

HVAC SYMBOLS	
SYMBOL	DESCRIPTION
	CEILING MTD RA GRD
	CEILING MTD EA GRD
	CEILING MTD SA GRD
	RA DUCT TURNING UP
	RA DUCT TURNING DOWN
	EA DUCT TURNING UP
	EA DUCT TURNING DOWN
	SA DUCT TURNING UP
	SA DUCT TURNING DOWN
	OVAL DUCT (WIDTH/HEIGHT)
	RECT. DUCT (WIDTH/HEIGHT)
	RECT. DUCT (INSIDE DIAMETER)
	LINED DUCTWORK
	INSULATED DUCTWORK
	RECT. DUCT ELBOW WITH TURNING VANES
	FLEX DUCT
	DUCT TAKEOFF WITH SPIN-IN FITTING
	BACKDRAFT DAMPER
	BAROMETRIC RELIEF DAMPER
	DUCT SMOKE DETECTOR
	CEILING RADIATION DAMPER
	FIRE DAMPER
	FIRE/SMOKE DAMPER
	MANUAL VOLUME DAMPER, MVD
	MOTORIZED DAMPER
	SMOKE DAMPER
	SIDEWALL SA GRILLE
	SIDEWALL EA/RA GRILLE
	AND
	AT
	DIAMETER
	NUMBER / POUND (LB)
	PERCENT
	HVAC EQUIPMENT
	HUMIDISTAT
	THERMOSTAT, T'STAT, DDC CONTROLLER
	SPACE TEMPERATURE SENSOR
	HAND-OFF-AUTO (HOA) SWITCH
	CO w/NO, SENSOR
	UNDERCUT DOOR 1/2"
	DUCT PRESSURE SENSOR
	SPACE PRESSURE SENSOR
	KEYED NOTE TAG
	CONNECT TO EXISTING
	DRAWING REVISION TAG

HVAC ABBREVIATIONS	
#, LB(S)	POUND(S)
#, NO.	NUMBER
(E)	EXISTING
°F	DEGREES FARENHEIT
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHRI	AIR-CONDITIONING, HEATING & REFRIGERATION INSTITUTE
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
ARCH	ARCHITECT
ARI	AMERICAN REFRIGERATION INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING & REFRIGERATION ENGINEERS
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
BTUh	BRITISH THERMAL UNIT PER HOUR
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CO	CARBON MONOXIDE
CO.	COMPANY
CO2	CARBON DIOXIDE
COP	COEFFICIENT OF PERFORMANCE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CRD	CEILING RADATION DAMPER
CTG	CEILING TRANSFER GRILLE
CU	CONDENSING UNIT
db	DRY BULB TEMPERATURE
dBA	A-WEIGHTED DECIBELS
DP-ΔP	PRESSURE DIFFERENTIAL
DWG	DRAWING
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EEF	EFFICIENCY
EER	ENERGY EFFICIENCY RATIO
ELEC	ELECTRIC/ELECTRICAL
ESP	EXTERNAL STATIC PRESSURE
EX	EXHAUST
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FSM	FEET PER MINUTE
SMACNA	COMBINATION FIRE/SMOKE DAMPER
FT	FEET
GA	GAUGE
GPm	GALLONS PER MINUTE
GRD	GRILLES, REGISTERS, DIFFUSERS
H.P.	HEAT PUMP
HP	HORSEPOWER
HSPF	HEATING SEASONAL PERFORMANCE FACTOR
IBC	INTERNATIONAL BUILDING CODE
IECC	INTERNATIONAL ENERGY CONSERVATION CODE
IFGC	INTERNATIONAL FUEL GAS CODE
IMC	INTERNATIONAL MECHANICAL CODE

HVAC ABBREVIATIONS	
IN.	INCH
INT	INTERNAL
IPC	INTERNATIONAL PLUMBING CODE
IRC	INTERNATIONAL RESIDENTIAL BUILDING CODE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
MA	MIXED AIR
MAX	MAXIMUM
MBH	1,000 BTUH
MCA	MINIMUM CIRCUIT AMPS
MIN.	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MOD	MOTOR OPERATED DAMPER
MTD	MOUNTED
MUA	MAKEUP AIR
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NAIMA	NORTH AMERICAN INSULATION MANUFACTURERS ASSOCIATION
NIS	NOT IN SCOPE
NK	NECK
NTS	NOT TO SCALE
O.C.	ON CENTER
OA	OUTSIDE AIR
OPD	OPPOSED BLADE DAMPER
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RAG	RETURN AIR GRILLE
RECT.	RECTANGULAR
RH	RELATIVE HUMIDITY
RLA	RELIEF AIR
RR	RESTROOM
RS/L	REFRIGERANT SUCTION/LIQUID LINES
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SD	SMOKE DETECTOR (OR SMOKE DAMPER DEPENDING ON USE)
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS.	SENSIBLE
SF, SQ.FT.	SQUARE FEET
SMACNA	SHEET METAL & AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SP	STATIC PRESSURE
TA	TRANSFER AIR
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W.C.	WATER COLUMN
W.G.	WATER GAUGE
wB	WET BULB TEMPERATURE
WxLxH	WIDTH x LENGTH x HEIGHT

CONTRACTOR ITEMS COMMONLY MISSED BUT REQUIRED

- CONTRACTOR SHALL SELECT EQUIPMENT TO MEET PERFORMANCE REQUIREMENTS IN SCHEDULES AND NOT BASED ON MODEL NUMBERS OR NOMINAL VALUES. MODEL NUMBERS/NOMINAL VALUES ARE A GUIDE.
- DUCT LINER SHALL BE SEALED AT ALL JOINTS WITH MASTIC AS APPROVED BY LINER MANUFACTURER. SEE GENERAL NOTES ON THIS SHEET.
- DUCT LINER IS NOT A SUBSTITUTE FOR INSULATION UNO. SEE DUCT INSULATION SCHEDULE.
- EQUIPMENT & DUCTWORK SHALL BE KEPT CLEAN FROM DIRT & DEBRIS. DO NOT ALLOW THE INSIDE OF DUCT & LINER TO GET WET OR DIRTY.
- PROVIDE DUCT AND CEILING ACCESS PANELS WHERE INDICATED. COORDINATE CEILING ACCESS PANELS WITH ARCHITECT.

HVAC GENERAL NOTES	
1. THIS SET OF DRAWINGS IS SCHEMATIC IN NATURE AND IS NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. PROVIDE A COMPLETE AIR CONDITIONING SYSTEM WITH ALL NECESSARY EQUIPMENT, ACCESSORIES AND CONTROLS, ENTIRELY COORDINATED WITH ALL DISCIPLINES. CONFORM TO ALL PARAMETERS GIVEN IN THESE DOCUMENTS METICULOUSLY. ANY ITEMS AND LABOR REQUIRED FOR A COMPLETE HVAC SYSTEM IN ACCORDANCE WITH ALL APPLICABLE STANDARDS, CODES AND THIS PACKAGE OF CONTRACT DOCUMENTS SHALL BE FURNISHED WITHOUT INCURRING ANY ADDITIONAL COST TO THE CONTRACT. CAREFULLY STUDY ALL THE CONTRACT DOCUMENTS AND THE DESIGN OF OTHER TRADES BEFORE SUBMITTING THE SHOP DRAWINGS AND SUBMITTALS. REVIEW SPECIFICATIONS FOR ANY ADDITIONAL REQUIREMENTS.	ATTIC SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 8.0. ALL OTHER FLEX DUCTS SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 6.0. FLEXIBLE DUCT SHALL BE THERMAX-FLEX TYPE KM. FLEXIBLE DUCTWORK SHALL NOT EXCEED 25 FEET UNO, SHALL BE PROVIDED AS STRAIGHT AS POSSIBLE, AND SHALL BE ROUTED AND SUPPORTED WITHOUT FORMING CHIMPS OR OTHER AIR FLOW RESTRICTIONS. INSTALL SQUARE TO ROUND ADAPTERS OR BOOTS TO CONNECT TO AIR. THEN NECK MUST BE SEALED AIRTIGHT WITH FOIL TAPE AND/OR MASTIC - DO NOT USE DUCT TAPE (FABRIC OR CLOTH TYPE EVEN IF IT HAS A FOIL FACE). MASTIC MUST BE APPLIED THICK ENOUGH TO COMPLETELY COVER STAPLES. PERIMETER JOINTS SHALL BE FORMED SUCH THAT THE INSULATION ON THE TOP OF THE DUCT OVERLAPS THE INSULATION ON THE SIDES AND THE SIDES OVERLAP THE BOTTOM. DO NOT COMPRESS THE INSULATION WITH SUPPORTS (STRIPS, HANGERS, ETC.) - WHERE NECESSARY PROVIDE RIGID BOARD (6 LB DENSITY) THE SAME THICKNESS AS THE INSULATION INSERTED INTO THE HANGER. INSULATION SHALL BE LABELED EVERY 36" ON THE EXTERIOR JACKET WITH: INSTALLED R-VALUE, FLAME & SMOKE DEVELOPED RATINGS, MANUFACTURER'S NAME.
2. MECHANICAL EQUIPMENT AND INSTALLATIONS SHALL CONFORM WITH THE REQUIREMENTS OF THE 2018 VIRGINIA MECHANICAL CODE, THE 2018 VIRGINIA CONSTRUCTION CODE, THE 2018 VIRGINIA ENERGY CONSERVATION CODE, THE 2017 NATIONAL ELECTRICAL CODE, AND ALL OTHER APPLICABLE CODES AND ORDINANCES.	25. RIGID SHEET METAL DUCT INSULATION: FIBERGLASS DUCT WRAP, WITH FOIL FACED VAPOR BARRIER INSULATION SHALL BE UL LISTED. GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. CONFORM WITH ASTM C-515, TYPE II, WITHOUT FACING AND WITH A SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRM, ALUMINUM FOIL, AND VINYL FTIN. EXTERIOR SURFACE JACKET SHALL HAVE THE FOLLOWING STAMP: R-VALUE AT THE INSTALLED THICKNESS, MANUFACTURER'S NAME, & FLAME/SMOKE SPREAD RATING. JOHNS MANVILLE. IF DUCTWORK SUPPORT STRAPS ARE ATTACHED TO THE DUCT, THEN LOCATE STRAPS INSIDE AND SEAL WITH MASTIC AT FUNGUS. ALL PUNCTURES (STAPLES) AND PENETRATIONS OF THE FOIL VAPOR BARRIER SHALL BE SEALED AIRTIGHT WITH FOIL TAPE AND/OR MASTIC - DO NOT USE DUCT TAPE (FABRIC OR CLOTH TYPE EVEN IF IT HAS A FOIL FACE). MASTIC MUST BE APPLIED THICK ENOUGH TO COMPLETELY COVER STAPLES. PERIMETER JOINTS SHALL BE FORMED SUCH THAT THE INSULATION ON THE TOP OF THE DUCT OVERLAPS THE INSULATION ON THE SIDES AND THE SIDES OVERLAP THE BOTTOM. DO NOT COMPRESS THE INSULATION WITH SUPPORTS (STRIPS, HANGERS, ETC.) - WHERE NECESSARY PROVIDE RIGID BOARD (6 LB DENSITY) THE SAME THICKNESS AS THE INSULATION INSERTED INTO THE HANGER. INSULATION SHALL BE LABELED EVERY 36" ON THE EXTERIOR JACKET WITH: INSTALLED R-VALUE, FLAME & SMOKE DEVELOPED RATINGS, MANUFACTURER'S NAME.
3. PRIOR TO PURCHASING MATERIALS OR STARTING WORK, CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. VERIFY DUCTWORK SIZES, DUCTWORK LOCATIONS, EQUIPMENT SIZES, EQUIPMENT LOCATIONS, VOLTAGES, ETC. SHOWN ON THE DRAWINGS OR CONDITIONS AFFECTING THIS WORK. REPORT ANY DEVIATIONS TO THE ARCHITECT.	26. DUCT LINER: RECTANGULAR DUCT: SHEET METAL DUCTWORK SHOWN OR CALLED OUT AS BEING INTERNALLY LINED SHALL BE LINED WITH 1" THICK, 1.5 LB./CU. FT. DENSITY DUCTLINER, R-4.2 PER INCH, MANVILLE UNACOUSTIC RC. DUCT LINER SHALL MEET REQUIREMENTS OF NFPA 90A & 90B, MEET THE 25/50 FLAME AND SMOKE DEVELOPED RATING OF ASTM E84, MEET ASTM G-21 AND G-22, A MIN. NOISE REDUCTION COEFFICIENT OF 0.70. LINE ALL DUCTWORK MIN, 10"-0" DOWNSTREAM OF ALL FAN COIL/AIR HANDLING OR ROOF TOP UNITS UNLESS NOTED OTHERWISE. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. SEAL ALL EDGES, SEAMS, RIPS, TEARS, ETC. COMPLETELY (NO OPENINGS ALLOWED) WITH MANUFACTURER RECOMMENDED SEALER. A SEALER SHALL BE APPLIED AS NOTED ABOVE REGARDLESS OF DIRECTION BY MANUFACTURER. NOTE: LINER IS NOT A SUBSTITUTE FOR INSULATION UNLESS SPECIFICALLY NOTED TO BE. ROUND AND SPIRAL DUCT: SPIRACOUSIC BY JOHNS MANVILLE, HAVING THE FOLLOWING CHARACTERISTICS: HAVING KERFS (CUTS) WITH THE LINER TO ALLOW IT TO CONFORM TO THE ROUND SHAPE AND SAME CHARACTERISTICS AS RECTANGULAR DUCT SHALL BE LINER ABOVE.
4. ALL WORK SHALL BE COORDINATED AND PERFORMED WITH PRIOR APPROVAL FROM THE OWNER TO SUIT THEIR OPERATING CONDITIONS. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF MECHANICAL EQUIPMENT, DUCTWORK, ETC. TO FIT WITH THE SPACE ALLOWED BY THE ARCHITECTURAL AND STRUCTURAL CONDITIONS. CUTTING OR OTHERWISE ALTERING ANY STRUCTURAL MEMBERS SHALL NOT BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT.	27. DUCTWORK DIMENSIONS SHOWN ON THE DRAWINGS ARE INSIDE CLER DIMENSIONS. INCREASE SIZE TO ACCOMMODATE LINER.
5. ANY EXISTING WALL, FLOOR, OR CEILING SURFACE THAT IS DISTURBED DURING THE COURSE OF THE HVAC WORK SHALL BE REPAIRED TO MATCH NEW AND/OR EXISTING CONDITIONS.	28. ALL WALL-APPLIED ITEMS (SUCH AS, BUT NOT NECESSARILY LIMITED TO, THERMOSTATS, SENSORS, ANNUNCIATORS, AND DETECTORS) SHALL BE INSTALLED PLUMB, LEVEL, AND IN THE LOCATIONS DESIGNATED ON THE CONTRACT DRAWINGS. ANY DEVICES REQUIRING USER INTERACTION SHALL BE MOUNTED SUCH THAT THE TOP OF THE DEVICE IS NO MORE THAN 48" AFF. PROVIDE DIGITALLY LOCKABLE THERMOSTATS OR CLEAR LOCKING COVER ASSEMBLIES FOR ALL THERMOSTATS LOCATED IN PUBLIC AREAS, ALL DEVICE COVERS AND TRIM SHALL FIT SNUGLY TO WALL SURFACES ON ALL SIDES. IF THE CONTRACT DOCUMENTS HAVE OVERLOOKED SPECIFIC LOCATIONS FOR SOME ITEMS, THEN THE CONTRACTOR SHALL OBTAIN CLARIFICATION AND DIRECTION FROM THE ARCHITECT/ENGINEER PRIOR TO INSTALLATION OF THESE ITEMS.
6. ALL ROOF ASSOCIATED WORK SHALL BE DONE BY THE OWNER'S APPROVED ROOFING CONTRACTOR. COORDINATE WITH THE OWNER PRIOR TO START OF WORK. ALL ROOF-TOP EQUIPMENT CURBS SHALL BE A MINIMUM OF 8 INCHES ABOVE THE FINISHED ROOF SURFACE FOR COUNTER-FLASH ENDORSED BY THE ROOF MANUFACTURER. THE TOPS OF ALL EQUIPMENT CURBS AND HOUSEKEEPING PADS SHALL BE LEVEL. ALL MISCELLANEOUS ROOF-TOP EQUIPMENT SUPPORTS SHALL BE ENDORSED BY BOTH THE RESPECTIVE EQUIPMENT MANUFACTURER AND THE ROOF MANUFACTURER. ALL TIE-DOWNS AND ANCHORING SYSTEMS SHALL MEET THE REQUIREMENTS SET FORTH IN THE NORTH CAROLINA MECHANICAL AND BUILDING CODES.	29. LOCATIONS OF GRILLES, REGISTERS, & DIFFUSERS SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE EXACT LOCATIONS WITH LIGHTS, CEILING GRID, ETC.
7. INSTALL OUTDOOR AIR CONDITIONING EQUIPMENT LEVEL AS SHOWN IN DETAIL, UNO. INSTALL GRADE MOUNTED OUTDOOR AIR CONDITIONING EQUIPMENT LEVEL ON MIN 3.5" THICK REINFORCED CONCRETE PADS, EXTENDING 6" BEYOND UNIT PERIMETER, ALL CORNERS CHAMFERED, AND ALL EXPOSED-TO-VIEW SURFACES DRESSED SMOOTH.	30. PROVIDE ACCESS PANELS IN NON-ACCESSIBLE CEILINGS (SHEET ROCK, ETC.) AND IN WALL STRUCTURES TO ALLOW ADEQUATE ROOM FOR MAINTENANCE OF EQUIPMENT. REMOVE OR BALANCE OF SYSTEM. PROVIDE TYPE AND STYLE PER ARCHITECT. IF STRUCTURE (CEILING) IS FIRE RATED ACCESS PANEL WILL BE REQUIRED TO BE AS WELL.
8. CONTRACTOR SHALL PROVIDE TEMPORARY PROTECTIVE COVERS FOR EXPOSED AIR TERMINALS AND COOLING COILS ON MECHANICAL EQUIPMENT DURING CONSTRUCTION.	31. DUCT ACCESS DOOR SHALL BE SIZE AS INDICATED ON DRAWINGS AND SHALL HAVE THE FOLLOWING: LOW PRESSURE DUCT ACCESS DOORS SHALL BE DOUBLE WALL IF INSTALLED ON SUPPLY DUCT AND PROVIDED WITH THUMB LATCHES FOR AN AIR TIGHT FIT. DOORS SHALL BE A MINIMUM OF 12x12 IF NOT STATED OTHERWISE.
9. LABEL EQUIPMENT WITH BLACK STENCILED LETTERING ON A WHITE BACKGROUND OR USE BAKELITE LETTERING ON A DIFFERENT COLOR BACKGROUND. MINIMUM 2" LETTERING. LABEL RTUs ON BOTH LONG SIDES.	32. PROVIDE MVD AT TAKE-OFFS, WHERE ACCESSIBLE CEILING (LAY-IN) IS PROVIDED, OF RUNOUTS TO DIFFUSERS AND WHERE SHOWN ON PLANS. WHERE BALANCING DAMPERS ARE ALSO PROVIDED AT THE SUPPLY GRILLE/DIFFUSER (SEE SCHEDULE), BALANCE THE SYSTEM WITH THE DAMPER AT THE TAKE-OFF (NOT AT GRILLE). GRILLE DAMPER SHOULD BE 100% OPEN AFTER TEST AND BALANCE.
10. HVAC EQUIPMENT SUBMITTALS: SEE NOTES ON THIS SHEET FOR SUBMITTAL AND RESUBMITTAL REQUIREMENTS.	33. ROUTE DUCT HIGH AS POSSIBLE UNDER JOIST/ROOF SUPPORT. DUCT SUPPORTS/HANGERS SHALL BE ATTACHED TO THE TOP CHORD OF JOISTS.
11. THE MECHANICAL CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR AND ELECTRICAL CONTRACTOR THAT A FACE TO FACE MEETING IS REQUIRED BETWEEN ELECTRICAL AND MECHANICAL CONTRACTORS PRIOR TO ORDERING AND INSTALLING EQUIPMENT. VOLTAGE, PHASE, AMPS, AND OTHER ELECTRICAL CHARACTERISTICS OF MECHANICAL EQUIPMENT. AFTER THIS MEETING HAS OCCURRED THE GENERAL CONTRACTOR SHALL PROVIDE NOTICE IN WRITING THAT THIS MEETING HAS OCCURRED AND ANY DISCREPANCIES HAVE BEEN RESOLVED.	34. FIRE-STOPPING: PIPE AND DUCT PENETRATIONS OF FIRE AND/OR SMOKE-RATED ASSEMBLIES SHALL BE FIRE-STOPPED AS REQUIRED TO RESTORE ASSEMBLY TO THE ORIGINAL INTEGRITY. SEE UL PENETRATION AND FIRE-STOPPING DETAILS IN THIS SET OF DRAWINGS AND CONSULT WITH FIRE-STOPPING MANUFACTURER FOR ADDITIONAL INFORMATION.
12. FOR UL LISTED EQUIPMENT, CONTRACTOR SHALL SUBMIT AN ADDITIONAL REVIEW TO THE ARCHITECT TO CONFIRM THAT THE EQUIPMENT BEING SUBMITTED IS UL LISTED FOR THE APPLICABLE UL ASSEMBLIES AS LISTED ON THE ARCHITECT'S DRAWINGS.	35. DUCT-MOUNTED SMOKE DETECTORS SHALL BE PROVIDED WHERE SHOWN ON THE PLANS. EACH SMOKE DETECTOR SHALL BE WIRED TO STOP THE FAN UPON DETECTION OF SMOKE. DETECTION OF SMOKE BY THE BUILDING FIRE ALARM CONTROL PANEL. THE SMOKE DETECTOR SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL/FIRE ALARM CONTRACTOR BUT MOUNTED IN THE DUCT BY THE MECHANICAL CONTRACTOR. DO NOT INSTALL DUCT DETECTORS IN DUCTWORK SERVING SHOWER OR STEAM ROOMS OR ROOMS PRODUCING EXCESSIVE MOISTURE. SMOKE DETECTORS SHALL BE UL LISTED PER UL 268A SPECIFICALLY FOR USE IN AIR HANDLING SYSTEMS.
13. IF THE CONTRACTOR REQUESTS THE ENGINEER'S CAD DRAWINGS OR IF THE DRAWINGS ARE REQUESTED BY OTHERS TO BE USED BY CONTRACTOR (FOR AS-BUILTS, COORDINATION, ETC.), DRAWINGS SENT OUT (BY THE ENGINEER) WILL BE OF FLOOR PLANS AND SECTIONS, BUT WILL NOT HAVE DETAILS, GENERAL NOTES, SCHEDULES, OR OTHER ITEMS DEEMED PROPRIETARY BY THE ENGINEER.	36. FIRE DAMPERS SHALL BE TYPE B (BLADES OUT OF AIRSTREAM) UNLESS NOTED OTHERWISE IN DETAILS.
14. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF MECHANICAL EQUIPMENT WITH ELECTRICAL DRAWINGS PRIOR TO ISSUING HVAC EQUIPMENT SUBMITTALS OR SHOP DRAWINGS OR ORDERING EQUIPMENT, AND CONTRACTOR SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN ON THE ELECTRICAL DRAWINGS.	37. MOTOR OPERATED DAMPERS (MOD) FOR OA VENTILATION AT FCUs SHALL HAVE THE FOLLOWING CHARACTERISTICS: BUTTERFLY STEEL DAMPER WITH RUBBER/NEOPRENE GASKET AROUND BLADE, MAX 60 DBA SOUND WHEN OPERATING, 24 VOLT OPERATION, TWO POSITION, POWERED OPEN POWERED CLOSED (NOT SPRING RETURN) BASIS OF DESIGN: FIELD CONTROLS FAD.
15. MECHANICAL EQUIPMENT REQUIRING ELECTRICAL POWER SHALL BE INSTALLED WITH DISCONNECT SWITCHES AT EACH PIECE OF EQUIPMENT. MOUNT FCUs WITH INTEGRAL DISCONNECT SWITCHES SO THERE IS PROPER WORKING CLEARANCE PER NEC 110.26. COORDINATE SWITCH TYPE (FUSED OR NON-FUSED) WITH EQUIPMENT CHARACTERISTICS, MANUFACTURER'S RECOMMENDATIONS, AND ELECTRICAL DRAWINGS.	38. UNLESS NOTED OTHERWISE, STARTERS, SMOKE DETECTORS, TRANSFORMERS, CONTROLS AND CONTROL WIRING REQUIRED FOR ALL MECHANICAL SYSTEMS SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. PROVIDE A STARTER FOR ALL MOTORS. IF A SIGNAL IS REQUIRED TO START A MOTOR THEN PROVIDE AN H-0-A-TYPE STARTER.
16. INCLUDE CONTROL WIRING AS A PART OF THE MECHANICAL WORK UNLESS SHOWN ON THE ELECTRICAL DRAWINGS. CONTROL WIRING, INCLUDING THERMOSTAT WIRING, SHALL BE PLENUM-RATED (MEETING THE 25/50 FLAME AND SMOKE DEVELOPED RATING OF ASTM E84).	39. MOTOR STARTERS: PROVIDE AUTOMATIC MOTOR STARTERS FOR THREE-PHASE AND SINGLE-PHASE MOTORS. FRACTIONAL HP SINGLE-PHASE MOTORS SHALL HAVE INTERNAL THERMAL OVERLOAD PROTECTION EXCEPT WHERE STARTERS ARE SCHEDULED. STARTERS SHALL BE BY THE SAME MANUFACTURER (SEE TYPE OR-306 BY SQUARE-D) SUBJECT TO FULL COMPLIANCE WITH ALL CRITERIA. UNITS SHALL HAVE NEMA-1 ENCLOSURES (NEMA-3B IF OUTDOORS). THREE THERMAL OVERLOADS IN THREE-PHASE STARTERS, AND WITH AUXILIARY CONTACTS AND PUSH BUTTON SWITCHES AS REQUIRED BY THE "CONTROLS" SPECIFICATIONS. MOUNT MOTOR STARTERS IN THEIR OWN INDIVIDUAL ENCLOSURES OR IN A FACTORY-BUILT STARTER PANEL.
17. CONTROLS FOR THERMOSTATS CONTROLLING MOTOR OPERATED DAMPERS AND FANS CAN BE EITHER 120V OR 24V. PROVIDE CONTROL TRANSFORMER WHERE REQUIRED. INSTALL 120V WIRING IN CONDUIT. ROUTE WIRING IN WALLS WHERE AVAILABLE.	40. REFRIGERANT PIPING SHALL BE TYPE L OR REFRIGERATION SERVICE COPPER TUBING. SUCTION PIPING SHALL BE INSULATED WITH 1" MINIMUM (VERIFY THICKNESS WITH ANY UL PENETRATION DETAILS) ARMAFLEX PIPE INSULATION SLID OVER TUBING WITHOUT CUTTING. ALL JOINTS AND SEAMS SHALL BE SEALED WITH ADHESIVE. ALL SEAMS AND JOINTS MUST BE SEALED COMPLETELY. PROVIDE INSULATION PIPE HANGER OR CLAMP SUPPORTS TO AVOID COMPRESSION OF INSULATION. SUPPORTS SHALL BE ARMACELL ARMAFLEX INSULATION PIPE HANGERS. DO NOT LEAVE SECTIONS OF PIPE UNINSULATED. ALL INSULATION LOCATED OUTSIDE SHALL HAVE TWO COATS OF WEATHER RESISTANT LIQUID COATING WHICH SHALL BE A SOLUTION SUCH AS WB/ARMAFLEX FINISH. FOSTER TITE-FIT COATING OR AS RECOMMENDED BY THE INSULATION MANUFACTURER. INSULATE THE VAPOR LINE THE ENTIRE LENGTH. ROUTE PIPE AS STRAIGHT AS POSSIBLE BETWEEN THE TWO UNITS (FCU & CU/HP) TO PROVIDE FOR SHORTEST DISTANCE. ALL REFRIGERANT LINES SHALL BE ROUTED IN WALLS OR ABOVE CEILING (NOT EXPOSED). PIPE SHALL BE SUPPORTED OUTSIDE ON GRADE OR ROOF WITH WITH PIPE CLAMPS OR HANGERS ATTACHED TO UNISTRUT OR CHANNEL SUPPORTS. DO NOT ALLOW SUPPORTS AND PIPE TO BE OF DISMILAR METALS IN CONTACT WITH EACH OTHER. CONTRACTORS SHALL GET IN WRITING FROM MANUFACTURER THEIR RECOMMENDATION FOR PIPE SIZING AND ROUTING. DO NOT ALLOW THE LIQUID AND VAPOR LINES TO COME IN CONTACT WITH EACH OTHER.
18. INSTALL MECHANICAL EQUIPMENT AND SYSTEMS FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY OWNER. ALL GUARANTEES COMMENCE ON PROJECT DATE OF SUBSTANTIAL COMPLETION. ALL GUARANTEES FULLY COVER THE COSTS OF MATERIALS & LABOR FOR REPAIR AND/OR REPLACEMENT WITHIN THE GUARANTEE PERIOD.	41. REFRIGERANT PIPE ROUTED THRU A WALL SHALL BE SLEEVED WITH A PVC SCHEDULE 40 OR GREATER PIPE AT LEAST 1/2" LARGER THAN THE PIPE (WITH INSULATION). ONE SLEEVE CAN ACCOMMODATE A LIQUID, SUCTION AND T'STAT WIRE. CAULK AS NECESSARY AROUND AND INSIDE SLEEVE TO PRESERVE WALL INTEGRITY.
19. GUARANTEE MECHANICAL EQUIPMENT AND SYSTEMS FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY OWNER. ALL GUARANTEES COMMENCE ON PROJECT DATE OF SUBSTANTIAL COMPLETION. ALL GUARANTEES FULLY COVER THE COSTS OF MATERIALS & LABOR FOR REPAIR AND/OR REPLACEMENT WITHIN THE GUARANTEE PERIOD.	42. CONDENSATE PIPING SHALL BE CPVC. CONDENSATE SHALL BE PUMPED AS REQUIRED. IF CPVC IS USED IN AN HVAC AIR PLENUM THEN THE PIPE SHALL HAVE THE FOLLOWING CHARACTERISTICS: BE NONCOMBUSTIBLE AND MEET THE 25/50 FLAME AND SMOKE DEVELOPED RATING OF ASTM E84 WITHOUT BEING WATER FILLED. CONTRACTOR SHALL PROVIDE A CUTSHEET STATING THESE CHARACTERISTICS TO THE LOCAL CODE OFFICIAL IF REQUESTED. ROUTE ROOF MOUNTED CONDENSATE DIRECTLY TO ROOF DRAINS AND PROVIDE PIPE SUPPORTS AS NECESSARY. DO NOT SPILL onto SPLASH BLOCKS OR DIRECTLY ON TO ROOF SURFACE. MAINTAIN AT LEAST 1/8" PER L.F. SLOPE. SEE DETAILS.
20. PROVIDE HVAC COMPRESSORS WITH AN EXTENDED 5-YEAR MANUFACTURER'S WARRANTY.	43. DURING CONSTRUCTION AND PRIOR TO OPERATING HVAC SYSTEMS, PROVIDE MIN. MERV 8 PLEATED FILTERS IN ALL UNITS. ALSO PROVIDE BLUE AIR FILTER MEDIA AT RETURN DUCT INLETS. AT TIME OF TEST AND BALANCE, REMOVE FILTER MEDIA AND PLEATED FILTERS AND PROVIDE SCHEDULED/SPECIFIED FILTERS FOR HVAC SYSTEMS.
21. APARTMENT UNIT DUCT: SUPPLY DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED PER THE GUIDELINES OF SMACNA, 2005 EDITION. EXCEPT WHERE NOTED, ALL DUCTWORK MATERIAL SHALL BE GALVANIZED SHEETMETAL NOT LESS THAN 30 GAUGE (0.0116 INCHES) WITH A ZINC COATING DESIGNATION OF G60 OR GREATER. DUCTS AND EQUIPMENT SHALL BE SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING TILES OR CEILING STRUCTURE. DUCT SUPPORTS AND ATTACHMENTS TO STRUCTURE SHALL BE PER SMACNA STANDARDS. ALL EXHAUST, OUTDOOR AIR, AND RETURN DUCTS UNDER A NEGATIVE PRESSURE SHALL BE CONSTRUCTED TO A MINIMUM PRESSURE CLASS OF NEGATIVE 1/2" W.C. AND ALL JOINTS SHALL BE SEALED TO A SEAL CLASS OF "C" AS DEFINED BY SMACNA. ALL SUPPLY (CONDITIONED AIR) DUCTS SHALL BE CONSTRUCTED TO A PRESSURE CLASSIFICATION OF +2" W.C. AND SEALED TO A CLASS "C". ALL JOINTS AND SEAMS IN ALL DUCTWORK SHALL BE SEALED WITH DUCT SEALER, UL LISTED 181A OR 181B FOR TAPES AND MASTICS. DO NOT USE DUCT TAPE. IF APPLICABLE, STAIR/ELEVATOR PRESSURIZATION AND SMOKE EXHAUST DUCTWORK SHALL MEET THE REQUIREMENTS LISTED ON THE DRAWINGS DETAILING THOSE SYSTEMS IN THIS SET OF PLANS.	44. TEST AND BALANCE (TAB): AFTER CONSTRUCTION, THE ENTIRE HVAC SYSTEM (EXCEPT APARTMENT UNITS UNLESS NOTED OTHERWISE), INCLUDING THE EXHAUST AND RETURN AIR SYSTEMS SHALL BE TESTED, ADJUSTED, AND BALANCED TO DELIVER THE AIR QUANTITIES SHOWN ON THE DRAWINGS. SUBMIT CERTIFIED TEST AND BALANCE REPORT TO ARCHITECT AND ENGINEER FOR APPROVAL. EXHAUST AND RETURN SYSTEMS UNDER NEGATIVE PRESSURE SHALL NOT EXCEED BY MORE THAN 10% FOR EACH FAN AND BY NO MORE THAN 10% AT EACH INLET OF THE VALUES INDICATED ON THE DRAWINGS. TEST AND BALANCE SHALL BE DONE PRIOR TO OPERATING THE HVAC EQUIPMENT. HVAC EQUIPMENT SHALL ONLY BE TURNED ON BEFORE TEST AND BALANCE TO VERIFY OPERATION (AFTER VERIFICATION TURN EQUIPMENT OFF). AFTER TEST AND BALANCE SHUTDOWN THE EQUIPMENT UNTIL ENGINEER/ARCHITECT REVIEWS TEST AND BALANCE REPORT AND RESPONDS BACK WITH COMMENTS. TESTING AGENCY SHALL BE ABC OR NEBB. CERTIFIED AND SHALL BE INDEPENDENT (NONAFFILIATED) FROM THE CONTRACTOR (INCLUDING SUBCONTRACTOR). THE CONTRACTOR SHALL INCLUDE IN THEIR SCOPE OF WORK ONE (1) FULL DAY (8 HOURS AT SITE) ON SITE WITH THE MECHANICAL ENGINEER OR OWNER OR AS DIRECTED BY THE ENGINEER TO SPOT CHECK OR REMEASURE AIRFLOWS, TEMPERATURES, ETC. TO VERIFY COMPLIANCE WITH THE CONTRACT DOCUMENTS AND THE TAB REPORT.
22. SHEETMETAL DUCT ELBOWS SHALL BE STANDARD RADIUS TYPE OR RECTANGULAR TYPE WITH SINGLE THICKNESS TURNING VANES. DO NOT USE RADIUS ELBOWS WITH A SQUARE THROAT. DO NOT USE TURNING VANES ON RETURN, EXHAUST, OR OA DUCT ELBOWS UNLESS NOTED OR SPECIFICALLY SHOWN ON THE DRAWINGS. INSTEAD USE STANDARD RADIUS ELBOWS.	
23. EXPOSED DUCTWORK IN SPACES WITHOUT CEILINGS SHALL BE FREE OF SIZE MARKS OR ASSEMBLY CODE NUMBERS; ALL SUCH MARKS SHALL BE ON THE INSIDE OF THE DUCTWORK. DURING FABRICATION AND ASSEMBLY, KEEP THE OUTSIDE SURFACES CLEAN. BANDS SHALL JOIN ON THE TOP (CONCEALED FROM NORMAL VIEW) OF THE DUCT AND SPIRALS SHALL BE CONTINUOUS. THREADED RODS FOR HANGER STRAPS SHALL BE NEATLY CLIPPED AND SECURED WITHOUT EXCESS. GREATER ATTENTION TO APPEARANCE IN SPACES WITHOUT CEILINGS IS EXPECTED AND DENTED/SCARRED DUCT WILL NOT BE ACCEPTABLE. IF DUCTWORK IS SPECIFIED TO BE PAINTED (CONFORM WITH ARCH/D PRIOR TO ORDERING), PROVIDE PAINT-GRIP FINISH. IF PROVIDED, SEE SPIRAL DUCT NOTES FOR ADDITIONAL REQUIREMENTS.	
24. ROUND AND FLEXIBLE DUCTWORK SHALL BE CONNECTED TO MAIN DUCTS WITH SPIN-IN OR DOVE-TAIL FITTINGS. ALSO PROVIDE BALANCING DAMPERS WHERE INDICATED IN THESE GENERAL NOTES AND ON THE DRAWINGS. DO NOT PROVIDE A SCOOP FITTING-ALL OPEN ENDED DUCTS SHALL BE REINFORCED WITH 1/2" x 1/2" GALVANIZED STEEL ANGLES BOLTED OR RIVETED 6" ON CENTER (MAXIMUM) ALL AROUND THE EXTERIOR PERIMETER OF THE DUCT.	
25. DUCTWORK FOR RESIDENTIAL DRYER EXHAUST SHALL BE 0.016" THICK OR THICKER SHEET METAL. THE MALE END OF THE DUCT AT OVERLAPPED DUCT JOINTS SHALL EXTEND IN THE DIRECTION OF FLOW. CLOTHES DRYER TRANSITION DUCTS SHALL BE LIMITED TO 4 FT IN LENGTH AND SHALL BE LISTED AND LABELED FOR THE APPLICATION. TRANSITION DUCTS SHALL NOT BE CONCEALED WITHIN CONSTRUCTION. TRANSITION DUCTS SHALL BE TERMINED TO BE AS SHORT AS POSSIBLE, WHILE STILL PROVIDING SWEEPING TURNS. SHEET-METAL DUCT SHALL BE INSTALLED SO THAT THE LONGITUDINAL SEAMS ARE ON THE TOP OF THE DUCT (NOT ON BOTTOM). SLOPE DUCTWORK SUCH THAT ANY CONDENSATE WILL DRAIN TOWARDS WALL CAP AND NOT BACK INTO DRYER. MECHANICAL CONTRACTOR SHALL INSTALL A PERMANENT PLAQUE STATING THE TOTAL EQUIVALENT LENGTH OF THE DRYER EXHAUST DUCT. REFER TO DRYER VENT WARNING LABEL DETAIL.	
26. FLEXIBLE DUCT SHALL BE UL LISTED AS A CLASS I AIR DUCT COMPLYING WITH UL STANDARD 181, NFPA 90A & 90B AND HAVE A MAX FLAME SPREAD RATING OF 25 AND A MAX SMOKE DEVELOPMENT RATING OF 50. FLEXIBLE DUCT SHALL HAVE A POSITIVE OPERATING PRESSURE OF AT LEAST 5". FLEXIBLE DUCT SHALL BE TESTED FOR A MAXIMUM INTERNAL OPERATING TEMPERATURE OF 140°F UNDER CONTINUOUS OPERATION AND MAX PRESSURE AND SHALL BE RATED FOR UP TO 4,000 FPM AIR VELOCITY. OUTER JACKET/LINER SHALL BE A MULTI-DIRECTIONAL FIBERGLASS SCRM REINFORCED, METALLIZED POLYESTER VAPOR BARRIER. INNER LINER SHALL CONSIST OF AN AIRTIGHT, SMOOTH LAMINATED POLYESTER OR POLYETHYLENE FABRIC ADHERED TO A SPRING STEEL WIRE HELIX. INSULATION SHALL BE BLANKET TYPE FIBERGLASS. FLEX DUCTS LOCATED IN AN	

HVAC EQUIPMENT SUBMITTAL REQUIREMENTS

HVAC EQUIPMENT SUBMITTALS SHALL BE SUBMITTED TO AND REVIEWED BY THE ARCHITECT AND ENGINEER PRIOR TO ORDERING, PURCHASING, OR FABRICATING MECHANICAL EQUIPMENT. SUBMITTALS SHALL INCLUDE ALL NEW EQUIPMENT SCHEDULED OR SPECIFIED ON THE DRAWINGS OR SPECS INCLUDING, BUT NOT LIMITED TO RTUs, CURBS, SPLIT SYSTEMS, GRDS, LOUVERS, FANS, HEATERS, DUCTWORK, PIPING, INSULATION, LINER, CONTROLS, VFDs, ETC.. SUBMITTALS SHALL BE LABELED CLEARLY AND OBVIOUSLY TO MATCH THE SCHEDULED EQUIPMENT UNIT DESIGNATION ("TAG" OR "MARK") SHOWN ON THE DESIGN DRAWINGS. SUBMITTALS SHALL SPECIFICALLY INDICATE THAT THE SCHEDULED CAPACITIES, ACCESSORIES, WEIGHTS, ELECTRICAL CHARACTERISTICS, AND ALL OTHER NOTES AND REQUIREMENTS LISTED ON THE DESIGN DRAWINGS AND SPECS ARE BEING SATISFIED. IF THERE ARE ANY DEVIATIONS FROM THE DESIGN DOCUMENTS, CONTRACTOR SHALL STATE AS SUCH AND PROVIDE A LIST OF DEVIATIONS AND REFERENCES TO ITEM IN THE DESIGN DOCUMENTS. ANY DEVIATIONS OR ALTERNATE EQUIPMENT SELECTIONS MUST STILL MEET SCHEDULED REQUIREMENTS. IT IS PREFERRED THAT ALL HVAC EQUIPMENT SUBMITTALS BE PROVIDED IN A SINGLE DOCUMENT/PACKAGE, BUT IF NOT POSSIBLE, ALL EQUIPMENT WITHIN EACH GIVEN SPEC SECTION SHALL BE SUBMITTED AT THE SAME TIME (I.E., SUBMIT ALL SPLIT SYSTEMS (DUCTED AND DUCTLESS) IN ONE DOCUMENT/PACKAGE, NOT INDIVIDUALLY). IF ENTIRE EQUIPMENT CATALOGS ARE SUBMITTED, THEY WILL BE REJECTED AND CONTRACTOR WILL NEED TO RESUBMIT WITH ONLY PERTINENT DATA PROVIDED. NO PIECE OF EQUIPMENT SHOULD HAVE MORE THAN FIVE PAGES (LETTER SIZE) OF INFORMATION PROVIDED TO DEMONSTRATE COMPLIANCE WITH DRAWINGS. MOST EQUIPMENT SUBMITTALS SHOULD HAVE ALL DATA PROVIDED ON A SINGLE PAGE. CONTRACTOR SHALL FILL OUT THE EXAMPLE FORMS LISTED BELOW FOR EACH PIECE OF EQUIPMENT AND PROVIDE WITH SUBMITTALS OR SUBMITTALS WILL BE REJECTED.	
HVAC EQUIPMENT RESUBMITTAL REQUIREMENTS: IF AN EQUIPMENT SUBMITTAL HAS BEEN MARKED AS "REJECTED" OR "REVISE AND RESUBMIT" BY ENGINEER, THEN CONTRACTOR SHALL RESUBMIT ONLY THAT EQUIPMENT MARKED TO BE RESUBMITTED (DO NOT RESUBMIT EQUIPMENT NOTED AS "NO EXCEPTIONS TAKEN" OR "EXCEPTIONS NOTED"). CONTRACTOR SHALL RESUBMIT ALL ITEMS MARKED "REJECTED" OR "REVISE AND RESUBMIT" AT THE SAME TIME OR THEY WILL BE REJECTED AGAIN.	
EXAMPLE SPLIT SYSTEM SUBMITTAL FORM: TAG: FCU MODEL NUMBER: FOU WEIGHT (LBS): CU/HP MODEL NUMBER: CU/HP WEIGHT (LBS): SUPPLY FAN HP: SUPPLY CFM: OA CFM (IF REQUIRED): TOTAL COOLING CAPACITY AT SCHEDULED COIL EAT: SENSIBLE COOLING CAPACITY AT SCHEDULED COIL EAT: INTEGRAL HEAT CAPACITY AT SCHEDULED EAT (IF HEAT PUMP): PROPOSED EER/SEER: PROPOSED HSPF/COP: STRIP HEAT CAPACITY AT SCHEDULED VOLTAGE//# OF STAGES: REFRIGERANT TYPE: DIMENSIONS RECOMMENDED BY MANUFACTURER: MINIMUM ANTICIPATED LENGTH AND IF LONG LINESET IS REQUIRED: WARRANTIES (COMPRESSOR/OTHER): AIR FILTER TYPE (MERV) PROVIDED: CABINET FINISH (BAKED ENAMEL/PAINT) AND LEAKAGE RATE: T'STAT MAKE/MODEL (INDICATE IF SCHEDULED REQUIREMENTS ARE MET): FOU/CU/HP ACCESSORIES PROVIDED:	EXAMPLE RTU SUBMITTAL FORM: TAG: MAKE/MODEL NUMBER: WEIGHT (LBS): SUPPLY FAN HP: SUPPLY CFM: OA CFM: TOTAL COOLING CAPACITY AT SCHEDULED COIL EAT: SENSIBLE COOLING CAPACITY AT SCHEDULED EAT (IF HEAT PUMP): GAS INPUT/OUTPUT RATING (IF APPLICABLE): GAS STAGES: GAS EFFICIENCY RATING (IF APPLICABLE): PROPOSED EER/SEER: PROPOSED HSPF/COP: STRIP HEAT CAPACITY AT SCHEDULED VOLTAGE//# OF STAGES: REFRIGERANT TYPE: WARRANTIES (COMPRESSOR/OTHER): AIR FILTER TYPE (MERV) PROVIDED: CABINET FINISH (BAKED ENAMEL/PAINT) AND LEAKAGE RATE: T'STAT MAKE/MODEL (INDICATE IF SCHEDULED REQUIREMENTS ARE MET): ACCESSORIES PROVIDED: CURB DIMENSIONS AND INSULATION:
EXAMPLE FLEX DUCT SUBMITTAL FORM: TAG: MAKE/MODEL NUMBER: INSTALLED R-VALUE: CONSTRUCTION DESCRIPTION: RATED AND MAXIMUM OPERATING PRESSURE AND TEMPERATURE PER UL181: AIR FRICTION CHART: WARRANTY:	EXAMPLE GRD SUBMITTAL FORM: TAG: MAKE/MODEL NUMBER: BLOW PATTERN: DIMENSIONS: AIRFLOW RANGE (CFM): PRESSURE DROP (IN.W.C.): NC AT AIRFLOW: THROW DISTANCES AT TERMINAL VELOCITIES OF 150/100/50 FPM (FT): FRAME/MOUNTING TYPE: COLOR/FINISH: WARRANTY: ACCESSORIES PROVIDED:
EXAMPLE SHEET METAL DUCTWORK SUBMITTAL FORM: TAG: MAKE/MODEL NUMBER: MATERIAL TYPE, FINISH, AND THICKNESS: CONSTRUCTION DESCRIPTION (SEAMS/JOINTS/MASTIC INFO): RATED AND MAXIMUM OPERATING PRESSURE AND TEMPERATURE: FITTINGS: WARRANTY:	EXAMPLE WALL LOUVER SUBMITTAL FORM: TAG: MAKE/MODEL NUMBER: DIMENSIONS: AIRFLOW (CFM): FREE AREA: WIND PERFORMANCE RATING: LICENSING (AMCA/UL/ETC.): WARRANTY: ACCESSORIES PROVIDED: EXAMPLE FAN SUBMITTAL FORM: TAG: MAKE/MODEL NUMBER: WEIGHT (LBS): AIRFLOW (CFM): SOUND

FANS												
TAG	MAKE & MODEL NO.	TYPE	AREA SERVED	AIRFLOW (CFM)	ESP INCHES	MAX POWER	MAX SONES	DRIVE	WEIGHT (LB)	NOTES	ACCESSORIES	CONTROLS
TEF-A	PANASONIC FV-0511VK1	CEILING MOUNTED EXHAUST	APARTMENT TOILET	50	0.25	50 W	2.0	DIRECT	10	1-6	1-4	A
TEF-B	PANASONIC FV-20V03	CEILING MOUNTED EXHAUST	AMENITY TOILET	140	0.25	44 W	N/A	DIRECT	25	2-4.6	1,2,4,5,7	B
EF-PE	S&P TO MIXED VENT	INLINE EXHAUST	POOL EQUIPMENT ROOM	200	0.20	65 W	N/A	DIRECT	25	2-4	7	C

- NOTES:
- SOME VALUES ARE VALUES MEASURED 5 FT FROM THE FAN - OPEN ENDED. SOME VALUES MUST NOT EXCEED SCHEDULED AMOUNT. FAN SHALL BE IAM OR AMCA CERTIFIED FOR SOUND & PERFORMANCE AND UL LISTED.
 - CONTRACTOR RESPONSIBLE FOR VERIFYING ARCHITECTURAL CONSTRUCTION FOR FAN INSTALLATION; PROVIDE SUPPORTS, BRACKETS, CURB, OR APPROPRIATE MOUNTING HARDWARE TO SECURE FAN TO STRUCTURE.
 - INCLUDING VIBRATION ISOLATION AS LISTED IN SPECIFICATIONS, EQUIPMENT NOTES, AND DETAILS.
 - PROVIDE TRANSITION TO ACTUAL FAN INLET/OUTLET FROM DUCT SIZE LISTED ON PLANS.
 - COORDINATE EXACT CEILING MOUNTED FAN LOCATIONS WITH ARCHITECTURAL/ID ROP PLANS.
 - FAN SHALL FIT IN A 2x4 STUD WALL. PROVIDE 4" ROUND DUCT ADAPTER FOR 4" OVAL DUCT COLLAR.
 - FAN SHALL BE CONSTRUCTED OF STEEL, NO PLASTIC.

ACCESSORIES:

- PROVIDE BACKDRAFT DAMPER AT FAN DISCHARGE. FOR UPBLAST AND DOWNBLAST ROOF MOUNTED FANS PROVIDE BDD AT FAN INLET ON "SHELF" IN ROOF CURB.
- PROVIDE DISCONNECT SWITCH INTEGRAL TO UNIT.
- PROVIDE WITH FACTORY CRD WHERE INSTALLED IN RATED CEILING.
- PROVIDE WITH MATCHING METAL PAINTABLE WALL CAP; NECK SIZE SAME AS DUCT SIZE SHOWN ON PLANS, UNO. COLOR SELECTION BY ARCHITECT AT TIME OF SHOP DRAWINGS.
- INTEGRAL THERMAL OVERLOAD PROTECTION.
- BIRDSCREEN AT FAN INLET.
- PROVIDE SUPPORTS TO HANG FAN FROM STRUCTURE (NOT LAY-IN CEILING TILE) FAN HANGING KIT WITH NEOPRENE PAD VIBRATION ISOLATORS. IF FAN HP EXCEEDS 1.0 PROVIDE SPRING ISOLATORS IN LIEU OF NEOPRENE.

CONTROLS:

- FAN SHALL BE CONTROLLED BY LIGHT SWITCH. SEE ELECTRICAL.
- FAN SHALL BE CONTROLLED BY OCCUPANCY SENSOR.
- FAN SHALL RUN CONTINUOUSLY. PROVIDE SERVICE SWITCH AT FAN OR ON WALL IF FAN IS NOT EASILY ACCESSIBLE.

GRILLES, REGISTERS & DIFFUSERS												
TAG	MODEL	SERVICE	SIZE	CFM	BLOW	TYPE/NOTES	INTEGRAL BALANCING DAMPER	CONNECTION SIZE	MATERIAL	NOTES	ACCESSORIES	
A	HART & COOLEY 682/683	SUPPLY	SEE DWGS	ON PLANS	AS SHOWN	STAMPED FACE, 1/2" SPACED FINS SET	YES	SEE DWGS	STEEL	1-6	1	
B	HART & COOLEY 650	TRANSFER	SEE DWGS	-	-	STAMPED SIDEWALL RETURN GRILLE, 1/2" BLADE SPACING	NO	SEE DWGS	STEEL	1-3	-	
C	TITUS TDC	SUPPLY	24x24 UNO	ON PLANS	-	FLAT, SQUARE LOUVERED CEILING DIFFUSER	YES	SEE DWGS	STEEL	1-7	-	
D	TITUS SDR	RETURN	SEE DWGS	-	-	1/2"x1/2"x1/2" EGGRATE	NO	SEE DWGS	STEEL	1,2,3,5,6,7	-	
E	TITUS 350RL	RETURN	SEE DWGS	-	-	3/4" BLADE SPACING, 45° DEFLECTION	NO	SEE DWGS	STEEL	1,2,3,5,6,7	-	
F	TITUS ML-39	SUPPLY	48" LONG	ON PLANS	-	48" LONG LINEAR DIFFUSER WITH (2) 1" WIDE SLOTS	YES	SEE DWGS	STEEL	1-3,7	2	
G	TITUS TDC	SUPPLY	18x18 UNO	ON PLANS	-	FLAT, SQUARE LOUVERED CEILING DIFFUSER	YES	SEE DWGS	STEEL	1-7	-	
H	TITUS TMR	SUPPLY	15" OUTSIDE DIA	ON PLANS	-	STEEL ROUND DIFFUSER WITH TWO DISCHARGE PATTERNS	YES	SEE DWGS	STEEL	1-7	-	
J	TITUS S300FL	SUPPLY	SEE DWGS	ON PLANS	-	SPIRAL DUCT MOUNTED DBL DEFLECTION, 3/4" BLADE SPACING	YES	SEE DWGS	ALUM.	1,7	-	
K	TITUS 300FL	SUPPLY	SEE DWGS	ON PLANS	-	DUCT MOUNTED DBL DEFLECTION, 3/4" BLADE SPACING	YES	SEE DWGS	ALUM.	1,7	-	

- NOTES:
- REFER TO ARCHITECTURAL DRAWINGS FOR TYPE OF CEILING AND SUSPENSION SYSTEM.
 - COLOR SELECTED BY ARCHITECT; SUBMIT FINISH CHART WITH SHOP DRAWINGS.
 - DIFFUSERS SHALL HAVE A BAKED ENAMEL FINISH. DO NOT FIELD PAINT GRDS.
 - PROVIDE GRILLES WITH BLOW PATTERNS AS INDICATED ON PLANS.
 - ROUNDOUT TO DIFFUSERS SHALL BE SAME SIZE AS DIFFUSER NECK UNLESS NOTED OTHERWISE.
 - PROVIDE SQUARE/RECTANGULAR TO ROUND TRANSITION WHERE INDICATED ON DRAWINGS. SEE PLANS FOR COLLAR SIZE.
 - DIFFUSER SHALL NOT HAVE AN NC RATING GREATER THAN 30 AT THE CFM INDICATED ON THE FLOOR PLANS. STATIC PRESSURE DROP SHALL NOT BE GREATER THAN 0.10" AT THE CFM INDICATED.

ACCESSORIES:

- MULTI-SHUTTER VALVE WITH INTERLOCKING LOUVERS (MVD).
- PROVIDE PLENUM WITH NECK BALANCING DAMPER (MNT RT-150 SERIES) ACCESSIBLE FROM SLOT FACE, DIFFUSER SHALL BE EXTRUDED ALUMINUM PAINTED WHITE ENAMEL, FRAME STYLE C FOR GYPSBOARD CEILINGS (COORD. WITH ARCH.). INSULATED PLENUM EXTERIOR. NC SHALL BE LESS THAN 30 @ 75 CFM/FT. STATIC PRESSURE SHALL NOT EXCEED 0.2".

WALL LOUVERS										(ALL NOTES APPLY)
TAG	MAKE & MODEL	CFM	SIZE WxH	FREE AREA SQ FT	TYPE	DUTY	MAX DP @ 700 FPM	ACCESSORIES		
WL-PI	RUSKIN ELF375DX	200	12x12	0.34	STATIONARY FORMED LOUVER	INTAKE	0.07		1	

- NOTES:
- LOUVERS SHALL BE CAPABLE OF WITHSTANDING A WIND LOAD OF 20 LBS PER SF.
 - UNIT SHALL BE MADE OF ALUMINUM WITH AN ALLOY.
 - SCREENS SHALL BE CONTAINED WITHIN A REMOVABLE FRAME.
 - UNIT SHALL BE AMCA LICENSED.
 - LOUVER SHALL HAVE A BAKED ENAMEL PAINTED FINISH. COLOR SELECTION BY ARCHITECT AT TIME OF SHOP DRAWINGS.
 - LOUVER SHALL HAVE DRAINABLE BLADES.

ACCESSORIES:

- BIRDSCREEN.

ELECTRIC HEATERS							
TAG	MAKE & MODEL	TYPE	CFM	SERVES	KW	NOTES	ACCESSORIES
EWH-1.5	REDD-1 AFA220D	ELECTRIC WALL HEATER	-	SEE PLANS	1.5	1,2,3	1,2,3
EWH-3.0	REDD-1 AFA240D	ELECTRIC WALL HEATER	-	SEE PLANS	3.0	1,2,3	1,2,3

- NOTES:
- UNITS SHALL BE MADE OF STEEL.
 - UNIT SHALL BE MOUNTED 12" AFF UNLESS NOTED OTHERWISE.
 - UNITS MOUNTED ON CONCRETE WALL SHALL BE SURFACE MTD. ALL OTHER UNITS SHALL BE RECESSED MOUNTED.

ACCESSORIES:

- PROVIDE UNIT WITH INTEGRAL T'STAT AND DISCONNECT.
- AUTO - RESET THERMAL OVERLOADS.
- UNIT SHALL BE PROVIDED WITH TAMPER PROOF CONTROLS.

SPLIT SYSTEMS - HEAT PUMPS																	(ALL NOTES APPLY)
TAG	INDOOR UNIT MODEL # CARRIER	OUTDOOR UNIT MODEL # CARRIER	NOMINAL TONS	AREA SERVED	TOTAL CFM	OA CFM	ESP	FAN HP	COOLING (NOTE 1)			COIL EAT DB/WB	MIN. INT. HEAT. MBH (NOTE 2)	MIN. HSPF2 (NOTE 3)	ELEC HEAT OUTPUT KW (208V)	MAX CU/HP WEIGHT LBS (NOTE 5)	ACCESSORIES
									TOTAL MBH	SENS. MBH	MIN. SEER2						
FCU/HP-A	FMA5 018	27SCAS 18	1.5	APARTMENTS	600	NOTE 11	0.5	1/3	17.4	13.3	14.3	80.0/67.0	17.4	7.8	3.8	101/152	1-13
FCU/HP-B	FMA5 024	27SCAS 24	2.0	APARTMENTS	800	NOTE 11	0.5	1/3	22.9	17.0	14.3	80.0/67.0	22.9	7.5	5.6	101/173	1-13

NOTES:

- COOLING CAPACITIES ARE BASED ON ENTERING AIR TEMPERATURES SHOWN AT FAN COIL UNIT & 95°F db ENTERING AIR AT OUTDOOR UNIT. CAPACITIES OF UNITS SUBMITTED SHALL NOT BE LESS THAN 5% OF SCHEDULED VALUES INCLUDING LINE LOSSES - SEE ACCESSORY NOTE BELOW REGARDING LONG LINE SETS.
- HEATING CAPACITY BASED ON 70°F db INDOOR ENTERING AIR AT FAN COIL UNIT & 47°F db ENTERING AIR AT OUTDOOR UNIT.
- HEATING HSPF IS AT 47°F OUTDOOR AIR TEMPERATURE.
- HEAT KW IS MINIMUM REQUIRED.
- WEIGHT DOES NOT INCLUDE PADS OR SUPPORTS.
- SEER VALUE IS BASED ON AHRI STANDARD 210/240.
- ESP VALUES DO NOT INCLUDE INTERNAL PRESSURE DROPS SUCH AS THE COOLING COIL, CASING, OR ELECTRIC HEAT.
- SUBMIT CLEARLY LABELED SHOP DRAWINGS INDICATING THE PROPOSED UNITS' CAPACITIES.
- MECHANICAL CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR REGARDING SINGLE CIRCUIT OR DUAL CIRCUIT CONNECTIONS FOR SPLIT SYSTEMS.
- UNIT SHALL USE R454B OR R32 REFRIGERANT.
- OUTSIDE AIR IS PROVIDED BY MECHANICAL MEANS. SEE DETAIL.
- SEE APARTMENT FCU DETAIL FOR MAXIMUM ALLOWABLE FAN COIL UNIT HEIGHTS. CONTRACTOR SHALL NOT SUBMIT A UNIT THAT EXCEEDS THE HEIGHT LIMITATIONS SHOWN IN THE DETAILS.
- SEE FLOOR PLANS FOR UNIT OUTDOOR AIR QUANTITIES.
- MOUNT FOU'S WITH INTEGRAL DISCONNECT SWITCHES SO THERE IS PROPER WORKING CLEARANCE PER NEC 110.26.

ACCESSORIES:

- STANDARD THROW-AWAY 1" PLEATED MERV 8 FIBERGLASS FILTER. PROVIDE FILTER DURING CONSTRUCTION
- FACTORY INSTALLED ELECTRIC HEAT WITH SINGLE POINT POWER FOR FCU. MANUFACTURER SHALL PROVIDE TRANSFORMER AS NECESSARY FOR BLOWER FAN, ACCUMULATOR, FACTORY INSTALLED (OUTDOOR UNIT, HP).
- 5-TON COMPRESSOR WARRANTY.
- BAKED ON ENAMEL FINISH.
- PROGRAMMABLE 7 DAY THERMOSTAT, NIGHT SETBACK (55° HEATING, 85° COOLING), AUTO CHANGEOVER FOR HEAT-COOL, 5 DEGREE DEADBAND ADJUSTMENT BETWEEN HEAT AND COOL OPERATION. PROVIDE A REMOTE SENSOR WHERE SHOWN ON THE PLANS. THERMOSTAT SHALL BE PROVIDED BY HEAT PUMP MANUFACTURER. SEE SEQUENCE.
- FILTER DRYER.
- ANTI-SHORT-CYCLE KIT.
- PROVIDE FCU WITH THERMAL EXPANSION VALVE AND TIME DELAY RELAY.
- COMPRESSOR CRANKCASE HEATER.
- REFRIGERANT LINES SHALL BE SIZED PER THE MANUFACTURER'S RECOMMENDATION. PROVIDE LONG LINE REFRIGERATION LINE SET WHERE REQUIRED BY MANUFACTURER. - LINES SHALL BE SIZED BY MANUFACTURER TO MAINTAIN SCHEDULED CAPACITY. SHOW MANUFACTURER'S RECOMMENDED LINE SET SIZE IN SUBMITTALS. MANUFACTURER SHALL DETERMINE IF LONG LINE APPLICATION KIT IS REQUIRED. PROVIDE DOCUMENTATION IN SHOP DRAWINGS. PROVIDE ALL ACCESSORIES REQUIRED BY THE MANUFACTURER FOR LONG LINE APPLICATIONS. BASIS OF DESIGN UNITS ARE CAPABLE OF 200 LF AND 250 EQUIVALENT FT.
- DISCONNECT SWITCH FOR EACH FCU FACTORY PROVIDED; DISCONNECT FOR EACH HEAT PUMP PROVIDED BY AND INSTALLED BY ELECTRICAL.
- PROVIDE ACCESSORIES TO ALLOW UNIT TO OPERATE IN COOLING MODE AT LOW AMBIENT TEMPERATURES (DOWN TO AT LEAST 25°F).
- PROVIDE A CONDENSATE PUMP IF SHOWN ON PLANS: 2 GAL/HR MIN, 20 FT HEAD, 1/3 GAL RESERVOIR, 100 WATTS MAX, 115 V, POWER CORD, CHECK VALVE, THERMAL OVERLOAD, LITTLE GIANT #55460 VCMA-20ULST-PRO.

SEQUENCE OF OPERATION:

- UNIT SHALL ONLY BE ENERGIZED BASED ON A CALL FOR HEATING OR COOLING.
- EVAPORATOR FAN IN COOLING MODE SHALL OPERATE ONLY WHEN COMPRESSOR IS OPERATING.
- IN COOLING MODE COMPRESSOR SHALL NOT MODULATE BUT SHALL BE FULLY ENERGIZED.
- OA DUCT MOD SHALL BE ENERGIZED (OPEN) ONLY WHEN HEAT PUMP CONDENSING UNIT IS OPERATING.

DUCTLESS SPLIT SYSTEMS																		
TAG	AREA SERVED	TYPE	MITSUBISHI MODEL # INDOOR/OUTDOOR UNIT	REFRI-GE RANT LINE (FT) NOTE 3	NOMINAL TONS	TOTAL CFM	OA CFM	COIL EAT DB/WB	TOTAL COOL MBH	SEN. COOL MBH	HEAT MBH	MIN. SEER2	MIN. HSPF2	MAX. WEIGHT LBS		NOTES		ACCESSORIES
DFC/DHP-1.0	FACP ROOM	HEAT PUMP	PKA-A12LA1 / PUZ-A12NKA	100	1.0	385	-	80.0/67.0	12.0	10.6	14.0	21.3	10.2	40	100	1,2,3		1-9
DHP-2.0	POOL RESTROOMS	HEAT PUMP	MXZ-3024NLHZ	65	2.0	-	-	80.0/67.0	22.0	19.4	25.0	20.0	10.0	-	152	1,2,3		1-4,6-8
DFC-1.1, DFC-1.2	POOL RESTROOMS	WALL MOUNT	MSZ-FX12NL	-	-	311	-	80.0/67.0	12.0	10.6	13.2	-	-	40	-	1,2,3		5

NOTES:

- COOLING CAPACITIES BASED ON 95° F db AIR ENTERING OUTDOOR UNIT
- COOLING CAPACITIES SCHEDULED IS AN AHRI RATED CAPACITY. UNIT SHALL BE AHRI RATED
- LINE LENGTHS ARE MAX LENGTHS OF THE BASIS OF DESIGN. DISTANCES BETWEEN INDOOR & OUTDOOR UNITS WORKS WITH THESE LENGTHS. SHORTER LENGTHS ARE ALLOWED IF FIELD CONDITIONS ALLOW. SEE ACCESSORY NOTE 7.

ACCESSORIES:

- FILTER DRYER.
- ROUTE CONDENSATE AS SHOWN ON PLANS; PROVIDE INTEGRAL CONDENSATE PUMP.
- CLEANABLE FILTERS.
- WALL MOUNTED T'STAT IN LOCKING COVER. SEE SEQUENCE BELOW. LOCATE T'STAT, IF NOT SHOWN OTHERWISE, ON WALL IN ROOM THE UNIT SERVES. MOUNT SO THAT SUPPLY AIR DOES NOT BLOW ON T'STAT.
- MOUNTING KIT FOR FAN COIL UNIT
- COOLING OPERATION DOWN TO 20 DEGREES. PROVIDE ALL MANUFACTURER RECOMMENDED ACCESSORIES NECESSARY TO ACCOMMODATE THE LOW AMBIENT COOLING.
- REFRIGERANT LINES SHALL BE SIZED PER THE MANUFACTURER'S RECOMMENDATION. PROVIDE LONG LINE REFRIGERATION LINE SET WHERE REQUIRED BY MANUFACTURER. - LINES SHALL BE SIZED BY MANUFACTURER TO MAINTAIN SCHEDULED CAPACITY. SHOW MANUFACTURER'S RECOMMENDED LINE SET SIZE IN SUBMITTALS. MANUFACTURER SHALL DETERMINE IF LONG LINE APPLICATION KIT IS REQUIRED. PROVIDE DOCUMENTATION IN SHOP DRAWINGS. PROVIDE ALL ACCESSORIES REQUIRED BY THE MANUFACTURER FOR LONG LINE APPLICATIONS.
- PROVIDE UNIT WITH INVERTER (VARIABLE SPEED) COMPRESSOR AND VARIABLE SPEED SUPPLY (EVAPORATOR) FAN.
- PROVIDE WITH OUTSIDE AIR INTAKE KIT.

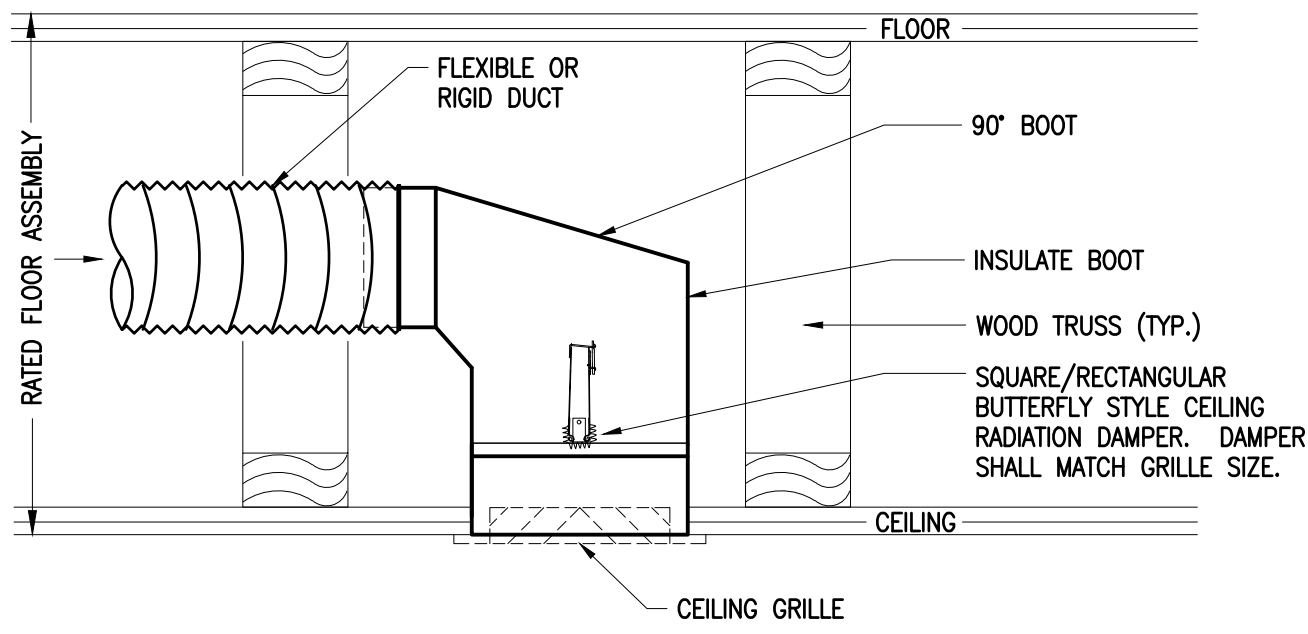
SEQUENCE OF OPERATION:

- UNIT SHALL BE ENERGIZED BASED ON A CALL FOR HEATING, COOLING, OR DEHUMIDIFICATION (IF PROVIDED FOR THRU THERMOSTAT/CONTROLLER)
- DO NOT ALLOW EVAPORATOR FAN TO OPERATE WITHOUT COMPRESSOR OPERATING.
- IN COOLING MODE, DO NOT ALLOW COMPRESSOR TO MODULATE (VARY SPEED) UNLESS EVAPORATOR FAN MODULATES AT SAME PART LOAD SPEED. EVAPORATOR DISCHARGE AIR SHALL BE SAME TEMPERATURE REGARDLESS OF COMPRESSOR SPEED. EVAPORATOR TEMPERATURE SHALL NOT BE GREATER THAN 58°F WHEN OPERATING.

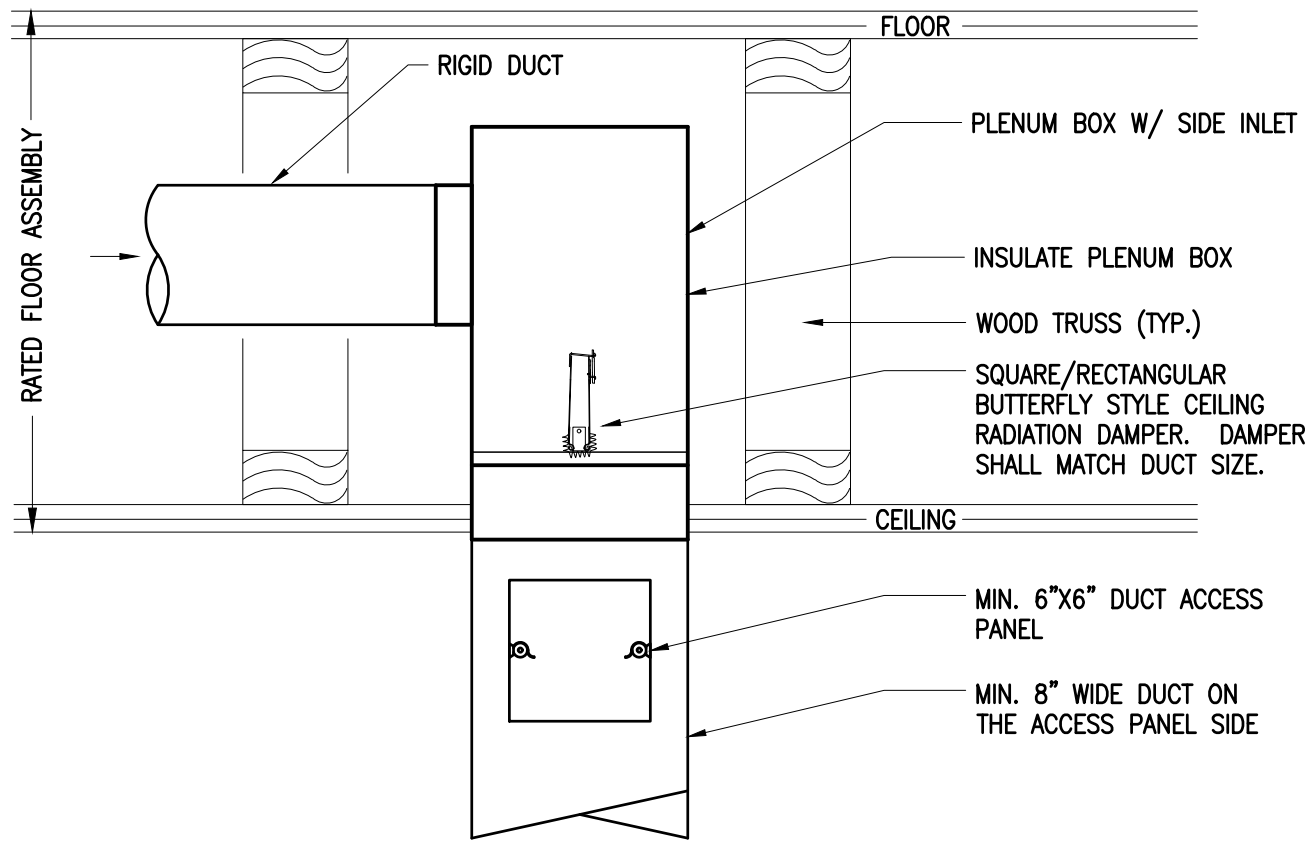
A2L REFRIGERANT SPLIT SYSTEMS EFFECTIVE DISPERSAL VOLUME CALCULATIONS PER ASHRAE 15-2022																			
UNIT TYPE / ZONE	SYSTEM SERVING ZONE (ALL BASED ON CARRIER 27SPA6 SERIES HEAT PUMPS USING R454B)	FLOOR AREA SERVED BY REFRIGERATION SYSTEM (FT ²)	CEILING HT. (FT)	DUCT VOLUME (FT ³) ⁽¹⁾	EFFECTIVE DISPERSAL VOLUME V _{eff} (FT ³) ⁽¹⁾	MAX RCL PER ASHRAE 34-2022 TABLE 4-1 (LBS/1,000 (FT ³))		LFL PER ASHRAE 34-2022 TABLE 4-1 (LBS/1,000 (FT ³))		MAX EDVC USING R-32 (LBS) ⁽³⁾ EQ. 7-3a EDVC= RCL x V _{eff} x F _{occ}	MAX EDVC USING R-454B (LBS) ⁽³⁾ EQ. 7-3a EDVC= RCL x V _{eff} x F _{occ}	MAX EDVC USING R-32 (LBS) ⁽⁴⁾ EQ. 7-8 EDVC= V _{eff} x LFL x CF x F _{occ}	MAX EDVC USING R-454B (LBS) ⁽⁴⁾ EQ. 7-8 EDVC= V _{eff} x LFL x CF x F _{occ}	ESTIMATED LINE SET LENGTH ⁽⁶⁾		SYSTEM FACTORY CHARGE (LBS)	ADDITIONAL LINE SET CHARGE (OZ/FT)	EDVC = TOTAL SYSTEM + LINESET CHARGE (LBS) ⁽⁵⁾	EDVC COMPLIANCE ⁽⁵⁾
						R-32 ⁽²⁾	R-454B ⁽²⁾	R-32 ⁽²⁾	R-454B ⁽²⁾					VERTICAL (FT)	HORIZONTAL (FT)				
UNIT B1	FCU/HP-A (1.5 TONS)	898	9.1	0.0	8,172	4.8	3.1	19.1	22.0	39.2	25.3	78.0	89.9	45.0	55.0	6.5	0.6	9.7	YES
UNIT B1 a1t1	FCU/HP-A (1.5 TONS)	878	9.1	0.0	7,990	4.8	3.1	19.1	22.0	38.4	24.8	76.3	87.9	45.0	55.0	6.5	0.6	9.7	YES
UNIT B1 a1t2	FCU/HP-A (1.5 TONS)	890	9.1	0.0	8,099	4.8	3.1	19.1	22.0	38.9	25.1	77.3	89.1	45.0	55.0	6.5	0.6	9.7	YES
UNIT B1 a1t2 HC	FCU/HP-A (1.5 TONS)	890	9.1	0.0	8,099	4.8	3.1	19.1	22.0	38.9	25.1	77.3	89.1	45.0	55.0	6.5	0.6	9.7	YES
UNIT B1 a1t3	FCU/HP-A (1.5 TONS)	875	9.1	0.0	7,963	4.8	3.1	19.1	22.0	38.2	24.7	76.0	87.6	45.0	55.0	6.5	0.6	9.7	YES
UNIT B1 a1t4	FCU/HP-A (1.5 TONS)	878	9.1	0.0	7,990	4.8	3.1	19.1	22.0	38.4	24.8	76.3	87.9	45.0	55.0	6.5	0.6	9.7	YES
UNIT B2	FCU/HP-A (1.5 TONS)	944	9.1	0.0	8,590	4.8	3.1	19.1	22.0	41.2	26.6	82.0	94.5	45.0	55.0	6.5	0.6	9.7	YES
UNIT C1	FCU/HP-B (2.0 TONS)	1115	9.1	0.0	10,147	4.8	3.1	19.1	22.0	48.7	31.5	96.9	111.6	45.0	55.0	5.4	0.6	8.6	YES
UNIT C1 a1t1	FCU/HP-B (2.0 TONS)	1115	9.1	0.0	10,147	4.8	3.1	19.1	22.0	48.7	31.5	96.9	111.6	45.0	55.0	5.4	0.6	8.6	YES
UNIT C2	FCU/HP-B (2.0 TONS)	1190	9.1	0.0	10,829	4.8	3.1	19.1	22.0	52.0	33.6	103.4	119.1	45.0	55.0	5.4	0.6	8.6	YES
UNIT C2 HC	FCU/HP-B (2.0 TONS)	1190	9.1	0.0	10,829	4.8	3.1	19.1	22.0	52.0	33.6	103.4	119.1	45.0	55.0	5.4	0.6	8.6	YES
NOTES (ALL NOTES APPLY):																			
1. PER ASHRAE 15-2022 7.2, THE EFFECTIVE DISPERSAL VOLUME (V _{eff}) SHALL BE BASED ON THE OCCUPIED OR NON-OCCUPIED SPACE SERVED BY A REFRIGERATION SYSTEM. THE VOLUME OF ALL CONNECTED SPACES VIA DUCTED AIR DISTRIBUTION SYSTEM ARE INCLUDED. THE ADDITIONAL VOLUME OF DUCTWORK IS NOT INCLUDED AS IT WOULD ONLY INCREASE THE MAX EDVC ALLOWED AND THE ADDITIONAL VOLUME ISNT NEEDED TO COMPLY. ALL WORST CASE SYSTEMS WITH LONGEST ESTIMATED LINESETS AND SMALLEST V _{eff} HAVE BEEN INCLUDED IN THIS TABLE. DUCTLESS SPLIT SYSTEMS STILL ALLOWED TO USE R-410A REFRIGERANT ARE NOT INCLUDED IN THIS TABLE.																			
2. VALUES ARE BASED ON DATA FROM ASHRAE 34-2022 TABLES 4-1 AND 4-2. R-454B REFRIGERANT IS USED BY SEVERAL APPROVED MANUFACTURERS AND R-32 IS USED BY SEVERAL OTHER APPROVED MANUFACTURERS. NO OTHER TYPE OF REFRIGERANT WILL BE ACCEPTABLE FOR USE ON THESE SYSTEMS WITHOUT PRIOR APPROVAL FROM ENGINEER.																			
3. PER ASHRAE 15-2022 SECTION 7.3.1 AND EQ. 7-3a, ON ALL REFRIGERATION SYSTEMS, THE MAX CHARGE PERMITTED FOR AN EFFECTIVE DISPERSAL VOLUME SHALL BE CALCULATED AS RCL * V _{eff} * OCCUPANCY ADJUSTMENT FACTOR (F _{occ}) OF 1.																			
4. PER ASHRAE 15-2022 SECTION 7.6.1 AND EQ. 7-8, FOR SYSTEMS WITH AIR CIRCULATION INITIATED BY A REFRIGERANT DETECTOR IN COMPLIANCE WITH SECTION 7.6.2.4, THE MAX CHARGE OF ANY INDEPENDENT CIRCUIT OF EACH SYSTEM (EDVC) SHALL BE CALCULATED AS V _{eff} X LFL X CONCENTRATION FACTOR (CF) OF 0.5 X OCCUPANCY ADJUSTMENT FACTOR (F _{occ}) OF 1.																			
5. CONCENTRATIONS LEVELS ARE ACCEPTABLE IF THE MAX EDVC VALUES ALLOWED BY EQ. 7-3a AND EQ. 7-8 ARE GREATER THAN THE CALCULATED TOTAL SYSTEM + ADDITIONAL LINESET CHARGE. LINESETS ARE ALSO NOT REQUIRED TO BE LOCATED IN MACHINERY ROOMS AS LONG AS MAX EDVC VALUES ARE NOT EXCEEDED PER SECTION 7.4.																			
6. SYSTEM CHARGE INCLUDES 15 FT OF LINESET, SO THAT LENGTH HAS BEEN SUBTRACTED FROM THE TOTAL ESTIMATED LENGTH WITH CALCULATING THE TOTAL EDVC. LINSET LENGTHS SHOWN ARE THE LONGEST ESTIMATED LENGTHS FOR UNIT TYPE LOCATED ANYWHERE IN THE BUILDING.																			
7. PER ASHRAE 15-2022 SECTION 7.6.2.3, DUCTED HVAC SYSTEMS WITH A RELEASABLE REFRIGERANT CHARGE MORE THAN 4.0 LBS AND WITH ANY DUCT OPENINGS LESS THAN 5.9 FT AFF OR DUCTED SYSTEMS WHERE SPACES CONNECTED TO THE SAME SUPPLY AIR DUCT ARE USED AS THE DISPERSAL FLOOR AREA TO CALCULATE VOLUME PER SECTION 7.2 ARE REQUIRED TO HAVE AN INTEGRAL REFRIGERANT DETECTION SYSTEM PROVIDED BY THE SYSTEM MANUFACTURER. THIS WILL BE REQUIRED ON ALL SYSTEMS FOR THIS PROJECT AS BOTH SITUATIONS OCCUR. BASIS OF DESIGN SYSTEMS HAVE REQUIRED INTEGRAL REFRIGERANT DETECTORS PROVIDED.																			
8. PER ASHRAE 15-2022 9.12.1.5.1, PIPING IN A HIGH PROBABILITY SYSTEM WHERE THE REFRIGERANT CONCENTRATION DOES NOT EXCEED THE EDVC FOR THE SMALLEST OCCUPIED SPACE THROUGH WHICH THE PIPING PASSES IS NOT REQUIRED TO BE ROUTED WITHIN A SHAFT ENCLOSURE. THIS TABLE ILLUSTRATES THAT NO SHAFT ENCLOSURES ARE REQUIRED.																			
9. REFRIGERANT PIPING SHALL BE FABRICATED, PROTECTED, AND TESTED, AND LABELED WITH A LEGIBLE PERMANENT SIGN, SECURELY ATTACHED AND EASILY ACCESSIBLE INDICATING THE NAME AND ADDRESS OF THE INSTALLER, REFRIGERANT NUMBER AND CHARGE AMOUNT, LUBRICANT IDENTITY AND AMOUNT, AND THE FIELD TEST PRESSURE APPLIED IN COMPLIANCE WITH ASHRAE 15-2022. PIPE JOINTS ERRECTED ON SITE SHALL BE EXPOSED TO VIEW FOR VISUAL INSPECTION PRIOR TO BEING COVERED OR ENCLOSED PER SECTION 9.13.2. REFRIGERANT PIPING SHALL BE LOCATED WITHIN BUILDING ELEMENTS OR PROTECTIVE ENCLOSURES, SUCH AS MECHANICAL ROOMS ONLY ACCESSIBLE TO MAINTENANCE PERSONNEL, AS ALLOWED BY SECTION 9.12. IN CONCEALED LOCATIONS WHERE LINESETS ARE INSTALLED THROUGH HOLES OR NOTCHES IN STUDS, JOISTS, OR SIMILAR MEMBERS LESS THAN 1.5 INCHES FROM THE NEAREST EDGE OF THE MEMBER, THE LINESET SHALL BE PROTECTED BY A MIN. 16 GA GALVANIZED STEEL SHIELD PLATE COVERING THE AREA OF THE LINESET WHERE THE MEMBER IS NOTCHED OR BORED AND SHALL EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES. REFRIGERANT PIPING INSTALLED IN CONCRETE FLOORS SHALL BE ENCASED IN PIPE DUCT AND PROPERLY ISOLATED AND SUPPORTED TO PREVENT DAMAGING VIBRATION, STRESS, OR CORROSION. PENETRATIONS OF FIRE RATED ASSEMBLIES SHALL BE PROTECTED PER UL DETAILS. LINESET MATERIAL AND INSULATION SHALL BE AS NOTED IN HVAC GENERAL NOTES.																			

NOTES (ALL NOTES APPLY):

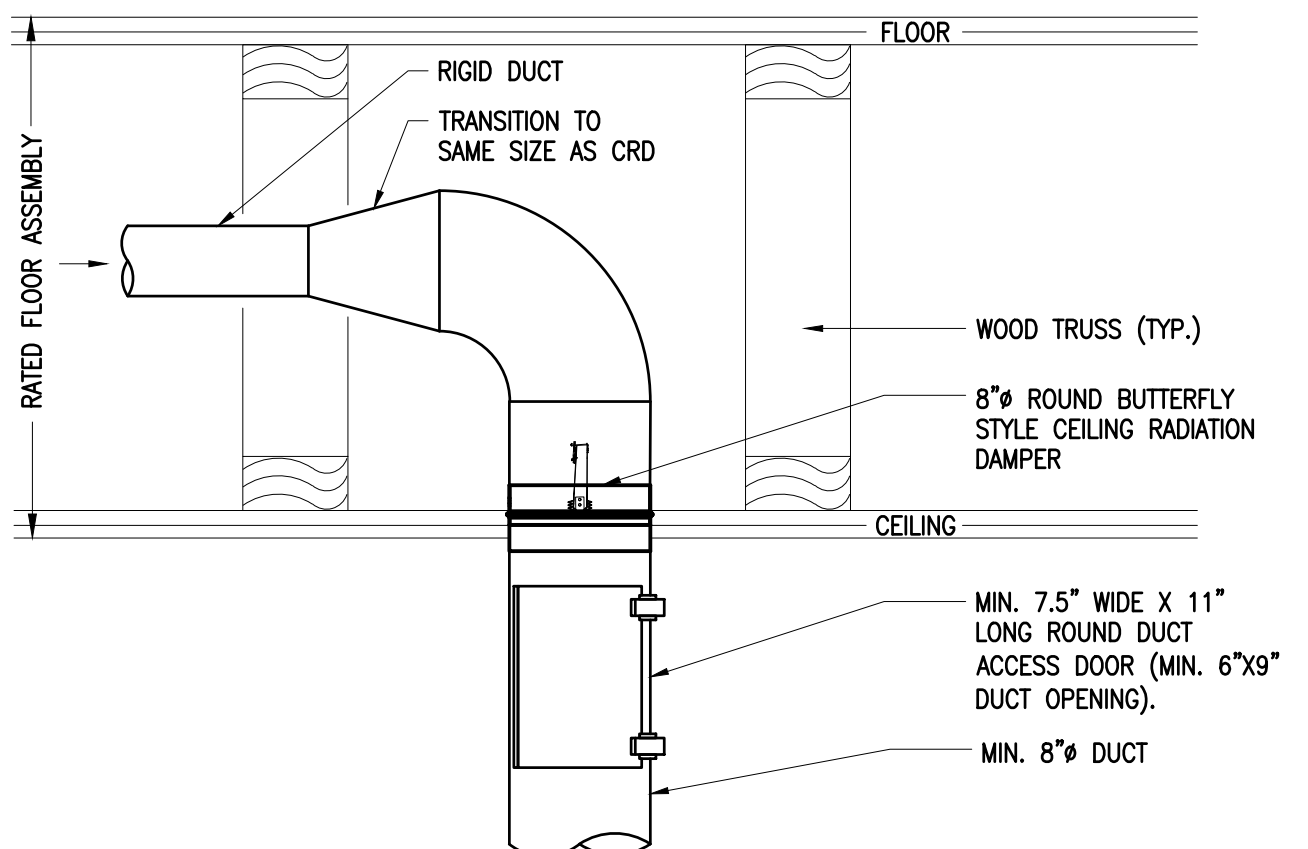
- PER ASHRAE 15-2022 7.2, THE EFFECTIVE DISPERSAL VOLUME (V_{eff}) SHALL BE BASED ON THE OCCUPIED OR NON-OCCUPIED SPACE SERVED BY A REFRIGERATION SYSTEM. THE VOLUME OF ALL CONNECTED SPACES VIA DUCTED AIR DISTRIBUTION SYSTEM ARE INCLUDED. THE ADDITIONAL VOLUME OF DUCTWORK IS NOT INCLUDED AS IT WOULD ONLY INCREASE THE MAX EDVC ALLOWED AND THE ADDITIONAL VOLUME ISN'T NEEDED TO COMPLY. ALL WORST CASE SYSTEMS WITH LONGEST ESTIMATED LINESETS AND SMALLEST V_{eff} HAVE BEEN INCLUDED IN THIS TABLE. DUCTLESS SPLIT SYSTEMS STILL ALLOWED TO USE R-410A REFRIGERANT ARE NOT INCLUDED IN THIS TABLE.
- VALUES ARE BASED ON DATA FROM ASHRAE 34-2022 TABLES 4-1 AND 4-2. R-454B REFRIGERANT IS USED BY SEVERAL APPROVED MANUFACTURERS AND R-32 IS USED BY SEVERAL OTHER APPROVED MANUFACTURERS. NO OTHER TYPE OF REFRIGERANT WILL BE ACCEPTABLE FOR USE ON THESE SYSTEMS WITHOUT PRIOR APPROVAL FROM ENGINEER.
- PER ASHRAE 15-2022 SECTION 7.3.1 AND EQ. 7-3a, ON ALL REFRIGERATION SYSTEMS, THE MAX CHARGE PERMITTED FOR AN EFFECTIVE DISPERSAL VOLUME SHALL BE CALCULATED AS RCL * V_{eff} * OCCUPANCY ADJUSTMENT FACTOR (F_{occ}) OF 1.
- PER ASHRAE 15-2022 SECTION 7.6.1 AND EQ. 7-8, FOR SYSTEMS WITH AIR CIRCULATION INITIATED BY A REFRIGERANT DETECTOR IN COMPLIANCE WITH SECTION 7.6.2.4, THE MAX CHARGE OF ANY INDEPENDENT CIRCUIT OF EACH SYSTEM (EDVC)SHALL BE CALCULATED AS V_{eff} x LFL X CONCENTRATION FACTOR (CF) OF 0.5 X OCCUPANCY ADJUSTMENT FACTOR (F_{occ}) OF 1.
- CONCENTRATIONS LEVELS ARE ACCEPTABLE IF THE MAX EDVC VALUES ALLOWED BY EQ. 7-3a AND EQ. 7-8 ARE GREATER THAN THE CALCULATED TOTAL SYSTEM + ADDITIONAL LINES



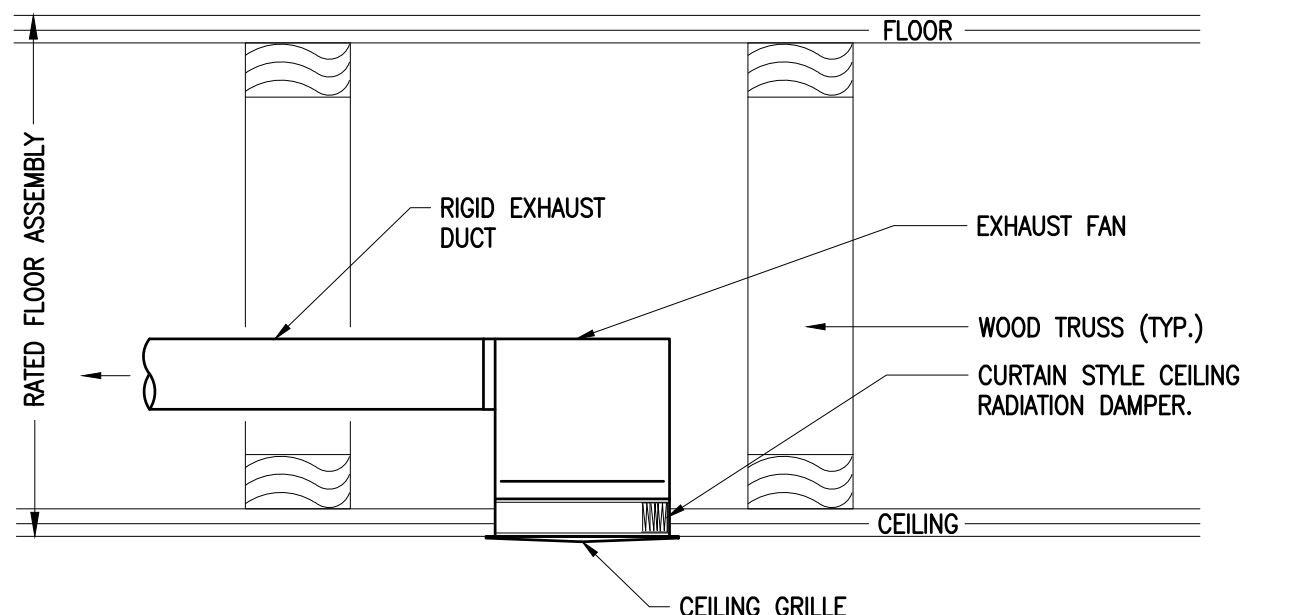
A CRD W/ FACTORY BOOT (CEILING GRILLE)



C RECTANGULAR CRD W/ FACTORY PLENUM BOX (DUCT PENETRATION)



E ROUND CRD WITH ACCESS DOOR

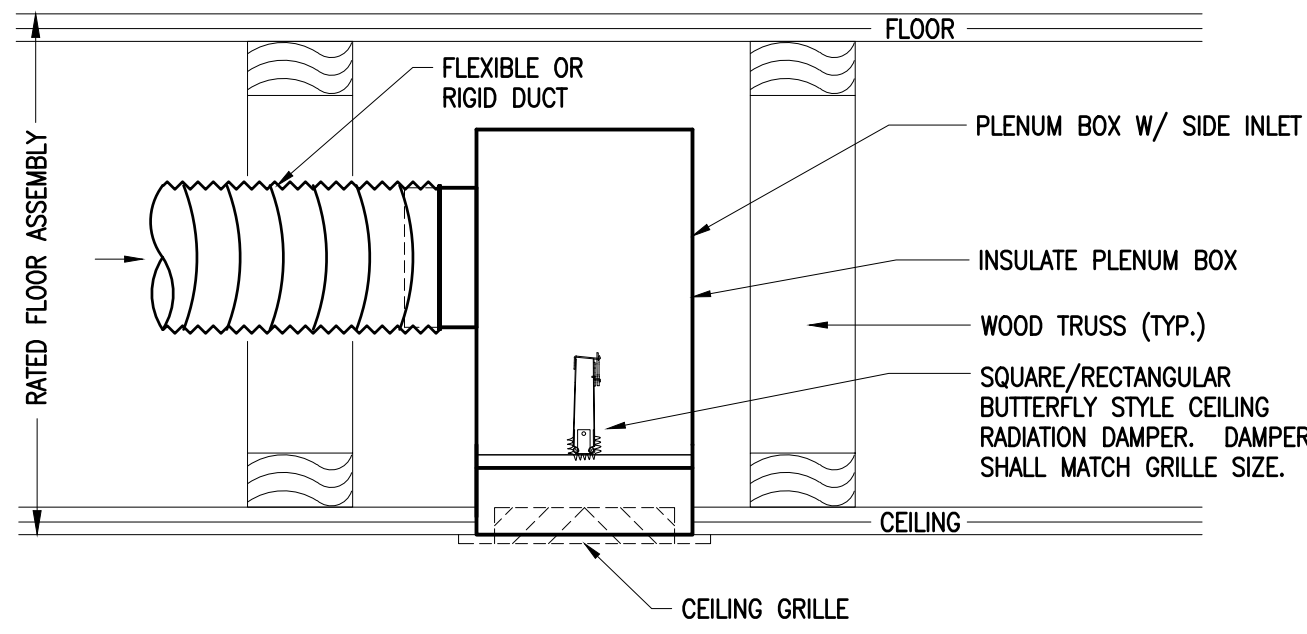


G CRD W/CEILING MOUNTED EXHAUST FAN

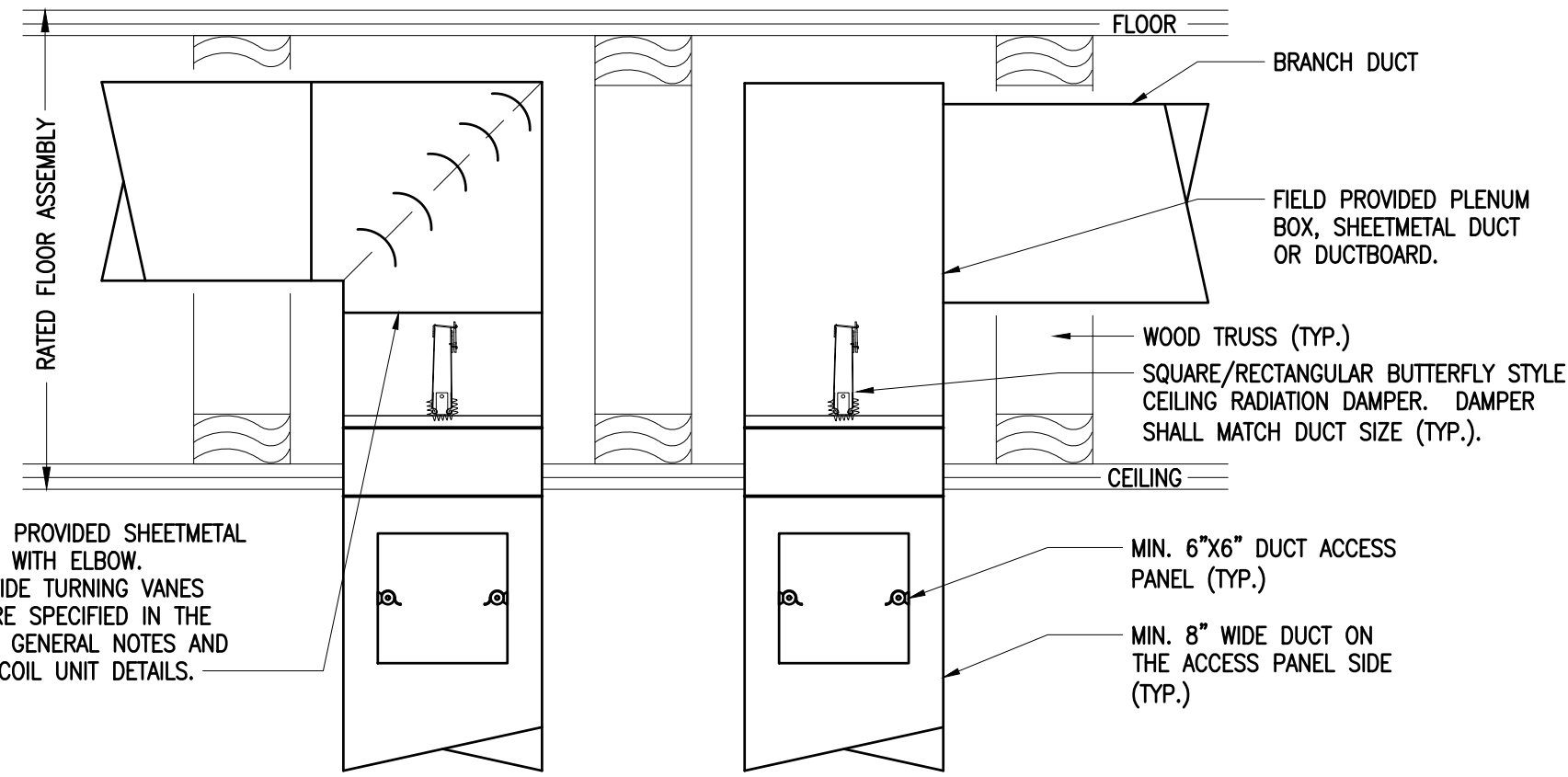
CEILING RADIATION DAMPERS (CRD)					
UL CEILING ASSEMBLY	CRD BASIS OF DESIGN (MANUFACTURER AND MODEL NO.) PER TYPE AND UL CEILING ASSEMBLY LISTING				
	CRD W/ FACTORY BOOT (DETAIL A)	RECTANGULAR CRD W/ FACTORY PLENUM BOX (DETAILS B & C)	RECTANGULAR CRD W/O FACTORY PLENUM BOX (DETAIL D)	ROUND CRD (DETAILS E & F)	CRD W/CEILING MOUNTED EXHAUST FAN (DETAIL G)
L521	POTTORFF MODEL CFD-521-90	POTTORFF MODEL CFD-521	POTTORFF MODEL CFD-521-NP	N/A	PANASONIC MODEL PC-R005C5
L528	POTTORFF MODEL CFD-521-90	POTTORFF MODEL CFD-521	POTTORFF MODEL CFD-521-NP	RUSKIN CFDR7T	PANASONIC MODEL PC-R005C5
L546	POTTORFF MODEL CFD-521-90	POTTORFF MODEL CFD-521	POTTORFF MODEL CFD-521-NP	RUSKIN CFDR7T	PANASONIC MODEL PC-R005C5
L563	AIRE TECHNOLOGIES MODEL 50 W/BOOT	LLOYD MODEL CRD50-NI-BT	LLOYD MODEL CRD50	N/A	N/A
L574	POTTORFF MODEL CFD-521-90	POTTORFF MODEL CFD-521	POTTORFF MODEL CFD-521-NP	RUSKIN CFDR7T	PANASONIC MODEL PC-R005C5
L576	POTTORFF MODEL CFD-521-90	POTTORFF MODEL CFD-521	POTTORFF MODEL CFD-521-NP	N/A	PANASONIC MODEL PC-R005C5
P522	POTTORFF MODEL CFD-521-90	POTTORFF MODEL CFD-521	POTTORFF MODEL CFD-521-NP	N/A	PANASONIC MODEL PC-R005C5
P531	NAILOR 0757-DB	NAILOR 0756(D)	NAILOR 0757D	N/A	N/A
P544	AIRE TECHNOLOGIES MODEL 50 W/BOOT	LLOYD MODEL CRD50-NI-BT	LLOYD MODEL CRD50	N/A	N/A
P580	AIRE TECHNOLOGIES MODEL 50 W/BOOT	POTTORFF MODEL CFD-521	POTTORFF MODEL CFD-521-NP	RUSKIN CFDR7T	PANASONIC MODEL PC-R005C5

NOTES:
1. THIS TABLE HAS CRD MODEL NUMBERS DERIVED FROM THE UL FLOOR/CEILING AND ROOF/CEILING ASSEMBLIES IN THE ARCHITECTURAL DRAWINGS. OTHER CRD MODELS ARE ACCEPTABLE IF THE CRD SUBMITTAL INDICATES THE FLOOR/CEILING OR ROOF/CEILING ASSEMBLY AND THE LOCAL AHJ APPROVES. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE AHJ.

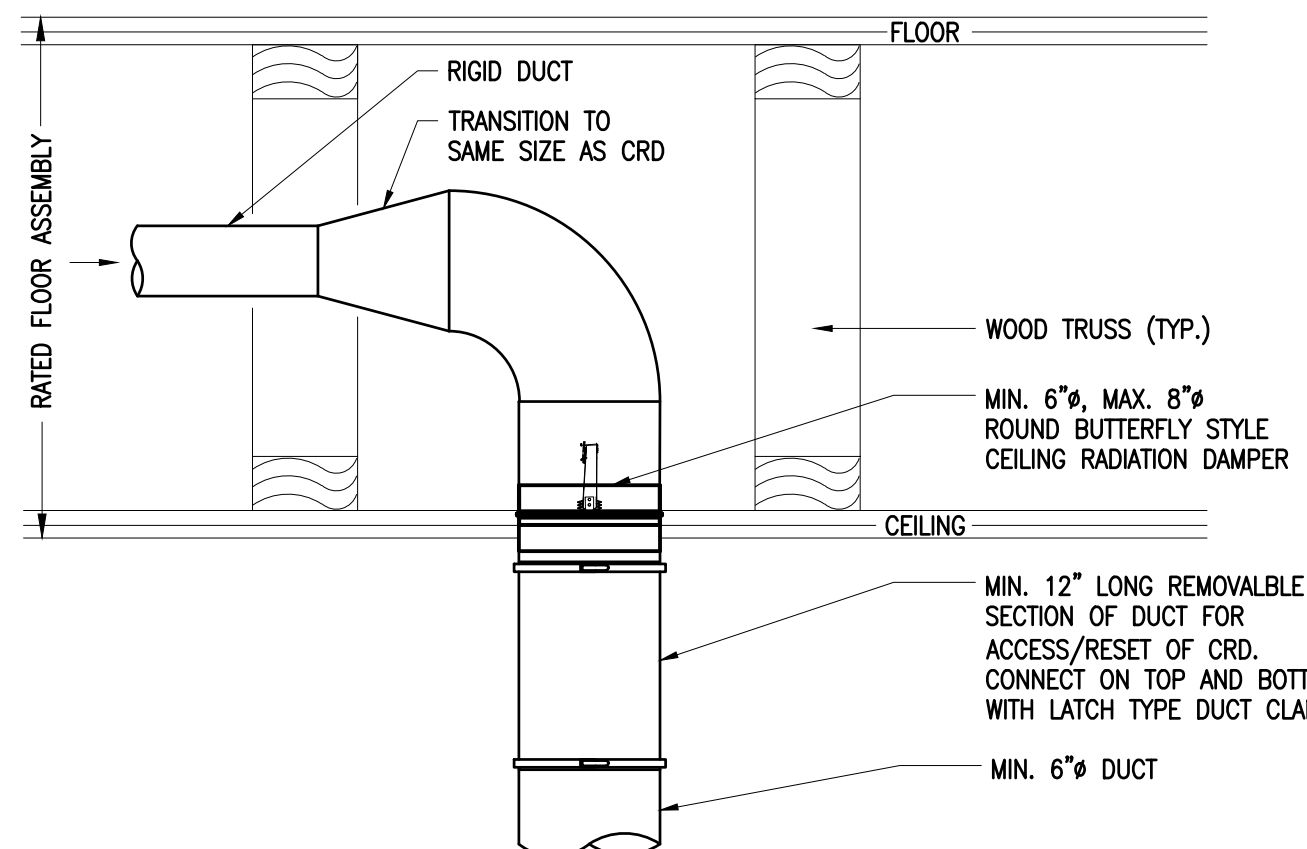
5 CEILING RADIATION DAMPER (CRD) DETAIL
SCHEMATIC: NO SCALE



B RECTANGULAR CRD W/ FACTORY PLENUM BOX (CEILING GRILLE)

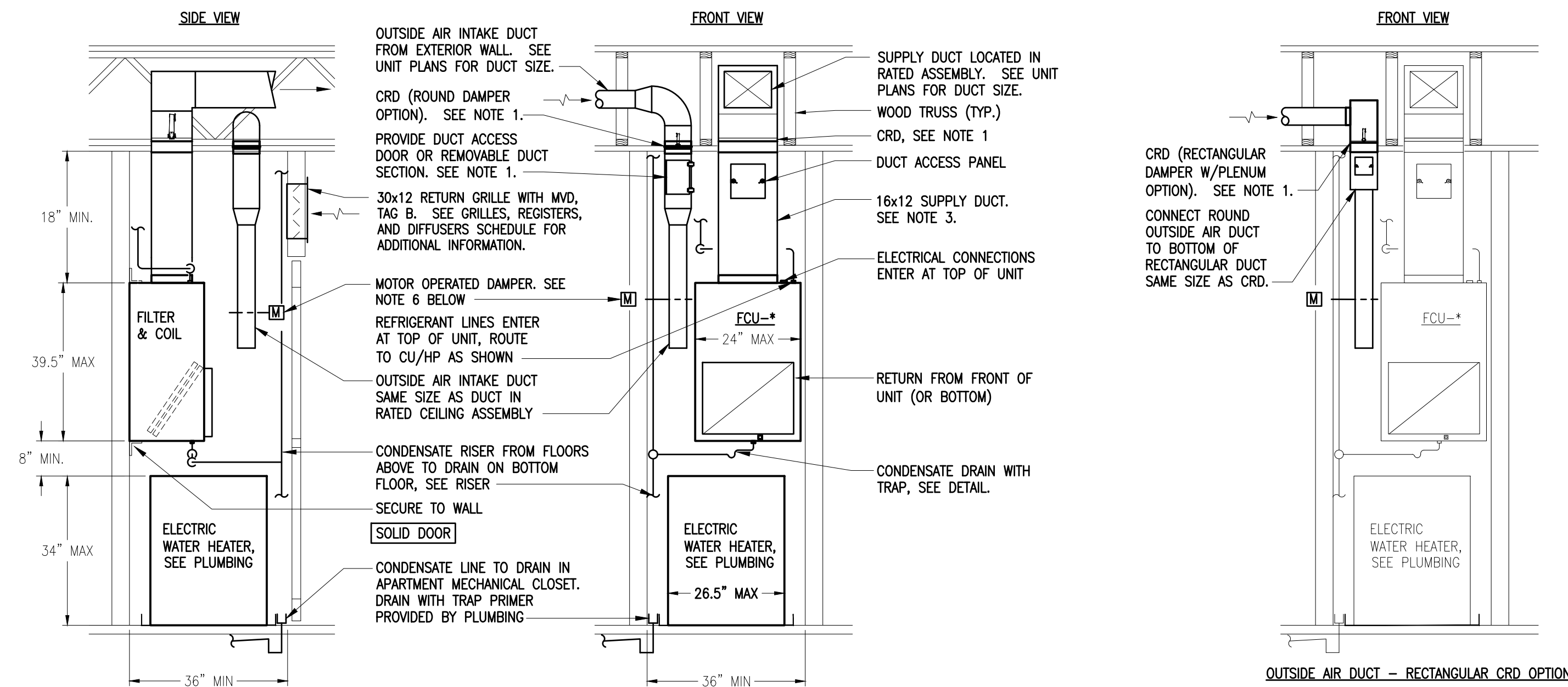


D RECTANGULAR CRD W/O FACTORY PLENUM BOX (DUCT PENETRATION)



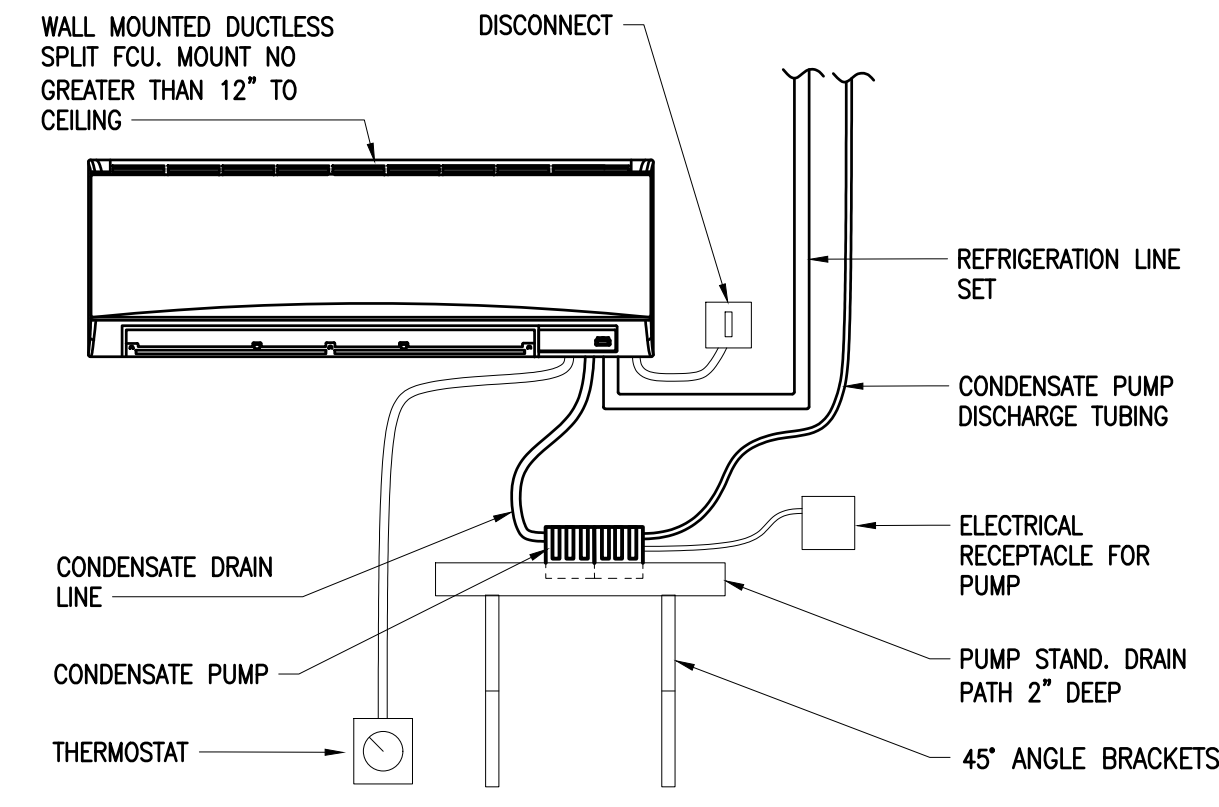
F ROUND CRD WITH REMOVABLE DUCT

- NOTES
- CEILING RADIATION DAMPER SHALL BE UL 555C LISTED FOR WOOD TRUSS CEILING ASSEMBLIES.
 - FOR COMBINED CRD AND BOOT ASSEMBLIES, EITHER PROVIDE A SINGLE-PIECE BOOT/CRD ASSEMBLY THAT IS UL LISTED OR PROVIDE A MULTI-PIECE ASSEMBLY THAT IS UL LISTED FOR THE COMBINED ASSEMBLY.
 - SEE CRD SCHEDULE INCLUDED IN THIS DETAIL FOR DAMPERS AND DAMPER ASSEMBLIES LISTED IN COMMONLY SPECIFIED UL FLOOR/CEILING AND ROOF/CEILING ASSEMBLIES. SCHEDULE SHALL BE USED AS A GENERAL GUIDE FOR DAMPER BASIS OF DESIGN FOR THE LISTED CEILING ASSEMBLIES. HOWEVER, THE SCHEDULE IS NOT INCLUSIVE TO ALL DAMPERS LISTED IN THE ASSEMBLIES.
 - SEE ARCHITECTURAL DRAWINGS FOR UL ASSEMBLY TYPES. CRD SHALL BE TESTED IN ACCORDANCE WITH THE UL ASSEMBLY OR ASSEMBLIES LISTED ON THE ARCHITECTURAL DRAWINGS. PROVIDE UL DOCUMENTATION WITH SUBMITTAL INDICATING THAT THE CRD IS AN APPROVED MODEL FOR THE UL ASSEMBLY WHERE CRDS ARE TO BE INSTALLED.
 - PROVIDE DAMPER WITH UL LISTED FUSIBLE LINK (165°F).
 - DAMPER INSTALLATION AND APPLICATION SHALL BE PER MANUFACTURER'S INSTRUCTIONS AND APPROVAL, AS WELL AS IN ACCORDANCE WITH THE REQUIREMENTS OF THE UL CEILING ASSEMBLIES SUCH AS MATERIAL, MAXIMUM DIMENSIONS, ETC.

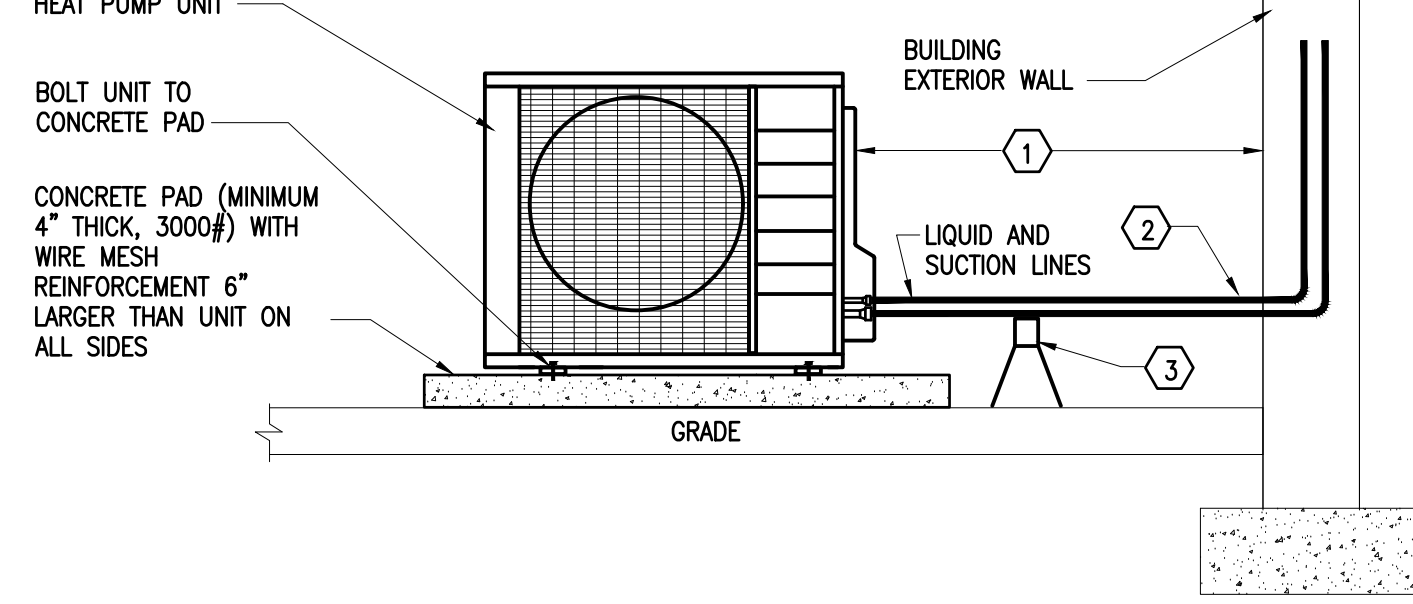


- NOTE:
- SEE CEILING RADIATION DAMPER DETAIL ON THIS SHEET FOR ADDITIONAL INFORMATION.
 - ALL COMPONENTS/MATERIALS (INCLUDING CONTROL WIRING) IN CLOSET SHALL BE PLENUM RATED (MEET ASTM E84 CRITERIA 25/50 FLAME/SMOKE DEVELOPED RATING OR LESS).
 - CONTRACTOR SHALL HAVE THE OPTION OF PROVIDING FLEX DUCT BETWEEN THE FCU AND CRD IN LIEU OF RIGID DUCT ONLY IF ITS ALLOWED BY THE AHJ. CONTRACTOR SHALL ALSO CONFORM WITH THE AHJ IF REMOVING THE FLEX DUCT IS AN ACCEPTABLE MEANS FOR SERVICING AND ACCESSING THE CRD. IF FLEX DUCT IS USED, PROVIDE THE FOLLOWING SIZES: FCU-A = 12", FCU-B = 14", FCU-C = 16".
 - REFRIGERANT LINES AND CONDENSATE RISER SHALL BE ROUTED SUCH THAT LINES ARE TIGHT TO CLOSET WALLS IN ORDER TO ALLOW ADEQUATE CLEARANCE FOR WATER HEATER DRAIN PAN. DO NOT BLOCK FCU ACCESS OR FILTER PULL WITH REFRIGERANT LINES OR CONDENSATE PIPE.
 - DIMENSIONS SHOWN HAVE BEEN BASED ON A MAX 3.0 TON FAN COIL UNIT, CARRIER FMS.
 - EACH APARTMENT FAN COIL UNIT SHALL BE PROVIDED WITH A MOTOR OPERATED DAMPER IN THE OUTSIDE AIR DUCT. CONTRACTOR SHALL INTERLOCK DAMPER TO OPEN WHEN THE FAN COIL UNIT IS ENERGIZED TO PROVIDE HEATING OR COOLING. DO NOT OPEN DAMPER WHEN FAN IS IN CONTINUOUS OR FAN ONLY MODE. SEE WIRING SCHEMATIC.
 - MOUNT THE MOD WITHIN 6" OF THE OPEN END OF THE OA DUCT. EXTEND OA DUCT DOWN TO WITHIN 12" OF THE FCU INTAKE.

1 APARTMENT FCU DETAIL
SCHEMATIC: NO SCALE

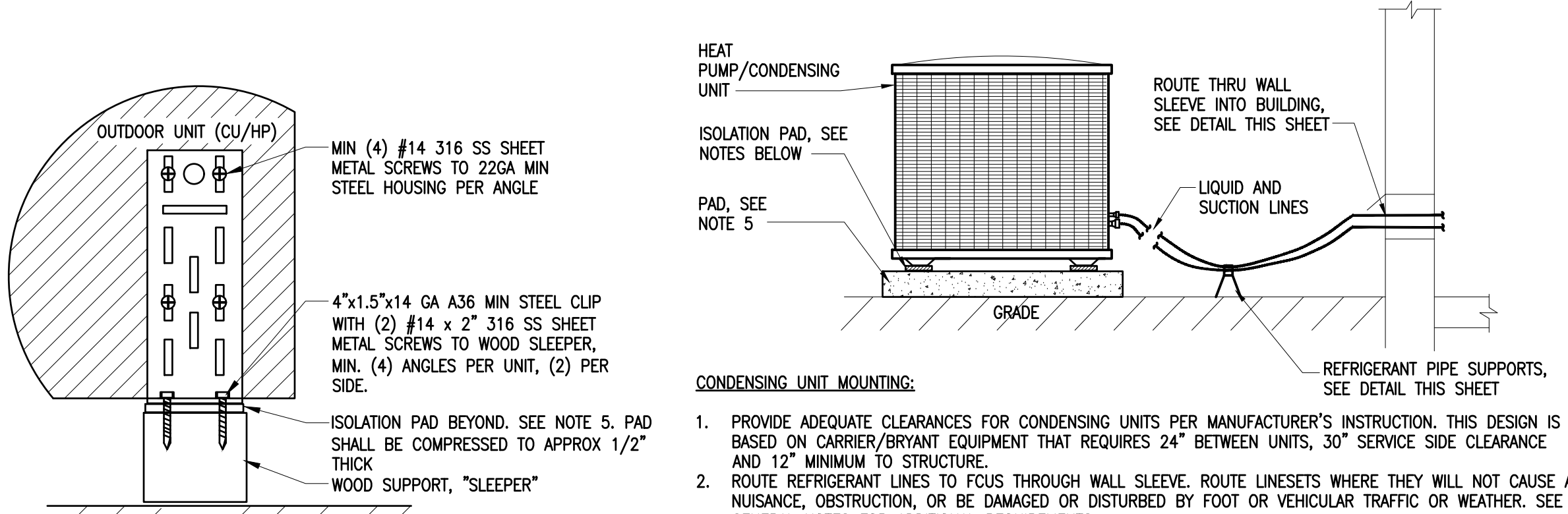


4 WALL MOUNTED DUCTLESS FCU
SCHEMATIC: NO SCALE



- NOTES:
- PROVIDE ADEQUATE CLEARANCES FOR HEAT PUMP UNITS PER MANUFACTURER'S INSTRUCTION.
 - INSTALL REFRIGERANT LINES FROM BUILDING TO HEAT PUMPS VIA MOST DIRECT ROUTE.
 - SUPPORT LINES WITH REFRIGERANT PIPING SUPPORT, SEE DETAIL THIS PAGE.

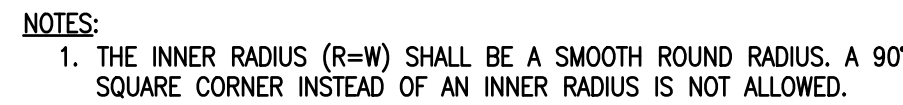
3 DUCTLESS SPLIT HEAT PUMP MOUNTING ON GRADE
SCHEMATIC: NO SCALE



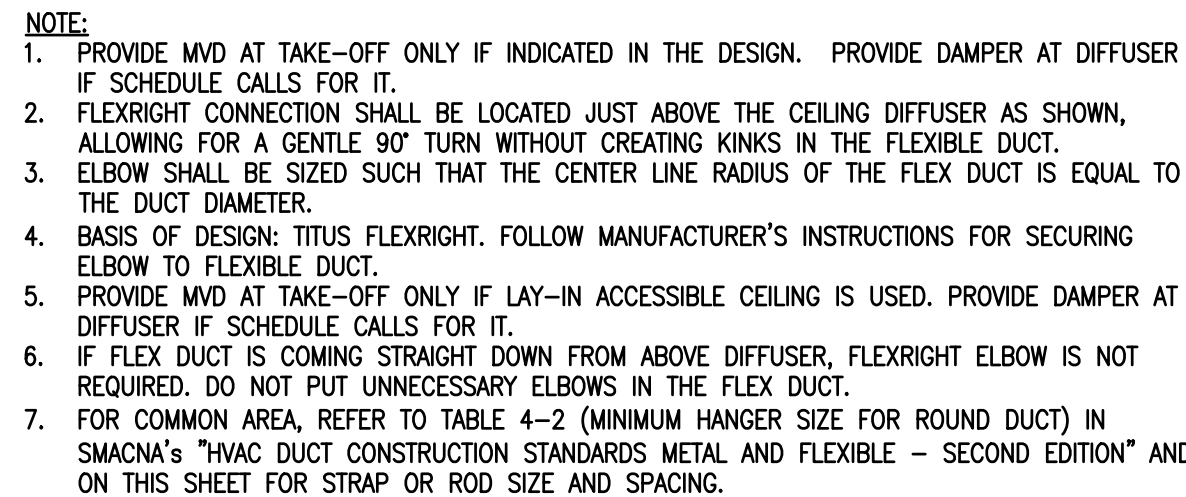
2 CONDENSING/HP UNIT MOUNTING ON GRADE
SCHEMATIC: NO SCALE

- CONDENSING UNIT MOUNTING:
- PROVIDE ADEQUATE CLEARANCES FOR CONDENSING UNITS PER MANUFACTURER'S INSTRUCTION. THIS DESIGN IS BASED ON CARRIER/BRYANT EQUIPMENT THAT REQUIRES 24" BETWEEN UNITS, 30" SERVICE SIDE CLEARANCE AND 12" MINIMUM TO STRUCTURE.
 - ROUTE REFRIGERANT LINES TO FOCUS THROUGH WALL SLEEVE. ROUTE LINESETS WHERE THEY WILL NOT CAUSE A NUISANCE, OBSTRUCTION, OR BE DAMAGED OR DISTURBED BY FOOT OR VEHICULAR TRAFFIC OR WEATHER. SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
 - SEE GENERAL NOTES REGARDING LABELING OF UNITS. LABEL WITH APARTMENT NUMBER.
 - ISOLATION PAD SHALL BE INORGANIC FIBERGLASS WITH A FLEXIBLE ELASTOMERIC COATING, 1" THICK, 2" X 2" SQUARE AT EACH CORNER, MIN LOAD RANGE OF 40 TO 80 LBS & A MIN STATIC DEFLECTION OF 0.20 TO 0.30 INCHES. MANUFACTURED BY KINETICS MODEL KIP-22-G. PROVIDE SHOP DRAWING SUBMITTALS.
 - PAD: 3" THICK CONCRETE OR EXPANDED POLYSTYRENE FOAM (EPS) HAVING A 1LB/CU F.T. DENSITY, A 1/4" THICK CEMENT/FIBER COATING ON EXPOSED SIDES. BASIS: DIVERSITECH ULTRALITE PAD

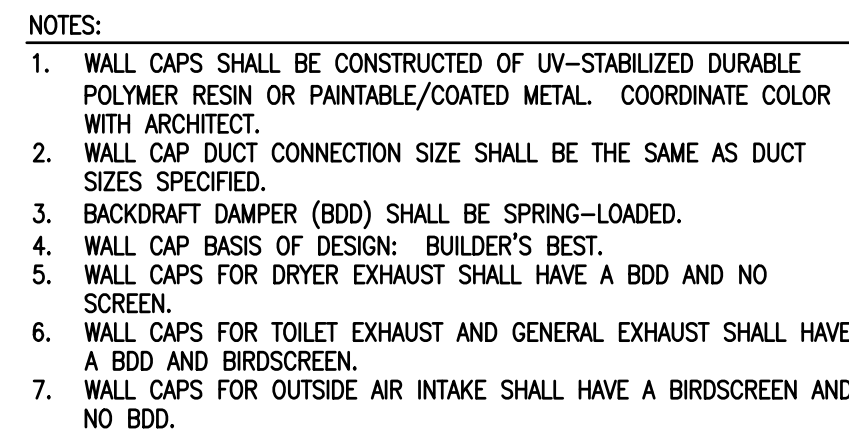
OUTSIDE AIR DUCT - RECTANGULAR CRD OPTION



SCHEMATIC: NO SCALE



SCHEMATIC: NO SCALE

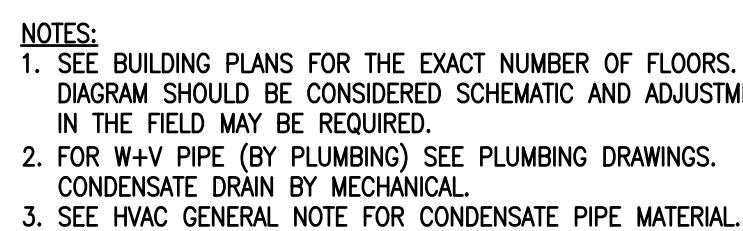


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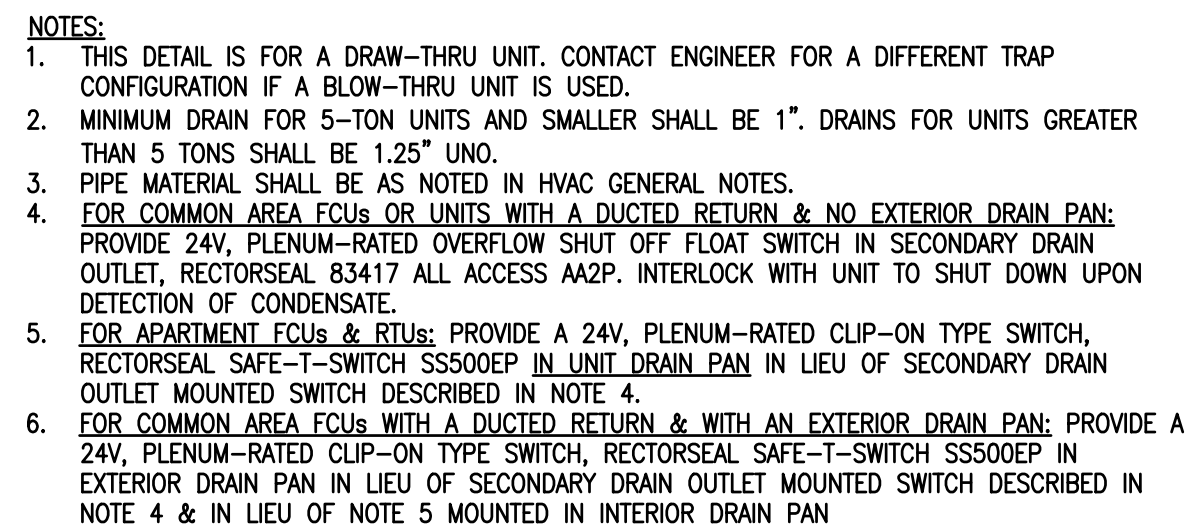
For answers to your Monogram, GE Café™, GE Profile™ or GE Appliances product questions, visit our website at geappliances.com or call GE Answer Center® Service, 800.626.2000.

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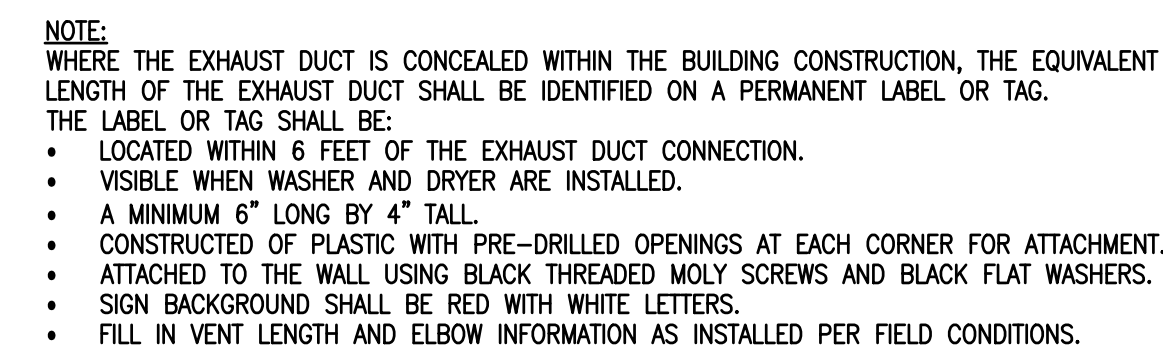
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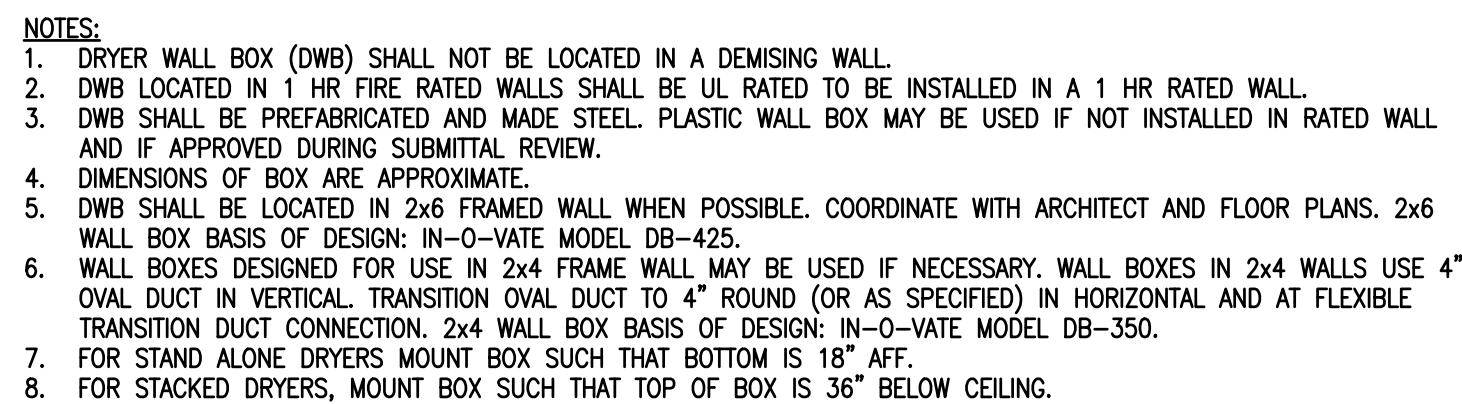
4 SCHEMATIC: NO SCALE



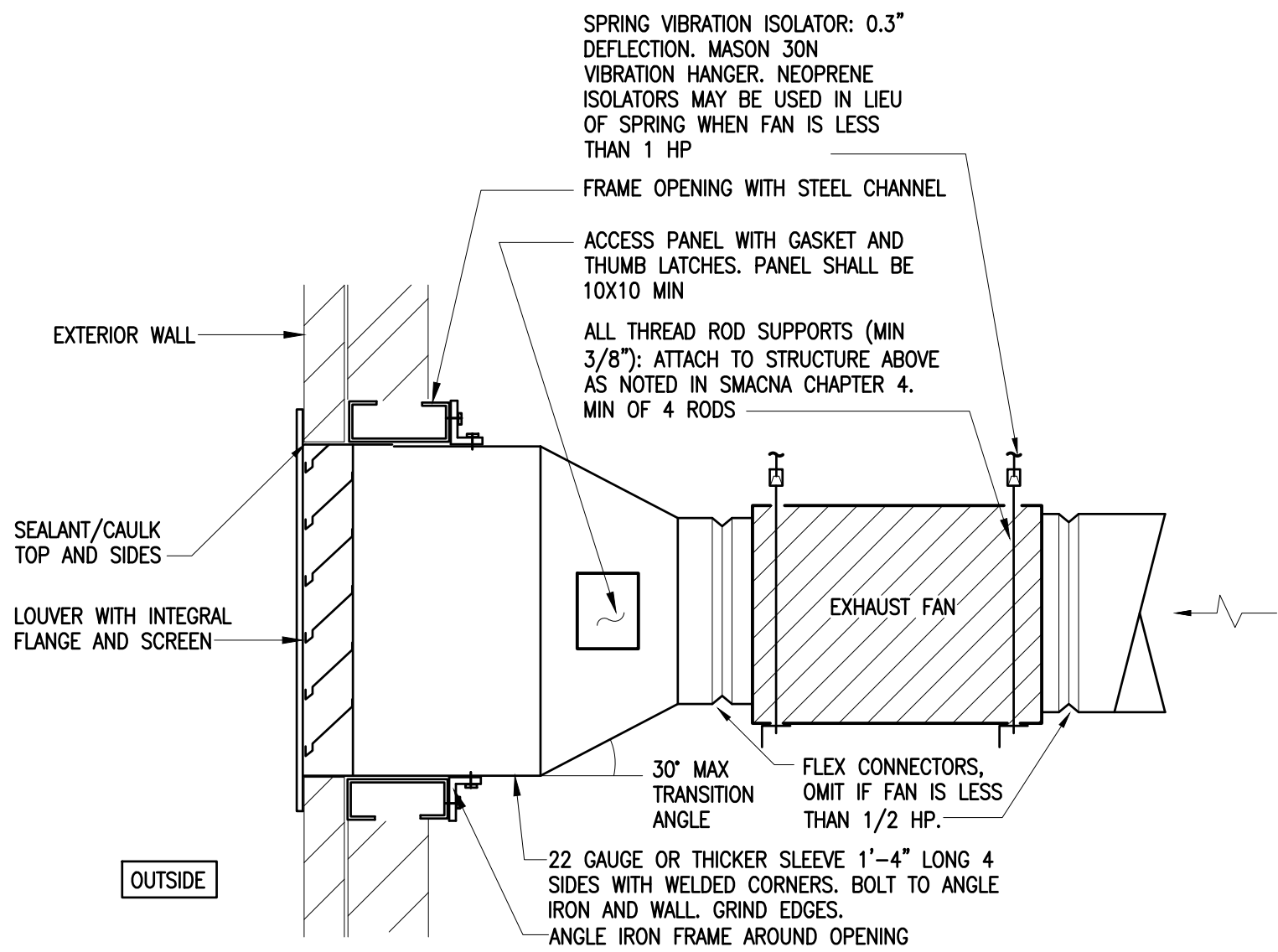
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SCHEMATIC: NO SCALE



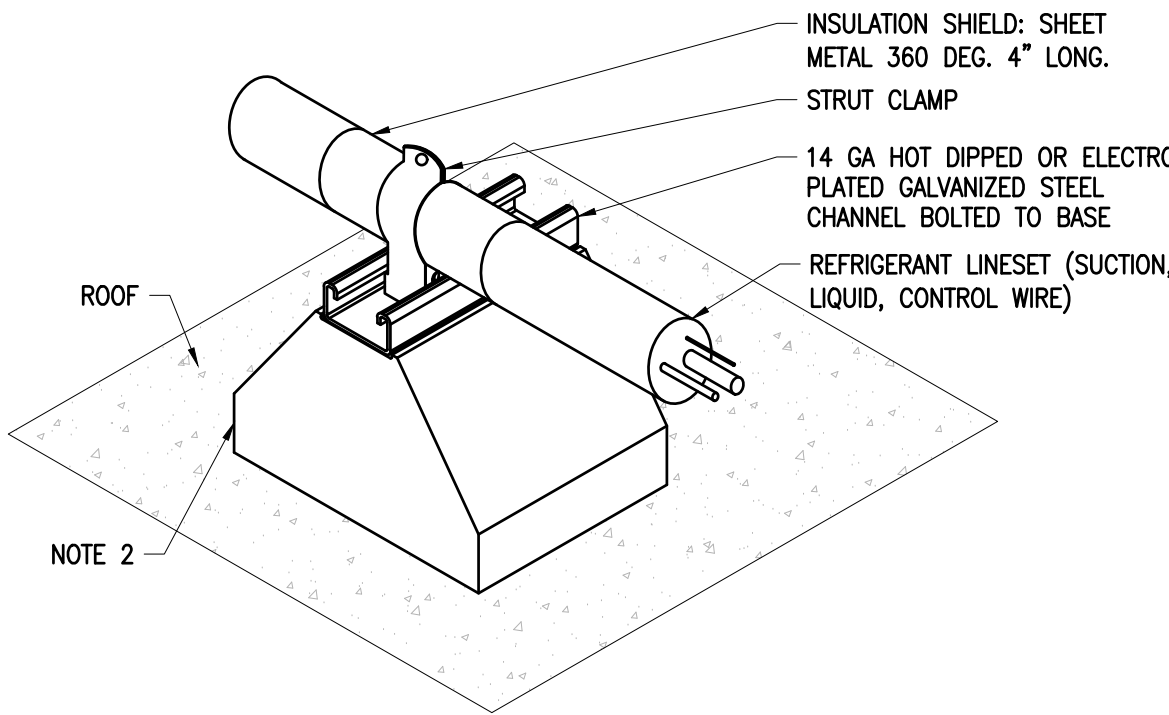
SCHEMATIC: NO SCALE



- NOTES:
1. WALL LOUVER, SCREEN, AND DAMPER ASSEMBLY SHALL BE SUPPORTED BY BUILDING PROVIDER/MANUFACTURER. COORDINATE BETWEEN TRADES.
 2. LOUVER SHALL BE FACTORY PAINTED TO MATCH EXTERIOR WALL COLOR. SUBMIT COLOR CHART WITH SHOP DRAWINGS.

3 HORIZONTAL FAN AND WALL LOUVER DETAIL

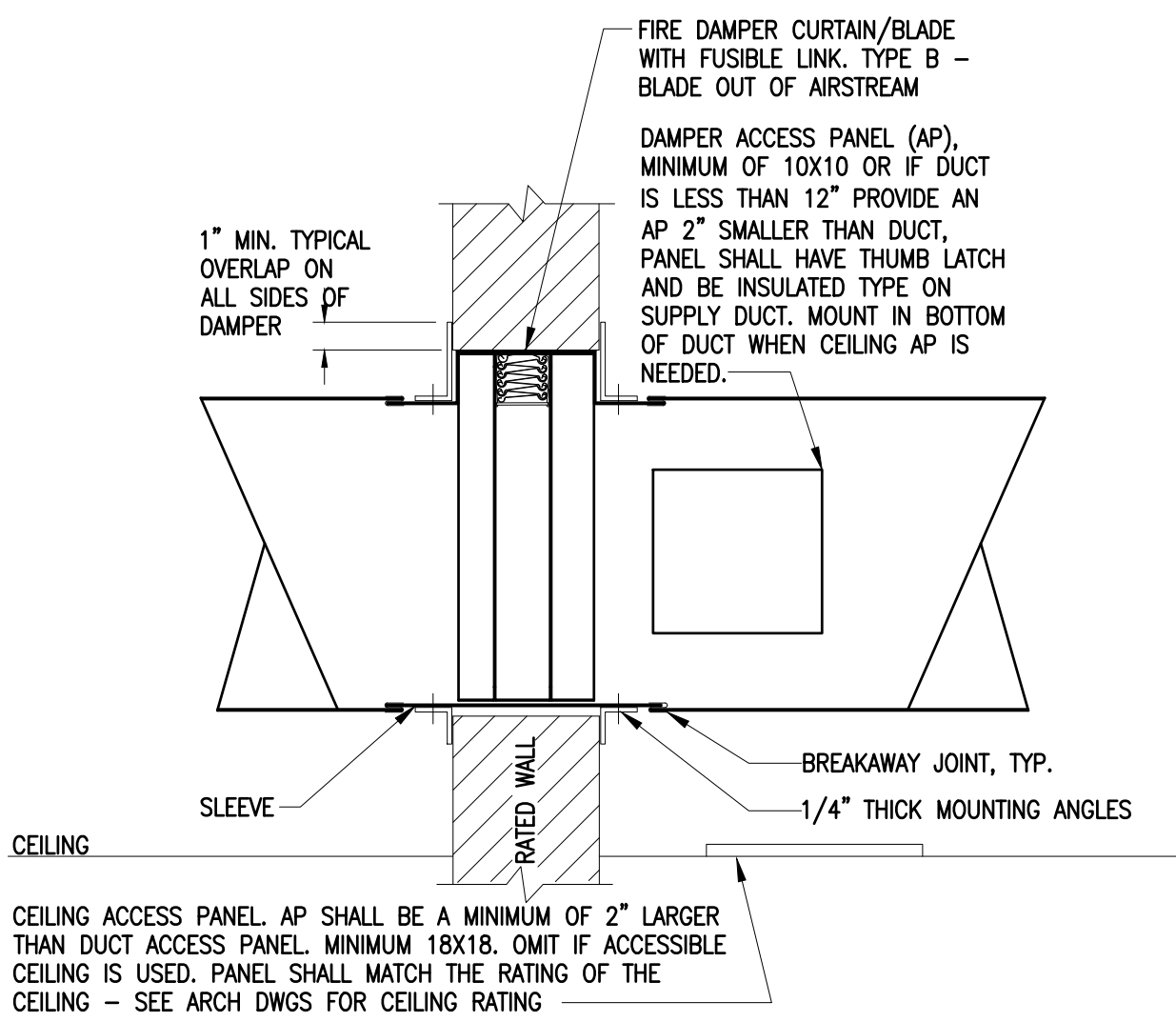
SCHEMATIC: NO SCALE



- NOTES:
1. SUCTION AND LIQUID REFRIGERANT LINES SHALL NOT COME IN CONTACT WITH EACH OTHER.
 2. UV RESISTANT, HIGH DENSITY POLYMER OR RUBBER PIPE SUPPORT BASE CAPABLE OF OUTDOOR INSTALLATION IN TEMPERATURE OF 0 TO 150 °F, WITH 14 GA GALVANIZED CHANNEL FOR ZINC PLATED STRUT CLAMPS. PROVIDE SUPPORT WIDE ENOUGH FOR SPECIFIC APPLICATION. MULTIPLE LINESETS CAN BE SUPPORTED BY EACH SUPPORT. PROVIDE SEPARATE STRUT CLAMP FOR EACH LINESET. MIFAB C-RUBBER SUPPORT SERIES.

2 REFRIGERANT PIPE SUPPORTS

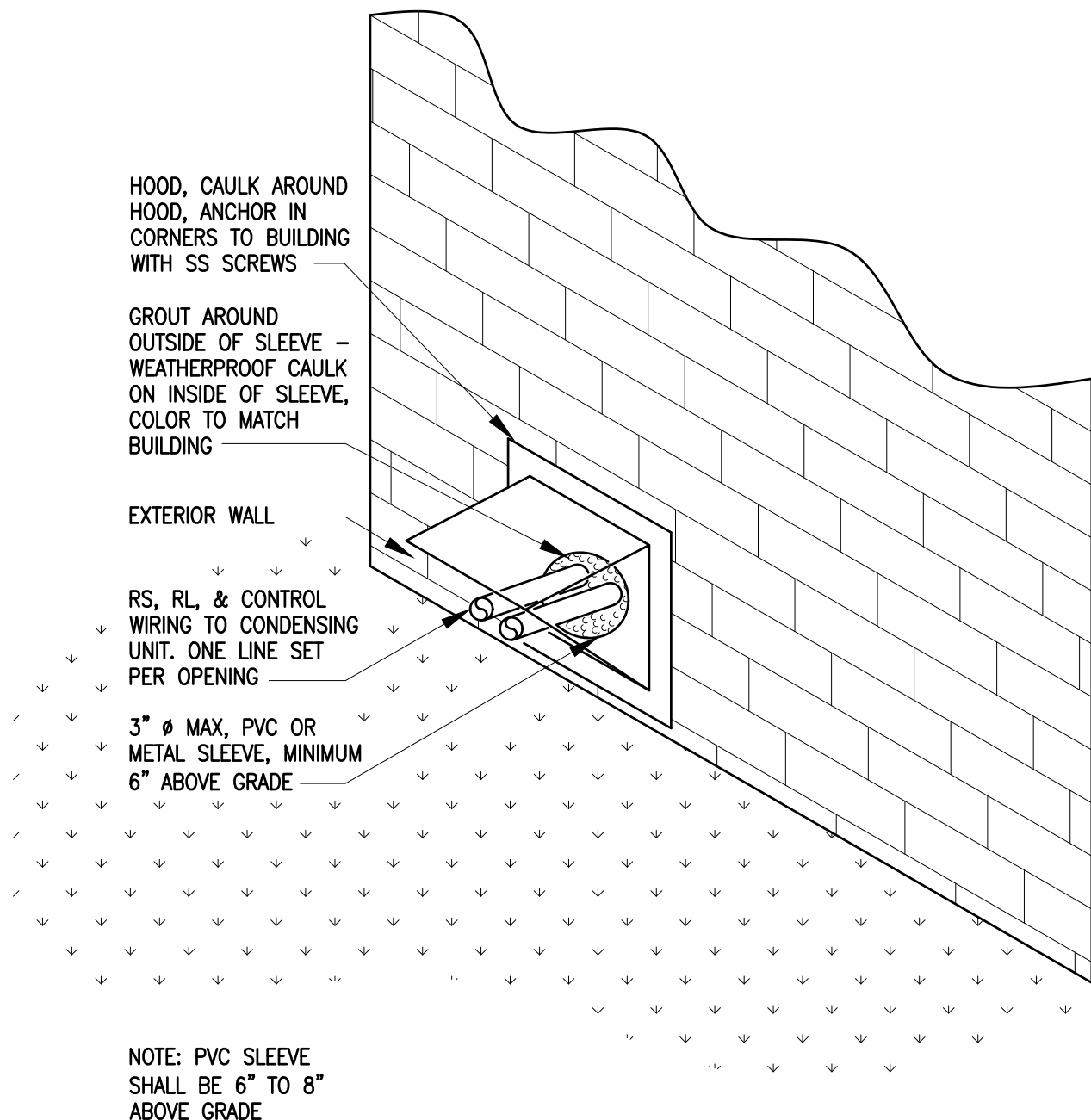
SCHEMATIC: NO SCALE



- NOTES:
1. SLEEVE SHEET METAL GAUGE MUST BE EQUAL TO OR GREATER THAN THE DUCT CONNECTING TO IT.
 2. PROVIDE A BREAKAWAY CONNECTION AS LISTED IN THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 3. MOUNTING/RETAINING ANGLES (ANGLE IRON) MUST OVERLAP THE WALL A MINIMUM OF 1".
 4. FD'S SHALL MEET THE REQUIREMENTS OF UL555.
 5. FD SHALL BE #160R 0220, FUSIBLE LINK (UL LISTED) 212°F.
 6. LOCATE DUCTWORK ACCESS PANEL (AP) TO COORDINATE WITH WALL OR CEILING ACCESS PANEL WHICH SHALL BE 2" LARGER THAN DUCT AP AND SPECIFIED BY ARCHITECT.
 7. MOUNTING ANGLES SHALL BE AS SPECIFIED BY MANUFACTURER. INSTALL FD PER MANUFACTURER'S INSTRUCTIONS.
 8. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING DAMPER SIZE WITH MANUFACTURER'S DIMENSIONS TO MEET OR EXCEED MINIMUM INSIDE CLEAR DUCT DIMENSIONS, AND COORDINATE WALL OPENING WITH OTHER TRADES.

1 VERTICAL FIRE DAMPER DETAIL

SCHEMATIC: NO SCALE



4 SPLIT SYSTEM LINESET THRU EXTERIOR WALL

SCHEMATIC: NO SCALE

Project: 2501
CADD File:
Drawn By: TN
Checked By: CSB
Permit Release:
Construction Release Set:

Revisions
No. Date Description

ASI / RFI Revisions
No. Date Description

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Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

Drawing Title:
Mechanical Details

M0.5

NOT RELEASED FOR CONSTRUCTION

4 METAL PIPE THROUGH WOOD FLOOR/CEILING ASSEMBLY

2 HVAC LINE SET THROUGH WOOD FLOOR/CEILING ASSEMBLY

3 MULTIPLE HVAC LINE SET THROUGH WOOD/FLOOR CEILING ASSEMBLY

1 MULTIPLE HVAC LINE SET THROUGH WOOD FLOOR/CEILING ASSEMBLY

[illegible]

Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

Drawing Title:
Firestop Details

MO.6

**PHILLIPS GRADICK
ENGINEERING, P.C.** PGE # NC21250318
1435 W. Morehead St. (704) 900-5638 (T)
Suite 200
Charlotte, NC 28208

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- GENERAL NOTES:**
1. CONTRACTOR MAY USE MANUFACTURERS OTHER THAN THOSE SHOWN IN THESE DETAILS.
 2. IF CONTRACTOR CANNOT FIND A DETAIL TO MATCH THE FIELD APPLICATION, THEN NOTIFY ENGINEER BEFORE INSTALLING.
 3. CONTRACTOR SHALL APPLY THE INSTALLATION CONDITIONS INDICATED IN THESE DETAILS TO THE PROJECT. FOR EXAMPLE, IF A CERTAIN STEEL THICKNESS OR INSULATION THICKNESS IS INDICATED IN THESE DETAILS THEN APPLY THAT CRITERIA TO THE PROJECT INSTALLATION.

2-19-26



POOLE & POOLE ARCHITECTURE
4240 Park Place Court
Glen Allen, Virginia 23060
Telephone 804.225.0215
www.2pa.net

Project: 2501	
CADD File:	
Drawn By:	TN
Checked By:	CSB

Permit Release:
-
Construction Release Set:
-

Revisions		
No.	Date	Description

ASI / RFI Revisions		
No.	Date	Description

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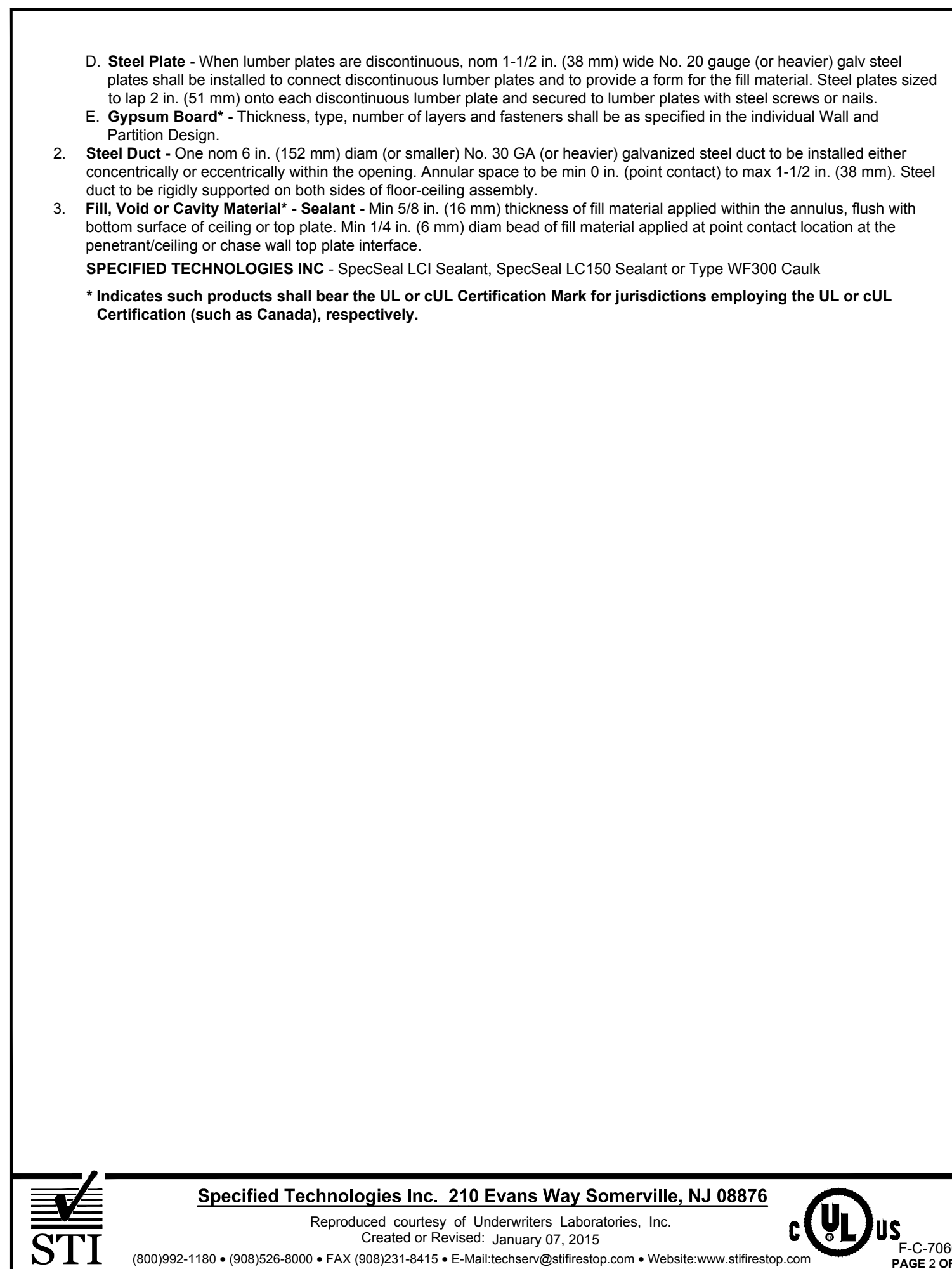
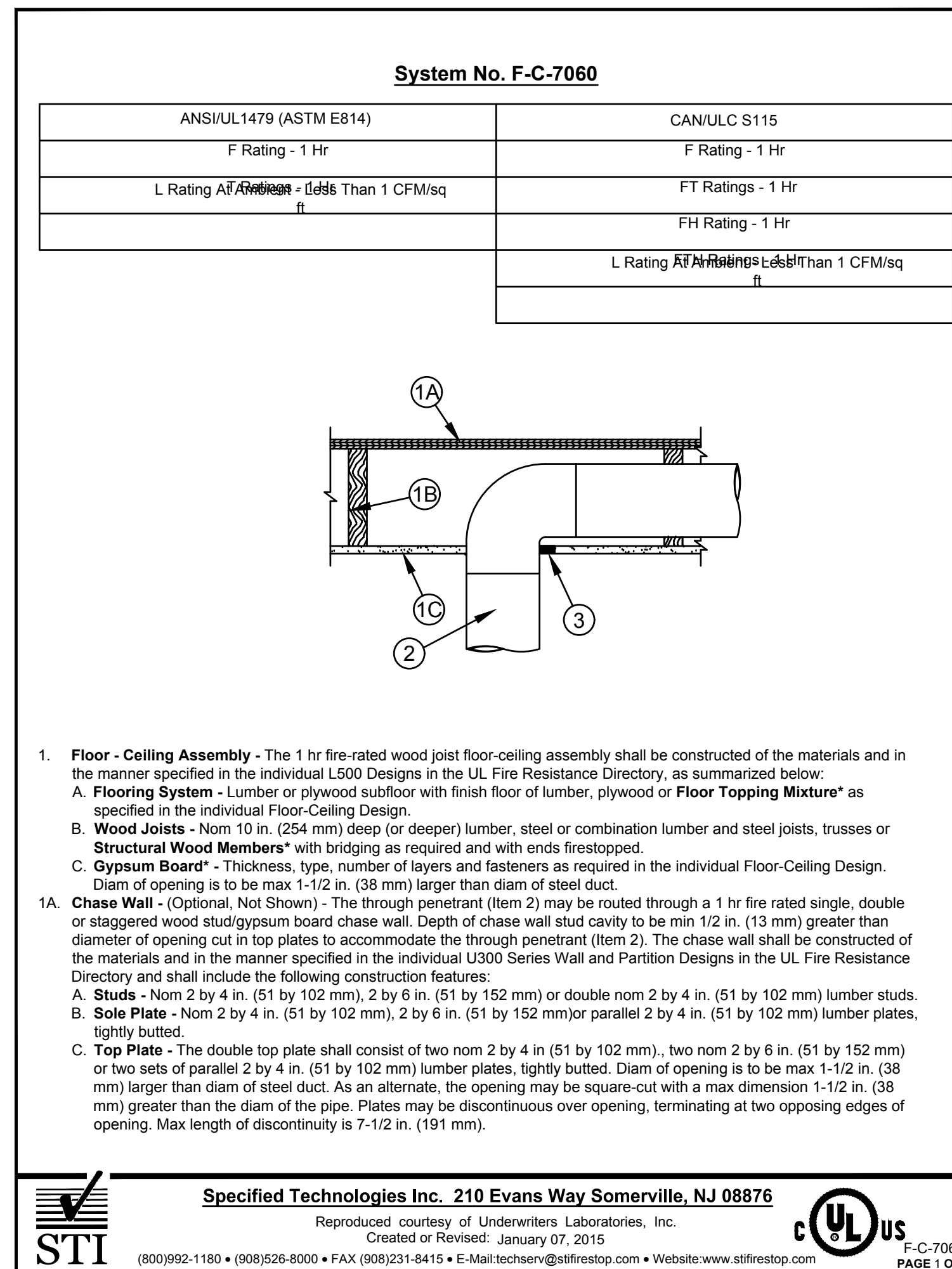
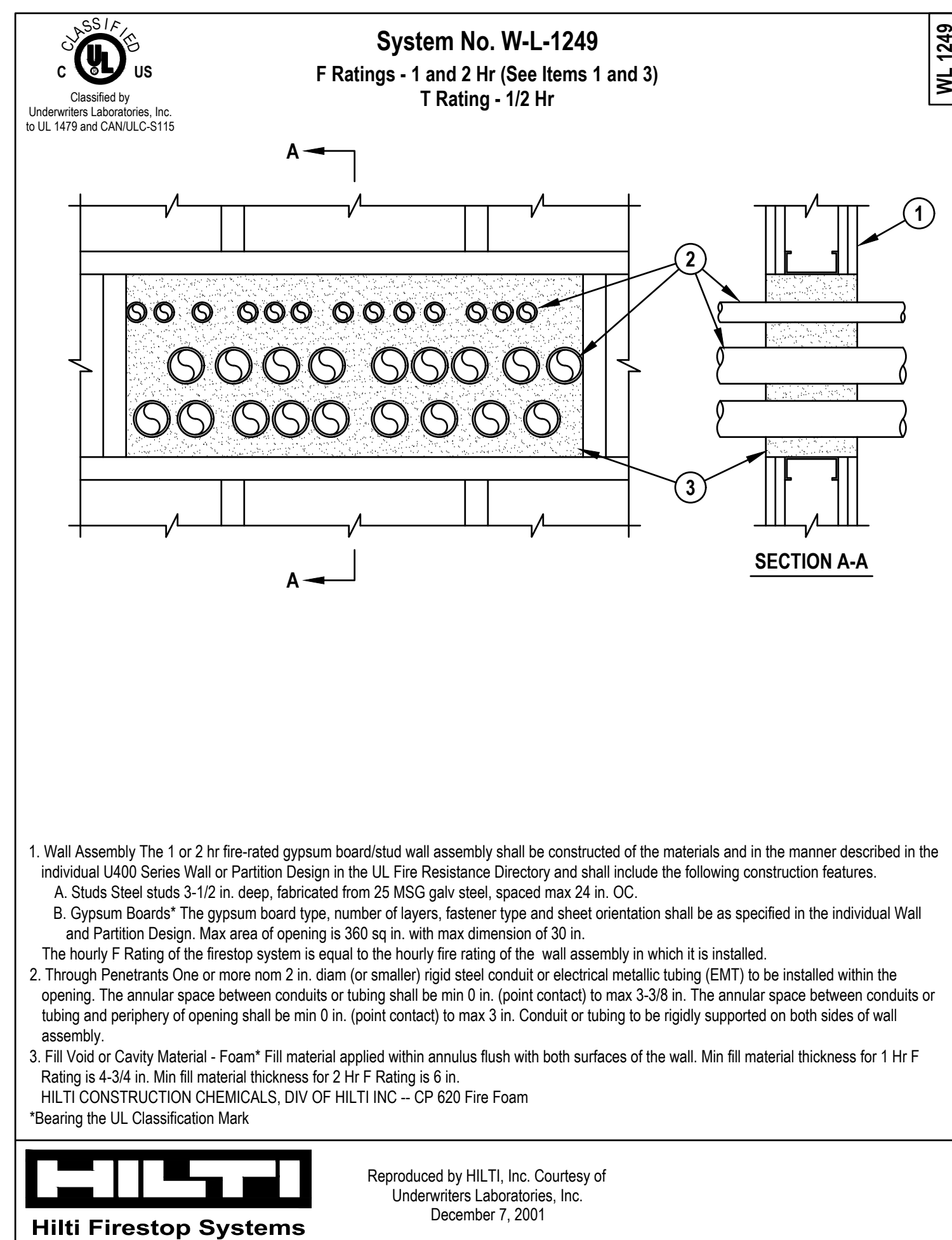
Daleville Town Center Apartments III

an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

Drawing Title:
Firestop & Mechanical
Details

M0.7

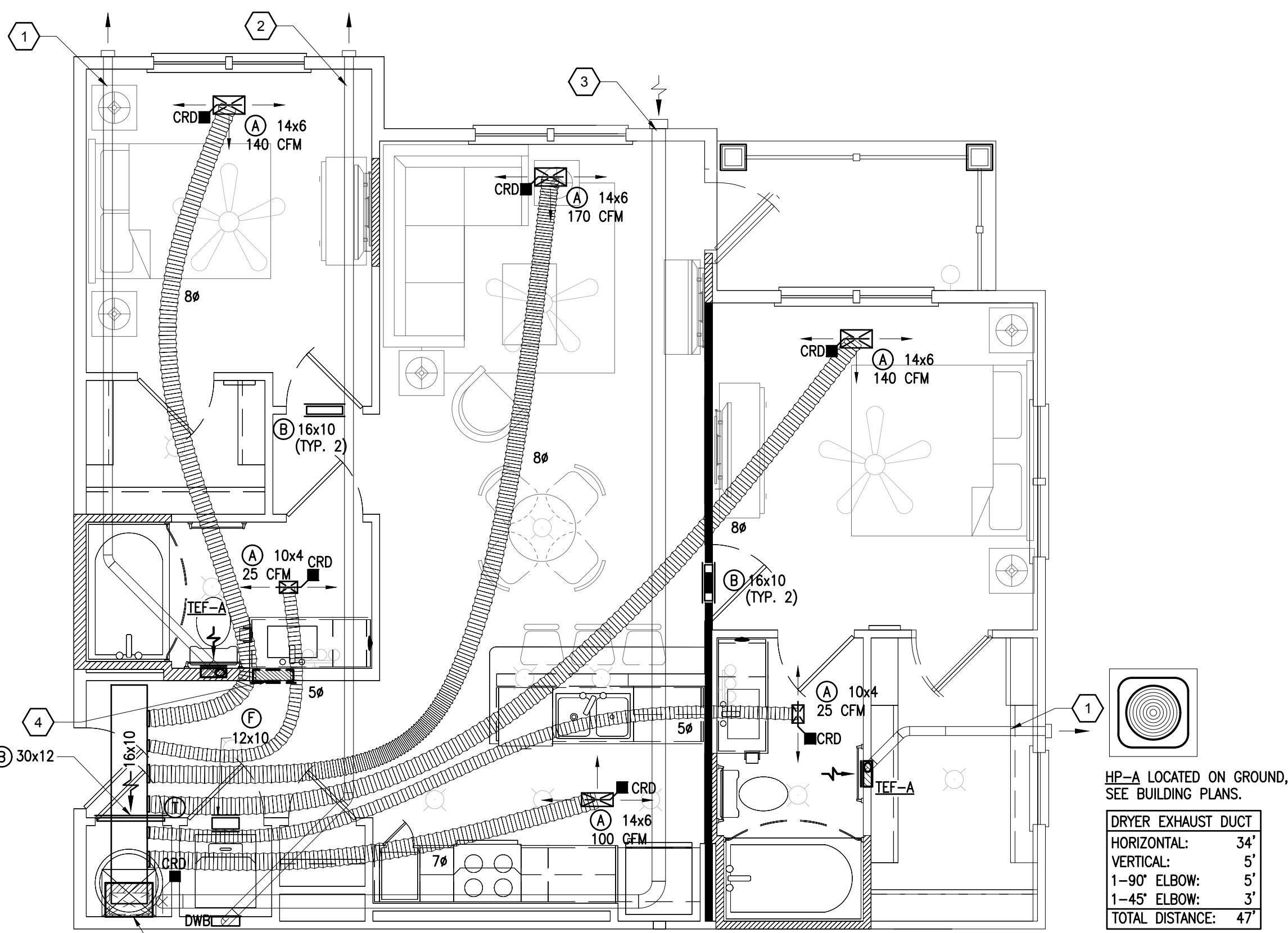
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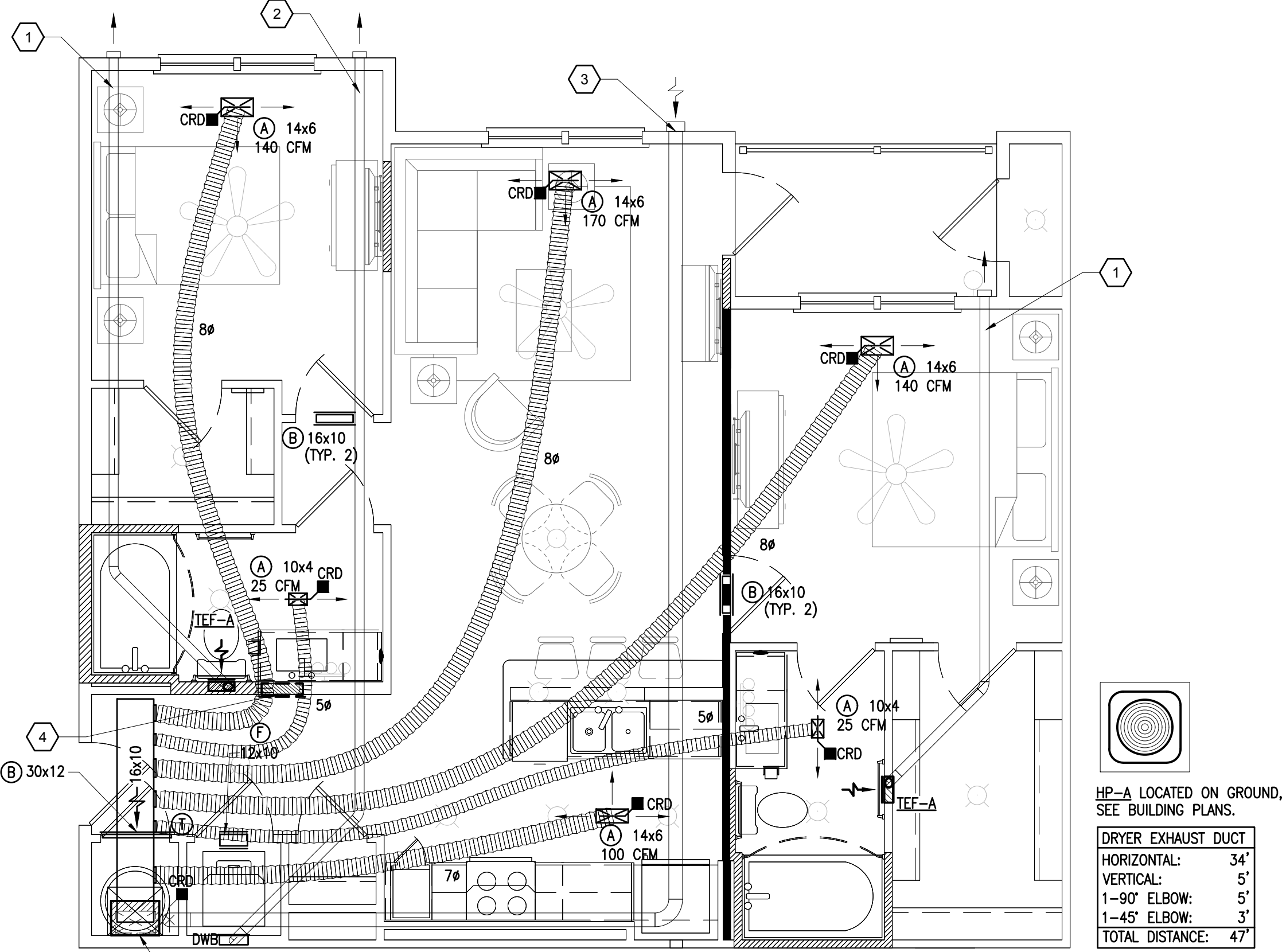
METAL DUCT THROUGH WOOD CEILING MEMBRANE WITH TOP
 \ PLATE OR NOT - DRYER/BATH EXHAUST (IF WALL MTD)

**PHILLIPS GRADICK
ENGINEERING, P.C.** PGE # NC225038
1435 W. Morehead St. (704) 900-5838 (T)
Suite 200
Charlotte, NC 28208

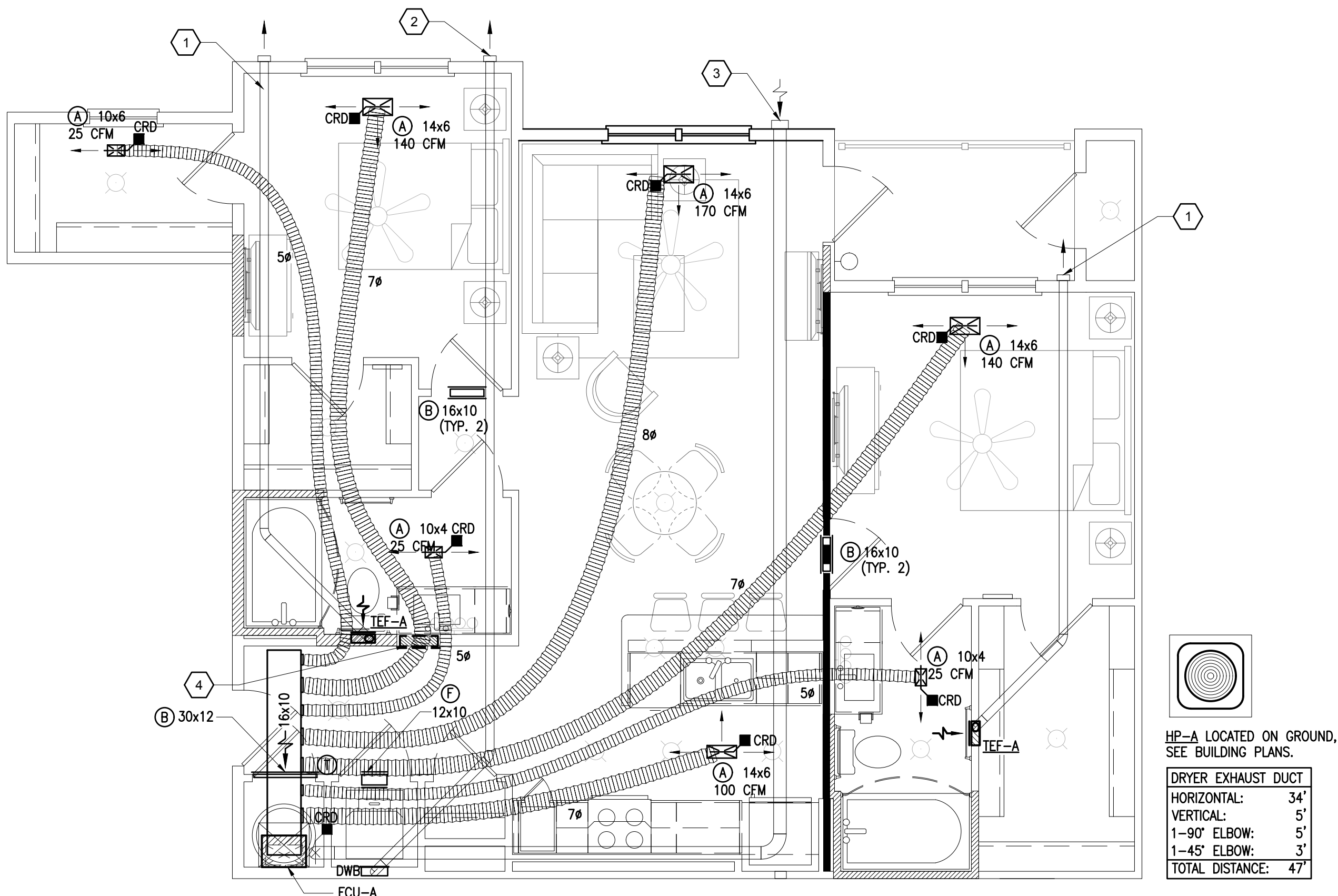
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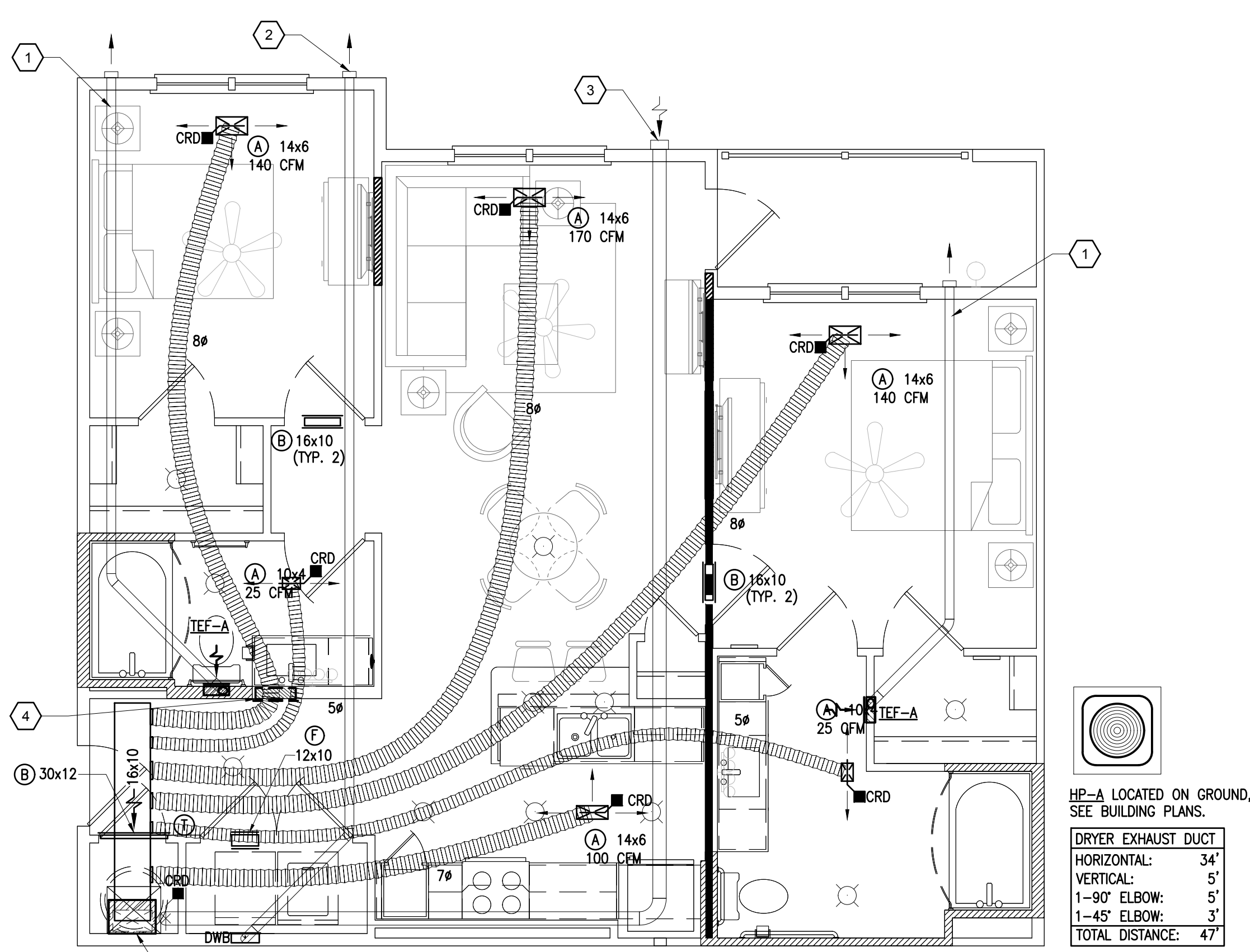
2 Unit B1 Alt-1 - Mechanical
Scale: 1/4"= 1'-0" Plan



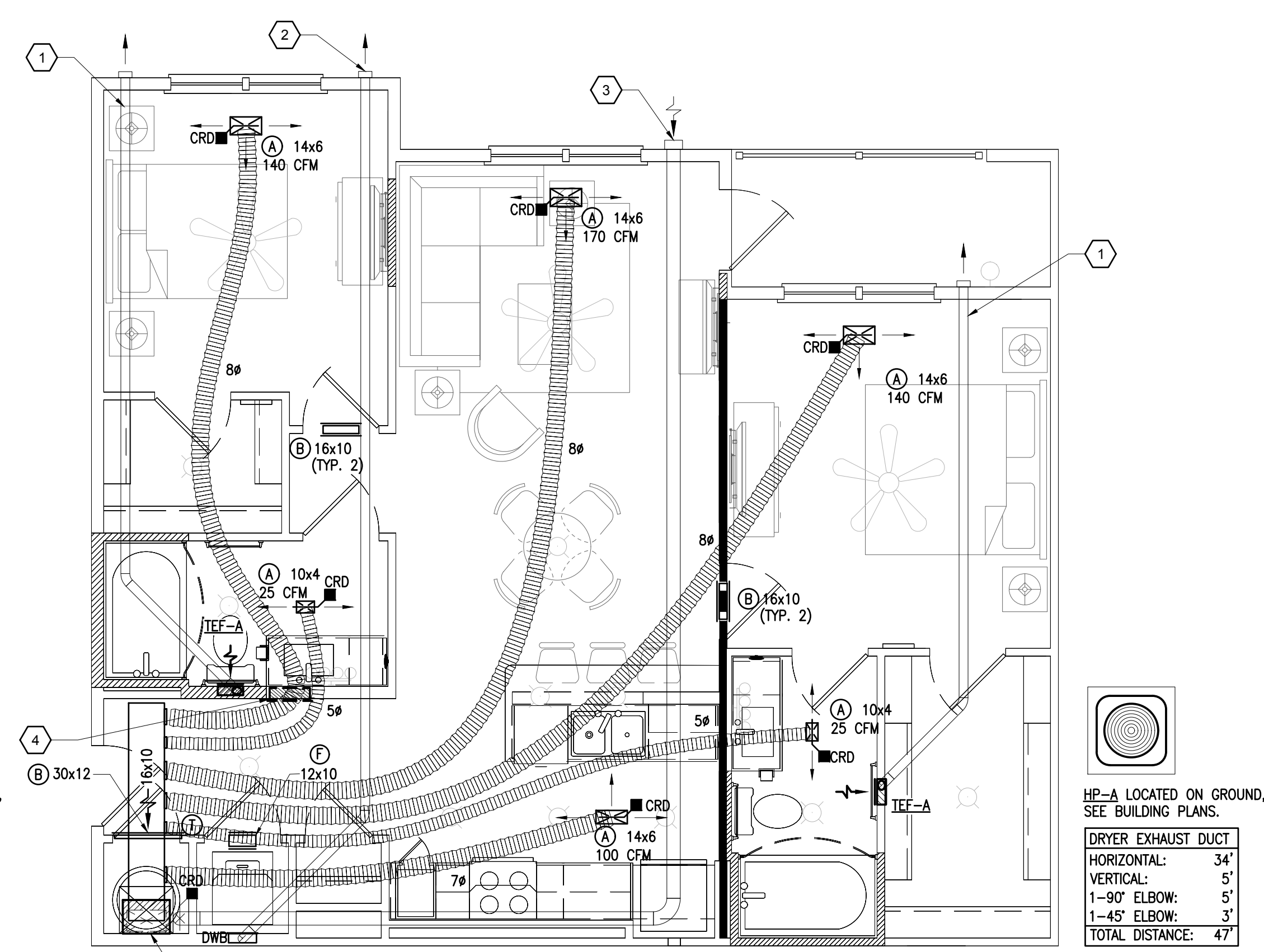
1 Unit B1 - Mechanical
Scale: 1/4"= 1'-0" Plan



5 Unit B2 - Mechanical
Scale: 1/4"= 1'-0" Plan



4 Unit B1 Alt-2-HC - Mechanical
Scale: 1/4"= 1'-0" Plan



3 Unit B1 Alt-2 - Mechanical
Scale: 1/4"= 1'-0" Plan
(Unit B1 Alt 3 and Unit B1 Alt-4 are Similar)

- NOTES:
- DUCTWORK SHALL BE ROUTED BETWEEN 18" DEEP OPEN WEB ROOF TRUSSES AT 24" O.C. (UNLESS NOTED OTHERWISE) RUNNING PARALLEL TO THE EXTERIOR WALL.
 - CONDENSING UNITS SHALL BE MOUNTED AT GRADE. COORDINATE EXACT LOCATIONS WITH ARCHITECT.
 - ALL CONDENSING UNITS SHALL HAVE THE FOLLOWING MINIMUM CLEARANCES, OR AS SPECIFIED BY MANUFACTURER:
 - 12 IN. FROM BUILDING
 - 30 IN. FROM CONDENSING UNIT ON OPPOSITE SIDE FROM BUILDING
 - 24 IN. FROM CONDENSING UNITS ON TWO REMAINING SIDE
 - SEE "HVAC GENERAL NOTES" FOR DRYER EXHAUST.
 - EXHAUST AND DRYER WALL CAPS SHALL HAVE SPRING LOADED BACK DRAFT DAMPERS. O.A. WALL CAPS SHALL NOT HAVE BACK DRAFT DAMPERS BUT SHALL HAVE A BIRD SCREEN.
 - PROVIDE HOODED BATH/DRYER WALL CAPS. DO NOT PROVIDE WIRE MESH OR SCREEN ON DRYER VENT CAP.
 - CONDENSATE PIPE SHALL BE CPVC. CONDENSATE PIPE SHALL BE ROUTED AS SHOWN IN RISER DETAIL, COORDINATE WITH PLUMBING.
 - DRYER VENT SHALL TURN DOWN IN WALL AND TERMINATE AT DRYER BOX. DRYER EXHAUST SHALL BE ON THE RIGHT SIDE OF THE WASHER IF IT IS SIDE-BY-SIDE ORIENTATION.
 - TRANSFER GRILLES SHALL BE PROVIDED ABOVE LAUNDRY ROOM DOORS AS SHOWN. LAUNDRY ROOM DOORS ARE SOLID AND NOT LOVERED. PROVIDE A GRILLE ON BOTH (2) SIDES OF WALL PROVIDING A MINIMUM OF 100 SQ. IN. FREE AREA.
 - RETURN AIR SHALL BE THRU GRILLE MOUNTED OVER THE DOOR AT THE MECHANICAL CLOSET. SEE DETAIL.
 - MAINTAIN 6" MIN. BETWEEN TAKE-OFF'S AT MAIN TRUNK DUCT. NO-TAKE OFF SHALL BE LOCATED WITHIN 6" OF START OR END OF TRUNK DUCT.
 - CEILING ARE RATED. PROVIDE CRD'S AT EACH PENETRATION.
 - DO NOT ROUTE DUCTWORK OR PIPING OVER LOAD CENTERS.
 - FUTURE DEHUMIDIFIER SHALL BE INSTALLED WITHIN STUD CAVITY. WHERE INSTALLED ON MECHANICAL AND LAUNDRY CLOSET WALLS, ROUTE CONDENSATE TO DRAIN IN CLOSET BY PLUMBING. OTHERWISE, SEE PLUMBING DRAWINGS FOR DRAIN CONNECTION. SEE ELECTRICAL FOR POWER CONNECTION. DEHUMIDIFIER TO BE ULTRA-AIR MC35.
 - KITCHEN IN APARTMENTS MUST HAVE A UL LISTED KITCHEN RANGE HOOD. SEE ARCHITECTURAL DRAWINGS FOR MORE INFORMATION. KITCHEN HOOD SHALL BE RECIRCULATING EXHAUST UNLESS NOTED OTHERWISE.
 - TRANSFER GRILLES SHALL BE PROVIDED ABOVE EACH BEDROOM DOOR ON BOTH (2) SIDES OF WALL. TRANSFER GRILLES SHALL BE SIZED AT A MINIMUM OF 50 SQUARE INCHES OF GRILLE AREA PER 100 CFM OF SUPPLY AIR.

KEYNOTES	
1	ROUTE 44 BATH EXHAUST TO WALL CAP
2	ROUTE 44 DRYER EXHAUST TO WALL CAP. SEE DRYER DUCT LENGTH CALCULATIONS
3	ROUTE 66 O.A. VENT TO WALL CAP. SEE VENTILATION CALCULATION FOR PROVIDED OUTDOOR AIR
4	FUTURE DEHUMIDIFIER LOCATION, SEE NOTE 14

VENTILATION CALCULATION BASED ON VMC TABLE 403.3.1.1 MINIMUM VENTILATION RATES			
APARTMENT	# of Persons 1-BDRM=2 2-BDRM=3	REQUIRED OUTDOOR AIR (CFM)	TOTAL OUTDOOR AIR PROVIDED (CFM)
ONE BEDROOM	2	37.5	40.0

Seal

CRAIG S. BLYTHE
Lic. No. 042055540

2-19-26

2PA

POOLE & MOORE ARCHITECTURE
4240 Park Place Court
Glen Allen, Virginia 23060
Telephone 804.225.0215
www.2pa.net

Project: 2501
CADD File:
Drawn By: TN
Checked By: CSB
Permit Release:
Construction Release Set:

Revisions
No. Date Description

ASI / RFI Revisions
No. Date Description

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Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

Drawing Title:
Unit Plans

PHILLIPS GRADICK ENGINEERING, P.C.
1415 W. Main Street
Chattanooga, TN 37402

PGC # NC225038
(2040) 900.5850 (TX)

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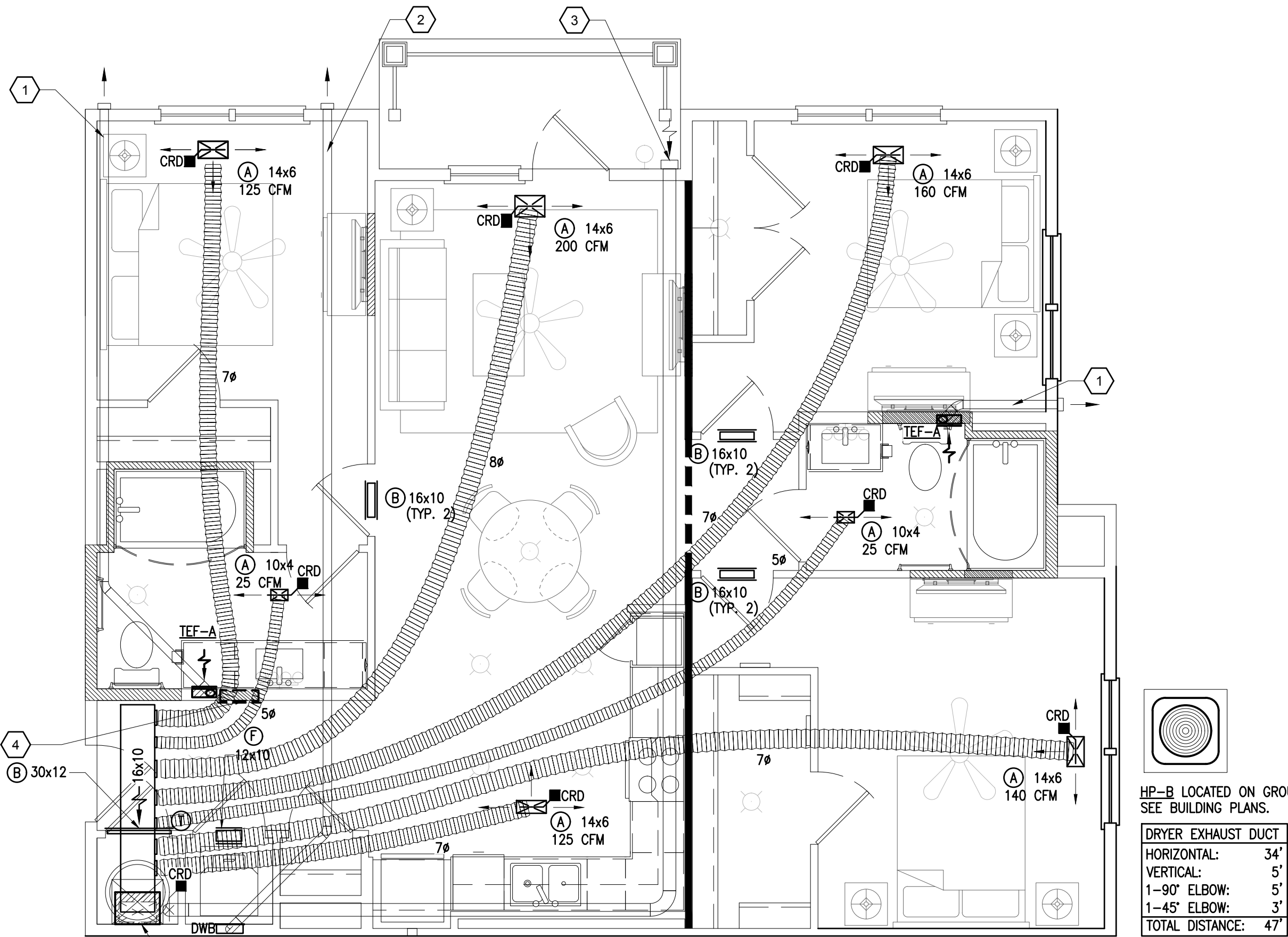
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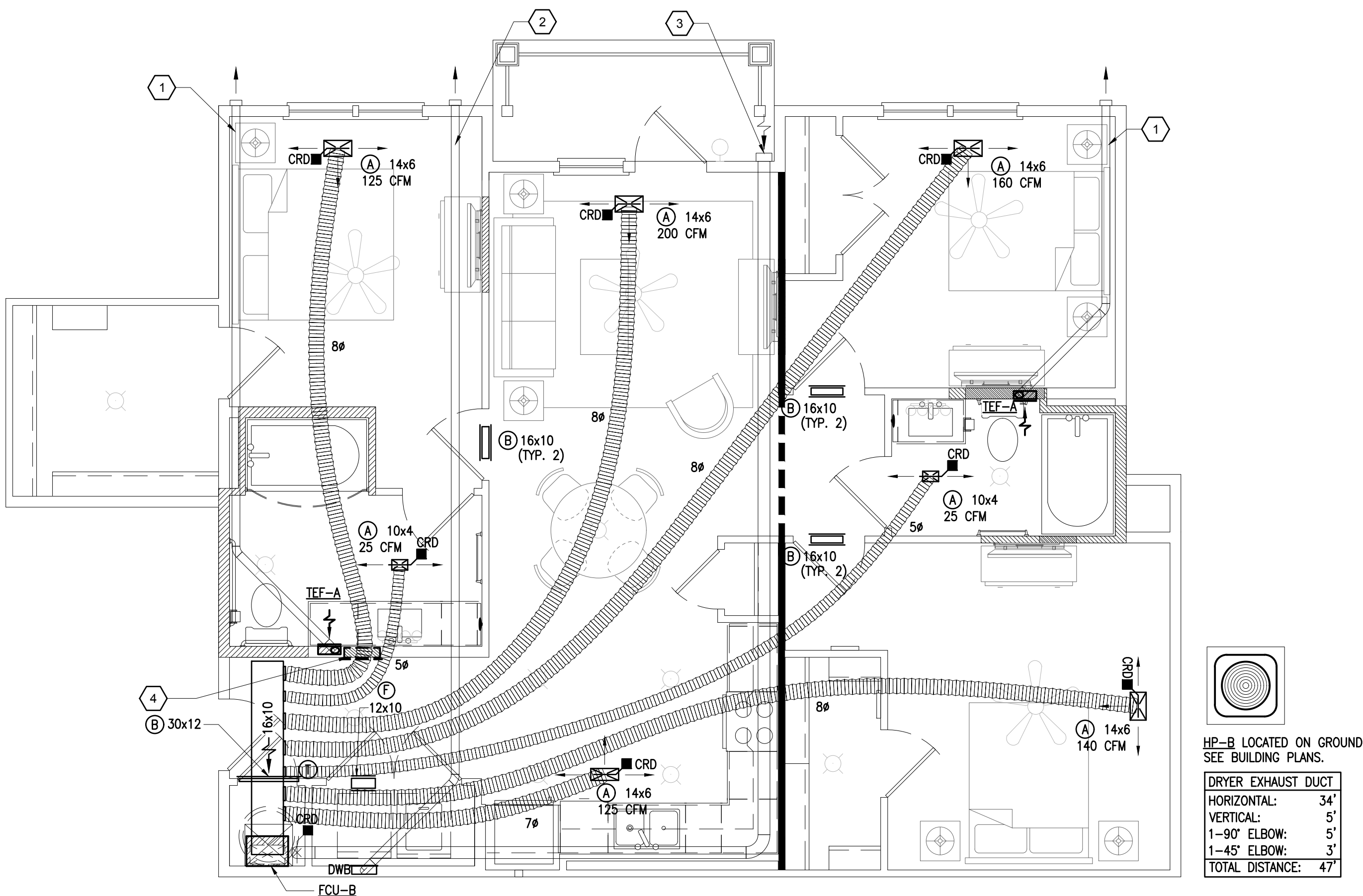
- NOTES:
1. DUCTWORK SHALL BE ROUTED BETWEEN 18" DEEP OPEN WEB ROOF TRUSSES AT 24" O.C. (UNLESS NOTED OTHERWISE) RUNNING PARALLEL TO THE EXTERIOR WALL.
 2. CONDENSING UNITS SHALL BE MOUNTED AT GRADE. COORDINATE EXACT LOCATIONS WITH ARCHITECT.
 3. ALL CONDENSING UNITS SHALL HAVE THE FOLLOWING MINIMUM CLEARANCES, OR AS SPECIFIED BY MANUFACTURER:
A. 12 IN. FROM BUILDING
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C. 24 IN. FROM CONDENSING UNITS ON TWO REMAINING SIDE
 4. SEE "HVAC GENERAL NOTES" FOR DRYER EXHAUST.
 5. EXHAUST AND DRYER WALL CAPS SHALL HAVE SPRING LOADED BACK DRAFT DAMPERS. O.A. WALL CAPS SHALL NOT HAVE BACK DRAFT DAMPERS BUT SHALL HAVE A BIRD SCREEN.
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 9. TRANSFER GRILLES SHALL BE PROVIDED ABOVE LAUNDRY ROOM DOORS AS SHOWN. LAUNDRY ROOM DOORS ARE SOLID AND NOT LOUVERED. PROVIDE A GRILLE ON BOTH (2) SIDES OF WALL PROVIDING A MINIMUM OF 100 SQ. IN. FREE AREA.
 10. RETURN AIR SHALL BE THRU GRILLE MOUNTED OVER THE DOOR AT THE MECHANICAL CLOSET, SEE DETAIL.
 11. MAINTAIN 6" MIN. BETWEEN TAKE-OFF'S AT MAIN TRUNK DUCT. NO-TAKE OFF SHALL BE LOCATED WITHIN 6" OF START OR END OF TRUNK DUCT.
 12. CEILINGS ARE RATED. PROVIDE CRD'S AT EACH PENETRATION.
 13. DO NOT ROUTE DUCTWORK OR PIPING OVER LOAD CENTERS.
 14. FUTURE DEHUMIDIFIER SHALL BE INSTALLED WITHIN STUD CAVITY. WHERE INSTALLED ON MECHANICAL AND LAUNDRY CLOSET WALLS, ROUTE CONDENSATE TO DRAIN IN CLOSET BY PLUMBING, OTHERWISE SEE PLUMBING DRAWINGS FOR DRAIN CONNECTION. SEE ELECTRICAL FOR POWER CONNECTION. DEHUMIDIFIER TO BE ULTRA-AIRE MD33.
 15. KITCHEN IN APARTMENTS MUST HAVE A UL LISTED KITCHEN RANGE HOOD, SEE ARCHITECTURAL DRAWINGS FOR MORE INFORMATION. KITCHEN HOOD SHALL BE RECIRCULATING EXHAUST UNLESS NOTED OTHERWISE.
 16. TRANSFER GRILLES SHALL BE PROVIDED ABOVE EACH BEDROOM DOOR ON BOTH (2) SIDES OF WALL. TRANSFER GRILLES SHALL BE SIZED AT A MINIMUM OF 50 SQUARE INCHES OF GRILLE AREA PER 100 CFM OF SUPPLY AIR.

KEYNOTES	
①	ROUTE 44 BATH EXHAUST TO WALL CAP
②	ROUTE 44 DRYER EXHAUST TO WALL CAP, SEE DRYER DUCT LENGTH CALCULATIONS
③	ROUTE 46 O.A. VENT TO WALL CAP, SEE VENTILATION CALCULATION FOR PROVIDED OUTDOOR AIR
④	FUTURE DEHUMIDIFIER LOCATION, SEE NOTE 14

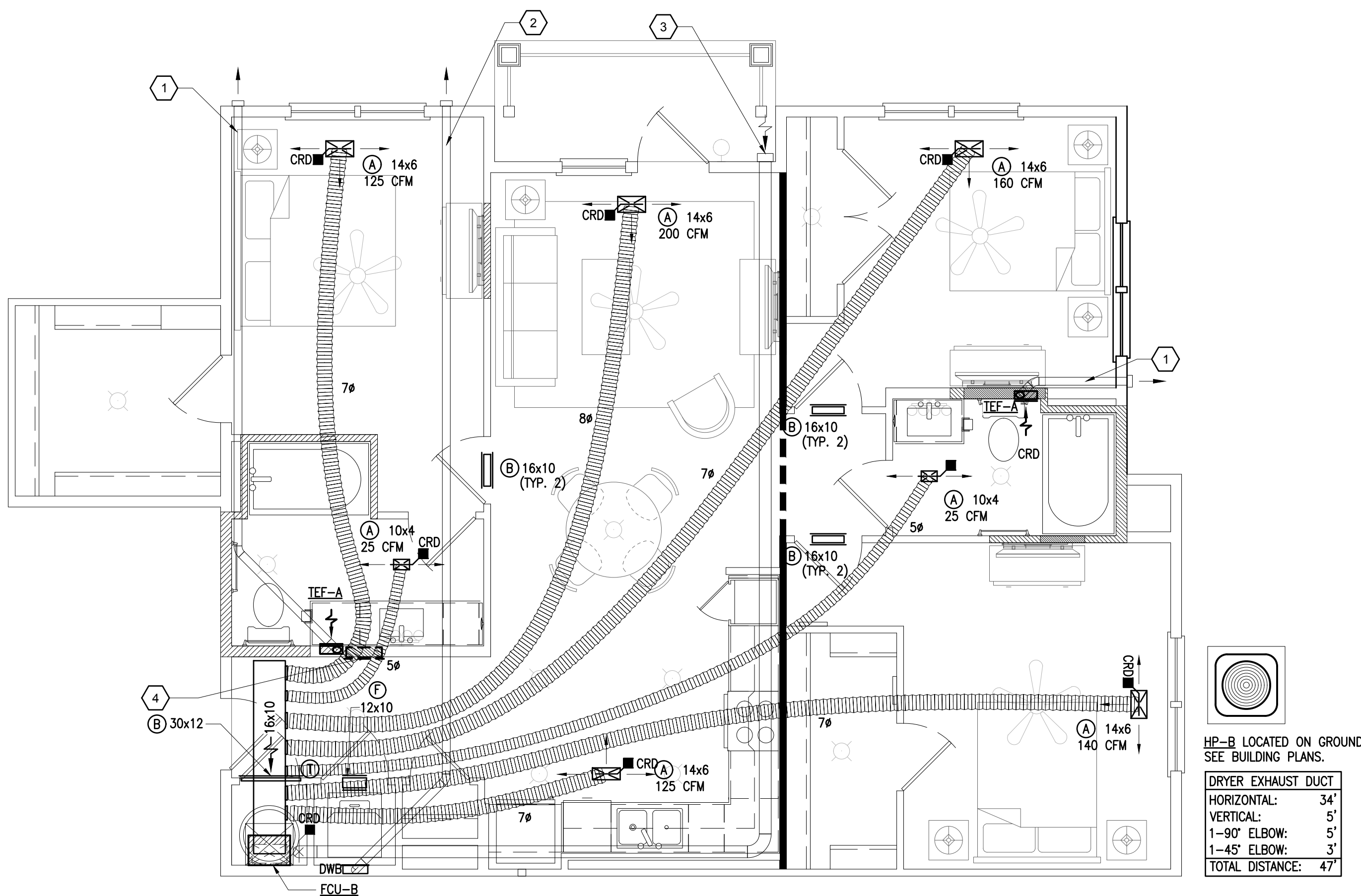
VENTILATION CALCULATION BASED ON VMC TABLE 403.3.1.1 MINIMUM VENTILATION RATES			
APARTMENT	# of Persons: 1-BDRM=2 2-BDRM=3	REQUIRED OUTDOOR AIR (CFM)	TOTAL OUTDOOR AIR PROVIDED (CFM)
ONE BEDROOM	3	56.3	60.0



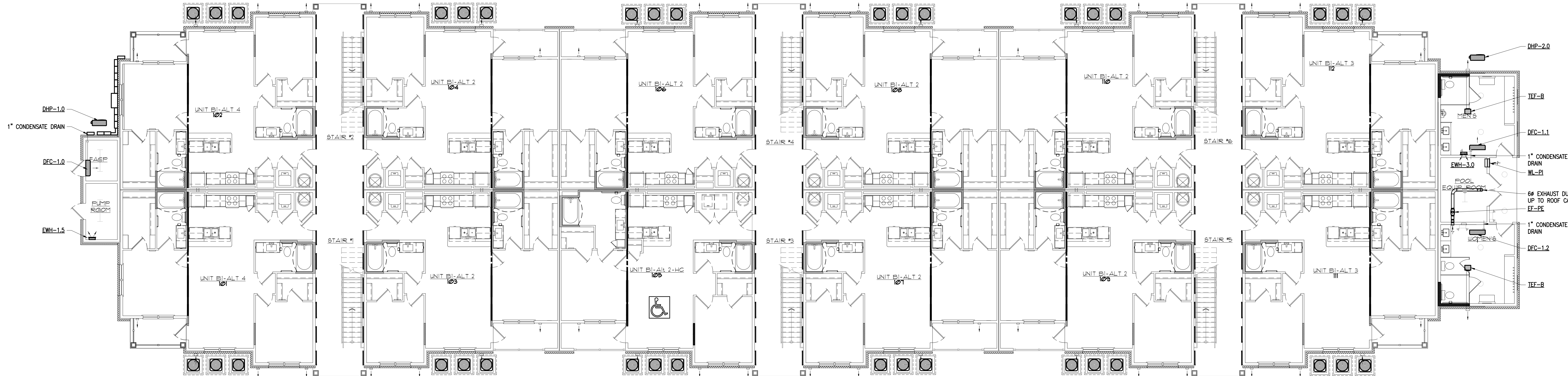
6 Unit C1 - Mechanical
Scale: 1/4"= 1'-0" Plan
(Unit C1 All 1 is Similar)



8 Unit C2-HC - Mechanical
Scale: 1/4"= 1'-0" Plan



7 Unit C2 - Mechanical
Scale: 1/4"= 1'-0" Plan



1 Building Plan - Building 1 - Level 1
Scale: 1/8" = 1'-0"

Plan

- NOTES:**
- DUCTWORK SHALL BE ROUTED BETWEEN 18" DEEP OPEN WEB ROOF TRUSSES AT 24" O.C. (UNLESS NOTED OTHERWISE) RUNNING PARALLEL TO THE EXTERIOR WALL.
 - CONDENSING UNITS SHALL BE MOUNTED AT GRADE. COORDINATE EXACT LOCATIONS WITH ARCHITECT.
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A. 12 IN. FROM BUILDING
B. 30 IN. FROM CONDENSING UNIT ON OPPOSITE SIDE FROM BUILDING
C. 24 IN. FROM CONDENSING UNITS ON TWO REMAINING SIDE
 - CONDENSATE PIPE SHALL BE CPVC. CONDENSATE PIPE SHALL BE ROUTED AS SHOWN ON PLANS. COORDINATE WITH PLUMBING.
 - DO NOT ROUTE EQUIPMENT, DUCTWORK OR PIPING OVER LOAD CENTERS.

Seal

CRAIG S. BLYTHE
Lic. No. 040205550

2-19-26

2PA

POOLE & MOORE ARCHITECTURE
4240 Park Place Court
Glen Allen, Virginia 23060
Telephone 804.225.0215
www.2pa.net

Project: 2501
CADD File:
Drawn By: TN
Checked By: CSB

Permit Release:
-
Construction Release Set:
-

Revisions
No. Date Description

ASI / RFI Revisions
No. Date Description

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Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

Drawing Title:
Building 1 - Level 1

**PHILLIPS GRADICK
ENGINEERING, P.C.**
1415 W. Morehead St.
Charlotte, NC 28208

PGI # NC225018
(704) 930-5850 (T)

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M2.11

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- NOTES:
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 - CONDENSATE PIPE SHALL BE CPVC. CONDENSATE PIPE SHALL BE ROUTED AS SHOWN ON PLANS. COORDINATE WITH PLUMBING.
 - DO NOT ROUTE EQUIPMENT, DUCTWORK OR PIPING OVER LOAD CENTERS.

Seal

CRAIG S. BLYTHE
Lic. No. 040205550

2-19-26

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POOLE & MOORE ARCHITECTURE
4240 Park Place Court
Glen Allen, Virginia 23060
Telephone 804.225.0215
www.2pa.net

Project: 2501
CADD File:
Drawn By: TN
Checked By: CSB

Permit Release:
-
Construction Release Set:
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Revisions
No. Date Description

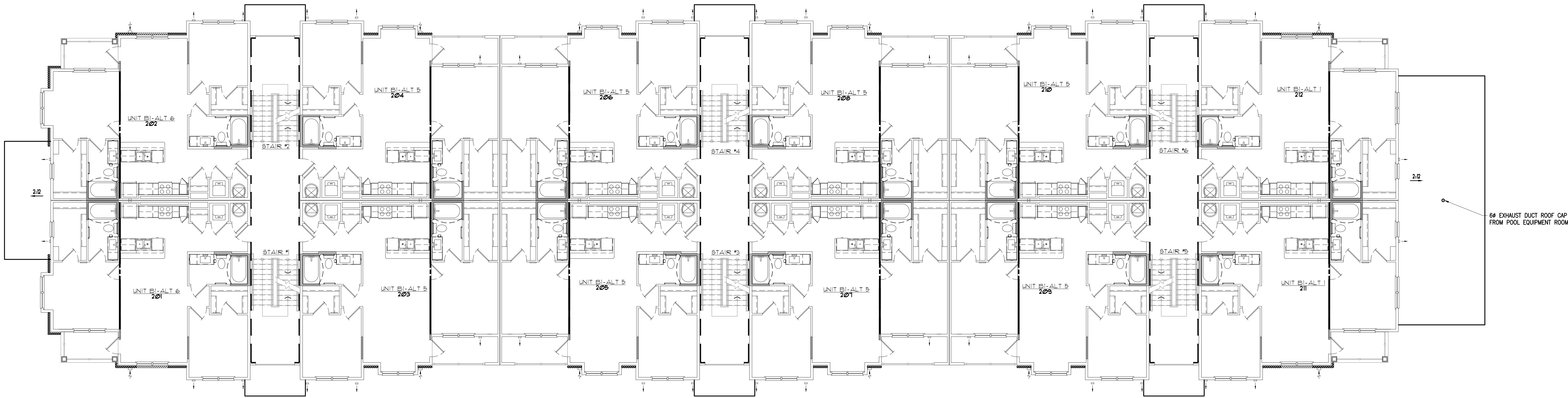
ASI / RFI Revisions
No. Date Description

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Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

Drawing Title:
Building 1 - Level 2

M2.12



1 Building Plan - Building 1 - Level 2
Scale: 1/8" = 1'-0"

Plan

**PHILLIPS GRADICK
ENGINEERING, P.C.**
1415 W. Main Street
Suite 205
Chapel Hill, NC 27514

PGC # NC225018
(204) 900-5850 (TX)

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2PA

POOLE & POOLE ARCHITECTURE
4240 Park Place Court
Glen Allen, Virginia 23060
Telephone 804.225.0215
www.2pa.net

Project: 2501
CADD File:
Drawn By: TN
Checked By: CSB
Permit Release:
-
Construction Release Set:

Revisions		
No.	Date	Description

ASI / RFI Revisions		
No.	Date	Description

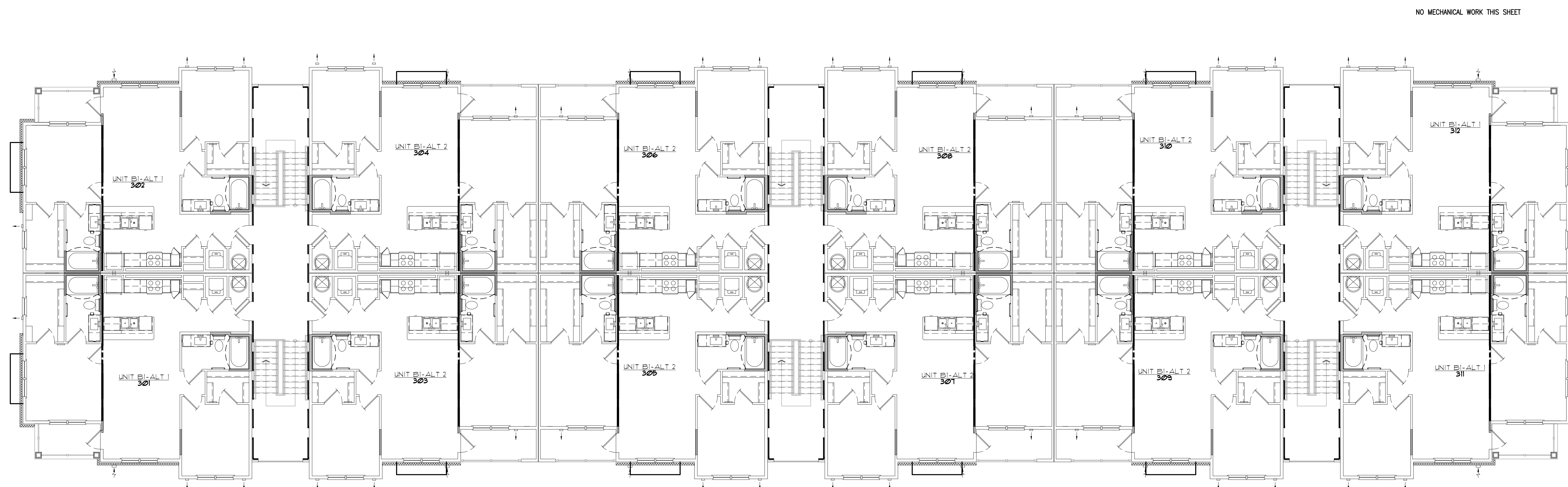
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Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

Drawing Title:
Building 1 - Level 3

M2.13

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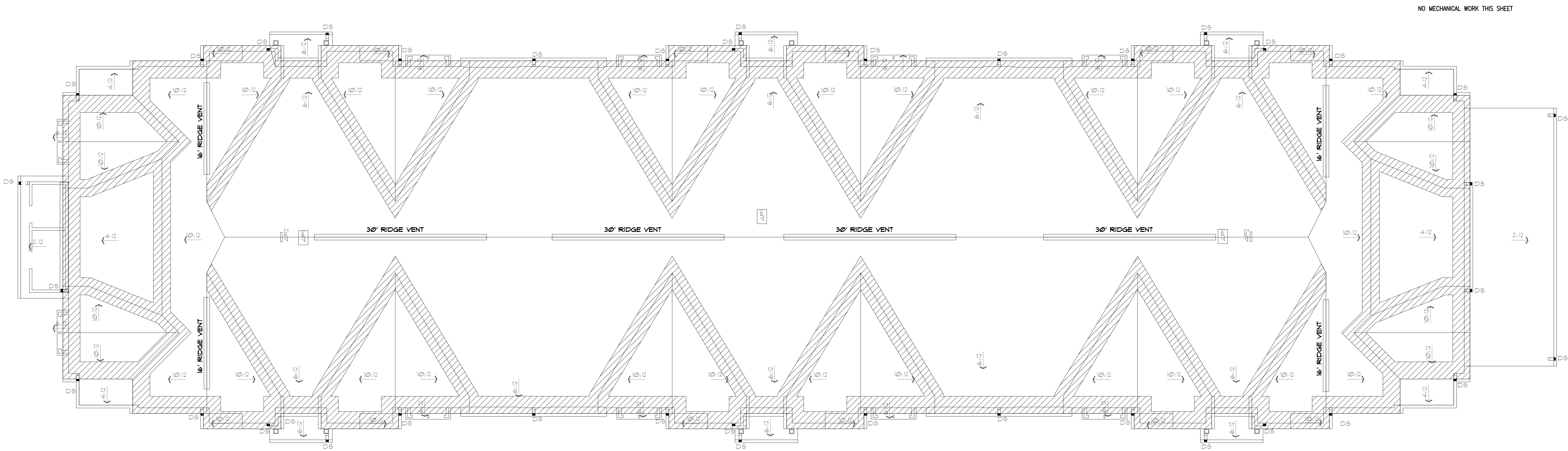


 1 Building Plan - Building 1 - Level 3
Scale: 1/8" = 1'-0"

Plan

**PHILLIPS GRADICK
ENGINEERING, P.C.** PGE # NC225038
1435 W. Morehead St. (704) 900-5838 (T)
Suite 200
Charlotte, NC 28208

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1 Building Plan - Building 1 - Roof
Scale: 1/8" = 1'-0"

Plan

PHILLIPS GRADICK
ENGINEERING, P.C.
1415 W. Morehead St.
Suite 205
Charlotte, NC 28208

PGC # NC225318
(1040 X 300 X 5/8) (1)

PGC # NC225318
(1040 X 300 X 5/8) (1)

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Drawing Title:
Building 1 - Roof

M2.14

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Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

2PAA

POOLE & POOLE ARCHITECTURE

4240 Park Place Court
Glen Allen, Virginia 23060
Telephone 804.225.0215
www.2pa.net

Project: 2501
CADD File:
Drawn By: TN
Checked By: CSB
Permit Release:
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Construction Release Set:
-

Revisions
No. Date Description

ASI / RFI Revisions
No. Date Description

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Seal

CRAIG S. BLYTHE
Lic. No. 0482955560

2-19-26

- NOTES:
- DUCTWORK SHALL BE ROUTED BETWEEN 18" DEEP OPEN WEB ROOF TRUSSES AT 24" O.C. (UNLESS NOTED OTHERWISE) RUNNING PARALLEL TO THE EXTERIOR WALL.
 - CONDENSING UNITS SHALL BE MOUNTED AT GRADE. COORDINATE EXACT LOCATIONS WITH ARCHITECT.
 - ALL CONDENSING UNITS SHALL HAVE THE FOLLOWING MINIMUM CLEARANCES, OR AS SPECIFIED BY MANUFACTURER:
 - 12 IN. FROM BUILDING
 - 30 IN. FROM CONDENSING UNIT ON OPPOSITE SIDE FROM BUILDING
 - 24 IN. FROM CONDENSING UNITS ON TWO REMAINING SIDE
 - CONDENSATE PIPE SHALL BE CPVC. CONDENSATE PIPE SHALL BE ROUTED AS SHOWN ON PLANS. COORDINATE WITH PLUMBING.
 - DO NOT ROUTE EQUIPMENT, DUCTWORK OR PIPING OVER LOAD CENTERS.

Seal

CRAIG S. BLYTHE
Lic. No. 048205550

2-19-26

2PA

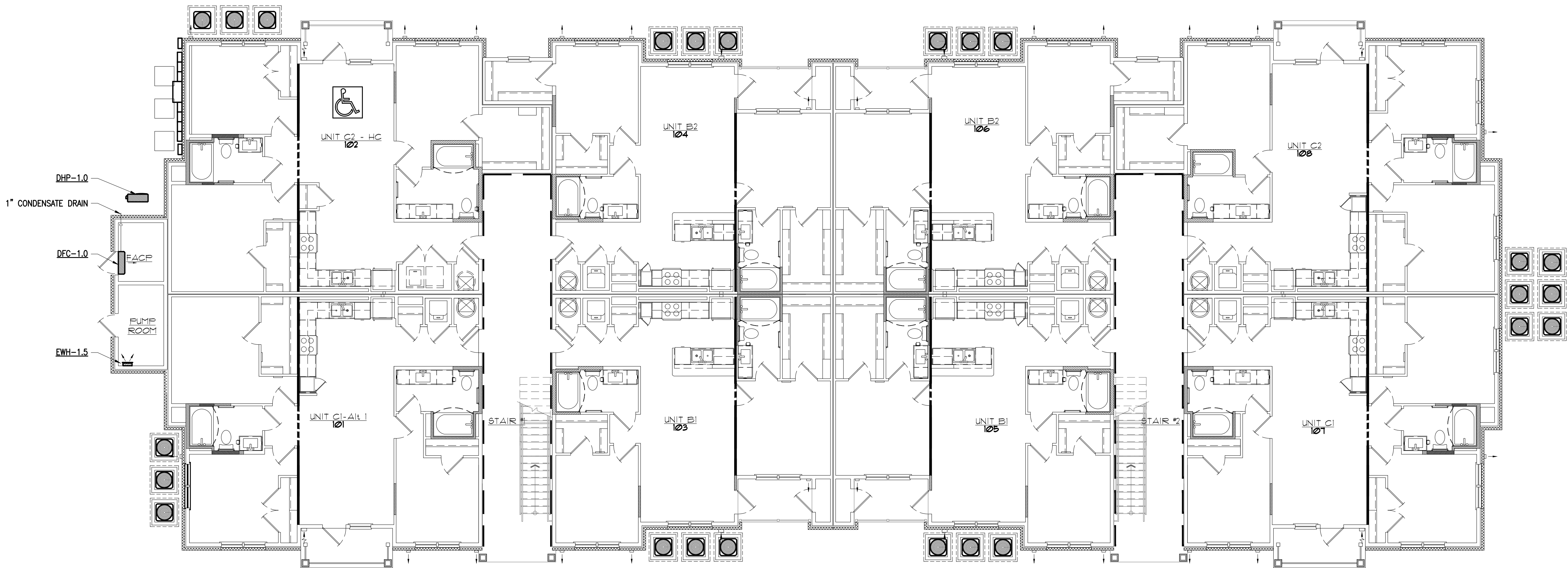
POOLE & MOORE ARCHITECTURE
4240 Park Place Court
Glen Allen, Virginia 23060
Telephone 804.225.0215
www.2pa.net

Project: 2501
CADD File:
Drawn By: JC
Checked By: CSB
Permit Release:
-
Construction Release Set:
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Revisions
No. Date Description

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1 Building Plan - Building 2 - Level 1
Scale: 1/8"= 1'-0"

Plan

PHILLIPS GRADICK ENGINEERING, P.C.
1415 W. Main Road St.
Suite 202
Chattanooga, TN 37428

PGC # NC225018
(704) 903.5850 (T)

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Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

Drawing Title:
Building 2 - Level 1

M2.21

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- NOTES:
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 - CONDENSING UNITS SHALL BE MOUNTED AT GRADE. COORDINATE EXACT LOCATIONS WITH ARCHITECT.
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 - 24 IN. FROM CONDENSING UNITS ON TWO REMAINING SIDE
 - CONDENSATE PIPE SHALL BE CPVC. CONDENSATE PIPE SHALL BE ROUTED AS SHOWN ON PLANS. COORDINATE WITH PLUMBING.
 - DO NOT ROUTE EQUIPMENT, DUCTWORK OR PIPING OVER LOAD CENTERS.

Seal

CRAIG S. BLYTHE
Lic. No. 040205550

2-19-26

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POOLE & MOORE ARCHITECTURE
4240 Park Place Court
Glen Allen, Virginia 23060
Telephone 804.225.0215
www.2pa.net

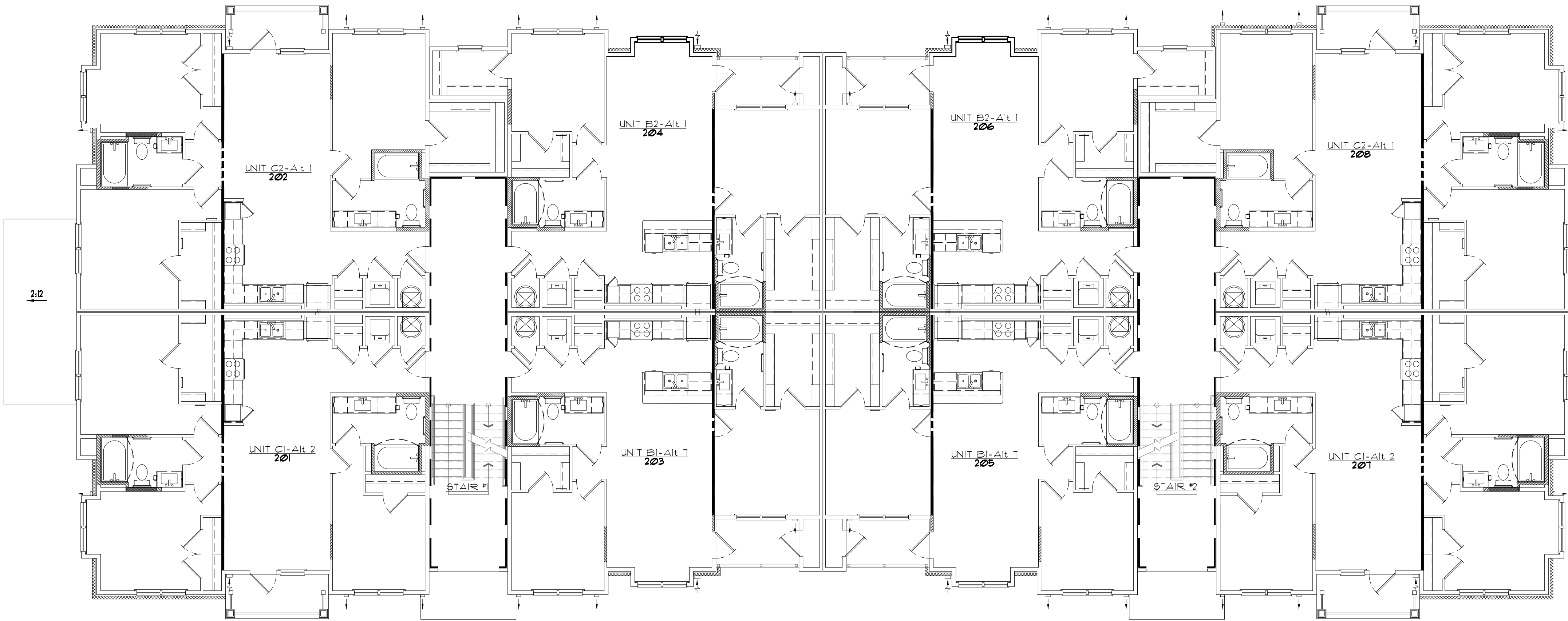
Project: 2501
CADD File:
Drawn By: JC
Checked By: CSB

Permit Release:
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Construction Release Set:
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No. Date Description

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1 Building Plan - Building 2 - Level 2
Scale: 1/8"= 1'-0"

Plan

PHILLIPS GRADICK ENGINEERING, P.C.
1415 W. Main Road St.
Suite 202
Charlottesville, NC 22908

PGC # NC225038
(7040 900.5850 (T))

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Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia

Drawing Title:
Building 2 - Level 2

M2.22

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CRAIG S. BLYTHE
Lic. No. 0402055360

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POOLE & POOLE ARCHITECTURE

4240 Park Place Court
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Revisions		
No.	Date	Description

No.	Date	Description
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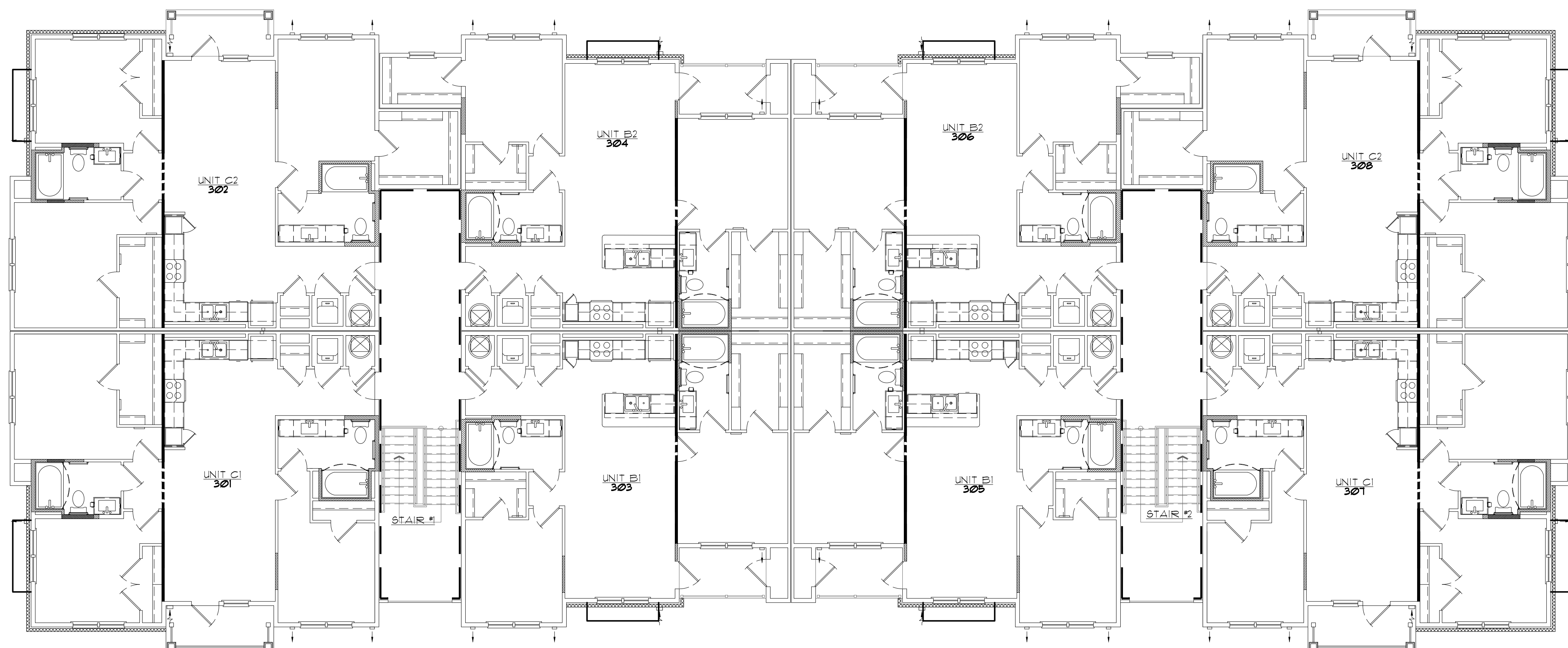
Daleville Town Center Apartments III
an Apartment Community by
Daleville Town Center Apartments III, LLC
in Daleville, Virginia


Drawing Title:
Building 2 - Level 3

M2.23

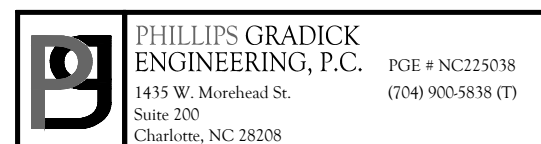
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NO MECHANICAL WORK THIS SHEET



 **1** Building Plan - Building 2 - Level 3
Scale: 1/8" = 1'-0"

Plan



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Project: 2501
CADD File:
Drawn By: JC
Checked By: CSB

Permit Release:
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Construction Release Set:
-

Revisions		
No.	Date	Description

ASI / RFI Revisions		
No.	Date	Description

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Daleville Town Center Apartments III

an Apartment Community by

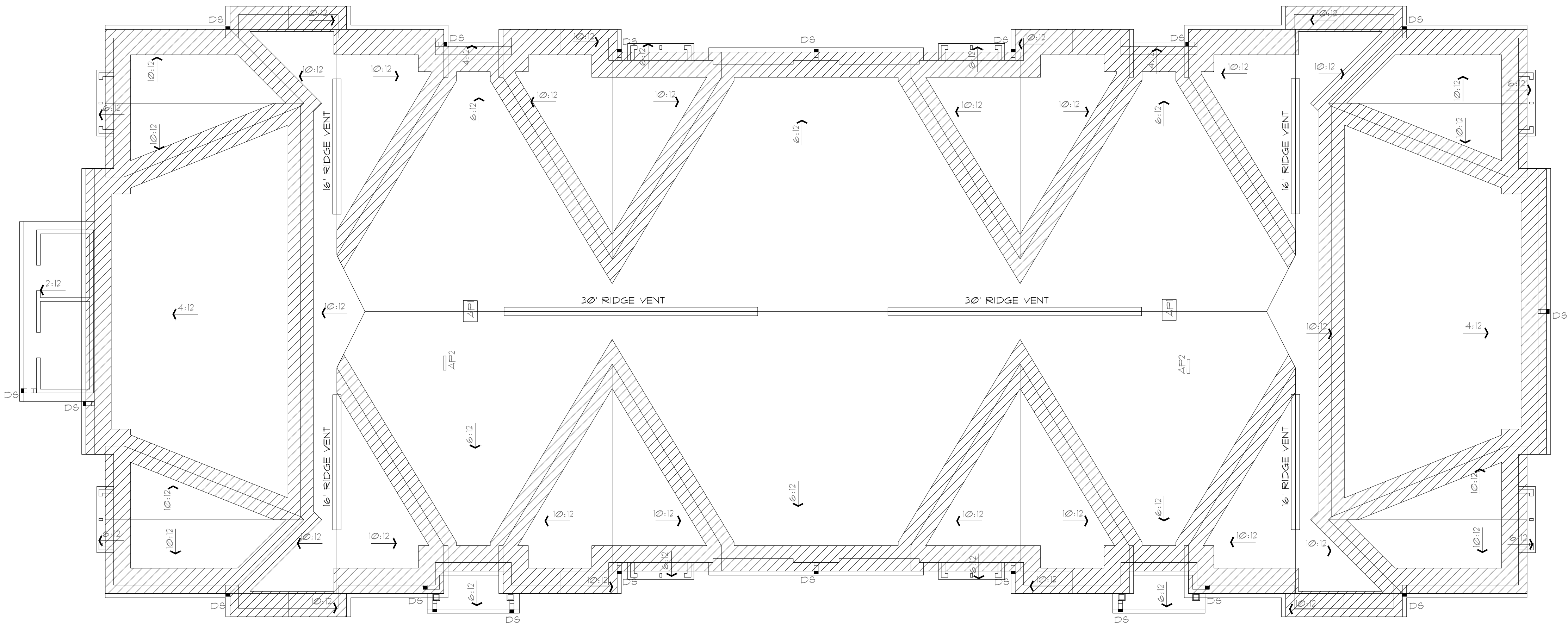
Daleville Town Center Apartments III, LLC

in Daleville, Virginia

Drawing Title:
Building 2 - Roof

M2.24

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1 Building Plan - Building 2 - Roof

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

Plan