKING

FIRESTOP MATERIALS BY 3M AND SPECSEAL ARE ACCEPTABLE WHERE TESTED & ACCEPTED BY U.L. FOR THIS APPLICATION.

2 UL 1 & 2 HOUR BLOCK WALL PENETRATION DETAIL
SCALE: N.T.S.



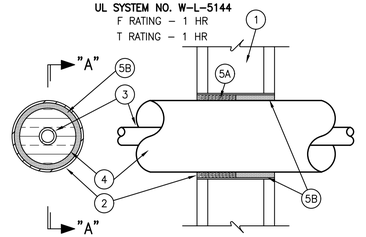
NOTES:

1. THIS DETAIL IS GENERIC FOR GENERAL GUIDANCE ONLY.
2. CENTERLINE OF THE DAMPER BLADES SHALL BE WITHIN 24" OF THE RATED SMOKE BARRIER AND BEFORE ANY DUCT INLETS OR OUTLETS.
3. INSTALL SMOKE DAMPER IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANY WAY. DO NOT FIRESTOP THE GAP BETWEEN THE FIRE DAMPER SLEEVE AND THE PENETRATION UNLESS SPECIFICALLY REQUIRED BY THE DAMPER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
4. APPLY SEALANT EQUAL TO DOW CORNING 999 AROUND RETAINING ANGLES & SLEEVE CONNECTIONS. PROVIDE 2" THICK WRAP INSULATION AROUND EXPOSED DAMPER SLEEVE TO PREVENT CONDENSATION.
5. DAMPER SHALL BE TESTED, CONSTRUCTED AND LABELED IN ACCORDANCE WITH UL STANDARD 555. SMOKE LEAKAGE CLASS 2 PER UL555S. DAMPER SHALL BE RATED FOR DYNAMIC CLOSURE TO A MINIMUM 2000 FPM AND 4 INCHES W.G. AND RATED TO CLOSE WITH AIRFLOW IN EITHER DIRECTION.
6. ACTUATOR SHALL BE FACTORY EXTERNALLY MOUNTED, 24VDC POWERED FROM THE FIRE ALARM SYSTEM, AND FAIL CLOSED. DAMPER AND ACTUATOR SHALL BE RATED FOR ELEVATED TEMPERATURES UP TO 350 DEG F.
7. DAMPER ACCESS DOOR SIZES SHALL BE 10"X6". POSITION CEILING ACCESS PANEL & DAMPER ACCESS DOOR TO ALLOW FOR FULL ACCESS TO DAMPER & ACTUATOR.
8. WHERE A SMOKE DAMPER IS INSTALLED WITHIN A DUCT, A SMOKE DETECTOR SHALL BE INSTALLED INSIDE THE DUCT OR OUTSIDE THE DUCT WITH SAMPLING TUBES PROTRUDING INTO THE DUCT. THE DETECTOR OR TUBES WITHIN THE DUCT SHALL BE WITHIN 5 FEET OF THE DAMPER. AIR OUTLETS AND INLETS SHALL NOT BE LOCATED BETWEEN THE DETECTOR OR TUBES AND THE DAMPER. THE DETECTOR SHALL BE LISTED FOR THE AIR VELOCITY, TEMPERATURE AND HUMIDITY ANTICIPATED AT THE POINT WHERE IT IS INSTALLED. OTHER THAN IN MECHANICAL SMOKE CONTROL SYSTEMS, DAMPERS SHALL BE CLOSED UPON FAN SHUTDOWN WHERE LOCAL SMOKE DETECTORS REQUIRE A MINIMUM VELOCITY TO OPERATE.

4 ROUND SMOKE DAMPER DETAIL
SCALE: N.T.S.

UL SYSTEM NO. W-L-5144

F RATING – 1 HR
T RATING – 1 HR



SECTION "A-A"

1. WALL ASSEMBLY – THE 1 HR FIRE–RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U400 SERIES OR V400 OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

   A. STUDS – "C–T" SHAPED STUDS 1–5/8 IN. WIDE BY 2–1/2 IN. DEEP, FABRICATED FROM 25 MSG GALV STEEL, SPACED MAX 24 IN. OC.

   B. GYPSUM BOARD* – ONE LAYER OF NOM 1 IN. THICK, 24 IN. WIDE GYPSUM LINER AND ONE LAYER OF NOM 5/8 IN. THICK, 4 FT. WIDE GYPSUM BOARD WITH SQUARED OR TAMPERED EDGES. THE GYPSUM BOARD TYPE, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IS 6–1/2 IN.

1A. WALL ASSEMBLY – AS AN ALTERNATE TO THE ABOVE WALL ASSEMBLY, THE 1 HR FIRE RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300, U400 OR V400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

   A. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. STEEL STUDS TO BE MIN 2–1/2 IN. WIDE AND SPACED MAX 24 IN. OC. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN LUMBER SPACED 16 IN. OC.

   B. GYPSUM BOARD* – THICKNESS, TYPE, NUMBER OF LAYERS AND FASTENERS AS REQUIRED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IS 6–1/2 IN.

2. METALLIC SLEEVE – MAX 6–1/2 IN. DIAM CYLINDRICAL SLEEVE FABRICATED FROM MIN 0.016 IN. THICK (28 GAUGE) GALV SHEET STEEL AND HAVING A MIN 1 IN. LAP ALONG THE LONGITUDINAL SEAM. LENGTH OF STEEL SLEEVE TO BE EQUAL TO THICKNESS OF WALL. SLEEVE INSTALLED BY COILING THE SHEET STEEL TO A DIAM SMALLER THAN THE THROUGH OPENING, INSERTING THE COIL THROUGH THE OPENING AND RELEASING THE COIL TO LET IT UNCOIL AGAINST THE CIRCULAR CUTOUTS IN THE GYPSUM BOARD LAYERS. SLEEVE MAY ALSO BE FORMED OF NO. 8 STEEL WIRE MESH HAVING A MIN 1 IN. LAP ALONG THE LONGITUDINAL SEAM.

3. THROUGH PENETRANTS – ONE METALLIC PIPE OR TUBE TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR TUBING MAY BE USED:

   A. COPPER TUBING – NOM 1 IN. DIAM (OR SMALLER) TYPE L COPPER TUBING.

   B. COPPER PIPE – NOM 1 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

4. PIPE COVERING* – NOM 2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN. 3.5 PCF) GLASS FIBER UNITS, JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY–APPLIED SSL TAPE. TRANSVERSE JOINTS SECURED WIT METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH THE PRODUCT. THE ANNULAR SPACE BETWEEN THE INSULATEDPIPE AND THE PERIPHERY OF THE STEEL SLEEVE SHALL BE MIN 1/4 IN. TO MAX 1–1/8.

   SEE PIPE AND EQUIPMENT COVERING – MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.

5. FIRE STOP SYSTEM – THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:

   A. PACKAGING MATERIAL – MIN 1–5/8 IN. THICKNESS OF MIN 4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO SLEEVE ON ONCE SIDE OF THE WALL AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM THE ROOM SIDE OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL. IN ALTERNATE WALL ASSEMBLY, PACKING MATERIAL TO BE FLUSH WITH EITHER SIDE OF THE WALL AND RECESSED FROM THE OTHER SIDE OF THE WALL TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.

   B. FILL, VOID OR CAVITY MATERIAL – SEALANT* – MIN 1–1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITH SLEEVE, FLUSH WITH THE ROOM SURFACE OF WALL OR EITHER SURFACE IN THE ALTERNATE WALL ASSEMBLY.

3 UL 1 HOUR GYPBOARD WALL PENETRATION DETAIL
SCALE: N.T.S.

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GOLDSBORO, NC 27532
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PROJECT NO. 224010 | PROJECT MGR. D. HAM | DRAWN BY D. HILL

NORTH CAROLINA PROFESSIONAL SEAL 31466 ENGINEER JAMES D. HAM
4/30/2025

REVISIONS:

#	DESC:	DATE

DRAWN BY: DEH
PROJECT #: 24008
ISSUE DATE: 04/30/2025
PHASE:
CONSTRUCTION DOCUMENTS

SHEET NAME & NUMBER
MECHANICAL DETAILS

M2.04

Ventilation Sizing Summary Based on ASHRAE 62.1-2016

for Constant Volume Systems serving multiple spaces

HP # 1 - North Offices

Space Name	Mult.	Req. Supply Air (CFM) (Vpz)	Space Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Avg Occ (Pz)	People Rate (CFM/ person) (Rp)	Air Eff (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone (CFM) (Vou)	Space Vent Eff (Evz)
109 Lounge/Day Room	1	1050	757	0.06	15	5	0.8	**151**	120	1.000
Totals (incl. Space Mult)		1050							120	1.000
								OA Required for unit		150
								OA CFM Provided		150

RTU # 1 - Training Rm

Space Name	Mult.	(Vpz)	(Az)	(Ra)	(Pz)	(Rp)	(Ez)	(Voz)	(Vbz)	(Evz)
101 Training Rm	1	1300	716	0.06	35.8	5	0.8	**277**	222	1.000
Totals (incl. Space Mult)		1300							222	1.000
								OA Required for unit		277
								OA CFM Provided		280

HP # 2 - Kitchen

Space Name	Mult.	(Vpz)	(Az)	(Ra)	(Pz)	(Rp)	(Ez)	(Voz)	(Vbz)	(Evz)
101A Storage	1	33	120	0.06	0	5	0.8	**9**	7	0.862
103 Kitchen	1	599	190	0.18	8	7.5	0.8	**118**	94	0.938
105 Mens Restroom Rm	1	8	119	0	0	0	0.8	**0**	0	1.135
107 Womens RR	1	7	121	0	0	0	0.8	**0**	0	1.135
113 Laundry	1	288	175	0.06	1	5	0.8	**19**	16	1.067
1st Floor Corridor	1	116	410	0.06	0	5	0.8	**31**	25	0.870
Totals (incl. Space Mult)		1051							142	0.862
								OA Required for unit		164
								OA CFM Provided		200

HP # 3 - 1st Floor Offices East Side

Space Name	Mult.	(Vpz)	(Az)	(Ra)	(Pz)	(Rp)	(Ez)	(Voz)	(Vbz)	(Evz)
102 Chief Office	1	156	196	0.06	1	5	0.8	**21**	17	0.954
104 Office	1	141	135	0.06	1	5	0.8	**16**	13	0.972
106 Vestibule	1	174	124	0.06	0	5	0.8	**9**	7	1.035
108 Radio Rm	1	142	134	0.06	1	5	0.8	**16**	13	0.973
110 Office	1	142	133	0.06	1	5	0.8	**16**	13	0.974
112 Bunk Room	1	147	134	0.06	1.3	5	0.8	**18**	15	0.964
114 Bunk Room	1	147	134	0.06	1.3	5	0.8	**18**	15	0.964
Totals (incl. Space Mult)		1049							92	0.954
								OA Required for unit		97
								OA CFM Provided		100

HP # 4 - 2nd Floor Conference Rm

Space Name	Mult.	(Vpz)	(Az)	(Ra)	(Pz)	(Rp)	(Ez)	(Voz)	(Vbz)	(Evz)
203 Conference Rm	1	875	528	0.06	26.4	5	0.8	**205**	164	1.000
Totals (incl. Space Mult)		875							164	1.000
								OA Required for unit		164
								OA CFM Provided		170

HP # 5 - 2nd Floor East Side

Space Name	Mult.	(Vpz)	(Az)	(Ra)	(Pz)	(Rp)	(Ez)	(Voz)	(Vbz)	(Evz)
204 Office	1	169	132	0.06	1	5	0.8	**16**	13	0.990
205 Mens Rest Room	1	29	120	0	0	5	0.8	**0**	0	1.086
206 Office	1	168	132	0.06	1	5	0.8	**16**	13	0.989
207 Womens Rest Rm	1	29	118	0	0	5	0.8	**0**	0	1.086
210 Office	1	168	134	0.06	1	5	0.8	**16**	13	0.989
212 Office	1	168	132	0.06	1	5	0.8	**16**	13	0.989
214 Office	1	168	132	0.06	1	5	0.8	**16**	13	0.989
216 Office	1	167	132	0.06	1	5	0.8	**16**	13	0.989
2nd Flr Corridor	1	168	466	0.06	0	5	0.8	**35**	28	0.878
Totals (incl. Space Mult)		1234							106	0.878
								OA Required for unit		120
								OA CFM Provided		125

HP # 7 - Fitness

Space Name	Mult.	(Vpz)	(Az)	(Ra)	(Pz)	(Rp)	(Ez)	(Voz)	(Vbz)	(Evz)
211 Fitness	1	260	225	0.06	2.2	20	0.8	**72**	58	1.000
Totals (incl. Space Mult)		260							58	1.000
								OA Required for unit		58
								OA CFM Provided		60

Shop and Shop Areas

Space Name	Area SF	Cfm/SF	People	OA cfm /person	Air Dist Effect	OA cfm Required	Vent CFM Provided
Apparatus Bays	5530	0.75	4	5.0	1	4167.5	4500
116 Storage	363	0.12	0	5.0	1	43.56	250

STATEMENT FOR SPECIAL INSPECTIONS:

PROJECT: MAYSVILLE FD
LOCATION: MAYSVILLE, NORTH CAROLINA
PME ENGINEERING FIRM: ENTECH ENGINEERING

THE SITE CLASSIFICATION AS DEFINED BY THE IBC IS "D". THE SEISMIC DESIGN CATEGORY IS "C" BASED ON BUILDING OCCUPANCY CATEGORY IV. – ESSENTIAL FACILITIES.

THIS STATEMENT OF SPECIAL INSPECTIONS IS SUBMITTED AS A CONDITION FOR PERMIT ISSUANCE IN ACCORDANCE WITH THE SPECIAL INSPECTION REQUIREMENTS OF THE NORTH CAROLINA BUILDING CODE. IT INCLUDES A SCHEDULE OF SPECIAL SERVICES APPLICABLE TO THIS PROJECT. IT INCLUDES REQUIREMENTS FOR SEISMIC RESISTANCE AND/OR REQUIREMENTS FOR WIND RESISTANCE.

THE SPECIAL INSPECTION COORDINATOR SHALL KEEP RECORDS OF ALL INSPECTIONS AND SHALL FURNISH INSPECTIONS REPORTS TO THE BUILDING OFFICIAL AND THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. DISCOVERED DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF SUCH DISCREPANCIES ARE NOT CORRECTED, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND REGISTERED DESIGN PROFESSIONAL. THE SPECIAL INSPECTION PROGRAM DOES NOT RELIEVE THE CONTRACTOR OF HIS OR HER RESPONSIBILITIES.

THE FREQUENCY OF INSPECTIONS, EITHER CONTINUOUS OR PERIODIC, SHALL BE MADE IN ACCORDANCE WITH SECTION 1704 OF THE NORTH CAROLINA BUILDING CODE.

INTERIM REPORTS SHALL BE SUBMITTED MONTHLY TO THE BUILDING OFFICIAL AND THE REGISTERED DESIGN PROFESSIONAL. THE REPORTS SHALL INCLUDE THE DAILY OBSERVATION REPORTS AND A SUMMARY OF THE ACTIVITIES COMPLETED AND/OR IN PROGRESS THAT ARE RECEIVING SPECIAL INSPECTIONS. A FINAL REPORT OF SPECIAL INSPECTIONS DOCUMENTING COMPLETION OF ALL REQUIRED SPECIAL INSPECTIONS, TESTING AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS SHALL BE SUBMITTED PRIOR TO ISSUANCE OF A CERTIFICATE OF USE AND OCCUPANCY.

THE MINIMUM QUALIFICATIONS OF SPECIAL INSPECTOR SHALL BE DONE BY AN APPROVED TESTING AGENCY MEETING THE REQUIREMENTS OF THE IBC SECTION 1703 AND ADTM–E329.

THE BUILDING OFFICIAL IS AUTHORIZED TO APPROVE SPECIAL INSPECTORS WHO HAVE DOCUMENTED RELEVANT EXPERIENCE AND ARE PROGRESSING TOWARDS ACHIEVING THE MINIMUM QUALIFICATIONS.

THE STATEMENT OF SPECIAL INSPECTIONS ENCOMPASSES THE FOLLOWING DISCIPLINES:

- MECHANICAL

THE CONTRACTOR SHALL INCLUDE SEISMIC REQUIREMENTS FOR THE FOLLOWING SYSTEMS AND COMPONENTS:

- GAS PIPING (HANGERS & SUPPORTS)
- AIR HANDLERS (HANGERS)
- INFRARED GAS UNIT HEATER (HANGERS & FLEX GAS CONNECTION)
- GAS RANGE (FLEX GAS CONNECTION)
- GAS DRYER (FLEX GAS CONNECTION)
- REFRIGERANT PIPING (HANGERS)
- AIR DISTRIBUTION (GRID CLIPS)
- WALL FANS (STRUCTURAL ATTACHMENTS)
- (DUCTWORK IS NOT REQUIRED)

STATEMENT OF SPECIAL INSPECTIONS REQUIREMENTS OF WIND RESISTANCE

BASIC WIND SPEED (3 SECOND GUST): 140 MPH

WIND EXPOSURE CATEGORY: "C" (ASCE 7–10)

DESCRIPTION OF MAIN WIND FORCE–RESISTING COMPONENTS SUBJECT TO SPECIAL INSPECTION FOR WIND RESISTANCE:

- N/A

STATEMENT OF SPECIAL INSPECTIONS REQUIREMENTS FOR SEISMIC RESISTANCE

THE SITE CLASSIFICATION: "D"

DESCRIPTION OF SEISMIC SYSTEMS SUBJECT TO PERIODIC SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE:

- GAS PIPING (HANGERS & SUPPORTS)
- AIR HANDLERS (HANGERS)
- INFRARED GAS UNIT HEATER (HANGERS & FLEX GAS CONNECTION)
- GAS RANGE (FLEX GAS CONNECTION)
- GAS DRYER (FLEX GAS CONNECTION)
- REFRIGERANT PIPING (HANGERS)
- AIR DISTRIBUTION (GRID CLIPS)
- WALL FANS (STRUCTURAL ATTACHMENTS)

CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OR FABRICATION OF A SYSTEM OR COMPONENT DESIGNATED ABOVE MUST SUBMIT A STATEMENT OF RESPONSIBILITY.

PIPE SYSTEMS:

1. ALL PIPING SHALL BE SUPPORTED & SECURED WITH SUITABLE HANGERS, STRAPS OR PIPE STANDS. SUPPORT WITH NO DROOPS OR SAGS. ALL HANGERS AND ATTACHMENTS SHALL BE PLATED, GALVANIZED OR PAINTED. PROVIDE ISOLATION ON PIPING OF DISSIMILAR MATERIALS.
2. CONDENSATE TRAPS FOR ALL AC UNITS SHALL BE SIZED AS RECOMMENDED BY UNIT MANUFACTURER'S. CONDENSATE PIPING SHALL BE SCHEDULE 40 PVC ROUTED TO DRYWELL OR STORM DRAIN. INSULATE WITH FLEXIBLE ELASTOMERIC INSULATION. SEAL ALL JOINTS AND SEAMS TO PREVENT CONDENSATION.
3. REFRIGERANT PIPING SHALL BE TYPE ACR COPPER WITH SILVER SOLDERED JOINTS. INSTALL PER EQUIPMENT INSTALLATION INSTRUCTIONS. INSULATION SHALL BE FLEXIBLE ELASTOMERIC INSULATION. SEAL ALL JOINTS AND SEAMS TO PREVENT CONDENSATION. PROTECT EXTERIOR INSULATION FROM SOLAR DETERIORATION WITH UV COATING.
4. GAS PIPING SHALL BE A–53 SCHEDULE 40 BLACK STEEL WITH MALLEABLE FITTINGS. PIPING BELOW GRADE SHALL HAVE FRP COATING AND ABOVE GRADE SHALL BE PRIMED & PAINTED. BOND ALL GAS PIPING ABOVE GRADE & WITHIN BUILDING. PROVIDE MAGNETIC MARKER TAPE 12–INCHES ABOVE ALL BELOW GRADE PIPING. PIPING CONCEALED WITHIN WALLS SHALL COMPLY WITH NC GAS CODE SECTION 404.3.

AIR DISTRIBUTION SCHEDULE

MARK	CFM RANGE	TYPE	MNT.	SIZE	NECK	THROW	MAX NC	PATTERN	DIRECTION	MAT'L	FINISH	REMARKS
A	0–100	LOUVERED FACE SUPPLY DIFFUSER	LAY–IN	24"x24"	6"x6"x6"ø	15'	15	4–WAY	HORZ	ALUM.	WHITE	FLUSH FACE SNAP IN CORE MOUNTED IN 2x2 PANEL
B	100–200	LOUVERED FACE SUPPLY DIFFUSER	LAY–IN	24"x24"	9"x9"x8"ø	20'	15	4–WAY	HORZ	ALUM.	WHITE	FLUSH FACE SNAP IN CORE MOUNTED IN 2X2 PANEL
C	200–400	LOUVERED FACE SUPPLY DIFFUSER	LAY–IN	24"x24"	12"x12"x10"ø	24'	20	4–WAY	HORZ	ALUM.	WHITE	FLUSH FACE SNAP IN CORE MOUNTED IN 2X2 PANEL
C1	200–400	LOUVERED FACE SUPPLY DIFFUSER	LAY–IN	24"x24"	12"x12"x10"ø	24'	20	3–WAY	HORZ	ALUM.	WHITE	FLUSH FACE SNAP IN CORE MOUNTED IN 2X2 PANEL
D	400–600	LOUVERED FACE SUPPLY DIFFUSER	LAY–IN	24"x24"	12"x12"x12"ø	27'	30	4–WAY	HORZ	ALUM.	WHITE	FLUSH FACE SNAP IN CORE MOUNTED IN 2X2 PANEL
SW	0–400	SIDEWALL SUPPLY DOUBLE DEFLECTION	WALL	14"x6"	14"x6"	19'	26	DBL DFL	HORZ	ALUM.	WHITE	VERTICAL FACE BARS, SIDEWALL MOUNTED
FR	0–600	LOUVERED FACE FILTERED RETURN, 1/2" SPACING	LAY–IN	24"x24"	6"ø TO 12"ø	–	–	–		STEEL	WHITE	HINGED FACE, KNURLED KNOBS, 1" PLEATED FILTER
R	0–600	RETURN 1/2" CUBE FACE	LAY–IN	24"x24"	6"ø TO 12"ø	–	–	–		ALUM.	MILL	
RG–1	0–200	LOUVERED RETURN GRILLE, 45 DEG BLADES	SURF	14"x8"	–	–	–	45 DEG		STEEL	WHITE	BLADES PARALLEL TO LONG DIMENSION
RG–2	0–1200	LOUVERED RETURN GRILLE, 45 DEG BLADES	DUCT	20"x20"	–	–	–	45 DEG		STEEL	WHITE	BLADES PARALLEL TO LONG DIMENSION

NOTES:
1. VERIFY AIR DISTRIBUTION TYPE WITH ARCHITECTURAL REFLECTED CEILING PLAN.
2. AIR THROWS BASED ON 50 FPM WITH ISOTHERMAL CONDITIONS. COOLING WILL SHORTEN THROW DISTANCES BY APPROXIMATELY 75% OF VALUE SHOWN. SIDEWALL GRILLS SET AT 45 DEG.

MECHANICAL PIPING INSULATION TABLE

SERVICE	LOCATION	MATERIAL TYPE	JACKET TYPE	PIPE SIZE	THICKNESS	REMARKS
REFRIGERATION SUCTION PIPING	BUILDING ENVELOPE	CLOSED CELL ELASTOMERIC	NONE	ALL	3/4"	SEAL ALL JOINTS & SEAMS TO PREVENT CONDENSATION
	UNCONDITIONED SPACE	CLOSED CELL ELASTOMERIC	NONE	ALL	1 1/2"	SEAL ALL JOINTS & SEAMS TO PREVENT CONDENSATION
	EXTERIOR	CLOSED CELL ELASTOMERIC	NONE	ALL	1 1/2"	PROVIDE WITH WHITE UV PROTECTIVE COATING
A/C CONDENSATE PIPING	BUILDING ENVELOPE	CLOSED CELL ELASTOMERIC	NONE	ALL	3/4"	–

NOTES: ALL PIPE HANGERS AND SUPPORTS ON COLD PIPING SHALL BE OF CLEVIS TYPE ON OUTSIDE OF INSULATION TO MAINTAIN VAPOR BARRIER.

MECHANICAL DUCT INSULATION TABLE

SERVICE	LOCATION	MATERIAL TYPE	JACKET TYPE	R–VALUE	THICKNESS	REMARKS
RIGID METAL SUPPLY DUCT	BUILDING ENVELOPE	FIBERGLASS BLANKET	FSK	R–6.0	2.2"	R–VALUE BASED ON NOMINAL RATING AS INSTALLED
RIGID METAL RETURN DUCT	CONDITIONED SPACE	(NONE REQUIRED)				
	BUILDING ENVELOPE	FIBERGLASS BLANKET	FSK	R–6.0	2.2"	R–VALUE BASED ON NOMINAL RATING AS INSTALLED
RIGID METAL OUTSIDE AIR DUCT	BUILDING ENVELOPE	FIBERGLASS BLANKET	FSK	R–6.0	2.2"	R–VALUE BASED ON NOMINAL RATING AS INSTALLED
EXHAUST DUCT	ALL	(NONE REQUIRED)				
FLEXIBLE SUPPLY DUCT	BUILDING ENVELOPE	FIBERGLASS	REINFORCED METALIZED PROTECTIVE BARRIER	R–6.0	2"	
FLEXIBLE RETURN DUCT	BUILDING ENVELOPE	FIBERGLASS	REINFORCED METALIZED PROTECTIVE BARRIER	R–6.0	2"	

HVAC LEGEND

- 24x12 — RIGID RECTANGULAR DUCT
- 24x12L — RIGID RECTANGULAR DUCT WITH LINER
- 8"ø — RIGID ROUND DUCT
- 6"ø — FLEXIBLE DUCT
- 90° ELBOW WITH TURNING VANES
- FLEXIBLE CONNECTION
- SD — SMOKE DETECTOR WITH ACCESS DOOR
- AD 6x8 — ACCESS DOOR VERTICAL OR HORIZONTAL
- SD — SMOKE DAMPER
- VD — VOLUME DAMPER
- BRANCH DUCT WITH 45° TAP
- SUPPLY DIFFUSER WITH ROUND NECK
- RETURN/EXHAUST GRILLE W/ROUND NECK
- RTU — ROOF CAP, INTAKE
- EF — ROOF CAP, EXHAUST
- CEILING EXHAUST FAN
- T3 — WALL THERMOSTAT FOR SYSTEM NO. 3
- S NO2 CO — TOXIC GAS SENSOR
- B 200 — AIR DISTRIBUTION MARK "B", 200 CFM
- EQUIPMENT MARK (SEE SCHEDULES)
- FLOW DIRECTION ARROW
- G — GAS PIPING
- C — CONDENSATE PIPING
- A — COMPRESSED AIR PIPING
- REFRIGERANT PIPING
- GATE VALVE
- GAS COCK
- UNION
- REDUCER

ABBREVIATIONS:

G.C.	GENERAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
ECM	ELECTRONICALLY COMMUTATED MICROPROCESSOR
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
UNO	UNLESS NOTED OTHERWISE
BOD	BOTTOM OF DUCT
TOD	TOP OF DUCT

DUCTLESS MINI-SPLIT SCHEDULE

INDOOR UNIT

MARK	SUPPLY FAN SA CFM	REQ'D. COOLING CAPACITY EAT(DB)	TOT CAP	SEN CAP	REQ'D. HTG CAPACITY EAT(DB)	TOT CAP	VOLT/PH	REF. MANF.	REF. MODEL	WEIGHT
AH–6	420	78°/69°	9 MBH	6 MBH	70°	10 MBH	240/1ø	DAIKEN	FTXM09VVJU	29 LBS
AH–7	438	78°/69°	12 MBH	10 MBH	70°	12 MBH	240/1ø	DAIKEN	FTXM12VVJU	29 LBS

NOTES:
1. PROVIDE AH–7 UNDER ALTERNATE BID

DUCTLESS MINI-SPLIT (MULTI-PORT) SCHEDULE

OUTDOOR UNIT

MARK	EAT(DB) SUM/WTR	TOT CAP CLG/HTG	VOLT/PH	FLA	MCA	MOCP	MIN. RATING	REF. MANF.	REF. MODEL	WEIGHT
HP–6	95°/20°	24 MBH / 24 MBH	240/1ø	16	22	25	18 SEER/12.5 HSPF	DAIKEN	3MXS24RMVJUA	140 LBS.

NOTES:
1. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES FOR THE INDOOR SECTION:
   - SINGLE POINT WIRING CONNECTION
   - TXV MATCHING CONDENSER CAPACITY
   - WIRELESS REMOTE CONTROLLER
   - BUILT–IN WIFI TO CONTROL THE UNIT VIA THE INTERNET
   - DRAIN PUMP
2. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES FOR THE OUTDOOR SECTION:
   - 5 YEAR COMPRESSOR WARRANTY
   - COMPRESSOR ANTI SHORT CYCLE DELAY
   - CRANKCASE HEATERS
   - HIGH AND LOW PRESSURE SWITCHES
   - LOW AMBIENT CONTROL TO 10°
   - COIL GUARD

EQUAL MANUFACTURERS

DESCRIPTION	SPECIFIED MANUFACTURER	ACCEPTABLE SUBSTITUTIONS
FANS	GREENHECK	LOREN COOK, CAPTIVE–AIRE, AEROVENT
ROOF CAPS & VENTILATORS	GREENHECK	LOREN COOK AND TWIN CITY FAN
UNIT HEATERS	MARKEL	MODINE, TRANE, AND REZNOR
LOUVERS	GREENHECK	RUSKIN AND NAILOR
INLINE INDUCED FLOW	GREENHECK	YORK AND LOREN COOK
LARGE DIAMETER CEILING FAN	GREENHECK	HUNTER AND BIG ASS FANS

NOTE: SPECIFIED PRODUCTS INDICATE QUALITY AND OPTIONS REQUIRED FOR THIS PROJECT. EQUAL PRODUCTS/MANUFACTURERS ARE ACCEPTABLE.

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MAYSVILLE FIRE STATION

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PROJECT NO. 224010 | PROJECT MGR. D. HAM | DRAWN BY D. HILL

NORTH CAROLINA PROFESSIONAL SEAL 31466 ENGINEER JAMES D. HAM
4/30/2025

REVISIONS:

#	DESC:	DATE

DRAWN BY: DEH
PROJECT #: 24008
ISSUE DATE: 04/30/2025

PHASE:
CONSTRUCTION DOCUMENTS

SHEET NAME & NUMBER
MECHANICAL SCHEDULES

M3.01

MECHANICAL NOTES:

1. MECHANICAL PLANS ARE INTENDED TO PROVIDE INFORMATION FOR INSTALLATION OF A COMPLETE OPERATING MECHANICAL SYSTEM. PROVIDE ALL ESSENTIAL LABOR, MATERIALS & DEVICES REQUIRED TO PRODUCE A QUALITY END PRODUCT.
2. CONTRACTOR SHALL REVIEW & BECOME FAMILIAR WITH THE WORK OF ALL TRADES FOR PURPOSES OF COORDINATION AND ROUTING. CONTRACTOR SHALL PROVIDE REQUIRED PLANNING, COORDINATION AND SEQUENCING OF HVAC INSTALLATION WITH BUILDING COMPONENTS AND OTHER TRADES.
3. ALL WORK SHALL COMPLY WITH LOCAL, STATE & NATIONAL CODES. WORKMANSHIP SHALL MEET OR EXCEED INDUSTRY STANDARDS.
4. PROTECT ALL NEW MATERIALS FROM THE WEATHER IN STORAGE TRAILERS OR PROVIDE SUITABLE COVERING.
5. POWER WIRING, DISCONNECTS & STARTERS NOT FURNISHED WITH HVAC EQUIPMENT AND FINAL CONNECTIONS SHALL BE BY THE E.C.
6. CONTROL WIRING, RELAYS AND INTERLOCKING DEVICES SHALL BE PROVIDED BY THE M.C.
7. TEMPERATURE CONTROLS FOR EACH HEATING–COOLING SYSTEM SHALL CONSIST OF AN ELECTRONIC PROGRAMMABLE HEATING–COOLING THERMOSTAT WITH HEAT–OFF–COOL–AUTO SYSTEM SWITCH & AUTO–ON FAN SWITCH. THERMOSTAT SHALL HAVE WIFI ACCESS. MOUNT THERMOSTATS 48–INCHES A.F.F.
8. INSTALL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE & REPAIR IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AS WELL AS SPECIFIC INSTRUCTIONS ON PLANS.
9. PROVIDE FLEX CONNECTORS AT ALL DUCT TO EQUIPMENT CONNECTIONS NOT HAVING INTERNALLY ISOLATED FANS.
10. PROVIDE CONCRETE HOUSEKEEPING PADS FOR ALL GROUND & FLOOR MOUNTED EQUIPMENT. UNLESS NOTED OTHERWISE ALL PADS SHALL BE 4" THICK & 4" LARGER THAN EQUIPMENT ON ALL SIDES. PADS SHALL BE 3000 PSI CONCRETE.
11. CONTRACTOR SHALL BALANCE AIR SYSTEM TO QUANTITIES INDICATED ON PLANS AND PROVIDE TYPE WRITTEN REPORT WITH O&M MANUALS.
12. ALL EQUIPMENT & SYSTEMS SHALL BE WASHED, MECHANICAL AREAS CLEANED AND PAINTED SURFACES TOUCHED UP TO MATCH FACTORY APPLIED FINISHES. AIR HANDLERS SHALL BE VACUUMED AND WIPED CLEAN ON THE INSIDE PRIOR TO TURNING THE PROJECT OVER TO THE OWNER. ENTIRE SYSTEMS INCLUDING DUCTWORK THAT HAVE NOT BEEN ADEQUATELY PROTECTED DURING INSTALLATION WILL REQUIRE ADDITIONAL CLEANING AT THE END OF THE PROJECT.
13. CONTRACTOR SHALL COVER EACH RETURN OPENING LOCATION & EACH AIR HANDLER FILTER RACK WITH MERV 8 PLEATED FILTER MEDIA BEFORE STARTUP OF MECHANICAL SYSTEMS. CONTRACTOR SHALL ALSO INSTALL A NEW SET OF MERV 8 PLEATED FILTERS AT EACH PERMANENT FILTER LOCATION BEFORE TURNING BUILDING OVER TO OWNER.
14. CONTRACTOR SHALL PROVIDE BUILDING OWNER WITH A COMPLETE OPERATING & MAINTENANCE MANUAL AS REQUIRED BY THE NC ENERGY CODE 503.2.9.2 INCLUDING EQUIPMENT BASIC DATA, CONTROL INFORMATION, ROUTINE MAINTENANCE ACTIONS AND SERVICE AGENCIES NAME, PHONE NUMBER & ADDRESS.
15. GUARANTEE ALL EQUIPMENT, MATERIALS AND INSTALLATION FREE OF DEFECTS FOR A PERIOD OF 1–YEAR AFTER RECEIVING CERTIFICATE OF OCCUPANCY. EXTENDED GUARANTEES ON EQUIPMENT SHALL BE AS PUBLISHED ON MANUFACTURER'S EXTENDED WARRANTIES.

DUCT SYSTEMS:

1. ALL DUCT INSTALLATION SHALL BE COORDINATED SUCH THAT DUCT DOES NOT INTERFERE WITH FUTURE REMOVAL OF CEILING TILES, WATER HEATERS, OR LIGHT FIXTURES. DUCT SHALL BE A MINIMUM OF 6" FROM LIGHT FIXTURES AND CEILING TILES.
2. DUCT SHALL BE FABRICATED OF MINIMUM G–60 GALVANIZED STEEL AND DELIVERED TO THE JOBSITE WITH OPEN ENDS AND INTERIOR OF DUCTWORK PROTECTED. STORE DUCT WITHIN THE BUILDING, ELEVATED OFF THE FLOOR AND PROTECTED FROM DUST, DERBIES AND WEATHER. MAINTAIN COVERING OF DUCT AND EQUIPMENT ONCE INSTALLED. SEAL ENDS OF THE DUCT AT THE END OF EACH DAY TO PROTECT THE INSIDE OF THE DUCTS. DUCTS NOT PROTECTED AND FOUND TO BE DIRTY AT FINAL INSPECTION SHALL BE CLEANED TO NEW CONDITION.
3. SUPPORT ALL DUCT FROM STRUCTURE ABOVE OR ON FABRICATED DUCT SUPPORTS. ALL BUILDING ATTACHMENTS, HANGER RODS, AND STRUCTURAL SUPPORTS SHALL BE GALVANIZED STEEL. HANGER RODS MAY BE PLATED STEEL. PRIOR TO FABRICATION, MECHANICAL CONTRACTOR SHALL FIELD VERIFY STRUCTURAL OBSTRUCTIONS & CEILING SPACE LIMITATIONS AND MAKE NECESSARY DUCT MODIFICATIONS INCLUDING CHANGING OF ASPECT RATIOS, ADDING OFFSETS, AND SHIFTING LOCATIONS. PROTECT DUCT BY STORING IN A CLEAN AND DRY ENVIRONMENT PRIOR TO INSTALLATION. COVER ENDS OF EXPOSED WORK AT THE END OF EVERY SHIFT.
4. FABRICATE AND INSTALL DUCT PER SMACNA STANDARDS FOR 2–INCH WC FOR ALL DUCTWORK. USE GALVANIZED METAL (26 GAUGE MINIMUM). SEAL ALL LONGITUDINAL AND TRAVERSE JOINTS AS REQUIRED BY CURRENT SMACNA AND ENERGY CODE STANDARDS FOR MINIMUM OF WC INDICATED ABOVE.
5. WHERE RECTANGULAR DUCT IS INDICATED, RADIUS ELBOWS & TEES SHALL HAVE CENTERLINE RADIUS OF 1.5 X DUCT WIDTH. SQUARE ELBOWS SHALL INCLUDE TURNING VANES. NO VANES SHALL BE REMOVED FROM THE VANE RUNNER. VANES WITH TRAILING EDGES SHALL NOT BE USED. RECTANGULAR RADIUS ELBOWS WITH RADIUS/WIDTH GREATER THAN 1 AND RADIUS THROAT ARE ALLOWED. WHEN RADIUS ELBOWS ARE USED, CONTRACTOR IS RESPONSIBLE FOR SPACE COORDINATION REQUIREMENTS BEFORE INSTALL. ALL DUCT JOINTS, SEAMS & BRANCH TAKEOFFS SHALL BE SEALED AIR–TIGHT WITH DUCT SEALANT EQUAL TO HARDCAST IRON–GRIP. ROLLED FORM FLANGE TYPE JOINTS WITH GASKETS BOLTED CORNERS AND CLIPS MAY BE USED PROVIDING AN AIR TIGHT SEAL AND REINFORCING.
6. PRIOR TO FABRICATION, MECHANICAL CONTRACTOR SHALL FIELD VERIFY STRUCTURAL OBSTRUCTIONS & CEILING SPACE LIMITATIONS AND MAKE NECESSARY DUCT MODIFICATIONS INCLUDING CHANGING OF ASPECT RATIOS, ADDING OFFSETS, AND SHIFTING LOCATIONS. PROTECT DUCT BY STORING IN A CLEAN AND DRY ENVIRONMENT PRIOR TO INSTALLATION. COVER ENDS OF EXPOSED WORK AT THE END OF EVERY SHIFT.
7. ROUND RUNOUTS ON RECTANGULAR DUCTS SHALL HAVE SIDE TAKEOFFS WITH GASKET & DAMPER, RECTANGULAR BRANCH DUCTS SHALL HAVE 45 DEGREE TAPS WITH AIR EXTRACTOR AND ALL TEES SHALL HAVE SPLITTER DAMPERS. PROVIDE ANY OTHER DEVICES REQUIRED TO BALANCE AIR SYSTEM.
8. FLEX DUCT SHALL BE FACTORY INSULATED, HAVE ACOUSTICAL INNER CORE AND HAVE METALIZED VAPOR BARRIER. SEAL FLEX TO HARD CONNECTIONS WITH MASTIC. BOTH ENDS SHALL BE SECURED WITH NYLON BANDS AND METALIZED DUCT TAPE PER MFG'S RECOMMENDATIONS AND IN ACCORDANCE WITH U.L. 181B. BEND RADIUS SHALL NOT BE LESS THAN ONE DUCT DIAMETER. PROVIDE "FLEXFLOW ELBOW" SUPPORT BY THERMAFLEX, OR EQUAL, AT EACH DIFFUSER. SUSPEND FLEXIBLE DUCTS WITH BANDS 1–1/2 INCHES WIDE OR WIDER AND SPACED A MAXIMUM OF 48 INCHES APART. MAXIMUM CENTERLINE SAG BETWEEN SUPPORTS SHALL NOT EXCEED 1/2 INCH PER 12 INCHES. DO NOT BEND DUCTS ACROSS SHARP CORNERS. AVOID CONTACT WITH METAL FIXTURES, CEILING GRIDS, WATER LINES, PIPES, OR CONDUITS.
9. WHERE ROUND OR FLAT OVAL DUCT IS INDICATED, DUCT SHALL BE SPIRAL LOCKSEAM WITH EPDM GASKETED FITTINGS. LARGE FLAT OVAL SIZES MAY USE BOLTED AND GASKETED ROLLED FLANGE TYPE JOINTS. WHERE DOUBLE WALL SPIRAL DUCT IS INDICATED THE DUCT SHALL BE DOUBLE WALL WITH FACTORY INSTALLED GASKET FITTINGS. OUTER SHELL SHALL BE PAINT GRIP GALVANIZED (ASTM A653) STEEL. INNER SHELL SHALL BE PERFORATED GALVANIZED STEEL INSULATION SHALL BE 1–INCH THICK 1 LB. DENSITY WITH MIN. R–VALUE OF 3.8
10. RIGID ROUND AND RECTANGULAR DUCT SHALL BE EXTERNALLY INSULATED WITH 3/4 LB. DENSITY FIBERGLASS BLANKET WITH FSK VAPOR BARRIER. STAPLE AND SEAL ALL JOINTS WITH 3–INCH WIDE METALIZED DUCT TAPE EQUAL TO SHURFLEX SF–683.
11. PROVIDE 1/2–INCH, 1.5 LB. DENSITY ACOUSTICAL LINER AT EACH A/C UNIT SUPPLY AND RETURN CONNECTION FOR SOUND ATTENUATION. TERMINATE LINER AT 10–FT. FROM UNIT, AT FIRST ELBOW OR AS NOTED ON PLANS. LINER SHALL BE INSTALLED WITH PINS & ADHESIVE AS RECOMMENDED BY MFG. & SMACNA. DUCT SIZES ON PLANS ARE METAL DIMENSIONS AND INCLUDE ALLOWANCES FOR LINER. DUCT SHALL BE WRAPPED WITH INSULATION IN ADDITION TO ACOUSTICAL LINER.
12. RECTANGULAR DUCT INDICATED AS BEING BE INTERNALLY LINED SHALL USE 1–INCH THICK, 1.5 LB. DENSITY LINER EQUAL TO CERTAINTEED TOUGHGARD. LINER SHALL MEET REQUIREMENTS OF ASTM C 665 AND ASTM G 21 & G 22 FOR RESISTANCE TO FUNGAL AND BACTERIAL ATTACK. LINER SHALL BE INSTALLED WITH PINS & ADHESIVE AS RECOMMENDED BY MFG. & SMACNA. DUCT SIZES ON PLANS ARE METAL DIMENSIONS AND INCLUDE ALLOWANCES FOR LINER.
13. INSULATE & SEAL ALL GRILLE & DIFFUSER NECKS TO MAINTAIN VAPOR BARRIER AND ELIMINATE CONDENSATION.
14. PER 2018 NCMC 607.5.3, DUCTS AND AIR TRANSFER OPENINGS THAT PENETRATE FIRE PARTITIONS SHALL BE PROTECTED WITH LISTED FIRE DAMPERS INSTALLED IN ACCORDANCE WITH THEIR LISTING. EXCEPTION WOULD BE SUCH WALLS ARE PENETRATED BY DUCTED HVAC SYSTEMS, HAVE A REQUIRED FIRE–RESISTANCE RATING OF 1 HOUR OR LESS, AND ARE IN AREAS OF OTHER THAN GROUP H AND ARE IN BUILDINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1 OR 903.3.1.2 OF THE INTERNATIONAL BUILDING CODE. FOR THE PURPOSES OF THIS EXCEPTION, A DUCTED HVAC SYSTEM SHALL BE A DUCT SYSTEM FOR CONVEYING SUPPLY, RETURN OR EXHAUST AIR AS PART OF THE STRUCTURE'S HVAC SYSTEM. SUCH A DUCT SYSTEM SHALL BE CONSTRUCTED OF SHEET STEEL NOT LESS THAN 26 GAGE IN THICKNESS AND SHALL BE CONTINUOUS FROM THE AIR–HANDLING APPLIANCE OR EQUIPMENT TO THE AIR OUTLET AND INLET TERMINALS.
15. A LISTED SMOKE DAMPER SHALL BE PROVIDED AT EACH POINT A DUCT OR AIR TRANSFER OPENING PENETRATES A SMOKE BARRIER WALL OR A CORRIDOR ENCLOSURE REQUIRED TO HAVE SMOKE AND DRAFT CONTROL DOORS IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE. SMOKE DAMPERS ARE NOT REQUIRED IN CORRIDOR PENETRATIONS WHERE THE DUCT IS CONSTRUCTED OF STEEL NOT LESS THAN 0.019 INCH (0.48 MM) IN THICKNESS AND THERE ARE NO OPENINGS SERVING THE CORRIDOR.
16. PROVIDE 3M FIRE BARRIER DUCT WRAP 615+, FIREMASTER FASTWRAP XL, OR EQUAL, ON THE KITCHEN HOOD EXHAUST DUCT.
17. DRYER DUCT PENETRATING FIRE RATED WALLS SHALL NOT HAVE FIRE DAMPERS. DUCT SHALL BE GALVANIZED STEEL AND OF A THICKNESS AS SPECIFIED IN SECTION 603.4 OF THE NC MECHANICAL CODE AND THE FIRE–RESISTANCE RATING IS MAINTAINED

HEAT PUMP (INDOOR UNIT) SCHEDULE

MARK	SUPPLY FAN					NOMINAL COOLING CAPACITY			AUX. HEAT	VOLT/PH	FLA	MCA	MOCP	REF. MANF.	REF. MODEL	WEIGHT
	SA CFM	OA CFM	EXT SP	MTR	HP	EAT(DB/WB)	TOT CAP	SEN CAP	@ 208V							
AH–1	1050	150	0.5"	1/2		77°/66°	32.8 MBH	21.3 MBH	7.7 KW	240/1ø	36	45	45A	TRANE	5TEM4D04	145 LBS.
AH–2	1225	300	0.5"	1/2		78°/68°	32.8 MBH	21.3 MBH	7.7 KW	240/1ø	36	45	45A	TRANE	5TEM4D04	145 LBS.
AH–3	1050	100	0.5"	1/2		78°/65°	32.8 MBH	21.3 MBH	7.7 KW	240/1ø	36	45	45A	TRANE	5TEM4D04	145 LBS.
AH–4	875	170	0.5"	1/2		78°/68°	27.4 MBH	20.0 MBH	4.8 KW	240/1ø	24	30	30A	TRANE	5TEM4D04	145 LBS.
AH–5	1225	125	0.5"	1/2		78°/65°	37.8 MBH	26.3 MBH	7.7 KW	240/1ø	36	45	45A	TRANE	5TEM4D04	145 LBS.

NOTES:
1. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES:
   - SINGLE POINT WIRING CONNECTION
   - TXV MATCHING CONDENSER CAPACITY
   - 7–DAY PROGRAMMABLE THERMOSTAT WITH LOCKOUT FUNCTION
   - ECM FAN MOTORS
2. PROVIDE AH–5 UNDER BID ALTERNATE #1
3. PROVIDE ALL AIR HANDLERS WITH CONDENSATE PUMP

HEAT PUMP (OUTDOOR UNIT) SCHEDULE

MARK	EAT(DB)	NOM CAP	VOLT/PH	FLA	MCA	MOCP	MIN. SEER	HSPF	REF. MANF.	REF. MODEL	WEIGHT
HP–1	95°	3.0 TONS	240/1ø	14	18	30A	14.0 SEER	7.5	TRANE	4TWR4036	230 LBS.
HP–2	95°	3.5 TONS	240/1ø	20	24	40A	14.0 SEER	7.5	TRANE	4TWR4042	230 LBS.
HP–3	95°	3.0 TONS	240/1ø	14	18	30A	14.0 SEER	7.5	TRANE	4TWR4036	230 LBS.
HP–4	95°	2.5 TONS	240/1ø	11	15	25A	14.0 SEER	7.5	TRANE	4TWR4030	230 LBS.
HP–5	95°	3.5 TONS	240/1ø	20	24	40A	14.0 SEER	7.5	TRANE	4TWR4042	230 LBS.

NOTES:
1. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES:
   - 5 YEAR COMPRESSOR WARRANTY
   - COMPRESSOR ANTI SHORT CYCLE DELAY
   - CRANKCASE HEATERS
   - HIGH AND LOW PRESSURE SWITCHES
   - OUTDOOR THERMOSTAT
   - LOW AMBIENT CONTROL TO 45°
   - SPECIALTIES FOR LONG–LINE APPLICATION
   - EXTREME CONDITION MOUNT KIT
2. M.C. SHALL COORDINATE PRODUCT SPECIFIC ELECTRICAL REQUIREMENTS WITH E.C..
3. PROVIDE HP–5 UNDER BID ALTERNATE #1.

PACKAGED HEAT PUMP SCHEDULE

MARK	SUPPLY FAN					COOLING CAPACITY			AUXILIARY HEAT		VOLT/PH	FLA	MCA	MOCP	MIN. RATING	HSPF2	REF. MANF.	REF. MODEL	WEIGHT
	SA CFM	OA CFM	EXT SP	MTR	HP	EAT(DB/WB)	TOT CAP	SEN CAP	@ 240V/1ø	STAGES									
RTU–1	1400	280	0.5"	3/4		78°/67°	47 MBH	32 MBH	10 KW	1	240/1ø	67	75	80	13.4 SEER2	7.0	TRANE	42CC4048E	530LB

NOTES:
1. ELECTRICAL DATA WAS NOT AVAILABLE FROM TRANE FOR SINGLE POINT WIRING DURING DESIGN. COORDINATE WITH E.C. UPON FINAL SELECTION OF EQUIPMENT.
2. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES:
   - 5 YEAR COMPRESSOR WARRANTY
   - SINGLE POWER ENTRY KIT
   - COMPRESSOR ANTI SHORT CYCLE DELAY
   - CRANKCASE HEATERS
   - HIGH AND LOW PRESSURE SWITCHES
   - LOW AMBIENT CONTROL TO 45°
   - MANUAL OUTSIDE AIR – 25% O.A.
   - COIL GUARD
   - FILTER FRAME WITH 1" PLEATED FILTERS
   - 14 INCH HIGH ROOF CURB
   - 7 DAY ELECTRONIC PROGRAMMABLE THERMOSTAT
   - ECM FAN MOTOR

DUCTLESS AIR CONDITIONER SCHEDULE

INDOOR UNIT					OUTDOOR UNIT										
MARK	SUPPLY FAN SA CFM	REF. MANF.	REF. MODEL	WEIGHT	MARK	EAT(DB) SUM	TOT CAP CLG	VOLT/PH	FLA	MCA	MOCP	MIN. RATING	REF. MANF.	REF. MODEL	WEIGHT
AC–1	557	DIAKEN	FTXM12VWJU	30 LBS	CU–1	75°/65°	12 MBH	208/1ø	12	12	15	25 SEER	DIAKEN	RXM12VWJU	96 LBS.

NOTES:
1. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES FOR THE INDOOR SECTION:
   - SINGLE POINT WIRING CONNECTION (INDOOR UNIT POWERED VIA OUTDOOR UNIT)
   - TXV MATCHING CONDENSER CAPACITY
   - WIRED REMOTE CONTROLLER
   - DRAIN PUMP
2. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES FOR THE OUTDOOR SECTION:
   - 5 YEAR COMPRESSOR WARRANTY
   - COMPRESSOR ANTI SHORT CYCLE DELAY
   - HIGH AND LOW PRESSURE SWITCHES
   - LOW AMBIENT CONTROL TO 10°
   - COIL GUARD
3. MAX PIPING LENGTH IS 95 FEET

WALL EXHAUST FAN SCHEDULE

MARK	TYPE	CFM	ESP	TSP	HP	VOLT/PH	FLA	WALL OPENING	REF. MANF.	REF. MODEL	*SONES	WEIGHT	NOTES
WF–1	WALL	4,500	0.25"	0.44"	2	240/1ø	12.5	34"x34"	GREENHECK	AER–24–02–0620–VG	15	250	1
WF–2	WALL	250	0.20"	0.28"	1/20	120/1ø	1	16.25"x16.25"	GREENHECK	SE1–10–428–P	10	70 LBS	1,2
WF–3	WALL	275	0.15"	0.19"	.03	120/1ø	2.85	19.25"x19.25"	GREENHECK	SE1–12–432–VG	4.3	73 LBS	1,2

NOTES:
1. PROVIDE WITH:
   - WALL HOUSING, FLUSH WITH EXTERIOR WITH PERMATECTOR COATING. COLOR SELECTED BY ARCHITECT.
   - DISCONNECT
   - DAMPER, MOTOR OPERATOR, MOUNTED AND WIRED
   - SINGLE POINT WIRING, WITH GREENHECK VARI–GREEN DRIVE, OR EQUAL.
2. PROVIDE WITH WALL SWITCH.

LOUVER SCHEDULE

MARK	SERVICE	SIZE	CFM	SP	FREE AREA	MATERIAL	REF. MANF.	REF. MODEL	NOTES
QTY (2) WL–1	INTAKE	36"Wx30"H	2250	0.18"	3.27 SQ FT	ALUMINUM	GREENHECK	EHV–550	1,2,3

NOTES:
1. PROVIDE WITH BIRD SCREEN, EXTENDED SILL & 2 COATS OF KYNAR FINISH (AAMA 2605).
2. SUBMIT LOUVER TYPE & COLOR PALLET TO ARCHITECT FOR COLOR SELECTION.
3. PROVIDE WITH BACKDRAFT DAMPER AND 120V OPERATOR INTERLOCKED WITH ASSOCIATED FAN.
4. LOUVERS SHALL BE LICENSED TO BEAR THE AMCA CERTIFIED RATINGS PROGRAM SEAL FOR AIR PERFORMANCE, WINDDRIVEN RAIN AND WATER PENETRATION IN ACCORDANCE WITH AMCA PUBLICATION 511.
5. BEGINNING POINT OF WATER PENETRATION SHALL BE NO LESS THAN 1000FPM FREE AREA VELOCITY.
6. HURRICANE LOUVERS SHALL BE AMCA 540 AND 550 CERTIFIED.

ROOF CAP SCHEDULE

MARK	USAGE	CFM RANGE	SP DROP	SIZE	MATERIAL	REF. MANF.	REF. MODEL	NOTES
RC–1	INTAKE	150	0.06"	8"ø	ALUMINUM	GREENHECK	GRS–8	1
RC–2	INTAKE	600	0.06"	15"ø	ALUMINUM	GREENHECK	GRS–15	1
RC–3	EXHAUST	200	0.06"	10"ø	ALUMINUM	GREENHECK	GRS–10	1
RC–4	EXHAUST	600	0.06"	12"ø	ALUMINUM	GREENHECK	GRS–12	1

NOTES:
1. PROVIDE WITH BIRDSCREEN & ROOF CURB FOR FLAT ROOF INSTALLATION.

EXHAUST FAN SCHEDULE

MARK	TYPE	CFM	ESP	WATTS	VOLT/PH	REF. MANF.	REF. MODEL	*SONES	WEIGHT	NOTES	CONTROL
EF–1	CEILING	109	0.25"	20	120/1ø	GREENHECK	SP–A125	0.6	17 LBS	1,2	A
EF–2	CEILING	360	0.25"	134	120/1ø	GREENHECK	SP–A390	2	25 LBS	1,2	B
EF–3	IN–LINE	75	1.1"	70	120/1ø	FANTECH	DEDPV–705	2	10 LBS	1,3,4	C

NOTES:
1. PROVIDE WITH ROOF CAP, WALL CAP OR LOUVER AS SHOWN ON PLANS.
2. PROVIDE WITH BACKDRAFT DAMPER.
3. UNIT SHALL BE UL–705 LISTED FOR BOTH GAS AND ELECTRIC DRYER APPLICATIONS, SUPPORT DUCT LENGTH OF UP TO 120 FEET, ALL METAL HOUSING, INDICATOR PANEL, AND HAVE CONTROLS FOR SENSING DUCT PRESSURE AND TIMER TO RUN 5 MINUTES AFTER DRYER SHUT DOWN.
4. PROVIDE SECONDARY LINT TRAP MODEL DBLT–4W BY FANTECH, OR EQUAL. INSTALL ABOVE DRYER IN VERTICAL SECTION OF DUCT.

CONTROL TYPE DESCRIPTION:
A. INTERLOCK WITH ROOM LIGHTING CONTROL BY EC.
B. PROVIDE WITH OVERRIDE SWITCH WIRED IN PARALLEL WITH LIGHTING CONTROL. PROVIDE PHENOLIC LABEL ABOVE SWITCH "EXHAUST FAN OVERRIDE".
C. INTERLOCK WITH CLOTHES DRYER.

GAS UNIT HEATER SCHEDULE

MARK	CFM	EAT(DB)	INPUT CAP.	MIN. EFF.	VOLT/PH	HP	FLA	REF. MANF.	REF. MODEL
UH–1	2140	65°	175 MBH	80%	120/1ø	1/6	5.0	MODINE	PTX–150
UH–2	2140	65°	175 MBH	80%	120/1ø	1/6	5.0	MODINE	PTX–150
UH–3	2140	65°	175 MBH	80%	120/1ø	1/6	5.0	MODINE	PTX–150
UH–4	2140	65°	175 MBH	80%	120/1ø	1/6	5.0	MODINE	PTX–150
UH–5	650	65°	60 MBH	80%	120/1ø	1/15	3.3	MODINE	HDS–60

NOTES:
1. PROVIDE WITH FAN GUARD, SINGLE DEFLECTION LOUVER & DIGITAL PROGRAMMABLE WALL THERMOSTAT WITH CONTROLS TRANSFORMER.
2. TWO STAGE (50% & 100%) GAS CONTROL WITH DIRECT SPARK IGNITION.
3. CONCENTRIC VENT KIT FOR THROUGH THE ROOF INSTALLATION.
4. CONCENTRIC VENT KIT FOR THROUGH THE WALL INSTALLATION (UH–5).

CIRCULATION FAN SCHEDULE

MARK	BLADES			CFM	FAN RPM	OPERATE WATTS	MOTOR FLA	VOLT/PH	MAXIMUM WATTS	MTG HEIGHT	SOUND dBA	MANF.	MODEL	WEIGHT
	QTY.	DIAMETER	TYPE											
CF–1	6	14"	AF	80,000	87	545	7.0	240/1ø	175	23'	46	GREENHECK	DS–6–14–70HV	200 LBS

NOTES:
1. PROVIDE WITH THE FOLLOWING:
   - VFD FACTORY PROGRAMMED
   - CAT–5e CONTROL CABLE TO WALL CONTROLLER
   - WALL MOUNTED CONTROLLER
   - EXTRUDED ALUMINUM AIR FOIL BLADES, MILL FINISH WITH WINGLETS
   - FACTORY WIRING
   - I–BEAM MOUNTING KIT WITH POLYESTER FLAT BLACK FINISH
   - SAFETY CABLES

MECHANICAL ENERGY SUMMARY
MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

METHOD OF COMPLIANCE:

NC ENERGY CODE (2018) PRESCRIPTIVE ☒ PERFORMANCE ☐

ASHRAE 90.1 (2016) PRESCRIPTIVE ☐ PERFORMANCE ☐

THERMAL ZONE 3A

EXTERIOR DESIGN CONDITIONS

WINTER DRY BULB	23°F
SUMMER DRY BULB	93°F

INTERIOR DESIGN CONDITIONS

WINTER DRY BULB	72°F
SUMMER DRY BULB	74°F
RELATIVE HUMIDITY	50%

	OFFICE AREA	TRUCK AREA
BUILDING HEATING LOAD	122 MBH	400 MBH
BUILDING COOLING LOAD	15 TONS	N/A

MECHANICAL CONDITIONING SYSTEM

UNITARY		
DESCRIPTION OF UNIT	SPLIT HEAT PUMP	GAS UNIT HEATER
HEATING EFFICIENCY	8.2 HSPF	80%
COOLING EFFICIENCY	14 SEER	N/A
HEAT OUTPUT OF UNIT	215 MBH	760 MBH
COOLING OUTPUT OF UNIT	16.5 TONS	

LIST EQUIPMENT EFFICIENCIES SEE MECHANICAL SCHEDULES

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PROJECT NO. 224010 | PROJECT MGR. D. HAM | DRAWN BY D. HILL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31466 JAMES D. HAM 4/30/2025

REVISIONS:

#	DESC:	DATE

DRAWN BY: DEH
PROJECT #: 24008
ISSUE DATE: 04/30/2025

PHASE:
CONSTRUCTION DOCUMENTS

SHEET NAME & NUMBER
MECHANICAL SCHEDULES

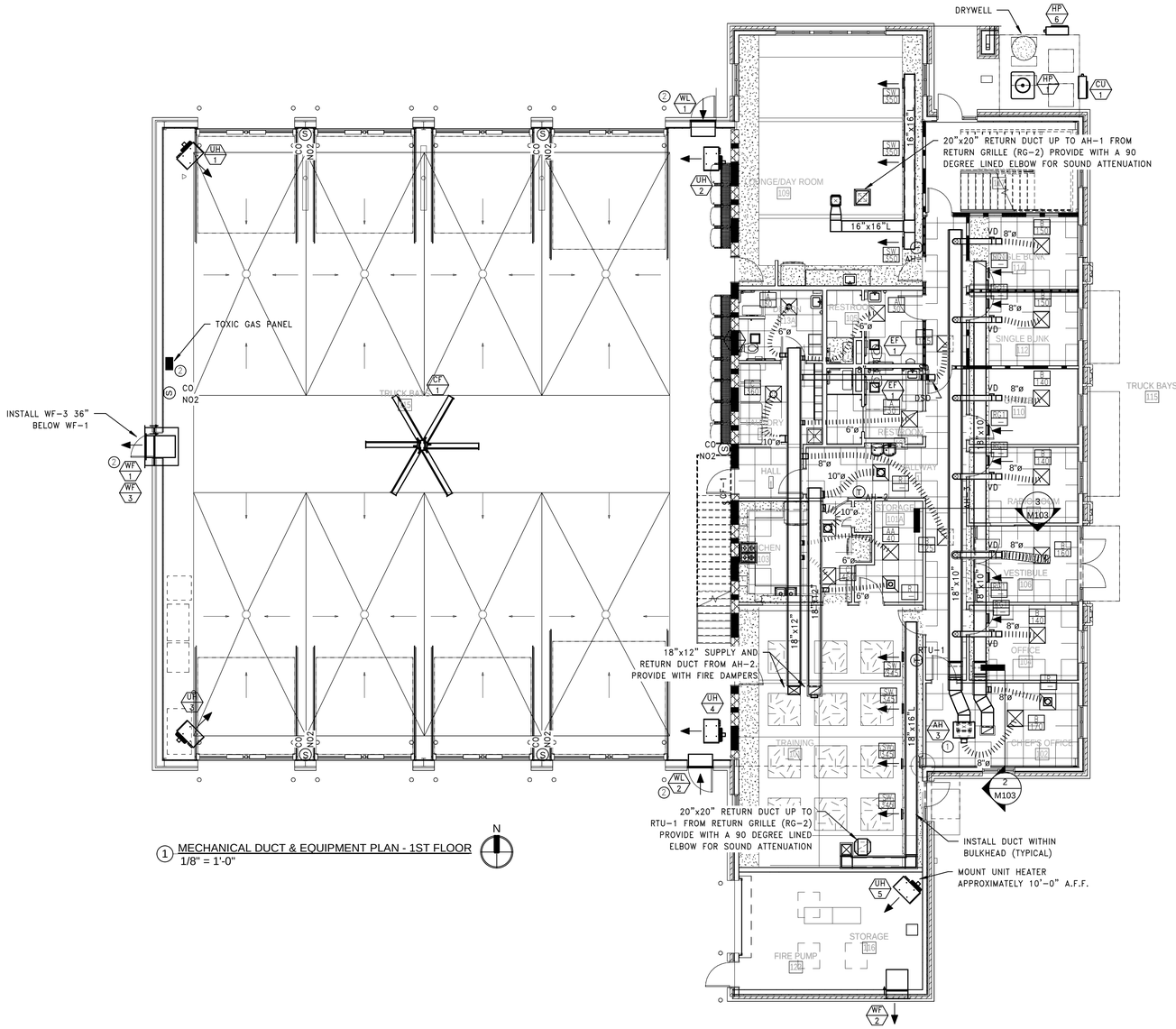
M3.02

INSTALLATION KEYED NOTES:

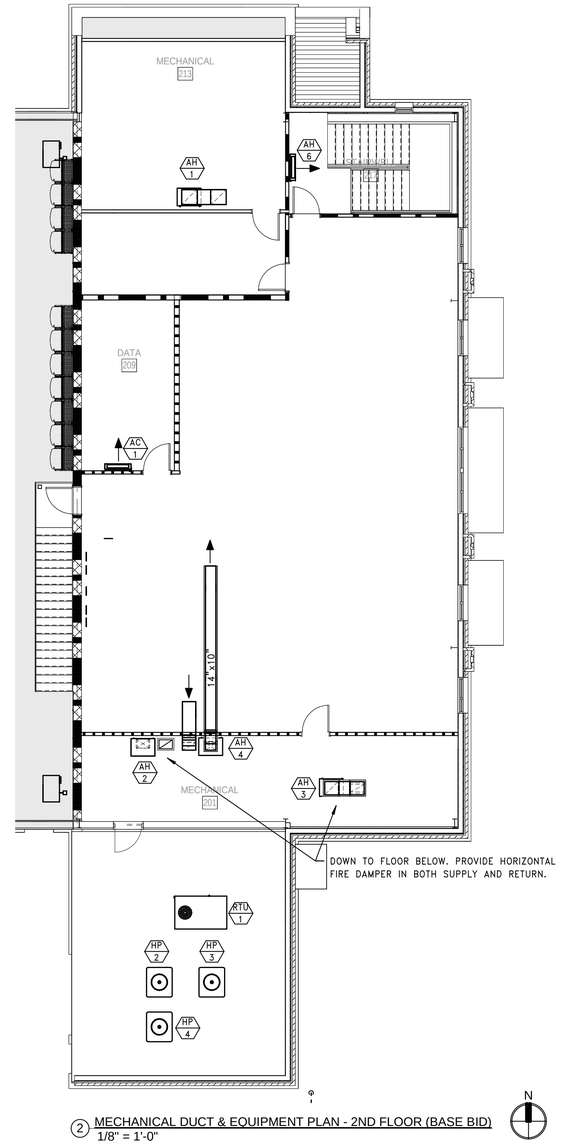
1. INSTALL AH-3 DUCT ABOVE CEILING IN ROOM 102 TIGHT TO FLOOR JOIST. PROVIDE 45 DEGREE TRANSITIONS TO ALLOW FOR ELEVATION CHANGE (SEE SECTION VIEW). RETURN DUCT NORTH OF OFFICE 102 SHALL BE LOCATED WITHIN BULKHEAD.
2. WALL LOUVERS & EXHAUST FAN (EF-1) CONTROLLED BY TOXIC GAS PANEL. WALL FAN (WF-3) CONTROLLED BY WALL SWITCH.

GENERAL NOTES:

1. ENTIRE FLOOR/CEILING ASSEMBLY IS 1-HOUR FIRE RATED. REFERENCE ARCHITECTURAL DRAWINGS.
2. EXPOSED DUCT SHALL BE PAINTED TO MATCH ARCHITECTURAL CEILING. COORDINATE COLOR SELECTION WITH ARCHITECT PRIOR TO PAINTING.



1 MECHANICAL DUCT & EQUIPMENT PLAN - 1ST FLOOR
1/8" = 1'-0"



2 MECHANICAL DUCT & EQUIPMENT PLAN - 2ND FLOOR (BASE BID)
1/8" = 1'-0"

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MECHANICAL DUCT & EQUIPMENT PLAN

M101