

HVAC INSTALLATION SPECIFICATIONS

- I. RECTANGULAR SHEETMETAL DUCT:
 - A) DUCTWORK IN CRAWLSPACES & IN INSULATED/UNINSULATED BASEMENTS & BETWEEN CONDITIONED SPACES: INSTALL AS FOLLOWS:
 - 1) NO DUCT LINER, UNLESS OTHERWISE NOTED ON PLANS. (WHEN SPECIFIED ON PLANS, DUCT LINER IS TO BE SECURELY GYBED AND PINNED (LINER TOUCHING LINER NO EXPOSED FIBERS)) EXTERNALLY WRAP WITH R-8 REFLECTIX 1" BIG BUBBLE INSULATION M/N RHVBB48075.
 - 2) USING 3" FSK TAPE PAINT ALL TAPED JOINTS WITH MASTIC SEALER.
 - 3) ALL SPLITTER FITTINGS TO HAVE PUSH-ROD SPLITTER DAMPERS FOR POSITIVE CONTROL OF AIR FLOW, AND CHECKED FOR PROPER MOVEMENT.
 - 4) ALL JOINTS IN RECTANGULAR DUCT MUST BE SEALED WITH SILICONIZED ACRYLIC LATEX CAULK OR A SUBSTITUTE APPROVED BY ENERGY INNOVATIONS BY HARRY BOODY, INC.
 - 5) GUIDELINES FOR SIZING GAUGE OF GALVANIZED DUCT ARE AS FOLLOWS:

FOR WIDTHS:	UP TO 14"	USE 28 GAUGE
	UP TO 14"	USE 24 GAUGE
	UP TO 36"	USE 26 GAUGE
	OVER 36"	USE 22 GAUGE
 - 6) GUIDELINES FOR SIZING GAUGE OF ALUMINUM B & S DUCT ARE AS FOLLOWS:

FOR WIDTHS:	UP TO 14"	USE 24 GAUGE
	UP TO 35"	USE 22 GAUGE
	UP TO 47"	USE 20 GAUGE
	OVER 47"	USE 18 GAUGE
 - B) PROVIDE CANVAS CONNECTORS ON SUPPLY AND RETURN AT UNIT (CAULK AND WRAP WITH R8 REFLECTIX 1" BIG BUBBLE FOIL INSULATION M/N RHVBB48075 (UNLESS NOT DISPLAYED ON DRAWING))
 - 6) TRUNK LINES SPANNING GREATER THAN 32' MUST BE SUPPORTED WITH ANGLE DRIVES TOP & BOTTOM. (ANGLE DRIVES ARE NOT TO BE INSTALLED INSIDE OF THE TRUNK LINE.)
 - 7) ALL TURNS MUST BE RADIUS TURNS
 - 8) ALL TRUNK LINES SPANNING OVER 60 DEGREES SHALL HAVE INSIDE RADIUS TURNS (SQUARE CORNERS CANNOT BE ACCEPTED UNLESS NOTED ON PLANS.)
 - 9) SUPPORT TRUNK LINES EVERY FOUR (4) FEET MAXIMUM
 - DUCTWORK IN ATTICS IS TO BE INSTALLED USING GENERAL SPECS ABOVE. WRAP ALL RECTANGULAR DUCTWORK IN UNINSULATED ATTIC SPACES WITH INSULATION. * MUST BE INSTALLED AT PROPER THICKNESS.
 - NOTE: ALL DUCT WRAP MUST BE INSTALLED WITHOUT COMPRESSING INSULATION.
 - II. ROUND BRANCH DUCTS - FLEX
 - A) GENERAL
 - 1) VOLUME DAMPERS IN FEEDER LINES ARE NOT REQUIRED UNLESS NOTED ON PLANS
 - 2) ALL TAKE-OFFS, "A" COLLARS, AND BOOTS ARE TO BE CAULKED (TIGHTLY SEALED) AND INSULATED
 - 3) FLEX DUCT 100' OR LESS MUST BE SUPPORTED AT LEAST EVERY 32' MINIMUM WITH 2" WIDE STRAPS.
 - 4) FLEX DUCT GREATER THAN 100' MUST BE SUPPORTED AT LEAST EVERY 24' MINIMUM WITH 3" WIDE STRAPS.
 - 5) FLEX DUCT TURNS OVER 60 DEGREES MUST HAVE SHEETMETAL ELBOWS
 - 6) FLEX DUCT FOIL FACING AND INSULATION SHALL FORM TIGHTLY AGAINST TRUNK LINES (AT MINIMUM) NO EXPOSED INSULATION.
 - B) INSTALLED BY LOCATION
 - 1) FLEX DUCT IN UNSEALED ATTIC SPACES MUST BE R-8 FOIL FACED OR BETTER
 - 2) FLEX DUCT IN SEALED CRAWL SPACES AND BASEMENTS MUST BE R-6 FOIL FACED OR BETTER.
 - 3) FLEX DUCT IN UNSEALED CRAWLSPACES MUST BE R-8 FOIL FACED.
 - III. VENTILATION (PROVIDE AS SEPARATE PRICE QUOTE)
 - A) IT IS THE RESPONSIBILITY OF THE HVAC CONTRACTOR TO VENT PIPE ALL BATH FANS AND DRYERS
 - B) ALL BATH FANS MUST BE VENTED W/1" INSULATION AROUND FLEX PIPE TO PREVENT CONDENSATION (IN UNCONDITIONED AREAS)
 - C) KITCHEN VENTILATION (SEPARATELY PRICED) TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS WALL & ROOF PENETRATIONS TO BE PROVIDED BY OTHERS.
 - IV. REGISTERS AND GRILLES
 - A) ALL REGISTERS AND GRILLES ARE TO BE HART & COOLEY SIZE AND TYPE AS SHOWN UNLESS OTHERWISE STATED ON DRAWING OR APPROVED REPLACEMENT BY EIH, INC. FOR ORDERING INFORMATION, CALL HARRY BOODY AT 336-689-2892.
 - B) IF APPLICABLE, FLOOR REGISTERS MUST BE 6" OFF ALL WALLS WITH WINDOWS, 6" OFF EXTERIOR WALLS WITHOUT WINDOWS, AND 3" OFF INTERIOR WALLS.
 - C) ALL LOW RETURN AIR OPENINGS AND TRANSFER GRILLES MUST BE LOCATED 1-1/2" ABOVE BASE BOARD UNLESS OTHERWISE NOTED ON PLANS
 - D) FRAME WITH 2x4 WOOD AROUND CEILING BOOTS FOR GRILLE WOOD SCREW EQUIPMENT
 - V. EQUIPMENT
 - A) PROVIDE EZ TRAPPED CONDENSATE PRIMARY AND SECONDARY DRAINS FOR ALL EQUIPMENT
 - B) PROVIDE AUXILIARY DRAIN PAN FOR EQUIPMENT LOCATED OVER CONDITIONED SPACES
 - C) SET AIR HANDLERS HIGH ENOUGH TO INSURE PROPER DRAINAGE OF CONDENSATE LINES
 - D) HVAC CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL EQUIPMENT BASES
 - E) TAPE AIR HANDLERS AND COIL ACCESSSES AND OTHER AREAS WHERE LEAKAGE CAN OCCUR
 - F) AIR HANDLERS AND COILS LOCATED IN VENTED ATTIC SPACES MUST BE INSULATED EXTERNALLY. * DO NOT INSULATE BOTTOM OF COIL.
 - VI. MISCELLANEOUS
 - A) USE STRAP TYPE HANGERS FOR ALL DUCTWORK
 - B) HVAC CONTRACTOR IS RESPONSIBLE FOR ALL FIELD MEASUREMENTS TO INSURE PROPER FIT OF DUCTWORK & PROPER ACCESS TO EQUIPMENT PRIOR TO INSTALLATION
 - C) JOIST PANNING IS STRICTLY PROHIBITED
 - D) AS SHOWN ON PLAN, COVER/BLOCK ALL RETURN & SUPPLY OPENINGS AFTER ROUGH-IN TO PREVENT DEBRIS ACCUMULATION.
 - E) HVAC CONTRACTOR TO COORDINATE WITH ELECTRICIAN THE WIRING OF THE SEPARATE FACTORY SEALED KILOWATT HOUR METER FOR INSTALLATION BY ELECTRICAL CONTRACTOR - KILOWATT HOUR METER PROVIDED BY ENERGY INNOVATION BY HARRY BOODY, INC. (EIH)
 - F) PUSH RODS MUST FACE IN DIRECTION OF ACCESS OR AS SHOWN ON PLANS.
 - G) ALL BOOTS AND DUCTS MUST BE CAULKED AT THE COMPLETION OF ROUGH-IN
 - H) ALL BOOT AND DUCT PENETRATIONS THROUGH FLOORS MUST BE CAULKED (TIGHTLY SEALED) AT FLOOR LEVEL. SEAL ALL DUCT PENETRATION THRU WALLS & CEILINGS LEADING INTO UNCONDITIONED SPACES.
 - I) FLOOR JOISTS MUST BE PROPERLY CUT AND HEADED OFF AS REQUIRED, AS STATED ON YOUR CONTRACT, SPECIAL CUTTING AND BOXING IS TO BE HANDLED BY GENERAL CONTRACTOR.
- NOTE: THE FINISHED HEIGHT WILL DEPEND ON THE LOWEST POINT MADE BY PLUMBING, STRUCTURAL BEAMS AND GIRDERS, ELECTRICAL WIRING, ETC., WHICH CANNOT BE CONTROLLED BY ENERGY INNOVATIONS BY HARRY BOODY, INC. (EIH). NOTIFY EIH IMMEDIATELY IF HEAD ROOM PROBLEMS EXIST. ID# 102019REH

WARNING
HVAC CONTRACTOR ASSUMES RESPONSIBILITY FOR ANY CONTAMINATION OF AIR DISTRIBUTION SYSTEM DUE TO INCOMPLETE OR IMPROPER SEALING. AIR DISTRIBUTION SYSTEM MUST BE KEPT CLEAN.

NOTICE
HVAC EQUIPMENT IS NOT TO BE STARTED-UP WITHOUT THE EXPRESS WRITTEN CONSENT OF ENERGY INNOVATIONS BY HARRY BOODY, INC. (EIH)

SHEETMETAL SCREWS SHALL NOT BE USED FOR INSTALLING REGISTERS, GRILLES OR DIFFUSERS.

NOTE
MECHANICAL CONTRACTOR IS TO READ AND FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR ALL HVAC AND RELATED EQUIPMENT

EFFECTIVE IMMEDIATELY - EQUIPMENT CANNOT BE USED FOR TEMPORARY HEATING & COOLING AS PER MANUFACTURER & STATE BUILDING CODES

LOW R/A TRANSFERS TO BE INSTALLED APPROXIMATELY 1 1/2" ABOVE BASEBOARD.

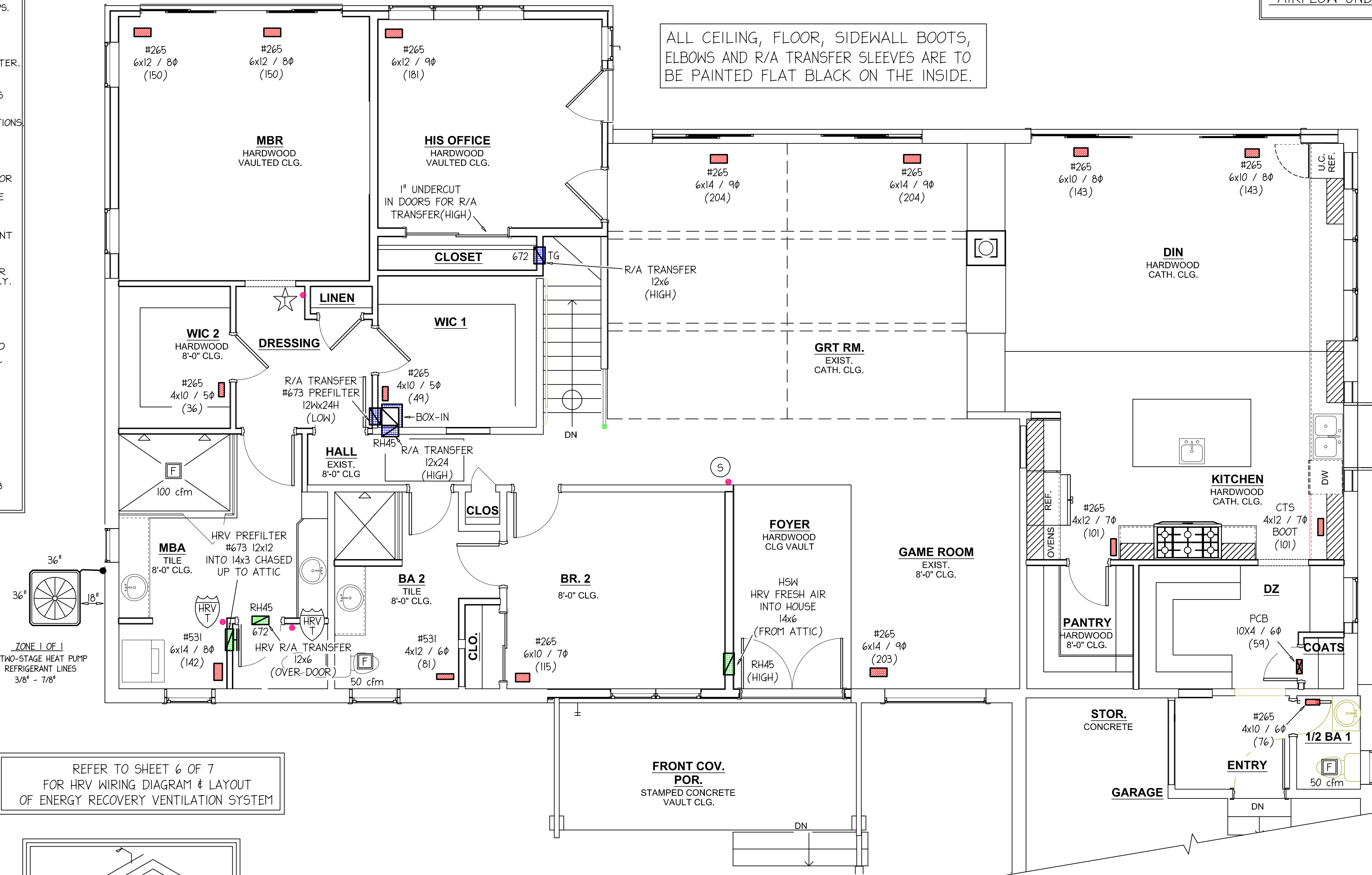
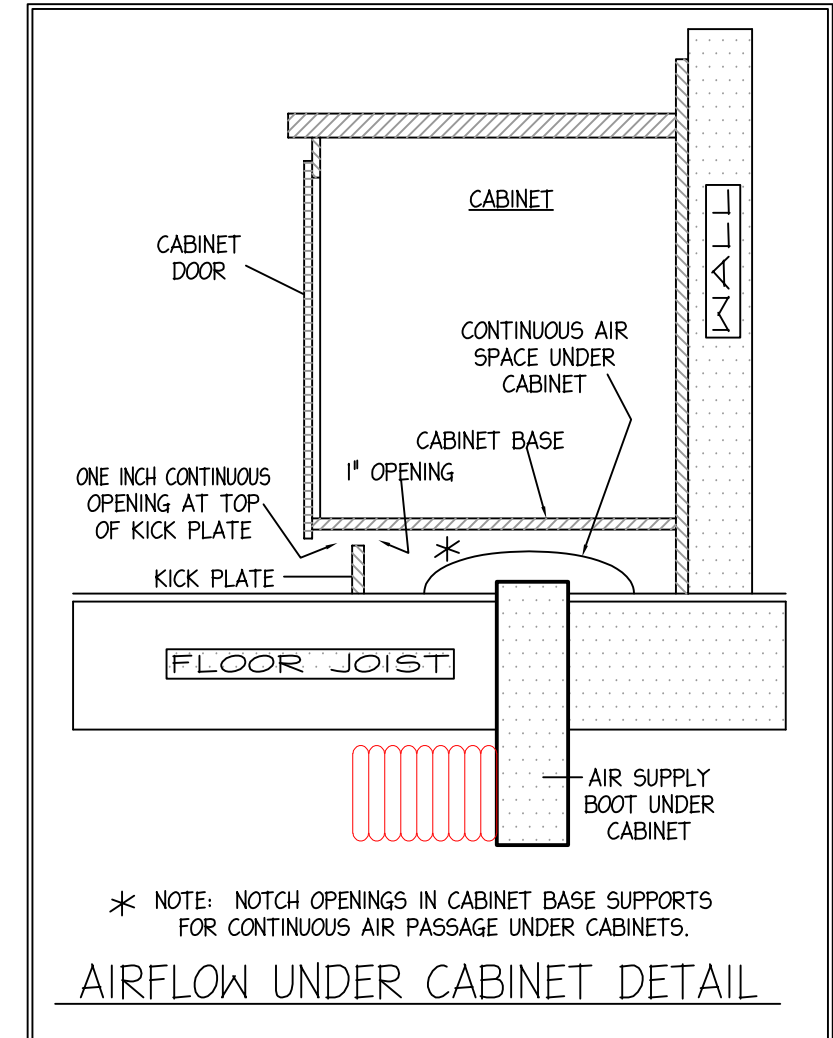
UNDER CUT ALL INTERIOR DOORS 7/8 INCH FOR PROPER AIR VENTILATION

REFER TO SHEET 7 OF 7 FOR WIRING DIAGRAM

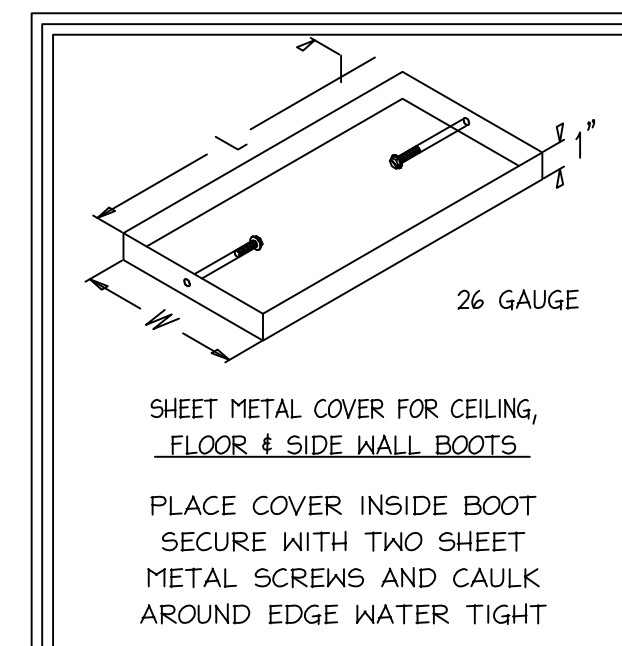
ALL RECTANGULAR TRUNK LINE DIMENSIONS ARE OUTSIDE (SHEET METAL) DIMENSIONS.

HIGH R/A TRANSFERS TO BE INSTALLED APPROXIMATELY 6" BELOW CROWN MOLDING.

ALL CEILING, FLOOR, SIDEWALL BOOTS, ELBOWS AND R/A TRANSFER SLEEVES ARE TO BE PAINTED FLAT BLACK ON THE INSIDE.



REFER TO SHEET 6 OF 7 FOR HRV WIRING DIAGRAM & LAYOUT OF ENERGY RECOVERY VENTILATION SYSTEM



ZONE 1 OF 1 EQUIPMENT NOTES
UNIT TO BE SUPPLIED BY OWNER

MANUFACTURER	MODEL NUMBER
YORK	(1) YH2F48TB215 - TWO STAGE HEAT PUMP
YORK	(2) JM1T12C52N1 - ECM BLOWER MODULE
YORK	(2) 8HK06500506 - 5 KW AUX. HEATER EACH
YORK	(1) XAH660H - HORIZONTAL COIL

SPEED SETTING: SPEED TAP #5 (HIGH SPEED)
DESIGN AIRFLOW: 3200 CFM @ 0.30" EXTERNAL STATIC PRESSURE
AUX. HEAT STAGING: CONTROL 9.6 KW THRU INDOOR THERMOSTAT WITH OUTDOOR TEMPERATURE SET @ 30°F

- NOTE: HVAC CONTRACTOR TO COORDINATE WITH ALARM COMPANY TO PROVIDE DRY CONTACT TO CENTRAL FIRE/SMOKE ALARM SYSTEM TO DEACTIVATE 24V LOW VOLTAGE TO AIR HANDLER IN THE EVENT OF FIRE OR SMOKE SIGNAL IN THE HOUSE DETECTION SYSTEM.
- ☆ - THERMOSTAT, HONEYWELL (1) VISION PRO 8000, TH8321R1001
 - Ⓢ - WIRELESS INDOOR AIR SENSOR, HONEYWELL C7189R1004
 - Ⓞ - WIRELESS OUTDOOR AIR SENSOR, HONEYWELL C7089R1013
 - EIM - EQUIPMENT INTERFACE MODULE, HONEYWELL TH15421R1021
 - Ⓢ - ZONE DAMPER T-STAT FOCUS PRO T4, IH/C TH4110U2005
 - RED LINE - GATEWAY INTERNET MODULE HONEYWELL TH16000R7001
 - TG - ZERO VISION R/A GRILLE
 - PC - PLENUM CHAMBER
 - CC - CANVAS CONNECTOR
 - VD - VOLUME DAMPER
 - AFF - ABOVE FINISHED FLOOR
 - BOG - BOTTOM OF GRILLE
 - Ⓜ - MOTORIZED DAMPER
 - RD - RADIUS DOWN
 - RU - RADIUS UP
 - IJ - IN JOIST
 - ⊕ - PUSH ROD SPLITTER DAMPER
 - ⊙ - RADIUS 45° OR 90° UP/DOWN
 - CTS - CONTINUOUS TOE SHOE (SEE DETAIL)
 - C-O - CASSED OPENING
 - HSW - HIGH SIDE WALL DIFFUSER
 - LSW - LOW SIDE WALL DIFFUSER
 - F - BATHROOM EXHAUST FANS
 - Ⓜ - HRV WALL CONTROL
 - Ⓜ - HRV 20/40/60 MINUTE TIMER
- NOTE: HVAC CONTRACTOR TO COORDINATE W/ ELECTRICIAN

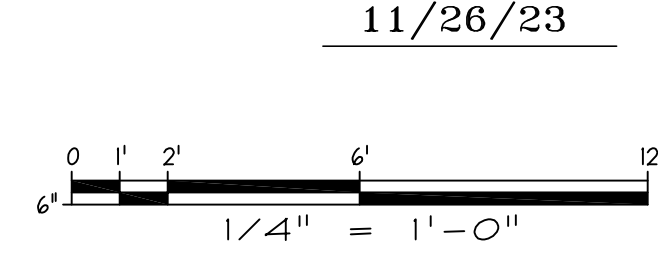
Energy Innovations
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HVAC SYSTEM COORDINATOR:
HARRY J. BOODY
PH: 336-689-2892
DRAWN BY: HJB, TSC, REH, PHM
SCALE: 1/4" = 1'-0"
CAD FILE NO.: N23001

DESIGNER:
PIPPIN HOME DESIGNS

HVAC DESIGN FOR:
KEVIN & KRISTIN LESTER
20141 RIVERCHASE DRIVE
CORNELIUS, NC 28031

6,294 ESF
SHEET
1 OF 7
LOG No.
10603-C04



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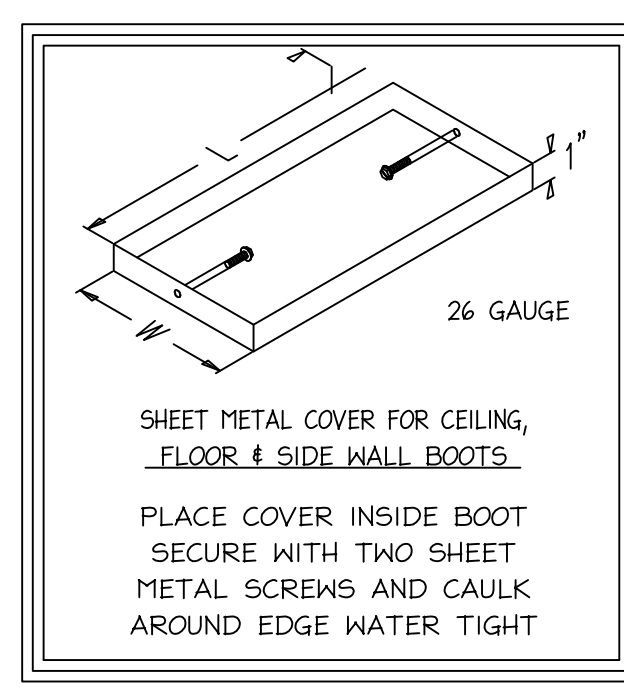
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ALL CEILING, FLOOR, SIDEWALL BOOTS, ELBOWS AND R/A TRANSFER SLEEVES ARE TO BE PAINTED FLAT BLACK ON THE INSIDE.

ALL RECTANGULAR TRUNK LINE DIMENSIONS ARE OUTSIDE (SHEET METAL) DIMENSIONS.

NOTE
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HIGH R/A TRANSFERS TO BE INSTALLED APPROXIMATELY 6" BELOW CROWN MOLDING.



LOW R/A TRANSFERS TO BE INSTALLED APPROXIMATELY 1 1/2" ABOVE BASEBOARD.

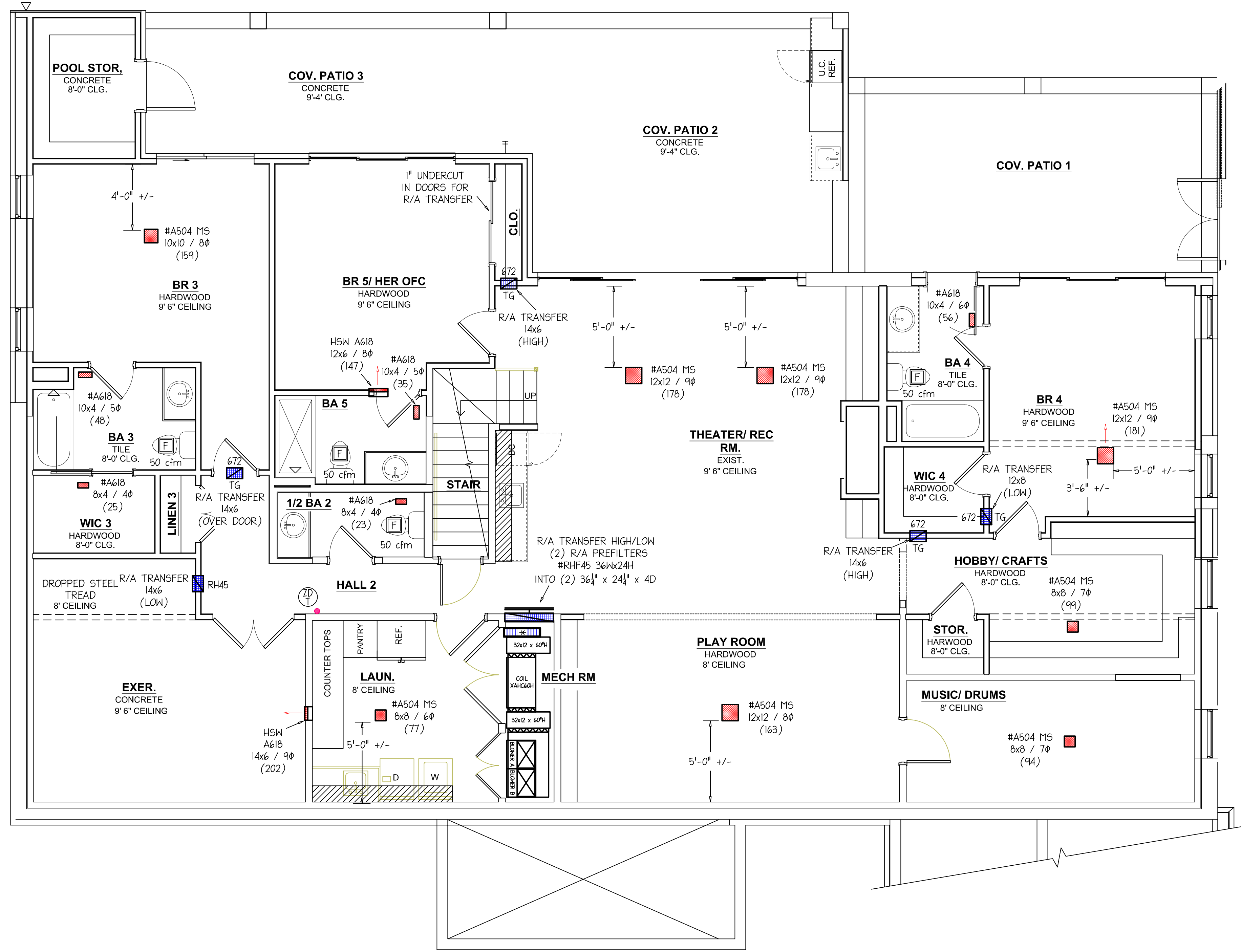
UNDER CUT ALL INTERIOR DOORS 7/8 INCH FOR PROPER AIR VENTILATION

REFER TO SHEET 7 OF 7 FOR WIRING DIAGRAM

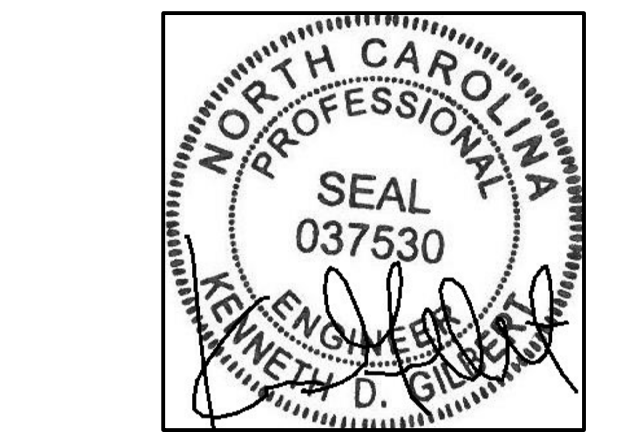
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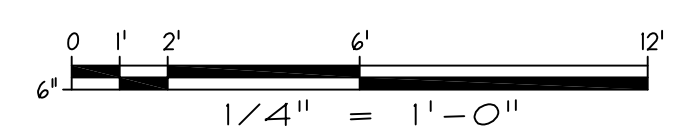
REFER TO SHEET 6 OF 7 FOR HRV WIRING DIAGRAM & LAYOUT OF ENERGY RECOVERY VENTILATION SYSTEM



ZONE 1 OF 1
LOWER LEVEL - REGISTER LAYOUT



11/26/23



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DATE: 06/07/23

Revisions:
1. 07/20/23 7..
2. 11/12/23 8..
3. 11/22/23 9..
4. 11/23/23 10..
5. 11/26/23 11..
6..

HVAC SYSTEM COORDINATOR:
HARRY J. BOODY
PH: 336-689-2892

DRAWN BY:
HJB,TSC,FEH,PHM

SCALE:
1/4" = 1'-0"

CAD FILE No.: N23001

DESIGNER:
PIPPIN HOME DESIGNS

CONTRACTOR:
LAGNIAPPE HOMES

HVAC DESIGN FOR:
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6,294 ESF

SHEET

2 OF 7

LOG No.

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ENERGY ANALYSIS SUMMARY

HEATING LOAD = 57,703 BTUH
 COOLING LOAD = 44,215 BTUH
 HOUSE SIZE = 6,294 ESF
 HOUSE VOLUME = 50,352 CU.-FT.
 ENERGY GUARANTEE: 17,440 Kwh/Yr.
 (NOTE: ESF = EQUIVALENT SQUARE FOOT = VOLUME/8FT.)

HVAC EQUIPMENT SUMMARY

(TWO STAGE HEAT PUMP)
 ZONES = 1 OF 1
 CAPACITY TONNAGE = 3.25/3.83 TONS
 AIRFLOW TONNAGE = 9.14 TONS @350 CFM/TON
 STAGE 1 COOLING CAPACITY OUTPUT = 39,000 BTUH
 STAGE 2 COOLING CAPACITY OUTPUT = 46,000 BTUH
 SEER2 RATING = 16.0
 HEATING CAPACITY @ 47° F = 44,000 BTUH
 COP @ 47° F = 3.90
 HEATING CAPACITY @ 17° F = 30,400 BTUH
 COP @ 17° F = 2.92
 HSPF2 = 8.10
 AUXILIARY HEAT = 9.6 KW @ 240V

WARNING

NO EXPOSED FIBERS IN DUCT LINING.
 ANY TEARS OR EXPOSED FIBERS SHALL BE REPLACED OR PROPERLY SECURED BY AN APPROVED SEALER ENCAPSULATING ALL LOOSE FIBERS. HVAC CONTRACTOR ASSUMES RESPONSIBILITY FOR DAMAGED DUCT LINERS AND VAPOR BARRIERS AROUND DUCT INSULATION.

NOTE

MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL FIELD MEASUREMENTS TO INSURE PROPER FIT OF DUCTWORK & PROPER ACCESS TO EQUIPMENT PRIOR TO INSTALLATION.

SECURELY TAPE AND SEAL ALL FLEX DUCT LINER TO SHEETMETAL "A" COLLAR AND SECURELY INSTALL THE TIE STRAP BAND OVER TAPED LINER. NO TIE STRAPS ARE TO BE INSTALLED OVER THE DUCT INSULATION

GENERAL NOTE:

ALL MECHANICAL WORK MUST COMPLY WITH THE APPLICABLE SECTION OF THE 2018 NC MECHANICAL CODE.

NOTE

MECHANICAL CONTRACTOR IS TO READ AND FOLLOW MANUFACTURERS INSTALLATION INSTRUCTIONS FOR ALL HVAC AND RELATED EQUIPMENT

IMPORTANT

ADVISE ELECTRICAL CONTRACTORS TO REPLACE ALL EQUIPMENT ACCESS PANELS REMOVED FOR WIRING. UNIT MUST BE KEPT CLEAN. DO NOT LEAVE ACCESS DOOR OFF AFTER WIRING.

WARNING

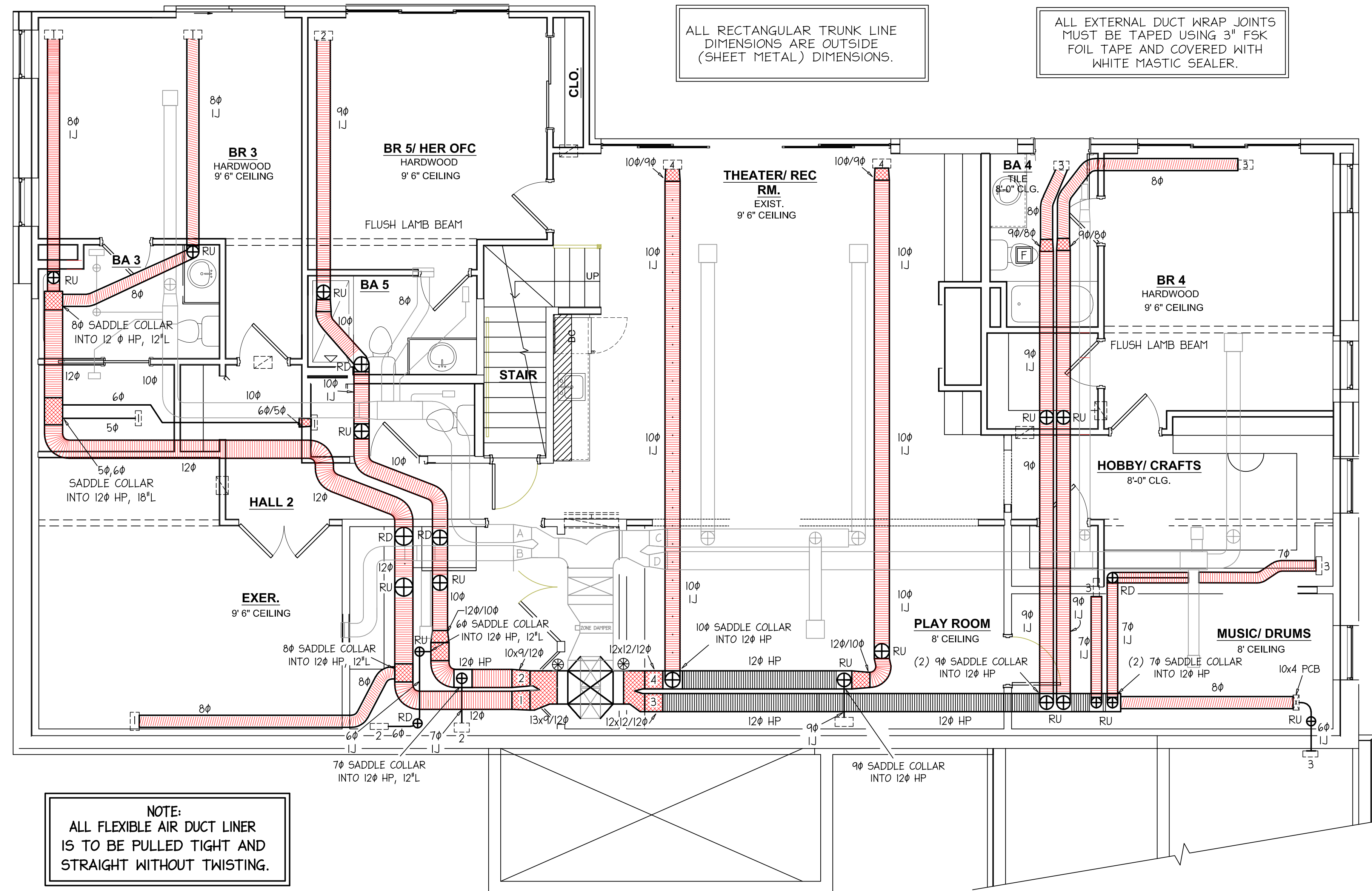
BEFORE INSTALLING DUCTWORK, CLEAN THE INSIDE SURFACES WITH CONCREBIUM MOLD CONTROL TO INSURE THE DUCTWORK IS ABSOLUTELY CLEAN.

NOTE

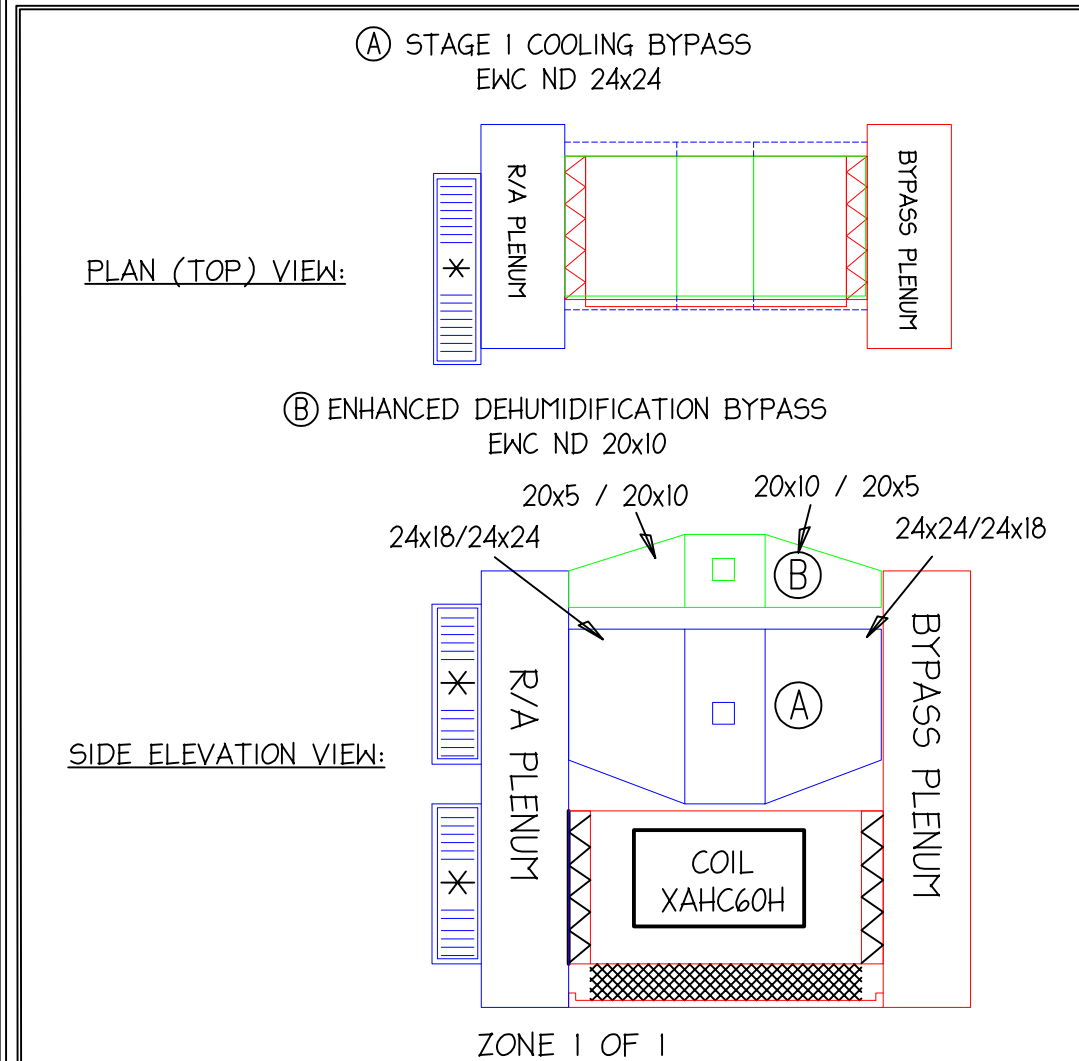
COVER WITH PLASTIC AND TAPE ALL OPENINGS IN DUCTWORK AND EQUIPMENT NOT COMPLETELY CONNECTED OR INSTALLED. THIS WILL PREVENT DIRT AND DUST FROM ENTERING INTO THE DUCT SYSTEM OR EQUIPMENT. AIR DISTRIBUTION SYSTEM MUST BE KEPT CLEAN TO PREVENT A BREEDING SURFACE FOR MOLD GROWTH.

NOTE:

ALL FLEXIBLE AIR DUCT LINER IS TO BE PULLED TIGHT AND STRAIGHT WITHOUT TWISTING.



BY-PASSING AIR AROUND COOLING COIL TO INCREASE MOISTURE REMOVAL (DEHUMIDIFICATION) RATE AND DECREASING THE POSSIBILITY OF MOLD GROWTH
ENERGY INNOVATIONS BY HARRY BOODY AIR/COIL BYPASS FOR TWO STAGE CAPACITY UNITS



STAGE 1 COOLING BY-PASS: (MOTORIZE DAMPER (MD)) EMC ND 24x24 WILL BYPASS APPROXIMATELY 20% CFM WITH A DUCT VELOCITY OF APPROXIMATELY 748 FPM THRU DAMPER.
 TOTAL BY-PASS STAGE 1 COOLING = 20% CFM (65%)
 ENHANCED DEHUMIDIFICATION BY-PASS (EDBP): EMC ND 20x10 MOTORIZED DAMPER IS POWERED OPEN IF INDOOR RH (HUMIDITY) EXCEEDS 60% THUS BYPASS AN ADDITIONAL 482 CFM @ 582 FPM THRU DAMPER.
 TOTAL BY-PASS STAGE 1 COOLING & EDBP = 2588 CFM (80%)
 MD = MOTORIZED DAMPER EMC (MODEL ND 24x24 AND ND 20x10) (POWER OPEN, POWER CLOSED, SIDE MOUNTED); DAMPER MUST NOT BE BINDING - CHECK FOR PROPER OPERATION.

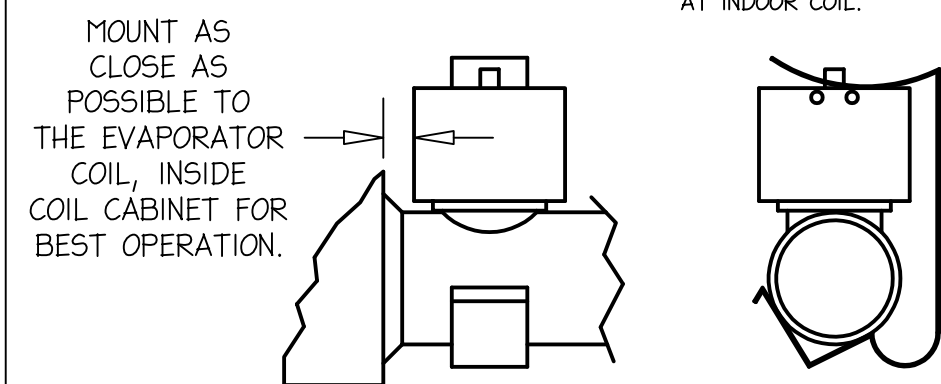
MODE OF OPERATION:

FOR STAGE 1 COOLING CAPACITY IN THE COOLING MODE: REFRIGERANT (SUCTION) LINE GETS COLD. AS LONG AS REFRIGERANT LINE TEMPERATURE IS GREATER THAN 36 F, THE EMC MOTORIZED DAMPER IS POWERED OPEN, BY-PASSING AIR AROUND COOLING COIL. IF THE REFRIGERANT LINE GETS COLDER THAN 36 F, THE EMC ANTI-FREEZE UP PROTECTION CONTROL (MODEL CPLS) ACTIVATES THE CIRCUIT TO CLOSE THE DAMPER. WHEN CLOSED, MORE AIRFLOW IS PASSING THROUGH THE COIL, WHICH WILL CAUSE COOLING COIL TO BEGIN RISING IN TEMPERATURE. WHEN COIL TEMPERATURE REACHES 46 F, THE DAMPER IS POWERED OPEN, BY-PASSING AIR AROUND COIL.
 FOR STAGE 2 COOLING CAPACITY AND IN HEATING MODE: CIRCUIT IS BROKEN BY SWITCHING TO STAGE 2 COOLING OR SWITCHING TO THE HEATING MODE AT THE HOUSE THERMOSTAT. AGAIN, DAMPER IS POWERED TO CLOSE.

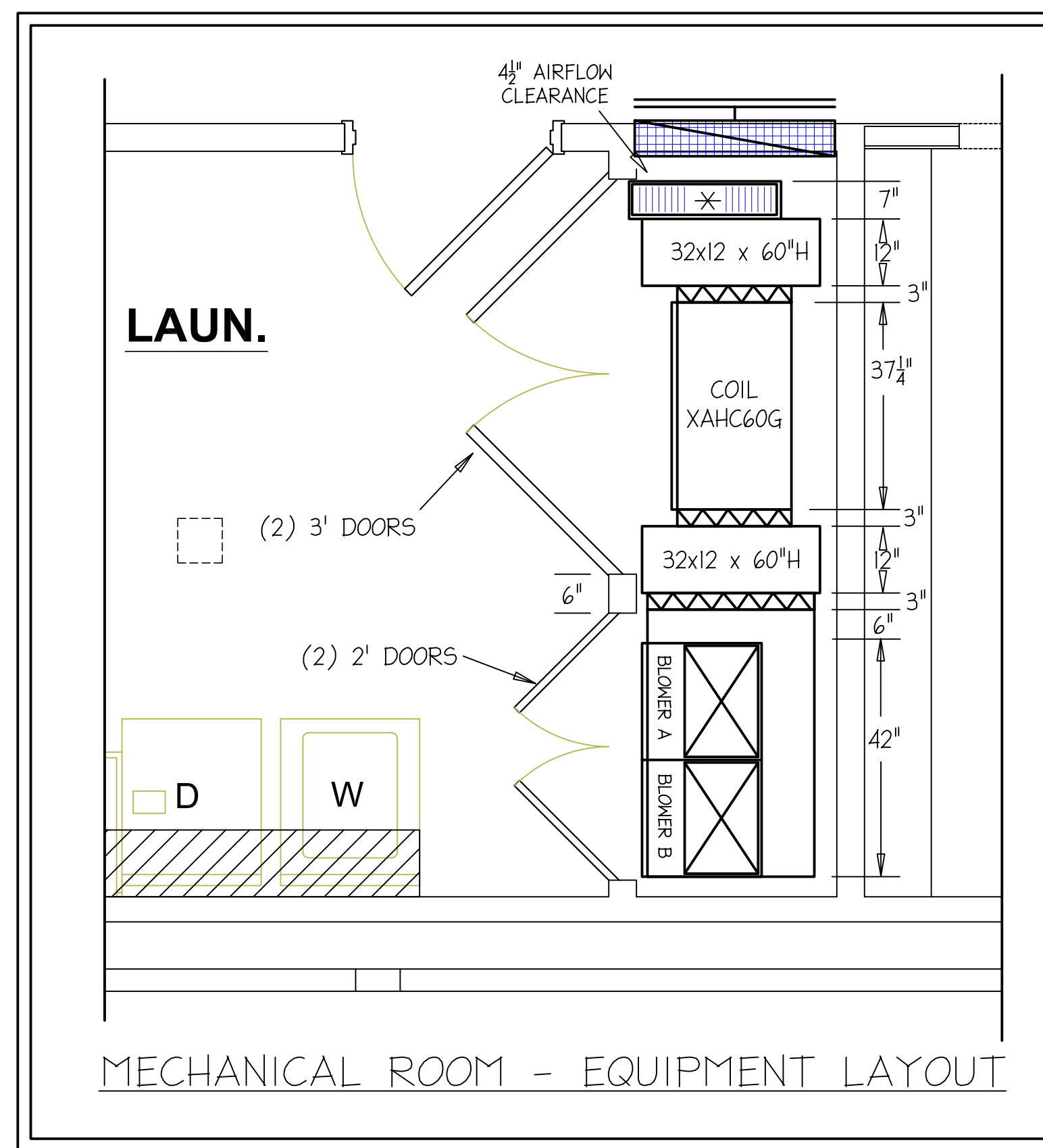
STAGE #2 COOLING & HEATING MODE: ADJUST STAGE 1 COOLING BYPASS STOP TO CLOSE 62% AND DAMPER REMAINS 38% OPEN FOR CONTINUOUS 1220 CFM AIRFLOW BYPASS

- NOTE: #1: FOR HEAT PUMP THERMOSTAT; SEE WIRING DIAGRAM SHEET 7 OF 7
- #2: AT LEAST 15VA IS NEEDED TO OPERATE (POWER OPEN/POWER CLOSE) DAMPER. NO ISOLATION TRANSFORMER IS NEEDED IF SYSTEM CAN PROVIDE AN EXTRA 15VA. OTHERWISE, AN ISOLATION TRANSFORMER AND AUXILIARY RELAY WILL BE REQUIRED.
- NOTE: INSURE THAT INTERNAL AIR HANDLER INSULATION IS PROPERLY SECURED.

ANTI-FREEZE PROTECTION CONTROL EMC (MODEL CPLS) TO BE CONNECTED TO SUCTION LINE AT INDOOR COIL.



- NOTE: #1: THE CURVED SURFACE OF THE SENSOR MUST BE ATTACHED DIRECTLY AND SECURELY TO THE OUTSIDE OF THE PIPE. MOUNT THE CPLS AT THE TOP OR SIDES OF THE PIPE, NOT AT THE BOTTOM. DO NOT EXCEED THE RECOMMENDED PIPE SIZE. LARGER DIAMETER PIPE WILL NOT ALLOW GOOD CONTACT WITH THE CPLS SURFACE. FOR BEST RESULTS, MOUNT THE CPLS INSIDE THE EVAPORATOR CABINET, ON THE EVAPORATOR MANIFOLD OR SUCTION LINE BEFORE IT EXITS THE CABINET.
- #2: INSULATE THE CPLS AND ANY EXPOSED PIPE WITH FOAM OR CORK INSULATION TAPE. AMBIENT TEMPERATURES WILL AFFECT THE OPERATION OF THE CPLS IF NOT PROPERLY INSULATED.



ZONE I OF 1 UPPER LEVEL - DUCT LAYOUT

ALL FLEX DUCT MUST BE PROPERLY INSTALLED SUCH THAT NO AIR FLOW RESTRICTIONS EXIST

NOTICE:
 HVAC CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH OWNER / BUILDER TO ASSURE THAT NO ROOF WATER RUN OFF CAN COME IN CONTACT WITH THE OUTDOOR UNIT. GUTTERS OR RAIN DIVERTERS MUST BE INSTALLED.

FLEXIBLE DUCT PERFORMANCE AND INSTALLATION MUST MEET THE "R" VALUES PER ASTM C-518 STANDARDS

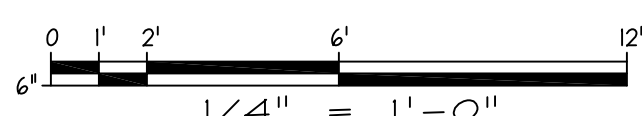
NOTE:
 REFER TO SHEET 5 OF 7 FOR ISOMETRIC LAYOUT & ALL DIMENSIONS

ALL VERTICAL ROUND DUCTS TO BE HARD SHEET METAL

NOTE:
 INSTALL iWAVE-R AIR PURIFIER PER MANUFACTURER GUIDELINES



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6,294 ESF
 SHEET
3 OF 7
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ENERGY ANALYSIS SUMMARY
 HEATING LOAD = 57,703 BTUH
 COOLING LOAD = 44,215 BTUH
 HOUSE SIZE = 6,294 ESF
 HOUSE VOLUME = 50,352 CU.-FT.
 ENERGY GUARANTEE: 17,440 Kwh/Yr.
 (NOTE: ESF = EQUIVALENT SQUARE FOOT = VOLUME/8FT.)

HVAC EQUIPMENT SUMMARY
 (TWO STAGE HEAT PUMP)
 ZONES = 1 OF 1
 CAPACITY TONNAGE = 3.25/3.83 TONS
 AIRFLOW TONNAGE = 9.14 TONS @350 CFM/TON
 STAGE 1 COOLING CAPACITY OUTPUT = 39,000 BTUH
 STAGE 2 COOLING CAPACITY OUTPUT = 46,000 BTUH
 SEER2 RATING = 16.0
 HEATING CAPACITY @ 47° F = 44,000 BTUH
 COP @ 47° F = 3.90
 HEATING CAPACITY @ 17° F = 30,400 BTUH
 COP @ 17° F = 2.92
 HSPF2 = 8.10
 AUXILIARY HEAT = 9.6 KW @ 240V

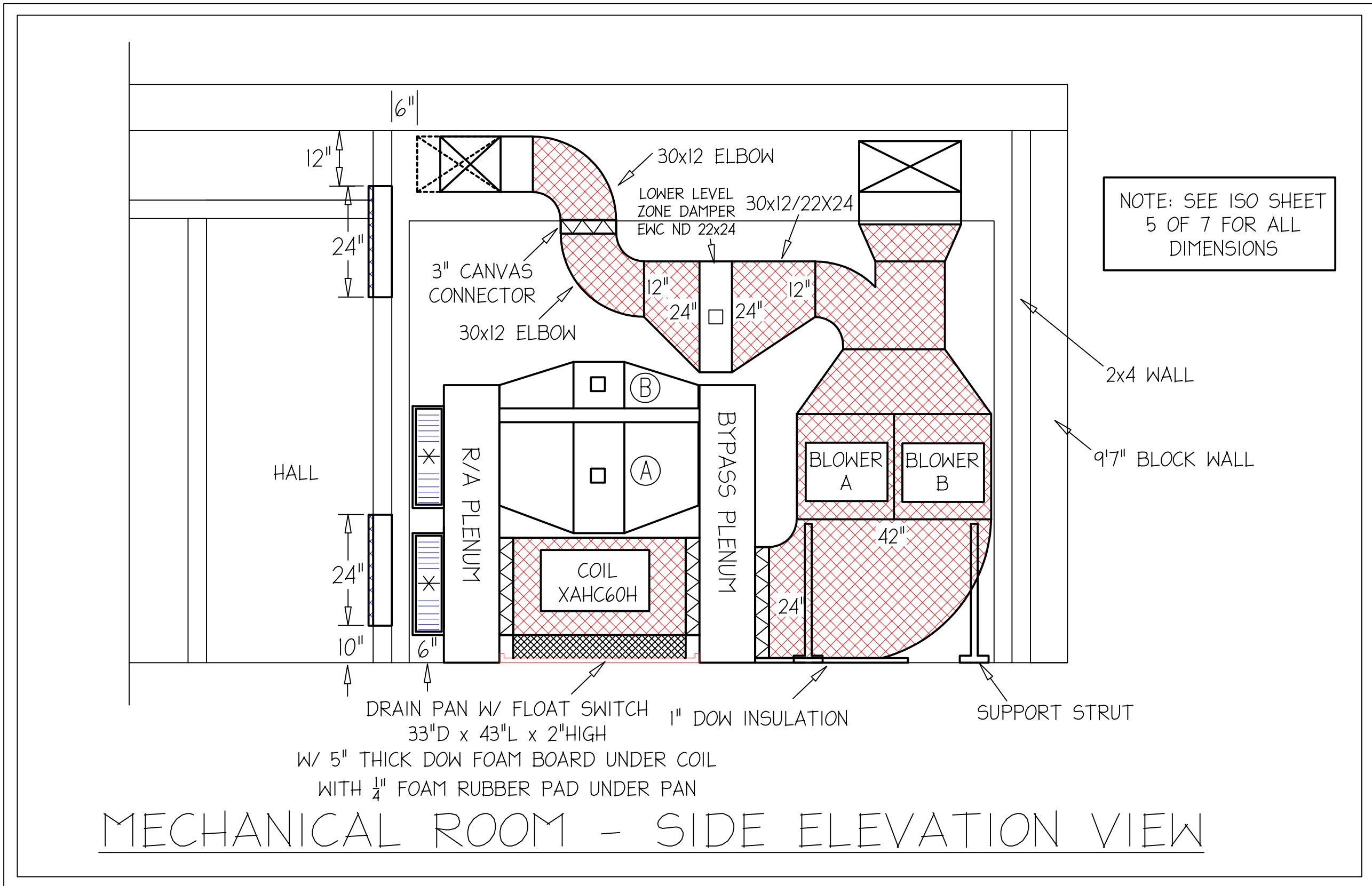
WARNING
 BEFORE INSTALLING DUCTWORK, CLEAN THE INSIDE SURFACES WITH CONGROBIUM MOLD CONTROL TO INSURE THE DUCTWORK IS ABSOLUTELY CLEAN.

ALL VERTICAL ROUND DUCTS TO BE HARD SHEET METAL

ALL FLEX DUCT MUST BE PROPERLY INSTALLED SUCH THAT NO AIR FLOW RESTRICTIONS EXIST

NOTE:
 ALL FLEXIBLE AIR DUCT LINER IS TO BE PULLED TIGHT AND STRAIGHT WITHOUT TWISTING.

NOTE:
 INSTALL iHAVE-R AIR PURIFIER PER MANUFACTURER GUIDELINES



WARNING
 NO EXPOSED FIBERS IN DUCT LINING. ANY TEARS OR EXPOSED FIBERS SHALL BE REPLACED OR PROPERLY SECURED BY AN APPROVED SEALER ENCAPSULATING ALL LOOSE FIBERS. HVAC CONTRACTOR ASSUMES RESPONSIBILITY FOR DAMAGED DUCT LINERS AND VAPOR BARRIERS AROUND DUCT INSULATION.

NOTE
 MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL FIELD MEASUREMENTS TO INSURE PROPER FIT OF DUCTWORK & PROPER ACCESS TO EQUIPMENT PRIOR TO INSTALLATION.

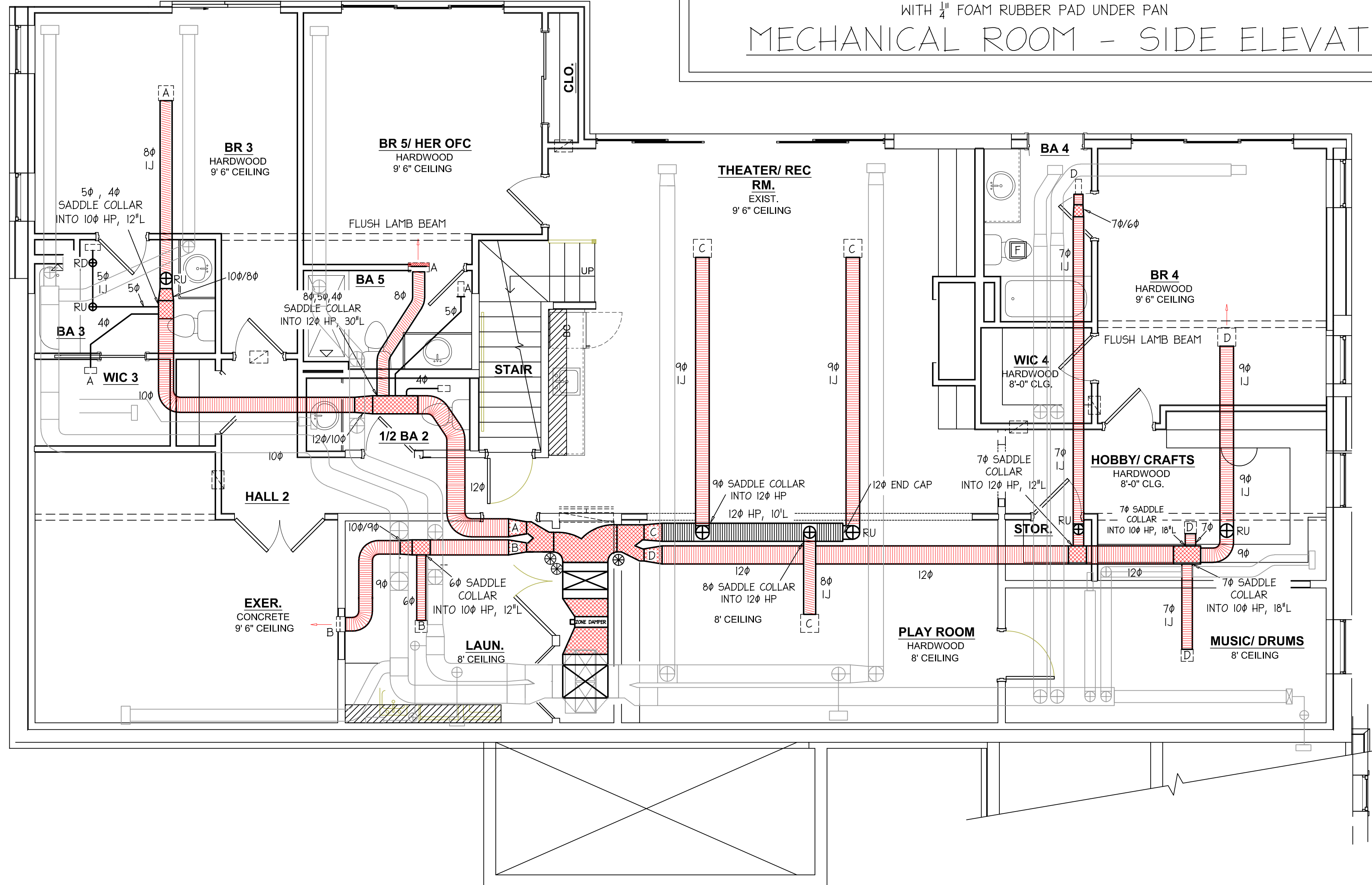
SECURELY TAPE AND SEAL ALL FLEX DUCT LINER TO SHEETMETAL "A" COLLAR AND SECURELY INSTALL THE TIE STRAP BAND OVER TAPED LINER. NO TIE STRAPS ARE TO BE INSTALLED OVER THE DUCT INSULATION

GENERAL NOTE:
 ALL MECHANICAL WORK MUST COMPLY WITH THE APPLICABLE SECTION OF THE 2018 NC MECHANICAL CODE.

IMPORTANT
 ADVISE ELECTRICAL CONTRACTORS TO REPLACE ALL EQUIPMENT ACCESS PANELS REMOVED FOR WIRING. UNIT MUST BE KEPT CLEAN. DO NOT LEAVE ACCESS DOOR OFF AFTER WIRING.

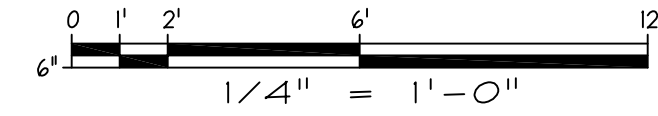
NOTE
 COVER WITH PLASTIC AND TAPE ALL OPENINGS IN DUCTWORK AND EQUIPMENT NOT COMPLETELY CONNECTED OR INSTALLED. THIS WILL PREVENT DIRT AND DUST FROM ENTERING INTO THE DUCT SYSTEM OR EQUIPMENT. AIR DISTRIBUTION SYSTEM MUST BE KEPT CLEAN TO PREVENT A BREEDING SURFACE FOR MOLD GROWTH.

NOTE:
 REFER TO SHEET 5 OF 7 FOR ISOMETRIC LAYOUT & ALL DIMENSIONS



NOTE: SEE ISO SHEET 5 OF 7 FOR ALL DIMENSIONS

DATE: 11/26/23



ZONE 1 OF 1
 LOWER LEVEL - DUCT LAYOUT

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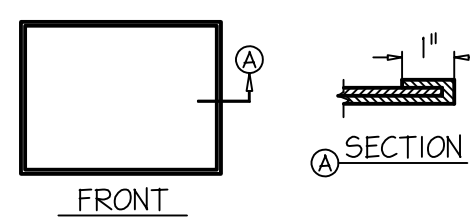
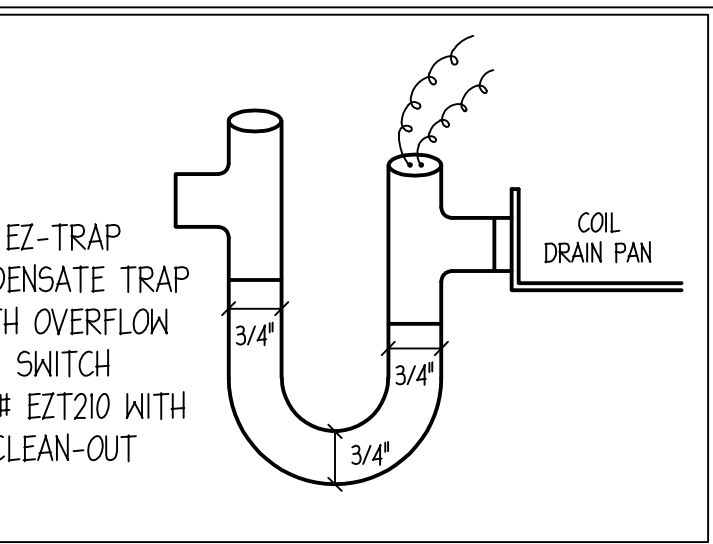
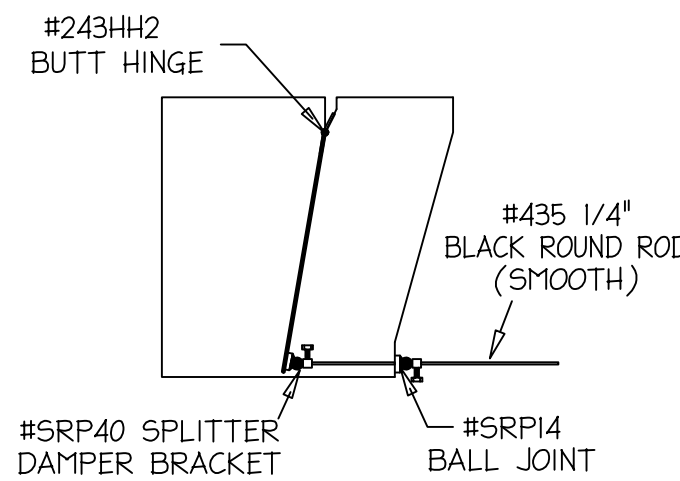
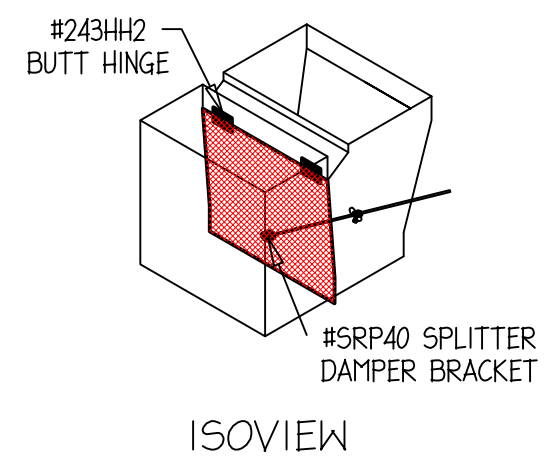
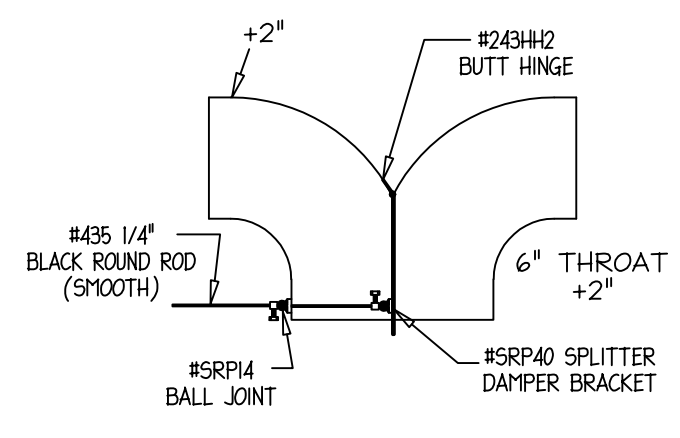
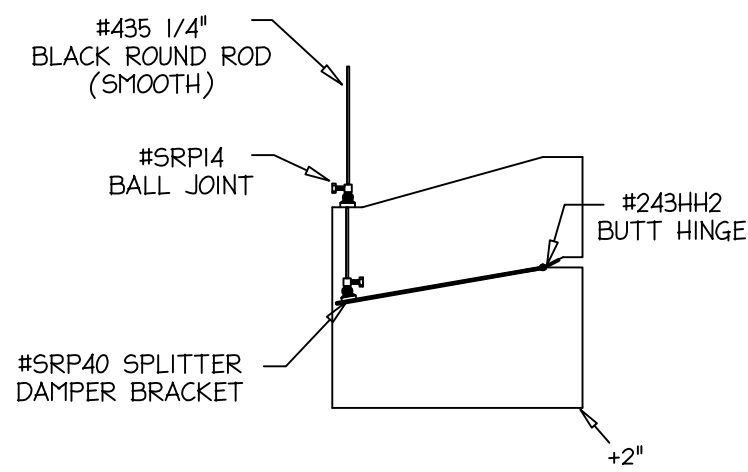
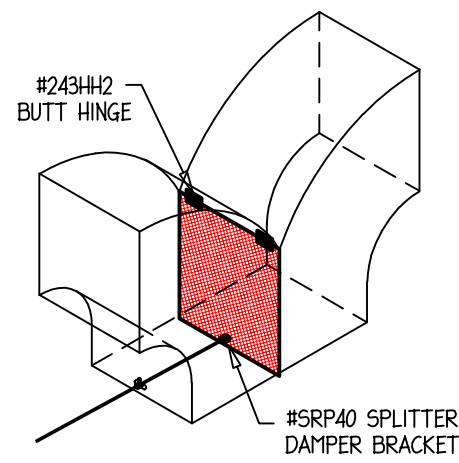
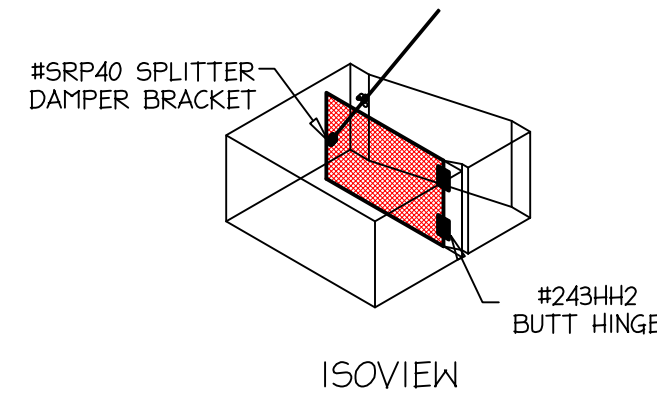
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 Revisions:
 1. 07/20/23 7.
 2. 11/12/23 8.
 3. 11/22/23 9.
 4. 11/23/23 10.
 5. 11/26/23 11.
 6.

HVAC SYSTEM COORDINATOR:
 HARRY J. BOODY
 PH: 336-689-2892
 DRAWN BY:
 HJB,TSC,FEH,PHM
 SCALE:
 1/4" = 1'-0"
 CAD FILE No.: N23001

DESIGNER:
 PIPPIN HOME DESIGNS
 CONTRACTOR:
 LAGNIAPPE HOMES

HVAC DESIGN FOR:
 KEVIN & KRISTIN LESTER
 20141 RIVERCHASE DRIVE
 CORNELIUS, NC 28031

6,294 ESF
 SHEET
 4 OF 7
 LOG No.
 10603-C04



ALL SPLITTER DAMPERS THAT EXCEED 20 INCHES IN WIDTH ARE TO BE TWO LAYERS OF SHEETMETAL WITH A RIBBED EDGE OF THREE LAYERS AS SHOWN.
DO NOT USE MORE THAN 1 DAMPER ROD UNLESS OTHERWISE NOTED ON PLANS.

SPLITTER DAMPER DETAIL

ALL FLEX DUCT MUST BE PROPERLY INSTALLED SUCH THAT NO AIR FLOW RESTRICTIONS EXIST

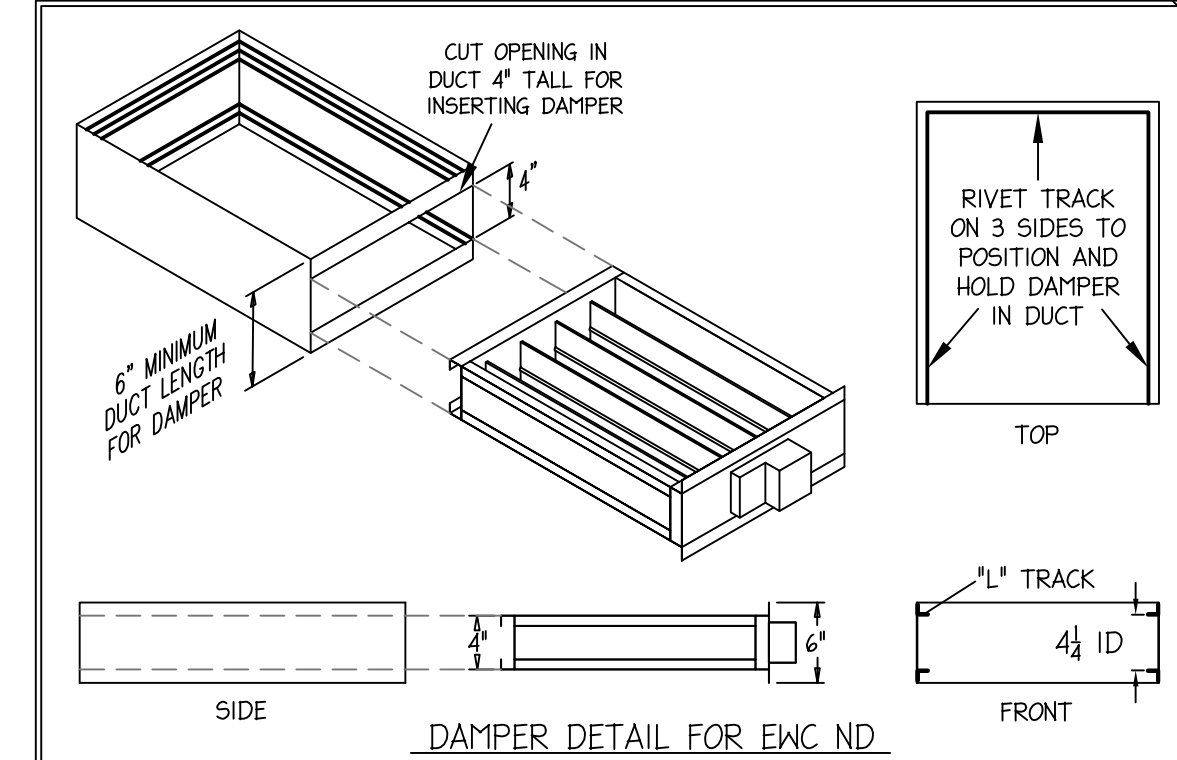
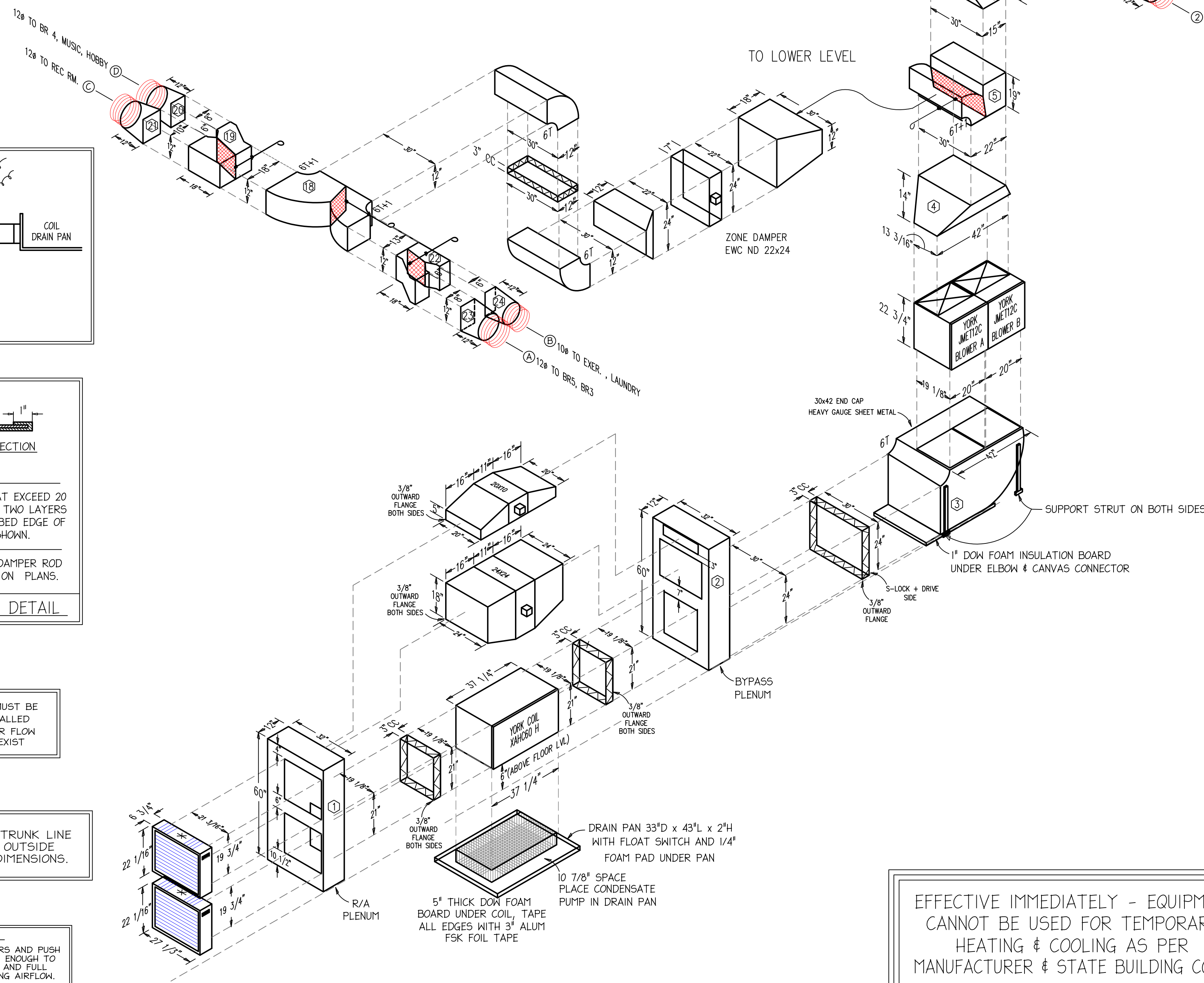
ALL RECTANGULAR TRUNK LINE DIMENSIONS ARE OUTSIDE (SHEET METAL) DIMENSIONS.

NOTICE
ALL SPLITTER DAMPERS AND PUSH RODS MUST BE LONG ENOUGH TO ENSURE FULL OPEN AND FULL CLOSURE OF SPLITTING AIRFLOW.

SECURELY TAPE AND SEAL ALL FLEX DUCT LINER TO SHEETMETAL "A" COLLAR AND SECURELY INSTALL THE TIE STRAP BAND OVER TAPED LINER. NO TIE STRAPS ARE TO BE INSTALLED OVER THE DUCT INSULATION

FLEXIBLE DUCT PERFORMANCE AND INSTALLATION MUST MEET THE "R" VALUES PER ASTM C-518 STANDARDS

WARNING
PROVIDE AUXILIARY DRAIN PAN FOR EQUIPMENT LOCATED OVER CONDITIONED SPACES.



NOTICE
COVER WITH PLASTIC AND TAPE ALL OPENINGS IN DUCTWORK AND EQUIPMENT NOT COMPLETELY CONNECTED OR INSTALLED. THIS WILL PREVENT DIRT AND DUST FROM ENTERING INTO THE DUCT SYSTEM OR EQUIPMENT. AIR DISTRIBUTION SYSTEM MUST BE KEPT CLEAN TO PREVENT A BREEDING SURFACE FOR MOLD GROWTH.

ALL SQUARE TO ROUND FITTINGS ARE TO BE 8" LONG UNLESS OTHERWISE NOTED

REFER TO SHEET 6 OF 7 FOR ERV WIRING DIAGRAM & LAYOUT OF ENERGY RECOVERY VENTILATION SYSTEM

REFER TO SHEET 7 OF 7 FOR WIRING & METER DIAGRAM

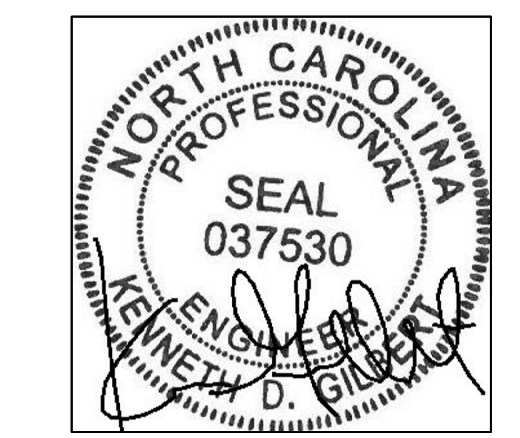
ALL EXTERNAL DUCT WRAP JOINTS MUST BE TAPED USING 3" FSK FOIL TAPE AND COVERED WITH MASTIC SEALER.

ALL VERTICAL ROUND DUCTS ARE HARD SHEET METAL

NOTE:
ALL FLEXIBLE AIR DUCT LINER IS TO BE PULLED TIGHT AND STRAIGHT WITHOUT TWISTING.

IMPORTANT
ADVISE ELECTRICAL CONTRACTORS TO REPLACE ALL EQUIPMENT ACCESS PANELS THAT WERE REMOVED FOR WIRING. UNIT MUST BE KEPT CLEAN. DO NOT LEAVE ACCESS DOOR OFF AFTER WIRING.

NOTE:
FLEX DUCT 10\"/>



DATE: 11/26/23

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EFFECTIVE IMMEDIATELY - EQUIPMENT CANNOT BE USED FOR TEMPORARY HEATING & COOLING AS PER MANUFACTURER & STATE BUILDING CODES

NOTE
MECHANICAL CONTRACTOR IS TO READ AND FOLLOW MANUFACTURERS INSTALLATION INSTRUCTIONS FOR ALL HVAC AND RELATED EQUIPMENT

NOTE:
INSTALL iWAVE-R AIR PURIFIER PER MANUFACTURER GUIDELINES

*
APRILAIRE 2210
AIR CLEANERS

NOTE:
HVAC CONTRACTOR TO COORDINATE WITH ELECTRICIAN FOR 120V ELECTRICAL OUTLET FOR CONDENSATE PUMPS AND AIR PURIFICATION UNITS, IF APPLICABLE.

WARNING
HVAC CONTRACTOR ASSUMES RESPONSIBILITY FOR ANY CONTAMINATION OF AIR DISTRIBUTION SYSTEM DUE TO INCOMPLETE OR IMPROPER SEALING. AIR DISTRIBUTION SYSTEM MUST BE KEPT CLEAN.

WARNING
NO EXPOSED FIBERS IN DUCT LINING. ANY TEARS OR EXPOSED FIBERS SHALL BE REPLACED OR PROPERLY SECURED BY AN APPROVED SEALER ENCAPSULATING ALL LOOSE FIBERS. HVAC CONTRACTOR ASSUMES RESPONSIBILITY FOR DAMAGED DUCT LINERS AND VAPOR BARRIERS AROUND DUCT INSULATION.

WARNING
BEFORE INSTALLING DUCTWORK, CLEAN THE INSIDE SURFACES WITH CONCREBRIUM MOLD CONTROL TO INSURE THE DUCTWORK IS ABSOLUTELY CLEAN.

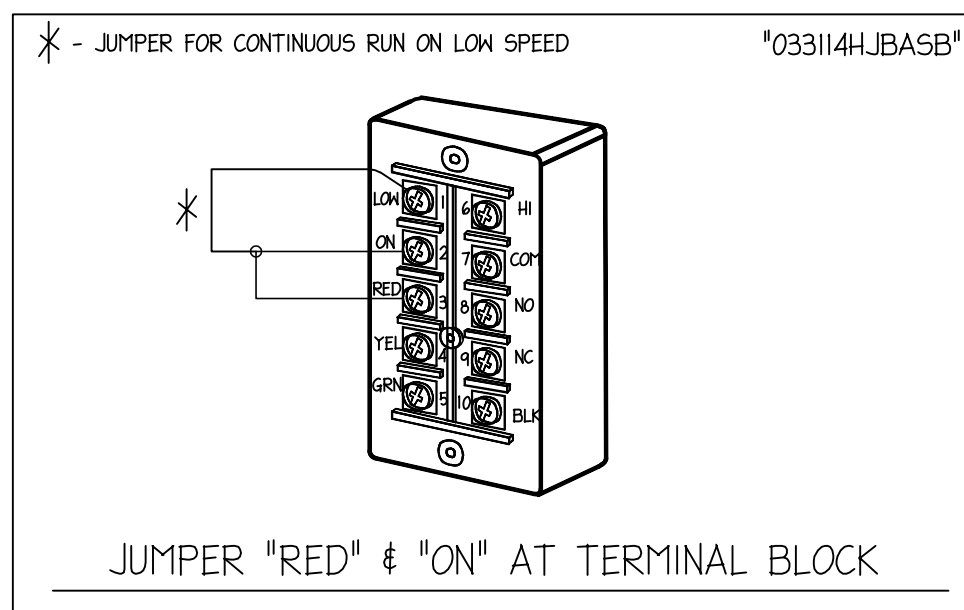
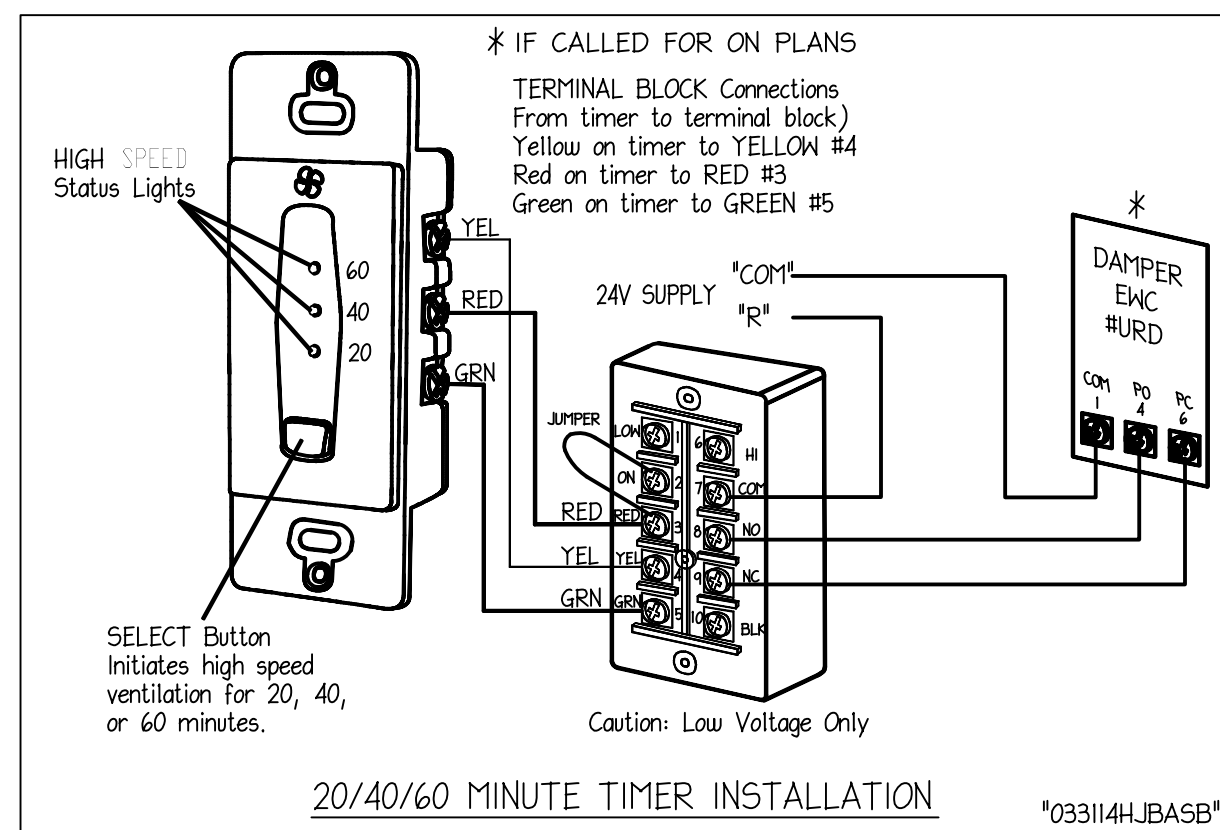
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SCALE: 1/4" = 1'-0"
CAD FILE No.: N23001

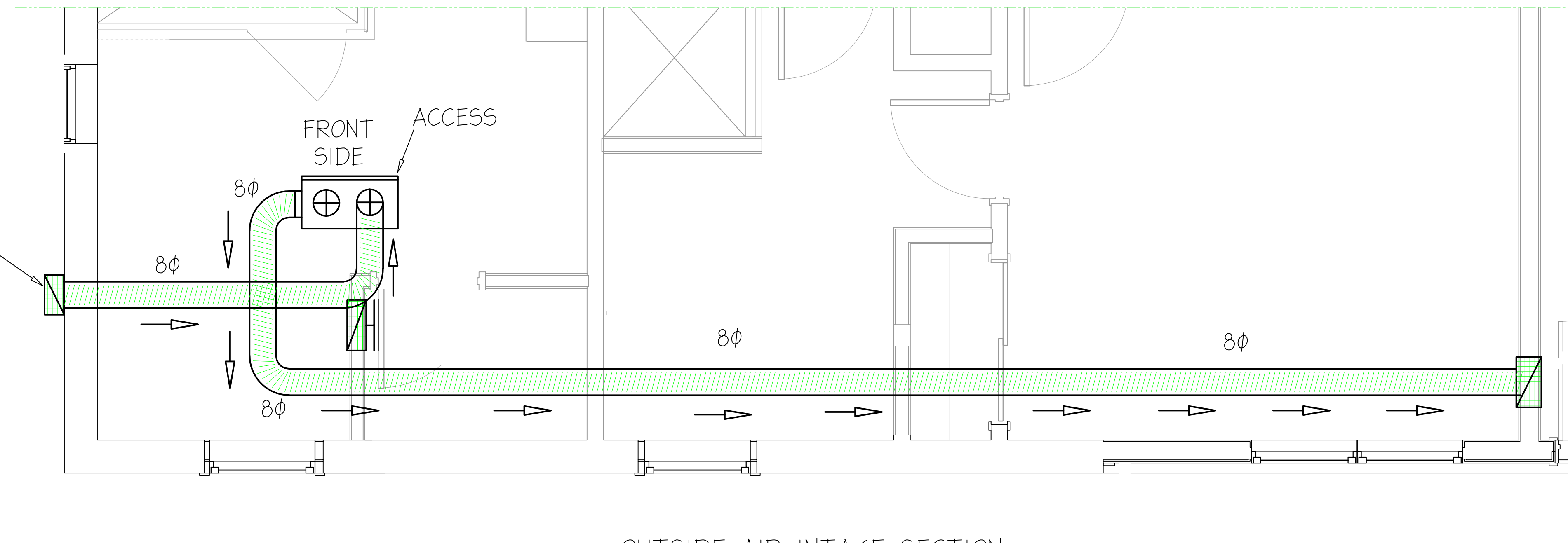
DESIGNER:
PIPPIN HOME DESIGNS
CONTRACTOR:
LAGNIAPPE HOMES

HVAC DESIGN FOR:
KEVIN & KRISTIN LESTER
20141 RIVERCHASE DRIVE
CORNELIUS, NC 28031

6,294 ESF
SHEET
5 OF 7
LOG No.
10603-C04



FRESH AIR
 OUTDOOR
 INTAKE
 RH45 ALUM
 12x6 W/ 1/4" BIRD
 SCREEN
 INTO 12x6/8φ BOOT
 (IN SOFFIC)



OUTSIDE AIR INTAKE SECTION
 ENERGY RECOVERY VENTILATION LAYOUT
 ATTIC FLOOR PLAN

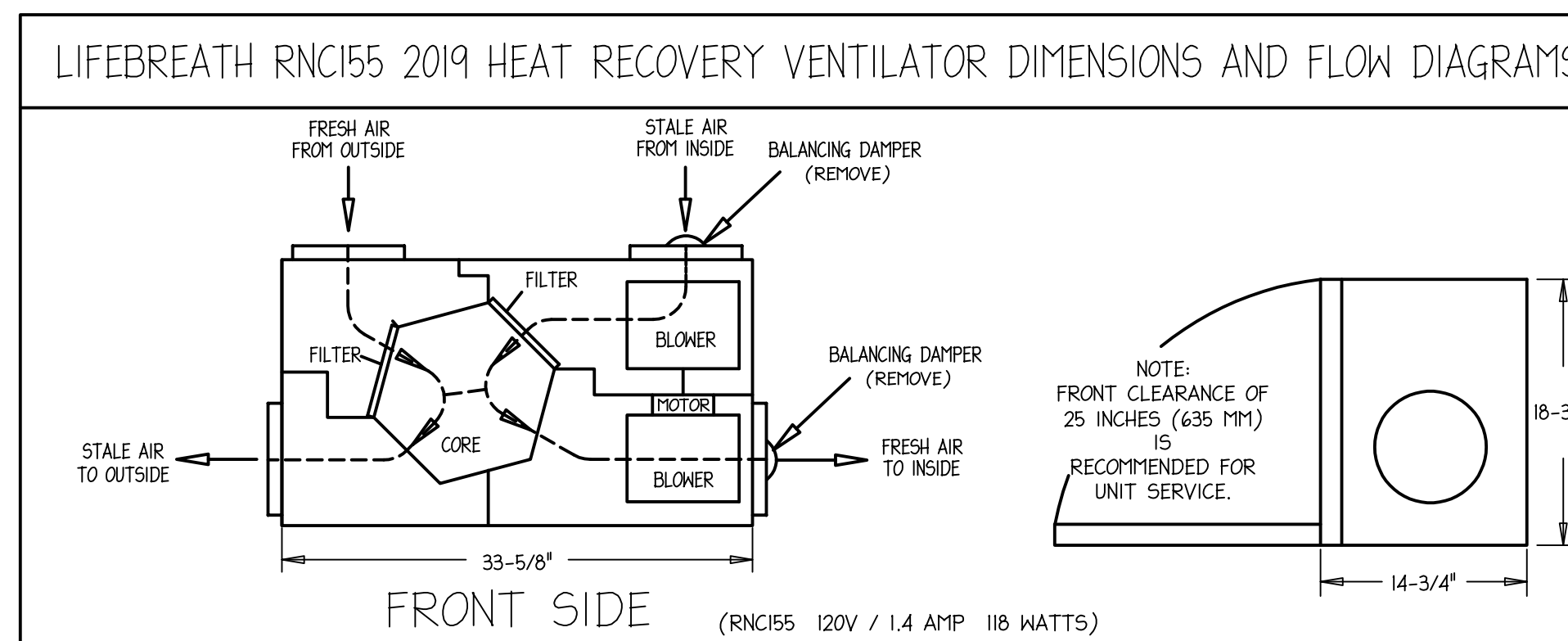
SCALE: 1/2" = 1'-0"

SECURELY TAPE AND SEAL ALL FLEX
 DUCT LINER TO SHEETMETAL "A" COLLAR
 AND SECURELY INSTALL THE TIE STRAP BAND
 OVER TAPED LINER. NO TIE STRAPS ARE TO BE
 INSTALLED OVER THE DUCT INSULATION

HVAC CONTRACTOR IS RESPONSIBLE FOR ALL FIELD
 MEASUREMENTS TO INSURE PROPER FIT OF DUCTWORK
 & PROPER ACCESS TO EQUIPMENT PRIOR TO
 INSTALLATION.

FLEXIBLE DUCT PERFORMANCE AND
 INSTALLATION MUST MEET THE "R" VALUES
 PER ASTM C-518 STANDARDS

MODE OF OPERATION: HRV IS POWERED ON BY
 20/40/60 MINUTE TIMER LOCATED IN MASTER
 BATH AS SHOWN ON FLOOR REGISTER PLANS.



NOTE:
 HVAC CONTRACTOR TO
 COORDINATE WITH ELECTRICIAN
 FOR 120V ELECTRICAL OUTLET
 FOR ENERGY RECOVERY
 VENTILATION UNIT.

HRV UNITS WILL BE
 SUPPLIED BY OWNER AND
 INSTALLED BY HVAC CONTRACTOR.

ALL FLEX DUCT MUST BE
 PROPERLY INSTALLED
 SUCH THAT NO AIR FLOW
 RESTRICTIONS EXIST

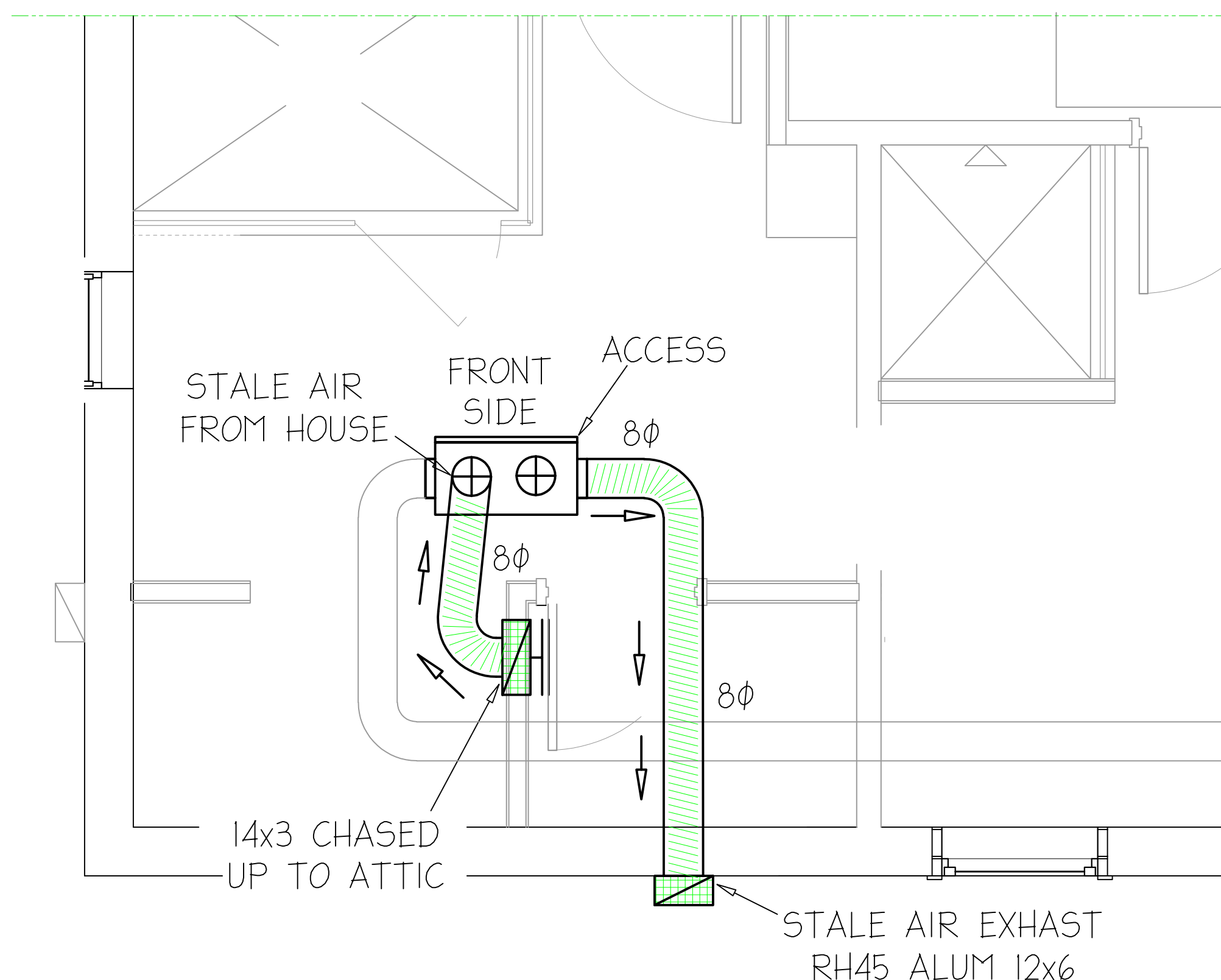
NOTE
 MECHANICAL CONTRACTOR IS TO READ AND FOLLOW
 MANUFACTURERS INSTALLATION INSTRUCTIONS
 FOR ALL HVAC AND RELATED EQUIPMENT

ALL EXTERNAL DUCT WRAP JOINTS
 MUST BE TAPED USING 3" FSK
 FOIL TAPE AND COVERED WITH
 MASTIC SEALER.

NOTE
 MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL
 FIELD MEASUREMENTS TO INSURE PROPER FIT OF
 DUCTWORK & PROPER ACCESS TO EQUIPMENT
 TO INSTALLATION.

NOTE:
 ALL FLEXIBLE AIR DUCT LINER
 IS TO BE PULLED TIGHT AND
 STRAIGHT WITHOUT TWISTING.

NOTE
 MECHANICAL CONTRACTOR IS TO READ AND FOLLOW
 MANUFACTURERS INSTALLATION INSTRUCTIONS
 FOR ALL HVAC AND RELATED EQUIPMENT



STALE AIR EXHAUST SECTION
 ENERGY RECOVERY VENTILATION LAYOUT
 ATTIC FLOOR PLAN

SCALE: 1/2" = 1'-0"



11/26/23

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6.	12.

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DESIGNER:
 PIPPIN HOME DESIGNS
 CONTRACTOR:
 LAGNIAPPE HOMES

HVAC DESIGN FOR:
 KEVIN & KRISTIN LESTER
 20141 RIVERCHASE DRIVE
 CORNELIUS, NC 28031

TWO-STAGE SYSTEM WITH BYPASS

CHECKING ELECTRICAL CONTROL SIGNALS

NOTE: PUT METER COM (BLACK) LEAD ON "C" TERMINAL FOR REFERENCE FOR ALL CHECKS.

1. VERIFY 24V BETWEEN "R" AND "C" BEFORE CONTINUING.

BOODY BYPASS BOARD CONNECTIONS:
REFER TO THE REFERENCE NUMBERS IN RED ON THE DRAWING FOR POINT LOCATIONS.

AIR HANDLER CONNECTIONS ARE CHECKED AT THE SCREW TERMINAL CONNECTIONS AT THE TERMINAL BLOCK LABELLED "BLOWER/COIL" ON THE BYPASS BOARD.

- POINT 1: "Y" SHOULD SHOW 24V.
- POINT 2: "Y2" SHOULD SHOW 24V.
- POINT 3: REVERSING VALVE (ACTIVE ON COOLING): "O/B" SHOULD SHOW 24V.
- POINT 4: FAN SIGNAL: "G" SHOULD SHOW 24V.
- POINT 5: EMERGENCY HEAT: "W" SHOULD SHOW 24V.

IF ALL POINTS CHECK AT THE BYPASS BOARD, REPEAT CHECKS AT TERMINAL BLOCK IN AIR HANDLER.

HEAT PUMP CONNECTIONS: ON TERMINAL BLOCK LABELLED "HEAT PUMP". TEST SCREW TERMINAL CONNECTIONS.

- POINT 6: "Y" SHOULD SHOW 24V.
- POINT 7: "Y2" SHOULD SHOW 24V. YELLOW "STAGE 2" LED ON BOARD SHOULD BE ON.
- POINT 8: REVERSING VALVE (ACTIVE ON COOLING): "O/B" SHOULD SHOW 24V. BLUE "COOL MODE" LED ON BOARD SHOULD BE ON.

IF ALL POINTS CHECK AT THE BYPASS BOARD, REPEAT CHECKS AT TERMINAL BLOCK IN AIR HANDLER.

ZONE DAMPERS: CONNECTIONS ARE ON SCREW TERMINAL BLOCK LABELLED "ZONE DAMPER 1" OR "ZONE DAMPER 2". BOTH ZONE DAMPER CONNECTIONS ARE IDENTICAL.

- POINT 9: SHOULD HAVE 24V WITH ZONE DAMPER ACTIVE. DAMPER SHOULD BE OPEN. CORRESPONDING GREEN LED ON BOARD WILL BE LIT.
- POINT 10: SHOULD HAVE 24V WITH ZONE DAMPER INACTIVE. DAMPER SHOULD BE CLOSED.

- POINT 11: Y1/W1: SHOULD SHOW 24V IF ZONE DAMPER IS CALLED FOR.
- POINT 12: 24V "C" REFERENCE. CHECK AGAINST 24V "R" SIGNAL. SHOULD SHOW 24V.

BYPASS DAMPER: CHECK AT SCREW TERMINAL BLOCKS LABELLED "BYPASS".

- FIRST, CHECK FREEZE TSTAT CONNECTIONS.
- POINT 13: SHOULD SHOW 24V WITH REVERSING VALVE ACTIVE. (COOLING).
- POINT 14: SHOULD SHOW 24V WITH REVERSING VALVE ACTIVE (COOLING).

WITH STAGE 1 COOLING ACTIVE, THE GREEN "BYPASS" LED AND THE BLUE "COOL MODE" LED ON THE BOARD SHOULD BE ON. BYPASS DAMPER SHOULD BE OPEN.

- POINT 15: SHOULD HAVE 24V WITH STAGE 1 ACTIVE. DAMPER SHOULD BE OPEN.
- POINT 16: SHOULD HAVE 24V WITH STAGE 2 ACTIVE OR FREEZE TSTAT MADE. DAMPER SHOULD BE CLOSED. "BYPASS" LED WILL BE OFF.
- POINT 17: 24V "C" REFERENCE. CHECK AGAINST 24V "R" SIGNAL. SHOULD SHOW 24V.

DEHUM DAMPER: CHECK AT SCREW TERMINAL BLOCKS LABELLED "DEHUM". WITH DEHUM CALLED FOR, THE "DEHUM" LED ON THE BOARD SHOULD BE ON. DEHUM DAMPER SHOULD BE OPEN.

- POINT 18: SHOULD HAVE 24V. DAMPER SHOULD BE OPEN.
- POINT 19: SHOULD HAVE 24V WHEN DEHUM LED IS OFF. DAMPER SHOULD BE CLOSED.

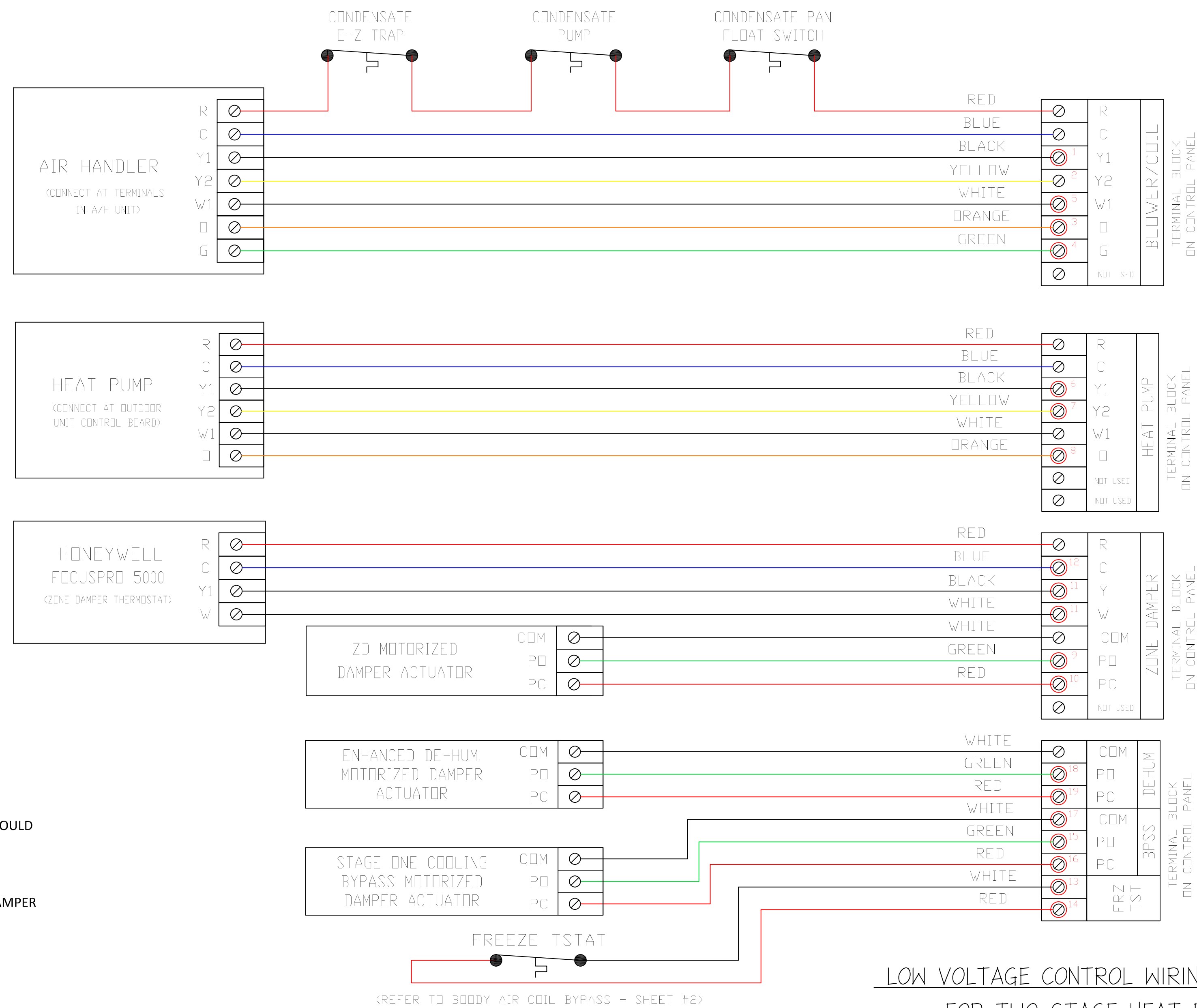
2. EIM BOARD CONNECTIONS:

CHECK EIM VOLTAGES AT THE TERMINAL BLOCK ON THE EIM BOARD.

- DEHUM: BOTH "U1" TERMINALS SHOULD SHOW 24V.
- STAGE 1: "Y" SHOULD SHOW 24V.
- STAGE 2: "Y2" SHOULD SHOW 24V.
- REVERSING VALVE (ACTIVE ON COOLING): "W O/B" SHOULD SHOW 24V.
- EMERGENCY HEAT: "W2 AUX1" SHOULD SHOW 24V.
- FAN SIGNAL: "G" SHOULD SHOW 24V.

3. TO CONTINUE CHECKING AT BYPASS BOARD CONNECTIONS:

- A. POWER DOWN AIR HANDLER TO REMOVE CONTROL POWER.
- B. REMOVE 4 NYLON SCREWS HOLDING EIM IN PLACE.
- C. REMOVE EIM, ALLOWING IT TO HANG BELOW BYPASS BOARD ENCLOSURE. HANDLE BOARD BY THE EDGES. ENSURE IT'S NOT CONTACTING ANYTHING BEFORE CONTINUING.



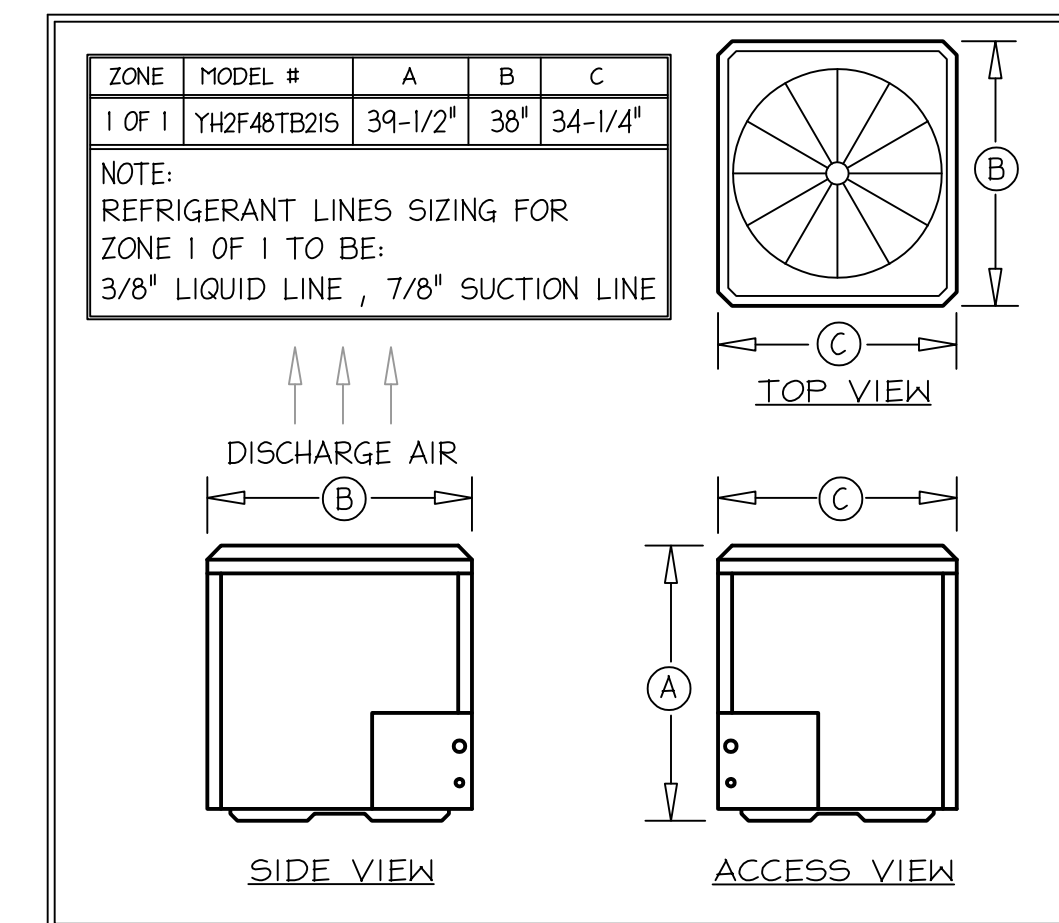
LOW VOLTAGE CONTROL WIRING DIAGRAM
FOR TWO-STAGE HEAT PUMP
100120 NC-REH-1

MODE OF OPERATION

COOLING MODE:
STAGE 1 (LOW CAPACITY) - BLOWER OPERATES AT 100% FAN SPEED WITH STAGE 1 COOLING BYPASS DAMPER TO POWER OPEN.
STAGE 2 (HIGH CAPACITY) - BLOWER OPERATES AT 100% FAN SPEED AND BYPASS DAMPER IS POWER TO CLOSE.

HEATING MODE:
STAGE 1 (LOW CAPACITY) - BLOWER OPERATES AT 100% FAN SPEED AND BYPASS DAMPER IS CLOSED.
STAGE 2 (HIGH CAPACITY) - BLOWER OPERATES AT 100% FAN SPEED AND BYPASS DAMPER IS CLOSED.
STAGE 3 (AUXILLARY HEAT) - BLOWER OPERATES AT 100% FAN SPEED AND BYPASS DAMPER IS CLOSED.

BLOWER OPERATES AT CONTINUOUS MEDIUM FAN SPEED 100% OF THE TIME WHEN THERE IS NO CALL FOR HEATING OR COOLING.



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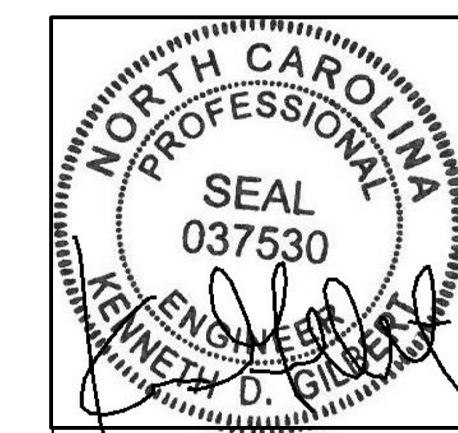
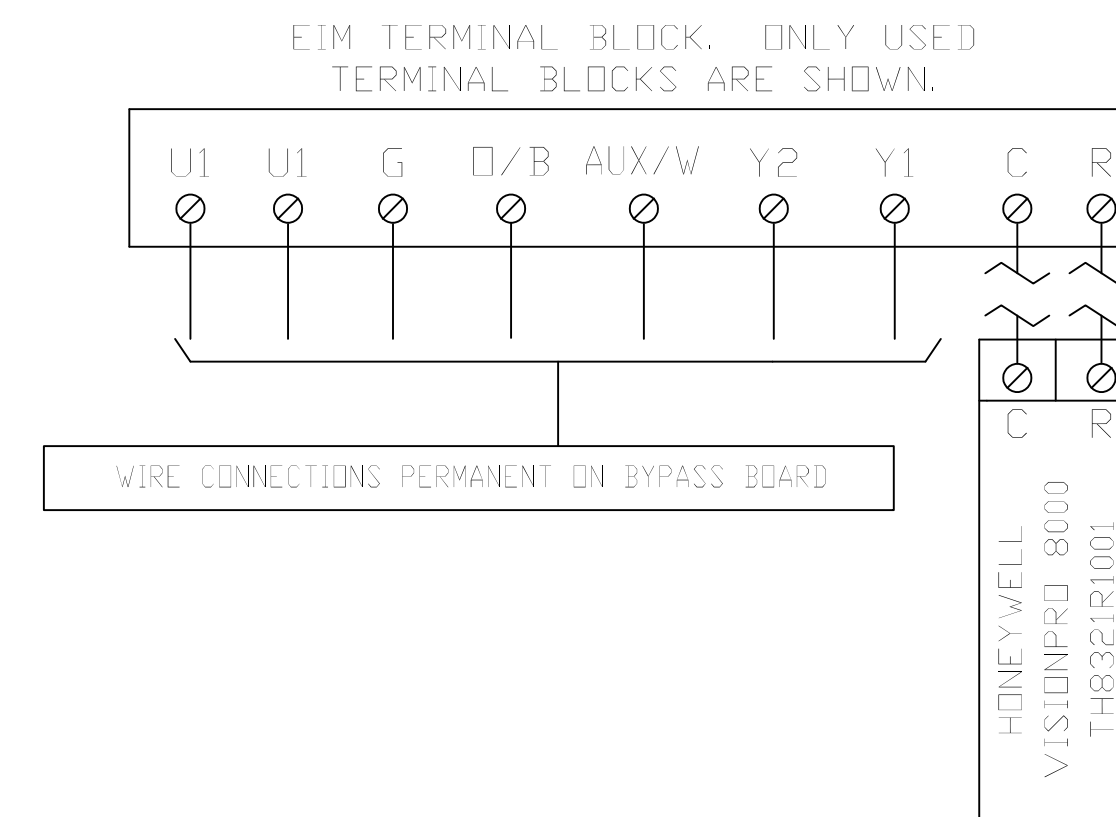
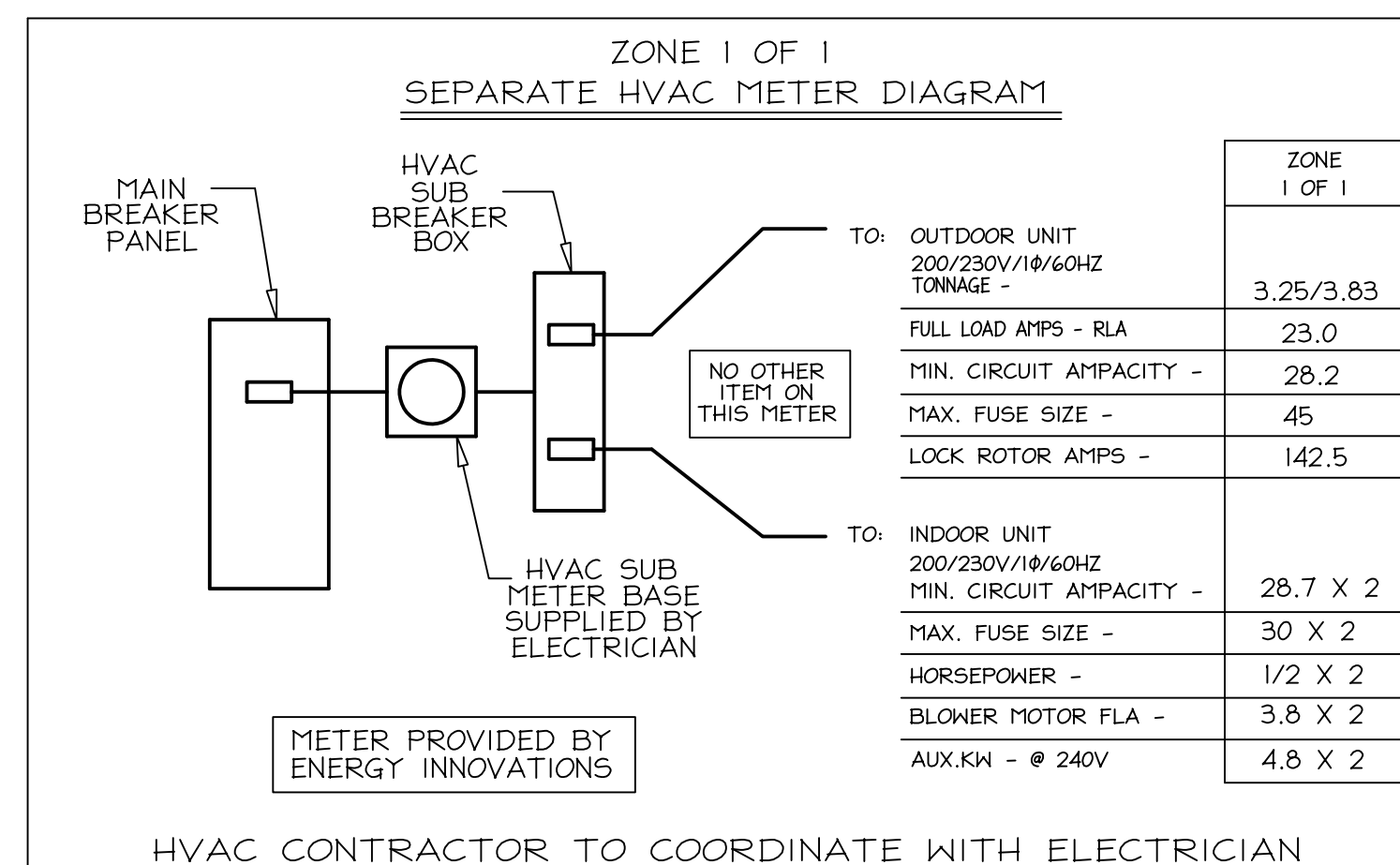
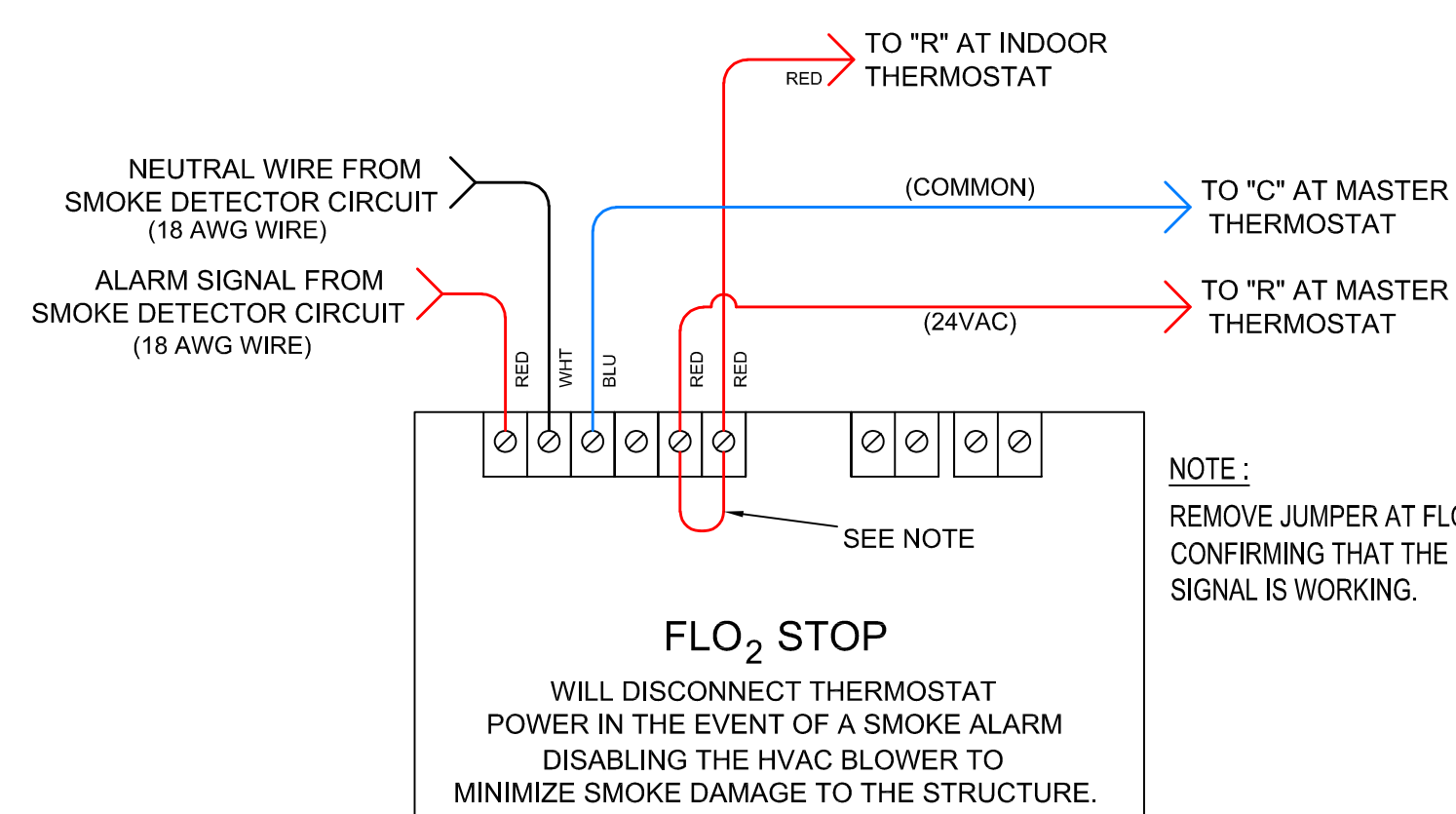
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SMOKE DETECTION INTERLOCK TO STOP HVAC BLOWER



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