SECTION 15010 - MECHANICAL GENERAL PROVISIONS:

- . THE WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE REFERENCED CODES AND STANDARDS: 1.1. LOCAL AUTHORITY HAVING JURISDICTION (AHJ) REQUIREMENTS
- 1.2. ALABAMA BUILDING CODE 2015, INCLUDING: IBC/2015 — INTERNATIONAL BUILDING CODE 1.2.1. NFPA 70/2014 - NATIONAL ELECTRICAL CODE 1.2.2. NFPA 72/2013 - NATIONAL FIRE ALARM CODE
- 1.2.3. 2015 INTÉRNATIONAL MECHANICAL CODE 1.3. ADAAG — AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
- 1.4. ANSI AMERICAN NATIONAL STANDARDS INSTITUTE 1.5. ASHRAE — AMER. SOC. OF HEATING. REFRIG. AND AIR COND.
- **ENGINEERS** 1.6. ASTM — AMERICAN SOCIETY FOR TESTING AND MATERIALS 1.7. NFPA - NATIONAL FIRE PROTECTION ASSOCIATION 1.8. OSHA — OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
- 1.9. SMACNA SHEET METAL AND AIR COND. CONTRACTORS NAT'L ASSOCIATION 1.10. UL - UNDERWRITERS LABORATORIES, INC.
- CONFORM TO THE BUILDING CODE AND LOCAL AUTHORITIES HAVING JURISDICTION (AHJ). OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND FEES REQUIRED.
- CONFORM TO DIV 0, DIV 1 AND THE GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT. COORDINATE SCHEDULE FOR ALL WORK WITH AND FOR APPROVAL BY THE
- COORDINATE WORK FROM OTHER TRADES AND BUILDING STRUCTURE PRIOR TO INSTALLATION. MAKE MINOR ADJUSTMENTS AS REQUIRED FACILITATING
- THE WORK. 6. ALL EQUIPMENT, MATERIALS AND SYSTEMS SHALL BE LISTED AND CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. (UL), AS SUITABLE FOR
- USE INTENDED. THE CONTRACTOR IS RESPONSIBLE FOR THE "MEANS AND METHODS" OF THE WORK. WORK SHALL CONFORM TO THE NECA 1 - "STANDARD OF INSTALLATION" AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE
- INSTALL AND APPLY ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE SUBMITTALS WHERE INDICATED. MECHANICAL EQUIPMENT LOCATED ON ROOFTOP SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S INSTALLATION INSTRUCTIONS TO MAINTAIN CLEARANCES TO ACCESS FOR SERVICE AND
- MAINTENANCE. INSTALL AND PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE, DIRT. AND DEBRIS AND CLEAN AND REPAIR AS REQUIRED. DO NOT USE COMPRESSED AIR FOR CLEANING.
- WARRANTY: PROVIDE WARRANTY ON WORKMANSHIP AND MATERIALS. WARRANTY SHALL COVER ALL COSTS FOR PARTS, LABOR, ASSOCIATED TRAVEL. AND EXPENSES FOR A PERIOD OF ONE YEAR FROM COMPLETION OF SYSTEM ACCEPTANCE. WARRANTY SHALL APPLY EQUALLY TO BOTH HARDWARE AND SOFTWARE. PERSONNEL SUPPORTING THIS WARRANTY AGREEMENT SHALL PROVIDE ON-SITE OR OFF-SITE SERVICE IN A TIMELY MANNER AFTER FAILURE NOTIFICATION TO THE VENDOR. THE MAXIMUM ACCEPTABLE RESPONSE TIME TO PROVIDE THIS SERVICE AT THE SITE SHALL BE 24 HOURS, MONDAY THROUGH FRIDAY AND 48 HOURS ON SATURDAY AND SUNDAY.
- SUBMITTALS: 11.1. PROVIDE SUBMITTALS ON EQUIPMENT AND MATERIALS. 11.2. SUBMITTAL REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE PLANS AND SPECIFICATIONS. 11.3. OPERATION OF THE SYSTEMS REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.
- 11.4. REVIEW OF A SPECIFIC ITEM DOES NOT INCLUDE OR IMPLY APPROVAL OF AN ASSEMBLY (OF WHICH THE ITEM IS A
- 11.5. ALL DEVIATIONS FROM THE PROJECT ENGINEERING DRAWINGS AND SPECIFICATIONS SHALL BE EXPLICITLY NOTED IN SUBMITTALS BY COVER LETTER OR WILL BE CONSIDERED NON-COMPLIANT AND REJECTED, REGARDLESS OF SUBMITTAL REVIEW STATUS. DEVIATIONS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONTRACT DOCUMENTS UNLESS SEPARATELY NEGOTIATED WITH THE
- 11.6. THE CONTRACTOR, BY SUBMITTING A PROPOSED SUBSTITUTION. ACCEPTS ALL RESPONSIBILITY FOR COORDINATING ALL CHANGES AND ABSORBING ALL COSTS DUE TO PROPOSED SUBSTITUTED EQUIPMENT TO INCLUDE, BUT NOT LIMITED TO: COORDINATION WITH AND CHANGES AFFECTING OTHER TRADES, ADDITIONAL CIRCUITS, IMPACT OF ADDITIONAL LOADS, CIRCUIT CHARACTERISTICS, AND SINGLE-POINT CONNECTION KITS.

-HALF-COUPLING

DRAIN PAN ON FAN INLET

(NEGATIVE PRESSURE)

M001 / NOT TO SCALE

1. DRAIN PIPE TO BE SAME SIZE AS UNIT OUTLET, BUT NOT

"B"=1/2 SYSTEM STATIC IN INCHES AT DRAIN POINT.

2. "A"=SYSTEM STATIC IN INCHES AT DRAIN POINT.

CONDENSATE DRAIN DETAIL

SECTION 15080-INSULATION:

ALL PRODUCTS IN THE CONDITIONED AIRSTREAM (INCLUDING PLENUMS) SHALL BE NONCOMBUSTIBLE AND SHALL COMPLY WITH NFPA 90A FLAME/SMOKE/FUEL CONTRIBUTION RATING OF 25/50/0 AND COMPLY WITH UL181 EROSION LIMITATIONS. FIRE HAZARD RATINGS SHALL BE DETERMINED BY NFPA-255 "METHOD OF TEST OF SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS", ASTM E84, OR UL723.

AT 75°F MEAN TEMPERATURE. BASED ON KNAUF DUCT WRAP.

ABOVE CEILINGS 1-1/2" BLANKET TYPE

GRILLE BOOTS 1-1/2" BLANKET TYPE

1" LINER

NONE

OUTDOOR REF PIPING 1-1/2" CLOSED CELL

WALL ELECTRIC HEATERS (WH) — RECESSED WALL MOUNTED ELECTRIC UNIT

STANDARD EFFICIENCY. SPLIT SYSTEM HEAT PUMP. COMPRESSOR TO BE

INTERNALLY PROTECTED AGAINST HIGH PRESSURE, TEMPERATURE, AND

EXTERNALLY BY A FACTORY INSTALLED HIGH PRESSURE SWITCH. PROVIDE

REMOVABLE ACCESS PANEL TO ELECTRICAL BOX. FURNISH FULLY CHARGED

AND FACTORY WIRED. UNIT SHALL OPERATE WITH R-410A. PROVIDE WITH

CONSTRUCTED OF PRE-PAINTED STEEL. INTERNALLY PROTECTED HERMETIC

CRANKCASE HEATER, AND HARD START KITS (FOR UNITS WITH REFRIGERANT

LINE LENGTHS OVER 100 FT). CONDENSER COILS CONSTRUCTED OF COPPER

INSTALL UNIT ON PLASTIC HOUSEKEEPING PAD (WITH NEOPRENE BETWEEN

PAD AND ROOF) OR 4x4 WEATHER TREATED LUMBER WITH NEOPRENE PADS

COMPACT AND STURDY CABINET IS PROTECTED WITH A DURABLE FINISH AND

INSULATED TO PREVENT SWEATING. PROVIDE WITH ALUMINUM FIN COILS AND

FOR UNITS MOUNTED VERTICALLY, PROVIDE FLOAT SWITCH ON CONDENSATE

CONDENSATE DRAIN PAN UNDER UNIT WITH FLOAT OR WATER DETECTOR

PROVIDE NON-PROGRAMMABLE DIGITAL THERMOSTAT FOR ALL RESIDENTIAL

OVERFLOW CONNECTION. FOR UNITS MOUNTED HORIZONTALLY PROVIDE

WITHIN THE PAN. UPON A DETECTION OF WATER IN THE PAN OR

CONDENSATE OVERFLOW CONNECTION, UNIT SHALL BE SHUT DOWN.

4. PROVIDE DUCTED INDOOR UNIT WITH SUPPLY AND RETURN PLENUMS AS

INDICATED. PLENUMS TO BE SIZED AS SMALL AS POSSIBLE FOR

CONNECTIONS. LINE WITH 1" INSULATION FOR SOUND DAMPENING.

5. PROVIDE WITH INTERNAL FILTER RACK AND 1"THICK FILTER.

DRAIN FUNNEL

DRAIN PAN ON FAN OUTLET

(POSITIVE PRESSURE)

COMPRESSOR WITH INTERNAL DISCHARGE LINE SOLID CORE FILTER DRIER.

5-YEAR LIMITED PARTS WARRANTY AND 5-YEAR LIMITED COMPRESSOR

HEATER WITH INTEGRAL THERMOSTAT, LOUVERED FRONT COVER, DISCONNECT

6. SCHEDULE (INSULATION BASED ON KNAUF):

SUPPLY DUCTWORK

RETURN/TRANSFER DUCTWORK:

GRILLE BOOTS

OUTSIDE AIR DUCTWORK:

EXHAUST DUCTWORK:

SECTION 15767—HEATERS:

ELECTRIC UNIT HEATERS:

EXHAUST

INDOOR REF PIPING

SWITCH, AND HEATING ELEMENT.

SECTION 15770—SPLIT SYSTEM AIR CONDITIONERS:

OUTDOOR STANDARD SPLIT SYSTEM HEAT PUMP (HP):

TUBING AND ENHANCED ALUMINUM COILS.

INDOOR STANDARD SPLIT SYSTEM AIR HANDLING UNIT (AHU):

BETWEEN UNIT AND LUMBER.

ELECTRIC HEATERS.

- FIRE DAMPERS: CURTAIN TYPE WITH BLADES OUT OF THE AIR STREAM (HIGH HAT TYPE) WITH 1-1/2" HOUR UL RATINGS APPROVED FOR USE IN 2 2. INSTALL INSULATION PER MANUFACTURERS INSTRUCTIONS. HOUR RATED WALLS AND 1-HOUR RATED FLOOR ASSEMBLIES. PROVIDE WITH 3. ON SUPPLY AIR AND OUTSIDE AIR DUCTS ENSURE THAT THE VAPOR FUSIBLE LINK AND CLOSURE SPRING FOR USE IN VERTICAL DUCTWORK BARRIER IS CONTINUOUS AND SEALED AT ALL PENETRATIONS. (HORIZONTALLY MOUNTED).
- 4. PIPING EXPOSED TO WEATHER SHALL BE PROVIDED WITH A WEATHER-PROOF

LINER WHERE NOTED, OTHERWISE:

1" CLOSED CELL ELASTOMERIC

ELASTOMERIC W/ WEATHERPROOF

2" 1LB DENSITY BLANKET

FUSIBLE LINK. BASED ON ARROW MODEL A91 (RECTANGULAR) AND A97 BLANKET FIBERGLASS: FLEXIBLE FIBROUS GLASS, FLAME RETARDANT (ROUND). FACTORY LAMINATED FOIL- SKRIM-KRAFT (FSK) VAPOR BARRIER, 2" STAPLING FLANGE, MAXIMUM VAPOR PERMEANCE OF .02 PERM/IN., MINIMUM 4. VOLUME DAMPERS (MANUAL): BLADES AND FRAME SHALL BE OF EXTRUDED DENSITY OF 1.0 LB/CF, MAXIMUM CONDUCTIVITY PER 1" THICKNESS OF .28 ALUMINUM OR GALVANIZED STEEL CONSTRUCTION. PROVIDE SINGLE BLADE DAMPERS PER SMACNA FIG 2-12, FIGURE B ON RECTANGULAR DUCTS LESS THAN 30" IN WIDTH AND 12" OR LESS IN DEPTH AND MULTI-BLADE

SECTION 15820-DUCTWORK ACCESSORIES:

SECTION 15830-FANS:

DUCTWORK.

1. FANS SHALL BE UL LISTED AND AMCA CERTIFIED. ELECTRICAL DEVICES SHALL CONFORM TO NEMA STANDARDS. WIRING SHALL CONFORM TO NEC.

WALL CAPS (EXTERIOR WALL): PROVIDE WALL CAPS FOR ALL DRYER AND

BATHROOM EXHAUST DUCTS AND OUTSIDE AIR DUCTS AT EXTERIOR WALL

DRYER AND EXHAUST DUCTS WITH BUILT IN DAMPER. BASED ON SEIHO

CEILING MOUNTED RADIATION DAMPER: INSULATED, 2-BLADE, 22 GA

GALVANIZED STEEL FRAME AND BLADES, SPRING OPERATED WITH 212°F

DAMPERS PER SMACNA FIGURE 2-13, FIGURE A ON LARGER RECTANGULAR

ON A CONTINUOUS SHAFT. EQUIP WITH LOCKING QUADRANT AND END

BEARINGS. PROVIDE HANDLE EXTENSION ON EXTERNALLY INSULATED

DUCTS. ROUND DUCT VOLUME DAMPERS SHALL BE SINGLE BLADE MOUNTED

MODEL SFZC. COLOR TO BE DETERMINED BY THE ARCHITECT.

PENETRATIONS. WALL CAPS SHALL BE ALUMINUM CONSTRUCTION. PROVIDE

- MOTORS SHALL BE NON-OVERLOADING, HIGH EFFICIENCY TYPE. MOTORS DESIGNED FOR VARIABLE SPEED SHALL BE DESIGNED AND RATED FOR USE WITH VFDs.
- CEILING MOUNTED (WITHIN RATED DROPPED CEILING): FORWARD CURVED INJECTION MOLDED POLYPROPYLENE FAN WHEEL. 22 GAUGE GALVANIZED STEEL INLET BOX, ISOLATED MOUNTED DIRECT MOTOR, MOUNTED TO ONE PIECE GALVANIZED STAMPED STEEL INTEGRAL MOTOR MOUNT/INLET, BACKDRAFT DAMPER, AND WHITE HIGH IMPACT STYRENE INJECTED MOLDED GRILLE. PROVIDE WITH INTEGRAL RADIATION DAMPER. BASIS OF DESIGN: COOK MODEL GC.

SECTION 15850-GRILLES, REGISTERS, AND DIFFUSERS:

- PROVIDE AS INDICATED IN THE GRD SCHEDULE. PROVIDE ALL GRDs WITH INTEGRAL VOLUME DAMPERS OR WITH VOLUME EXTRACTORS AS INDICATED. COLOR OF THE GRILLES TO BE DETERMINED BY ARCHITECT. PERFORMANCE OF THE GRILLES IS A MAXIMUM OF 700 FPM OR A NC LEVEL OF 30 OR LESS FOR SIZE AND CFM INDICATED.
- INSTALL WITH AIR TIGHT CONNECTION TO DUCTWORK. COORDINATE MOUNTING CONDITIONS WITH ARCHITECTURAL.
- CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENTS.

SECTION 15890-METAL DUCTWORK:

- UNLESS OTHERWISE NOTED (REFER TO PARAGRAPH 2), RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED OF HOT ROLLED STEEL CONTINUOUSLY ANNEALED AND HOT DIPPED GALVANIZED SHEET OR COIL, MINIMUM G-90, 0.90 OZ/SF COATING SUITABLE FOR FORMING WITHOUT FLAKING OR PEELING, SUITABLE FOR WELDING OR SOLDERING. ZINC COATING SHALL NOT BE IMPAIRED FROM DOUBLE SEAMING, BREAKING OR ROLL FORMING. 14 GA. AND LIGHTER CONFORMING TO ASTM A 527; 13 GA AND HEAVIER CONFORMING TO ASTM A 526.
- DUCT BOARD IS ACCEPTABLE WITH WRITTEN APPROVAL BY OWNER DUCT BOARD, IF ALLOWED, SHALL HAVE A MINIMUM R-VALUE OF 6 AND BE COMPOSED OF RESIN BONDED GLASS FIBERS, DUCT BOARD SHALL HAVE AN FSK VAPOR JACKET AND COMPLY WITH ASTM C1290.

DRYER VENT SHALL BE 26 GA. MINIMUM.

- 4. UNLESS OTHERWISE NOTED, ROUND DUCTWORK SHALL BE CONSTRUCTED OF G-90 GALVANIZED STEEL WITH THE FOLLOWING MINIMUM GAUGES: <15" DIA. = 24 GAUGE, 15"-26" DIA. = 22 GAUGE.
- INSULATED ROUND FLEXIBLE DUCT (MAX LENGTH 8') IS ALLOWED FOR BRANCH CONNECTIONS TO DIFFUSERS AND GRILLES ABOVE LAY-IN CEILINGS. INSULATED ROUND FLEXIBLE DUCTWORK SHALL BE UL181, CLASS 1 AND SUITABLE FOR LOW PRESSURE APPLICATIONS OF NOT LESS THAN 3" W.C. CONNECT TO METAL DUCT WITH STAINLESS STEEL DRAW BANDS.
- ALL DUCT SIZES SHOWN ON PLANS ARE INSIDE CLEAR (AIRFLOW) DIMENSIONS. NO ALLOWANCE HAS BEEN MADE FOR DUCT LINER OR DOUBLE WALL DUCTWORK WHERE REQUIRED.
- 7. FABRICATE AND SUPPORT METAL DUCT IN ACCORDANCE WITH SMACNA HVAC
- DUCT CONSTRUCTION STANDARDS.
- 8. PROVIDE ALL HANGERS AND SUPPORTS AS REQUIRED.
- 9. PROVIDE DOUBLE WALL TURNING VANES IN ALL LOW PRESSURE SUPPLY, RETURN, AND EXHAUST DUCTS. TURNING VANES ARE NOT REQUIRED WHERE RADIUS ELBOW FITTINGS WITH R=1.5 OR GREATER ARE USED.
- 10. SEAL DUCT JOINTS AIR TIGHT. PROVIDE AIR TIGHT SEAL WITH VOLUME DAMPERS AT ALL TAPS OFF MAIN DUCT TO DIFFUSERS.

11. SCHEDULE:

SOUIL DOLL.			
<u>SYSTEM</u>	<u>SECTION</u>	PRESSURE CLASS	SEAL CLASS
SUPPLY	NOTE 1	2"	Α
RETURN-RELIEF	ALL	2"	С
GEN. EXHAUST	ALL	2"	С
DRYER VENT	ALL	2"	SPOT WELD

1. REFER TO PARAGRAPH 2 WHERE DUCT BOARD IS ALLOWED.

MECHANICAL GENERAL NOTES:

PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, AND OTHER SERVICES NECESSARY TO SATISFACTORILY COMPLETE ALL MECHANICAL WORK INDICATED ON THE CONTRACT DOCUMENTS. ALL SPECIFICATIONS, NOTES, OR SYMBOLS MAY NOT BE APPLICABLE FOR THIS TENANT. CONTRACTOR SHALL CAREFULLY REVIEW PLANS AND DETAILS FOR ACCURATE EXTENT OF WORK REQUIRED.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROCUREMENT OF ALL APPLICABLE BUILDING PERMITS, INSPECTIONS, AND OTHER REQUIRED ADMINISTRATIVE DUTIES TO COMPLETE ALL INDICATED WORK REQUIREMENTS.

DESIGN CONSIDERATIONS:

OUTDOOR TEMPERATURE: SUMMER: 95°F DB, 75°F WB WINTER: 17°F DB SUMMER: 75°F DB, 45-60% R.H. INDOOR TEMPERATURE

WINTER: 70°F DB *HUMIDITY WILL VARY WITH OUTDOOR CONDITION

VENTILATION AND DISTRIBUTION:

MECHANICAL VENTILATION WILL BE PROVIDED PER IMC SECTION 403 AND TABLE 403.3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH IBC 2015, IMC 2015 AND ANY ADDITIONAL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

ALL MATERIALS WITH ELECTRICAL REQUIREMENTS SHALL BE UL LISTED FOR THE INTENDED

PHASING AND WORK PERFORMANCE:

THE CONTRACTOR SHALL COORDINATE ALL PHASING AND STAGING/STORAGE OF MATERIALS AND WORK WITH THE GENERAL CONTRACTOR. A WRITTEN GUARANTEE FOR THE PERIOD OF AT LEAST ONE YEAR AFTER SUBSTANTIAL COMPLETION SHALL BE TURNED OVER TO THE OWNER ON ALL MATERIALS AND WORK DONE BY THE CONTRACTOR. ALL MATERIALS INSTALLED SHALL ALSO BE PROVIDED WITH THE MAXIMUM AVAILABLE GUARANTEE FROM THE MANUFACTURER.

CLEAN UP AND PROTECTION OF AREA:

THE CONTRACTOR SHALL CLAIM ALL RESPONSIBILITY FOR PROTECTION OF THE AREAS INVOLVED. INCLUDING ANY AREAS INVOLVED IN THE TRANSPORTATION AND STORAGE OF EQUIPMENT DURING CONSTRUCTION. THE CONTRACTOR SHALL CONSISTENTLY MAINTAIN A WORK ENVIRONMENT THAT IS CLEAN AND PROTECTED FROM UNAUTHORIZED PERSONS AND DAMAGE DUE TO CONSTRUCTION. AFTER COMPLETION OF ALL CONSTRUCTION, THE CONTRACTOR SHALL CLEAN ALL AREAS INVOLVED IN THE CONSTRUCTION PROCESS, TO THE OWNER'S APPROVAL. ALL REFUSE INVOLVED DUE TO CONSTRUCTION SHALL BE PROPERLY AND PROMPTLY DISPOSED OF AT AN ON SITE LOCATION.

CONSTRUCTION TYPE: R-2 USE GROUP: OCCUPANCY:

- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO SHOW THE GENERAL ROUTING, LOCATION, AND SIZE OF EQUIPMENT, PIPING AND/OR DUCTWORK, THE CONTRACTOR SHALL MAKE ALLOWANCES FOR ALL MATERIALS AND LABOR NECESSARY TO MAKE FINAL CONNECTIONS. NOT ALL NECESSARY OFFSETS OR FITTINGS ARE SHOWN. BUT SHALL BE PROVIDED WHERE REQUIRED. THE CONTRACTOR SHALL PROVIDE ALL ACCESSORIES, SUPPORTS, AND HANGERS TO ALLOW FOR COMPLETE AND FUNCTIONAL SYSTEMS, ALL WORK SHALL MEET OR EXCEED PUBLISHED OR ACCEPTED STANDARDS OF QUALITY WORKMANSHIP. AND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS AND/OR INSTALLATION INSTRUCTIONS. THE INTENT OF THESE CONTRACT
- INSTALL ALL DEVICES IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.

DOCUMENTS IS TO PROVIDE COMPLETE FUNCTIONING SYSTEMS.

- COORDINATE THE PROPER GRILLE STYLE AND FRAME STYLE WITH THE FINAL APPROVED CEILING CONSTRUCTION AND INSTALL GRILLES, REGISTERS, AND DIFFUSERS.
- DUE TO THE SMALL SCALE OF THE DRAWINGS, THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY TO COORDINATE THE AIR OUTLET AND INLET LOCATIONS WITH THE CEILING PLANS. LIGHTING PLANS. SECTIONS AND/OR DETAILS.
- PROVIDE SUBMITTALS ON ALL EQUIPMENT AND CONTROLS FOR APPROVAL.
- PROVIDE OWNER TRAINING ON ALL EQUIPMENT.
- PROVIDE START-UP OF ALL EQUIPMENT.
- WELDING, CUTTING, OR BURNING: THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM OF 72 HOURS ADVANCE NOTICE PRIOR TO PERFORMING ANY WELDING. CUTTING. OR BURNING WITHIN THE BUILDING. NO WELDING, CUTTING, OR BURNING SHALL OCCUR WITHOUT GENERAL CONTRACTOR APPROVAL. WHERE WELDING, CUTTING, OR BURNING ARE NECESSARY, NON-COMBUSTIBLE SHIELDS SHALL BE USED AND SUITABLE FIRE EXTINGUISHING EQUIPMENT SHALL BE MAINTAINED NEARBY.
- FABRICATION OF STEEL SUPPORTS: FABRICATE FROM STEEL ANGLES, CHANNELS OR PLATES IN ACCORDANCE WITH ASTM.
- THERMOSTAT LOCATIONS ARE GENERAL. THERMOSTATS SHALL BE LOCATED ADJACENT TO DOORS OR NEAR RETURN GRILLES. COORDINATE FINAL THERMOSTAT LOCATIONS WITH ARCHITECT AND OR OWNER.

MECHANICAL LEGEND <u>SYMBOL</u> **DESCRIPTION** <u>SYMBOL</u> <u>DESCRIPTION</u> DUCT SIZE (FIRST FIGURE IS SIDEWAYS RETURN OF SIDE SHOWN DIMENSION) SIDEWAYS SUPPLY FLEXIBLE CONNECTION DIFFUSER TO BE PROVIDED WITH RADIATION DAMPER 20x20 12x12 TRANSITION DIFFUSER TAG WITH AIRFLOW FIRE DAMPER W/ DOOR UNDERCUT ACCESS DOOR THERMOSTAT (48"AFF) AIR TIGHT CONNECTION SMOKE DETECTOR OFF DUCT MAIN OCCUPANCY SENSOR 4-WAY THROW SUPPLY ACCESS DOOR IN SIDE DIFFUSER WITH FLEX OF WALL OR DUCT DUCT CONNECTION EQUIPMENT NUMBER RETURN DIFFUSER 1-HOUR RATED WALL _----2-HOUR RATED WALL HEAT PUMP WITH COIL AND MAINTENANCE CLEARANCE MATCH LINE _ . . _ . . _ . . _ BOUNDARY LINE: REFER TO MANUFACTURER'S MANUAL. ZDZONE DAMPER MOTORIZED DAMPER; M USED FOR BYPASS AIR

ME	CHANICAL ABBR	EVIA	TIONS
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Α	AMPERES	GA	GAUGE
AD	ACCESS DOOR	HP	HORSEPOWER
AHU	AIR HANLDING UNIT	HZ	FREQUENCY
BTU	BRITISH THERMAL UNIT	KW	KILOWATT
BTUH	BRITISH THERMAL UNIT PER HOUR	LAT	LEAVING AIR TEMPERATURE
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
DB	DRYBULB	NTS	NOT TO SCALE
DE	DRYER EXHAUST	OA	OUT SIDE AIR
DN	DOWN	PD	PRESSURE DROP
DWG	DRAWING	PH	PHASE
DX	DIRECT EXPANSION	PSI	POUNDS PER SQUARE INCH
EA	EXHAUST AIR	PVC	POLYVINYL CHLORIDE
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EF	EXHAUST FAN	RD	RADIATION DAMPER
ESP	EXTERNAL STATIC PRESSURE	RL	REFRIGERANT LIQUID
°F	DEGREE FAHRENHEIT	RPM	REVOLUTIONS PER MINUTE
FD	FIRE DAMPER	RS	REFRIGERANT SUCTION
FLA	FULL LOAD AMPERES	SA	SUPPLYAIR
FPM	FEET PER MINUTE	TYP	TYPICAL
FT	FEET	WB	WET BULB
J		WH	WALL HEATER

MECHANICAL DRAWING LIST

M1.001 - MECHANICAL NOTES, SPECIFICATIONS, LEGEND, DETAILS AND ABBREVIATIONS

M1.002 - MECHANICAL SCHEDULES AND DETAILS

M1.100 - MECHANICAL BASEMENT FLOOR PLAN M1.101 - MECHANICAL FIRST FLOOR PLAN

M1.102 - MECHANICAL SECOND FLOOR PLAN M1.103 - MECHANICAL THIRD FLOOR PLAN

M1.900 - MECHANICAL ENLARGED PLANS M1.901 - MECHANICAL ENLARGED PLANS

<u>AHU NOTES:</u>

PLENUMS.

ACTIVATES SWITCH.

1. MOUNT INDOOR AIR HANDLING UNIT IN

NEEDED TO SUPPORT UNIT.

DRAIN IN MECHANICAL CLOSET.

4. PROVIDED LINED RETURN AND SUPPLY

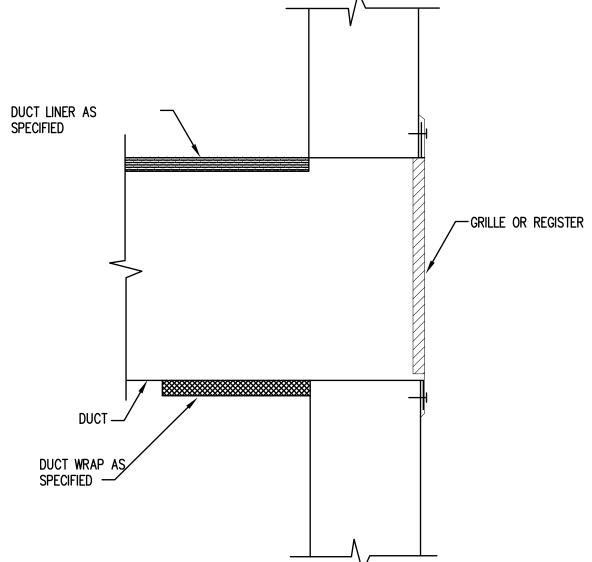
VERTICAL POSITION. PROVIDE FRAME AS

PROVIDE RETURN AIR PLENUM WITH FILTER.

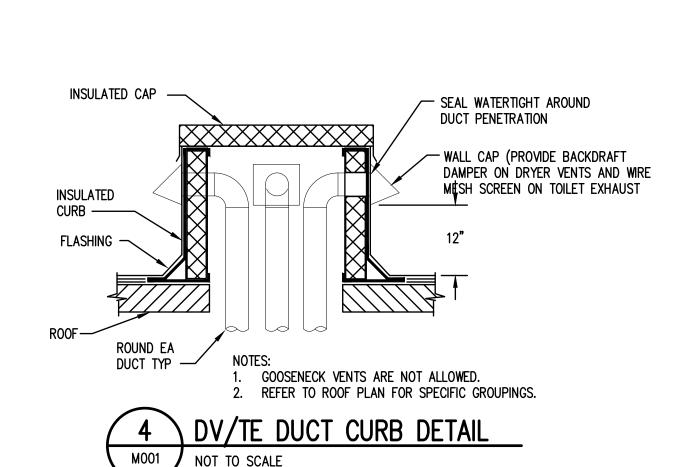
PIPE CONDENSATE DRAIN DOWN TO FLOOR

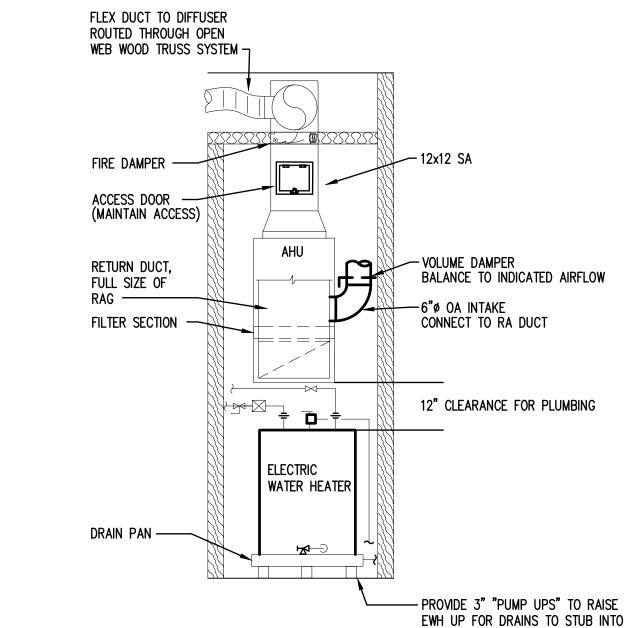
PROVIDE FLOAT SWITCH IN AHU DRAIN PAN OVERFLOW CONNECTION. FLOAT SWITCH TO

SHUT DOWN UNIT IF CONDENSATE LEVEL

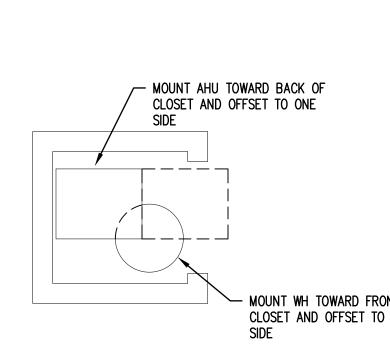




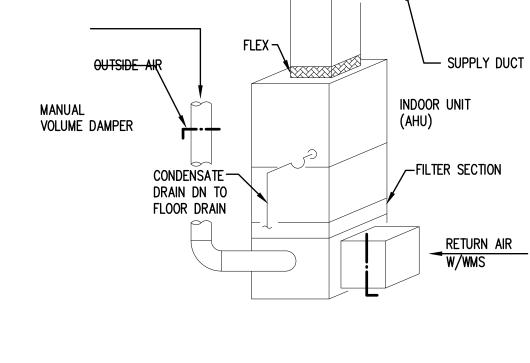




POSITION. PROVIDE FRAME AS NEEDED TO SUPPORT UNIT. PIPE CONDENSATE DRAIN DOWN TO OPEN SITE DRAIN IN MECHANICAL PROVIDE LINED SUPPLY PLENUM. PROVIDE FLOAT SWITCH IN AHU DRAIN PAN OVERFLOW CONNECTION. FLOAT SWITCH TO SHUT DOWN UNIT IF CONDENSATE LEVEL ACTIVATES SWITCH. ALLOW SUFFICIENT SPACE FOR MAINTENANCE, INCLUDING FILTER REPLACEMENT. BALANCE TO INDICATED AIRFLOW CONNECT TO RA DUCT SIDE



MOUNT INDOOR AHU IN VERTICAL



VERTICALLY MOUNTED AHU DETAIL

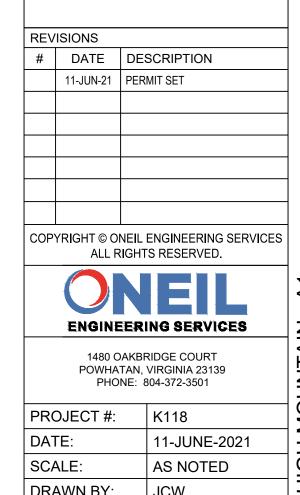


· MOUNT WH TOWARD FRONT OF CLOSET AND OFFSET TO OTHER

M001 / NOT TO SCALE

-SUPPLY PLENUM

INDOOR AHU MOUNTED ABOVE WATER HEATER CLOSET LAYOUT M001 / NOT TO SCALE



 ∞

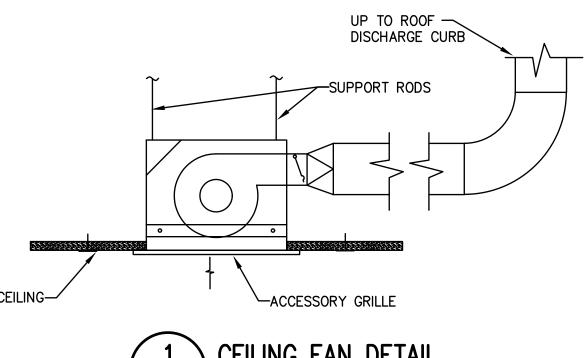
 \simeq

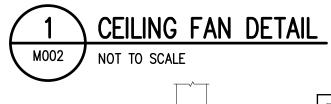
DRAWN BY: APPROVED BY: JCW MECHANICAL NOTES, SPECIFICATIONS **ABBREVIATIONS** LEGEND, AND DETAILS.

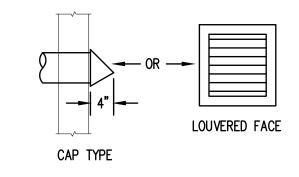
ELECTRIC UNIT HEATER SCHEDULE: AIR DATA ELECTRIC DATA SELECTION BASED ON UNIT NO. REMARKS SERVING CAPACITY **TYPE** EAT CFM FLA VOLT KW MANUFACTURER MODEL (BTUH) MECHANICAL ROOMS AND WALL MTD 6142 100 1.8 15 120 **BERKO** FRA1812 **STAIRS**

FAN	SCHEDULE:											
LINUTALO	O E DVIVIO	7/05	0514	BLADE	TOTAL	FAN	МО	TOR DATA	A	SELECTION I	BASED ON	DEM DIVO
UNIT NO.	SERVING	TYPE	CFM	TYPE	STATIC H ₂ O	RPM	HP	VOLTS	РН	MANUFACTURER	MODEL	REMARKS
EF-1	RESIDENTIAL BATHROOM	CEILING MTD	50	FC	0.35	750	27W	120	1	COOK	GC-128	CONTROLL BY SWITCH

		TYPE		8	SERVICI	Ē		MOUNTI	NG DATA					COI	NSTRUC	CTION D	ATA						SELECTION BA	SED ON
UNIT NO.	G	R	D	SA	RA	EA	CEILING	DUCT	FLOOR	WALL	SHAPE	MATERIAL	COLOR		ACCES	SORIES			Р	ATTER	N		MANUFACTURER	MODEL
	G	Z	D	SA	KA	EA	CEILING	DOCI	FLOOR	VVALL	SHAPE	MATERIAL	COLOR	VD	RC	VE	Р	1-W	2-W	3-W	4-W	E/R	WANDPACTORER	MODEL
S-1		Х		Х			Х				RECT	ALUMINUM	TBD	Х					Х				USAIRE	102M
R-1	Х				Х					Х	RECT	STEEL	TBD	Х								Χ	KRUEGER	S80
E-1	Х					Х				Х	RECT	STEEL	TBD									Х	KRUEGER	S80









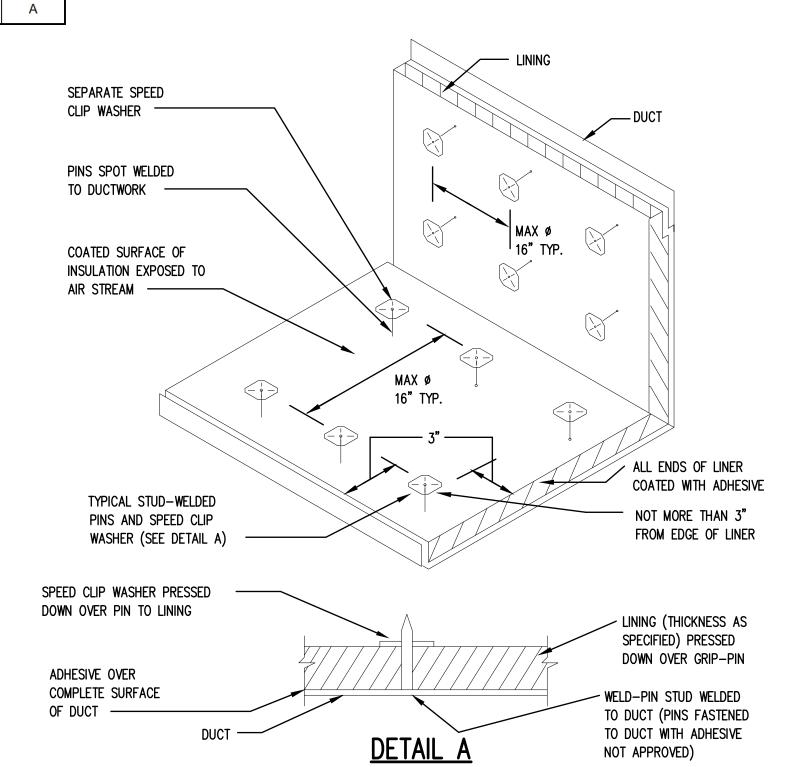
SPLIT S	YSTEM C	UTDOC	R UN	IT SC	HEDL	JLE (14	SEER)	- C	ONVE	NTIO	NAL						
				unit data				FAN	DATA			COMPRI	ESSOR(S))	UI	NIT ELECT	RIC D
UNIT TAG	SERVING	CAPACITY	COND.	S. SUCT.	SEER	REFRIG.	NO.	HP	RPM	TOTAL	NO.	STEPS	LRA	RLA	MCA	MOCP	VOL

OI LII O	I O I E IVI O	, o i b o c		11 00		, L L (1 +	OLLIV)	- 0		.14 1 10													
			l	JNIT DATA				FAN [DATA			COMPR	ESSOR(S)		U	NIT ELEC	TRIC DATA	1	SELECTION	N BASED ON	PAIF	RED WITH	
UNIT TAG	SERVING	CAPACITY MBH	COND. EAT °F	S. SUCT. °F	SEER	REFRIG. TYPE	NO.	HP	RPM	TOTAL CFM	NO.	STEPS	LRA	RLA	MCA	МОСР	VOLT	PH	MANUF.	MODEL	MANUF.	MODEL	REMARKS
HP-A	AHU-A	18.0	95	45	14.0	R-410A	1	1/12	1100	-	1	1	48	9	11.8	20	208	1	CARRIER	CH14NB18-A	CARRIER	FMA4P1800AL	
HP-B	AHU-B	24.0	95	45	14.0	R-410A	1	1/10	1100	-	1	1	62.9	10.9	14.2	25	208	1	CARRIER	CH14NB24-A	CARRIER	FMA4P2400AL	

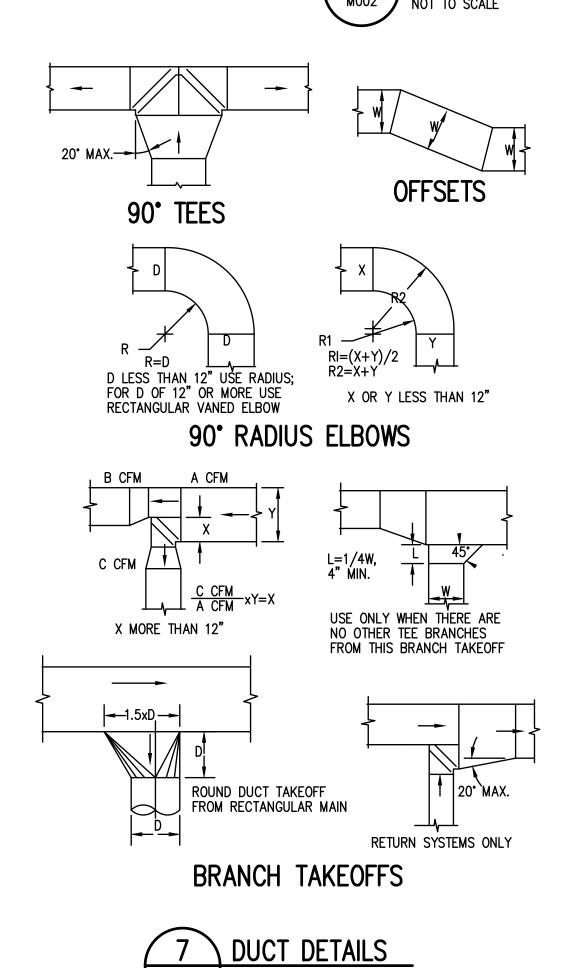
SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE - CONVENTIONAL

OI LIT OI	OTEM AIR HAIR	LING	OIII	<u> </u>		<u> </u>	OONVE		~ L																
			SUPPLY	FAN DA	TA			COOLING	DATA			F	HEATING DAT	A	ELEC	. HEATIN	IG COIL	DATA	UN	IIT ELEC	TRIC DA	TA	SELECTION	BASED ON	
UNIT TAG	SERVING	NOMINAL CFM RANGE	ESP Delta P IN H ₂ O	OA CFM	HP	RPM	TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH	DB °F		SEER @ARI	CAPACITY MBH	INDOOR EAT DB °F	OUTDOOR COND. DB °F	KW	VOLT	PH	NO. STEPS	VOLT	PH	MCA	MOCP	MANUFACTURER	MODEL	REMARKS
AHU-A	APARTMENT TYPE A	600	0.5	SEE UNIT SCHED	1/6	1075	18.0	13.2	80	67	14.0	12.3	70	17	5	240	1	1	208	1	23.6	25	CARRIER	FMA4P1800AL	
AHU-B	APARTMENT TYPE B	800	0.5	UNIT SCHED	1/4	1075	24	18.01	80	67	14	12.3	70	17	5	240	1	1	208	1	23.9	30	CARRIER	FMA4P2400AL	

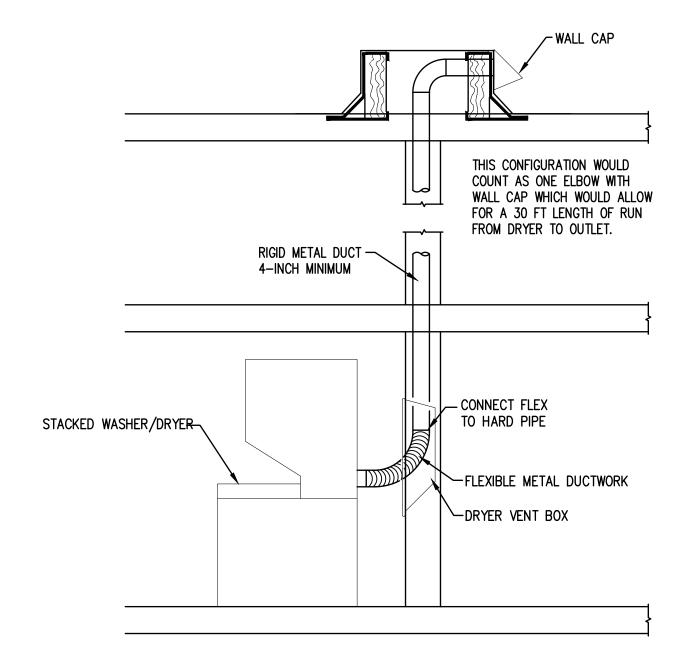
	AC AP	T UNI	Τ		AC AF	PT UNI	Т		AC AF	PT UNI	Γ		AC AF	T UNI	Т
UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYP
1001	45	Α	Α	1101	60	Α	Α	1201	60	Α	Α	1301	45	Α	Α
1002	30	В	В	1102	30	В	В	1202	30	В	В	1302	45	В	В
1003	45	А	Α	1103	30	Α	Α	1203	30	Α	Α	1303	45	Α	Α
1004	30	Α	Α	1104	45	Α	Α	1204	45	Α	Α	1304	45	Α	Α
1005	45	А	Α	1105	45	А	Α	1205	45	Α	Α	1305	45	А	Α
1006	30	А	Α	1106	30	Α	Α	1206	30	Α	Α	1306	45	Α	Α
1007	30	Α	Α	1107	30	Α	Α	1207	30	Α	Α				
				1108	45	Α	Α	1208	45	Α	Α				
				1109	45	Α	Α	1209	45	Α	Α				
				1110	30	Α	Α	1210	30	Α	Α				
				1111	30	Α	Α	1211	30	Α	Α				
				1112	60	Α	А	1212	60	А	Α				



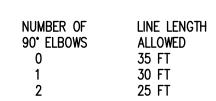




M002 NOT TO SCALE

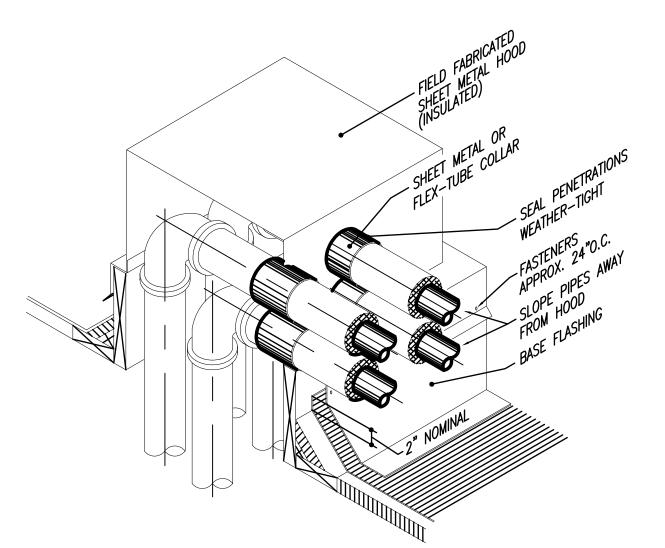


BELOW IS THE CHART ON THE MAXIMUM DRYER LENGTHS PER THE DRYER MANUFACTURER. IT IS UP TO THE HVAC CONTRACTOR TO VERIFY LINE LENGTHS PER THE INSTALLED PRODUCT AND COMPARE TO THE CHART BELOW. NOTE THAT THE LONGEST RUN IS AFFECTED BY THE TYPE OF WALL CAP USED. THE PREFERRED WALL CAP TYPE IS SHOWN UNDER WALL CAP SPECIFICATION. SMALLER OR DIFFERENT CONFIGURATIONS OF THE WALL CAP WILL AFFECT THE LINE LENGTH OF THE DRYER EXHAUST AND NEED TO BE EVALUATED PRIOR TO INSTALLATION.

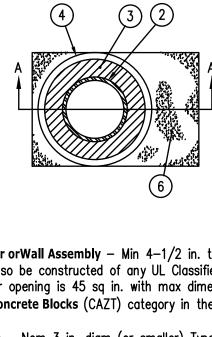


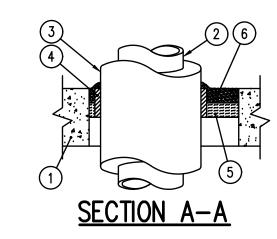
NOTE: (2) 45° ELBOWS = (1) 90° ELBOW





5 REFRIGERANT PIPING ROOF DETAIL M002 NOT TO SCALE





1. Floor orWall Assembly – Min 4–1/2 in. thick lightweight or normal weight (100–150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks* Max area of square, rectangular or circular opening is 45 sq in. with max dimension of 9 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Pipe - Nom 3 in. diam (or smaller) Type L (or heavier) copper pipe or nom 2-1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe. One or more insulated pipes may be installed with a min clearance of 1/2 in. maintained between insulated pipes and with a min clearance of 1/4 in. maintained between insulated pipe and sides of through opening. Pipes to be rigidly supported on both sides of floor or wall assembly.

3. Pipe Insulation - Plastics# - Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing with skin. When nom 2-1/2 or 3 in. diam insulated steel or copper pipe is used, T Rating is 1/2 hr. When max 2 in. diam insulated steel or copper pipe is used, T rating is See Plastics# (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

4. Fill, Void or Cavity Materials* - Wrap Strip - Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. wide strips. One nom 2 in. wide strip tightly-wrapped around pipe insulation (Item 3) with the foil side exposed and slid into through opening such that the top edge is flush with top surface of floor. When a single insulated pipe is installed in a circular through opening and when the max annular space between the insulated pipe and the sides of the through opening is 3/8 in., the wrap strip layer may be secured in place with pressure—sensitive tape. In all other situations, the wrap strip layer shall be secured in place with min No. 18 gauge galv steel tie wire. In wall assemblies, the wrap strip layer is to be installed on the insulated pipe in the same manner used for floor assemblies but shall be installed symmetrically on both sides of the wall.

3M COMPANY - Type FS-195+

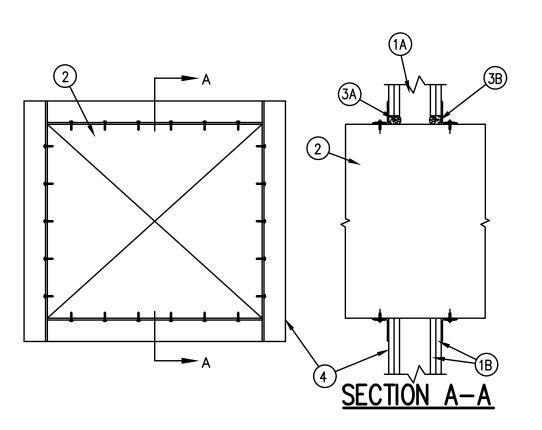
5. Packing Material — Min 1 in. thick mineral wool batt insulation firmly packed into opening with its top surface recessed min 1 in. from top surface of the floor. In wall assemblies, packing material to be firmly packed into opening on both sides of wall and recessed min 1 in. from wall surface. When a single insulated pipe (with wrap strip layer) is installed in a circular through opening and when the max annular space between the wrap strip layer and the sides of the through opening is 1/8 in., no forming material

6. Fill, Void or Cavity Materials* — Caulk or Sealant — Applied to fill through opening to a min depth of 1 in. In floor assemblies, fill material to be installed flush with top surface of floor. In wall assemblies, fill material to be installed flush with wall surface on both sides of wall.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant. (The W Rating applies only when FB-3000 WT sealant is used.)

*Bearing the UL Classification Marking

\ PIPE THROUGH CONCRETE FIRESTOP DETAIL



1. Wall Assembly — The 1 and 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing shall consist of steel channel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional 3-1/2 in. (89 mm) wide steel studs shall be used to completely frame opening. B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max size of opening to be 1216 sq in. (188.5 cm2) with a max dimension of 38 in. (965 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant – Nom 36 by 30 in. (914 by 762 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm) (point contact) to max 2 in. (51 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of floor or wall assembly.

3. Firestop System — The details of the firestop system shall be as follows:

A. Packing Material (Optional) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction—fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

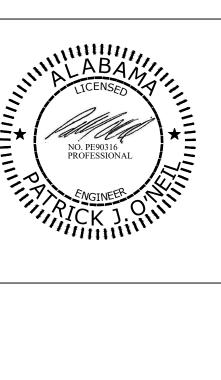
B. Fill, Void or Cavity Material* - Caulk or Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At the point contact location between duct and wallboard, a min 1/4 in. (6 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant

C. Retaining Angles — Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap wall surfaces of a min of 1 in. (25 mm). Angles attached to duct on both sides of wall with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC.

*Bearing the UL Classification Marking

8 DUCT THROUGH GYPSUM FIRESTOP DETAIL M002 NOT TO SCALE



581 FS H 30 TERR

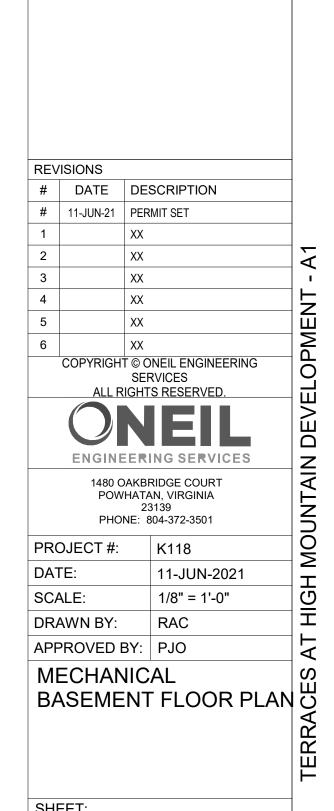
REVISIONS # DATE DESCRIPTION 11-JUN-21 PERMIT SET COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. **ENGINEERING SERVICES** 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118

11-JUNE-2021 SCALE: AS NOTED DRAWN BY: APPROVED BY: JCW MECHANICAL

SCHEDULES AND DETAILS.



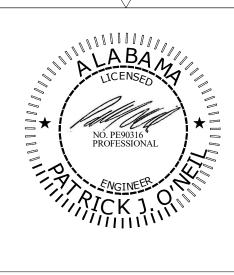
TERRACES AT HIGH MOUNTAIN - A1 4130 HIGH MOUNTAIN ROAD NE HUNTSVILLE, AL 35811



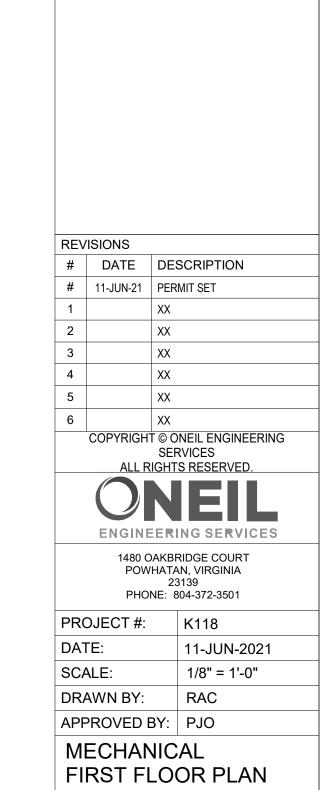
M1.100

100 CFM RISER / BACKFLOW ♦ 125 CFM - 122---12x6,S-1 - __/ COPY UNIT 1002 ELEC/TELECOM 250 CFM COPY UNIT 1001 4" Ø DRYER EXHAUST TO RUN SIDEWALL. REFER TO ARCHITECTURALS FOR EXACT LOCATIONS OF WALL CAPS. 150 CFM 004 003 4" Ø BATHROOM EXHAUST TO RUN SIDEWALL. REFER TO ARCHITECTURALS FOR EXACT LOCATIONS OF WALL CAPS. ARCHITECTURALS FOR EXACT LOCATIONS OF WALL CAPS. 6" Ø OA INTAKE TO RUN SIDEWALL. REFER TO ARCHITECTURALS FOR EXACT LOCATIONS OF WALL CAPS. 005 AHU-1007 _RETURN GRILLE TO BE PLACE ABOVE MECHANICAL CLOSET DOOR. UNIT WITH 600 CFM GRILLE SIZE WILL BE18x10 R-3, AND 24x10 R-3 FOR UNITS WITH 800CFM. GRILLE TO BE PLACED ABOVE LAUNDRY ROOM DOOR OR HIGH ON WALL IN LOCATION NOTED. GRILLE TO BE _SAME SIZE AS THE RETURN GRILLE FOR THE UNIT.____ | ___ __ _ __ _ _ _ __ __ __ _

1 MECHANICAL BASEMENT FLOOR PLAN 1/8" = 1'-0"



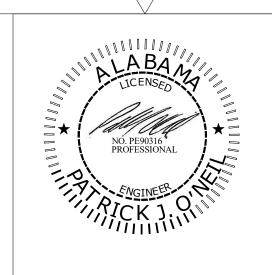
TERRACES AT HIGH MOUNTAIN - A1 4130 HIGH MOUNTAIN ROAD NE HUNTSVILLE, AL 35811



M1.101



MECHANICAL FIRST FLOOR PLAN
1/8" = 1'-0"



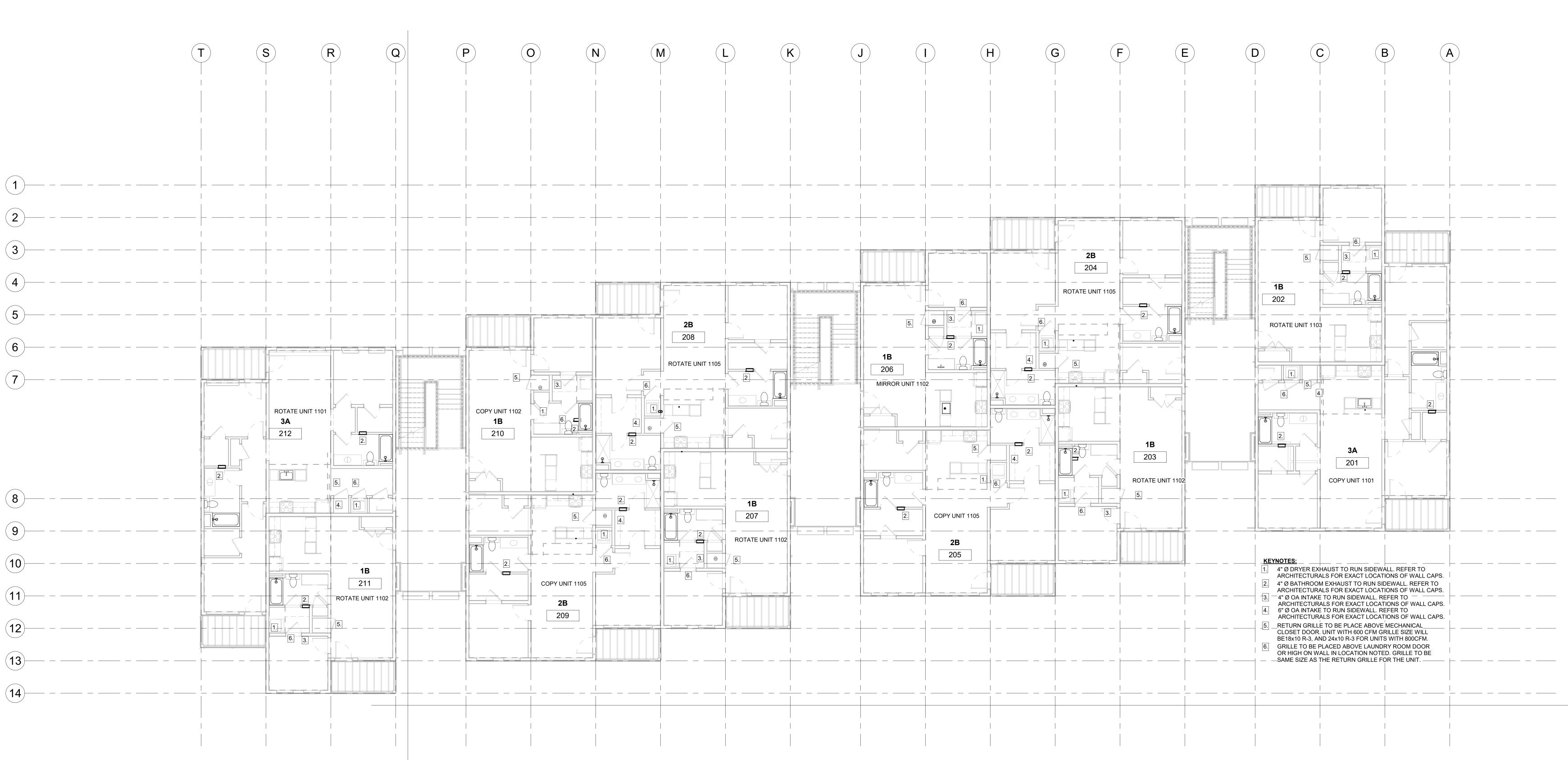
REVISIONS # DATE DESCRIPTION # 11-JUN-21 PERMIT SET XX XX XX COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED.

ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501

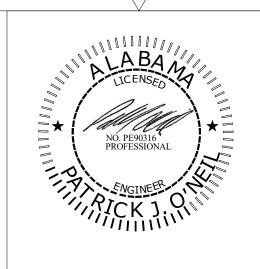
PROJECT #: K118 11-JUN-2021 1/8" = 1'-0"

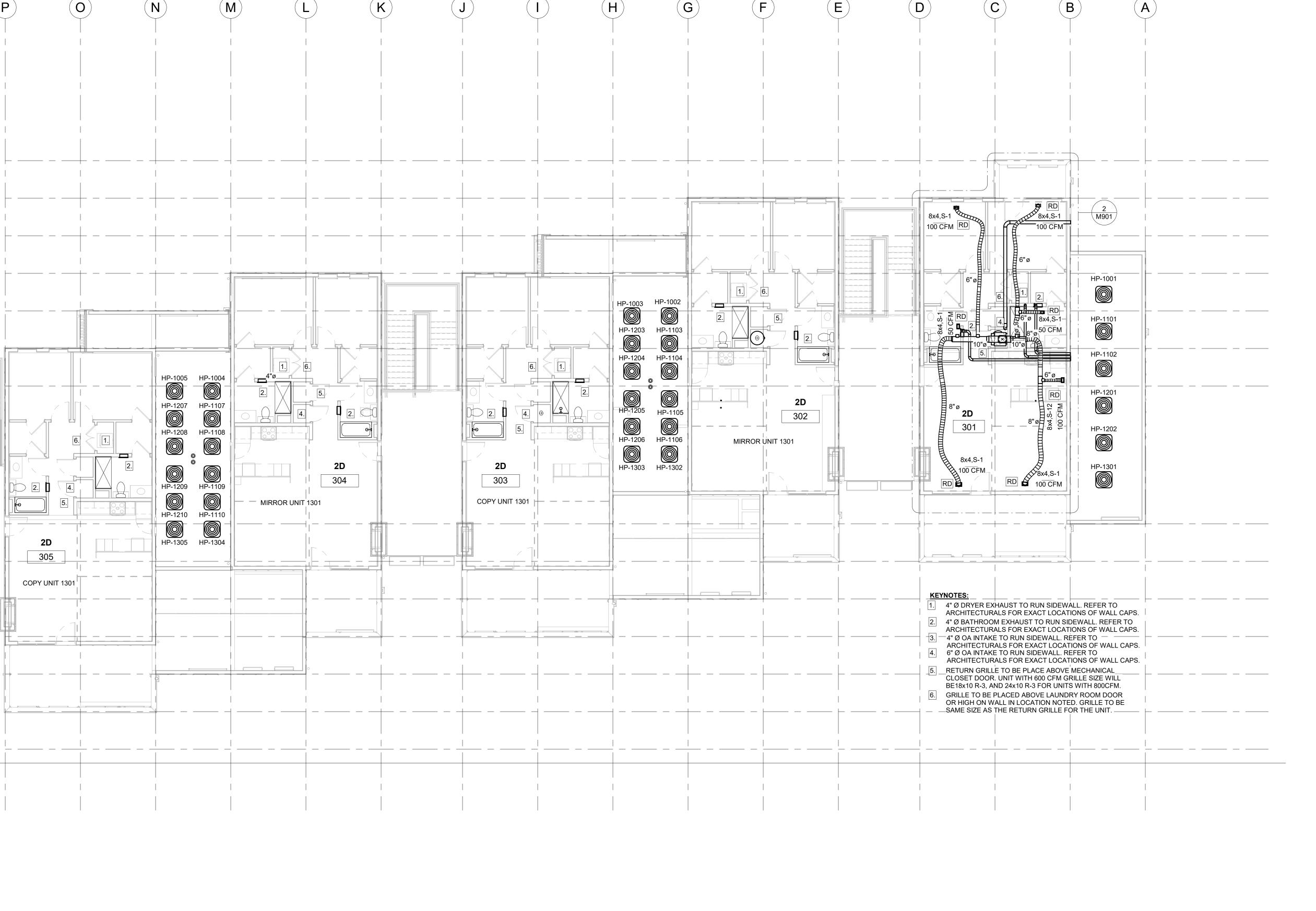
SCALE: DRAWN BY: APPROVED BY: PJO MECHANICAL SECOND FLOOR PLAN

M1.102



1/8" = 1'-0"





1 MECHANICAL THIRD FLOOR PLAN 1/8" = 1'-0"

HP-1006

HP-1007

HP-1111

HP-1112

HP-1211

HP-1212

2D

306

MIRROR UNIT 1301

COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118 11-JUN-2021 1/8" = 1'-0" DRAWN BY: APPROVED BY: PJO MECHANICAL THIRD FLOOR PLAN

REVISIONS

SCALE:

DATE DESCRIPTION

11-JUN-21 PERMIT SET

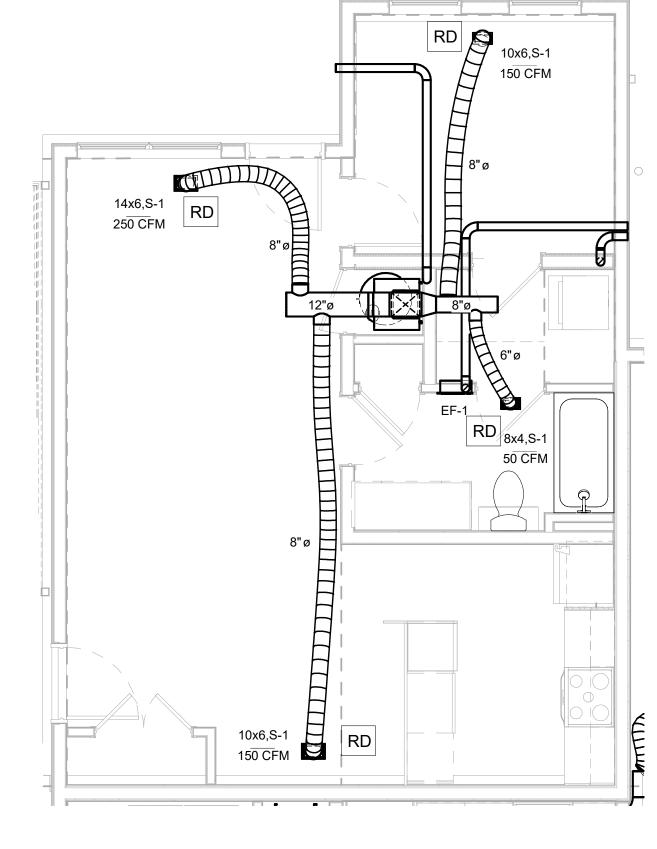
REVISIONS
DATE DESCRIPTION # 11-JUN-21 PERMIT SET
1 XX XX 6 XX

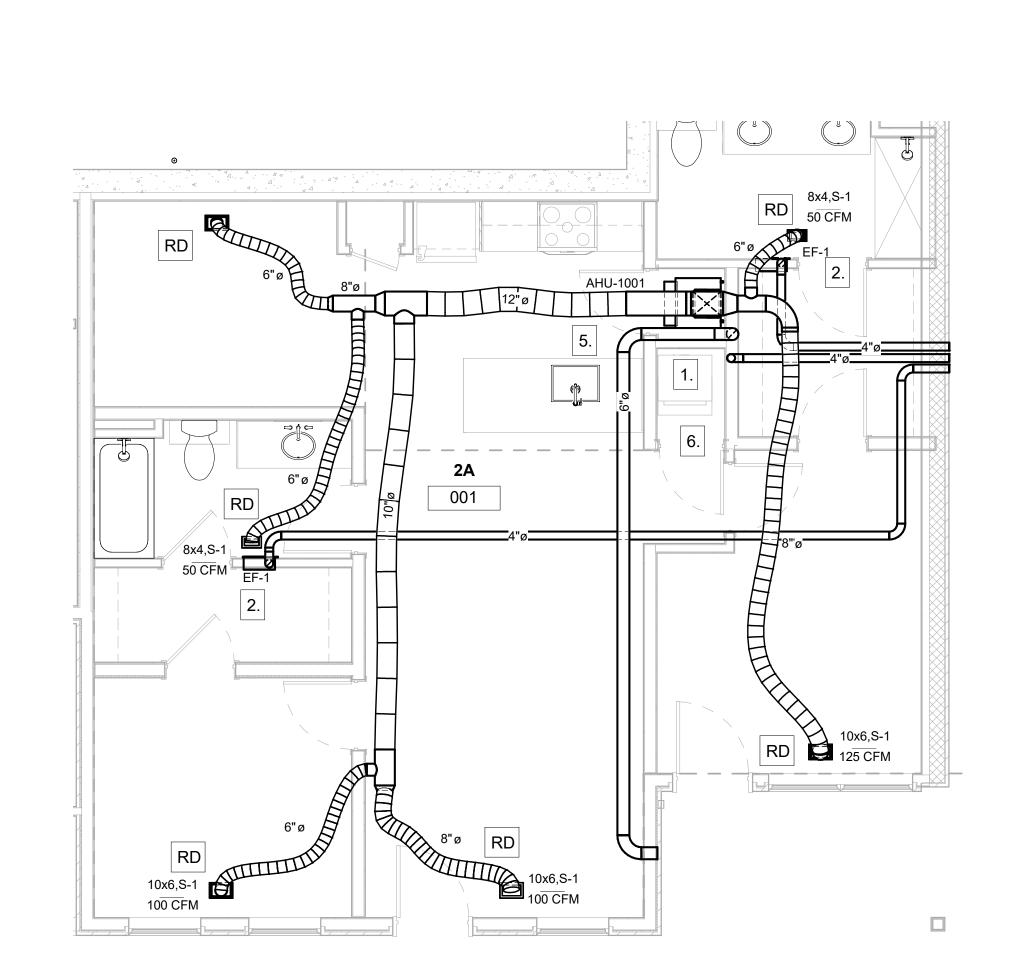
COPYRIGHT © ONEIL ENGINEERING
SERVICES
ALL RIGHTS RESERVED. ONELL ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118 11-JUN-2021 1/8" = 1'-0" SCALE: RAC DRAWN BY:

M1.900

APPROVED BY: PJO MECHANICAL ENLARGED PLANS

5 MECHANICAL TYPICAL UNIT TYPE 2B 1/4" = 1'-0"



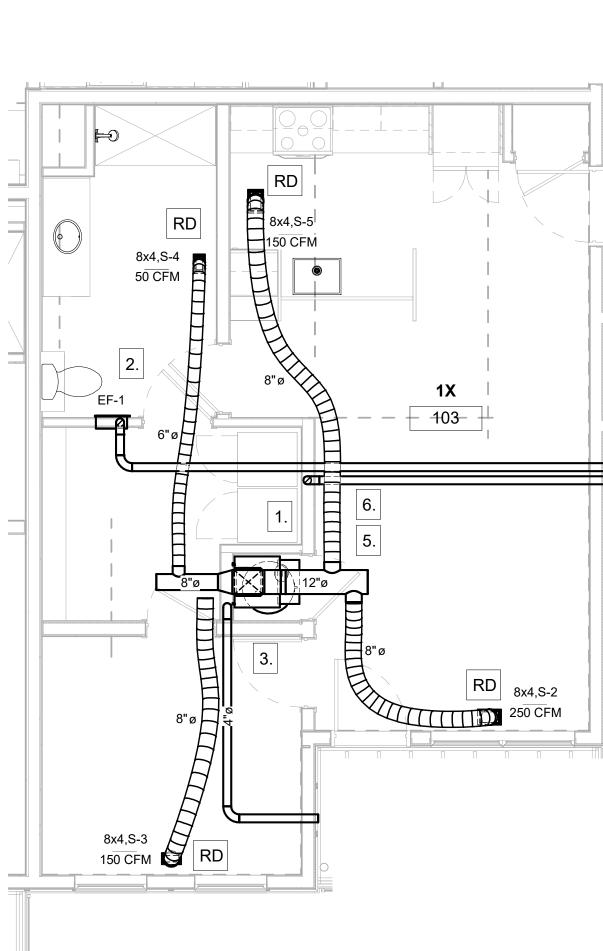


1 MECHANICAL TYPICAL UNIT TYPE 1A 1/4" = 1'-0"

006

14x6,S-1

A A A A A



2 MECHANICAL TYPICAL UNIT TYPE 1X 1/4" = 1'-0"

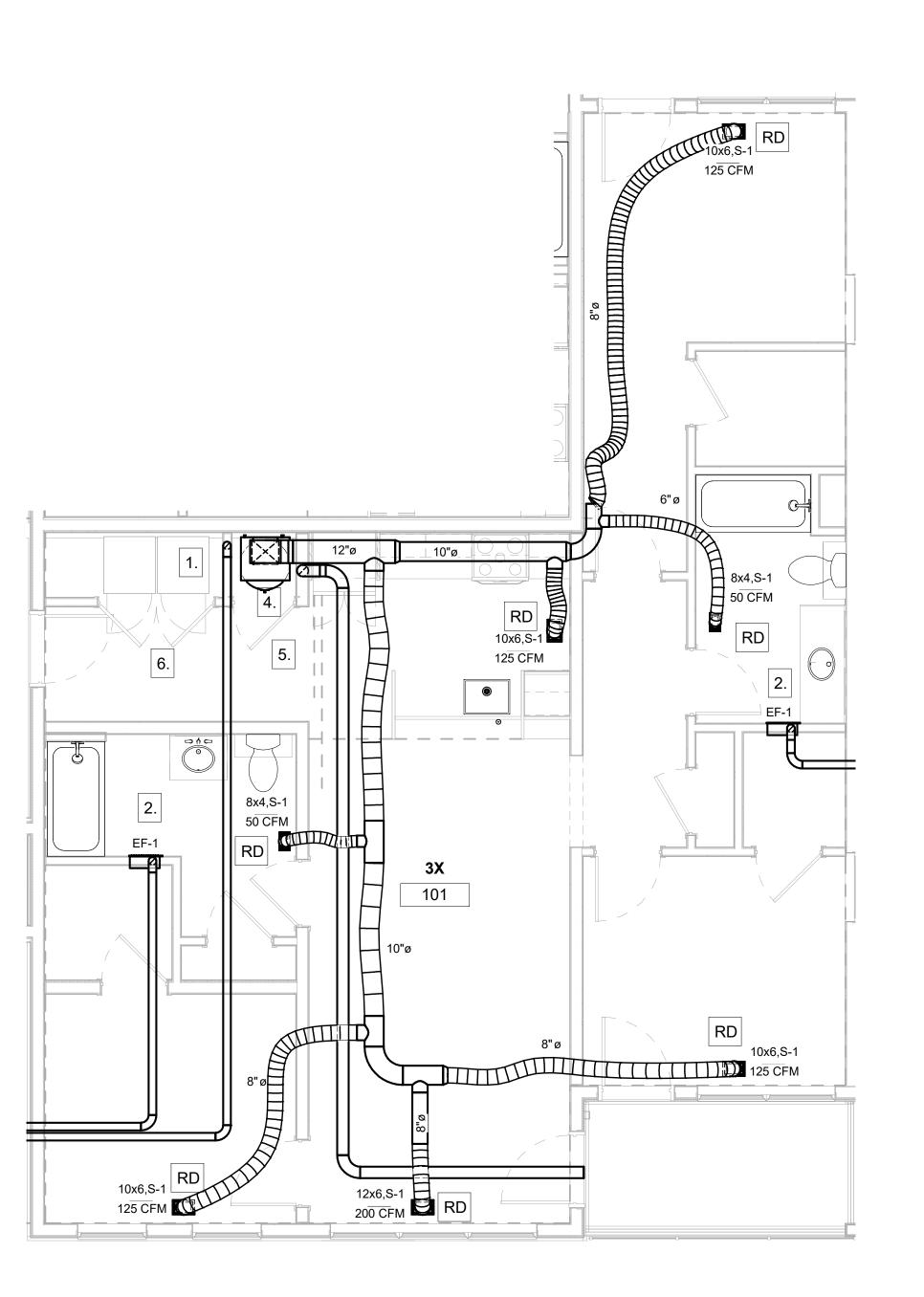
6 MECHANICAL TYPICAL UNIT TYPE 1B 1/4" = 1'-0"

RD 3 MECHANICAL TYPICAL UNIT TYPE 1C 1/4" = 1'-0"

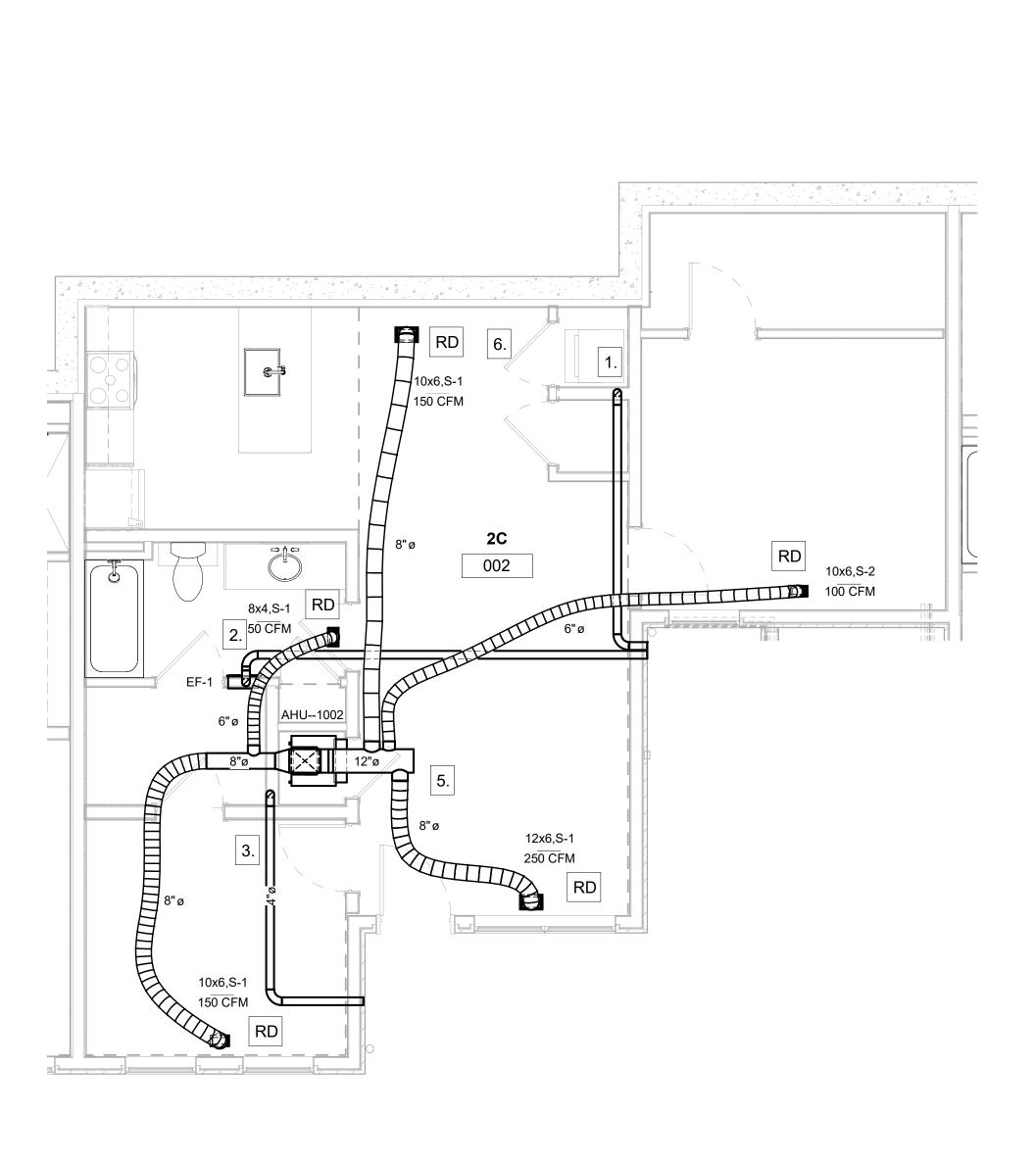
007

105 10"ø 8x4,S-6 RD 125 CFM RD 150 CFM

4 MECHANICAL TYPICAL UNIT TYPE 2A 1/4" = 1'-0"



3 MECHANICAL TYPICAL UNIT TYPE 3A 1/4" = 1'-0"



8x4,S-1 100 CFM RD 3011 8x4,S-1 100 CFM RD RD

1 MECHANICAL TYPICAL UNIT TYPE 2C 1/4" = 1'-0"

MECHANICAL TYPICAL UNIT TYPE 2D 1/4" = 1'-0"

4130 HIGH

TERR

SHEET: 1.901

DRAWN BY:

APPROVED BY: PJO

MECHANICAL ENLARGED PLANS SECTION 15010 - MECHANICAL GENERAL PROVISIONS:

- 1. THE WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE REFERENCED CODES AND STANDARDS: 1.1. LOCAL AUTHORITY HAVING JURISDICTION (AHJ) REQUIREMENTS 1.2. ALABAMA BUILDING CODE — 2015, INCLUDING:
 - IBC/2015 INTERNATIONAL BUILDING CODE 1.2.1. NFPA 70/2014 - NATIONAL ELECTRICAL CODE 1.2.2. NFPA 72/2013 - NATIONAL FIRE ALARM CODE
- 1.2.3. 2015 INTERNATIONAL MECHANICAL CODE 1.3. ADAAG — AMERICANS WITH DISABILITIES ACT ACCESSIBILITY
- GUIDELINES 1.4. ANSI — AMERICAN NATIONAL STANDARDS INSTITUTE 1.5. ASHRAE — AMER. SOC. OF HEATING. REFRIG. AND AIR COND.
- ENGINEERS 1.6. ASTM — AMERICAN SOCIETY FOR TESTING AND MATERIALS 1.7. NFPA - NATIONAL FIRE PROTECTION ASSOCIATION 1.8. OSHA — OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
- 1.9. SMACNA SHEET METAL AND AIR COND. CONTRACTORS NAT'L ASSOCIATION 1.10. UL – UNDERWRITERS LABORATORIES, INC.
- CONFORM TO THE BUILDING CODE AND LOCAL AUTHORITIES HAVING JURISDICTION (AHJ). OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND FEES REQUIRED.
- CONFORM TO DIV 0, DIV 1 AND THE GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT.
- 4. COORDINATE SCHEDULE FOR ALL WORK WITH AND FOR APPROVAL BY THE 5. COORDINATE WORK FROM OTHER TRADES AND BUILDING STRUCTURE PRIOR
- TO INSTALLATION. MAKE MINOR ADJUSTMENTS AS REQUIRED FACILITATING

6. ALL EQUIPMENT, MATERIALS AND SYSTEMS SHALL BE LISTED AND

- CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. (UL), AS SUITABLE FOR USE INTENDED. THE CONTRACTOR IS RESPONSIBLE FOR THE "MEANS AND METHODS" OF THE WORK. WORK SHALL CONFORM TO THE NECA 1 — "STANDARD OF INSTALLATION" AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE
- 8. INSTALL AND APPLY ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE SUBMITTALS WHERE
- INSTALL AND PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE, DIRT, AND DEBRIS AND CLEAN AND REPAIR AS REQUIRED. DO NOT USE
- COMPRESSED AIR FOR CLEANING. <u>WARRANTY:</u> PROVIDE WARRANTY ON WORKMANSHIP AND MATERIALS. WARRANTY SHALL COVER ALL COSTS FOR PARTS, LABOR, ASSOCIATED TRAVEL, AND EXPENSES FOR A PERIOD OF ONE YEAR FROM COMPLETION OF SYSTEM ACCEPTANCE. WARRANTY SHALL APPLY EQUALLY TO BOTH HARDWARE AND SOFTWARE. PERSONNEL SUPPORTING THIS WARRANTY AGREEMENT SHALL PROVIDE ON-SITE OR OFF-SITE SERVICE IN A TIMELY MANNER AFTER FAILURE NOTIFICATION TO THE VENDOR. THE MAXIMUM ACCEPTABLE RESPONSE TIME TO PROVIDE THIS SERVICE AT THE SITE SHALL BE 24 HOURS, MONDAY THROUGH FRIDAY AND 48 HOURS ON SATURDAY AND SUNDAY.
- <u>SUBMITTALS:</u> 11.1. PROVIDE SUBMITTALS ON EQUIPMENT AND MATERIALS. 11.2. SUBMITTAL REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE
- DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE PLANS AND SPECIFICATIONS. 11.3. OPERATION OF THE SYSTEMS REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.
- 11.4. REVIEW OF A SPECIFIC ITEM DOES NOT INCLUDE OR IMPLY APPROVAL OF AN ASSEMBLY (OF WHICH THE ITEM IS A
- 11.5. ALL DEVIATIONS FROM THE PROJECT ENGINEERING DRAWINGS AND SPECIFICATIONS SHALL BE EXPLICITLY NOTED IN SUBMITTALS BY COVER LETTER OR WILL BE CONSIDERED NON-COMPLIANT AND REJECTED. REGARDLESS OF SUBMITTAL REVIEW STATUS. DEVIATIONS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONTRACT DOCUMENTS UNLESS SEPARATELY NEGOTIATED WITH THE
- 11.6. THE CONTRACTOR, BY SUBMITTING A PROPOSED SUBSTITUTION. ACCEPTS ALL RESPONSIBILITY FOR COORDINATING ALL CHANGES AND ABSORBING ALL COSTS DUE TO PROPOSED SUBSTITUTED EQUIPMENT TO INCLUDE, BUT NOT LIMITED TO: COORDINATION WITH AND CHANGES AFFECTING OTHER TRADES, ADDITIONAL CIRCUITS, IMPACT OF ADDITIONAL LOADS, CIRCUIT CHARACTERISTICS, AND SINGLE-POINT CONNECTION KITS.

SECTION 15080-INSULATION:

- ALL PRODUCTS IN THE CONDITIONED AIRSTREAM (INCLUDING PLENUMS) SHALL BE NONCOMBUSTIBLE AND SHALL COMPLY WITH NFPA 90A FLAME/SMOKE/FUEL CONTRIBUTION RATING OF 25/50/0 AND COMPLY WITH UL181 EROSION LIMITATIONS. FIRE HAZARD RATINGS SHALL BE DETERMINED BY NFPA-255 "METHOD OF TEST OF SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS", ASTM E84, OR UL723.
- 2. INSTALL INSULATION PER MANUFACTURERS INSTRUCTIONS 3. ON SUPPLY AIR AND OUTSIDE AIR DUCTS ENSURE THAT THE VAPOR
- BARRIER IS CONTINUOUS AND SEALED AT ALL PENETRATIONS. 4. PIPING EXPOSED TO WEATHER SHALL BE PROVIDED WITH A WEATHER-PROOF MEMBRANE.
- 5. BLANKET FIBERGLASS: FLEXIBLE FIBROUS GLASS, FLAME RETARDANT FACTORY LAMINATED FOIL— SKRIM-KRAFT (FSK) VAPOR BARRIER, 2" STAPLING FLANGE, MAXIMUM VAPOR PERMEANCE OF .02 PERM/IN., MINIMUM DENSITY OF 1.0 LB/CF, MAXIMUM CONDUCTIVITY PER 1" THICKNESS OF .28 AT 75°F MEAN TEMPERATURE. BASED ON KNAUF DUCT WRAP.
- 6. SCHEDULE (INSULATION BASED ON KNAUF):

SUPPLY DUCTWORK ABOVE CEILINGS 1-1/2" BLANKET TYPE

GRILLE BOOTS 1-1/2" BLANKET TYPE

RETURN/TRANSFER DUCTWORK: LINER WHERE NOTED, OTHERWISE: GRILLE BOOTS 1" LINER

2" 1LB DENSITY BLANKET

JACKET

EXHAUST DUCTWORK:

INDOOR REF PIPING

OUTDOOR REF PIPING

OUTSIDE AIR DUCTWORK:

1" CLOSED CELL ELASTOMERIC 1-1/2" CLOSED CELL ELASTOMERIC W/ WEATHERPROOF

SECTION 15767—HEATERS: **ELECTRIC UNIT HEATERS:**

1. WALL ELECTRIC HEATERS (WH) — RECESSED WALL MOUNTED ELECTRIC UNIT HEATER WITH INTEGRAL THERMOSTAT, LOUVERED FRONT COVER, DISCONNECT SWITCH, AND HEATING ELEMENT.

SECTION 15770—SPLIT SYSTEM AIR CONDITIONERS:

OUTDOOR STANDARD SPLIT SYSTEM HEAT PUMP (HP):

- STANDARD EFFICIENCY, SPLIT SYSTEM HEAT PUMP. COMPRESSOR TO BE INTERNALLY PROTECTED AGAINST HIGH PRESSURE, TEMPERATURE, AND EXTERNALLY BY A FACTORY INSTALLED HIGH PRESSURE SWITCH. PROVIDE REMOVABLE ACCESS PANEL TO ELECTRICAL BOX. FURNISH FULLY CHARGED AND FACTORY WIRED. UNIT SHALL OPERATE WITH R-410A. PROVIDE WITH 5-YEAR LIMITED PARTS WARRANTY AND 5-YEAR LIMITED COMPRESSOR
- 2. CONSTRUCTED OF PRE-PAINTED STEEL, INTERNALLY PROTECTED HERMETIC COMPRESSOR WITH INTERNAL DISCHARGE LINE SOLID CORE FILTER DRIER, CRANKCASE HEATER, AND HARD START KITS (FOR UNITS WITH REFRIGERANT LINE LENGTHS OVER 100 FT). CONDENSER COILS CONSTRUCTED OF COPPER TUBING AND ENHANCED ALUMINUM COILS.
- INSTALL UNIT ON PLASTIC HOUSEKEEPING PAD (WITH NEOPRENE BETWEEN PAD AND ROOF) OR 4x4 WEATHER TREATED LUMBER WITH NEOPRENE PADS BETWEEN UNIT AND LUMBER.

INDOOR STANDARD SPLIT SYSTEM AIR HANDLING UNIT (AHU):

- COMPACT AND STURDY CABINET IS PROTECTED WITH A DURABLE FINISH AND INSULATED TO PREVENT SWEATING. PROVIDE WITH ALUMINUM FIN COILS AND ELECTRIC HEATERS.
- 2. FOR UNITS MOUNTED VERTICALLY, PROVIDE FLOAT SWITCH ON CONDENSATE OVERFLOW CONNECTION. FOR UNITS MOUNTED HORIZONTALLY PROVIDE CONDENSATE DRAIN PAN UNDER UNIT WITH FLOAT OR WATER DETECTOR WITHIN THE PAN. UPON A DETECTION OF WATER IN THE PAN OR CONDENSATE OVERFLOW CONNECTION, UNIT SHALL BE SHUT DOWN.
- 3. PROVIDE NON-PROGRAMMABLE DIGITAL THERMOSTAT FOR ALL RESIDENTIAL
- 4. PROVIDE DUCTED INDOOR UNIT WITH SUPPLY AND RETURN PLENUMS AS INDICATED. PLENUMS TO BE SIZED AS SMALL AS POSSIBLE FOR CONNECTIONS. LINE WITH 1" INSULATION FOR SOUND DAMPENING.
- 5. PROVIDE WITH INTERNAL FILTER RACK AND 1"THICK FILTER.

- 1" PLUG

DRAIN FUNNEL

DRAIN PAN ON FAN OUTLET

(POSITIVE PRESSURE)

SECTION 15820-DUCTWORK ACCESSORIES:

- WALL CAPS (EXTERIOR WALL): PROVIDE WALL CAPS FOR ALL DRYER AND BATHROOM EXHAUST DUCTS AND OUTSIDE AIR DUCTS AT EXTERIOR WALL PENETRATIONS. WALL CAPS SHALL BE ALUMINUM CONSTRUCTION. PROVIDE DRYER AND EXHAUST DUCTS WITH BUILT IN DAMPER. BASED ON SEIHO MODEL SFZC. COLOR TO BE DETERMINED BY THE ARCHITECT.
- 2. <u>FIRE DAMPERS:</u> CURTAIN TYPE WITH BLADES OUT OF THE AIR STREAM (HIGH HAT TYPE) WITH 1-1/2" HOUR UL RATINGS APPROVED FOR USE IN 2 HOUR RATED WALLS AND 1-HOUR RATED FLOOR ASSEMBLIES. PROVIDE WITH FUSIBLE LINK AND CLOSURE SPRING FOR USE IN VERTICAL DUCTWORK (HORIZONTALLY MOUNTED).
- CEILING MOUNTED RADIATION DAMPER: INSULATED, 2-BLADE, 22 GA GALVANIZED STEEL FRAME AND BLADES, SPRING OPERATED WITH 212°F FUSIBLE LINK. BASED ON ARROW MODEL A91 (RECTANGULAR) AND A97
- 4. VOLUME DAMPERS (MANUAL): BLADES AND FRAME SHALL BE OF EXTRUDED ALUMINUM OR GALVANIZED STEEL CONSTRUCTION. PROVIDE SINGLE BLADE DAMPERS PER SMACNA FIG 2-12, FIGURE B ON RECTANGULAR DUCTS LESS THAN 30" IN WIDTH AND 12" OR LESS IN DEPTH AND MULTI-BLADE DAMPERS PER SMACNA FIGURE 2-13, FIGURE A ON LARGER RECTANGULAR DUCTS. ROUND DUCT VOLUME DAMPERS SHALL BE SINGLE BLADE MOUNTED ON A CONTINUOUS SHAFT. EQUIP WITH LOCKING QUADRANT AND END BEARINGS. PROVIDE HANDLE EXTENSION ON EXTERNALLY INSULATED DUCTWORK.

SECTION 15830-FANS:

- 1. FANS SHALL BE UL LISTED AND AMCA CERTIFIED. ELECTRICAL DEVICES SHALL CONFORM TO NEMA STANDARDS. WIRING SHALL CONFORM TO NEC.
- 2. MOTORS SHALL BE NON-OVERLOADING, HIGH EFFICIENCY TYPE. MOTORS DESIGNED FOR VARIABLE SPEED SHALL BE DESIGNED AND RATED FOR USE WITH VFDs.
- 3. CEILING MOUNTED (WITHIN RATED DROPPED CEILING): FORWARD CURVED INJECTION MOLDED POLYPROPYLENE FAN WHEEL, 22 GAUGE GALVANIZED STEEL INLET BOX, ISOLATED MOUNTED DIRECT MOTOR, MOUNTED TO ONE PIECE GALVANIZED STAMPED STEEL INTEGRAL MOTOR MOUNT/INLET. BACKDRAFT DAMPER. AND WHITE HIGH IMPACT STYRENE INJECTED MOLDED GRILLE. PROVIDE WITH INTEGRAL RADIATION DAMPER. BASIS OF DESIGN: COOK MODEL GC.

SECTION 15850-GRILLES, REGISTERS, AND DIFFUSERS:

- PROVIDE AS INDICATED IN THE GRD SCHEDULE. PROVIDE ALL GRDs WITH INTEGRAL VOLUME DAMPERS OR WITH VOLUME EXTRACTORS AS INDICATED. COLOR OF THE GRILLES TO BE DETERMINED BY ARCHITECT. PERFORMANCE OF THE GRILLES IS A MAXIMUM OF 700 FPM OR A NC LEVEL OF 30 OR LESS FOR SIZE AND CFM INDICATED.
- INSTALL WITH AIR TIGHT CONNECTION TO DUCTWORK. COORDINATE MOUNTING CONDITIONS WITH ARCHITECTURAL.
- CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENTS.

SECTION 15890-METAL DUCTWORK:

- 1. UNLESS OTHERWISE NOTED, RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED OF HOT ROLLED STEEL CONTINUOUSLY ANNEALED AND HOT DIPPED GALVANIZED SHEET OR COIL, MINIMUM G-90, 0.90 OZ/SF COATING SUITABLE FOR FORMING WITHOUT FLAKING OR PEELING, SUITABLE FOR WELDING OR SOLDERING. ZINC COATING SHALL NOT BE IMPAIRED FROM DOUBLE SEAMING, BREAKING OR ROLL FORMING. 14 GA. AND LIGHTER CONFORMING TO ASTM A 527; 13 GA AND HEAVIER CONFORMING TO ASTM A
- 2. DRYER VENT SHALL BE 26 GA. MINIMUM.
- 3. UNLESS OTHERWISE NOTED, ROUND DUCTWORK SHALL BE CONSTRUCTED OF G-90 GALVANIZED STEEL WITH THE FOLLOWING MINIMUM GAUGES: <15" DIA. = 24 GAUGE, 15"-26" DIA. = 22 GAUGE.
- INSULATED ROUND FLEXIBLE DUCT (MAX LENGTH 8') IS ALLOWED FOR BRANCH CONNECTIONS TO DIFFUSERS AND GRILLES ABOVE LAY-IN CEILINGS. INSULATED ROUND FLEXIBLE DUCTWORK SHALL BE UL181, CLASS 1 AND SUITABLE FOR LOW PRESSURE APPLICATIONS OF NOT LESS THAN 3" W.C. CONNECT TO METAL DUCT WITH STAINLESS STEEL DRAW BANDS.
- 5. ALL DUCT SIZES SHOWN ON PLANS ARE INSIDE CLEAR (AIRFLOW) DIMENSIONS. NO ALLOWANCE HAS BEEN MADE FOR DUCT LINER OR DOUBLE WALL DUCTWORK WHERE REQUIRED.
- 6. FABRICATE AND SUPPORT IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
- 7. PROVIDE ALL HANGERS AND SUPPORTS AS REQUIRED.
- 8. PROVIDE DOUBLE WALL TURNING VANES IN ALL LOW PRESSURE SUPPLY, RETURN, AND EXHAUST DUCTS . TURNING VANES ARE NOT REQUIRED WHERE RADIUS ELBOW FITTINGS WITH R=1.5 OR GREATER ARE USED.
- 9. SEAL DUCT JOINTS AIR TIGHT. PROVIDE AIR TIGHT SEAL WITH VOLUME DAMPERS AT ALL TAPS OFF MAIN DUCT TO DIFFUSERS.

10. SCHEDULE:

FLEX DUCT TO DIFFUSER ROUTED THROUGH OPEN

WEB WOOD TRUSS SYSTEM -

<u>System</u> Lp Supply Return-Relief Gen. Exhaust	<u>Section</u> Note 1 All All	PRESSURE CLASS 2" 2" 2" 2"	SEAL CLASS A C C
DRYER VENT	ALL	2"	SPOT WELD

MECHANICAL GENERAL NOTES:

PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, AND OTHER SERVICES NECESSARY TO SATISFACTORILY COMPLETE ALL MECHANICAL WORK INDICATED ON THE CONTRACT DOCUMENTS. ALL SPECIFICATIONS, NOTES, OR SYMBOLS MAY NOT BE APPLICABLE FOR THIS TENANT. CONTRACTOR SHALL CAREFULLY REVIEW PLANS AND DETAILS FOR ACCURATE EXTENT OF WORK REQUIRED.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROCUREMENT OF ALL APPLICABLE BUILDING PERMITS, INSPECTIONS, AND OTHER REQUIRED ADMINISTRATIVE DUTIES TO COMPLETE ALL INDICATED WORK REQUIREMENTS.

DESIGN CONSIDERATIONS:

OUTDOOR TEMPERATURE: SUMMER: 95°F DB, 75°F WB WINTER: 17°F DB SUMMER: 75°F DB. 45-60% R.H. INDOOR TEMPERATURE WINTER: 70°F DB *HUMIDITY WILL VARY WITH OUTDOOR CONDITION

VENTILATION AND DISTRIBUTION:

MECHANICAL VENTILATION WILL BE PROVIDED PER IMC SECTION 403 AND TABLE 403.3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH IBC 2015, IMC 2015 AND ANY ADDITIONAL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

ALL MATERIALS WITH ELECTRICAL REQUIREMENTS SHALL BE UL LISTED FOR THE INTENDED APPLICATION.

PHASING AND WORK PERFORMANCE:

THE CONTRACTOR SHALL COORDINATE ALL PHASING AND STAGING/STORAGE OF MATERIALS AND WORK WITH THE GENERAL CONTRACTOR, A WRITTEN GUARANTEE FOR THE PERIOD OF AT LEAST ONE YEAR AFTER SUBSTANTIAL COMPLETION SHALL BE TURNED OVER TO THE OWNER ON ALL MATERIALS AND WORK DONE BY THE CONTRACTOR, ALL MATERIALS INSTALLED SHALL ALSO BE PROVIDED WITH THE MAXIMUM AVAILABLE GUARANTEE FROM THE MANUFACTURER.

CLEAN UP AND PROTECTION OF AREA: THE CONTRACTOR SHALL CLAIM ALL RESPONSIBILITY FOR PROTECTION OF THE AREAS INVOLVED, INCLUDING ANY AREAS INVOLVED IN THE TRANSPORTATION AND STORAGE OF EQUIPMENT DURING CONSTRUCTION. THE CONTRACTOR SHALL CONSISTENTLY MAINTAIN A WORK ENVIRONMENT THAT IS CLEAN AND PROTECTED FROM UNAUTHORIZED PERSONS AND DAMAGE DUE TO CONSTRUCTION. AFTER COMPLETION OF ALL CONSTRUCTION, THE CONTRACTOR SHALL CLEAN ALL AREAS INVOLVED IN THE CONSTRUCTION PROCESS, TO THE OWNER'S APPROVAL. ALL REFUSE INVOLVED DUE TO CONSTRUCTION SHALL BE PROPERLY AND PROMPTLY DISPOSED OF AT AN ON SITE LOCATION.

CONSTRUCTION TYPE: R-2 USE GROUP: OCCUPANCY:

- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO SHOW THE GENERAL ROUTING, LOCATION, AND SIZE OF EQUIPMENT, PIPING AND/OR DUCTWORK, THE CONTRACTOR SHALL MAKE ALLOWANCES FOR ALL MATERIALS AND LABOR NECESSARY TO MAKE FINAL CONNECTIONS. NOT ALL NECESSARY OFFSETS OR FITTINGS ARE SHOWN. BUT SHALL BE PROVIDED WHERE REQUIRED. THE CONTRACTOR SHALL PROVIDE ALL ACCESSORIES, SUPPORTS, AND HANGERS TO ALLOW FOR COMPLETE AND FUNCTIONAL SYSTEMS. ALL WORK SHALL MEET OR EXCEED PUBLISHED OR ACCEPTED STANDARDS OF QUALITY WORKMANSHIP. AND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS AND/OR INSTALLATION INSTRUCTIONS. THE INTENT OF THESE CONTRACT DOCUMENTS IS TO PROVIDE COMPLETE FUNCTIONING SYSTEMS.
- INSTALL ALL DEVICES IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- COORDINATE THE PROPER GRILLE STYLE AND FRAME STYLE WITH THE FINAL APPROVED CEILING CONSTRUCTION AND INSTALL GRILLES, REGISTERS, AND DIFFUSERS.
- DUE TO THE SMALL SCALE OF THE DRAWINGS, THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY TO COORDINATE THE AIR OUTLET AND INLET LOCATIONS WITH THE CEILING PLANS, LIGHTING PLANS, SECTIONS AND/OR DETAILS.
- PROVIDE SUBMITTALS ON ALL EQUIPMENT AND CONTROLS FOR APPROVAL.
- PROVIDE OWNER TRAINING ON ALL EQUIPMENT.
- PROVIDE START-UP OF ALL EQUIPMENT.
- WELDING, CUTTING, OR BURNING: THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM OF 72 HOURS ADVANCE NOTICE PRIOR TO PERFORMING ANY WELDING. CUTTING. OR BURNING WITHIN THE BUILDING. NO WELDING. CUTTING. OR BURNING SHALL OCCUR WITHOUT GENERAL CONTRACTOR APPROVAL. WHERE WELDING, CUTTING, OR BURNING ARE NECESSARY, NON-COMBUSTIBLE SHIELDS SHALL BE USED AND SUITABLE FIRE EXTINGUISHING EQUIPMENT SHALL BE MAINTAINED NEARBY.
- FABRICATION OF STEEL SUPPORTS: FABRICATE FROM STEEL ANGLES, CHANNELS OR PLATES IN ACCORDANCE WITH ASTM.
- THERMOSTAT LOCATIONS ARE GENERAL. THERMOSTATS SHALL BE LOCATED ADJACENT TO DOORS OR NEAR RETURN GRILLES. COORDINATE FINAL THERMOSTAT LOCATIONS WITH ARCHITECT AND/OR OWNER.

MECHANICAL LEGEND <u>SYMBOL</u> **DESCRIPTION** <u>DESCRIPTION</u> DUCT SIZE (FIRST FIGURE I SIDEWAYS RETURN OF SIDE SHOWN DIMENSION) SIDEWAYS SUPPLY FLEXIBLE CONNECTION DIFFUSER TO BE PROVIDED WITH RADIATION DAMPER 20x20 TRANSITION DIFFUSER TAG WITH AIRFLOW FIRE DAMPER W/ DOOR UNDERCUT ACCESS DOOR THERMOSTAT (48"AFF) AIR TIGHT CONNECTION SMOKE DETECTOR OFF DUCT MAIN OCCUPANCY SENSOR 4-WAY THROW SUPPLY ACCESS DOOR IN SIDE DIFFUSER WITH FLEX OF WALL OR DUCT DUCT CONNECTION EQUIPMENT NUMBER RETURN DIFFUSER 1-HOUR RATED WALL 2-HOUR RATED WALL HEAT PUMP WITH COIL AND MAINTENANCE CLEARANCE MATCH LINE _ . . _ . . _ . . _ BOUNDARY LINE: REFER TO MANUFACTURER'S MANUAL. ZDZONE DAMPER MOTORIZED DAMPER; M USED FOR BYPASS AIR

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Α	AMPERES	GA	GAUGE
AD	ACCESS DOOR	HP	HORSEPOWER
AHU	AIR HANLDING UNIT	HZ	FREQUENCY
BTU	BRITISH THERMAL UNIT	KW	KILOWATT
BTUH	BRITISH THERMAL UNIT PER HOUR	LAT	LEAVING AIR TEMPERATURE
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
DB	DRYBULB	NTS	NOT TO SCALE
DE	DRYER EXHAUST	OA	OUT SIDE AIR
DN	DOWN	PD	PRESSURE DROP
DWG	DRAWING	PH	PHASE
DX	DIRECT EXPANSION	PSI	POUNDS PER SQUARE INCH
EA	EXHAUST AIR	PVC	POLYVINYL CHLORIDE
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EF	EXHAUST FAN	RD	RADIATION DAMPER
ESP	EXTERNAL STATIC PRESSURE	RL	REFRIGERANT LIQUID
°F	DEGREE FAHRENHEIT	RPM	REVOLUTIONS PER MINUTE
FD	FIRE DAMPER	RS	REFRIGERANT SUCTION
FLA	FULL LOAD AMPERES	SA	SUPPLYAIR
FPM	FEET PER MINUTE	TYP	TYPICAL
FT	FEET	WB	WET BULB
!	ı	WH	WALL HEATER



MOUNT INDOOR AIR HANDLING UNIT IN

NEEDED TO SUPPORT UNIT.

PLENUMS.

ACTIVATES SWITCH.

DRAIN IN MECHANICAL CLOSET.

PROVIDED LINED RETURN AND SUPPLY

VERTICAL POSITION. PROVIDE FRAME AS

PROVIDE RETURN AIR PLENUM WITH FILTER.

PIPE CONDENSATE DRAIN DOWN TO FLOOR

PROVIDE FLOAT SWITCH IN AHU DRAIN PAN

SHUT DOWN UNIT IF CONDENSATE LEVEL

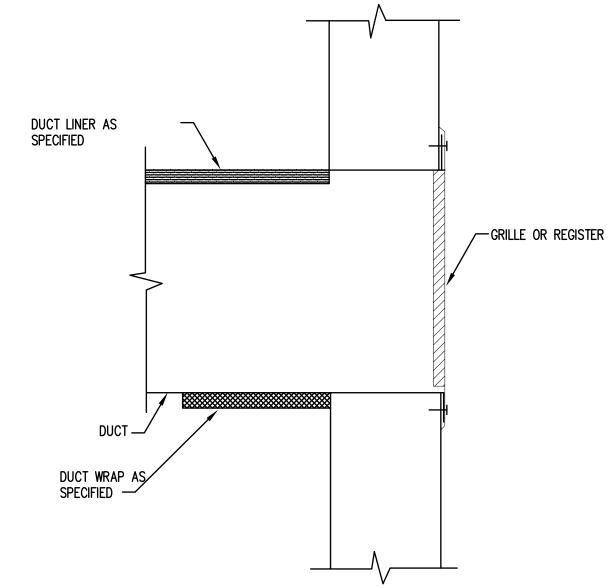
OVERFLOW CONNECTION. FLOAT SWITCH TO

M2.001 - MECHANICAL NOTES, SPECIFICATIONS, LEGEND, DETAILS AND ABBREVIATIONS M2.002 - MECHANICAL SCHEDULES AND DETAILS

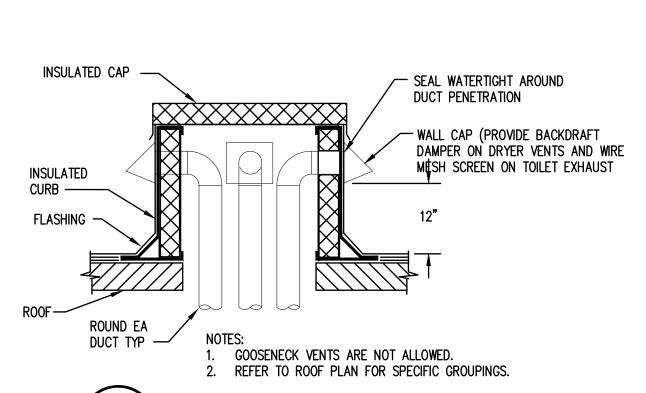
M2.100 - MECHANICAL BASEMENT FLOOR PLAN M2.101 - MECHANICAL FIRST FLOOR PLAN

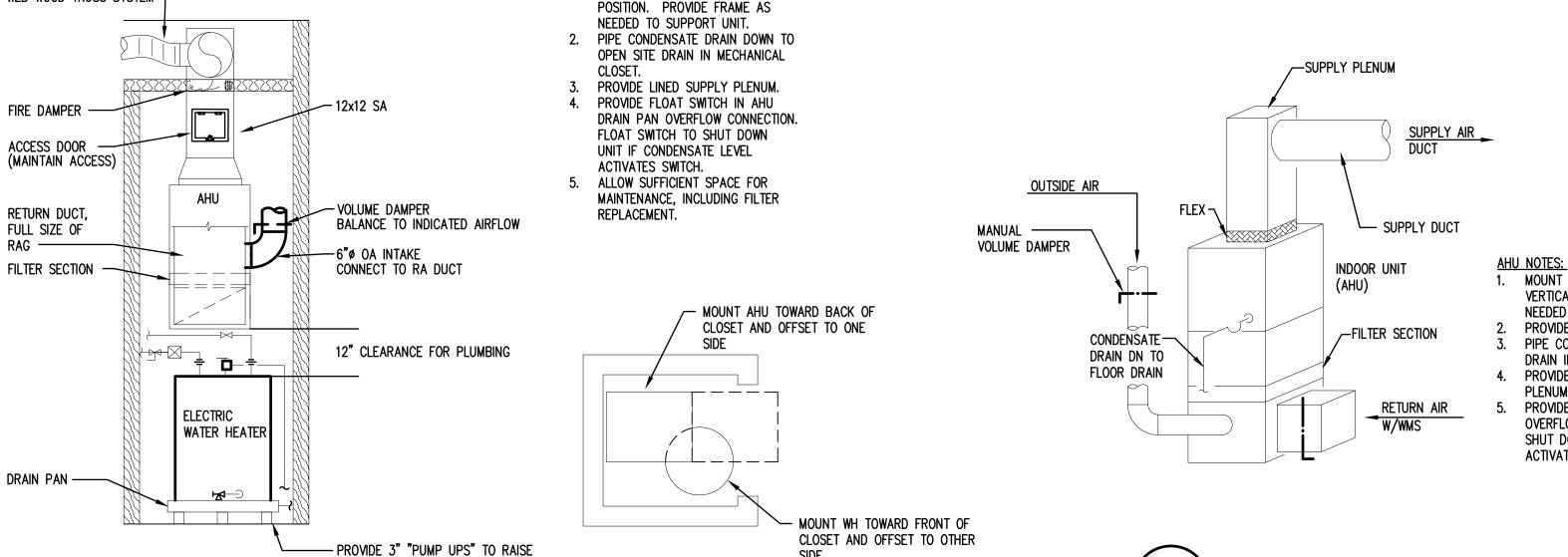
M2.102 - MECHANICAL SECOND FLOOR PLAN

M2.103 - MECHANICAL THIRD FLOOR PLAN M2.900 - MECHANICAL ENLARGED PLANS M2.901 - MECHANICAL ENLARGED PLANS









1. MOUNT INDOOR AHU IN VERTICAL

VERTICALLY MOUNTED AHU DETAIL EWH UP FOR DRAINS TO STUB INTO M001

4 DV/TE DUCT CURB DETAIL M001 NOT TO SCALE

CONDENSATE DRAIN DETAIL NOT TO SCALE M001

LESS THAN 1" PIPE SIZE.

1. DRAIN PIPE TO BE SAME SIZE AS UNIT OUTLET, BUT NOT

"B"=1/2 SYSTEM STATIC IN INCHES AT DRAIN POINT.

2. "A"=SYSTEM STATIC IN INCHES AT DRAIN POINT.

DRAIN PAN ON FAN INLET

(NEGATIVE PRESSURE)

INDOOR AHU MOUNTED ABOVE WATER HEATER CLOSET LAYOUT NOT TO SCALE

REVISIONS

DATE DESCRIPTION 11-JUN-2021 PERMIT SET

COPYRIGHT © ONEIL ENGINEERING SERVICES

ALL RIGHTS RESERVED.

ENGINEERING SERVICES

1480 OAKBRIDGE COURT

POWHATAN, VIRGINIA 23139

PHONE: 804-372-3501

11-JUN-2021

AS NOTED

PROJECT #: K118B

APPROVED BY: JCW

SPECIFICATIONS

ABBREVIATIONS

MECHANICAL NOTES,

LEGEND, AND DETAILS.

SCALE:

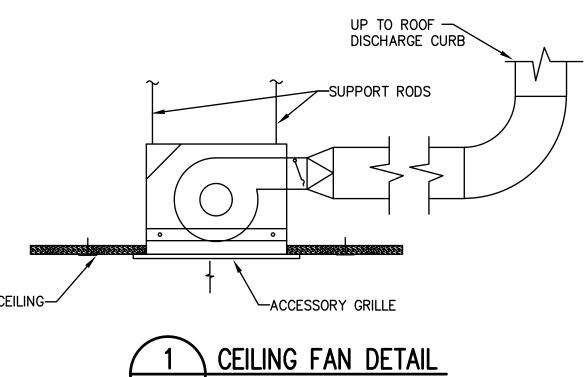
DRAWN BY:

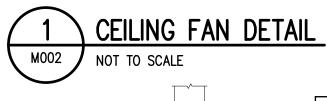
 ∞

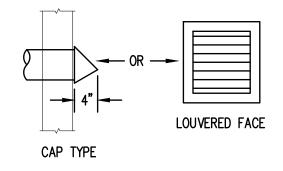
ELECTRIC UNIT HEATER SCHEDULE: ELECTRIC DATA AIR DATA SELECTION BASED ON UNIT NO. REMARKS SERVING CAPACITY **TYPE** EAT CFM FLA VOLT KW MANUFACTURER MODEL (BTUH) MECHANICAL ROOMS AND WALL MTD 6142 100 1.8 15 120 **BERKO** FRA1812 **STAIRS**

FAN S	SCHEDULE:											
				BLADE	TOTAL	FAN	МО	TOR DATA	Α	SELECTION I	BASED ON	
UNIT NO.	SERVING	TYPE	CFM	TYPE	STATIC H ₂ O	RPM	HP	VOLTS	РН	MANUFACTURER	MODEL	REMARKS
EF-1	RESIDENTIAL BATHROOM	CEILING MTD	50	FC	0.35	750	27W	120	1	COOK	GC-128	CONTROLL BY SWITCH

		T	TYPE		S	SERVICI	E		MOUNTI	NG DATA					COI	NSTRU	CTION D	ATA						SELECTION BA	SED ON
UNIT NO.	G		R	D	SA	RA	EA	CEILING	DUCT	FLOOR	WALL	SHAPE	MATERIAL	COLOR	,	ACCES	SORIES			Р	ATTER	N		MANUFACTURER	MODEL
		9	K	D	SA	IVA	LA	CEILING	DOCT	FLOOR	VVALL	SHAPE	WATERIAL	COLOR	VD	RC	VE	Р	1-W	2-W	3-W	4-W	E/R	MANOPACTORER	MODEL
S-1			Х		X			Х				RECT	ALUMINUM	TBD	Х					Х				USAIRE	102M
R-1	Х	X				Х					Х	RECT	STEEL	TBD	X								Х	KRUEGER	S80
E-1	Х	x					Х				Х	RECT	STEEL	TBD									Х	KRUEGER	S80





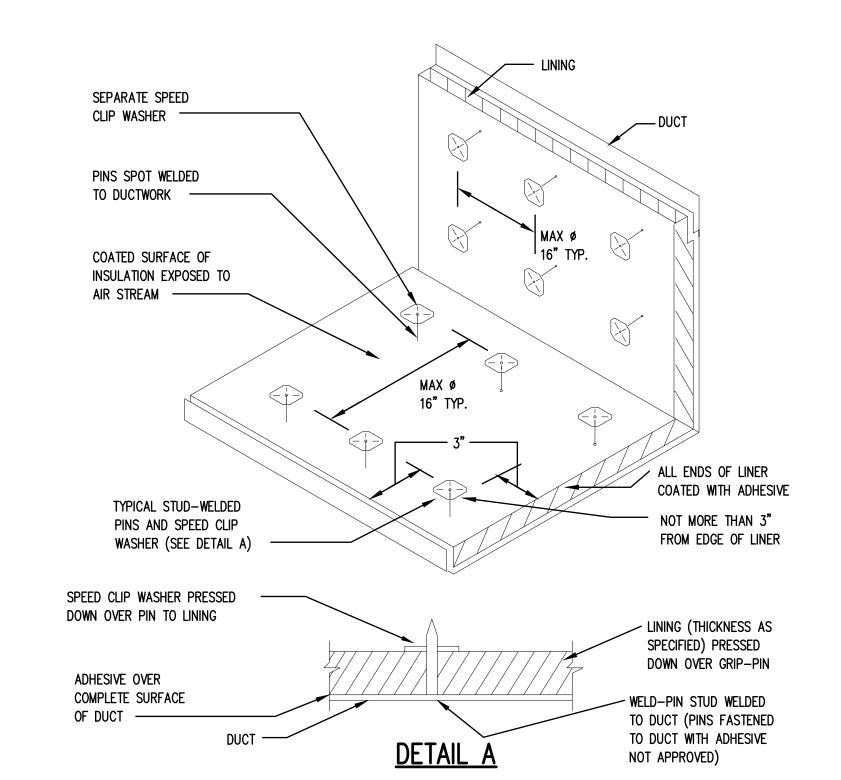


2	WALL CAP	DETAIL
M002	NOT TO SCALE	

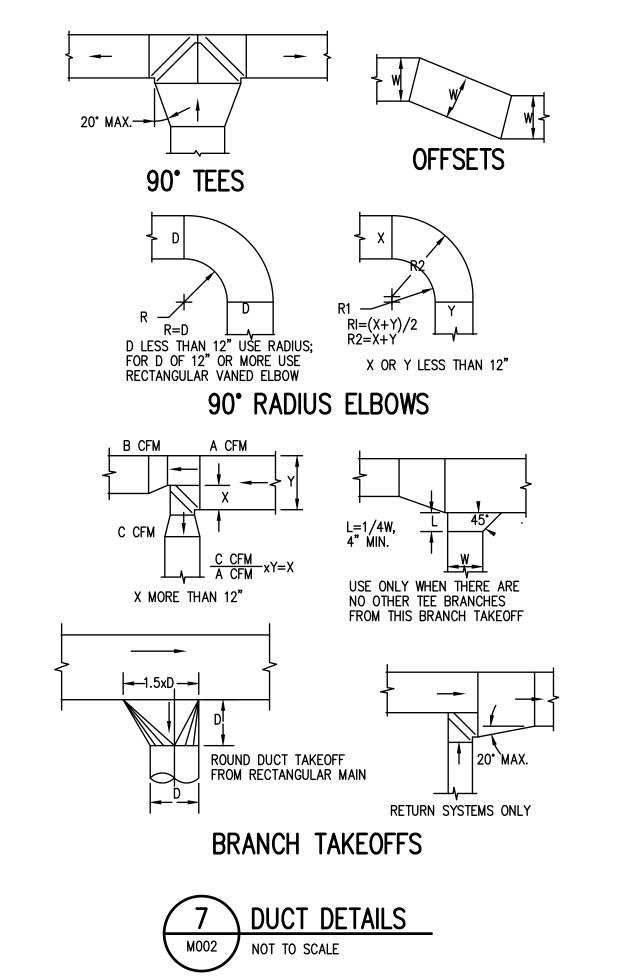
SPLIT S	YSTEM C	UTDOC	R UN	IT SC	HEDU	ILE (14	SEER)	- C	ONVE	NTIO	NAL												
	UNIT DATA FAN DATA COMPRESSOR(S) UNIT ELECTRIC DATA SELECTION BASED ON PAIRED WITH																						
UNIT TAG	SERVING	CAPACITY MBH	COND. EAT °F		SEER	REFRIG. TYPE	NO.	HP	RPM	TOTAL CFM	NO.	STEPS	LRA	RLA	MCA	МОСР	VOLT	PH	MANUF.	MODEL	MANUF.	MODEL	REMARKS
HP-A	AHU-A	18.0	95	45	14.0	R-410A	1	1/12	1100	-	1	1	48	9	11.8	20	208	1	CARRIER	CH14NB18-A	CARRIER	FMA4P1800AL	
HP-B	AHU-B	24.0	95	45	14.0	R-410A	1	1/10	1100	-,	1	1	62.9	10.9	14.2	25	208	1	CARRIER	CH14NB24-A	CARRIER	FMA4P2400AL	

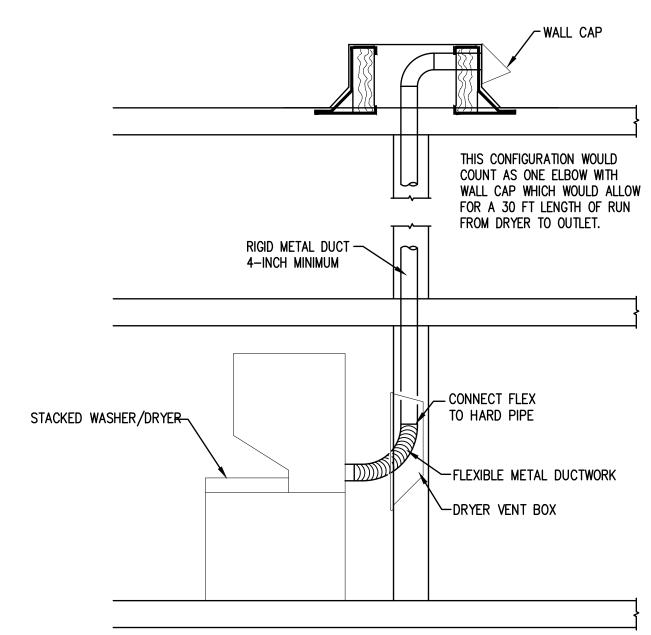
SPLIT SY	STEM AIR HAND	DLING (JNIT	SCH	EDU	LE -	CONVE	NTION	٩L																
			SUPPLY	FAN DA	ATA			COOLING	DATA			Н	EATING DAT	Ā	ELEC	. HEATIN	NG COIL	DATA	UN	IIT ELEC	TRIC DA	λTA	SELECTION	BASED ON	
UNIT TAG	SERVING	NOMINAL CFM RANGE	ESP Delta P IN H ₂ O	OA CFM	HP	RPM	TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH	DB °F		@ADI	CAPACITY MBH	INDOOR EAT DB °F	OUTDOOR COND. DB °F	KW	VOLT	PH	NO. STEPS	VOLT	PH	MCA	MOCP	MANUFACTURER	MODEL	REMARKS
AHU-A	APARTMENT TYPE A	600	0.5	SEE UNIT SCHED	1/6	1075	18.0	13.2	80	67	14.0	12.3	70	17	5	240	1	1	208	1	23.6	25	CARRIER	FMA4P1800AL	
AHU-B	APARTMENT TYPE B	800	0.5	UNIT SCHED	1/4	1075	24	18.01	80	67	14	12.3	70	17	5	240	1	1	208	1	23.9	30	CARRIER	FMA4P2400AL	

		T UNI [.] DULE	Т		AC AF	T UNI ⁻ DULE	Т		AC AP	T UNI [.] DULE	Т		AC AF	T UNI.	Т
UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE
2001	45	Α	Α	2101	60	Α	Α	2201	60	Α	Α	2301	45	Α	Α
2002	30	В	В	2102	30	В	В	2202	30	В	В	2302	45	В	В
2003	45	А	А	2103	30	А	Α	2203	30	Α	А	2303	45	А	Α
2004	30	А	Α	2104	45	Α	Α	2204	45	Α	Α	2304	45	А	Α
2005	45	Α	Α	2105	45	Α	Α	2205	45	Α	Α	2305	45	Α	Α
2006	30	А	Α	2106	30	Α	Α	2206	30	Α	Α	2306	45	Α	А
2007	30	А	Α	2107	30	Α	Α	2207	30	Α	Α				
				2108	45	Α	Α	2208	45	Α	Α				
				2109	45	Α	Α	2209	45	Α	Α				
				2110	30	Α	Α	2210	30	Α	Α				
				2111	30	Α	Α	2211	30	Α	Α				
				2112	60	Α	Α	2212	60	Α	Α	1			

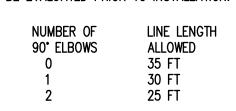






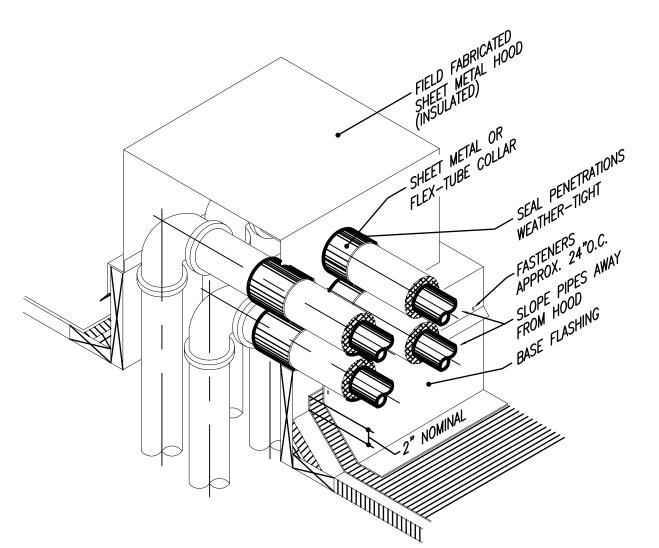


BELOW IS THE CHART ON THE MAXIMUM DRYER LENGTHS PER THE DRYER MANUFACTURER. IT IS UP TO THE HVAC CONTRACTOR TO VERIFY LINE LENGTHS PER THE INSTALLED PRODUCT AND COMPARE TO THE CHART BELOW. NOTE THAT THE LONGEST RUN IS AFFECTED BY THE TYPE OF WALL CAP USED. THE PREFERRED WALL CAP TYPE IS SHOWN UNDER WALL CAP SPECIFICATION. SMALLER OR DIFFERENT CONFIGURATIONS OF THE WALL CAP WILL AFFECT THE LINE LENGTH OF THE DRYER EXHAUST AND NEED TO BE EVALUATED PRIOR TO INSTALLATION.



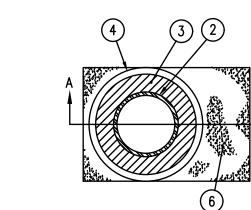
NOTE: (2) 45° ELBOWS = (1) 90° ELBOW

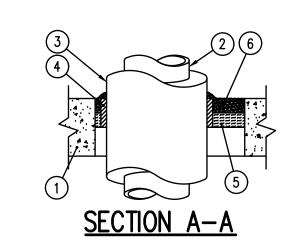




5 REFRIGERANT PIPING ROOF DETAIL

NOT TO SCALE





1. Floor orWall Assembly — Min 4—1/2 in. thick lightweight or normal weight (100—150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks* Max area of square, rectangular or circular opening is 45 sq in. with max dimension of 9 in.

See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Pipe — Nom 3 in. diam (or smaller) Type L (or heavier) copper pipe or nom 2—1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe. One or more insulated pipes may be installed with a min clearance of 1/2 in. maintained between insulated pipes and with a min clearance of 1/4 in. maintained between insulated pipe and sides of through opening. Pipes to be rigidly supported on both sides of floor or wall assembly.

3. Pipe Insulation — Plastics# — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing with skin. When nom 2-1/2 or 3 in. diam insulated steel or copper pipe is used, T Rating is 1/2 hr. When max 2 in. diam insulated steel or copper pipe is used,T rating is 1 hr.

See Plastics# (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

4. Fill, Void or Cavity Materials* - Wrap Strip — Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. wide strips. One nom 2 in. wide strip tightly—wrapped around pipe insulation (Item 3) with the foil side exposed and slid into through opening such that the top edge is flush with top surface of floor. When a single insulated pipe is installed in a circular through opening and when the max annular space between the insulated pipe and the sides of the through opening is 3/8 in., the wrap strip layer may be secured in place with pressure—sensitive tape. In all other situations, the wrap strip layer shall be secured in place with min No. 18 gauge galv steel tie wire. In wall assemblies, the wrap strip layer is to be installed on the insulated pipe in the same manner used for floor assemblies but shall be installed symmetrically on both sides of the wall.

3M COMPANY — Type FS—195+

5. Packing Material — Min 1 in. thick mineral wool batt insulation firmly packed into opening with its top surface recessed min 1 in. from top surface of the floor. In wall assemblies, packing material to be firmly packed into opening on both sides of wall and recessed min 1 in. from wall surface. When a single insulated pipe (with wrap strip layer) is installed in a circular through opening and when the max annular space between the wrap strip layer and the sides of the through opening is 1/8 in., no forming material is required.

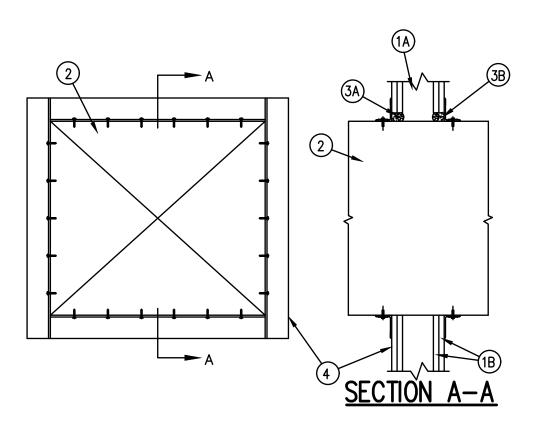
6. Fill, Void or Cavity Materials* — Caulk or Sealant — Applied to fill through opening to a min depth of 1 in. In floor assemblies, fill material to be installed flush with top surface of floor. In wall assemblies, fill material to be installed flush with wall surface on both sides of wall.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant. (The W Rating applies only when FB-3000 WT sealant is used.)

*Bearing the UL Classification Marking

4 PIPE THROUGH CONCRETE FIRESTOP DETAIL

NOT TO SCALE



1. Wall Assembly — The 1 and 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing shall consist of steel channel studs to be min 3—1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional 3—1/2 in. (89 mm) wide steel studs shall be used to completely frame opening.

B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max size of opening to be 1216 sq in. (188.5 cm2) with a max dimension of 38 in. (965 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant — Nom 36 by 30 in. (914 by 762 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm) (point contact) to max 2 in. (51 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of floor or wall assembly.

3. Firestop System — The details of the firestop system shall be as follows:

A. Packing Material (Optional) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction—fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

B. Fill, Void or Cavity Material* - Caulk or Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At the point contact location between duct and wallboard, a min 1/4 in. (6 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.

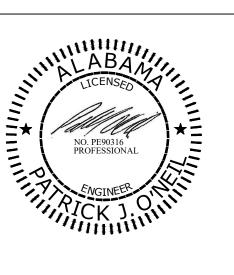
3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant

C. Retaining Angles — Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap wall surfaces of a min of 1 in. (25 mm). Angles attached to duct on both sides of wall with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC.

*Bearing the UL Classification Marking

8 DUCT THROUGH GYPSUM FIRESTOP DETAIL

NOT TO SCALE



TERRACES AT HIGH MOUNTAIN ROAD N 4130 HIGH MOUNTAIN ROAD N HUNTSVILLE, AL 35811

REVISIONS

DATE DESCRIPTION

11-JUN-2021 PERMIT SET

COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED.

ENGINEERING SERVICES

1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501

PROJECT #: K118B

DATE: 11-JUN-2021

SCALE: 11-JUN-2021

SCALE: AS NOTED

DRAWN BY: JCW

APPROVED BY: JCW

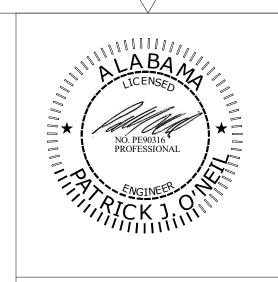
MECHANICAL

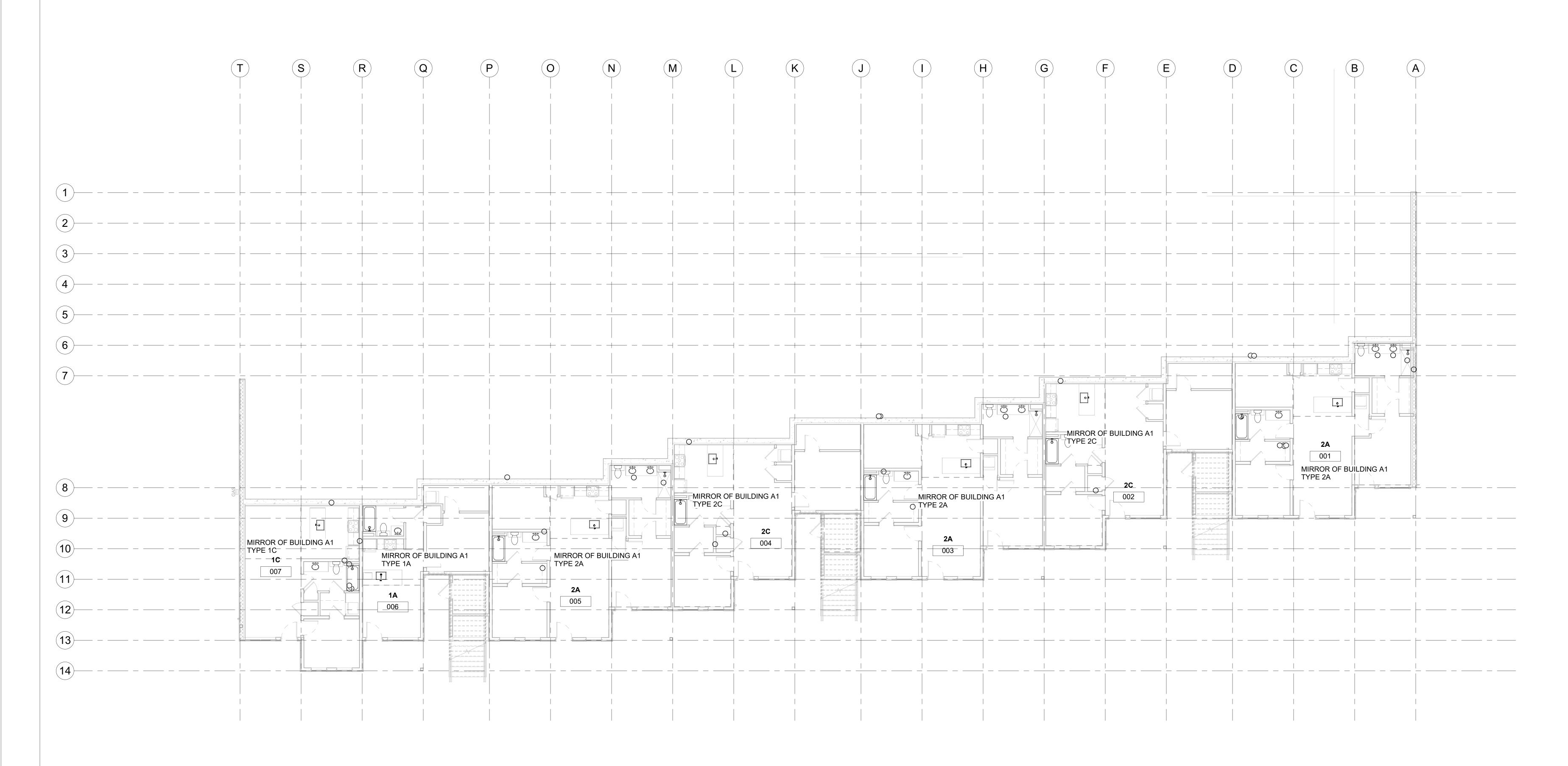
SCHEDULES AND

DETAILS.

Г:

 $\sqrt{12.002}$





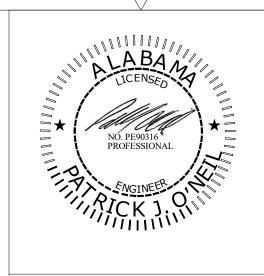
1 MECHANICAL BASEMENT FLOOR PLAN 1/8" = 1'-0"

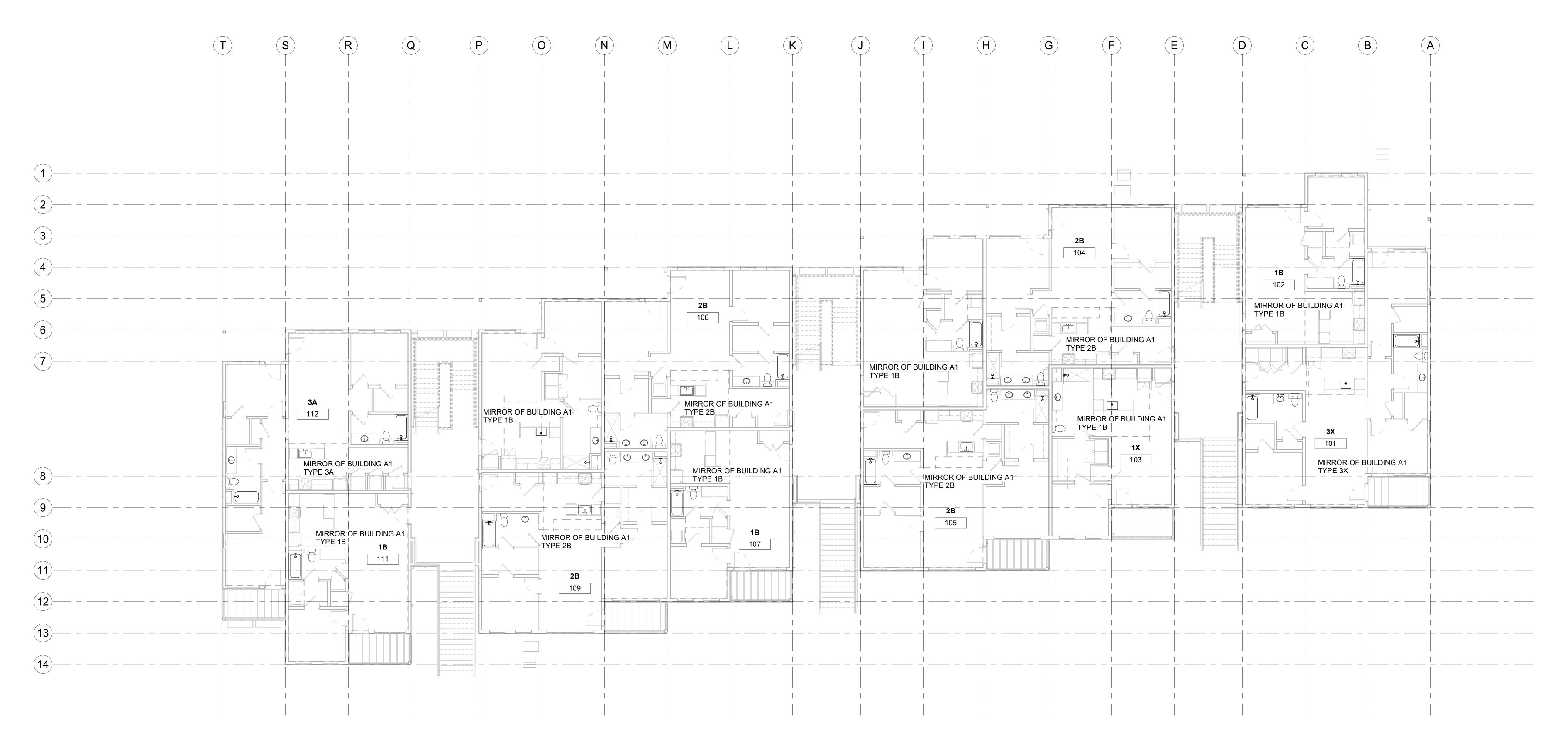
GENERAL NOTE:

THIS PLAN IS A MIRROR COPY OF BUILDING A1.

PLEASE REFER TO A1 FOR LAYOUTS.

M2.100





1 MECHANICAL FIRST FLOOR PLAN 1/8" = 1'-0"

GENERAL NOTE:

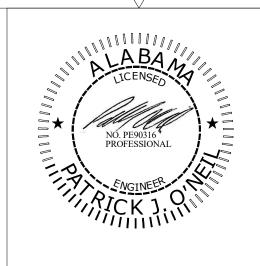
THIS PLAN IS A MIRROR COPY OF BUILDING A1. SHEET PLEASE REFER TO A1 FOR LAYOUTS.

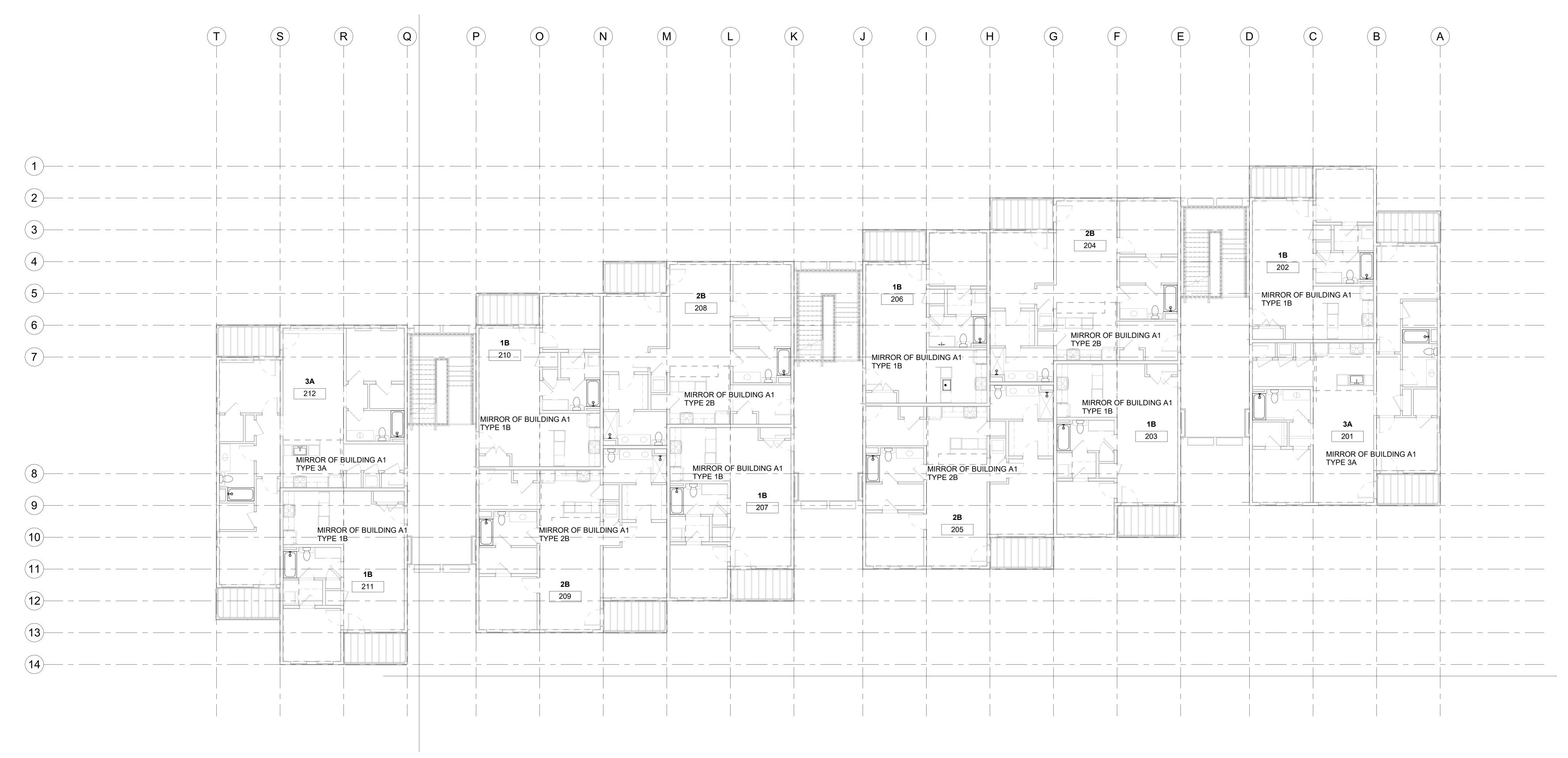
TERRACE AT HIGH MOUNTAIN ROAD
HUNTSVII.F. AL 35811

REV	ISIONS										
#	DATE	DES	SCRIPTION								
#	11-JUN-21	PER	MIT SET								
1		XX									
2		XX									
3		XX									
4		XX									
5		XX									
6		XX									
	COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED.										
	ENGINE	ERI	NG SERVICES								
	POW	HATA 23	RIDGE COURT IN, VIRGINIA 8139 104-372-3501								
PROJECT #: K118											
DATE: 11-JUN-2021											
SCA	ALE:		1/8" = 1'-0"								
DR	AWN BY:		RAC								
APF	PROVED E	3Y:	PJO								
			A 1								

M2.101

FIRST FLOOR PLAN





1 MECHANICAL SECOND FLOOR PLAN
1/8" = 1'-0"

GENERAL NOTE:

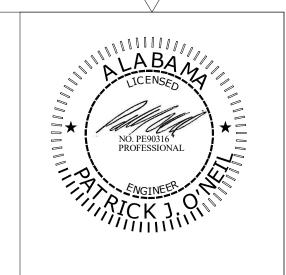
THIS PLAN IS A MIRROR COPY OF BUILDING A1.

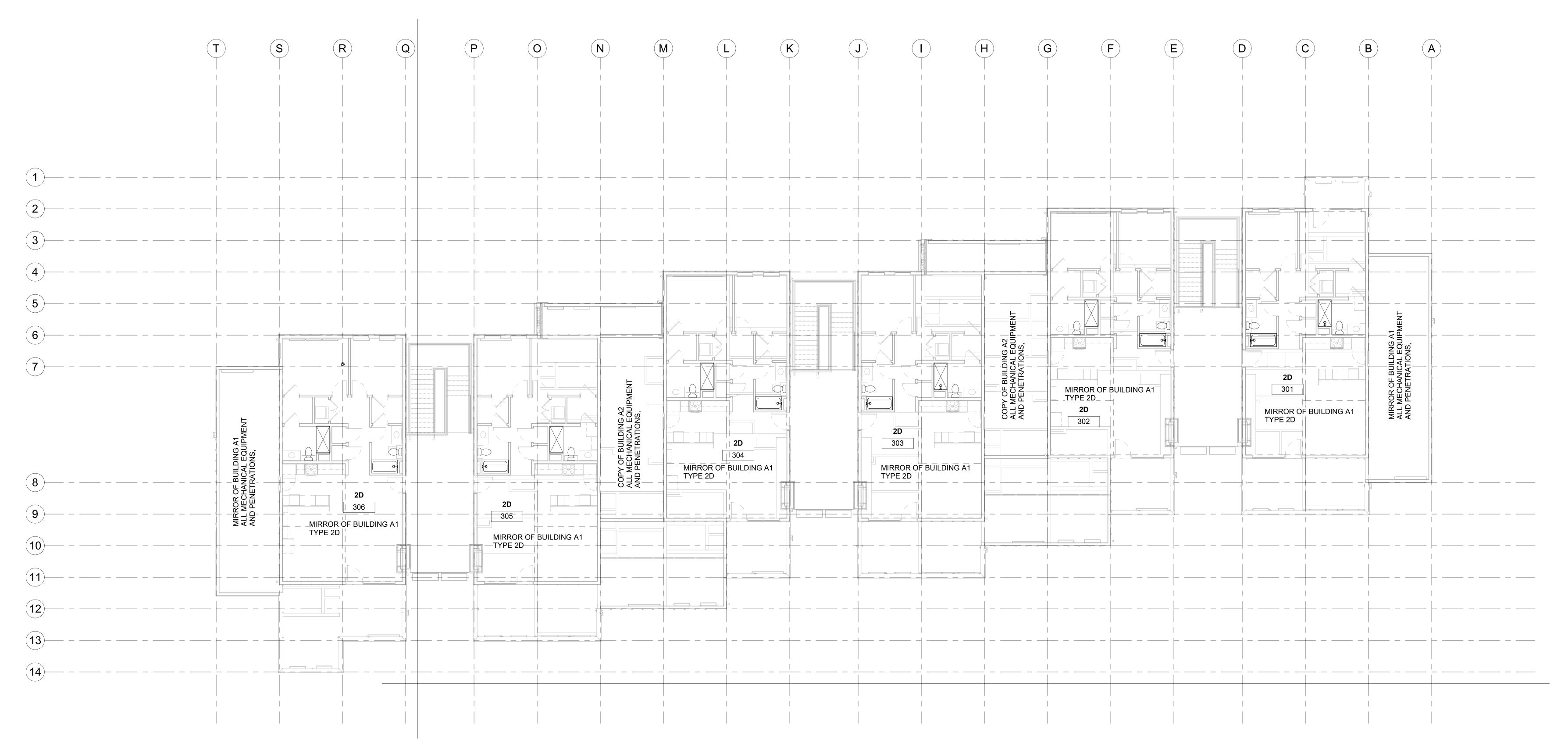
PLEASE REFER TO A1 FOR LAYOUTS.

TERRACE AT HIGH MOUNTAIN ROAD
4130 HIGH MOUNTAIN ROAD
HUNTSVILLE, AL 35811

EV	ISIONS												
#	DATE	DES	SCRIPTION										
#	11-JUN-21	PER	MIT SET										
1		XX											
2		XX											
3		XX											
4		XX											
5		XX											
6		XX											
	COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED.												
	ONE L ENGINEERING SERVICES												
	POW	HATA 23	RIDGE COURT NN, VIRGINIA 1139 104-372-3501										
חח	DJECT #:		1/440										
			K118										
)A7	ΓE:		11-JUN-2021										
C/	ALE:		1/8" = 1'-0"										
RA	RAWN BY: RAC												
PF	PROVED E	3Y:	PJO										
	ECHAN ECOND		AL LOOR PLAN										

M2.102





1 MECHANICAL THIRD FLOOR PLAN
1/8" = 1'-0"

GENERAL NOTE:

THIS PLAN IS A MIRROR COPY OF BUILDING A1.

PLEASE REFER TO A1 FOR LAYOUTS.

TERRACE AT HIGH MOUNTAIN ROAD N 4130 HIGH MOUNTAIN ROAD N HUNTSVII J. F. AI, 35811

REV	'ISIONS		
#	DATE	DES	SCRIPTION
#	11-JUN-21	PER	MIT SET
1		XX	
2		XX	
3		XX	
4		XX	
5		XX	
6		XX	
	COPYRIGHT		NEIL ENGINEERING RVICES
	ALL R		S RESERVED.
		N	EIL
	ENGINE	ERI	NG SERVICES
	POW	HATA 23	RIDGE COURT N, VIRGINIA 3139 304-372-3501
PRO	OJECT #:		K118
DAT	ГЕ:		11-JUN-2021
SCA	ALE:		1/8" = 1'-0"
DRA	AWN BY:		RAC
APF	PROVED E	3Y:	PJO

MECHANICAL

THIRD FLOOR PLAN

M2.103

<u>SECTION 15010 - MECHANICAL GENERAL PROVISIONS:</u>

- 1. THE WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE
- REFERENCED CODES AND STANDARDS: 1.1. LOCAL AUTHORITY HAVING JURISDICTION (AHJ) REQUIREMENTS 1.2. ALABAMA BUILDING CODE — 2015, INCLUDING: IBC/2015 - INTERNATIONAL BUILDING CODE
- 1.2.1. NFPA 70/2014 NATIONAL ELECTRICAL CODE 1.2.2. NFPA 72/2013 - NATIONAL FIRE ALARM CODE
- 1.2.3. 2015 INTERNATIONAL MECHANICAL CODE 1.3. ADAAG — AMERICANS WITH DISABILITIES ACT ACCESSIBILITY 1.4. ANSI — AMERICAN NATIONAL STANDARDS INSTITUTE
- 1.5. ASHRAE AMER. SOC. OF HEATING. REFRIG. AND AIR COND. ENGINEERS
- 1.6. ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS 1.7. NFPA — NATIONAL FIRE PROTECTION ASSOCIATION
- 1.8. OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
- 1.9. SMACNA SHEET METAL AND AIR COND. CONTRACTORS NAT'L ASSOCIATION 1.10. UL – UNDERWRITERS LABORATORIES, INC.
- CONFORM TO THE BUILDING CODE AND LOCAL AUTHORITIES HAVING 6. SCHEDULE (INSULATION BASED ON KNAUF): JURISDICTION (AHJ). OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND FEES REQUIRED.
- CONFORM TO DIV 0, DIV 1 AND THE GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT. COORDINATE SCHEDULE FOR ALL WORK WITH AND FOR APPROVAL BY THE
- COORDINATE WORK FROM OTHER TRADES AND BUILDING STRUCTURE PRIOR TO INSTALLATION. MAKE MINOR ADJUSTMENTS AS REQUIRED FACILITATING
- ALL EQUIPMENT. MATERIALS AND SYSTEMS SHALL BE LISTED AND
- CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. (UL), AS SUITABLE FOR USE INTENDED. 7. THE CONTRACTOR IS RESPONSIBLE FOR THE "MEANS AND METHODS" OF THE WORK. WORK SHALL CONFORM TO THE NECA 1 - "STANDARD OF INSTALLATION" AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE
- INSTALL AND APPLY ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE SUBMITTALS WHERE INDICATED. MECHANICAL EQUIPMENT LOCATED ON ROOFTOP SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S INSTALLATION INSTRUCTIONS TO MAINTAIN CLEARANCES TO ACCESS FOR SERVICE AND
- MAINTENANCE. INSTALL AND PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE, DIRT, AND DEBRIS AND CLEAN AND REPAIR AS REQUIRED. DO NOT USE
- COMPRESSED AIR FOR CLEANING. <u>WARRANTY:</u> PROVIDE WARRANTY ON WORKMANSHIP AND MATERIALS. WARRANTY SHALL COVER ALL COSTS FOR PARTS, LABOR, ASSOCIATED TRAVEL, AND EXPENSES FOR A PERIOD OF ONE YEAR FROM COMPLETION OF SYSTEM ACCEPTANCE. WARRANTY SHALL APPLY EQUALLY TO BOTH HARDWARE AND SOFTWARE. PERSONNEL SUPPORTING THIS WARRANTY AGREEMENT SHALL PROVIDE ON-SITE OR OFF-SITE SERVICE IN A TIMELY MANNER AFTER FAILURE NOTIFICATION TO THE VENDOR. THE MAXIMUM ACCEPTABLE RESPONSE TIME TO PROVIDE THIS SERVICE AT THE SITE SHALL BE 24 HOURS, MONDAY THROUGH FRIDAY AND 48 HOURS ON SATURDAY AND SUNDAY.
- <u>SUBMITTALS:</u> 11.1. PROVIDE SUBMITTALS ON EQUIPMENT AND MATERIALS.
- 11.2. SUBMITTAL REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE PLANS AND SPECIFICATIONS. 11.3. OPERATION OF THE SYSTEMS REMAINS THE RESPONSIBILITY OF THE
- 11.4. REVIEW OF A SPECIFIC ITEM DOES NOT INCLUDE OR IMPLY APPROVAL OF AN ASSEMBLY (OF WHICH THE ITEM IS A
- COMPONENT). 11.5. ALL DEVIATIONS FROM THE PROJECT ENGINEERING DRAWINGS AND SPECIFICATIONS SHALL BE EXPLICITLY NOTED IN SUBMITTALS BY COVER LETTER OR WILL BE CONSIDERED NON-COMPLIANT AND REJECTED, REGARDLESS OF SUBMITTAL REVIEW STATUS. DEVIATIONS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONTRACT DOCUMENTS UNLESS SEPARATELY NEGOTIATED WITH THE
- 11.6. THE CONTRACTOR, BY SUBMITTING A PROPOSED SUBSTITUTION. ACCEPTS ALL RESPONSIBILITY FOR COORDINATING ALL CHANGES AND ABSORBING ALL COSTS DUE TO PROPOSED SUBSTITUTED EQUIPMENT TO INCLUDE, BUT NOT LIMITED TO: COORDINATION WITH AND CHANGES AFFECTING OTHER TRADES, ADDITIONAL CIRCUITS, IMPACT OF ADDITIONAL LOADS, CIRCUIT CHARACTERISTICS, AND SINGLE-POINT CONNECTION KITS.

SECTION 15080-INSULATION:

MEMBRANE.

2. INSTALL INSULATION PER MANUFACTURERS INSTRUCTIONS

3. ON SUPPLY AIR AND OUTSIDE AIR DUCTS ENSURE THAT THE VAPOR

4. PIPING EXPOSED TO WEATHER SHALL BE PROVIDED WITH A WEATHER-PROOF

BLANKET FIBERGLASS: FLEXIBLE FIBROUS GLASS, FLAME RETARDANT

FACTORY LAMINATED FOIL— SKRIM-KRAFT (FSK) VAPOR BARRIER, 2"

STAPLING FLANGE, MAXIMUM VAPOR PERMEANCE OF .02 PERM/IN., MINIMUM

DENSITY OF 1.0 LB/CF, MAXIMUM CONDUCTIVITY PER 1" THICKNESS OF .28

ABOVE CEILINGS 1-1/2" BLANKET TYPE

GRILLE BOOTS 1-1/2" BLANKET TYPE

OUTDOOR REF PIPING 1-1/2" CLOSED CELL

1. WALL ELECTRIC HEATERS (WH) - RECESSED WALL MOUNTED ELECTRIC UNIT

STANDARD EFFICIENCY, SPLIT SYSTEM HEAT PUMP. COMPRESSOR TO BE

INTERNALLY PROTECTED AGAINST HIGH PRESSURE, TEMPERATURE, AND

EXTERNALLY BY A FACTORY INSTALLED HIGH PRESSURE SWITCH. PROVIDE

AND FACTORY WIRED. UNIT SHALL OPERATE WITH R-410A. PROVIDE WITH

5-YEAR LIMITED PARTS WARRANTY AND 5-YEAR LIMITED COMPRESSOR

CONSTRUCTED OF PRE-PAINTED STEEL, INTERNALLY PROTECTED HERMETIC

COMPRESSOR WITH INTERNAL DISCHARGE LINE SOLID CORE FILTER DRIER,

INSTALL UNIT ON PLASTIC HOUSEKEEPING PAD (WITH NEOPRENE BETWEEN

CRANKCASE HEATER, AND HARD START KITS (FOR UNITS WITH REFRIGERANT

LINE LENGTHS OVER 100 FT). CONDENSER COILS CONSTRUCTED OF COPPER

PAD AND ROOF) OR 4x4 WEATHER TREATED LUMBER WITH NEOPRENE PADS

COMPACT AND STURDY CABINET IS PROTECTED WITH A DURABLE FINISH AND

INSULATED TO PREVENT SWEATING. PROVIDE WITH ALUMINUM FIN COILS AND

FOR UNITS MOUNTED VERTICALLY, PROVIDE FLOAT SWITCH ON CONDENSATE

CONDENSATE DRAIN PAN UNDER UNIT WITH FLOAT OR WATER DETECTOR

OVERFLOW CONNECTION. FOR UNITS MOUNTED HORIZONTALLY PROVIDE

WITHIN THE PAN. UPON A DETECTION OF WATER IN THE PAN OR

CONDENSATE OVERFLOW CONNECTION, UNIT SHALL BE SHUT DOWN.

3. PROVIDE NON-PROGRAMMABLE DIGITAL THERMOSTAT FOR ALL RESIDENTIAL

4. PROVIDE DUCTED INDOOR UNIT WITH SUPPLY AND RETURN PLENUMS AS

INDICATED. PLENUMS TO BE SIZED AS SMALL AS POSSIBLE FOR

CONNECTIONS. LINE WITH 1" INSULATION FOR SOUND DAMPENING.

5. PROVIDE WITH INTERNAL FILTER RACK AND 1"THICK FILTER.

REMOVABLE ACCESS PANEL TO ELECTRICAL BOX. FURNISH FULLY CHARGED

HEATER WITH INTEGRAL THERMOSTAT, LOUVERED FRONT COVER, DISCONNECT

LINER WHERE NOTED, OTHERWISE:

1" CLOSED CELL ELASTOMERIC

ELASTOMERIC W/ WEATHERPROOF

2" 1LB DENSITY BLANKET

BARRIER IS CONTINUOUS AND SEALED AT ALL PENETRATIONS.

AT 75°F MEAN TEMPERATURE. BASED ON KNAUF DUCT WRAP.

GRILLE BOOTS 1" LINER

SUPPLY DUCTWORK

RETURN/TRANSFER DUCTWORK:

OUTSIDE AIR DUCTWORK:

EXHAUST DUCTWORK:

SECTION 15767—HEATERS:

ELECTRIC UNIT HEATERS:

EXHAUST

INDOOR REF PIPING

SWITCH, AND HEATING ELEMENT.

SECTION 15770-SPLIT SYSTEM AIR CONDITIONERS:

OUTDOOR STANDARD SPLIT SYSTEM HEAT PUMP (HP):

TUBING AND ENHANCED ALUMINUM COILS.

INDOOR STANDARD SPLIT SYSTEM AIR HANDLING UNIT (AHU):

BETWEEN UNIT AND LUMBER.

ELECTRIC HEATERS.

- WALL CAPS (EXTERIOR WALL): PROVIDE WALL CAPS FOR ALL DRYER AND 1. ALL PRODUCTS IN THE CONDITIONED AIRSTREAM (INCLUDING PLENUMS) SHALL BE NONCOMBUSTIBLE AND SHALL COMPLY WITH NFPA 90A BATHROOM EXHAUST DUCTS AND OUTSIDE AIR DUCTS AT EXTERIOR WALL PENETRATIONS. WALL CAPS SHALL BE ALUMINUM CONSTRUCTION. PROVIDE FLAME/SMOKE/FUEL CONTRIBUTION RATING OF 25/50/0 AND COMPLY WITH DRYER AND EXHAUST DUCTS WITH BUILT IN DAMPER. BASED ON SEIHO UL181 EROSION LIMITATIONS. FIRE HAZARD RATINGS SHALL BE DETERMINED MODEL SFZC. COLOR TO BE DETERMINED BY THE ARCHITECT. BY NFPA-255 "METHOD OF TEST OF SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS", ASTM E84, OR UL723.
 - 2. <u>FIRE DAMPERS:</u> CURTAIN TYPE WITH BLADES OUT OF THE AIR STREAM (HIGH HAT TYPE) WITH 1-1/2" HOUR UL RATINGS APPROVED FOR USE IN 2 HOUR RATED WALLS AND 1-HOUR RATED FLOOR ASSEMBLIES. PROVIDE WITH FUSIBLE LINK AND CLOSURE SPRING FOR USE IN VERTICAL DUCTWORK (HORIZONTALLY MOUNTED).

SECTION 15820-DUCTWORK ACCESSORIES:

- CEILING MOUNTED RADIATION DAMPER: INSULATED, 2-BLADE, 22 GA GALVANIZED STEEL FRAME AND BLADES, SPRING OPERATED WITH 212°F FUSIBLE LINK. BASED ON ARROW MODEL A91 (RECTANGULAR) AND A97
- 4. VOLUME DAMPERS (MANUAL): BLADES AND FRAME SHALL BE OF EXTRUDED ALUMINUM OR GALVANIZED STEEL CONSTRUCTION. PROVIDE SINGLE BLADE DAMPERS PER SMACNA FIG 2-12, FIGURE B ON RECTANGULAR DUCTS LESS THAN 30" IN WIDTH AND 12" OR LESS IN DEPTH AND MULTI-BLADE DAMPERS PER SMACNA FIGURE 2-13, FIGURE A ON LARGER RECTANGULAR DUCTS. ROUND DUCT VOLUME DAMPERS SHALL BE SINGLE BLADE MOUNTED ON A CONTINUOUS SHAFT. EQUIP WITH LOCKING QUADRANT AND END BEARINGS. PROVIDE HANDLE EXTENSION ON EXTERNALLY INSULATED DUCTWORK.

SECTION 15830-FANS:

- 1. FANS SHALL BE UL LISTED AND AMCA CERTIFIED. ELECTRICAL DEVICES SHALL CONFORM TO NEMA STANDARDS. WIRING SHALL CONFORM TO NEC.
- 2. MOTORS SHALL BE NON-OVERLOADING, HIGH EFFICIENCY TYPE. MOTORS DESIGNED FOR VARIABLE SPEED SHALL BE DESIGNED AND RATED FOR USE WITH VFDs.
- 3. CEILING MOUNTED (WITHIN RATED DROPPED CEILING): FORWARD CURVED INJECTION MOLDED POLYPROPYLENE FAN WHEEL, 22 GAUGE GALVANIZED STEEL INLET BOX, ISOLATED MOUNTED DIRECT MOTOR, MOUNTED TO ONE PIECE GALVANIZED STAMPED STEEL INTEGRAL MOTOR MOUNT/INLET. BACKDRAFT DAMPER. AND WHITE HIGH IMPACT STYRENE INJECTED MOLDED GRILLE. PROVIDE WITH INTEGRAL RADIATION DAMPER. BASIS OF DESIGN: COOK MODEL GC.

SECTION 15850-GRILLES, REGISTERS, AND DIFFUSERS:

- PROVIDE AS INDICATED IN THE GRD SCHEDULE. PROVIDE ALL GRDs WITH INTEGRAL VOLUME DAMPERS OR WITH VOLUME EXTRACTORS AS INDICATED. COLOR OF THE GRILLES TO BE DETERMINED BY ARCHITECT. PERFORMANCE OF THE GRILLES IS A MAXIMUM OF 700 FPM OR A NC LEVEL OF 30 OR LESS FOR SIZE AND CFM INDICATED.
- INSTALL WITH AIR TIGHT CONNECTION TO DUCTWORK. COORDINATE MOUNTING CONDITIONS WITH ARCHITECTURAL.
- CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENTS.

SECTION 15890-METAL DUCTWORK:

- 1. UNLESS OTHERWISE NOTED (REFER TO PARAGRAPH 2). RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED OF HOT ROLLED STEEL CONTINUOUSLY ANNEALED AND HOT DIPPED GALVANIZED SHEET OR COIL, MINIMUM G-90, 0.90 OZ/SF COATING SUITABLE FOR FORMING WITHOUT FLAKING OR PEELING, SUITABLE FOR WELDING OR SOLDERING. ZINC COATING SHALL NOT BE IMPAIRED FROM DOUBLE SEAMING, BREAKING OR ROLL FORMING. 14 GA. AND LIGHTER CONFORMING TO ASTM A 527: 13 GA AND HEAVIER CONFORMING TO
- 2. DUCT BOARD IS ACCEPTABLE WITH WRITTEN APPROVAL BY OWNER DUCT BOARD, IF ALLOWED, SHALL HAVE A MINIMUM R-VALUE OF 6 AND BE COMPOSED OF RESIN BONDED GLASS FIBERS. DUCT BOARD SHALL HAVE AN FSK VAPOR JACKET AND COMPLY WITH ASTM C1290.
- 3. DRYER VENT SHALL BE 26 GA. MINIMUM.
- 4. UNLESS OTHERWISE NOTED, ROUND DUCTWORK SHALL BE CONSTRUCTED OF G-90 GALVANIZED STEEL WITH THE FOLLOWING MINIMUM GAUGES: <15" DIA. = 24 GAUGE, 15"-26" DIA. = 22 GAUGE.
- 5. INSULATED ROUND FLEXIBLE DUCT (MAX LENGTH 8') IS ALLOWED FOR BRANCH CONNECTIONS TO DIFFUSERS AND GRILLES ABOVE LAY-IN CEILINGS. INSULATED ROUND FLEXIBLE DUCTWORK SHALL BE UL181, CLASS 1 AND SUITABLE FOR LOW PRESSURE APPLICATIONS OF NOT LESS THAN 3" W.C. CONNECT TO METAL DUCT WITH STAINLESS STEEL DRAW BANDS.
- 6. ALL DUCT SIZES SHOWN ON PLANS ARE INSIDE CLEAR (AIRFLOW) DIMENSIONS. NO ALLOWANCE HAS BEEN MADE FOR DUCT LINER OR DOUBLE
- WALL DUCTWORK WHERE REQUIRED. 7. FABRICATE AND SUPPORT METAL DUCT IN ACCORDANCE WITH SMACNA HVAC
- 8. PROVIDE ALL HANGERS AND SUPPORTS AS REQUIRED.

DUCT CONSTRUCTION STANDARDS.

- 9. PROVIDE DOUBLE WALL TURNING VANES IN ALL LOW PRESSURE SUPPLY, RETURN, AND EXHAUST DUCTS . TURNING VANES ARE NOT REQUIRED WHERE RADIUS ELBOW FITTINGS WITH R=1.5 OR GREATER ARE USED.
- 10. SEAL DUCT JOINTS AIR TIGHT. PROVIDE AIR TIGHT SEAL WITH VOLUME DAMPERS AT ALL TAPS OFF MAIN DUCT TO DIFFUSERS.

11. SCHEDULE

<u>System</u>	<u>Section</u>	PRESSURE CLASS 2" 2" 2"	SEAL CLASS
Supply	Note 1		A
Return—Relief	All		C
Gen. Exhaust	All		C
DRYER VENT	ALL	2"	SPOT WELD

1. REFER TO PARAGRAPH 2 WHERE DUCT BOARD IS ALLOWED.

MECHANICAL GENERAL NOTES: PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, AND OTHER SERVICES NECESSARY TO SATISFACTORILY COMPLETE ALL MECHANICAL WORK INDICATED ON THE CONTRACT DOCUMENTS. ALL SPECIFICATIONS, NOTES, OR SYMBOLS MAY NOT BE APPLICABLE FOR THIS TENANT. CONTRACTOR SHALL CAREFULLY REVIEW PLANS AND DETAILS FOR ACCURATE EXTENT OF WORK REQUIRED.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROCUREMENT OF ALL APPLICABLE BUILDING PERMITS, INSPECTIONS, AND OTHER REQUIRED ADMINISTRATIVE DUTIES TO COMPLETE ALL INDICATED WORK REQUIREMENTS.

DESIGN CONSIDERATIONS: SUMMER: 95°F DB, 75°F WB OUTDOOR TEMPERATURE: WINTER: 17°F DB SUMMER: 75°F DB. 45-60% R.H. INDOOR TEMPERATURE WINTER: 70°F DB

*HUMIDITY WILL VARY WITH OUTDOOR CONDITION

VENTILATION AND DISTRIBUTION: MECHANICAL VENTILATION WILL BE PROVIDED PER IMC SECTION 403 AND TABLE 403.3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH IBC 2015, IMC 2015 AND ANY ADDITIONAL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

ALL MATERIALS WITH ELECTRICAL REQUIREMENTS SHALL BE UL LISTED FOR THE INTENDED

PHASING AND WORK PERFORMANCE:

APPLICATION.

THE CONTRACTOR SHALL COORDINATE ALL PHASING AND STAGING/STORAGE OF MATERIALS AND WORK WITH THE GENERAL CONTRACTOR, A WRITTEN GUARANTEE FOR THE PERIOD OF AT LEAST ONE YEAR AFTER SUBSTANTIAL COMPLETION SHALL BE TURNED OVER TO THE OWNER ON ALL MATERIALS AND WORK DONE BY THE CONTRACTOR, ALL MATERIALS INSTALLED SHALL ALSO BE PROVIDED WITH THE MAXIMUM AVAILABLE GUARANTEE FROM THE MANUFACTURER.

CLEAN UP AND PROTECTION OF AREA: THE CONTRACTOR SHALL CLAIM ALL RESPONSIBILITY FOR PROTECTION OF THE AREAS INVOLVED, INCLUDING ANY AREAS INVOLVED IN THE TRANSPORTATION AND STORAGE OF EQUIPMENT DURING CONSTRUCTION. THE CONTRACTOR SHALL CONSISTENTLY MAINTAIN A WORK ENVIRONMENT THAT IS CLEAN AND PROTECTED FROM UNAUTHORIZED PERSONS AND DAMAGE DUE TO CONSTRUCTION. AFTER COMPLETION OF ALL CONSTRUCTION, THE CONTRACTOR SHALL CLEAN ALL AREAS INVOLVED IN THE CONSTRUCTION PROCESS, TO THE OWNER'S APPROVAL. ALL REFUSE INVOLVED DUE TO CONSTRUCTION SHALL BE PROPERLY AND PROMPTLY DISPOSED OF AT AN ON SITE LOCATION.

CONSTRUCTION TYPE: R-2 USE GROUP: OCCUPANCY:

- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO SHOW THE GENERAL ROUTING, LOCATION, AND SIZE OF EQUIPMENT, PIPING AND/OR DUCTWORK, THE CONTRACTOR SHALL MAKE ALLOWANCES FOR ALL MATERIALS AND LABOR NECESSARY TO MAKE FINAL CONNECTIONS. NOT ALL NECESSARY OFFSETS OR FITTINGS ARE SHOWN, BUT SHALL BE PROVIDED WHERE REQUIRED. THE CONTRACTOR SHALL PROVIDE ALL ACCESSORIES, SUPPORTS, AND HANGERS TO ALLOW FOR COMPLETE AND FUNCTIONAL SYSTEMS. ALL WORK SHALL MEET OR EXCEED PUBLISHED OR ACCEPTED STANDARDS OF QUALITY WORKMANSHIP. AND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS AND/OR INSTALLATION INSTRUCTIONS. THE INTENT OF THESE CONTRACT DOCUMENTS IS TO PROVIDE COMPLETE FUNCTIONING SYSTEMS.
- INSTALL ALL DEVICES IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- COORDINATE THE PROPER GRILLE STYLE AND FRAME STYLE WITH THE FINAL APPROVED CEILING CONSTRUCTION AND INSTALL GRILLES, REGISTERS, AND DIFFUSERS.
- DUE TO THE SMALL SCALE OF THE DRAWINGS, THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY TO COORDINATE THE AIR OUTLET AND INLET LOCATIONS WITH THE CEILING PLANS, LIGHTING PLANS, SECTIONS AND/OR DETAILS.
- PROVIDE SUBMITTALS ON ALL EQUIPMENT AND CONTROLS FOR APPROVAL.
- PROVIDE OWNER TRAINING ON ALL EQUIPMENT.
- PROVIDE START-UP OF ALL EQUIPMENT.
- WELDING, CUTTING, OR BURNING: THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM OF 72 HOURS ADVANCE NOTICE PRIOR TO PERFORMING ANY WELDING. CUTTING. OR BURNING WITHIN THE BUILDING. NO WELDING. CUTTING. OR BURNING SHALL OCCUR WITHOUT GENERAL CONTRACTOR APPROVAL. WHERE WELDING, CUTTING, OR BURNING ARE NECESSARY, NON-COMBUSTIBLE SHIELDS SHALL BE USED AND SUITABLE FIRE EXTINGUISHING EQUIPMENT SHALL BE MAINTAINED NEARBY.
- FABRICATION OF STEEL SUPPORTS: FABRICATE FROM STEEL ANGLES, CHANNELS OR PLATES IN ACCORDANCE WITH ASTM.
- THERMOSTAT LOCATIONS ARE GENERAL. THERMOSTATS SHALL BE LOCATED ADJACENT TO DOORS OR NEAR RETURN GRILLES. COORDINATE FINAL THERMOSTAT LOCATIONS WITH ARCHITECT AND/OR OWNER.

MECHAN	IICAL LEGEN	ID	
<u>SYMBOL</u>	DESCRIPTION	<u>SYMBOL</u>	<u>DESCRIPTION</u>
WxD	DUCT SIZE (FIRST FIGURE IS OF SIDE SHOWN DIMENSION)	24x12, R-X 100 CFM	SIDEWAYS RETURN
	FLEXIBLE CONNECTION	24x12, S-X 100 CFM	SIDEWAYS SUPPLY
20x20 12x12	TRANSITION	RD ■ 8″ø, S−1	DIFFUSER TO BE PROVIDED WITH RADIATION DAMPER DIFFUSER TAG
	FIRE DAMPER W/ ACCESS DOOR	160 CFM ◀	WITH AIRFLOW DOOR UNDERCUT
	AIR TIGHT CONNECTION OFF DUCT MAIN	① ③	THERMOSTAT (48"AFF) SMOKE DETECTOR
	4-WAY THROW SUPPLY DIFFUSER WITH FLEX DUCT CONNECTION	(60C) AD	OCCUPANCY SENSOR ACCESS DOOR IN SIDE OF WALL OR DUCT
	RETURN DIFFUSER	<u>AHU-1</u>	EQUIPMENT NUMBER 1-HOUR RATED WALL
24°-	HEAT PUMP WITH COIL AND MAINTENANCE CLEARANCE		2-HOUR RATED WALL
	BOUNDARY LINE; REFER TO MANUFACTURER'S MANUAL.	ZD 🗖	ZONE DAMPER
		М	MOTORIZED DAMPER; USED FOR BYPASS AIR

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Α	AMPERES	GA	GAUGE
AD	ACCESS DOOR	HP	HORSEPOWER
AHU	AIR HANLDING UNIT	HZ	FREQUENCY
BTU	BRITISH THERMAL UNIT	KW	KILOWATT
BTUH	BRITISH THERMAL UNIT PER HOUR	LAT	LEAVING AIR TEMPERATURE
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
DB	DRYBULB	NTS	NOT TO SCALE
DE	DRYER EXHAUST	OA	OUT SIDE AIR
DN	DOWN	PD	PRESSURE DROP
DWG	DRAWING	PH	PHASE
DX	DIRECT EXPANSION	PSI	POUNDS PER SQUARE INCH
EA	EXHAUST AIR	PVC	POLYVINYL CHLORIDE
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EF	EXHAUST FAN	RD	RADIATION DAMPER
ESP	EXTERNAL STATIC PRESSURE	RL	REFRIGERANT LIQUID
°F	DEGREE FAHRENHEIT	RPM	REVOLUTIONS PER MINUTE
FD	FIRE DAMPER	RS	REFRIGERANT SUCTION
FLA	FULL LOAD AMPERES	SA	SUPPLYAIR
FPM	FEET PER MINUTE	TYP	TYPICAL
FT	FEET	WB	WET BULB
	1	WH	WALL HEATER



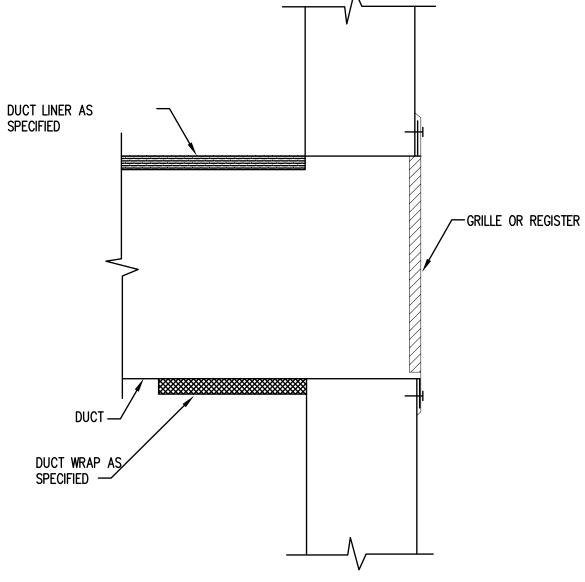
M3.001 - MECHANICAL NOTES, SPECIFICATIONS, LEGEND, DETAILS AND ABBREVIATIONS

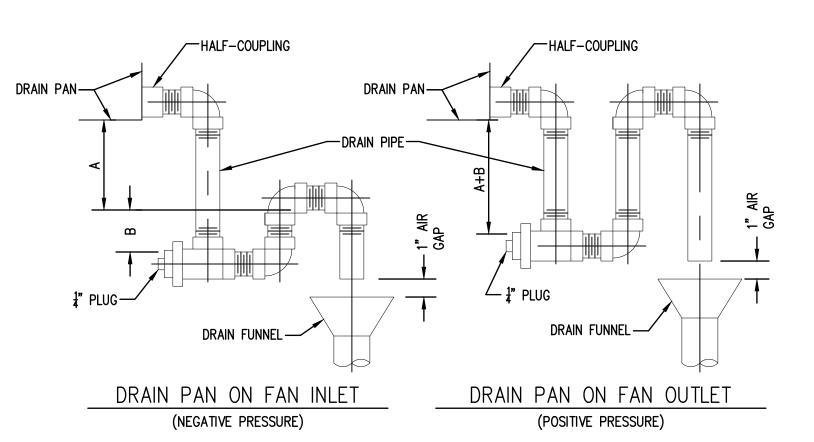
M3.002 - MECHANICAL SCHEDULES AND DETAILS M3.100 - MECHANICAL BASEMENT FLOOR PLAN

M3.101 - MECHANICAL FIRST FLOOR PLAN

M3.102 - MECHANICAL SECOND FLOOR PLAN M3.103 - MECHANICAL THIRD FLOOR PLAN

M3.900 - MECHANICAL ENLARGED PLANS M3.901 - MECHANICAL ENLARGED PLANS

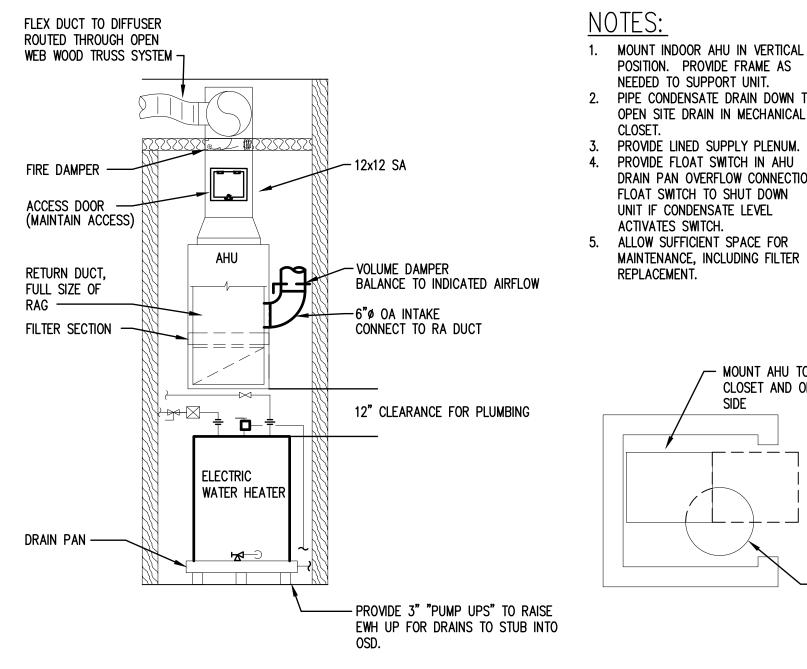


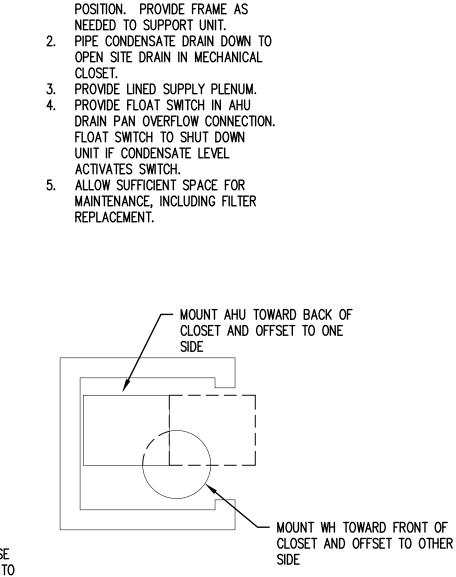


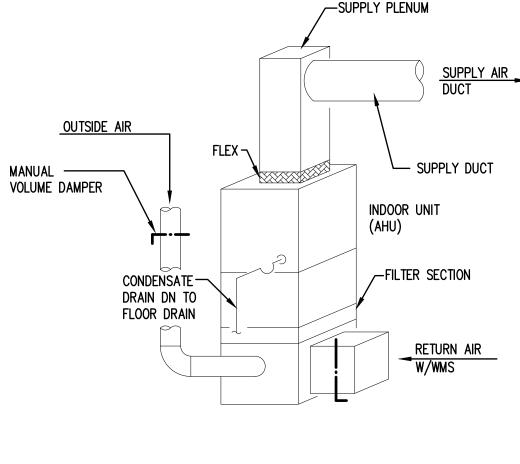
1. DRAIN PIPE TO BE SAME SIZE AS UNIT OUTLET, BUT NOT

LESS THAN 1" PIPE SIZE. 2. "A"=SYSTEM STATIC IN INCHES AT DRAIN POINT. "B"=1/2 SYSTEM STATIC IN INCHES AT DRAIN POINT.

CONDENSATE DRAIN DETAIL







PROVIDE RETURN AIR PLENUM WITH FILTER. PIPE CONDENSATE DRAIN DOWN TO FLOOR DRAIN IN MECHANICAL CLOSET. PROVIDED LINED RETURN AND SUPPLY PLENUMS. PROVIDE FLOAT SWITCH IN AHU DRAIN PAN OVERFLOW CONNECTION. FLOAT SWITCH TO SHUT DOWN UNIT IF CONDENSATE LEVEL ACTIVATES SWITCH.

NEEDED TO SUPPORT UNIT.

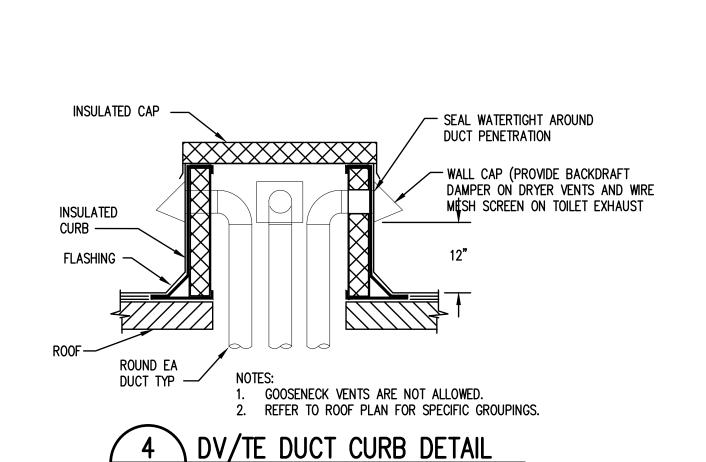
MOUNT INDOOR AIR HANDLING UNIT IN

VERTICAL POSITION. PROVIDE FRAME AS

<u>ahu notes:</u>

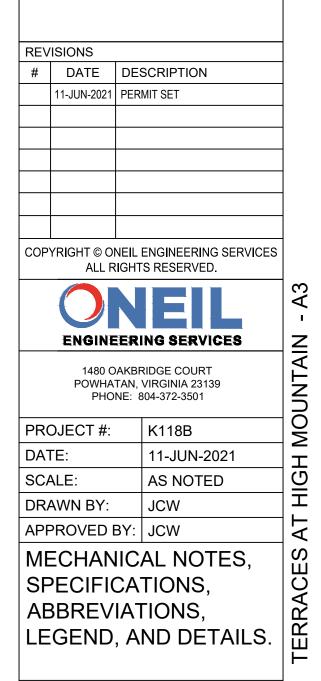
\ VERTICALLY MOUNTED AHU DETAIL M001





M001 NOT TO SCALE

INDOOR AHU MOUNTED ABOVE WATER HEATER CLOSET LAYOUT M001 / NOT TO SCALE



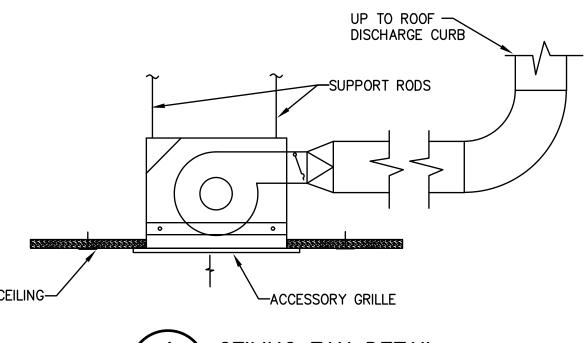
 \triangleleft

 ∞

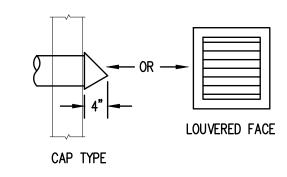
ELECTRIC UNIT HEATER SCHEDULE: AIR DATA ELECTRIC DATA SELECTION BASED ON REMARKS UNIT NO. SERVING CAPACITY **TYPE** EAT CFM FLA VOLT KW MANUFACTURER MODEL (BTUH) MECHANICAL ROOMS AND WALL MTD 6142 100 1.8 15 120 **BERKO** FRA1812 **STAIRS**

FAN S	SCHEDULE:											
				BLADE	TOTAL	FAN	МО	TOR DATA	A	SELECTION I	BASED ON	
UNIT NO.	SERVING	TYPE	CFM	TYPE	STATIC H ₂ O	RPM	HP	VOLTS	PH	MANUFACTURER	MODEL	REMARKS
EF-1	RESIDENTIAL BATHROOM	CEILING MTD	50	FC	0.35	750	27W	120	1	COOK	GC-128	CONTROLL BY SWITCH

							<u> </u>																	
E1000E		TYPE		5	SERVIC	=		MOUNTI	NG DATA					CON	NSTRUC	CTION D	ATA						SELECTION BAS	SED ON
UNIT NO.	G	R	D	SA	RA	EA	CEILING	DUCT	FLOOR	WALL	SHAPE	MATERIAL	COLOR	,	ACCES	SORIES			P.	ATTER	N		MANUFACTURER	MODEL
	9	K	D	5	2	LA	CEILING	DOCT	FLOOR	VVALL	SHAFE	MATERIAL	COLOR	VD	RC	VE	Р	1-W	2-W	3-W	4-W	E/R	WANDFACTORER	WODEL
S-1		Х		Χ			Х				RECT	ALUMINUM	TBD	Х					Х				USAIRE	102M
R-1	Х				Х					Х	RECT	STEEL	TBD	Х								X	KRUEGER	S80
E-1	Х					Х				Х	RECT	STEEL	TBD									X	KRUEGER	S80





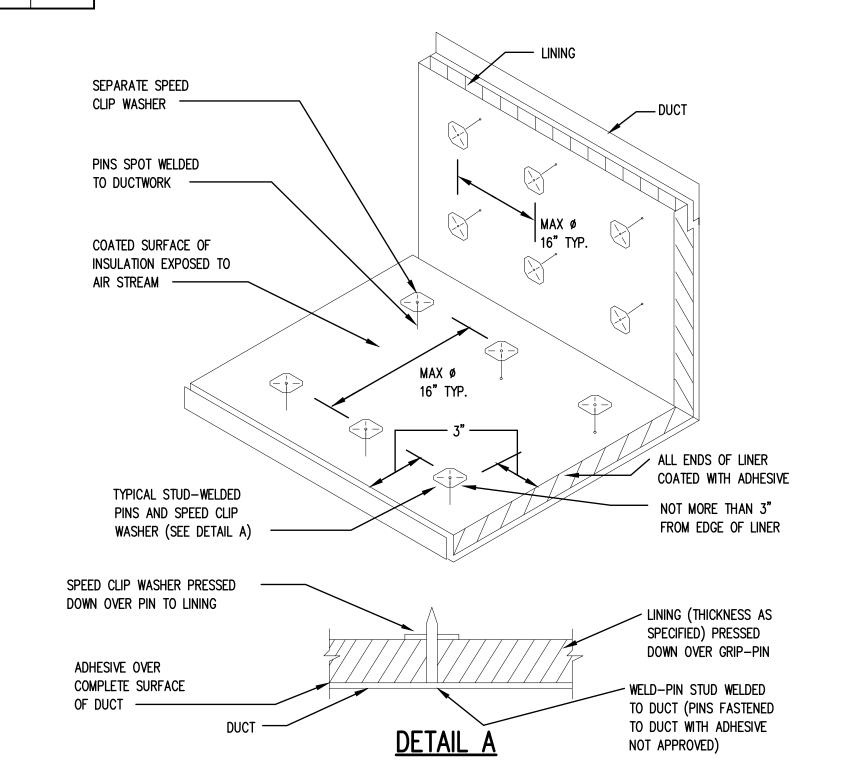




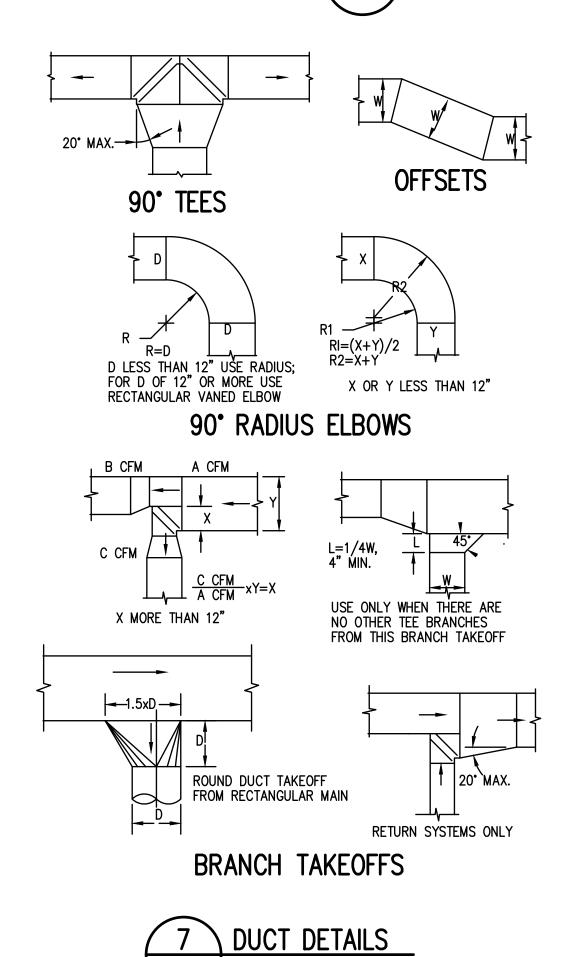
SPLIT S	YSTEM C	OODTU	R UN	IT SC	HEDU	ILE (14	SEER)	- C	ONVE	NTIO	NAL												
			l	UNIT DATA				FAN	DATA			COMPR	ESSOR(S))	U	NIT ELECT	TRIC DATA	+	SELECTION	N BASED ON	PAIF	RED WITH	
UNIT TAG	SERVING	CAPACITY MBH	COND. EAT °F	S. SUCT. °F	SEER	REFRIG. TYPE	NO.	HP	RPM	TOTAL CFM	NO.	STEPS	LRA	RLA	MCA	MOCP	VOLT	PH	MANUF.	MODEL	MANUF.	MODEL	REMARKS
HP-A	AHU-A	18.0	95	45	14.0	R-410A	1	1/12	1100	-	1	1	48	9	11.8	20	208	1	CARRIER	CH14NB18-A	CARRIER	FMA4P1800AL	
HP-B	AHU-B	24.0	95	45	14.0	R-410A	1	1/10	1100	-	1	1	62.9	10.9	14.2	25	208	1	CARRIER	CH14NB24-A	CARRIER	FMA4P2400AL	

SPLIT SY	YSTEM AIR HAND	DLING I	UNIT	SCH	EDU	LE -	CONVE	NTIONA	\L																
			SUPPLY	FAN DA	TA			COOLING	DATA			ŀ	IEATING DAT	A	ELEC	. HEATI	NG COIL	DATA	UN	IIT ELEC	TRIC DA	TA	SELECTION	BASED ON	
UNIT TAG	SERVING	NOMINAL CFM RANGE	ESP Delta P IN H ₂ O	OA CFM	HP	RPM	TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH	EAT		SEER @ARI	CAPACITY MBH	INDOOR EAT DB °F	OUTDOOR COND. DB °F	KW	VOLT	PH	NO. STEPS	VOLT	PH	MCA	MOCP	MANUFACTURER	MODEL	REMARKS
AHU-A	APARTMENT TYPE A	600	0.5	SEE UNIT SCHED	1/6	1075	18.0	13.2	80	67	14.0	12.3	70	17	5	240	1	1	208	1	23.6	25	CARRIER	FMA4P1800AL	
AHU-B	APARTMENT TYPE B	800	0.5	UNIT SCHED	1/4	1075	24	18.01	80	67	14	12.3	70	17	5	240	1	1	208	1	23.9	30	CARRIER	FMA4P2400AL	

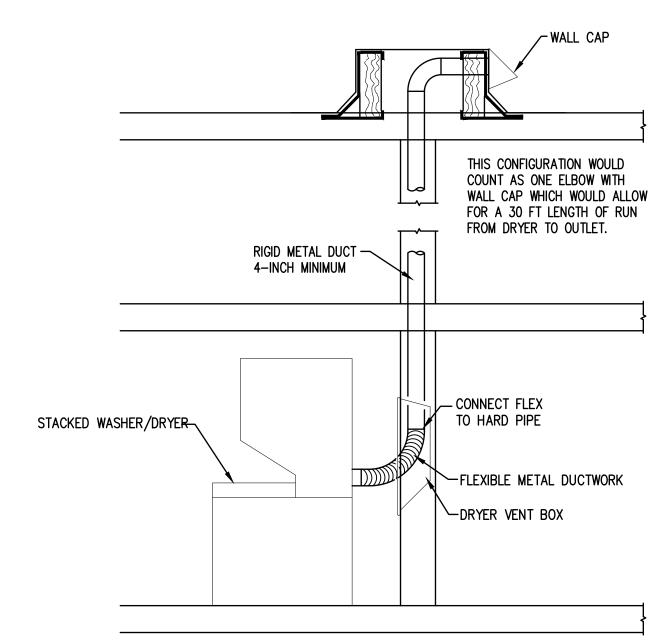
	AC AP	T UNIT	Τ		AC AP	T UNI	Т		AC AF	PT UNIT	Γ		AC AF	T UNI ⁻ DULE	Т
UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE
3001	45	А	Α	3101	60	Α	Α	3201	60	Α	Α	3301	45	Α	Α
3002	30	В	В	3102	30	В	В	3202	30	В	В	3302	45	В	В
3003	45	Α	Α	3103	30	Α	Α	3203	30	Α	Α	3303	45	А	Α
3004	30	А	Α	3104	45	А	Α	3204	45	Α	Α	3304	45	Α	Α
3005	45	Α	Α	3105	3105 45 A A		Α	3205	45	Α	Α	3305	45	Α	Α
3006	30	Α	Α	3106	30	Α	Α	3206	30	Α	Α	3306	45	Α	Α
3007	30	Α	Α	3107	30	Α	Α	3207	30	Α	Α				
	,			3108	45	Α	Α	3208	45	Α	Α				
				3109	45	Α	Α	3209	45	Α	Α				
				3110	30	Α	Α	3210	30	Α	Α				
				3111	30	Α	Α	3211	30	Α	Α				
				3112	60	Α	Α	3212	60	А	Α				



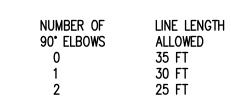
6 SOUND LINING INSTALLATION DETAIL M002 NOT TO SCALE



M002 NOT TO SCALE

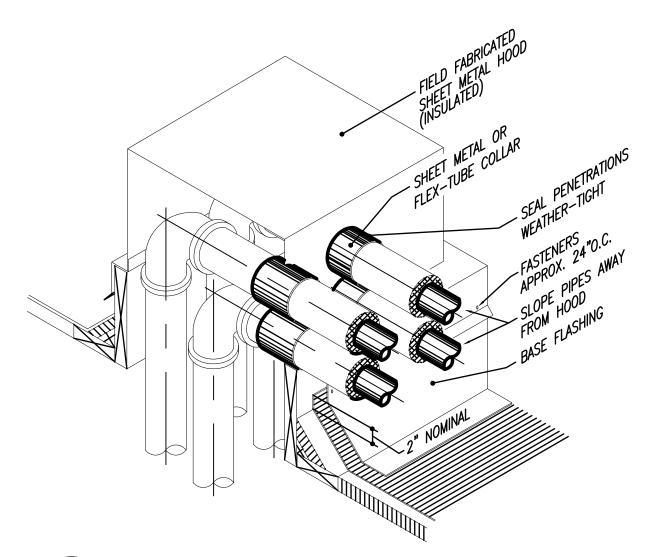


BELOW IS THE CHART ON THE MAXIMUM DRYER LENGTHS PER THE DRYER MANUFACTURER. IT IS UP TO THE HVAC CONTRACTOR TO VERIFY LINE LENGTHS PER THE INSTALLED PRODUCT AND COMPARE TO THE CHART BELOW. NOTE THAT THE LONGEST RUN IS AFFECTED BY THE TYPE OF WALL CAP USED. THE PREFERRED WALL CAP TYPE IS SHOWN UNDER WALL CAP SPECIFICATION. SMALLER OR DIFFERENT CONFIGURATIONS OF THE WALL CAP WILL AFFECT THE LINE LENGTH OF THE DRYER EXHAUST AND NEED TO BE EVALUATED PRIOR TO INSTALLATION.

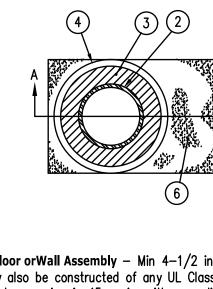


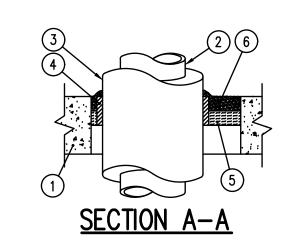
NOTE: (2) 45° ELBOWS = (1) 90° ELBOW





5 REFRIGERANT PIPING ROOF DETAIL M002 NOT TO SCALE





1. Floor orWall Assembly – Min 4–1/2 in. thick lightweight or normal weight (100–150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks* Max area of square, rectangular or circular opening is 45 sq in. with max dimension of 9 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Pipe - Nom 3 in. diam (or smaller) Type L (or heavier) copper pipe or nom 2-1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe. One or more insulated pipes may be installed with a min clearance of 1/2 in. maintained between insulated pipes and with a min clearance of 1/4 in. maintained between insulated pipe and sides of through opening. Pipes to be rigidly supported on both sides of floor or wall assembly.

3. Pipe Insulation - Plastics# - Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing with skin. When nom 2-1/2 or 3 in. diam insulated steel or copper pipe is used, T Rating is 1/2 hr. When max 2 in. diam insulated steel or copper pipe is used, T rating is See Plastics# (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

4. Fill, Void or Cavity Materials* - Wrap Strip - Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. wide strips. One nom 2 in. wide strip tightly-wrapped around pipe insulation (Item 3) with the foil side exposed and slid into through opening such that the top edge is flush with top surface of floor. When a single insulated pipe is installed in a circular through opening and when the max annular space between the insulated pipe and the sides of the through opening is 3/8 in., the wrap strip layer may be secured in place with pressure—sensitive tape. In all other situations, the wrap strip layer shall be secured in place with min No. 18 gauge galv steel tie wire. In wall assemblies, the wrap strip layer is to be installed on the insulated pipe in the same manner used for floor assemblies but shall be installed symmetrically on both sides of the wall.

3M COMPANY - Type FS-195+

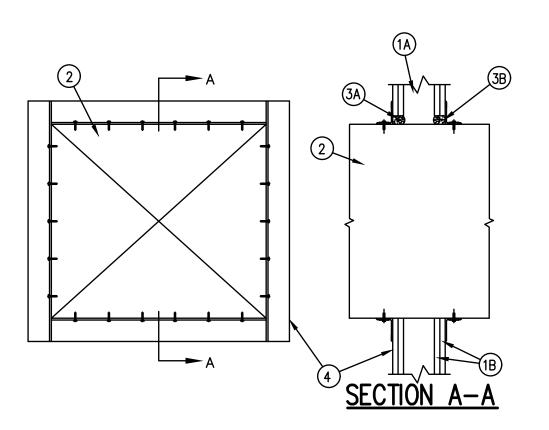
5. Packing Material — Min 1 in. thick mineral wool batt insulation firmly packed into opening with its top surface recessed min 1 in. from top surface of the floor. In wall assemblies, packing material to be firmly packed into opening on both sides of wall and recessed min 1 in. from wall surface. When a single insulated pipe (with wrap strip layer) is installed in a circular through opening and when the max annular space between the wrap strip layer and the sides of the through opening is 1/8 in., no forming material

6. Fill, Void or Cavity Materials* — Caulk or Sealant — Applied to fill through opening to a min depth of 1 in. In floor assemblies, fill material to be installed flush with top surface of floor. In wall assemblies, fill material to be installed flush with wall surface on both sides of wall.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant. (The W Rating applies only when FB-3000 WT sealant is used.)

*Bearing the UL Classification Marking

\ PIPE THROUGH CONCRETE FIRESTOP DETAIL



1. Wall Assembly - The 1 and 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing shall consist of steel channel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional 3-1/2 in. (89 mm) wide steel studs shall be used to completely frame opening. B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max size of opening to be 1216 sq in. (188.5 cm2) with a max dimension of 38 in. (965 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant – Nom 36 by 30 in. (914 by 762 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm) (point contact) to max 2 in. (51 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of floor or wall assembly.

3. Firestop System — The details of the firestop system shall be as follows:

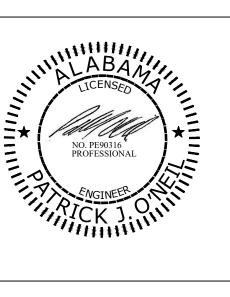
A. Packing Material (Optional) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction—fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

B. Fill, Void or Cavity Material* - Caulk or Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At the point contact location between duct and wallboard, a min 1/4 in. (6 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant

C. Retaining Angles — Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap wall surfaces of a min of 1 in. (25 mm). Angles attached to duct on both sides of wall with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC. *Bearing the UL Classification Marking

8 DUCT THROUGH GYPSUM FIRESTOP DETAIL M002 NOT TO SCALE

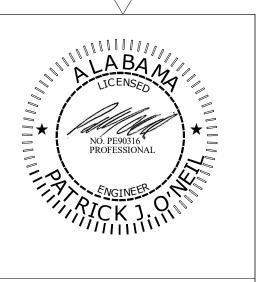


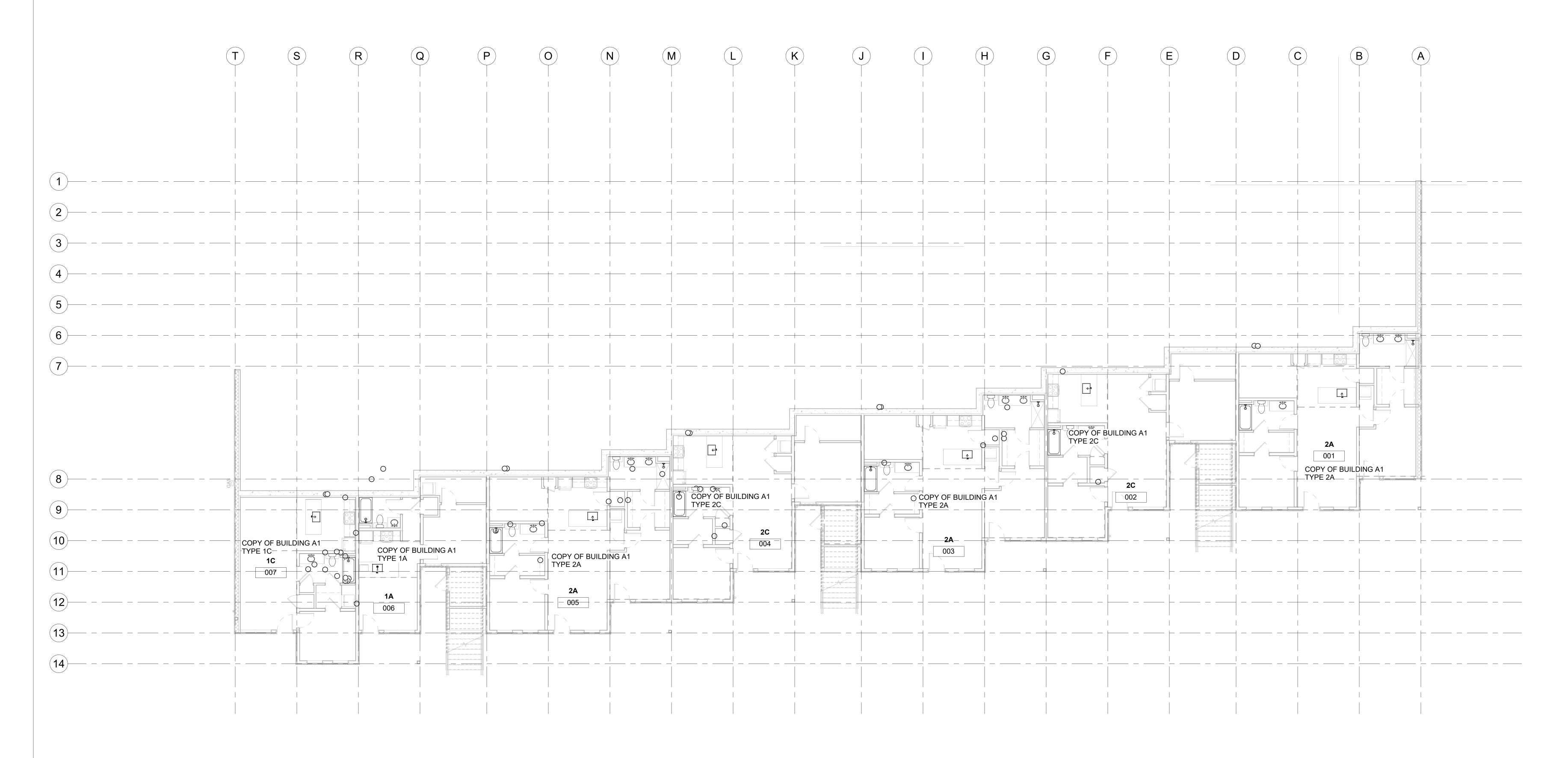
3

581 FS. 30 TERR

REVISIONS # DATE DESCRIPTION 11-JUN-2021 PERMIT SET COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. **ENGINEERING SERVICES** 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118B 11-JUN-2021 AS NOTED DRAWN BY: APPROVED BY: JCW MECHANICAL SCHEDULES AND DETAILS.

SCALE:





MECHANICAL BASEMENT FLOOR PLAN

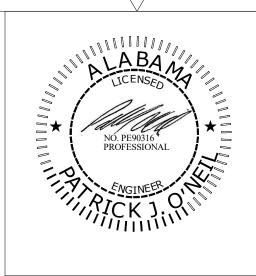
GENERAL NOTE:

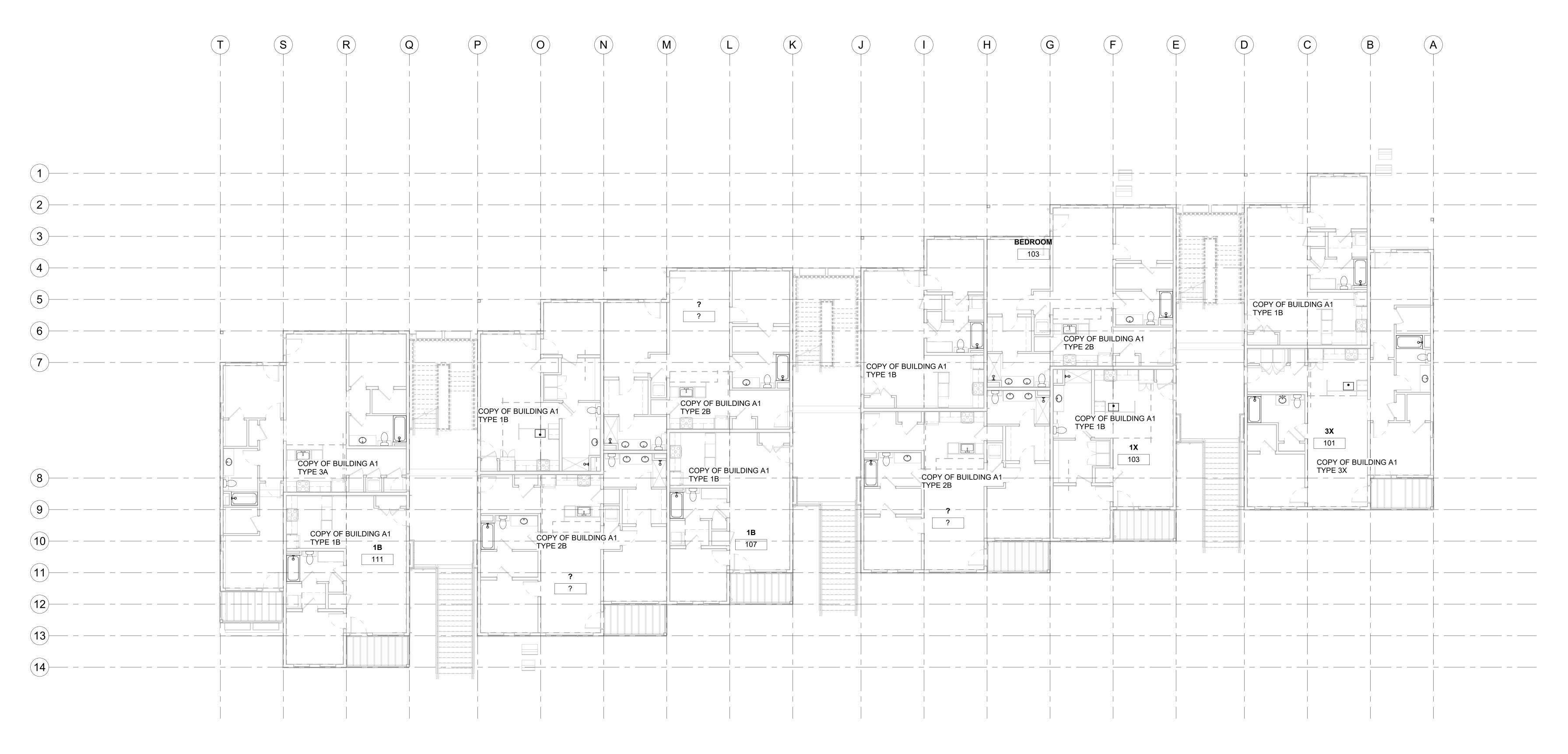
THIS PLAN IS A DIRECT COPY OF BUILDING A1.
PLEASE REFER TO A1 FOR LAYOUTS.

M

TERRACE AT HIGH MOUNTAIN ROAD NE 4130 HIGH MOUNTAIN ROAD NE HIJNTSVII F. AI. 35811

11-JUN-21 PERMIT SET 1 XX 2 XX 3 XX 4 XX 5 XX 6 XX COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501
2 XX 3 XX 4 XX 5 XX 6 XX COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139
3 XX 4 XX 5 XX 6 XX COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139
4 XX 5 XX 6 XX COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139
5 XX 6 XX COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139
COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139
COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139
1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139
PROJECT #: K118
DATE: 11-JUN-2021
SCALE: 1/8" = 1'-0"
DRAWN BY: RAC
APPROVED BY: PJO





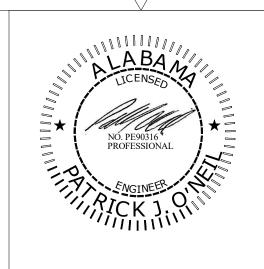
1 MECHANICAL FIRST FLOOR PLAN 1/8" = 1'-0"

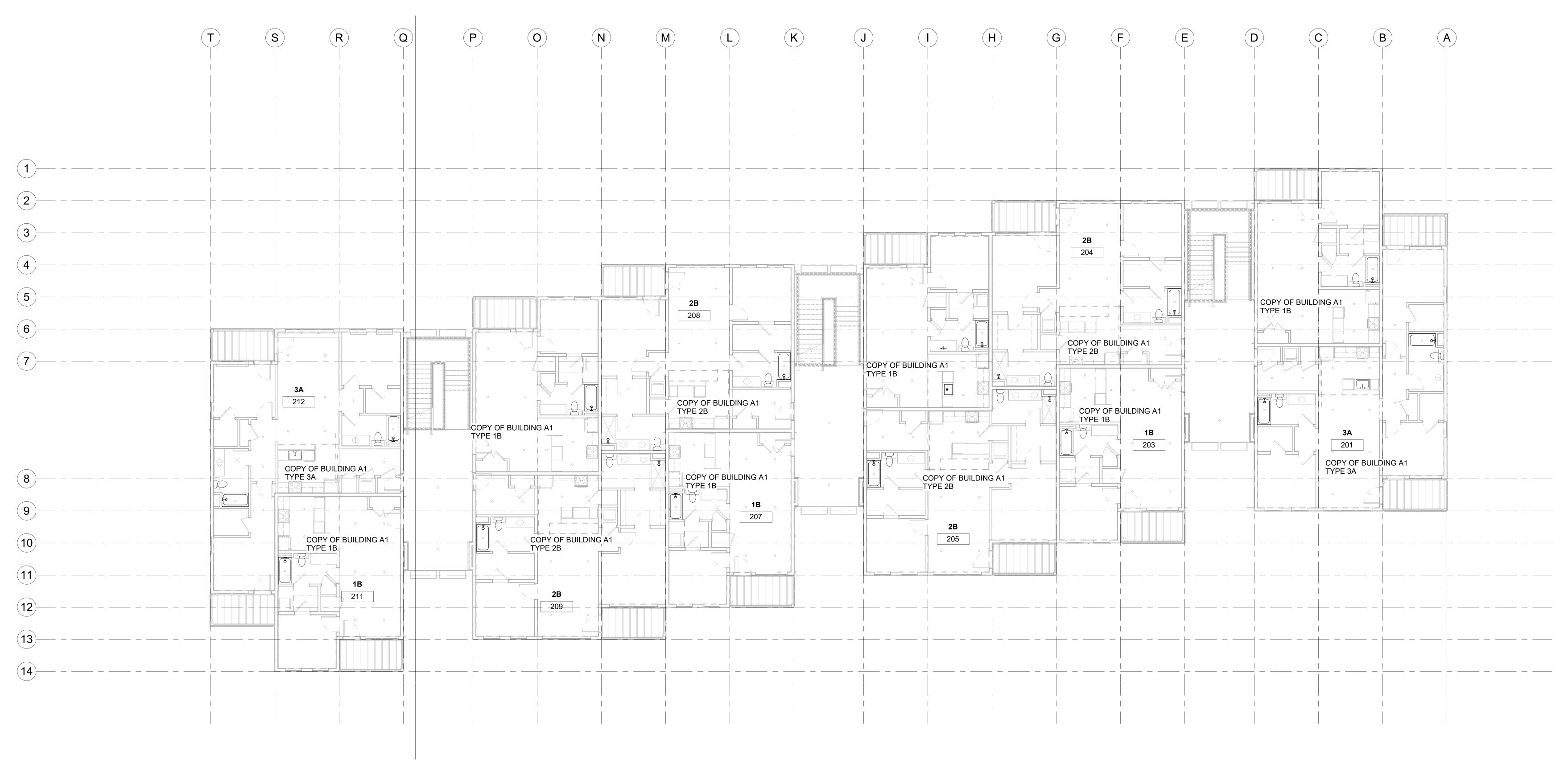
GENERAL NOTE:

THIS PLAN IS A DIRECT COPY OF BUILDING A1.
PLEASE REFER TO A1 FOR LAYOUTS.

TERRACE AT HIGH MOUNTAIN ROAD NE HUNTSVILLE, AL 35811

REV	ISIONS	ı										
#	DATE	DES	SCRIPTION									
#	11-JUN-21	PER	MIT SET									
1		XX										
2		XX										
3		XX										
4		XX										
5		XX										
6												
	COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES											
			RIDGE COURT									
	POW	HATA 23	N, VIRGINIA 1139 104-372-3501									
PRO	DJECT #:		K118									
DA	ΓE:		11-JUN-2021									
SCA	ALE:		1/8" = 1'-0"									
DRA	AWN BY:		RAC									
APF	PROVED E	3Y:	PJO									
	ECHAN RST FL		AL OR PLAN									





1 MECHANICAL SECOND FLOOR PLAN 1/8" = 1'-0"

GENERAL NOTE:

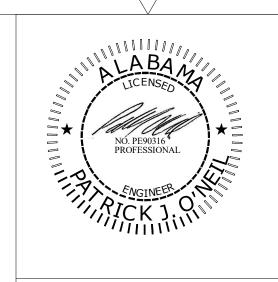
THIS PLAN IS A DIRECT COPY OF BUILDING A1.

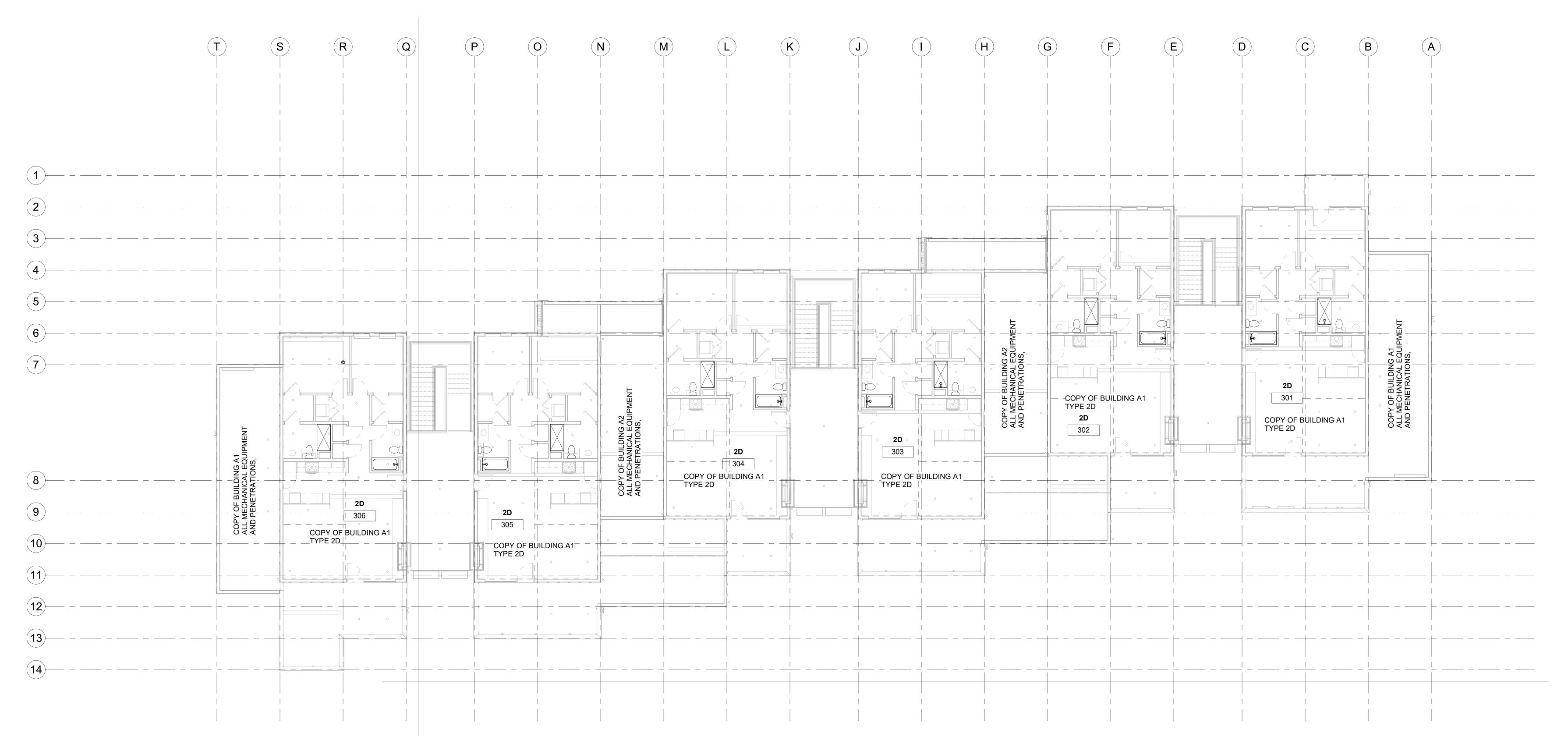
PLEASE REFER TO A1 FOR LAYOUTS.

M

TERRACE AT HIGH MOUNTAIN ROAD N 4130 HIGH MOUNTAIN ROAD N HUNTSVILLE, AL 35811

REV	ISIONS											
#	DATE	DES	SCRIPTION									
#	11-JUN-21	PER	MIT SET									
1		XX										
2		XX										
3		XX										
4		XX										
5		XX										
6		XX	NEIL ENGINEERING									
SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES												
	POW	HATA 23	RIDGE COURT IN, VIRGINIA 1139 04-372-3501									
PRO	DJECT #:		K118									
DA	ΓE:		11-JUN-2021									
SCA	ALE:		1/8" = 1'-0"									
DRA	AWN BY:		RAC									
APF	PROVED E	3Y:	PJO									
APPROVED BY: PJO MECHANICAL SECOND FLOOR PLAN												





TERRACE AT HIGH MOUNTAIN - A3 4130 HIGH MOUNTAIN ROAD NE HIMTSVILLE AL 35811

MECHANICAL THIRD FLOOR PLAN

GENERAL NOTE:

THIS PLAN IS A DIRECT COPY OF BUILDING A1.
PLEASE REFER TO A1 FOR LAYOUTS.

REVISIONS

DATE DESCRIPTION

11-JUN-21 PERMIT SET

1 XX
2 XX
3 XX
4 XX
5 XX
6 XX

COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED.

ENGINEERING SERVICES

1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501

PROJECT #: K118

DATE: 11-JUN-2021

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

DRAWN BY: RAC

APPROVED BY: PJO

MECHANICAL

THIRD FLOOR PLAN

<u>SECTION 15010 - MECHANICAL GENERAL PROVISIONS:</u>

- 1. THE WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE
- REFERENCED CODES AND STANDARDS: 1.1. LOCAL AUTHORITY HAVING JURISDICTION (AHJ) REQUIREMENTS 1.2. ALABAMA BUILDING CODE — 2015, INCLUDING:
- IBC/2015 INTERNATIONAL BUILDING CODE 1.2.1. NFPA 70/2014 - NATIONAL ELECTRICAL CODE 1.2.2. NFPA 72/2013 - NATIONAL FIRE ALARM CODE
- 1.2.3. 2015 INTERNATIONAL MECHANICAL CODE 1.3. ADAAG — AMERICANS WITH DISABILITIES ACT ACCESSIBILITY
- 1.4. ANSI AMERICAN NATIONAL STANDARDS INSTITUTE 1.5. ASHRAE - AMER. SOC. OF HEATING. REFRIG. AND AIR COND. ENGINEERS
- 1.6. ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS 1.7. NFPA — NATIONAL FIRE PROTECTION ASSOCIATION
- 1.8. OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION 1.9. SMACNA - SHEET METAL AND AIR COND. CONTRACTORS NAT'L ASSOCIATION
- 1.10. UL UNDERWRITERS LABORATORIES, INC. CONFORM TO THE BUILDING CODE AND LOCAL AUTHORITIES HAVING 6. SCHEDULE (INSULATION BASED ON KNAUF): JURISDICTION (AHJ). OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND
- FEES REQUIRED. CONFORM TO DIV 0, DIV 1 AND THE GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT.
- COORDINATE SCHEDULE FOR ALL WORK WITH AND FOR APPROVAL BY THE COORDINATE WORK FROM OTHER TRADES AND BUILDING STRUCTURE PRIOR
- TO INSTALLATION. MAKE MINOR ADJUSTMENTS AS REQUIRED FACILITATING ALL EQUIPMENT. MATERIALS AND SYSTEMS SHALL BE LISTED AND
- CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. (UL), AS SUITABLE FOR USE INTENDED. 7. THE CONTRACTOR IS RESPONSIBLE FOR THE "MEANS AND METHODS" OF
- INSTALLATION" AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE INSTALL AND APPLY ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE SUBMITTALS WHERE INDICATED. MECHANICAL EQUIPMENT LOCATED ON ROOFTOP SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S INSTALLATION

INSTRUCTIONS TO MAINTAIN CLEARANCES TO ACCESS FOR SERVICE AND

THE WORK. WORK SHALL CONFORM TO THE NECA 1 - "STANDARD OF

- MAINTENANCE. INSTALL AND PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE, DIRT, AND DEBRIS AND CLEAN AND REPAIR AS REQUIRED. DO NOT USE
- COMPRESSED AIR FOR CLEANING. <u>WARRANTY:</u> PROVIDE WARRANTY ON WORKMANSHIP AND MATERIALS. WARRANTY SHALL COVER ALL COSTS FOR PARTS, LABOR, ASSOCIATED TRAVEL, AND EXPENSES FOR A PERIOD OF ONE YEAR FROM COMPLETION OF SYSTEM ACCEPTANCE. WARRANTY SHALL APPLY EQUALLY TO BOTH HARDWARE AND SOFTWARE. PERSONNEL SUPPORTING THIS WARRANTY AGREEMENT SHALL PROVIDE ON-SITE OR OFF-SITE SERVICE IN A TIMELY MANNER AFTER FAILURE NOTIFICATION TO THE VENDOR. THE MAXIMUM ACCEPTABLE RESPONSE TIME TO PROVIDE THIS SERVICE AT THE SITE SHALL BE 24 HOURS, MONDAY THROUGH FRIDAY AND 48 HOURS ON
- SATURDAY AND SUNDAY. <u>SUBMITTALS:</u>
- 11.1. PROVIDE SUBMITTALS ON EQUIPMENT AND MATERIALS. 11.2. SUBMITTAL REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE PLANS AND SPECIFICATIONS. 11.3. OPERATION OF THE SYSTEMS REMAINS THE RESPONSIBILITY OF THE
- 11.4. REVIEW OF A SPECIFIC ITEM DOES NOT INCLUDE OR IMPLY APPROVAL OF AN ASSEMBLY (OF WHICH THE ITEM IS A
- COMPONENT). 11.5. ALL DEVIATIONS FROM THE PROJECT ENGINEERING DRAWINGS AND SPECIFICATIONS SHALL BE EXPLICITLY NOTED IN SUBMITTALS BY COVER LETTER OR WILL BE CONSIDERED NON-COMPLIANT AND REJECTED, REGARDLESS OF SUBMITTAL REVIEW STATUS. DEVIATIONS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONTRACT DOCUMENTS UNLESS SEPARATELY NEGOTIATED WITH THE
- 11.6. THE CONTRACTOR, BY SUBMITTING A PROPOSED SUBSTITUTION. ACCEPTS ALL RESPONSIBILITY FOR COORDINATING ALL CHANGES AND ABSORBING ALL COSTS DUE TO PROPOSED SUBSTITUTED EQUIPMENT TO INCLUDE, BUT NOT LIMITED TO: COORDINATION WITH AND CHANGES AFFECTING OTHER TRADES, ADDITIONAL CIRCUITS, IMPACT OF ADDITIONAL LOADS, CIRCUIT CHARACTERISTICS, AND SINGLE-POINT CONNECTION KITS.

SECTION 15080-INSULATION:

MEMBRANE.

2. INSTALL INSULATION PER MANUFACTURERS INSTRUCTIONS

3. ON SUPPLY AIR AND OUTSIDE AIR DUCTS ENSURE THAT THE VAPOR

4. PIPING EXPOSED TO WEATHER SHALL BE PROVIDED WITH A WEATHER-PROOF

BLANKET FIBERGLASS: FLEXIBLE FIBROUS GLASS, FLAME RETARDANT

FACTORY LAMINATED FOIL— SKRIM-KRAFT (FSK) VAPOR BARRIER, 2"

STAPLING FLANGE, MAXIMUM VAPOR PERMEANCE OF .02 PERM/IN., MINIMUM

DENSITY OF 1.0 LB/CF, MAXIMUM CONDUCTIVITY PER 1" THICKNESS OF .28

ABOVE CEILINGS 1-1/2" BLANKET TYPE

GRILLE BOOTS 1-1/2" BLANKET TYPE

OUTDOOR REF PIPING 1-1/2" CLOSED CELL

LINER WHERE NOTED, OTHERWISE:

1" CLOSED CELL ELASTOMERIC

ELASTOMERIC W/ WEATHERPROOF

2" 1LB DENSITY BLANKET

JACKET

1. WALL ELECTRIC HEATERS (WH) - RECESSED WALL MOUNTED ELECTRIC UNIT

STANDARD EFFICIENCY, SPLIT SYSTEM HEAT PUMP. COMPRESSOR TO BE

INTERNALLY PROTECTED AGAINST HIGH PRESSURE, TEMPERATURE, AND

EXTERNALLY BY A FACTORY INSTALLED HIGH PRESSURE SWITCH. PROVIDE

AND FACTORY WIRED. UNIT SHALL OPERATE WITH R-410A. PROVIDE WITH

5-YEAR LIMITED PARTS WARRANTY AND 5-YEAR LIMITED COMPRESSOR

CONSTRUCTED OF PRE-PAINTED STEEL, INTERNALLY PROTECTED HERMETIC

COMPRESSOR WITH INTERNAL DISCHARGE LINE SOLID CORE FILTER DRIER,

INSTALL UNIT ON PLASTIC HOUSEKEEPING PAD (WITH NEOPRENE BETWEEN

CRANKCASE HEATER, AND HARD START KITS (FOR UNITS WITH REFRIGERANT

LINE LENGTHS OVER 100 FT). CONDENSER COILS CONSTRUCTED OF COPPER

PAD AND ROOF) OR 4x4 WEATHER TREATED LUMBER WITH NEOPRENE PADS

COMPACT AND STURDY CABINET IS PROTECTED WITH A DURABLE FINISH AND

INSULATED TO PREVENT SWEATING. PROVIDE WITH ALUMINUM FIN COILS AND

FOR UNITS MOUNTED VERTICALLY, PROVIDE FLOAT SWITCH ON CONDENSATE

CONDENSATE DRAIN PAN UNDER UNIT WITH FLOAT OR WATER DETECTOR

OVERFLOW CONNECTION. FOR UNITS MOUNTED HORIZONTALLY PROVIDE

WITHIN THE PAN. UPON A DETECTION OF WATER IN THE PAN OR

CONDENSATE OVERFLOW CONNECTION, UNIT SHALL BE SHUT DOWN.

3. PROVIDE NON-PROGRAMMABLE DIGITAL THERMOSTAT FOR ALL RESIDENTIAL

4. PROVIDE DUCTED INDOOR UNIT WITH SUPPLY AND RETURN PLENUMS AS

INDICATED. PLENUMS TO BE SIZED AS SMALL AS POSSIBLE FOR

CONNECTIONS. LINE WITH 1" INSULATION FOR SOUND DAMPENING.

5. PROVIDE WITH INTERNAL FILTER RACK AND 1"THICK FILTER.

REMOVABLE ACCESS PANEL TO ELECTRICAL BOX. FURNISH FULLY CHARGED

HEATER WITH INTEGRAL THERMOSTAT, LOUVERED FRONT COVER, DISCONNECT

BARRIER IS CONTINUOUS AND SEALED AT ALL PENETRATIONS.

AT 75°F MEAN TEMPERATURE. BASED ON KNAUF DUCT WRAP.

GRILLE BOOTS 1" LINER

SUPPLY DUCTWORK

RETURN/TRANSFER DUCTWORK:

OUTSIDE AIR DUCTWORK:

EXHAUST DUCTWORK:

SECTION 15767—HEATERS:

ELECTRIC UNIT HEATERS:

EXHAUST

INDOOR REF PIPING

SWITCH, AND HEATING ELEMENT.

SECTION 15770-SPLIT SYSTEM AIR CONDITIONERS:

OUTDOOR STANDARD SPLIT SYSTEM HEAT PUMP (HP):

TUBING AND ENHANCED ALUMINUM COILS.

INDOOR STANDARD SPLIT SYSTEM AIR HANDLING UNIT (AHU):

BETWEEN UNIT AND LUMBER.

ELECTRIC HEATERS.

- WALL CAPS (EXTERIOR WALL): PROVIDE WALL CAPS FOR ALL DRYER AND 1. ALL PRODUCTS IN THE CONDITIONED AIRSTREAM (INCLUDING PLENUMS) SHALL BE NONCOMBUSTIBLE AND SHALL COMPLY WITH NFPA 90A BATHROOM EXHAUST DUCTS AND OUTSIDE AIR DUCTS AT EXTERIOR WALL PENETRATIONS. WALL CAPS SHALL BE ALUMINUM CONSTRUCTION. PROVIDE FLAME/SMOKE/FUEL CONTRIBUTION RATING OF 25/50/0 AND COMPLY WITH DRYER AND EXHAUST DUCTS WITH BUILT IN DAMPER. BASED ON SEIHO UL181 EROSION LIMITATIONS. FIRE HAZARD RATINGS SHALL BE DETERMINED MODEL SFZC. COLOR TO BE DETERMINED BY THE ARCHITECT. BY NFPA-255 "METHOD OF TEST OF SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS", ASTM E84, OR UL723.
 - 2. <u>FIRE DAMPERS:</u> CURTAIN TYPE WITH BLADES OUT OF THE AIR STREAM (HIGH HAT TYPE) WITH 1-1/2" HOUR UL RATINGS APPROVED FOR USE IN 2 HOUR RATED WALLS AND 1-HOUR RATED FLOOR ASSEMBLIES. PROVIDE WITH FUSIBLE LINK AND CLOSURE SPRING FOR USE IN VERTICAL DUCTWORK (HORIZONTALLY MOUNTED).

SECTION 15820-DUCTWORK ACCESSORIES:

- CEILING MOUNTED RADIATION DAMPER: INSULATED, 2-BLADE, 22 GA GALVANIZED STEEL FRAME AND BLADES, SPRING OPERATED WITH 212°F FUSIBLE LINK. BASED ON ARROW MODEL A91 (RECTANGULAR) AND A97
- 4. VOLUME DAMPERS (MANUAL): BLADES AND FRAME SHALL BE OF EXTRUDED ALUMINUM OR GALVANIZED STEEL CONSTRUCTION. PROVIDE SINGLE BLADE DAMPERS PER SMACNA FIG 2-12, FIGURE B ON RECTANGULAR DUCTS LESS THAN 30" IN WIDTH AND 12" OR LESS IN DEPTH AND MULTI-BLADE DAMPERS PER SMACNA FIGURE 2-13, FIGURE A ON LARGER RECTANGULAR DUCTS. ROUND DUCT VOLUME DAMPERS SHALL BE SINGLE BLADE MOUNTED ON A CONTINUOUS SHAFT. EQUIP WITH LOCKING QUADRANT AND END BEARINGS. PROVIDE HANDLE EXTENSION ON EXTERNALLY INSULATED DUCTWORK.

SECTION 15830-FANS:

- 1. FANS SHALL BE UL LISTED AND AMCA CERTIFIED. ELECTRICAL DEVICES SHALL CONFORM TO NEMA STANDARDS. WIRING SHALL CONFORM TO NEC.
- 2. MOTORS SHALL BE NON-OVERLOADING, HIGH EFFICIENCY TYPE. MOTORS DESIGNED FOR VARIABLE SPEED SHALL BE DESIGNED AND RATED FOR USE WITH VFDs.
- 3. CEILING MOUNTED (WITHIN RATED DROPPED CEILING): FORWARD CURVED INJECTION MOLDED POLYPROPYLENE FAN WHEEL, 22 GAUGE GALVANIZED STEEL INLET BOX, ISOLATED MOUNTED DIRECT MOTOR, MOUNTED TO ONE PIECE GALVANIZED STAMPED STEEL INTEGRAL MOTOR MOUNT/INLET. BACKDRAFT DAMPER. AND WHITE HIGH IMPACT STYRENE INJECTED MOLDED GRILLE. PROVIDE WITH INTEGRAL RADIATION DAMPER. BASIS OF DESIGN: COOK MODEL GC.

SECTION 15850-GRILLES, REGISTERS, AND DIFFUSERS:

- PROVIDE AS INDICATED IN THE GRD SCHEDULE. PROVIDE ALL GRDs WITH INTEGRAL VOLUME DAMPERS OR WITH VOLUME EXTRACTORS AS INDICATED. COLOR OF THE GRILLES TO BE DETERMINED BY ARCHITECT. PERFORMANCE OF THE GRILLES IS A MAXIMUM OF 700 FPM OR A NC LEVEL OF 30 OR LESS FOR SIZE AND CFM INDICATED.
- INSTALL WITH AIR TIGHT CONNECTION TO DUCTWORK. COORDINATE MOUNTING CONDITIONS WITH ARCHITECTURAL.
- CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENTS.

SECTION 15890-METAL DUCTWORK:

- 1. UNLESS OTHERWISE NOTED (REFER TO PARAGRAPH 2). RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED OF HOT ROLLED STEEL CONTINUOUSLY ANNEALED AND HOT DIPPED GALVANIZED SHEET OR COIL, MINIMUM G-90, 0.90 OZ/SF COATING SUITABLE FOR FORMING WITHOUT FLAKING OR PEELING, SUITABLE FOR WELDING OR SOLDERING. ZINC COATING SHALL NOT BE IMPAIRED FROM DOUBLE SEAMING, BREAKING OR ROLL FORMING. 14 GA. AND LIGHTER CONFORMING TO ASTM A 527; 13 GA AND HEAVIER CONFORMING TO
- 2. DUCT BOARD IS ACCEPTABLE WITH WRITTEN APPROVAL BY OWNER DUCT BOARD, IF ALLOWED, SHALL HAVE A MINIMUM R-VALUE OF 6 AND BE COMPOSED OF RESIN BONDED GLASS FIBERS. DUCT BOARD SHALL HAVE AN FSK VAPOR JACKET AND COMPLY WITH ASTM C1290.
- 3. DRYER VENT SHALL BE 26 GA. MINIMUM.
- 4. UNLESS OTHERWISE NOTED, ROUND DUCTWORK SHALL BE CONSTRUCTED OF G-90 GALVANIZED STEEL WITH THE FOLLOWING MINIMUM GAUGES: <15" DIA. = 24 GAUGE, 15"-26" DIA. = 22 GAUGE.
- 5. INSULATED ROUND FLEXIBLE DUCT (MAX LENGTH 8') IS ALLOWED FOR BRANCH CONNECTIONS TO DIFFUSERS AND GRILLES ABOVE LAY-IN CEILINGS. INSULATED ROUND FLEXIBLE DUCTWORK SHALL BE UL181, CLASS 1 AND SUITABLE FOR LOW PRESSURE APPLICATIONS OF NOT LESS THAN 3" W.C. CONNECT TO METAL DUCT WITH STAINLESS STEEL DRAW BANDS.
- 6. ALL DUCT SIZES SHOWN ON PLANS ARE INSIDE CLEAR (AIRFLOW) DIMENSIONS. NO ALLOWANCE HAS BEEN MADE FOR DUCT LINER OR DOUBLE
- WALL DUCTWORK WHERE REQUIRED. 7. FABRICATE AND SUPPORT METAL DUCT IN ACCORDANCE WITH SMACNA HVAC
- 8. PROVIDE ALL HANGERS AND SUPPORTS AS REQUIRED.

DUCT CONSTRUCTION STANDARDS.

- 9. PROVIDE DOUBLE WALL TURNING VANES IN ALL LOW PRESSURE SUPPLY, RETURN, AND EXHAUST DUCTS . TURNING VANES ARE NOT REQUIRED WHERE RADIUS ELBOW FITTINGS WITH R=1.5 OR GREATER ARE USED.
- 10. SEAL DUCT JOINTS AIR TIGHT. PROVIDE AIR TIGHT SEAL WITH VOLUME DAMPERS AT ALL TAPS OFF MAIN DUCT TO DIFFUSERS.

11. SCHEDULE

<u>System</u>	<u>Section</u>	PRESSURE CLASS 2" 2" 2"	SEAL CLASS
Supply	Note 1		A
Return—Relief	All		C
Gen. Exhaust	All		C
DRYER VENT	ALL	2"	SPOT WELD

1. REFER TO PARAGRAPH 2 WHERE DUCT BOARD IS ALLOWED.

MEQUANUAL LEGEND **MECHANICAL GENERAL NOTES:** PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, AND OTHER SERVICES NECESSARY TO SATISFACTORILY COMPLETE ALL MECHANICAL WORK INDICATED ON THE CONTRACT DOCUMENTS. ALL SPECIFICATIONS, NOTES, OR SYMBOLS MAY NOT BE APPLICABLE FOR THIS TENANT. CONTRACTOR SHALL CAREFULLY REVIEW PLANS AND DETAILS FOR ACCURATE EXTENT OF WORK REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE FOR PROCUREMENT OF ALL APPLICABLE BUILDING PERMITS, INSPECTIONS, AND OTHER REQUIRED ADMINISTRATIVE DUTIES TO COMPLETE ALL INDICATED WORK REQUIREMENTS. **DESIGN CONSIDERATIONS:** SUMMER: 95°F DB, 75°F WB OUTDOOR TEMPERATURE: WINTER: 17°F DB SUMMER: 75°F DB. 45-60% R.H. INDOOR TEMPERATURE WINTER: 70°F DB *HUMIDITY WILL VARY WITH OUTDOOR CONDITION **VENTILATION AND DISTRIBUTION:** MECHANICAL VENTILATION WILL BE PROVIDED PER IMC SECTION 403 AND TABLE 403.3.

ALL MATERIALS WITH ELECTRICAL REQUIREMENTS SHALL BE UL LISTED FOR THE INTENDED APPLICATION.

REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

ALL WORK SHALL BE DONE IN ACCORDANCE WITH IBC 2015, IMC 2015 AND ANY ADDITIONAL

- PHASING AND WORK PERFORMANCE: THE CONTRACTOR SHALL COORDINATE ALL PHASING AND STAGING/STORAGE OF MATERIALS AND WORK WITH THE GENERAL CONTRACTOR, A WRITTEN GUARANTEE FOR THE PERIOD OF AT LEAST ONE YEAR AFTER SUBSTANTIAL COMPLETION SHALL BE TURNED OVER TO THE OWNER ON ALL MATERIALS AND WORK DONE BY THE CONTRACTOR, ALL MATERIALS INSTALLED SHALL ALSO BE PROVIDED WITH THE MAXIMUM AVAILABLE GUARANTEE FROM THE MANUFACTURER.
- CLEAN UP AND PROTECTION OF AREA: THE CONTRACTOR SHALL CLAIM ALL RESPONSIBILITY FOR PROTECTION OF THE AREAS INVOLVED, INCLUDING ANY AREAS INVOLVED IN THE TRANSPORTATION AND STORAGE OF EQUIPMENT DURING CONSTRUCTION. THE CONTRACTOR SHALL CONSISTENTLY MAINTAIN A WORK ENVIRONMENT THAT IS CLEAN AND PROTECTED FROM UNAUTHORIZED PERSONS AND DAMAGE DUE TO CONSTRUCTION. AFTER COMPLETION OF ALL CONSTRUCTION, THE CONTRACTOR SHALL CLEAN ALL AREAS INVOLVED IN THE CONSTRUCTION PROCESS, TO THE OWNER'S APPROVAL. ALL REFUSE INVOLVED DUE TO CONSTRUCTION SHALL BE PROPERLY AND PROMPTLY DISPOSED OF AT AN ON SITE LOCATION.

CONSTRUCTION TYPE: R-2 USE GROUP: OCCUPANCY:

- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO SHOW THE GENERAL ROUTING, LOCATION, AND SIZE OF EQUIPMENT, PIPING AND/OR DUCTWORK, THE CONTRACTOR SHALL MAKE ALLOWANCES FOR ALL MATERIALS AND LABOR NECESSARY TO MAKE FINAL CONNECTIONS. NOT ALL NECESSARY OFFSETS OR FITTINGS ARE SHOWN, BUT SHALL BE PROVIDED WHERE REQUIRED. THE CONTRACTOR SHALL PROVIDE ALL ACCESSORIES, SUPPORTS, AND HANGERS TO ALLOW FOR COMPLETE AND FUNCTIONAL SYSTEMS. ALL WORK SHALL MEET OR EXCEED PUBLISHED OR ACCEPTED STANDARDS OF QUALITY WORKMANSHIP. AND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS AND/OR INSTALLATION INSTRUCTIONS. THE INTENT OF THESE CONTRACT DOCUMENTS IS TO PROVIDE COMPLETE FUNCTIONING SYSTEMS.
- INSTALL ALL DEVICES IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- COORDINATE THE PROPER GRILLE STYLE AND FRAME STYLE WITH THE FINAL APPROVED CEILING CONSTRUCTION AND INSTALL GRILLES, REGISTERS, AND DIFFUSERS.
- DUE TO THE SMALL SCALE OF THE DRAWINGS, THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY TO COORDINATE THE AIR OUTLET AND INLET LOCATIONS WITH THE CEILING PLANS, LIGHTING PLANS, SECTIONS AND/OR DETAILS.
- PROVIDE SUBMITTALS ON ALL EQUIPMENT AND CONTROLS FOR APPROVAL.
- PROVIDE OWNER TRAINING ON ALL EQUIPMENT.
- PROVIDE START-UP OF ALL EQUIPMENT. WELDING, CUTTING, OR BURNING: THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM OF 72 HOURS ADVANCE NOTICE PRIOR TO PERFORMING ANY WEIDING, CUTTING, OR BURNING WITHIN THE BUILDING. NO WELDING, CUTTING, OR BURNING SHALL OCCUR WITHOUT GENERAL CONTRACTOR APPROVAL. WHERE WELDING, CUTTING, OR BURNING ARE NECESSARY, NON-COMBUSTIBLE SHIELDS SHALL BE USED AND SUITABLE FIRE
- EXTINGUISHING EQUIPMENT SHALL BE MAINTAINED NEARBY. FABRICATION OF STEEL SUPPORTS: FABRICATE FROM STEEL ANGLES, CHANNELS OR PLATES IN ACCORDANCE WITH ASTM.
- THERMOSTAT LOCATIONS ARE GENERAL. THERMOSTATS SHALL BE LOCATED ADJACENT TO DOORS OR NEAR RETURN GRILLES. COORDINATE FINAL THERMOSTAT LOCATIONS WITH ARCHITECT AND/OR OWNER.

<u>SYMBOL</u>	DESCRIPTION	<u>SYMBOL</u>	DESCRIPTION
WxD	DUCT SIZE (FIRST FIGURE IS OF SIDE SHOWN DIMENSION)	24x12, R-X 100 CFM	SIDEWAYS RETURN
	FLEXIBLE CONNECTION	24x12, S-X 100 CFM	SIDEWAYS SUPPLY
0x20 12x12	TRANSITION	RD 🔳	DIFFUSER TO BE PROVIDED WITH RADIATION DAMPER
TZAIZ	IKANSITION	8"ø, S-1 160 CFM	DIFFUSER TAG WITH AIRFLOW
	FIRE DAMPER W/ ACCESS DOOR	◀	DOOR UNDERCUT
		①	THERMOSTAT (48"AFF)
——	AIR TIGHT CONNECTION OFF DUCT MAIN	®	SMOKE DETECTOR
W		<u></u>	OCCUPANCY SENSOR
	4-WAY THROW SUPPLY DIFFUSER WITH FLEX DUCT CONNECTION	AD	ACCESS DOOR IN SIDE OF WALL OR DUCT
		<u>AHU-1</u>	EQUIPMENT NUMBER
	RETURN DIFFUSER		1-HOUR RATED WALL
	UEAT DINID WITH OOF AND		2-HOUR RATED WALL
24	HEAT PUMP WITH COIL AND MAINTENANCE CLEARANCE		MATCH LINE
	BOUNDARY LINE; REFER TO MANUFACTURER'S MANUAL.	ZD 🗖	ZONE DAMPER
_ _		M	MOTORIZED DAMPER; USED FOR BYPASS AIR

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Α	AMPERES	GA	GAUGE
AD	ACCESS DOOR	HP	HORSEPOWER
AHU	AIR HANLDING UNIT	HZ	FREQUENCY
BTU	BRITISH THERMAL UNIT	KW	KILOWATT
BTUH	BRITISH THERMAL UNIT PER HOUR	LAT	LEAVING AIR TEMPERATURE
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
DB	DRYBULB	NTS	NOT TO SCALE
DE	DRYER EXHAUST	OA	OUT SIDE AIR
DN	DOWN	PD	PRESSURE DROP
DWG	DRAWING	PH	PHASE
DX	DIRECT EXPANSION	PSI	POUNDS PER SQUARE INCH
EA	EXHAUST AIR	PVC	POLYVINYL CHLORIDE
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EF	EXHAUST FAN	RD	RADIATION DAMPER
ESP	EXTERNAL STATIC PRESSURE	RL	REFRIGERANT LIQUID
°F	DEGREE FAHRENHEIT	RPM	REVOLUTIONS PER MINUTE
FD	FIRE DAMPER	RS	REFRIGERANT SUCTION
FLA	FULL LOAD AMPERES	SA	SUPPLYAIR
FPM	FEET PER MINUTE	TYP	TYPICAL
FT	FEET	WB	WET BULB
		WH	WALL HEATER

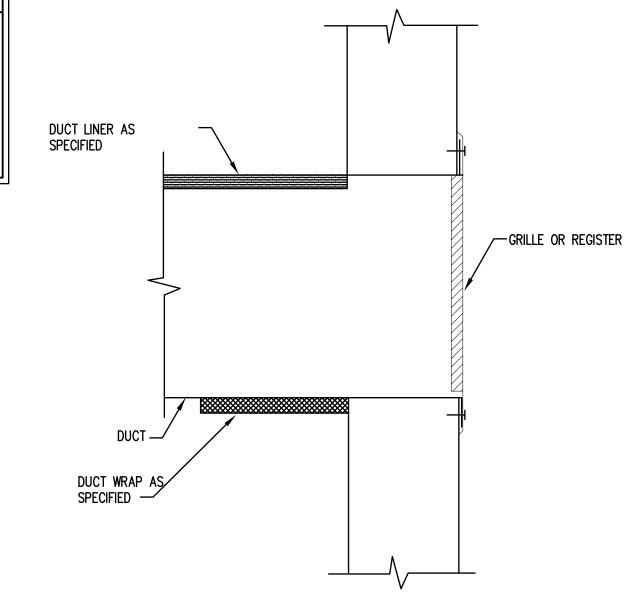


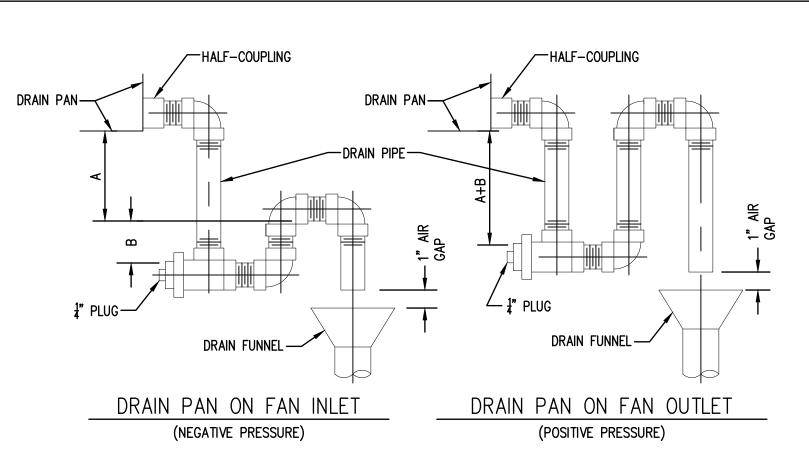
M4.001 - MECHANICAL NOTES, SPECIFICATIONS, LEGEND, DETAILS AND ABBREVIATIONS M4.002 - MECHANICAL SCHEDULES AND DETAILS

M4.100 - MECHANICAL BASEMENT FLOOR PLAN M4.101 - MECHANICAL FIRST FLOOR PLAN

M4.102 - MECHANICAL SECOND FLOOR PLAN

M4.103 - MECHANICAL THIRD FLOOR PLAN M4.900 - MECHANICAL ENLARGED PLANS M4.901 - MECHANICAL ENLARGED PLANS

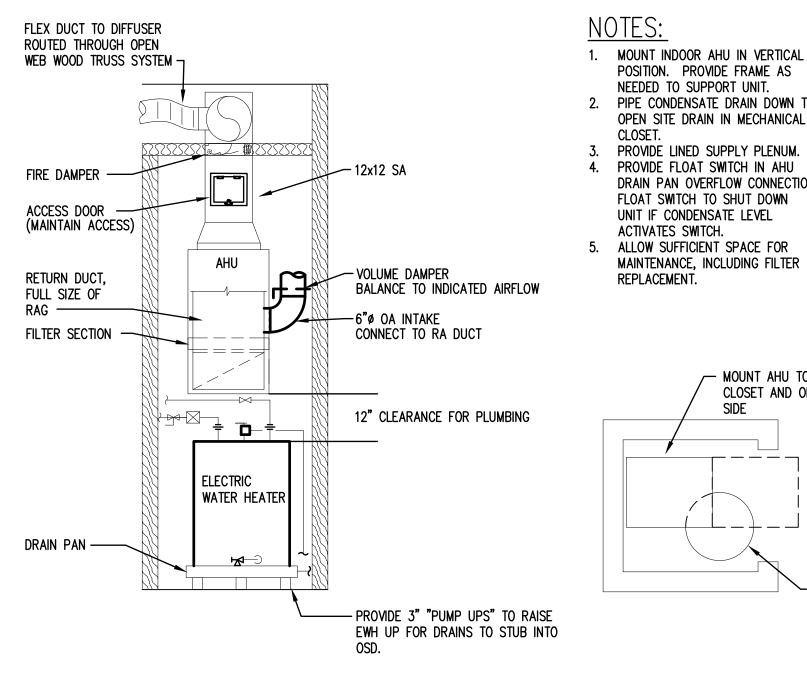


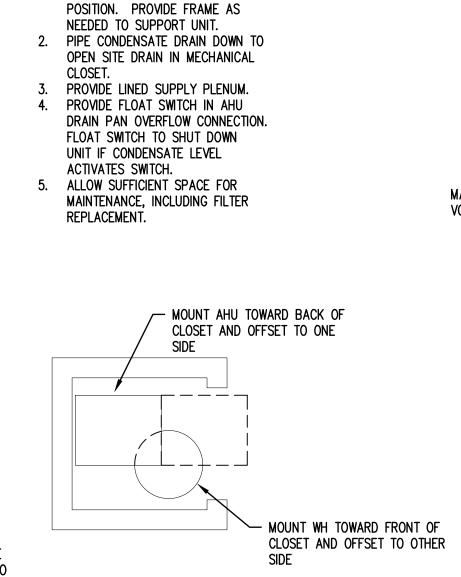


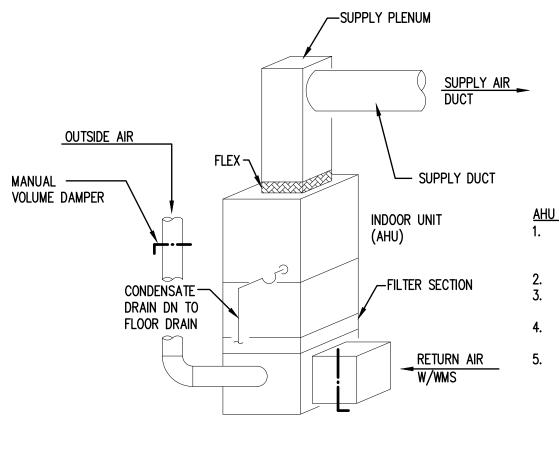
1. DRAIN PIPE TO BE SAME SIZE AS UNIT OUTLET, BUT NOT

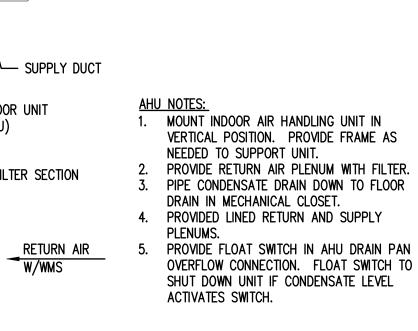
LESS THAN 1" PIPE SIZE. 2. "A"=SYSTEM STATIC IN INCHES AT DRAIN POINT. "B"=1/2 SYSTEM STATIC IN INCHES AT DRAIN POINT.





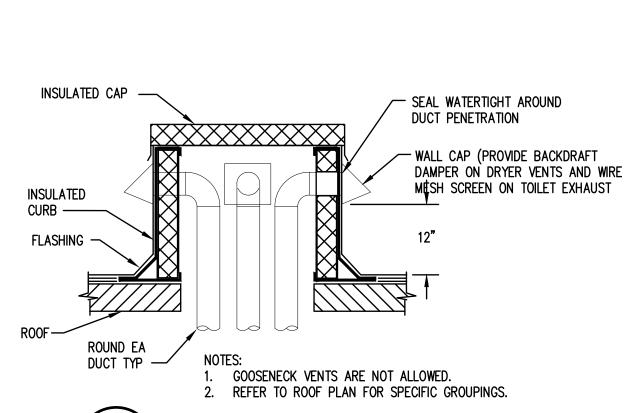






\ VERTICALLY MOUNTED AHU DETAIL M001





4 \ DV/TE DUCT CURB DETAIL M001 NOT TO SCALE

INDOOR AHU MOUNTED ABOVE WATER HEATER CLOSET LAYOUT M001 / NOT TO SCALE

REVISIONS

DATE DESCRIPTION

COPYRIGHT © ONEIL ENGINEERING SERVICES

ENGINEERING SERVICES

1480 OAKBRIDGE COURT

POWHATAN, VIRGINIA 23139

PHONE: 804-372-3501

11-JUNE-2021

AS NOTED

PROJECT #: K118

APPROVED BY: | JCW

SPECIFICATIONS

ABBREVIATIONS

MECHANICAL NOTES,

LEGEND, AND DETAILS.

SCALE:

DRAWN BY:

ALL RIGHTS RESERVED.

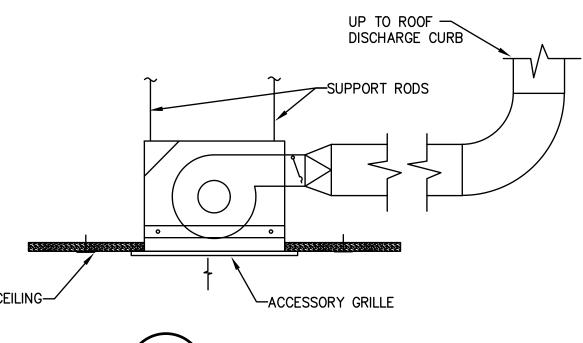
11-JUN-21 PERMIT SET

 ∞

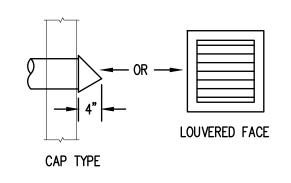
ELECTRIC UNIT HEATER SCHEDULE: ELECTRIC DATA AIR DATA SELECTION BASED ON UNIT NO. REMARKS SERVING CAPACITY **TYPE** EAT CFM FLA VOLT MODEL KW MANUFACTURER (BTUH) MECHANICAL ROOMS AND WALL MTD 6142 100 1.8 15 120 **BERKO** FRA1812 **STAIRS**

FAN	SCHEDULE:											
	0.550,40.40	7/05		BLADE	TOTAL	FAN	МО	TOR DATA	A	SELECTION I	BASED ON	DEMA DIVO
UNIT NO.	SERVING	TYPE	CFM	TYPE	STATIC H ₂ O	RPM	HP	VOLTS	РН	MANUFACTURER	MODEL	REMARKS
EF-1	RESIDENTIAL BATHROOM	CEILING MTD	50	FC	0.35	750	27W	120	1	COOK	GC-128	CONTROLL BY SWITCH

		TYPE		(SERVIC			MOUNTIN	NG DATA					COI	NSTRUC	CTION D	ATA						SELECTION BA	SED ON
UNIT NO.	G	R	D	SA	RA	EA	CEILING	DUCT	FLOOR	WALL	SUVDE	SHAPE MATERIAL			ACCES	SORIES	3		Р	ATTER	N		MANUFACTURER	MODEL
	9	K	D	SA	I NA	EA	CEILING	БОСТ	FLOOR	VVALL	SHAPE	MATERIAL	COLOR	VD	RC	VE	Р	1-W	2-W	3-W	4-W	E/R	MANUFACTURER	MODEL
S-1		Х		Х			Х				RECT	ALUMINUM	TBD	Х					Х				USAIRE	102M
R-1	Х				Х					Х	RECT	STEEL	TBD	Х								Х	KRUEGER	S80
E-1	Х					Х				Х	RECT	STEEL	TBD									Х	KRUEGER	S80





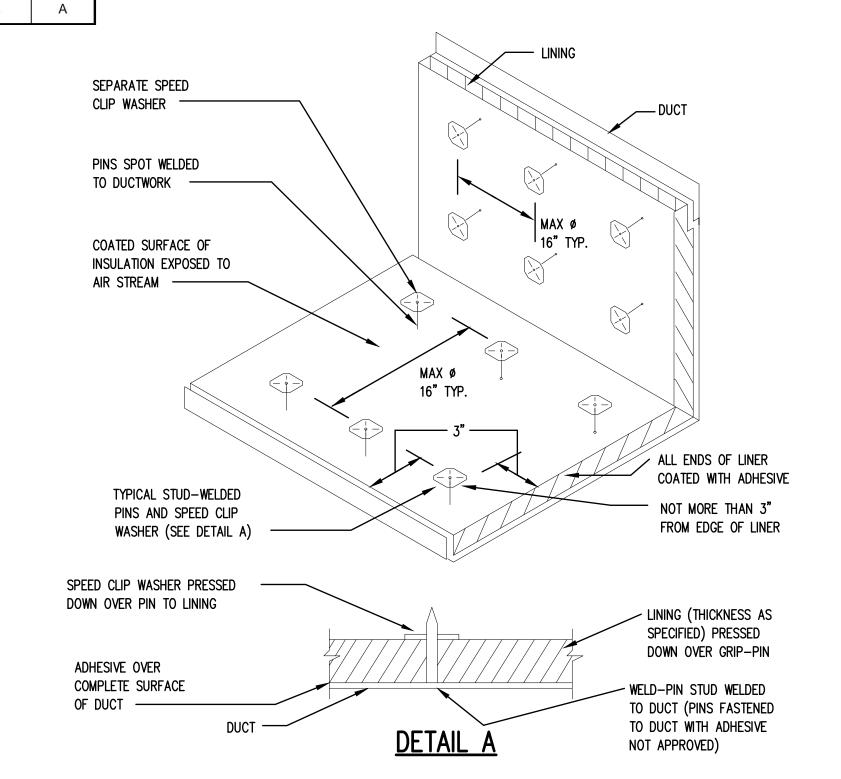




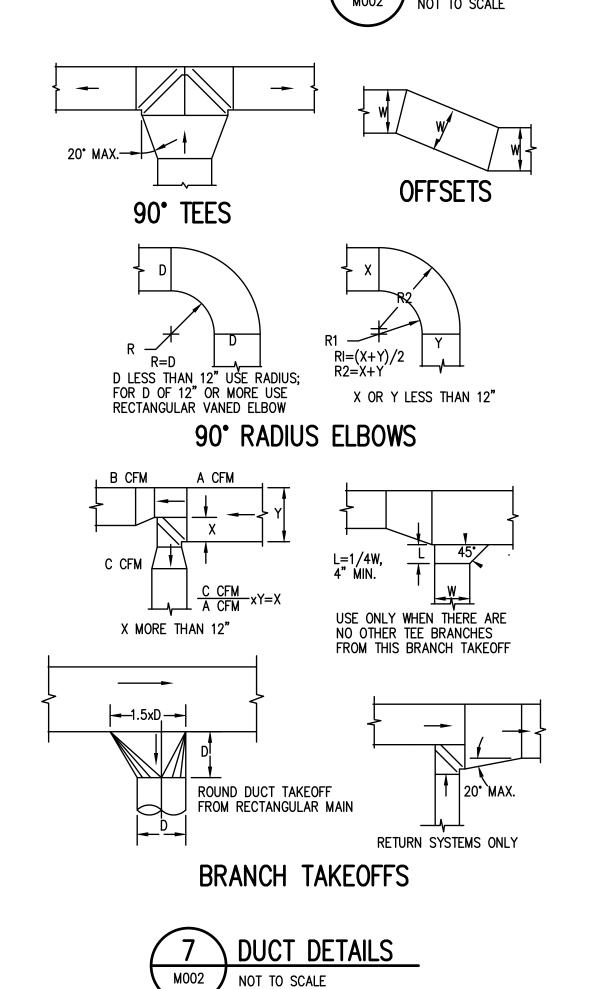
SPLIT S	YSTEM C	OUTDOC	R UN	IT SC	HEDU	ILE (14	SEER)	- C	ONVE	NTIO	NAL												
				unit data				FAN [DATA			COMPR	ESSOR(S)	U	NIT ELECT	RIC DATA	1	SELECTION	N BASED ON	PAIF	RED WITH	
UNIT TAG	SERVING	CAPACITY MBH	COND. EAT °F	S. SUCT. °F	SEER	REFRIG. TYPE	NO.	HP	RPM	TOTAL CFM	NO.	STEPS	LRA	RLA	MCA	МОСР	VOLT	PH	MANUF.	MODEL	MANUF.	MODEL	REMARKS
HP-A	AHU-A	18.0	95	45	14.0	R-410A	1	1/12	1100	-	1	1	48	9	11.8	20	208	1	CARRIER	CH14NB18-A	CARRIER	FMA4P1800AL	
HP-B	AHU-B	24.0	95	45	14.0	R-410A	1	1/10	1100	-	1	1	62.9	10.9	14.2	25	208	1	CARRIER	CH14NB24-A	CARRIER	FMA4P2400AL	

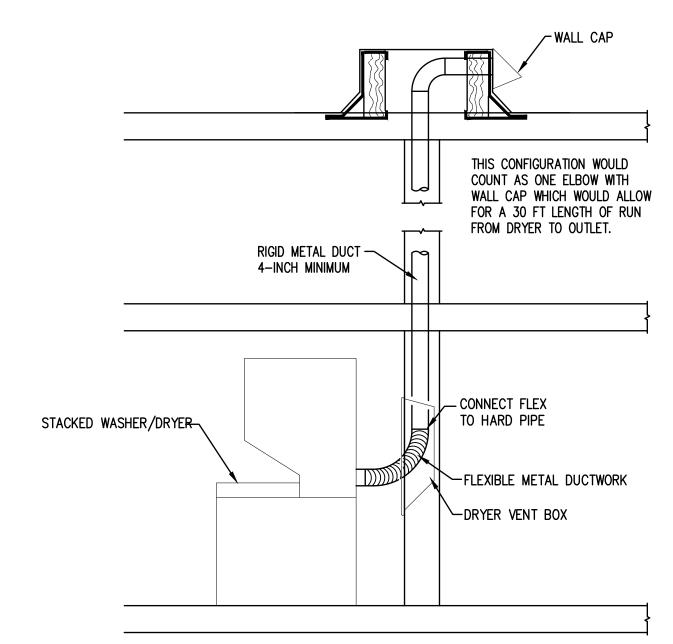
SPLIT SY	STEM AIR HAND	DLING (JNIT	SCH	EDU	LE -	CONVE	NTION	AL																
			SUPPLY	FAN DA	TΑ			COOLING	DATA			Н	EATING DAT	Ā	ELEC	. HEATIN	NG COIL	DATA	UN	IT ELEC	TRIC DA	·ΤΑ	SELECTION	BASED ON	
UNIT TAG	SERVING	NOMINAL CFM RANGE	ESP Delta P IN H ₂ O	OA CFM	HP	RPM	TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH	EAT DB °F	r°F WB °F	SEER @ARI	CAPACITY MBH	INDOOR EAT DB °F	OUTDOOR COND. DB °F	KW	VOLT	РН	NO. STEPS	VOLT	РН	MCA	MOCP	MANUFACTURER	MODEL	REMARKS
AHU-A	APARTMENT TYPE A	600	0.5	SEE UNIT SCHED	1/6	1075	18.0	13.2	80	67	14.0	12.3	70	17	5	240	1	1	208	1	23.6	25	CARRIER	FMA4P1800AL	
AHU-B	APARTMENT TYPE B	800	0.5	UNIT SCHED	1/4	1075	24	18.01	80	67	14	12.3	70	17	5	240	1	1	208	1	23.9	30	CARRIER	FMA4P2400AL	

	AC AP	T UNI	T	400 1100 1440 500	AC AF	T UNI	T		AC AP	T UNI	T	100 100 100	AC AF	T UNI	T
UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE
4001	45	Α	Α	4101	60	Α	Α	4201	60	Α	Α	4301	45	Α	Α
4002	30	В	В	4102	30	В	В	4202	30	В	В	4302	45	В	В
4003	45	Α	Α	4103	30	Α	Α	4203	30	Α	Α	4303	45	Α	Α
4004	30	Α	А	4104	45	Α	Α	4204	45	Α	Α	4304	45	Α	Α
4005	45	Α	А	4105	45	Α	Α	4205	45	Α	Α	4305	45	А	Α
4006	30	Α	Α	4106	30	Α	Α	4206	30	Α	Α	4306	45	Α	Α
4007	30	Α	Α	4107	30	Α	Α	4207	30	Α	Α				
		•	•	4108	45	Α	Α	4208	45	Α	Α				
				4109	45	Α	Α	4209	45	Α	Α				
				4110	30	Α	Α	4210	30	Α	Α				
				4111	20	۸	۸	1211	20	^	۸				

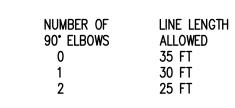


6 SOUND LINING INSTALLATION DETAIL M002 NOT TO SCALE



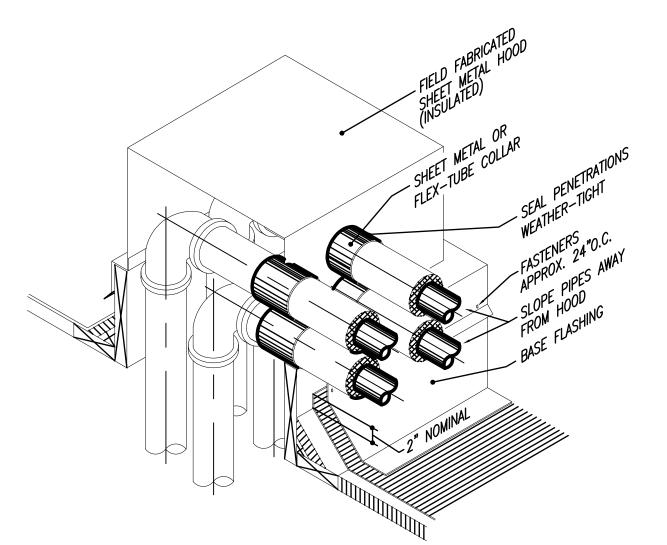


BELOW IS THE CHART ON THE MAXIMUM DRYER LENGTHS PER THE DRYER MANUFACTURER. IT IS UP TO THE HVAC CONTRACTOR TO VERIFY LINE LENGTHS PER THE INSTALLED PRODUCT AND COMPARE TO THE CHART BELOW. NOTE THAT THE LONGEST RUN IS AFFECTED BY THE TYPE OF WALL CAP USED. THE PREFERRED WALL CAP TYPE IS SHOWN UNDER WALL CAP SPECIFICATION. SMALLER OR DIFFERENT CONFIGURATIONS OF THE WALL CAP WILL AFFECT THE LINE LENGTH OF THE DRYER EXHAUST AND NEED TO BE EVALUATED PRIOR TO INSTALLATION.

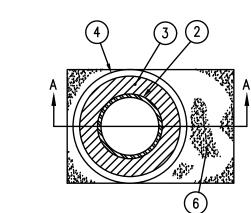


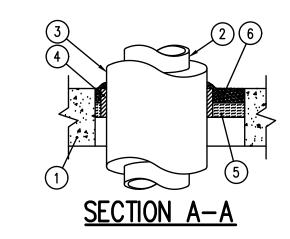
NOTE: (2) 45° ELBOWS = (1) 90° ELBOW





5 REFRIGERANT PIPING ROOF DETAIL M002 NOT TO SCALE





1. Floor orWall Assembly – Min 4–1/2 in. thick lightweight or normal weight (100–150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks* Max area of square, rectangular or circular opening is 45 sq in. with max dimension of 9 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Pipe - Nom 3 in. diam (or smaller) Type L (or heavier) copper pipe or nom 2-1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe. One or more insulated pipes may be installed with a min clearance of 1/2 in. maintained between insulated pipes and with a min clearance of 1/4 in. maintained between insulated pipe and sides of through opening. Pipes to be rigidly supported on both sides of floor or wall assembly.

3. Pipe Insulation - Plastics# - Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible form furnished in the form of tubing with skin. When nom 2-1/2 or 3 in diam insulated steel or copper pipe is used, T Rating is 1/2 hr. When max 2 in. diam insulated steel or copper pipe is used, T rating is See Plastics# (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

4. Fill, Void or Cavity Materials* - Wrap Strip - Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. wide strips. One nom 2 in. wide strip tightly-wrapped around pipe insulation (Item 3) with the foil side exposed and slid into through opening such that the top edge is flush with top surface of floor. When a single insulated pipe is installed in a circular through opening and when the max annular space between the insulated pipe and the sides of the through opening is 3/8 in., the wrap strip layer may be secured in place with pressure—sensitive tape. In all other situations, the wrap strip layer shall be secured in place with min No. 18 gauge galv steel tie wire. In wall assemblies, the wrap strip layer is to be installed on the insulated pipe in the same manner used for floor assemblies but shall be installed symmetrically on both sides of the wall. 3M COMPANY - Type FS-195+

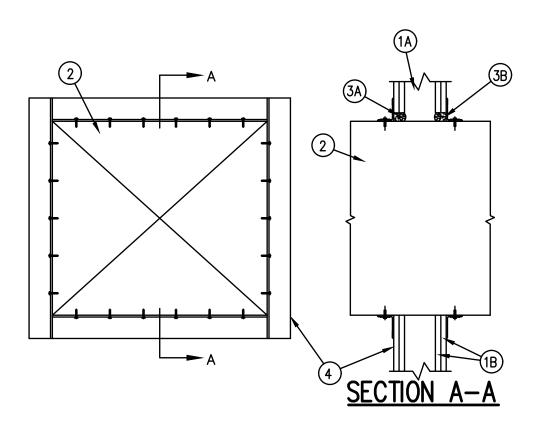
5. Packing Material — Min 1 in. thick mineral wool batt insulation firmly packed into opening with its top surface recessed min 1 in. from top surface of the floor. In wall assemblies, packing material to be firmly packed into opening on both sides of wall and recessed min 1 in. from wall surface. When a single insulated pipe (with wrap strip layer) is installed in a circular through opening and when the max annular space between the wrap strip layer and the sides of the through opening is 1/8 in., no forming material

6. Fill, Void or Cavity Materials* — Caulk or Sealant — Applied to fill through opening to a min depth of 1 in. In floor assemblies, fill material to be installed flush with top surface of floor. In wall assemblies, fill material to be installed flush with wall surface on both sides of wall.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant. (The W Rating applies only when FB-3000 WT sealant is used.)

*Bearing the UL Classification Marking

\ PIPE THROUGH CONCRETE FIRESTOP DETAIL



1. Wall Assembly - The 1 and 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing shall consist of steel channel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional 3-1/2 in. (89 mm) wide steel studs shall be used to completely frame opening. B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max size of opening to be 1216 sq in. (188.5 cm2) with a max dimension of 38 in. (965 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant – Nom 36 by 30 in. (914 by 762 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm) (point contact) to max 2 in. (51 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of floor or wall assembly.

3. Firestop System — The details of the firestop system shall be as follows:

A. Packing Material (Optional) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction—fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

B. Fill, Void or Cavity Material* - Caulk or Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At the point contact location between duct and wallboard, a min 1/4 in. (6 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant

C. Retaining Angles — Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap wall surfaces of a min of 1 in. (25 mm). Angles attached to duct on both sides of wall with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC. *Bearing the UL Classification Marking

8 DUCT THROUGH GYPSUM FIRESTOP DETAIL M002 NOT TO SCALE



FS. 30 TERR REVISIONS # DATE DESCRIPTION 11-JUN-21 PERMIT SET

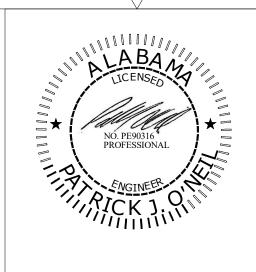
581

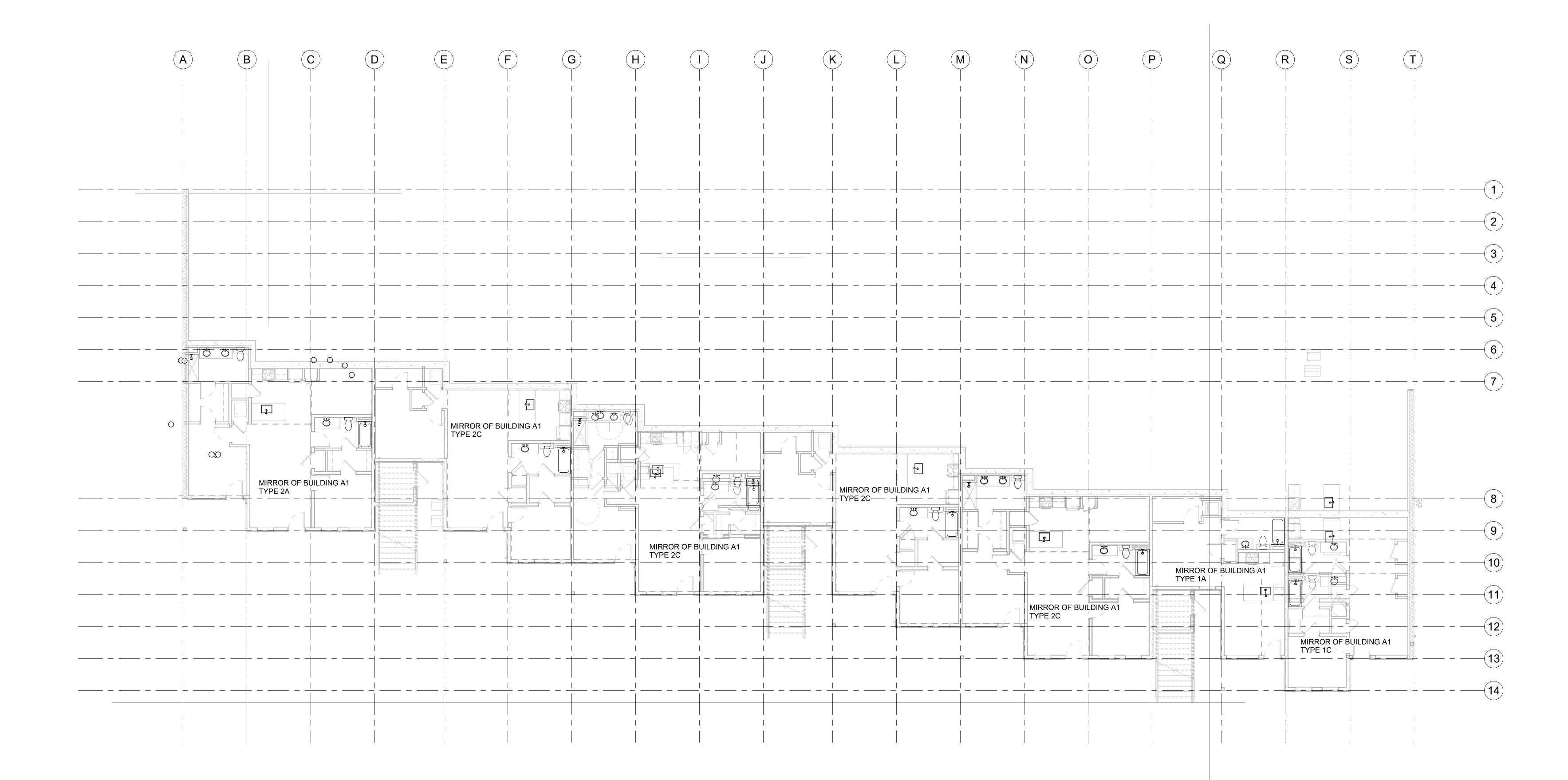
COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. **ENGINEERING SERVICES** 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118 11-JUNE-2021 AS NOTED APPROVED BY: JCW MECHANICAL SCHEDULES AND

SCALE:

DRAWN BY:

DETAILS.





MECHANICAL BASEMENT FLOOR PLAN

GENERAL NOTE:

THIS PLAN IS A MIRROR COPY OF BUILDING A1.

PLEASE REFER TO A1 FOR LAYOUTS.

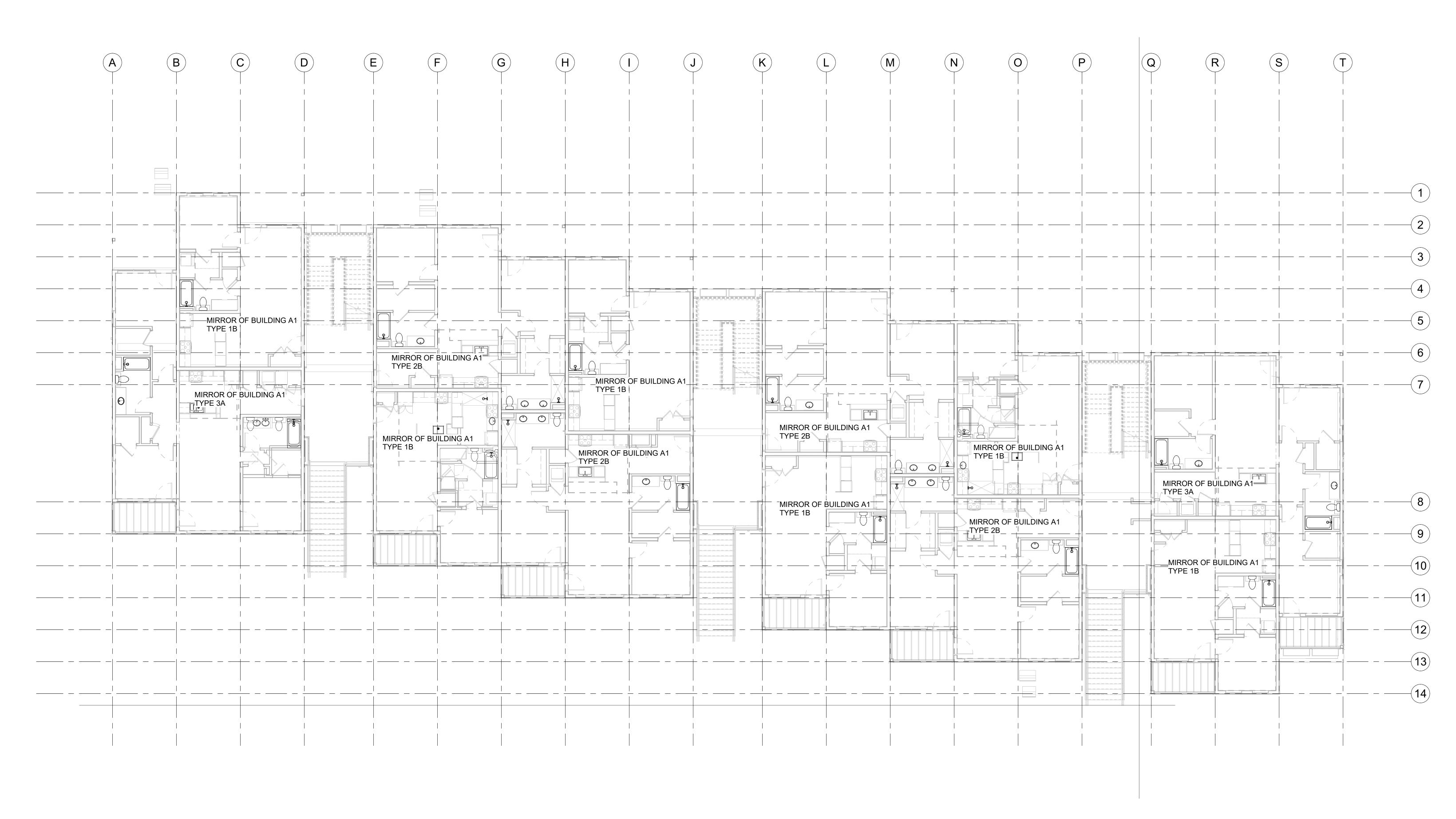
TERRACE AT HIGH MOUNTAIN ROAD
HINTSVILLE AT 35811

REV	REVISIONS # DATE DESCRIPTION										
#	DATE	DES	SCRIPTION								
#	11-JUN-21	PER	MIT SET								
1		XX									
2		XX									
3		XX									
4 XX											
5 XX											
6		XX									
		SEF	NEIL ENGINEERING RVICES S RESERVED.								
	ENGINE	ERI	NG SERVICES								
	POW	HATA 23	RIDGE COURT NN, VIRGINIA 8139 904-372-3501								
PRO	PROJECT #: K118										
DA	ΓE:		11-JUN-2021								
SCA	ALE:		1/8" = 1'-0"								
DR	AWN BY:		RAC								
APF	PROVED E	3Y:	PJO								
N A I											

M4.100

BASEMENT FLOOR PLAN





1 MECHANICAL FIRST FLOOR PLAN 1/8" = 1'-0"

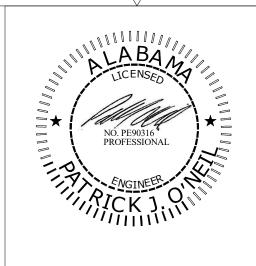
GENERAL NOTE:

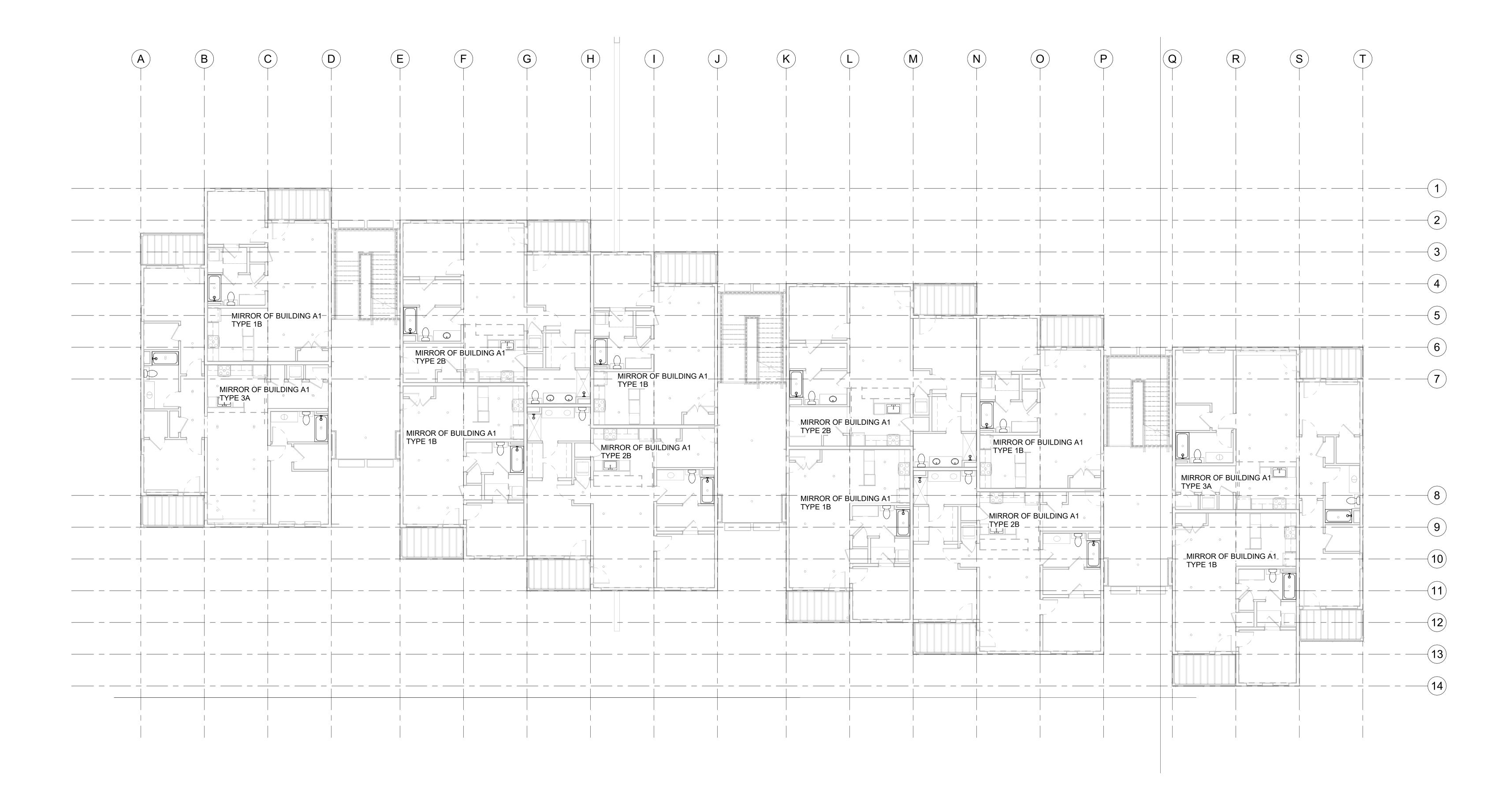
THIS PLAN IS A MIRROR COPY OF BUILDING A1. SHEET: PLEASE REFER TO A1 FOR LAYOUTS.

REV	/ISIONS											
#	DATE	DES	SCRIPTION									
#	11-JUN-21	PER	MIT SET									
1		XX										
2		XX										
3		XX										
4		XX										
5		XX										
6		XX										
	COPYRIGH		NEIL ENGINEERING									
	ALL R		RVICES S RESERVED.									
	O	N	NG SERVICES									
	LINGINE		NG SERVICES									
		HATA	RIDGE COURT N, VIRGINIA									
	23139 PHONE: 804-372-3501											
PR	OJECT #:		K118									
D 4-			44 11111 0004									

FIRST FLOOR PLAN

M4.101





1 MECHANICAL SECOND FLOOR PLAN 1/8" = 1'-0"

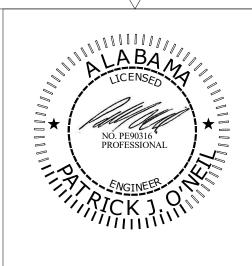
GENERAL NOTE:

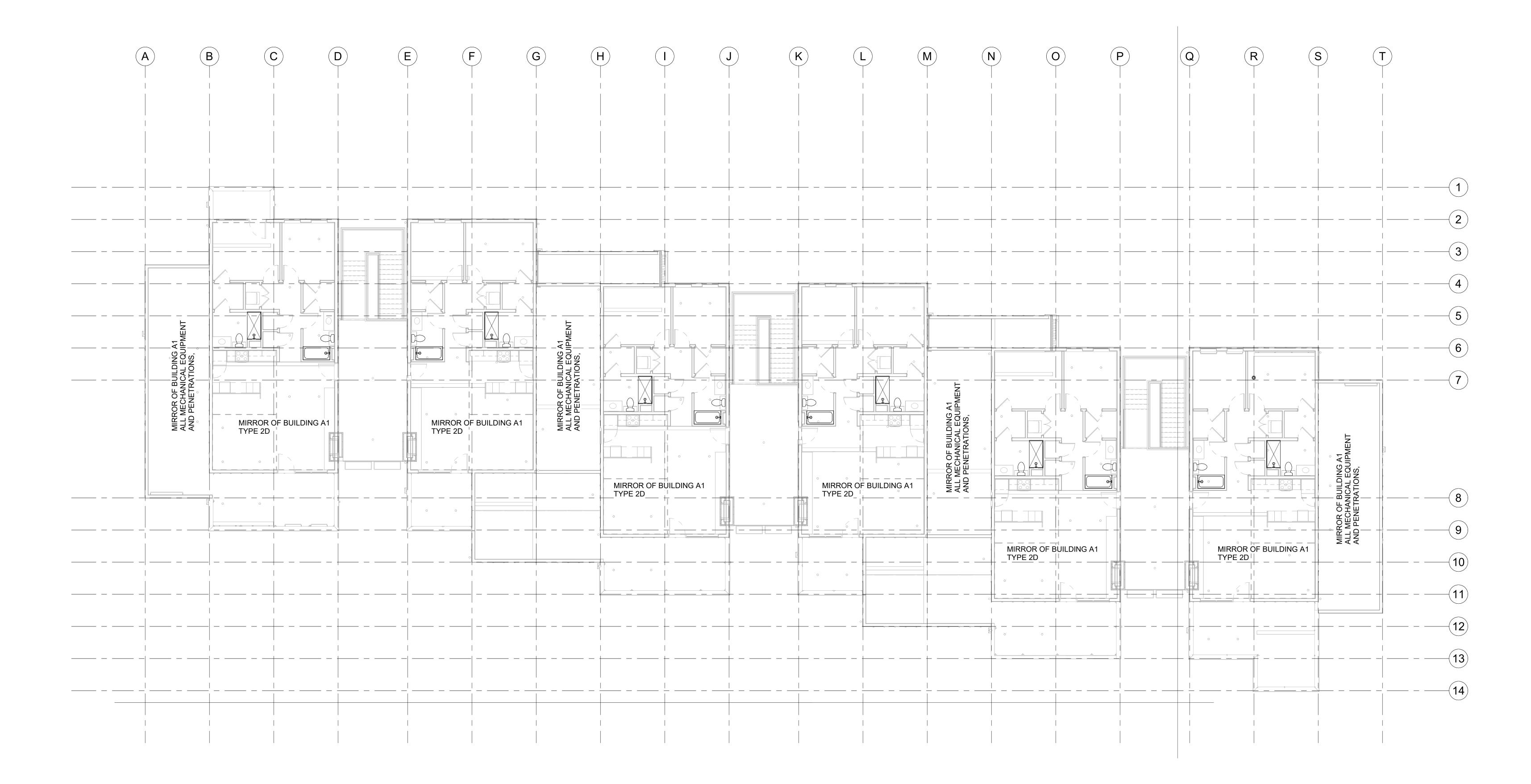
THIS PLAN IS A MIRROR COPY OF BUILDING A1. SHEET: PLEASE REFER TO A1 FOR LAYOUTS.

REV	'ISIONS		
#	DATE	DES	SCRIPTION
#	11-JUN-21	PER	MIT SET
1		XX	
2		XX	
3		XX	
4		XX	
5		XX	
6		XX	
		SEF	NEIL ENGINEERING RVICES S RESERVED.
		N	ING SERVICES
	POW	HATA 23	RIDGE COURT N, VIRGINIA 1139 104-372-3501
PRO	OJECT #:		K118
DA	ΓE:		11-JUN-2021
			4/0!! — 41.0!!

MECHANICAL SECOND FLOOR PLAN

M1.102





1 MECHANICAL THIRD FLOOR PLAN 1/8" = 1'-0"

GENERAL NOTE:

THIS PLAN IS A MIRROR COPY OF BUILDING A1. SHEET: PLEASE REFER TO A1 FOR LAYOUTS.

	ISIONS		
#	DATE	DE	SCRIPTION
#	11-JUN-21	PER	MIT SET
1		XX	
2		XX	
3		XX	
4		XX	
5		XX	
6		XX	
		SEF	NEIL ENGINEERING RVICES S RESERVED.
		N	NG SERVICES
	POW	HATA 23	RIDGE COURT IN, VIRGINIA 8139 104-372-3501
PRO	DJECT #:		K118
DA	ΓE:		11-JUN-2021

APPROVED BY: PJO THIRD FLOOR PLAN

M1.103

<u>SECTION 15010 - MECHANICAL GENERAL PROVISIONS:</u>

- 1. THE WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE REFERENCED CODES AND STANDARDS:
- 1.1. LOCAL AUTHORITY HAVING JURISDICTION (AHJ) REQUIREMENTS 1.2. ALABAMA BUILDING CODE — 2015, INCLUDING: IBC/2015 - INTERNATIONAL BUILDING CODE
- 1.2.1. NFPA 70/2014 NATIONAL ELECTRICAL CODE 1.2.2. NFPA 72/2013 - NATIONAL FIRE ALARM CODE 1.2.3. 2015 INTERNATIONAL MECHANICAL CODE
- 1.3. ADAAG AMERICANS WITH DISABILITIES ACT ACCESSIBILITY 1.4. ANSI — AMERICAN NATIONAL STANDARDS INSTITUTE
- 1.5. ASHRAE AMER. SOC. OF HEATING. REFRIG. AND AIR COND. ENGINEERS 1.6. ASTM — AMERICAN SOCIETY FOR TESTING AND MATERIALS
- 1.7. NFPA NATIONAL FIRE PROTECTION ASSOCIATION 1.8. OSHA — OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
- 1.9. SMACNA SHEET METAL AND AIR COND. CONTRACTORS NAT'L ASSOCIATION
- 1.10. UL UNDERWRITERS LABORATORIES, INC. CONFORM TO THE BUILDING CODE AND LOCAL AUTHORITIES HAVING 6. SCHEDULE (INSULATION BASED ON KNAUF):
- JURISDICTION (AHJ). OBTAIN AND PAY FOR ALL PERMITS. LICENSES AND FEES REQUIRED. CONFORM TO DIV 0, DIV 1 AND THE GENERAL CONDITIONS OF THE
- CONSTRUCTION CONTRACT. COORDINATE SCHEDULE FOR ALL WORK WITH AND FOR APPROVAL BY THE COORDINATE WORK FROM OTHER TRADES AND BUILDING STRUCTURE PRIOR
- TO INSTALLATION. MAKE MINOR ADJUSTMENTS AS REQUIRED FACILITATING ALL EQUIPMENT, MATERIALS AND SYSTEMS SHALL BE LISTED AND
- CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. (UL), AS SUITABLE FOR USE INTENDED.
- 7. THE CONTRACTOR IS RESPONSIBLE FOR THE "MEANS AND METHODS" OF THE WORK. WORK SHALL CONFORM TO THE NECA 1 - "STANDARD OF INSTALLATION" AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE
- INSTALL AND APPLY ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE SUBMITTALS WHERE INDICATED. MECHANICAL EQUIPMENT LOCATED ON ROOFTOP SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S INSTALLATION INSTRUCTIONS TO MAINTAIN CLEARANCES TO ACCESS FOR SERVICE AND
- MAINTENANCE. INSTALL AND PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE, DIRT, AND DEBRIS AND CLEAN AND REPAIR AS REQUIRED. DO NOT USE
- COMPRESSED AIR FOR CLEANING. <u>WARRANTY:</u> PROVIDE WARRANTY ON WORKMANSHIP AND MATERIALS. WARRANTY SHALL COVER ALL COSTS FOR PARTS, LABOR, ASSOCIATED TRAVEL, AND EXPENSES FOR A PERIOD OF ONE YEAR FROM COMPLETION OF SYSTEM ACCEPTANCE. WARRANTY SHALL APPLY EQUALLY TO BOTH HARDWARE AND SOFTWARE. PERSONNEL SUPPORTING THIS WARRANTY AGREEMENT SHALL PROVIDE ON-SITE OR OFF-SITE SERVICE IN A TIMELY MANNER AFTER FAILURE NOTIFICATION TO THE VENDOR. THE MAXIMUM ACCEPTABLE RESPONSE TIME TO PROVIDE THIS SERVICE AT THE SITE SHALL BE 24 HOURS, MONDAY THROUGH FRIDAY AND 48 HOURS ON SATURDAY AND SUNDAY.
- <u>SUBMITTALS:</u> 11.1. PROVIDE SUBMITTALS ON EQUIPMENT AND MATERIALS. 11.2. SUBMITTAL REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE
- DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE PLANS AND SPECIFICATIONS. 11.3. OPERATION OF THE SYSTEMS REMAINS THE RESPONSIBILITY OF THE
- 11.4. REVIEW OF A SPECIFIC ITEM DOES NOT INCLUDE OR IMPLY APPROVAL OF AN ASSEMBLY (OF WHICH THE ITEM IS A COMPONENT).
- 11.5. ALL DEVIATIONS FROM THE PROJECT ENGINEERING DRAWINGS AND SPECIFICATIONS SHALL BE EXPLICITLY NOTED IN SUBMITTALS BY COVER LETTER OR WILL BE CONSIDERED NON-COMPLIANT AND REJECTED, REGARDLESS OF SUBMITTAL REVIEW STATUS. DEVIATIONS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONTRACT DOCUMENTS UNLESS SEPARATELY NEGOTIATED WITH THE
- 11.6. THE CONTRACTOR, BY SUBMITTING A PROPOSED SUBSTITUTION. ACCEPTS ALL RESPONSIBILITY FOR COORDINATING ALL CHANGES AND ABSORBING ALL COSTS DUE TO PROPOSED SUBSTITUTED EQUIPMENT TO INCLUDE, BUT NOT LIMITED TO: COORDINATION WITH AND CHANGES AFFECTING OTHER TRADES, ADDITIONAL CIRCUITS, IMPACT OF ADDITIONAL LOADS, CIRCUIT CHARACTERISTICS, AND SINGLE-POINT CONNECTION KITS.

SECTION 15080-INSULATION:

MEMBRANE.

2. INSTALL INSULATION PER MANUFACTURERS INSTRUCTIONS

3. ON SUPPLY AIR AND OUTSIDE AIR DUCTS ENSURE THAT THE VAPOR

4. PIPING EXPOSED TO WEATHER SHALL BE PROVIDED WITH A WEATHER-PROOF

BLANKET FIBERGLASS: FLEXIBLE FIBROUS GLASS, FLAME RETARDANT

FACTORY LAMINATED FOIL— SKRIM-KRAFT (FSK) VAPOR BARRIER, 2"

STAPLING FLANGE, MAXIMUM VAPOR PERMEANCE OF .02 PERM/IN., MINIMUM

DENSITY OF 1.0 LB/CF, MAXIMUM CONDUCTIVITY PER 1" THICKNESS OF .28

ABOVE CEILINGS 1-1/2" BLANKET TYPE

GRILLE BOOTS 1-1/2" BLANKET TYPE

1" LINER

LINER WHERE NOTED, OTHERWISE:

1" CLOSED CELL ELASTOMERIC

ELASTOMERIC W/ WEATHERPROOF

1-1/2" CLOSED CELL

1. WALL ELECTRIC HEATERS (WH) - RECESSED WALL MOUNTED ELECTRIC UNIT

STANDARD EFFICIENCY, SPLIT SYSTEM HEAT PUMP. COMPRESSOR TO BE

INTERNALLY PROTECTED AGAINST HIGH PRESSURE, TEMPERATURE, AND

EXTERNALLY BY A FACTORY INSTALLED HIGH PRESSURE SWITCH. PROVIDE

REMOVABLE ACCESS PANEL TO ELECTRICAL BOX. FURNISH FULLY CHARGED

AND FACTORY WIRED. UNIT SHALL OPERATE WITH R-410A. PROVIDE WITH

5-YEAR LIMITED PARTS WARRANTY AND 5-YEAR LIMITED COMPRESSOR

CONSTRUCTED OF PRE-PAINTED STEEL, INTERNALLY PROTECTED HERMETIC

COMPRESSOR WITH INTERNAL DISCHARGE LINE SOLID CORE FILTER DRIER,

INSTALL UNIT ON PLASTIC HOUSEKEEPING PAD (WITH NEOPRENE BETWEEN

CRANKCASE HEATER, AND HARD START KITS (FOR UNITS WITH REFRIGERANT

LINE LENGTHS OVER 100 FT). CONDENSER COILS CONSTRUCTED OF COPPER

PAD AND ROOF) OR 4x4 WEATHER TREATED LUMBER WITH NEOPRENE PADS

COMPACT AND STURDY CABINET IS PROTECTED WITH A DURABLE FINISH AND

INSULATED TO PREVENT SWEATING. PROVIDE WITH ALUMINUM FIN COILS AND

FOR UNITS MOUNTED VERTICALLY, PROVIDE FLOAT SWITCH ON CONDENSATE

CONDENSATE DRAIN PAN UNDER UNIT WITH FLOAT OR WATER DETECTOR

OVERFLOW CONNECTION. FOR UNITS MOUNTED HORIZONTALLY PROVIDE

WITHIN THE PAN. UPON A DETECTION OF WATER IN THE PAN OR

CONDENSATE OVERFLOW CONNECTION, UNIT SHALL BE SHUT DOWN.

3. PROVIDE NON-PROGRAMMABLE DIGITAL THERMOSTAT FOR ALL RESIDENTIAL

4. PROVIDE DUCTED INDOOR UNIT WITH SUPPLY AND RETURN PLENUMS AS

INDICATED. PLENUMS TO BE SIZED AS SMALL AS POSSIBLE FOR

CONNECTIONS. LINE WITH 1" INSULATION FOR SOUND DAMPENING.

5. PROVIDE WITH INTERNAL FILTER RACK AND 1"THICK FILTER.

HEATER WITH INTEGRAL THERMOSTAT, LOUVERED FRONT COVER, DISCONNECT

2" 1LB DENSITY BLANKET

BARRIER IS CONTINUOUS AND SEALED AT ALL PENETRATIONS.

AT 75°F MEAN TEMPERATURE. BASED ON KNAUF DUCT WRAP.

SUPPLY DUCTWORK

RETURN/TRANSFER DUCTWORK:

GRILLE BOOTS

OUTSIDE AIR DUCTWORK:

ALL

SECTION 15767—HEATERS:

ELECTRIC UNIT HEATERS:

EXHAUST DUCTWORK:

EXHAUST

INDOOR REF PIPING

SWITCH, AND HEATING ELEMENT.

SECTION 15770-SPLIT SYSTEM AIR CONDITIONERS:

OUTDOOR STANDARD SPLIT SYSTEM HEAT PUMP (HP):

TUBING AND ENHANCED ALUMINUM COILS.

INDOOR STANDARD SPLIT SYSTEM AIR HANDLING UNIT (AHU):

BETWEEN UNIT AND LUMBER.

ELECTRIC HEATERS.

OUTDOOR REF PIPING

- WALL CAPS (EXTERIOR WALL): PROVIDE WALL CAPS FOR ALL DRYER AND 1. ALL PRODUCTS IN THE CONDITIONED AIRSTREAM (INCLUDING PLENUMS) SHALL BE NONCOMBUSTIBLE AND SHALL COMPLY WITH NFPA 90A BATHROOM EXHAUST DUCTS AND OUTSIDE AIR DUCTS AT EXTERIOR WALL PENETRATIONS. WALL CAPS SHALL BE ALUMINUM CONSTRUCTION. PROVIDE FLAME/SMOKE/FUEL CONTRIBUTION RATING OF 25/50/0 AND COMPLY WITH DRYER AND EXHAUST DUCTS WITH BUILT IN DAMPER. BASED ON SEIHO UL181 EROSION LIMITATIONS. FIRE HAZARD RATINGS SHALL BE DETERMINED MODEL SFZC. COLOR TO BE DETERMINED BY THE ARCHITECT. BY NFPA-255 "METHOD OF TEST OF SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS". ASTM E84. OR UL723.
 - 2. <u>FIRE DAMPERS:</u> CURTAIN TYPE WITH BLADES OUT OF THE AIR STREAM (HIGH HAT TYPE) WITH 1-1/2" HOUR UL RATINGS APPROVED FOR USE IN 2 HOUR RATED WALLS AND 1-HOUR RATED FLOOR ASSEMBLIES. PROVIDE WITH FUSIBLE LINK AND CLOSURE SPRING FOR USE IN VERTICAL DUCTWORK (HORIZONTALLY MOUNTED).

SECTION 15820-DUCTWORK ACCESSORIES:

- CEILING MOUNTED RADIATION DAMPER: INSULATED, 2-BLADE, 22 GA GALVANIZED STEEL FRAME AND BLADES, SPRING OPERATED WITH 212°F FUSIBLE LINK. BASED ON ARROW MODEL A91 (RECTANGULAR) AND A97
- 4. VOLUME DAMPERS (MANUAL): BLADES AND FRAME SHALL BE OF EXTRUDED ALUMINUM OR GALVANIZED STEEL CONSTRUCTION. PROVIDE SINGLE BLADE DAMPERS PER SMACNA FIG 2-12, FIGURE B ON RECTANGULAR DUCTS LESS THAN 30" IN WIDTH AND 12" OR LESS IN DEPTH AND MULTI-BLADE DAMPERS PER SMACNA FIGURE 2-13, FIGURE A ON LARGER RECTANGULAR DUCTS. ROUND DUCT VOLUME DAMPERS SHALL BE SINGLE BLADE MOUNTED ON A CONTINUOUS SHAFT. EQUIP WITH LOCKING QUADRANT AND END BEARINGS. PROVIDE HANDLE EXTENSION ON EXTERNALLY INSULATED

SECTION 15830-FANS:

DUCTWORK.

- 1. FANS SHALL BE UL LISTED AND AMCA CERTIFIED. ELECTRICAL DEVICES SHALL CONFORM TO NEMA STANDARDS. WIRING SHALL CONFORM TO NEC.
- 2. MOTORS SHALL BE NON-OVERLOADING, HIGH EFFICIENCY TYPE. MOTORS DESIGNED FOR VARIABLE SPEED SHALL BE DESIGNED AND RATED FOR USE WITH VFDs.
- 3. CEILING MOUNTED (WITHIN RATED DROPPED CEILING): FORWARD CURVED INJECTION MOLDED POLYPROPYLENE FAN WHEEL, 22 GAUGE GALVANIZED STEEL INLET BOX, ISOLATED MOUNTED DIRECT MOTOR, MOUNTED TO ONE PIECE GALVANIZED STAMPED STEEL INTEGRAL MOTOR MOUNT/INLET. BACKDRAFT DAMPER. AND WHITE HIGH IMPACT STYRENE INJECTED MOLDED GRILLE. PROVIDE WITH INTEGRAL RADIATION DAMPER. BASIS OF DESIGN: COOK MODEL GC.

SECTION 15850-GRILLES, REGISTERS, AND DIFFUSERS:

- PROVIDE AS INDICATED IN THE GRD SCHEDULE. PROVIDE ALL GRDs WITH INTEGRAL VOLUME DAMPERS OR WITH VOLUME EXTRACTORS AS INDICATED. COLOR OF THE GRILLES TO BE DETERMINED BY ARCHITECT. PERFORMANCE OF THE GRILLES IS A MAXIMUM OF 700 FPM OR A NC LEVEL OF 30 OR LESS FOR SIZE AND CFM INDICATED.
- INSTALL WITH AIR TIGHT CONNECTION TO DUCTWORK. COORDINATE MOUNTING CONDITIONS WITH ARCHITECTURAL.
- CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENTS.

SECTION 15890-METAL DUCTWORK:

- 1. UNLESS OTHERWISE NOTED (REFER TO PARAGRAPH 2). RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED OF HOT ROLLED STEEL CONTINUOUSLY ANNEALED AND HOT DIPPED GALVANIZED SHEET OR COIL, MINIMUM G-90, 0.90 OZ/SF COATING SUITABLE FOR FORMING WITHOUT FLAKING OR PEELING, SUITABLE FOR WELDING OR SOLDERING. ZINC COATING SHALL NOT BE IMPAIRED FROM DOUBLE SEAMING, BREAKING OR ROLL FORMING. 14 GA. AND LIGHTER CONFORMING TO ASTM A 527: 13 GA AND HEAVIER CONFORMING TO
- 2. DUCT BOARD IS ACCEPTABLE WITH WRITTEN APPROVAL BY OWNER DUCT BOARD, IF ALLOWED, SHALL HAVE A MINIMUM R-VALUE OF 6 AND BE COMPOSED OF RESIN BONDED GLASS FIBERS. DUCT BOARD SHALL HAVE AN FSK VAPOR JACKET AND COMPLY WITH ASTM C1290.
- 3. DRYER VENT SHALL BE 26 GA. MINIMUM.
- 4. UNLESS OTHERWISE NOTED, ROUND DUCTWORK SHALL BE CONSTRUCTED OF G-90 GALVANIZED STEEL WITH THE FOLLOWING MINIMUM GAUGES: <15" DIA. = 24 GAUGE, 15"-26" DIA. = 22 GAUGE.
- 5. INSULATED ROUND FLEXIBLE DUCT (MAX LENGTH 8') IS ALLOWED FOR BRANCH CONNECTIONS TO DIFFUSERS AND GRILLES ABOVE LAY-IN CEILINGS. INSULATED ROUND FLEXIBLE DUCTWORK SHALL BE UL181, CLASS 1 AND SUITABLE FOR LOW PRESSURE APPLICATIONS OF NOT LESS THAN 3" W.C. CONNECT TO METAL DUCT WITH STAINLESS STEEL DRAW BANDS.
- 6. ALL DUCT SIZES SHOWN ON PLANS ARE INSIDE CLEAR (AIRFLOW) DIMENSIONS. NO ALLOWANCE HAS BEEN MADE FOR DUCT LINER OR DOUBLE
- WALL DUCTWORK WHERE REQUIRED. 7. FABRICATE AND SUPPORT METAL DUCT IN ACCORDANCE WITH SMACNA HVAC
- 8. PROVIDE ALL HANGERS AND SUPPORTS AS REQUIRED.

DUCT CONSTRUCTION STANDARDS.

- 9. PROVIDE DOUBLE WALL TURNING VANES IN ALL LOW PRESSURE SUPPLY, RETURN, AND EXHAUST DUCTS . TURNING VANES ARE NOT REQUIRED WHERE RADIUS ELBOW FITTINGS WITH R=1.5 OR GREATER ARE USED.
- 10. SEAL DUCT JOINTS AIR TIGHT. PROVIDE AIR TIGHT SEAL WITH VOLUME DAMPERS AT ALL TAPS OFF MAIN DUCT TO DIFFUSERS.

11. SCHEDULE

<u>System</u>	<u>Section</u>	PRESSURE CLASS 2" 2" 2"	SEAL CLASS
Supply	Note 1		A
Return—Relief	All		C
Gen. Exhaust	All		C
DRYER VENT	ALL	2"	SPOT WELD

1. REFER TO PARAGRAPH 2 WHERE DUCT BOARD IS ALLOWED.

MECHANICAL GENERAL NOTES: PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, AND OTHER SERVICES NECESSARY TO SATISFACTORILY COMPLETE ALL MECHANICAL WORK INDICATED ON THE CONTRACT DOCUMENTS. ALL SPECIFICATIONS, NOTES, OR SYMBOLS MAY NOT BE

CONTRACTOR SHALL BE RESPONSIBLE FOR PROCUREMENT OF ALL APPLICABLE BUILDING PERMITS, INSPECTIONS, AND OTHER REQUIRED ADMINISTRATIVE DUTIES TO COMPLETE ALL INDICATED WORK REQUIREMENTS.

APPLICABLE FOR THIS TENANT. CONTRACTOR SHALL CAREFULLY REVIEW PLANS AND DETAILS

DESIGN CONSIDERATIONS:

SUMMER: 95°F DB, 75°F WB OUTDOOR TEMPERATURE: WINTER: 17°F DB SUMMER: 75°F DB, 45-60% R.H. INDOOR TEMPERATURE WINTER: 70°F DB *HUMIDITY WILL VARY WITH OUTDOOR CONDITION

VENTILATION AND DISTRIBUTION:

FOR ACCURATE EXTENT OF WORK REQUIRED.

MECHANICAL VENTILATION WILL BE PROVIDED PER IMC SECTION 403 AND TABLE 403.3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH IBC 2015, IMC 2015 AND ANY ADDITIONAL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

ALL MATERIALS WITH ELECTRICAL REQUIREMENTS SHALL BE UL LISTED FOR THE INTENDED APPLICATION.

PHASING AND WORK PERFORMANCE:

THE CONTRACTOR SHALL COORDINATE ALL PHASING AND STAGING/STORAGE OF MATERIALS AND WORK WITH THE GENERAL CONTRACTOR. A WRITTEN GUARANTEE FOR THE PERIOD OF AT LEAST ONE YEAR AFTER SUBSTANTIAL COMPLETION SHALL BE TURNED OVER TO THE OWNER ON ALL MATERIALS AND WORK DONE BY THE CONTRACTOR, ALL MATERIALS INSTALLED SHALL ALSO BE PROVIDED WITH THE MAXIMUM AVAILABLE GUARANTEE FROM THE MANUFACTURER.

CLEAN UP AND PROTECTION OF AREA: THE CONTRACTOR SHALL CLAIM ALL RESPONSIBILITY FOR PROTECTION OF THE AREAS INVOLVED, INCLUDING ANY AREAS INVOLVED IN THE TRANSPORTATION AND STORAGE OF EQUIPMENT DURING CONSTRUCTION. THE CONTRACTOR SHALL CONSISTENTLY MAINTAIN A WORK ENVIRONMENT THAT IS CLEAN AND PROTECTED FROM UNAUTHORIZED PERSONS AND DAMAGE DUE TO CONSTRUCTION. AFTER COMPLETION OF ALL CONSTRUCTION, THE CONTRACTOR SHALL CLEAN ALL AREAS INVOLVED IN THE CONSTRUCTION PROCESS, TO THE OWNER'S APPROVAL. ALL REFUSE INVOLVED DUE TO CONSTRUCTION SHALL BE PROPERLY AND PROMPTLY DISPOSED OF AT AN ON SITE LOCATION.

CONSTRUCTION TYPE: R-2 USE GROUP: OCCUPANCY:

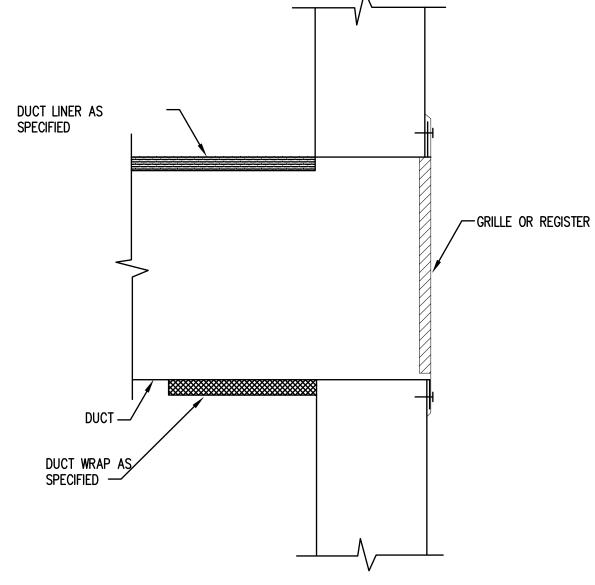
- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO SHOW THE GENERAL ROUTING, LOCATION, AND SIZE OF EQUIPMENT, PIPING AND/OR DUCTWORK, THE CONTRACTOR SHALL MAKE ALLOWANCES FOR ALL MATERIALS AND LABOR NECESSARY TO MAKE FINAL CONNECTIONS. NOT ALL NECESSARY OFFSETS OR FITTINGS ARE SHOWN, BUT SHALL BE PROVIDED WHERE REQUIRED. THE CONTRACTOR SHALL PROVIDE ALL ACCESSORIES, SUPPORTS, AND HANGERS TO ALLOW FOR COMPLETE AND FUNCTIONAL SYSTEMS. ALL WORK SHALL MEET OR EXCEED PUBLISHED OR ACCEPTED STANDARDS OF QUALITY WORKMANSHIP. AND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS AND/OR INSTALLATION INSTRUCTIONS. THE INTENT OF THESE CONTRACT DOCUMENTS IS TO PROVIDE COMPLETE FUNCTIONING SYSTEMS.
- INSTALL ALL DEVICES IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- COORDINATE THE PROPER GRILLE STYLE AND FRAME STYLE WITH THE FINAL APPROVED CEILING CONSTRUCTION AND INSTALL GRILLES, REGISTERS, AND DIFFUSERS.
- DUE TO THE SMALL SCALE OF THE DRAWINGS, THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY TO COORDINATE THE AIR OUTLET AND INLET LOCATIONS WITH THE CEILING PLANS, LIGHTING PLANS, SECTIONS AND/OR DETAILS.
- PROVIDE SUBMITTALS ON ALL EQUIPMENT AND CONTROLS FOR APPROVAL.
- PROVIDE OWNER TRAINING ON ALL EQUIPMENT.
- PROVIDE START-UP OF ALL EQUIPMENT.
- WELDING, CUTTING, OR BURNING: THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM OF 72 HOURS ADVANCE NOTICE PRIOR TO PERFORMING ANY WELDING. CUTTING. OR BURNING WITHIN THE BUILDING. NO WELDING, CUTTING, OR BURNING SHALL OCCUR WITHOUT GENERAL CONTRACTOR APPROVAL. WHERE WELDING, CUTTING, OR BURNING ARE NECESSARY, NON-COMBUSTIBLE SHIELDS SHALL BE USED AND SUITABLE FIRE EXTINGUISHING EQUIPMENT SHALL BE MAINTAINED NEARBY.
- FABRICATION OF STEEL SUPPORTS: FABRICATE FROM STEEL ANGLES, CHANNELS OR PLATES IN ACCORDANCE WITH ASTM.
- THERMOSTAT LOCATIONS ARE GENERAL. THERMOSTATS SHALL BE LOCATED ADJACENT TO DOORS OR NEAR RETURN GRILLES. COORDINATE FINAL THERMOSTAT LOCATIONS WITH ARCHITECT AND/OR OWNER.

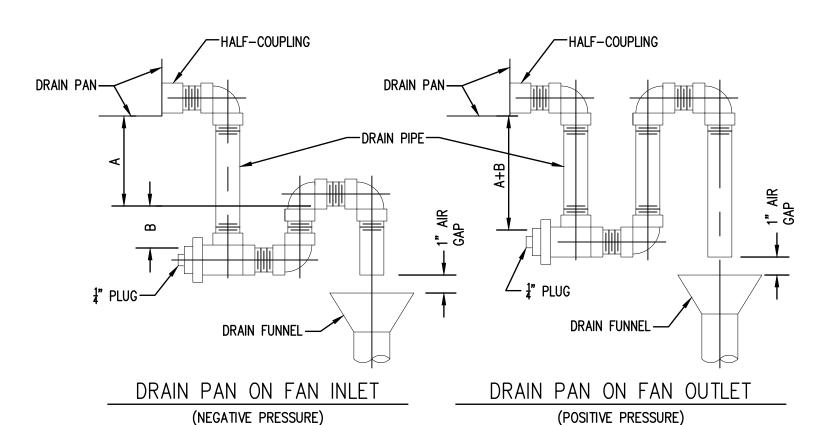
MECHANICAL LEGEND <u>SYMBOL</u> **DESCRIPTION** <u>DESCRIPTION</u> DUCT SIZE (FIRST FIGURE IS SIDEWAYS RETURN OF SIDE SHOWN DIMENSION) SIDEWAYS SUPPLY FLEXIBLE CONNECTION DIFFUSER TO BE PROVIDED WITH RADIATION DAMPER 20x20 TRANSITION DIFFUSER TAG WITH AIRFLOW FIRE DAMPER W/ DOOR UNDERCUT ACCESS DOOR THERMOSTAT (48"AFF) AIR TIGHT CONNECTION SMOKE DETECTOR OFF DUCT MAIN OCCUPANCY SENSOR 4-WAY THROW SUPPLY ACCESS DOOR IN SIDE DIFFUSER WITH FLEX OF WALL OR DUCT DUCT CONNECTION EQUIPMENT NUMBER RETURN DIFFUSER 1-HOUR RATED WALL 2-HOUR RATED WALL HEAT PUMP WITH COIL AND MAINTENANCE CLEARANCE MATCH LINE _ . . _ . . _ . . _ BOUNDARY LINE: REFER TO MANUFACTURER'S MANUAL. ZDZONE DAMPER MOTORIZED DAMPER; M USED FOR BYPASS AIR

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Α	AMPERES	GA	GAUGE
AD	ACCESS DOOR	HP	HORSEPOWER
AHU	AIR HANLDING UNIT	HZ	FREQUENCY
BTU	BRITISH THERMAL UNIT	KW	KILOWATT
BTUH	BRITISH THERMAL UNIT PER HOUR	LAT	LEAVING AIR TEMPERATURE
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
DB	DRYBULB	NTS	NOT TO SCALE
DE	DRYER EXHAUST	OA	OUT SIDE AIR
DN	DOWN	PD	PRESSURE DROP
DWG	DRAWING	PH	PHASE
DX	DIRECT EXPANSION	PSI	POUNDS PER SQUARE INCH
EA	EXHAUST AIR	PVC	POLYVINYL CHLORIDE
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EF	EXHAUST FAN	RD	RADIATION DAMPER
ESP	EXTERNAL STATIC PRESSURE	RL	REFRIGERANT LIQUID
°F	DEGREE FAHRENHEIT	RPM	REVOLUTIONS PER MINUTE
FD	FIRE DAMPER	RS	REFRIGERANT SUCTION
FLA	FULL LOAD AMPERES	SA	SUPPLYAIR
FPM	FEET PER MINUTE	TYP	TYPICAL
FT	FEET	WB	WET BULB
		WH	WALL HEATER



- M5.001 MECHANICAL NOTES, SPECIFICATIONS, LEGEND, DETAILS AND ABBREVIATIONS
- M5.002 MECHANICAL SCHEDULES AND DETAILS M5.100 - MECHANICAL BASEMENT FLOOR PLAN
- M5.101 MECHANICAL FIRST FLOOR PLAN
- M5.102 MECHANICAL SECOND FLOOR PLAN
- M5.103 MECHANICAL THIRD FLOOR PLAN M5.900 - MECHANICAL ENLARGED PLANS M5.901 - MECHANICAL ENLARGED PLANS

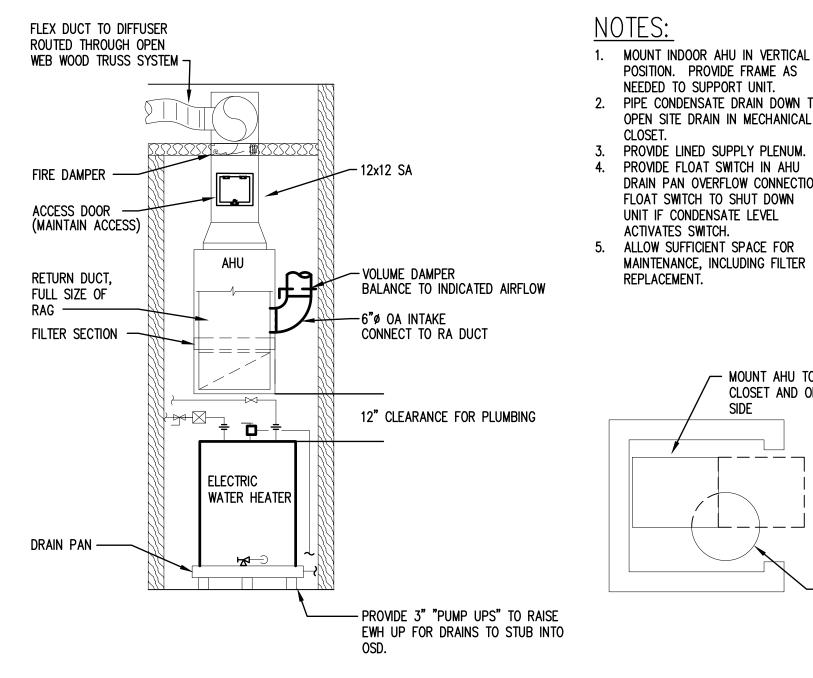


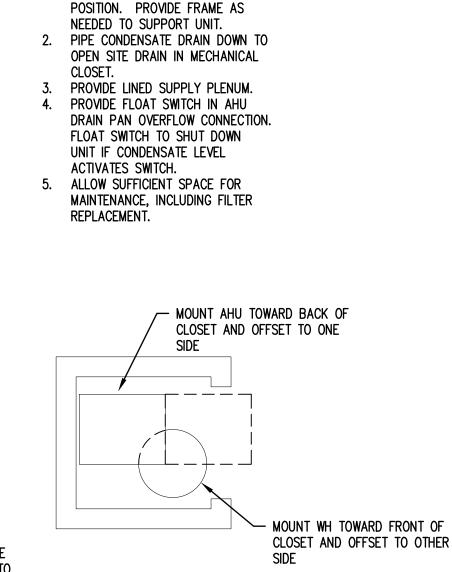


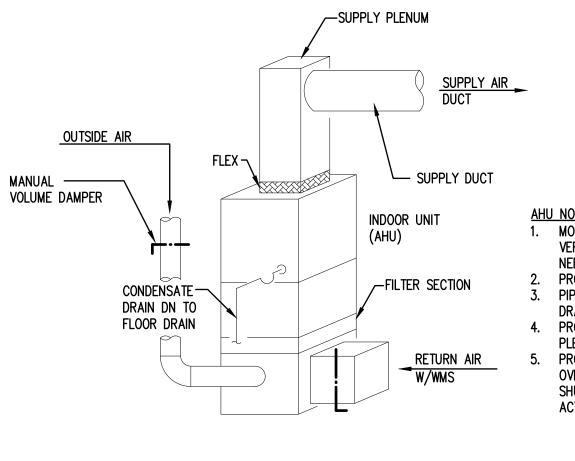
1. DRAIN PIPE TO BE SAME SIZE AS UNIT OUTLET, BUT NOT

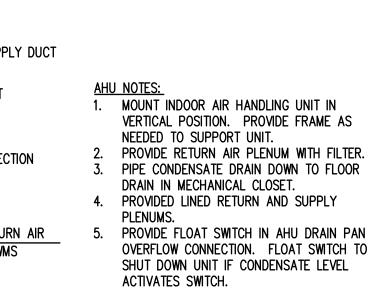
LESS THAN 1" PIPE SIZE. 2. "A"=SYSTEM STATIC IN INCHES AT DRAIN POINT. "B"=1/2 SYSTEM STATIC IN INCHES AT DRAIN POINT.





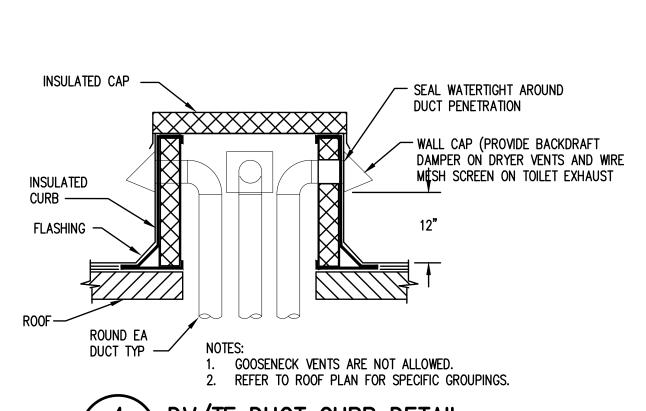












4 \ DV/TE DUCT CURB DETAIL M001 NOT TO SCALE

INDOOR AHU MOUNTED ABOVE WATER HEATER CLOSET LAYOUT M001 / NOT TO SCALE

[] REVISIONS DATE DESCRIPTION 11-JUN-21 PERMIT SET COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. **ENGINEERING SERVICES** 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501

PROJECT #: K118

APPROVED BY: | JCW

SPECIFICATIONS

ABBREVIATIONS

MECHANICAL NOTES,

LEGEND, AND DETAILS.

SCALE:

DRAWN BY:

11-JUNE-2021

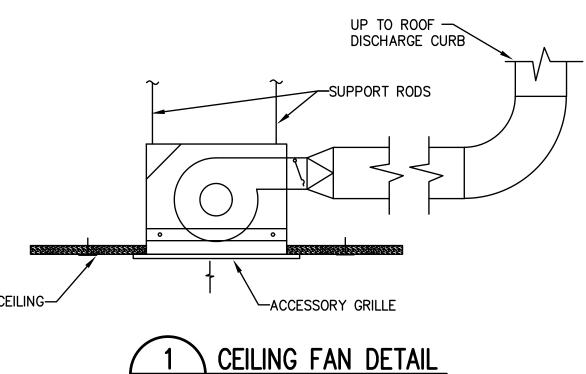
AS NOTED

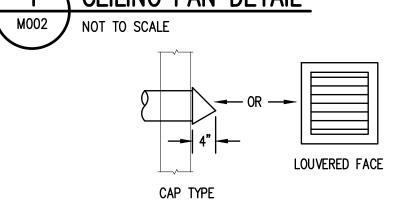
 ∞

ELECTRIC UNIT HEATER SCHEDULE: ELECTRIC DATA AIR DATA SELECTION BASED ON UNIT NO. REMARKS SERVING CAPACITY **TYPE** EAT CFM FLA VOLT KW MANUFACTURER MODEL (BTUH) MECHANICAL ROOMS AND WALL MTD 6142 100 1.8 15 120 **BERKO** FRA1812 **STAIRS**

FAN S	SCHEDULE:											
				BLADE	TOTAL	FAN	МО	TOR DATA	Α	SELECTION I	BASED ON	
UNIT NO.	SERVING	TYPE	CFM	TYPE	STATIC H ₂ O	RPM	HP	VOLTS	РН	MANUFACTURER	MODEL	REMARKS
EF-1	RESIDENTIAL BATHROOM	CEILING MTD	50	FC	0.35	750	27W	120	1	COOK	GC-128	CONTROLL BY SWITCH

		TYPE		5	SERVICI	E		MOUNTI	NG DATA					CO	NSTRUC	CTION D	ATA						SELECTION BAS	SED ON
UNIT NO.	G	R	ס	SA	RA	EA	CEILING	DUCT	FLOOR	WALL	SHAPE	MATERIAL	COLOR	1	ACCES	SORIES			Р	ATTERI	N		MANUFACTURER	MODEL
	5	K	D	SA	IVA	LA	CEILING	DOCT	FLOOR	VVALL	SHAPE	IVIATERIAL	COLOR	VD	RC	VE	Р	1-W	2-W	3-W	4-W	E/R	WANOFACTORER	MODEL
S-1		х		Χ			Х				RECT	ALUMINUM	TBD	Χ					Х				USAIRE	102M
R-1	X				Х					Х	RECT	STEEL	TBD	Χ								Х	KRUEGER	S80
E-1	Х					Х				Х	RECT	STEEL	TBD									Х	KRUEGER	S80



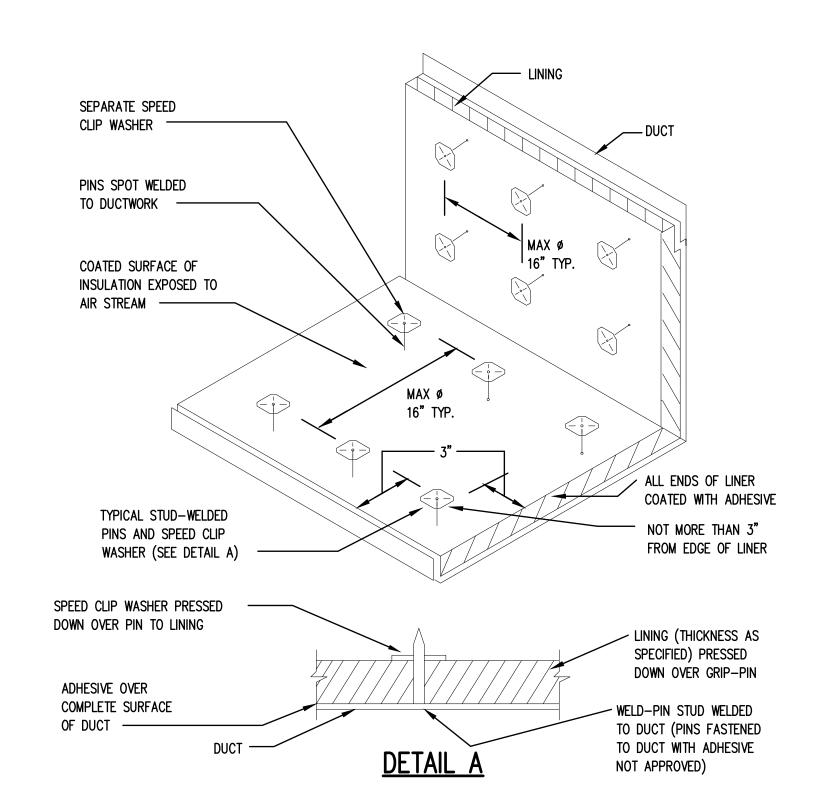


2	WALL CAP	DETAIL
M002	NOT TO SCALE	

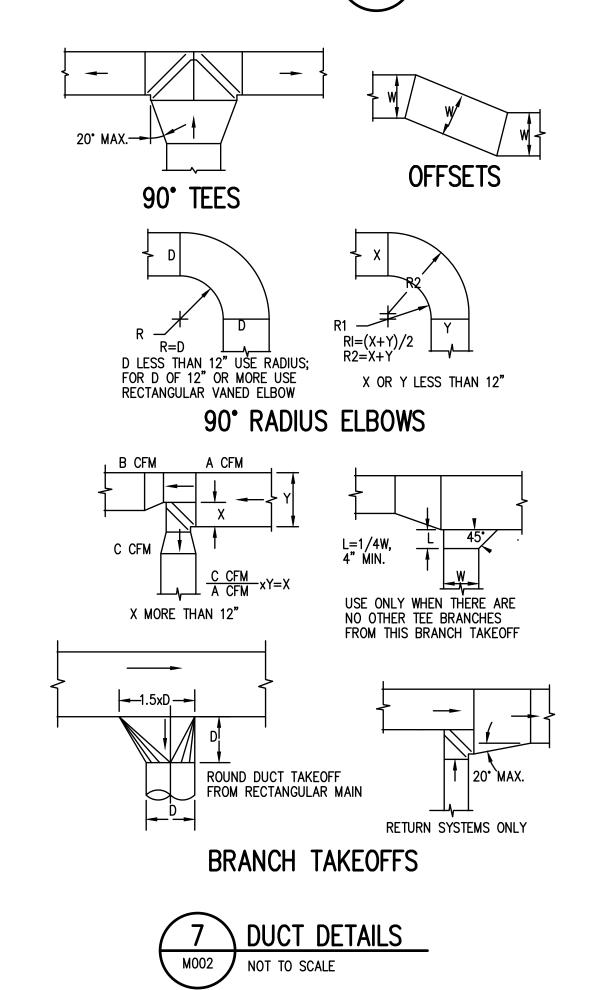
SPLIT S	YSTEM C	OUTDOC	R UN	IT SC	HEDU	ILE (14	SEER)	- C	ONVE	NTIO	NAL												
			l	UNIT DATA				FAN [DATA			COMPR	ESSOR(S)	U	NIT ELECT	TRIC DATA	+	SELECTION	N BASED ON	PAIF	RED WITH	
UNIT TAG	SERVING	CAPACITY MBH	COND. EAT °F		SEER	REFRIG. TYPE	NO.	HP	RPM	TOTAL CFM	NO.	STEPS	LRA	RLA	MCA	МОСР	VOLT	PH	MANUF.	MODEL	MANUF.	MODEL	REMARKS
HP-A	AHU-A	18.0	95	45	14.0	R-410A	1	1/12	1100	-	1	1	48	9	11.8	20	208	1	CARRIER	CH14NB18-A	CARRIER	FMA4P1800AL	
HP-B	AHU-B	24.0	95	45	14.0	R-410A	1	1/10	1100		1	1	62.9	10.9	14.2	25	208	1	CARRIER	CH14NB24-A	CARRIER	FMA4P2400AL	

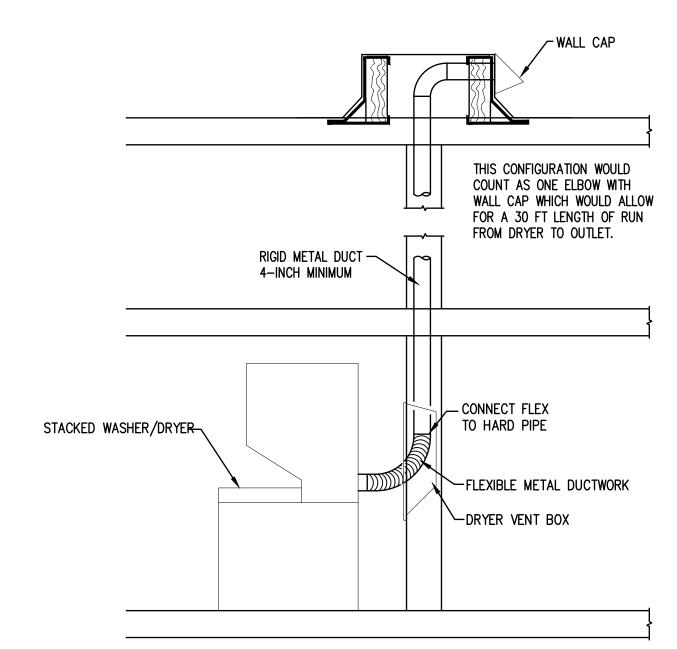
SPLIT SY	STEM AIR HAND	DLING U	JNIT	SCH	EDU	LE -	CONVE	NTION	AL																
			SUPPLY	FAN DA	ATA			COOLING	DATA			Н	EATING DAT	A	ELEC	. HEATIN	IG COIL	DATA	UN	IIT ELEC	TRIC DA	ATA	SELECTION	BASED ON	
UNIT TAG	SERVING	NOMINAL CFM RANGE	ESP Delta P IN H ₂ O	OA CFM	HP	RPM	TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH	DB °F		SEER @ARI	CAPACITY MBH	INDOOR EAT DB °F	OUTDOOR COND. DB °F	KW	VOLT	PH	NO. STEPS	VOLT	РН	MCA	МОСР	MANUFACTURER	MODEL	REMARKS
AHU-A	APARTMENT TYPE A	600	0.5	SEE UNIT SCHED	1/6	1075	18.0	13.2	80	67	14.0	12.3	70	17	5	240	1	1	208	1	23.6	25	CARRIER	FMA4P1800AL	
AHU-B	APARTMENT TYPE B	800	0.5	UNIT SCHED	1/4	1075	24	18.01	80	67	14	12.3	70	17	5	240	1	1	208	1	23.9	30	CARRIER	FMA4P2400AL	

	AC AP	T UNIT	T		AC AF	T UNI	Т		AC AP	T UNIT	Ī		AC AF	T UNI	Т
UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE
5001	45	Α	Α	5101	60	Α	Α	5201	60	Α	Α	5301	45	Α	Α
5002	30	В	В	5102	30	В	В	5202	30	В	В	5302	45	В	В
5003	45	Α	Α	5103	30	Α	Α	5203	30	Α	Α	5303	45	Α	Α
5004	30	Α	Α	5104	45	Α	Α	5204	45	Α	Α	5304	45	Α	Α
5005	45	Α	Α	5105	45	Α	Α	5205	45	Α	Α				
				5106	30	Α	Α	5206	30	Α	Α				
				5107	30	Α	Α	5207	30	А	Α				
				5108	45	Α	Α	5208	45	Α	Α				

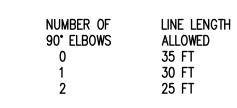






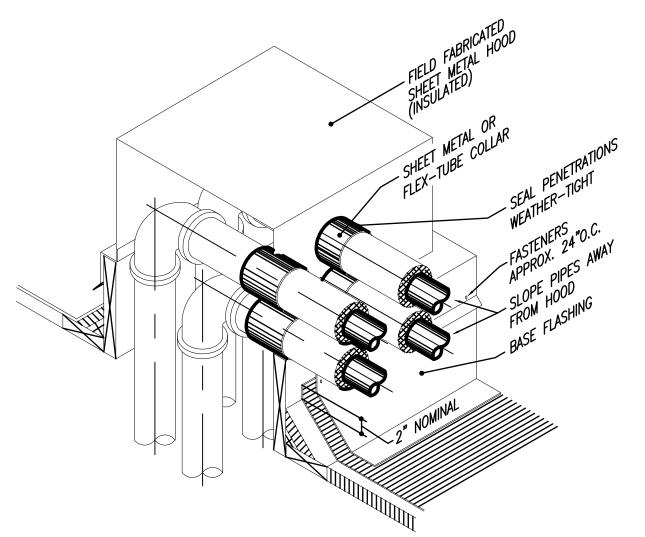


BELOW IS THE CHART ON THE MAXIMUM DRYER LENGTHS PER THE DRYER MANUFACTURER. IT IS UP TO THE HVAC CONTRACTOR TO VERIFY LINE LENGTHS PER THE INSTALLED PRODUCT AND COMPARE TO THE CHART BELOW. NOTE THAT THE LONGEST RUN IS AFFECTED BY THE TYPE OF WALL CAP USED. THE PREFERRED WALL CAP TYPE IS SHOWN UNDER WALL CAP SPECIFICATION. SMALLER OR DIFFERENT CONFIGURATIONS OF THE WALL CAP WILL AFFECT THE LINE LENGTH OF THE DRYER EXHAUST AND NEED TO BE EVALUATED PRIOR TO INSTALLATION.

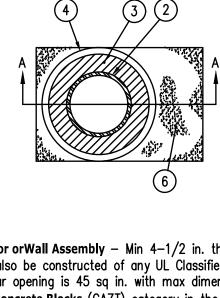


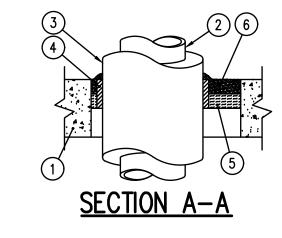
NOTE: (2) 45° ELBOWS = (1) 90° ELBOW





5 REFRIGERANT PIPING ROOF DETAIL M002 NOT TO SCALE





1. Floor orWall Assembly – Min 4–1/2 in. thick lightweight or normal weight (100–150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks* Max area of square, rectangular or circular opening is 45 sq in. with max dimension of 9 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Pipe - Nom 3 in. diam (or smaller) Type L (or heavier) copper pipe or nom 2-1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe. One or more insulated pipes may be installed with a min clearance of 1/2 in. maintained between insulated pipes and with a min clearance of 1/4 in. maintained between insulated pipe and sides of through opening. Pipes to be rigidly supported on both sides of floor or wall assembly.

3. Pipe Insulation - Plastics# - Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible form furnished in the form of tubing with skin. When nom 2-1/2 or 3 in diam insulated steel or copper pipe is used, T Rating is 1/2 hr. When max 2 in. diam insulated steel or copper pipe is used, T rating is See Plastics# (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

4. Fill, Void or Cavity Materials* - Wrap Strip - Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. wide strips. One nom 2 in. wide strip tightly-wrapped around pipe insulation (Item 3) with the foil side exposed and slid into through opening such that the top edge is flush with top surface of floor. When a single insulated pipe is installed in a circular through opening and when the max annular space between the insulated pipe and the sides of the through opening is 3/8 in., the wrap strip layer may be secured in place with pressure—sensitive tape. In all other situations, the wrap strip layer shall be secured in place with min No. 18 gauge galv steel tie wire. In wall assemblies, the wrap strip layer is to be installed on the insulated pipe in the same manner used for floor assemblies but shall be installed symmetrically on both sides of the wall. 3M COMPANY - Type FS-195+

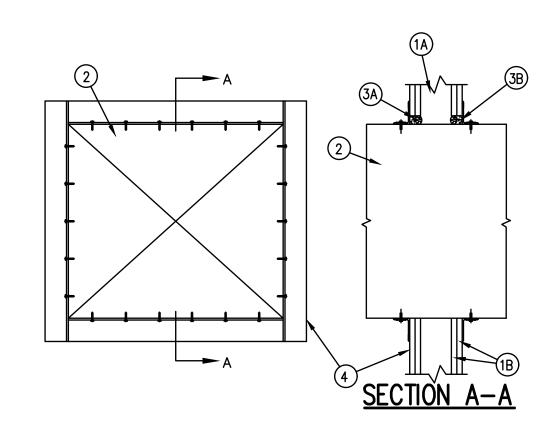
5. Packing Material — Min 1 in. thick mineral wool batt insulation firmly packed into opening with its top surface recessed min 1 in. from top surface of the floor. In wall assemblies, packing material to be firmly packed into opening on both sides of wall and recessed min 1 in. from wall surface. When a single insulated pipe (with wrap strip layer) is installed in a circular through opening and when the max annular space between the wrap strip layer and the sides of the through opening is 1/8 in., no forming material

6. Fill, Void or Cavity Materials* — Caulk or Sealant — Applied to fill through opening to a min depth of 1 in. In floor assemblies, fill material to be installed flush with top surface of floor. In wall assemblies, fill material to be installed flush with wall surface on both sides of wall.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant. (The W Rating applies only when FB-3000 WT sealant is used.)

\ PIPE THROUGH CONCRETE FIRESTOP DETAIL

*Bearing the UL Classification Marking



1. Wall Assembly - The 1 and 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing shall consist of steel channel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional 3-1/2 in. (89 mm) wide steel studs shall be used to completely frame opening. B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max size of opening to be 1216 sq in. (188.5 cm2) with a max dimension of 38 in. (965 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant — Nom 36 by 30 in. (914 by 762 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm) (point contact) to max 2 in. (51 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of floor or wall assembly.

3. Firestop System — The details of the firestop system shall be as follows:

A. Packing Material (Optional) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction—fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

B. Fill, Void or Cavity Material* - Caulk or Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At the point contact location between duct and wallboard, a min 1/4 in. (6 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant

*Bearing the UL Classification Marking

C. Retaining Angles — Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap wall surfaces of a min of 1 in. (25 mm). Angles attached to duct on both sides of wall with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC.

8 DUCT THROUGH GYPSUM FIRESTOP DETAIL M002 NOT TO SCALE



FS.

TERR

REVISIONS

SCALE:

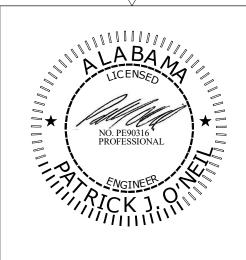
DRAWN BY:

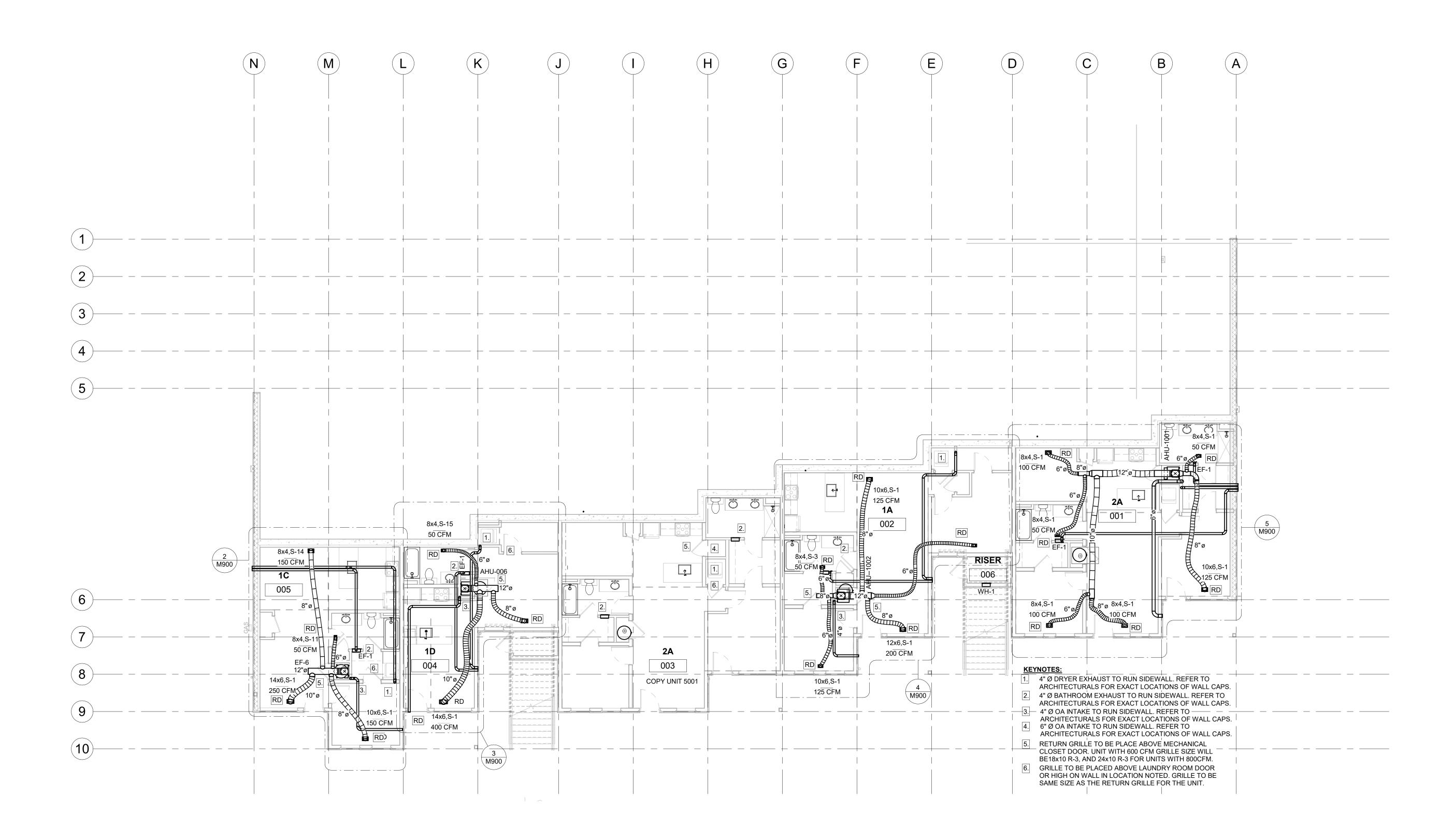
DETAILS.

30

581

DATE DESCRIPTION 11-JUN-21 PERMIT SET COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. **ENGINEERING SERVICES** 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118 11-JUNE-2021 AS NOTED APPROVED BY: JCW MECHANICAL SCHEDULES AND

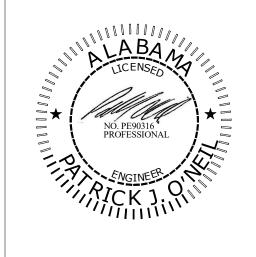


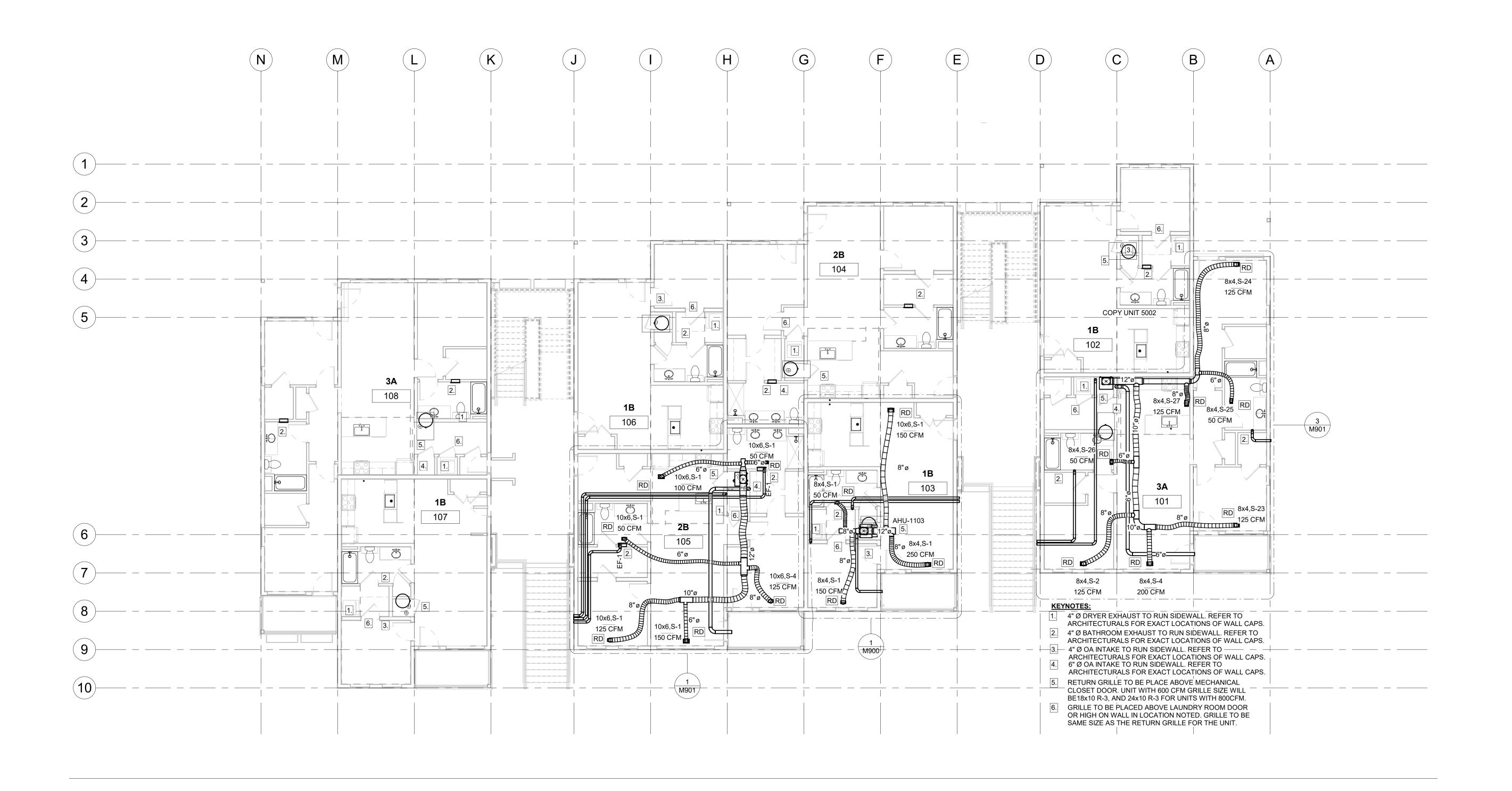


1 MECHANICAL BASEMENT FLOOR PLAN
1/8" = 1'-0"

REVISIONS # DATE DESCRIPTION # 11-JUN-21 PERMIT SET XX COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118 11-JUN-2021 1/8" = 1'-0" DRAWN BY: APPROVED BY: PJO MECHANICAL BASEMENT FLOOR PLAN

M5.100





1 MECHANICAL FIRST FLOOR PLAN
1/8" = 1'-0"

REVISIONS # DATE DESCRIPTION # 11-JUN-21 PERMIT SET XX XX XX XX COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118 11-JUN-2021

TERR

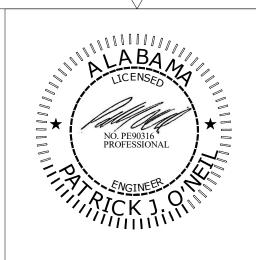
MECHANICAL
FIRST FLOOR PLAN

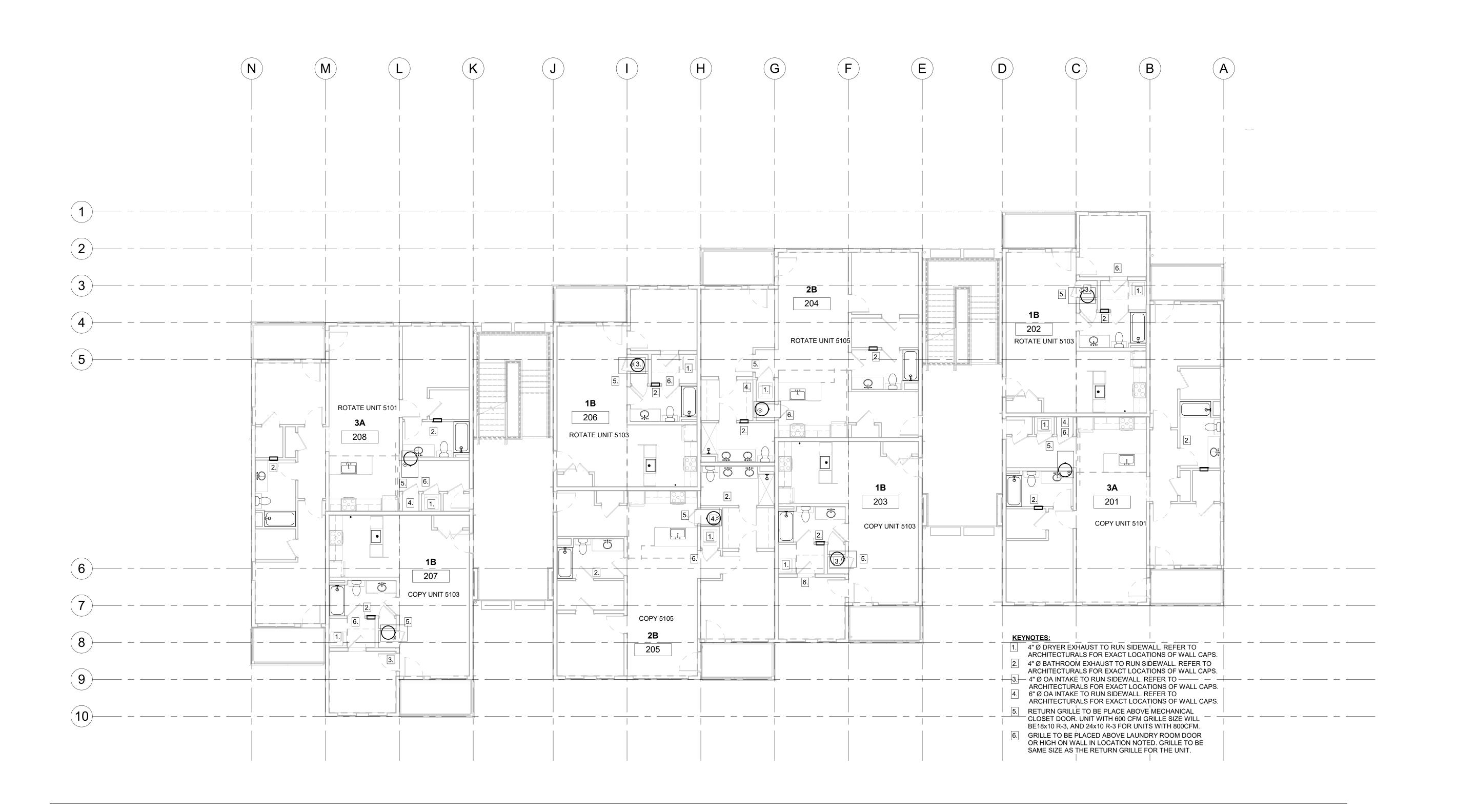
1/8" = 1'-0"

SCALE:

DRAWN BY:

M5.101





1 MECHANICAL SECOND FLOOR PLAN 1/8" = 1'-0" REVISIONS

DATE DESCRIPTION

11-JUN-21 PERMIT SET

1 XX

2 XX

3 XX

4 XX

5 XX

6 XX

COPYRIGHT © ONEIL ENGINEERING SERVICES
ALL RIGHTS RESERVED.

ENGINEERING SERVICES

1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501

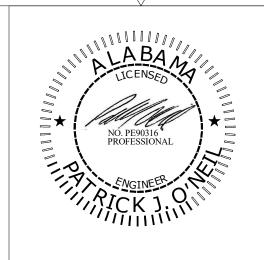
PROJECT #: K118

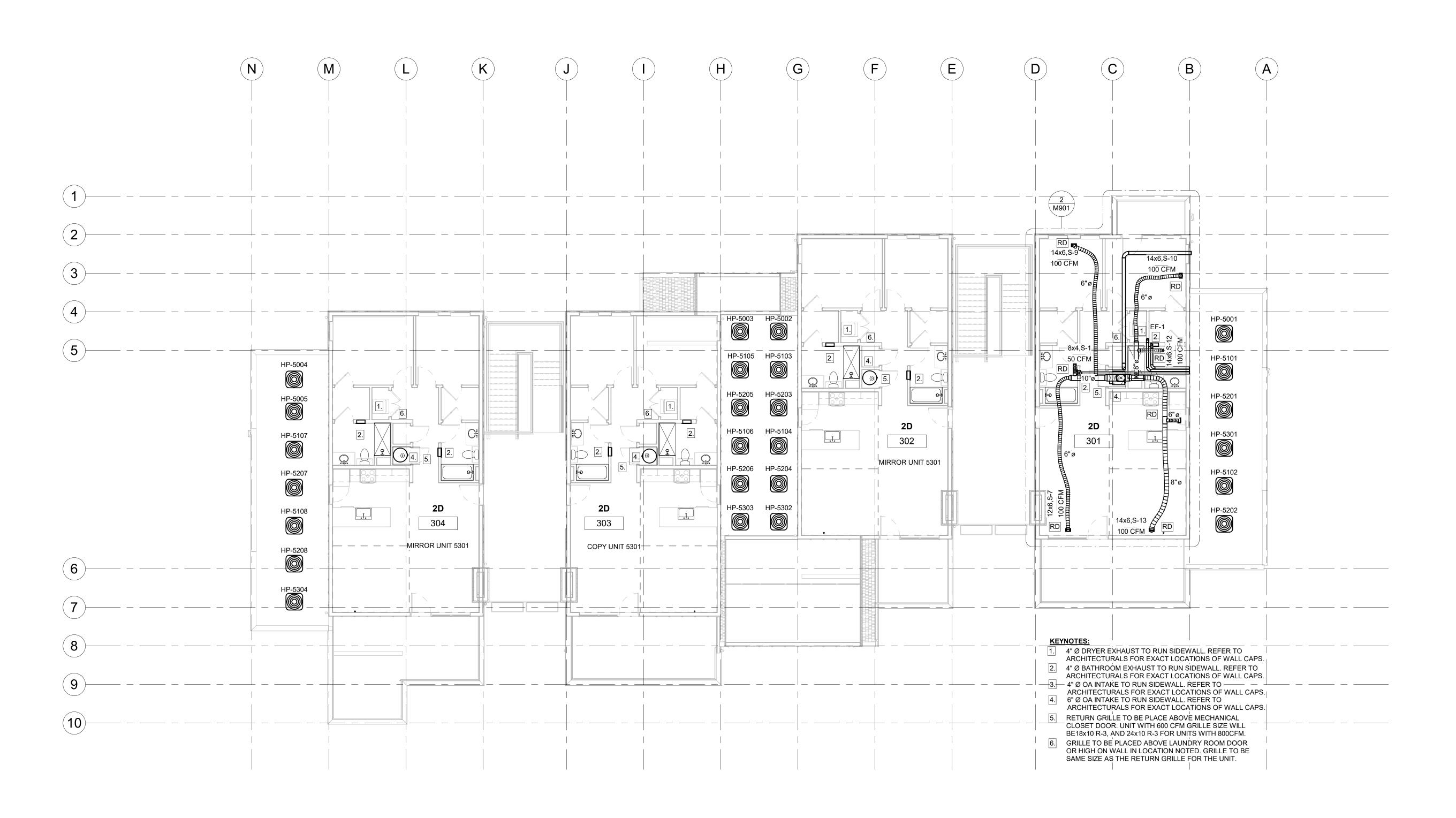
11-JUN-2021 1/8" = 1'-0"

M5.102

DRAWN BY: RAC
APPROVED BY: PJO

MECHANICAL SECOND FLOOR PLAN





1 MECHANICAL THIRD FLOOR PLAN
1/8" = 1'-0"

REVISIONS # DATE DESCRIPTION # 11-JUN-21 PERMIT SET XX XX XX XX COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118 11-JUN-2021

30

TERR

M5.103

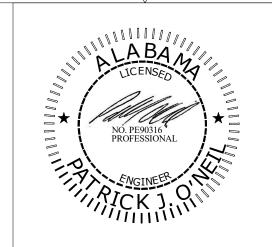
1/8" = 1'-0"

SCALE:

DRAWN BY:

APPROVED BY: PJO

MECHANICAL THIRD FLOOR PLAN

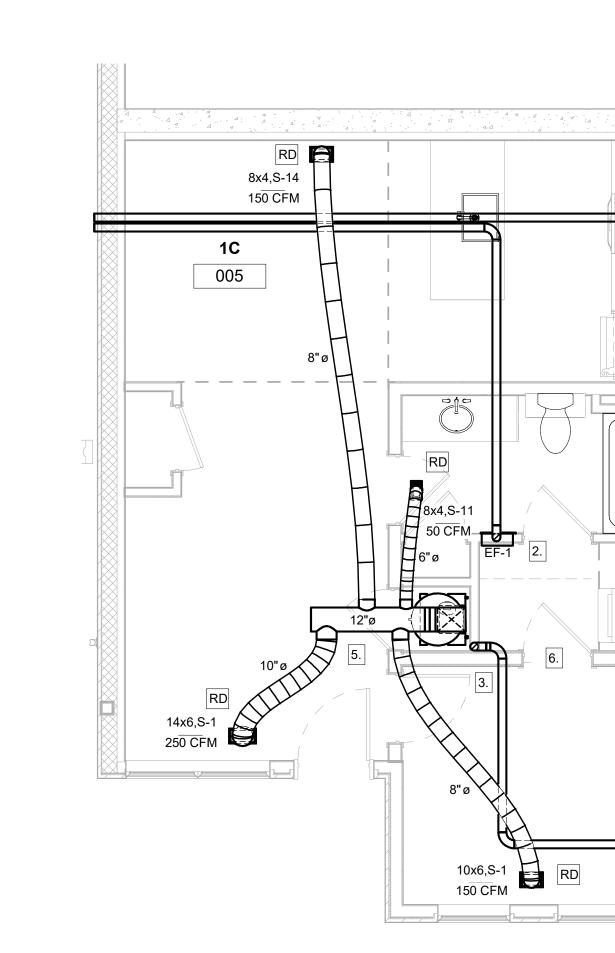


4130 HI

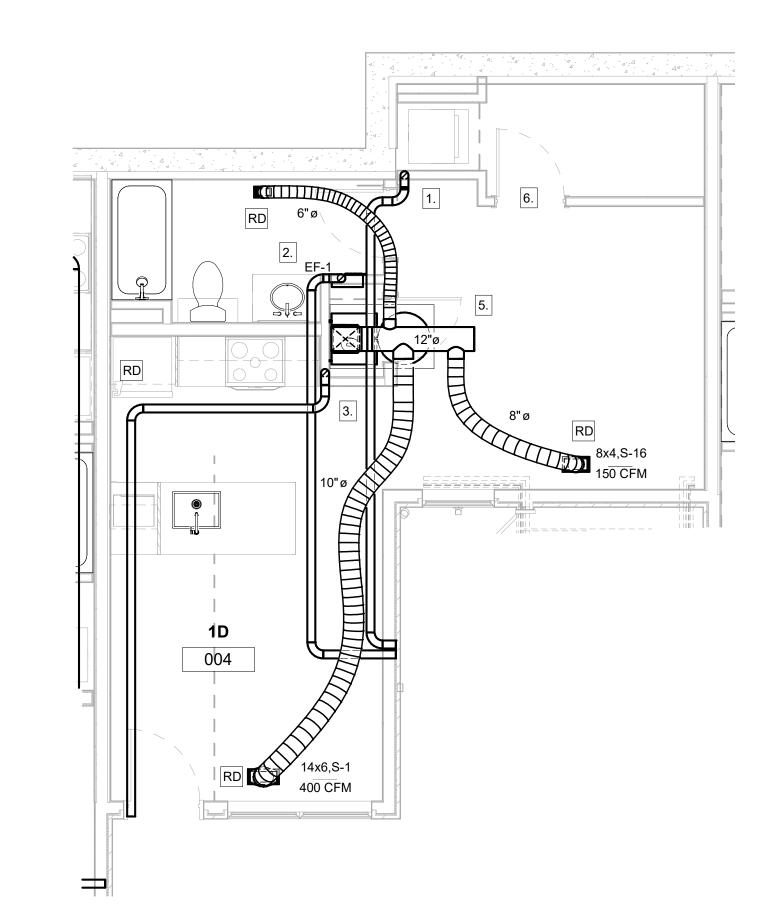
TERR

REVISIONS
DATE DESCRIPTION

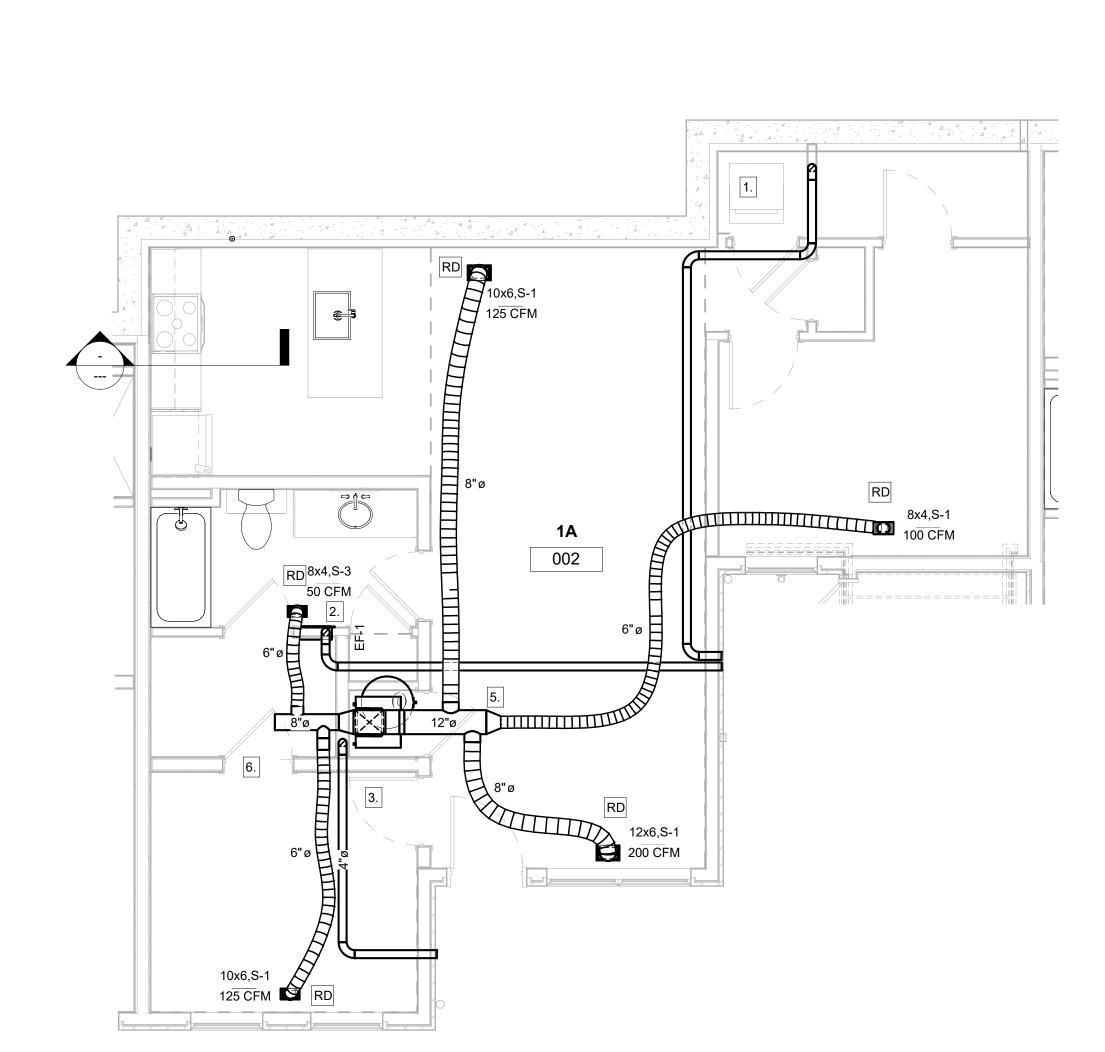
11-JUN-21 PERMIT SET
1 XX



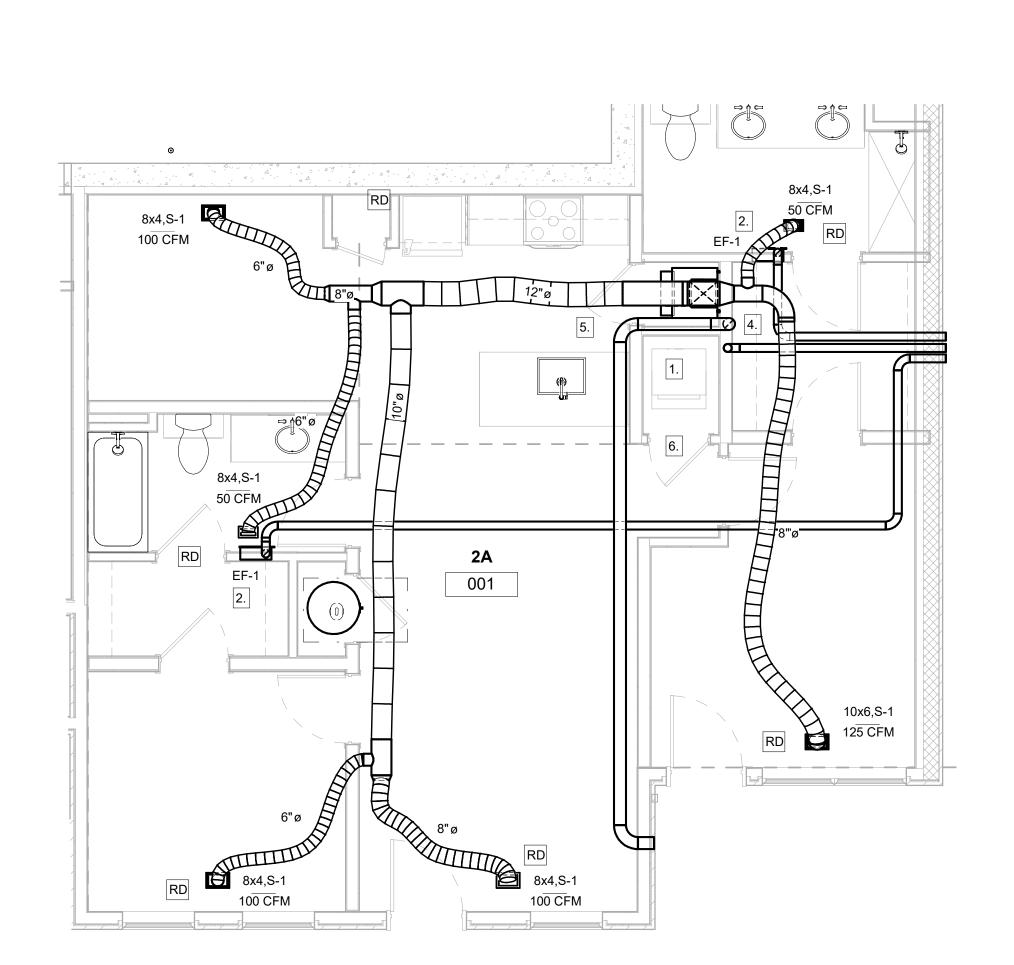
2 MECHANICAL TYPICAL UNIT TYPE 1C 1/4" = 1'-0"



3 MECHANICAL TYPICAL UNIT TYPE 1D
1/4" = 1'-0"



1 MECHANICAL TYPICAL UNIT TYPE 1B 1/4" = 1'-0"



5 MECHANICAL TYPICAL UNIT TYPE 2A 1/4" = 1'-0"

4 XX
5 XX
6 XX
COPYRIGHT © ONEIL ENGINEERING SERVICES
ALL RIGHTS RESERVED.

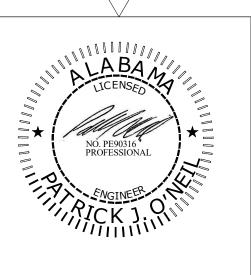
ONE L
ENGINEERING SERVICES

1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139
PHONE: 804-372-3501

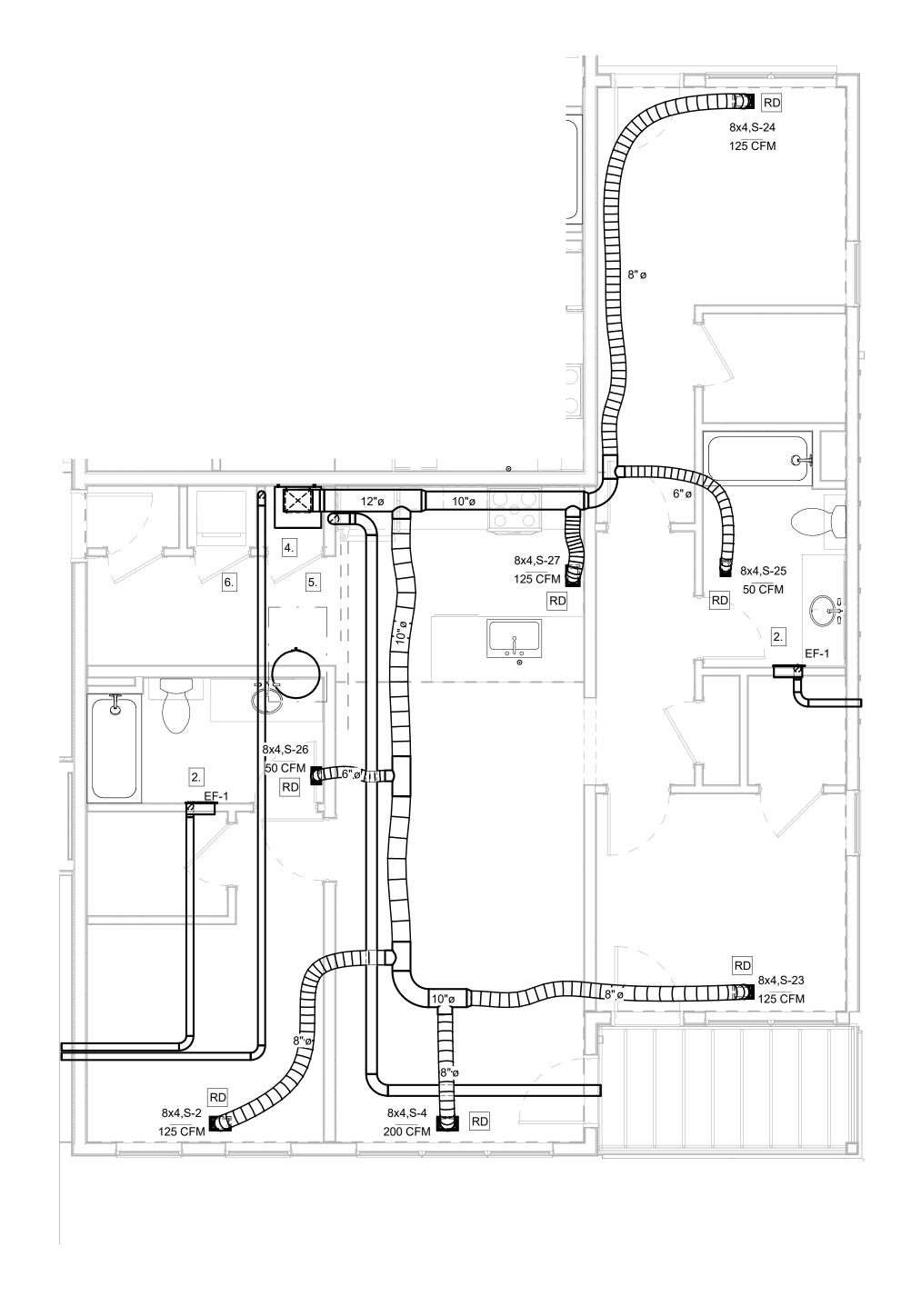
PROJECT #: K118
DATE: 11-JUN-2021
SCALE: 1/8" = 1'-0"
DRAWN BY: RAC
APPROVED BY: PJO
MECHANICAL
ENLARGED PLANS

M5.900

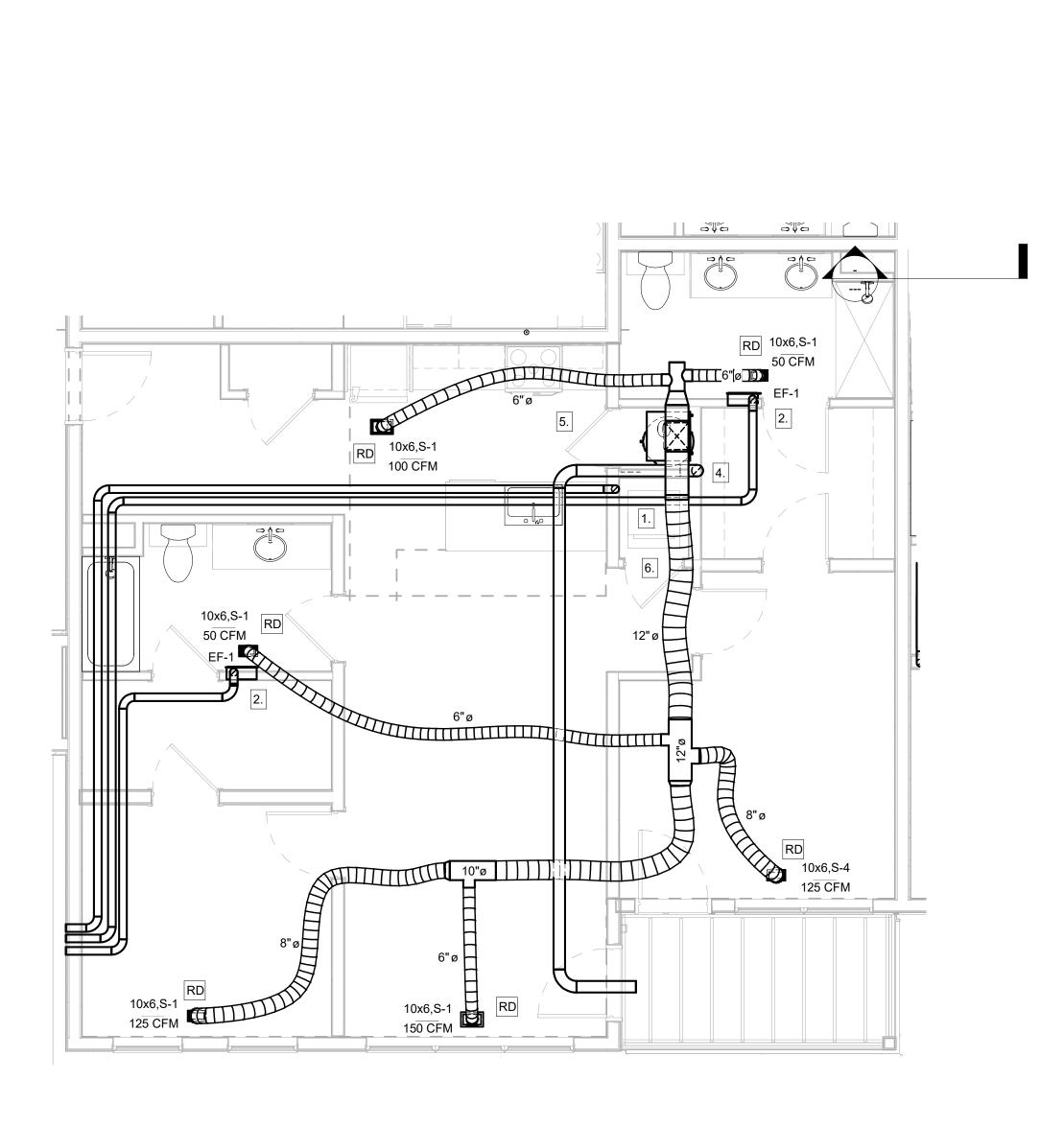
4 MECHANICAL TYPICAL UNIT TYPE 2 1/4" = 1'-0"







3 MECHANICAL TYPICAL UNIT TYPE 3A 1/4" = 1'-0"



1 MECHANICAL TYPICAL UNIT TYPE 2B 1/4" = 1'-0" 12x6,S-7 100 CFM RD RD

> 2 MECHANICAL TYPICAL UNIT TYPE 2D 1/4" = 1'-0"

14x6,S-14 100 CFM

REVISIONS

DATE DESCRIPTION

11-JUN-21 PERMIT SET

1 XX
2 XX
3 XX
4 XX
5 XX
6 XX
COPYRIGHT © ONEIL ENGINEERING SERVICES
ALL RIGHTS RESERVED.

ALL RIGHTS RESERVED.

PROJECT #:

BATE:

1/8" = 1'-0"

DRAWN BY:

ALL RIGHTS RESERVED.

1480 OAKBRIDGE COURT
POWHATAN, VIRGINIA
23139
PHONE: 804-372-3501

PROJECT #:

K118

DATE:

1/8" = 1'-0"

DRAWN BY:

RAC

APPROVED BY:

PJO

MECHANICAL THIRD FLOOR PLAN

SHEET:

10.10

<u>SECTION 15010 - MECHANICAL GENERAL PROVISIONS:</u>

- 1. THE WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE REFERENCED CODES AND STANDARDS:
- 1.1. LOCAL AUTHORITY HAVING JURISDICTION (AHJ) REQUIREMENTS 1.2. ALABAMA BUILDING CODE — 2015, INCLUDING: IBC/2015 - INTERNATIONAL BUILDING CODE
- 1.2.1. NFPA 70/2014 NATIONAL ELECTRICAL CODE 1.2.2. NFPA 72/2013 - NATIONAL FIRE ALARM CODE 1.2.3. 2015 INTERNATIONAL MECHANICAL CODE
- 1.3. ADAAG AMERICANS WITH DISABILITIES ACT ACCESSIBILITY 1.4. ANSI — AMERICAN NATIONAL STANDARDS INSTITUTE
- 1.5. ASHRAE AMER. SOC. OF HEATING. REFRIG. AND AIR COND. ENGINEERS 1.6. ASTM — AMERICAN SOCIETY FOR TESTING AND MATERIALS
- 1.7. NFPA NATIONAL FIRE PROTECTION ASSOCIATION 1.8. OSHA — OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
- 1.9. SMACNA SHEET METAL AND AIR COND. CONTRACTORS NAT'L ASSOCIATION
- 1.10. UL UNDERWRITERS LABORATORIES, INC. CONFORM TO THE BUILDING CODE AND LOCAL AUTHORITIES HAVING 6. SCHEDULE (INSULATION BASED ON KNAUF): JURISDICTION (AHJ). OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND
- FEES REQUIRED. CONFORM TO DIV 0, DIV 1 AND THE GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT.
- COORDINATE SCHEDULE FOR ALL WORK WITH AND FOR APPROVAL BY THE COORDINATE WORK FROM OTHER TRADES AND BUILDING STRUCTURE PRIOR
- TO INSTALLATION. MAKE MINOR ADJUSTMENTS AS REQUIRED FACILITATING ALL EQUIPMENT, MATERIALS AND SYSTEMS SHALL BE LISTED AND
- CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. (UL), AS SUITABLE FOR USE INTENDED. 7. THE CONTRACTOR IS RESPONSIBLE FOR THE "MEANS AND METHODS" OF
- INSTALLATION" AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE INSTALL AND APPLY ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE SUBMITTALS WHERE INDICATED. MECHANICAL EQUIPMENT LOCATED ON ROOFTOP SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S INSTALLATION

INSTRUCTIONS TO MAINTAIN CLEARANCES TO ACCESS FOR SERVICE AND

THE WORK. WORK SHALL CONFORM TO THE NECA 1 - "STANDARD OF

- MAINTENANCE. INSTALL AND PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE, DIRT, AND DEBRIS AND CLEAN AND REPAIR AS REQUIRED. DO NOT USE
- COMPRESSED AIR FOR CLEANING. <u>WARRANTY:</u> PROVIDE WARRANTY ON WORKMANSHIP AND MATERIALS. WARRANTY SHALL COVER ALL COSTS FOR PARTS, LABOR, ASSOCIATED TRAVEL, AND EXPENSES FOR A PERIOD OF ONE YEAR FROM COMPLETION OF SYSTEM ACCEPTANCE. WARRANTY SHALL APPLY EQUALLY TO BOTH HARDWARE AND SOFTWARE. PERSONNEL SUPPORTING THIS WARRANTY AGREEMENT SHALL PROVIDE ON-SITE OR OFF-SITE SERVICE IN A TIMELY MANNER AFTER FAILURE NOTIFICATION TO THE VENDOR. THE MAXIMUM ACCEPTABLE RESPONSE TIME TO PROVIDE THIS SERVICE AT THE SITE SHALL BE 24 HOURS, MONDAY THROUGH FRIDAY AND 48 HOURS ON SATURDAY AND SUNDAY.
- <u>SUBMITTALS:</u> 11.1. PROVIDE SUBMITTALS ON EQUIPMENT AND MATERIALS. 11.2. SUBMITTAL REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE
- DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE PLANS AND SPECIFICATIONS. 11.3. OPERATION OF THE SYSTEMS REMAINS THE RESPONSIBILITY OF THE
- 11.4. REVIEW OF A SPECIFIC ITEM DOES NOT INCLUDE OR IMPLY APPROVAL OF AN ASSEMBLY (OF WHICH THE ITEM IS A COMPONENT).
- 11.5. ALL DEVIATIONS FROM THE PROJECT ENGINEERING DRAWINGS AND SPECIFICATIONS SHALL BE EXPLICITLY NOTED IN SUBMITTALS BY COVER LETTER OR WILL BE CONSIDERED NON-COMPLIANT AND REJECTED, REGARDLESS OF SUBMITTAL REVIEW STATUS. DEVIATIONS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONTRACT DOCUMENTS UNLESS SEPARATELY NEGOTIATED WITH THE
- 11.6. THE CONTRACTOR, BY SUBMITTING A PROPOSED SUBSTITUTION. ACCEPTS ALL RESPONSIBILITY FOR COORDINATING ALL CHANGES AND ABSORBING ALL COSTS DUE TO PROPOSED SUBSTITUTED EQUIPMENT TO INCLUDE, BUT NOT LIMITED TO: COORDINATION WITH AND CHANGES AFFECTING OTHER TRADES, ADDITIONAL CIRCUITS, IMPACT OF ADDITIONAL LOADS, CIRCUIT CHARACTERISTICS, AND SINGLE-POINT CONNECTION KITS.

SECTION 15080-INSULATION:

WALL CAPS (EXTERIOR WALL): PROVIDE WALL CAPS FOR ALL DRYER AND 1. ALL PRODUCTS IN THE CONDITIONED AIRSTREAM (INCLUDING PLENUMS) SHALL BE NONCOMBUSTIBLE AND SHALL COMPLY WITH NFPA 90A BATHROOM EXHAUST DUCTS AND OUTSIDE AIR DUCTS AT EXTERIOR WALL PENETRATIONS. WALL CAPS SHALL BE ALUMINUM CONSTRUCTION. PROVIDE FLAME/SMOKE/FUEL CONTRIBUTION RATING OF 25/50/0 AND COMPLY WITH DRYER AND EXHAUST DUCTS WITH BUILT IN DAMPER. BASED ON SEIHO UL181 EROSION LIMITATIONS. FIRE HAZARD RATINGS SHALL BE DETERMINED MODEL SFZC. COLOR TO BE DETERMINED BY THE ARCHITECT. BY NFPA-255 "METHOD OF TEST OF SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS". ASTM E84. OR UL723.

FACTORY LAMINATED FOIL— SKRIM-KRAFT (FSK) VAPOR BARRIER, 2"

AT 75°F MEAN TEMPERATURE. BASED ON KNAUF DUCT WRAP.

SUPPLY DUCTWORK

RETURN/TRANSFER DUCTWORK:

GRILLE BOOTS

OUTSIDE AIR DUCTWORK:

ALL

SECTION 15767—HEATERS:

ELECTRIC UNIT HEATERS:

EXHAUST DUCTWORK:

EXHAUST

INDOOR REF PIPING

SWITCH, AND HEATING ELEMENT.

SECTION 15770-SPLIT SYSTEM AIR CONDITIONERS:

OUTDOOR STANDARD SPLIT SYSTEM HEAT PUMP (HP):

TUBING AND ENHANCED ALUMINUM COILS.

INDOOR STANDARD SPLIT SYSTEM AIR HANDLING UNIT (AHU):

BETWEEN UNIT AND LUMBER.

ELECTRIC HEATERS.

OUTDOOR REF PIPING

STAPLING FLANGE, MAXIMUM VAPOR PERMEANCE OF .02 PERM/IN., MINIMUM

DENSITY OF 1.0 LB/CF, MAXIMUM CONDUCTIVITY PER 1" THICKNESS OF .28

ABOVE CEILINGS 1-1/2" BLANKET TYPE

GRILLE BOOTS 1-1/2" BLANKET TYPE

1" LINER

- 2. <u>FIRE DAMPERS:</u> CURTAIN TYPE WITH BLADES OUT OF THE AIR STREAM (HIGH HAT TYPE) WITH 1-1/2" HOUR UL RATINGS APPROVED FOR USE IN 2 2. INSTALL INSULATION PER MANUFACTURERS INSTRUCTIONS HOUR RATED WALLS AND 1-HOUR RATED FLOOR ASSEMBLIES. PROVIDE WITH 3. ON SUPPLY AIR AND OUTSIDE AIR DUCTS ENSURE THAT THE VAPOR FUSIBLE LINK AND CLOSURE SPRING FOR USE IN VERTICAL DUCTWORK BARRIER IS CONTINUOUS AND SEALED AT ALL PENETRATIONS. (HORIZONTALLY MOUNTED).
- 4. PIPING EXPOSED TO WEATHER SHALL BE PROVIDED WITH A WEATHER-PROOF CEILING MOUNTED RADIATION DAMPER: INSULATED, 2-BLADE, 22 GA MEMBRANE. GALVANIZED STEEL FRAME AND BLADES, SPRING OPERATED WITH 212°F FUSIBLE LINK. BASED ON ARROW MODEL A91 (RECTANGULAR) AND A97 BLANKET FIBERGLASS: FLEXIBLE FIBROUS GLASS, FLAME RETARDANT

LINER WHERE NOTED, OTHERWISE:

1" CLOSED CELL ELASTOMERIC

ELASTOMERIC W/ WEATHERPROOF

1-1/2" CLOSED CELL

1. WALL ELECTRIC HEATERS (WH) - RECESSED WALL MOUNTED ELECTRIC UNIT

STANDARD EFFICIENCY, SPLIT SYSTEM HEAT PUMP. COMPRESSOR TO BE

INTERNALLY PROTECTED AGAINST HIGH PRESSURE, TEMPERATURE, AND

EXTERNALLY BY A FACTORY INSTALLED HIGH PRESSURE SWITCH. PROVIDE

REMOVABLE ACCESS PANEL TO ELECTRICAL BOX. FURNISH FULLY CHARGED

AND FACTORY WIRED. UNIT SHALL OPERATE WITH R-410A. PROVIDE WITH

5-YEAR LIMITED PARTS WARRANTY AND 5-YEAR LIMITED COMPRESSOR

CONSTRUCTED OF PRE-PAINTED STEEL, INTERNALLY PROTECTED HERMETIC

COMPRESSOR WITH INTERNAL DISCHARGE LINE SOLID CORE FILTER DRIER,

INSTALL UNIT ON PLASTIC HOUSEKEEPING PAD (WITH NEOPRENE BETWEEN

CRANKCASE HEATER, AND HARD START KITS (FOR UNITS WITH REFRIGERANT

LINE LENGTHS OVER 100 FT). CONDENSER COILS CONSTRUCTED OF COPPER

PAD AND ROOF) OR 4x4 WEATHER TREATED LUMBER WITH NEOPRENE PADS

COMPACT AND STURDY CABINET IS PROTECTED WITH A DURABLE FINISH AND

INSULATED TO PREVENT SWEATING. PROVIDE WITH ALUMINUM FIN COILS AND

FOR UNITS MOUNTED VERTICALLY, PROVIDE FLOAT SWITCH ON CONDENSATE

CONDENSATE DRAIN PAN UNDER UNIT WITH FLOAT OR WATER DETECTOR

OVERFLOW CONNECTION. FOR UNITS MOUNTED HORIZONTALLY PROVIDE

WITHIN THE PAN. UPON A DETECTION OF WATER IN THE PAN OR

CONDENSATE OVERFLOW CONNECTION, UNIT SHALL BE SHUT DOWN.

3. PROVIDE NON-PROGRAMMABLE DIGITAL THERMOSTAT FOR ALL RESIDENTIAL

4. PROVIDE DUCTED INDOOR UNIT WITH SUPPLY AND RETURN PLENUMS AS

INDICATED. PLENUMS TO BE SIZED AS SMALL AS POSSIBLE FOR

CONNECTIONS. LINE WITH 1" INSULATION FOR SOUND DAMPENING.

5. PROVIDE WITH INTERNAL FILTER RACK AND 1"THICK FILTER.

HEATER WITH INTEGRAL THERMOSTAT, LOUVERED FRONT COVER, DISCONNECT

2" 1LB DENSITY BLANKET

4. VOLUME DAMPERS (MANUAL): BLADES AND FRAME SHALL BE OF EXTRUDED ALUMINUM OR GALVANIZED STEEL CONSTRUCTION. PROVIDE SINGLE BLADE DAMPERS PER SMACNA FIG 2-12, FIGURE B ON RECTANGULAR DUCTS LESS THAN 30" IN WIDTH AND 12" OR LESS IN DEPTH AND MULTI-BLADE DAMPERS PER SMACNA FIGURE 2-13, FIGURE A ON LARGER RECTANGULAR DUCTS. ROUND DUCT VOLUME DAMPERS SHALL BE SINGLE BLADE MOUNTED ON A CONTINUOUS SHAFT. EQUIP WITH LOCKING QUADRANT AND END

SECTION 15820-DUCTWORK ACCESSORIES:

DUCTWORK. SECTION 15830-FANS:

1. FANS SHALL BE UL LISTED AND AMCA CERTIFIED. ELECTRICAL DEVICES SHALL CONFORM TO NEMA STANDARDS. WIRING SHALL CONFORM TO NEC.

BEARINGS. PROVIDE HANDLE EXTENSION ON EXTERNALLY INSULATED

- 2. MOTORS SHALL BE NON-OVERLOADING, HIGH EFFICIENCY TYPE. MOTORS DESIGNED FOR VARIABLE SPEED SHALL BE DESIGNED AND RATED FOR USE WITH VFDs.
- 3. CEILING MOUNTED (WITHIN RATED DROPPED CEILING): FORWARD CURVED INJECTION MOLDED POLYPROPYLENE FAN WHEEL, 22 GAUGE GALVANIZED STEEL INLET BOX, ISOLATED MOUNTED DIRECT MOTOR, MOUNTED TO ONE PIECE GALVANIZED STAMPED STEEL INTEGRAL MOTOR MOUNT/INLET. BACKDRAFT DAMPER. AND WHITE HIGH IMPACT STYRENE INJECTED MOLDED GRILLE. PROVIDE WITH INTEGRAL RADIATION DAMPER. BASIS OF DESIGN: COOK MODEL GC.

SECTION 15850-GRILLES, REGISTERS, AND DIFFUSERS:

- PROVIDE AS INDICATED IN THE GRD SCHEDULE. PROVIDE ALL GRDs WITH INTEGRAL VOLUME DAMPERS OR WITH VOLUME EXTRACTORS AS INDICATED. COLOR OF THE GRILLES TO BE DETERMINED BY ARCHITECT. PERFORMANCE OF THE GRILLES IS A MAXIMUM OF 700 FPM OR A NC LEVEL OF 30 OR LESS FOR SIZE AND CFM INDICATED.
- INSTALL WITH AIR TIGHT CONNECTION TO DUCTWORK. COORDINATE MOUNTING CONDITIONS WITH ARCHITECTURAL.
- CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENTS.

SECTION 15890-METAL DUCTWORK:

- 1. UNLESS OTHERWISE NOTED (REFER TO PARAGRAPH 2). RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED OF HOT ROLLED STEEL CONTINUOUSLY ANNEALED AND HOT DIPPED GALVANIZED SHEET OR COIL, MINIMUM G-90, 0.90 OZ/SF COATING SUITABLE FOR FORMING WITHOUT FLAKING OR PEELING, SUITABLE FOR WELDING OR SOLDERING. ZINC COATING SHALL NOT BE IMPAIRED FROM DOUBLE SEAMING, BREAKING OR ROLL FORMING. 14 GA. AND LIGHTER CONFORMING TO ASTM A 527; 13 GA AND HEAVIER CONFORMING TO
- 2. DUCT BOARD IS ACCEPTABLE WITH WRITTEN APPROVAL BY OWNER DUCT BOARD, IF ALLOWED, SHALL HAVE A MINIMUM R-VALUE OF 6 AND BE COMPOSED OF RESIN BONDED GLASS FIBERS. DUCT BOARD SHALL HAVE AN FSK VAPOR JACKET AND COMPLY WITH ASTM C1290.
- 3. DRYER VENT SHALL BE 26 GA. MINIMUM.
- 4. UNLESS OTHERWISE NOTED, ROUND DUCTWORK SHALL BE CONSTRUCTED OF G-90 GALVANIZED STEEL WITH THE FOLLOWING MINIMUM GAUGES: <15" DIA. = 24 GAUGE, 15"-26" DIA. = 22 GAUGE.
- 5. INSULATED ROUND FLEXIBLE DUCT (MAX LENGTH 8') IS ALLOWED FOR BRANCH CONNECTIONS TO DIFFUSERS AND GRILLES ABOVE LAY-IN CEILINGS. INSULATED ROUND FLEXIBLE DUCTWORK SHALL BE UL181, CLASS 1 AND SUITABLE FOR LOW PRESSURE APPLICATIONS OF NOT LESS THAN 3" W.C. CONNECT TO METAL DUCT WITH STAINLESS STEEL DRAW BANDS.
- 6. ALL DUCT SIZES SHOWN ON PLANS ARE INSIDE CLEAR (AIRFLOW) DIMENSIONS. NO ALLOWANCE HAS BEEN MADE FOR DUCT LINER OR DOUBLE WALL DUCTWORK WHERE REQUIRED.
- 7. FABRICATE AND SUPPORT METAL DUCT IN ACCORDANCE WITH SMACNA HVAC
- 8. PROVIDE ALL HANGERS AND SUPPORTS AS REQUIRED.

DUCT CONSTRUCTION STANDARDS.

- 9. PROVIDE DOUBLE WALL TURNING VANES IN ALL LOW PRESSURE SUPPLY, RETURN, AND EXHAUST DUCTS . TURNING VANES ARE NOT REQUIRED WHERE RADIUS ELBOW FITTINGS WITH R=1.5 OR GREATER ARE USED.
- 10. SEAL DUCT JOINTS AIR TIGHT. PROVIDE AIR TIGHT SEAL WITH VOLUME DAMPERS AT ALL TAPS OFF MAIN DUCT TO DIFFUSERS.

11. SCHEDULE

FLEX DUCT TO DIFFUSER ROUTED THROUGH OPEN

<u>System</u>	<u>Section</u>	PRESSURE CLASS 2" 2" 2"	SEAL CLASS
Supply	Note 1		A
Return—Relief	All		C
Gen. Exhaust	All		C
DRYER VENT	ALL	2"	SPOT WELD

1. REFER TO PARAGRAPH 2 WHERE DUCT BOARD IS ALLOWED.

MECHANICAL GENERAL NOTES:

PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, AND OTHER SERVICES NECESSARY TO SATISFACTORILY COMPLETE ALL MECHANICAL WORK INDICATED ON THE CONTRACT DOCUMENTS. ALL SPECIFICATIONS, NOTES, OR SYMBOLS MAY NOT BE APPLICABLE FOR THIS TENANT. CONTRACTOR SHALL CAREFULLY REVIEW PLANS AND DETAILS FOR ACCURATE EXTENT OF WORK REQUIRED.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROCUREMENT OF ALL APPLICABLE BUILDING PERMITS. INSPECTIONS. AND OTHER REQUIRED ADMINISTRATIVE DUTIES TO COMPLETE ALL INDICATED WORK REQUIREMENTS.

DESIGN CONSIDERATIONS:

SUMMER: 95°F DB, 75°F WB OUTDOOR TEMPERATURE: WINTER: 17°F DB SUMMER: 75°F DB, 45-60% R.H. INDOOR TEMPERATURE WINTER: 70°F DB *HUMIDITY WILL VARY WITH OUTDOOR CONDITION

VENTILATION AND DISTRIBUTION:

MECHANICAL VENTILATION WILL BE PROVIDED PER IMC SECTION 403 AND TABLE 403.3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH IBC 2015, IMC 2015 AND ANY ADDITIONAL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

ALL MATERIALS WITH ELECTRICAL REQUIREMENTS SHALL BE UL LISTED FOR THE INTENDED APPLICATION.

PHASING AND WORK PERFORMANCE:

THE CONTRACTOR SHALL COORDINATE ALL PHASING AND STAGING/STORAGE OF MATERIALS AND WORK WITH THE GENERAL CONTRACTOR. A WRITTEN GUARANTEE FOR THE PERIOD OF AT LEAST ONE YEAR AFTER SUBSTANTIAL COMPLETION SHALL BE TURNED OVER TO THE OWNER ON ALL MATERIALS AND WORK DONE BY THE CONTRACTOR, ALL MATERIALS INSTALLED SHALL ALSO BE PROVIDED WITH THE MAXIMUM AVAILABLE GUARANTEE FROM THE MANUFACTURER.

CLEAN UP AND PROTECTION OF AREA: THE CONTRACTOR SHALL CLAIM ALL RESPONSIBILITY FOR PROTECTION OF THE AREAS INVOLVED, INCLUDING ANY AREAS INVOLVED IN THE TRANSPORTATION AND STORAGE OF EQUIPMENT DURING CONSTRUCTION. THE CONTRACTOR SHALL CONSISTENTLY MAINTAIN A WORK ENVIRONMENT THAT IS CLEAN AND PROTECTED FROM UNAUTHORIZED PERSONS AND DAMAGE DUE TO CONSTRUCTION. AFTER COMPLETION OF ALL CONSTRUCTION, THE CONTRACTOR SHALL CLEAN ALL AREAS INVOLVED IN THE CONSTRUCTION PROCESS, TO THE OWNER'S APPROVAL. ALL REFUSE INVOLVED DUE TO CONSTRUCTION SHALL BE PROPERLY AND PROMPTLY DISPOSED OF AT AN ON SITE LOCATION.

CONSTRUCTION TYPE: R-2 USE GROUP: OCCUPANCY:

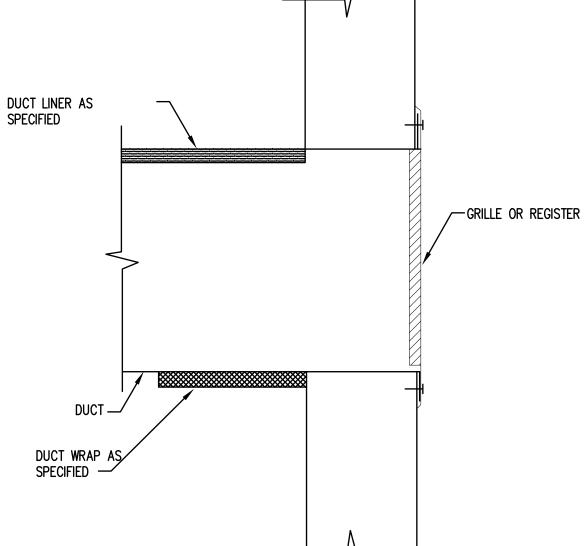
- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO SHOW THE GENERAL ROUTING, LOCATION, AND SIZE OF EQUIPMENT, PIPING AND/OR DUCTWORK, THE CONTRACTOR SHALL MAKE ALLOWANCES FOR ALL MATERIALS AND LABOR NECESSARY TO MAKE FINAL CONNECTIONS. NOT ALL NECESSARY OFFSETS OR FITTINGS ARE SHOWN. BUT SHALL BE PROVIDED WHERE REQUIRED. THE CONTRACTOR SHALL PROVIDE ALL ACCESSORIES, SUPPORTS, AND HANGERS TO ALLOW FOR COMPLETE AND FUNCTIONAL SYSTEMS. ALL WORK SHALL MEET OR EXCEED PUBLISHED OR ACCEPTED STANDARDS OF QUALITY WORKMANSHIP. AND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS AND/OR INSTALLATION INSTRUCTIONS. THE INTENT OF THESE CONTRACT DOCUMENTS IS TO PROVIDE COMPLETE FUNCTIONING SYSTEMS.
- INSTALL ALL DEVICES IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- COORDINATE THE PROPER GRILLE STYLE AND FRAME STYLE WITH THE FINAL APPROVED CEILING CONSTRUCTION AND INSTALL GRILLES, REGISTERS, AND DIFFUSERS.
- DUE TO THE SMALL SCALE OF THE DRAWINGS, THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY TO COORDINATE THE AIR OUTLET AND INLET LOCATIONS WITH THE CEILING PLANS, LIGHTING PLANS, SECTIONS AND/OR DETAILS.
- PROVIDE SUBMITTALS ON ALL EQUIPMENT AND CONTROLS FOR APPROVAL.
- PROVIDE OWNER TRAINING ON ALL EQUIPMENT.
- PROVIDE START-UP OF ALL EQUIPMENT.
- WELDING, CUTTING, OR BURNING: THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM OF 72 HOURS ADVANCE NOTICE PRIOR TO PERFORMING ANY WELDING. CUTTING. OR BURNING WITHIN THE BUILDING. NO WELDING. CUTTING. OR BURNING SHALL OCCUR WITHOUT GENERAL CONTRACTOR APPROVAL. WHERE WELDING, CUTTING, OR BURNING ARE NECESSARY, NON-COMBUSTIBLE SHIELDS SHALL BE USED AND SUITABLE FIRE EXTINGUISHING EQUIPMENT SHALL BE MAINTAINED NEARBY.
- FABRICATION OF STEEL SUPPORTS: FABRICATE FROM STEEL ANGLES, CHANNELS OR PLATES IN ACCORDANCE WITH ASTM.
- THERMOSTAT LOCATIONS ARE GENERAL. THERMOSTATS SHALL BE LOCATED ADJACENT TO DOORS OR NEAR RETURN GRILLES. COORDINATE FINAL THERMOSTAT LOCATIONS WITH ARCHITECT AND/OR OWNER.

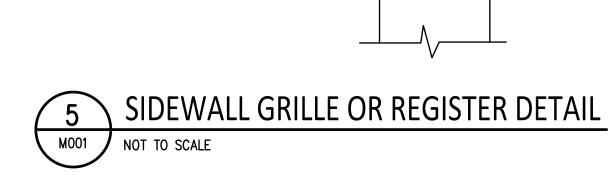
MECHANICAL LEGEND <u>SYMBOL</u> **DESCRIPTION** <u>DESCRIPTION</u> DUCT SIZE (FIRST FIGURE I SIDEWAYS RETURN OF SIDE SHOWN DIMENSION) SIDEWAYS SUPPLY FLEXIBLE CONNECTION DIFFUSER TO BE PROVIDED WITH RADIATION DAMPER 20x20 TRANSITION DIFFUSER TAG WITH AIRFLOW FIRE DAMPER W/ DOOR UNDERCUT ACCESS DOOR THERMOSTAT (48"AFF) AIR TIGHT CONNECTION SMOKE DETECTOR OFF DUCT MAIN OCCUPANCY SENSOR 4-WAY THROW SUPPLY ACCESS DOOR IN SIDE DIFFUSER WITH FLEX OF WALL OR DUCT DUCT CONNECTION EQUIPMENT NUMBER RETURN DIFFUSER 1-HOUR RATED WALL 2-HOUR RATED WALL HEAT PUMP WITH COIL AND MAINTENANCE CLEARANCE MATCH LINE _ . . _ . . _ . . _ BOUNDARY LINE: REFER TO MANUFACTURER'S MANUAL. ZDZONE DAMPER MOTORIZED DAMPER; M USED FOR BYPASS AIR

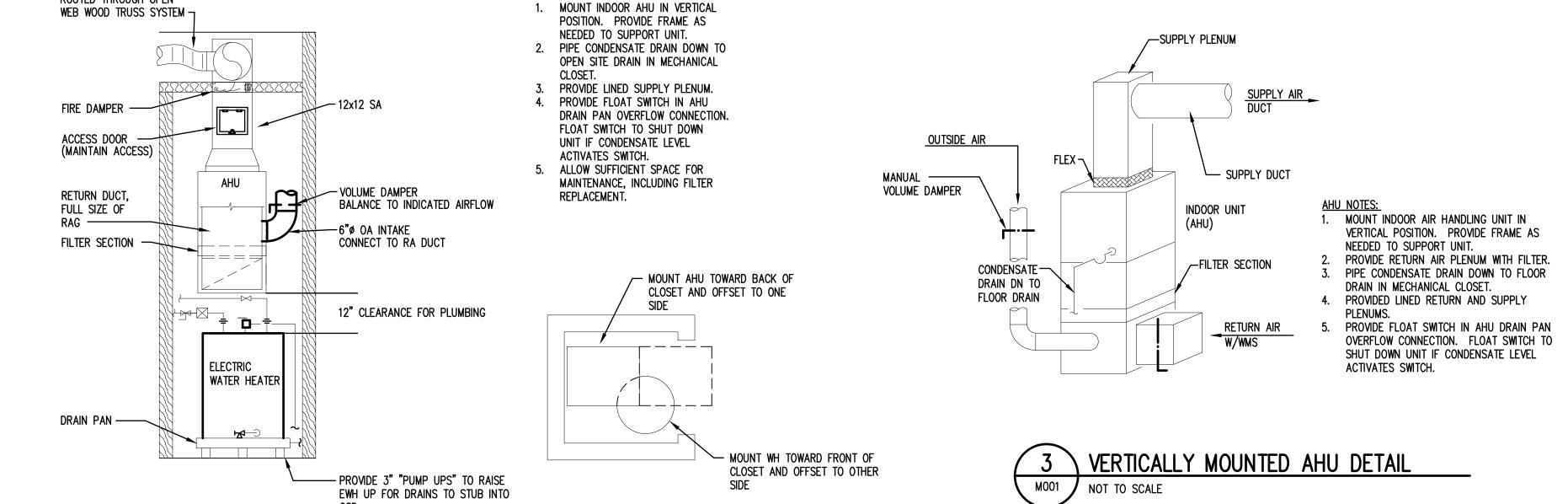
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Α	AMPERES	GA	GAUGE
AD	ACCESS DOOR	HP	HORSEPOWER
AHU	AIR HANLDING UNIT	HZ	FREQUENCY
BTU	BRITISH THERMAL UNIT	KW	KILOWATT
BTUH	BRITISH THERMAL UNIT PER HOUR	LAT	LEAVING AIR TEMPERATURE
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
DB	DRYBULB	NTS	NOT TO SCALE
DE	DRYER EXHAUST	OA	OUT SIDE AIR
DN	DOWN	PD	PRESSURE DROP
DWG	DRAWING	PH	PHASE
DX	DIRECT EXPANSION	PSI	POUNDS PER SQUARE INCH
EA	EXHAUST AIR	PVC	POLYVINYL CHLORIDE
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EF	EXHAUST FAN	RD	RADIATION DAMPER
ESP	EXTERNAL STATIC PRESSURE	RL	REFRIGERANT LIQUID
°F	DEGREE FAHRENHEIT	RPM	REVOLUTIONS PER MINUTE
FD	FIRE DAMPER	RS	REFRIGERANT SUCTION
FLA	FULL LOAD AMPERES	SA	SUPPLYAIR
FPM	FEET PER MINUTE	TYP	TYPICAL
FT	FEET	WB	WET BULB
		WH	WALL HEATER

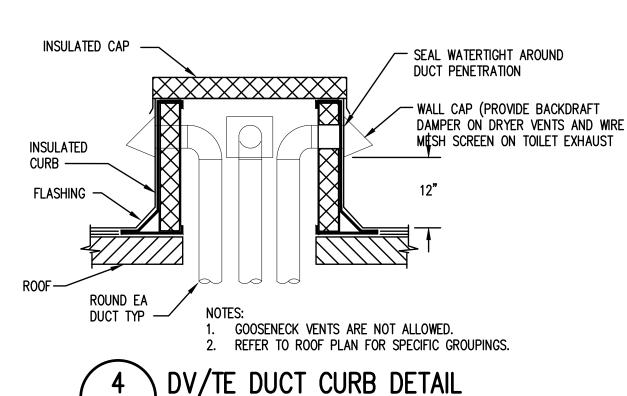


- M6.001 MECHANICAL NOTES, SPECIFICATIONS, LEGEND, DETAILS AND ABBREVIATIONS
- M6.002 MECHANICAL SCHEDULES AND DETAILS
- M6.100 MECHANICAL BASEMENT FLOOR PLAN M6.101 - MECHANICAL FIRST FLOOR PLAN
- M6.102 MECHANICAL SECOND FLOOR PLAN M6.103 - MECHANICAL THIRD FLOOR PLAN
- M6.900 MECHANICAL ENLARGED PLANS M6.901 - MECHANICAL ENLARGED PLANS









M001 NOT TO SCALE

DRAIN FUNNEL DRAIN PAN ON FAN INLET DRAIN PAN ON FAN OUTLET (NEGATIVE PRESSURE) (POSITIVE PRESSURE)

1. DRAIN PIPE TO BE SAME SIZE AS UNIT OUTLET, BUT NOT

LESS THAN 1" PIPE SIZE. 2. "A"=SYSTEM STATIC IN INCHES AT DRAIN POINT. "B"=1/2 SYSTEM STATIC IN INCHES AT DRAIN POINT.

CONDENSATE DRAIN DETAIL

M001 / NOT TO SCALE

INDOOR AHU MOUNTED ABOVE WATER HEATER CLOSET LAYOUT

REVISIONS DATE DESCRIPTION 11-JUN-21 PERMIT SET COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. **ENGINEERING SERVICES** 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118 11-JUNE-2021 AS NOTED DRAWN BY: APPROVED BY: | JCW MECHANICAL NOTES, **SPECIFICATIONS ABBREVIATIONS**

9

 ∞

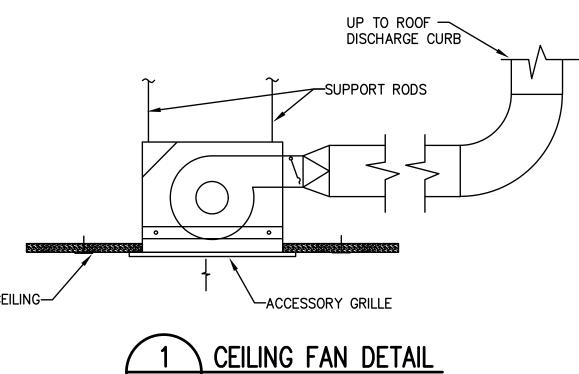
LEGEND, AND DETAILS.

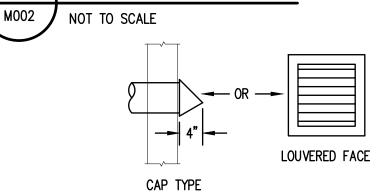
SCALE:

ELECTRIC UNIT HEATER SCHEDULE: AIR DATA ELECTRIC DATA SELECTION BASED ON REMARKS UNIT NO. SERVING CAPACITY **TYPE** EAT CFM FLA VOLT KW MANUFACTURER MODEL (BTUH) MECHANICAL ROOMS AND WALL MTD 6142 100 1.8 15 120 **BERKO** FRA1812 **STAIRS**

FAN S	SCHEDULE:											
				BLADE	TOTAL	FAN	МО	TOR DATA	A	SELECTION I	BASED ON	
UNIT NO.	SERVING	TYPE	CFM	TYPE	STATIC H ₂ O	RPM	HP	VOLTS	PH	MANUFACTURER	MODEL	REMARKS
EF-1	RESIDENTIAL BATHROOM	CEILING MTD	50	FC	0.35	750	27W	120	1	COOK	GC-128	CONTROLL BY SWITCH

		TYPE		(SERVIC	E		MOUNTII	NG DATA					CO	NSTRUC	CTION DA	ATA						SELECTION BAS	SED ON
UNIT NO.	G	R	D	SA	RA	EA	CEILING	DUCT	FLOOR	WALL	SHAPE	MATERIAL	COLOR	i	ACCES	SORIES			Р	ATTER	N		MANUFACTURER	MODEL
	G	K	D	SA	IVA	LA	CEILING	DOCI	FLOOR	VVALL	SHAFE	MATERIAL	COLOR	VD	RC	VE	Р	1-W	2-W	3-W	4-W	E/R	MANOPACTORER	WODEL
S-1		Х		Х			Х				RECT	ALUMINUM	TBD	Χ					Х				USAIRE	102M
R-1	Х				Х					Х	RECT	STEEL	TBD	X								Χ	KRUEGER	S80
E-1	Х					X				Х	RECT	STEEL	TBD									Х	KRUEGER	S80



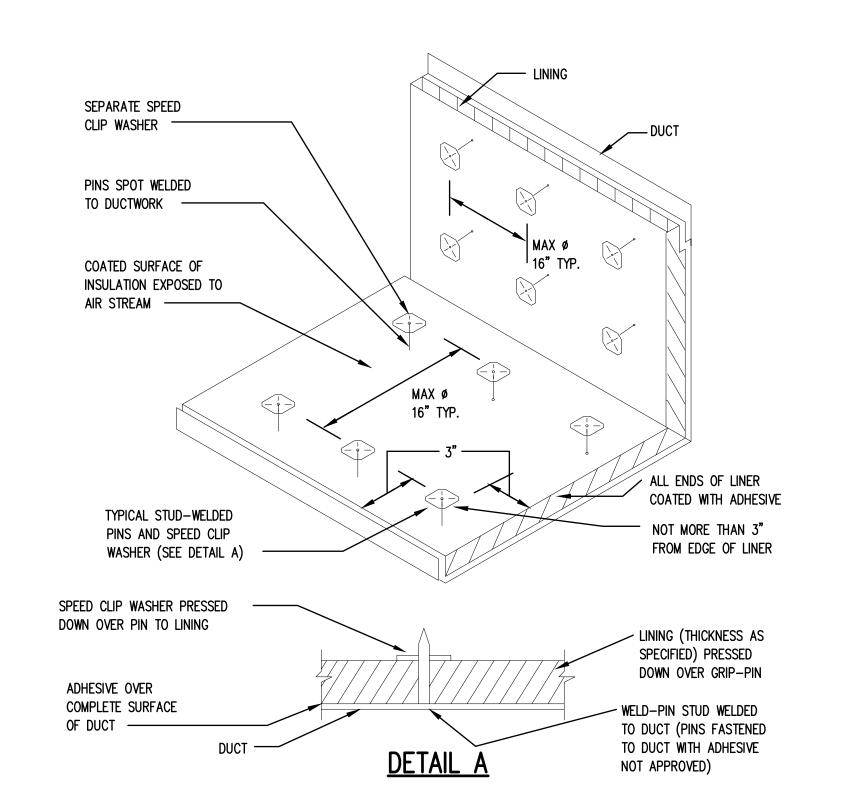


2	WALL CAP DETAIL
M002	NOT TO SCALE

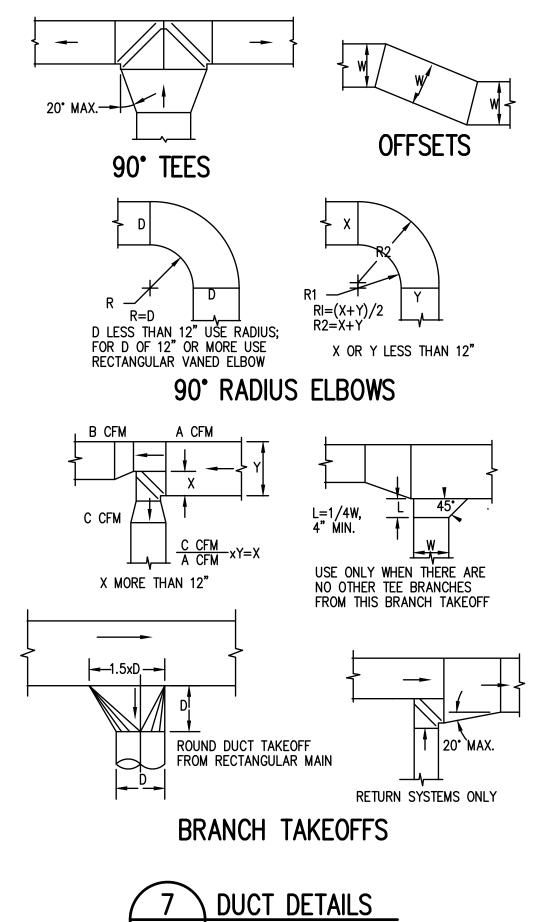
SPLIT S	YSTEM C	UTDOO	R UN	IT SC	HEDU	JLE (14	SEER)	- C	ONVE	NTIO	NAL												
			ļ	UNIT DATA				FAN I	DATA			COMPR	ESSOR(S)	U	NIT ELEC	TRIC DATA		SELECTIO	N BASED ON	PAIF	RED WITH	
UNIT TAG	SERVING	CAPACITY MBH	COND. EAT °F	S. SUCT. °F	SEER	REFRIG. TYPE	NO.	HP	RPM	TOTAL CFM	NO.	STEPS	LRA	RLA	MCA	МОСР	VOLT	PH	MANUF.	MODEL	MANUF.	MODEL	REMARKS
HP-A	AHU-A	18.0	95	45	14.0	R-410A	1	1/12	1100	-	1	1	48	9	11.8	20	208	1	CARRIER	CH14NB18-A	CARRIER	FMA4P1800AL	
HP-B	AHU-B	24.0	95	45	14.0	R-410A	1	1/10	1100	-	1	1	62.9	10.9	14.2	25	208	1	CARRIER	CH14NB24-A	CARRIER	FMA4P2400AL	

SPLIT SY	STEM AIR HAND	DLING I	UNIT	SCH	EDU	LE -	CONVE	NTIONA	AL																
			SUPPLY	FAN DA	TA			COOLING	DATA			ŀ	HEATING DAT	ΓA	ELEC	. HEATIN	NG COIL	DATA	UN	IT ELEC	TRIC DA	TA	SELECTION	BASED ON	
UNIT TAG	SERVING	NOMINAL CFM RANGE	ESP Delta P IN H₂O	OA CFM	HP	RPM	TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH	DB °F	T °F WB °F	@ A DI	CAPACITY MBH	INDOOR EAT DB °F	OUTDOOR COND. DB °F	KW	VOLT	PH	NO. STEPS	VOLT	PH	MCA	MOCP	MANUFACTURER	MODEL	REMARKS
AHU-A	APARTMENT TYPE A	600	0.5	SEE UNIT SCHED	1/6	1075	18.0	13.2	80	67	14.0	12.3	70	17	5	240	1	1	208	1	23.6	25	CARRIER	FMA4P1800AL	
AHU-B	APARTMENT TYPE B	800	0.5	UNIT SCHED	1/4	1075	24	18.01	80	67	14	12.3	70	17	5	240	1	1	208	1	23.9	30	CARRIER	FMA4P2400AL	

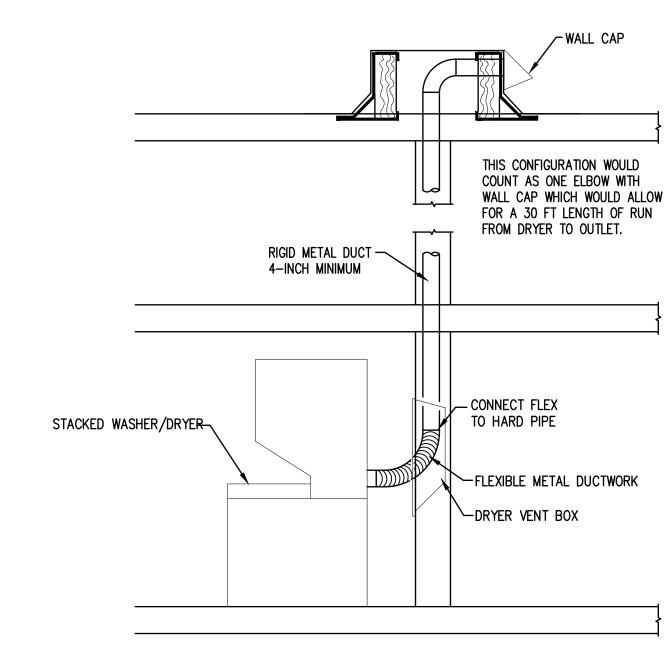
	AC AP	T UNI ⁻ DULE	T		AC AP	T UNI [.] DULE	T		AC AP	T UNI [.] DULE	T		AC AP	T UNI [.] DULE	Τ
UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE	UNIT NUMBER	OA TYPE	AHU TYPE	HP TYPE
6001	45	Α	Α	6101	60	А	Α	6201	60	Α	Α	6301	45	Α	Α
6002	30	В	В	6102	30	В	В	6202	30	В	В	6302	45	В	В
6003	45	А	Α	6103	30	А	Α	6203	30	Α	Α	6303	45	А	Α
6004	30	А	Α	6104	45	А	Α	6204	45	Α	Α	6304	45	Α	Α
6005	45	А	Α	6105	45	А	Α	6205	45	А	Α				
				6106	30	А	Α	6206	30	Α	Α				
				6107	30	Α	Α	6207	30	Α	Α				
				6108	45	Α	Α	6208	45	Α	Α				



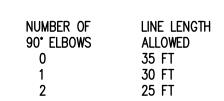




M002 NOT TO SCALE

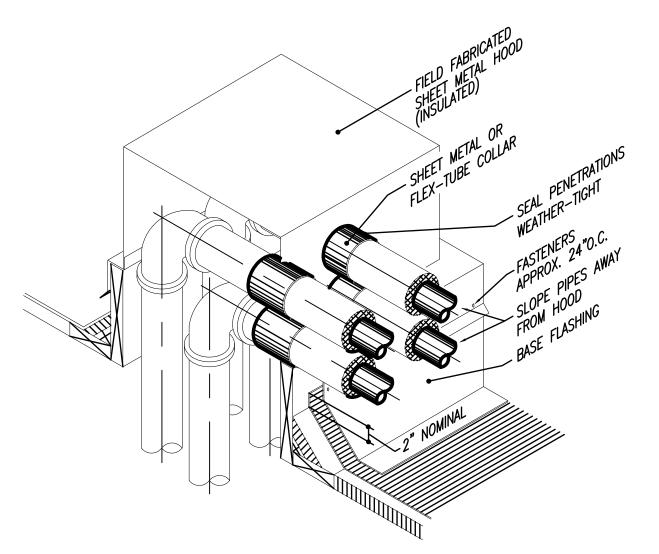


BELOW IS THE CHART ON THE MAXIMUM DRYER LENGTHS PER THE DRYER MANUFACTURER. IT IS UP TO THE HVAC CONTRACTOR TO VERIFY LINE LENGTHS PER THE INSTALLED PRODUCT AND COMPARE TO THE CHART BELOW. NOTE THAT THE LONGEST RUN IS AFFECTED BY THE TYPE OF WALL CAP USED. THE PREFERRED WALL CAP TYPE IS SHOWN UNDER WALL CAP SPECIFICATION. SMALLER OR DIFFERENT CONFIGURATIONS OF THE WALL CAP WILL AFFECT THE LINE LENGTH OF THE DRYER EXHAUST AND NEED TO BE EVALUATED PRIOR TO INSTALLATION.

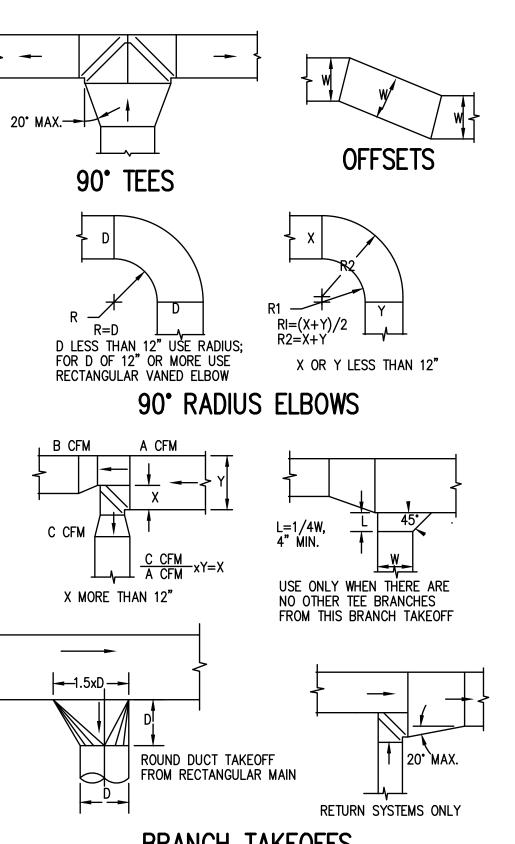


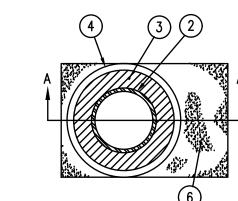
NOTE: (2) 45° ELBOWS = (1) 90° ELBOW

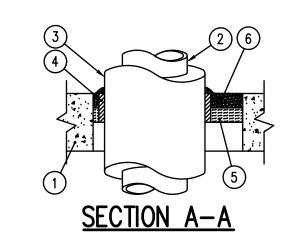




5 REFRIGERANT PIPING ROOF DETAIL M002 NOT TO SCALE







1. Floor orWall Assembly – Min 4–1/2 in. thick lightweight or normal weight (100–150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks* Max area of square, rectangular or circular opening is 45 sq in. with max dimension of 9 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Pipe - Nom 3 in. diam (or smaller) Type L (or heavier) copper pipe or nom 2-1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe. One or more insulated pipes may be installed with a min clearance of 1/2 in. maintained between insulated pipes and with a min clearance of 1/4 in. maintained between insulated pipe and sides of through opening. Pipes to be rigidly supported on both sides of floor or wall assembly.

3. Pipe Insulation - Plastics# - Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible form furnished in the form of tubing with skin. When nom 2-1/2 or 3 in diam insulated steel or copper pipe is used, T Rating is 1/2 hr. When max 2 in. diam insulated steel or copper pipe is used, T rating is See Plastics# (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

4. Fill, Void or Cavity Materials* - Wrap Strip - Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. wide strips. One nom 2 in. wide strip tightly-wrapped around pipe insulation (Item 3) with the foil side exposed and slid into through opening such that the top edge is flush with top surface of floor. When a single insulated pipe is installed in a circular through opening and when the max annular space between the insulated pipe and the sides of the through opening is 3/8 in., the wrap strip layer may be secured in place with pressure—sensitive tape. In all other situations, the wrap strip layer shall be secured in place with min No. 18 gauge galv steel tie wire. In wall assemblies, the wrap strip layer is to be installed on the insulated pipe in the same manner used for floor assemblies but shall be installed symmetrically on both sides of the wall. 3M COMPANY - Type FS-195+

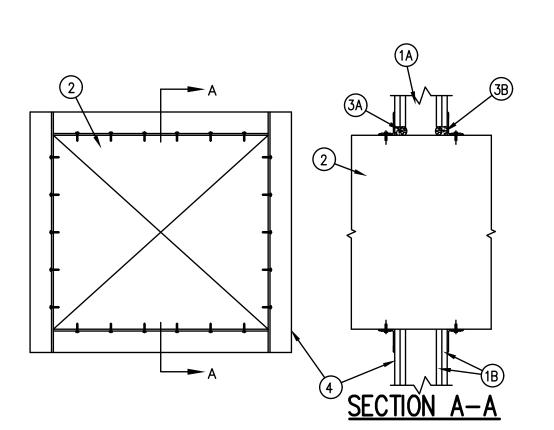
5. Packing Material — Min 1 in. thick mineral wool batt insulation firmly packed into opening with its top surface recessed min 1 in. from top surface of the floor. In wall assemblies, packing material to be firmly packed into opening on both sides of wall and recessed min 1 in. from wall surface. When a single insulated pipe (with wrap strip layer) is installed in a circular through opening and when the max annular space between the wrap strip layer and the sides of the through opening is 1/8 in., no forming material

6. Fill, Void or Cavity Materials* — Caulk or Sealant — Applied to fill through opening to a min depth of 1 in. In floor assemblies, fill material to be installed flush with top surface of floor. In wall assemblies, fill material to be installed flush with wall surface on both sides of wall.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant. (The W Rating applies only when FB-3000 WT sealant is used.)

*Bearing the UL Classification Marking

Y PIPE THROUGH CONCRETE FIRESTOP DETAIL



1. Wall Assembly - The 1 and 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing shall consist of steel channel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional 3-1/2 in. (89 mm) wide steel studs shall be used to completely frame opening. B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max size of opening to be 1216 sq in. (188.5 cm2) with a max dimension of 38 in. (965 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant – Nom 36 by 30 in. (914 by 762 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm) (point contact) to max 2 in. (51 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of floor or wall assembly.

3. Firestop System — The details of the firestop system shall be as follows:

A. Packing Material (Optional) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction—fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

B. Fill, Void or Cavity Material* - Caulk or Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At the point contact location between duct and wallboard, a min 1/4 in. (6 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant

C. Retaining Angles — Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap wall surfaces of a min of 1 in. (25 mm). Angles attached to duct on both sides of wall with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC.

*Bearing the UL Classification Marking

8 DUCT THROUGH GYPSUM FIRESTOP DETAIL M002 NOT TO SCALE



9

581 FS. 30 TERR

REVISIONS # DATE DESCRIPTION 11-JUN-21 PERMIT SET COPYRIGHT © ONEIL ENGINEERING SERVICES ALL RIGHTS RESERVED. **ENGINEERING SERVICES** 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA 23139 PHONE: 804-372-3501 PROJECT #: K118

11-JUNE-2021 SCALE: AS NOTED DRAWN BY: APPROVED BY: JCW MECHANICAL

SCHEDULES AND DETAILS.



1 MECHANICAL BASEMENT FLOOR PLAN 1/8" = 1'-0"

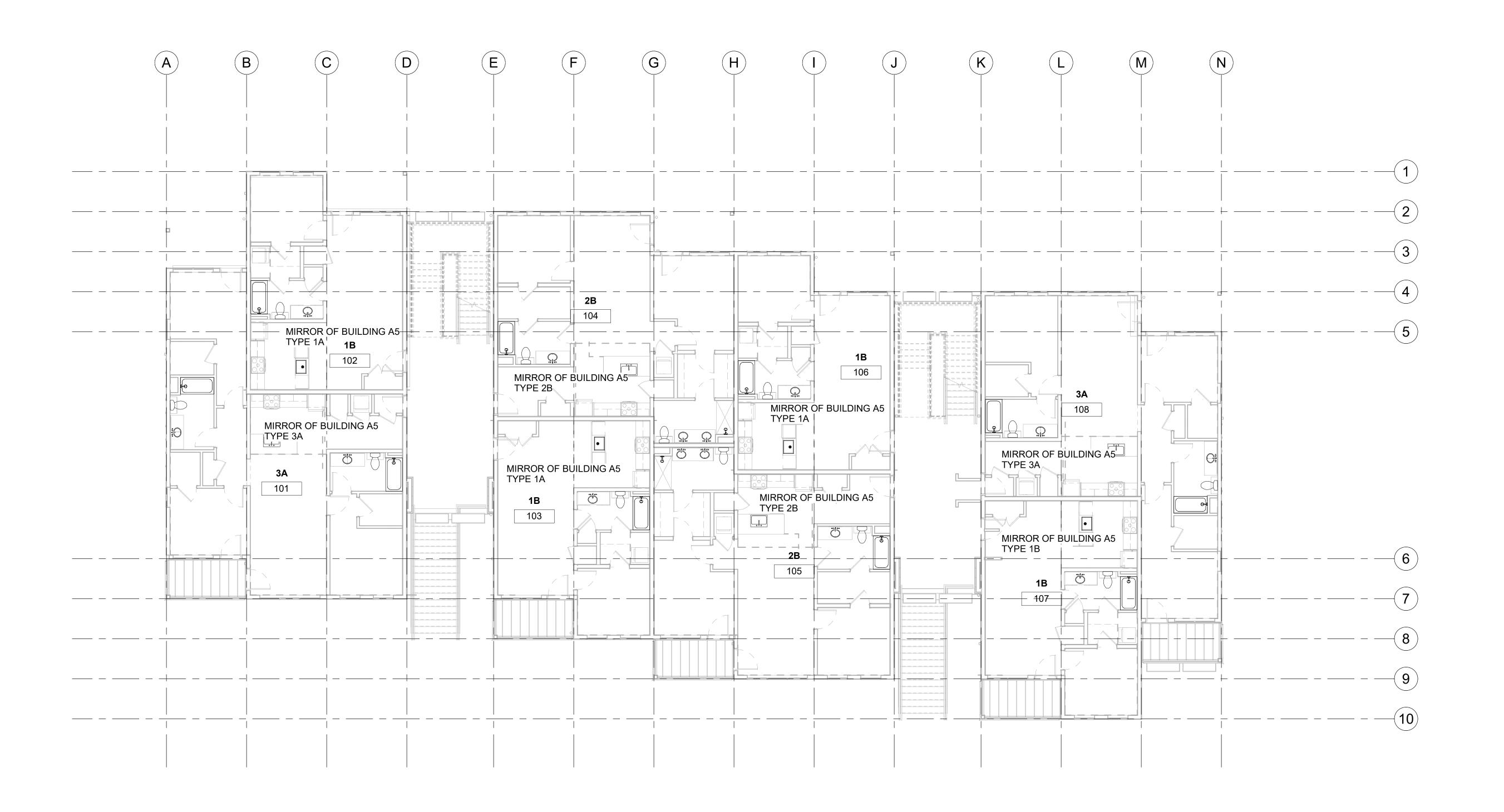
GENERAL NOTE:

THIS PLAN IS A MIRROR COPY OF BUILDING A5.

PLEASE REFER TO A5 FOR LAYOUTS.

# DATE # 11-JUN-21 1 2 3 4 5 6		SCRIPTION MIT SET
1 2 3 4 5 6	XX XX XX	WIII OLI
2 3 4 5 6	XX	
3 4 5 6	XX	
4 5 6		
6		
·	XX	
	XX	
	SER	NEIL ENGINEERING RVICES S RESERVED.
ENGINE	ERI	NG SERVICES
POW	HATA 23	RIDGE COURT NN, VIRGINIA 8139 804-372-3501
PROJECT #:		K118
DATE:		11-JUN-2021
SCALE:		1/8" = 1'-0"
DRAWN BY:		RAC
APPROVED E	3Y:	PJO
MECHAN BASEMEI		AL FLOOR PLAN

M6.100



1 MECHANICAL FIRST FLOOR PLAN
1/8" = 1'-0"

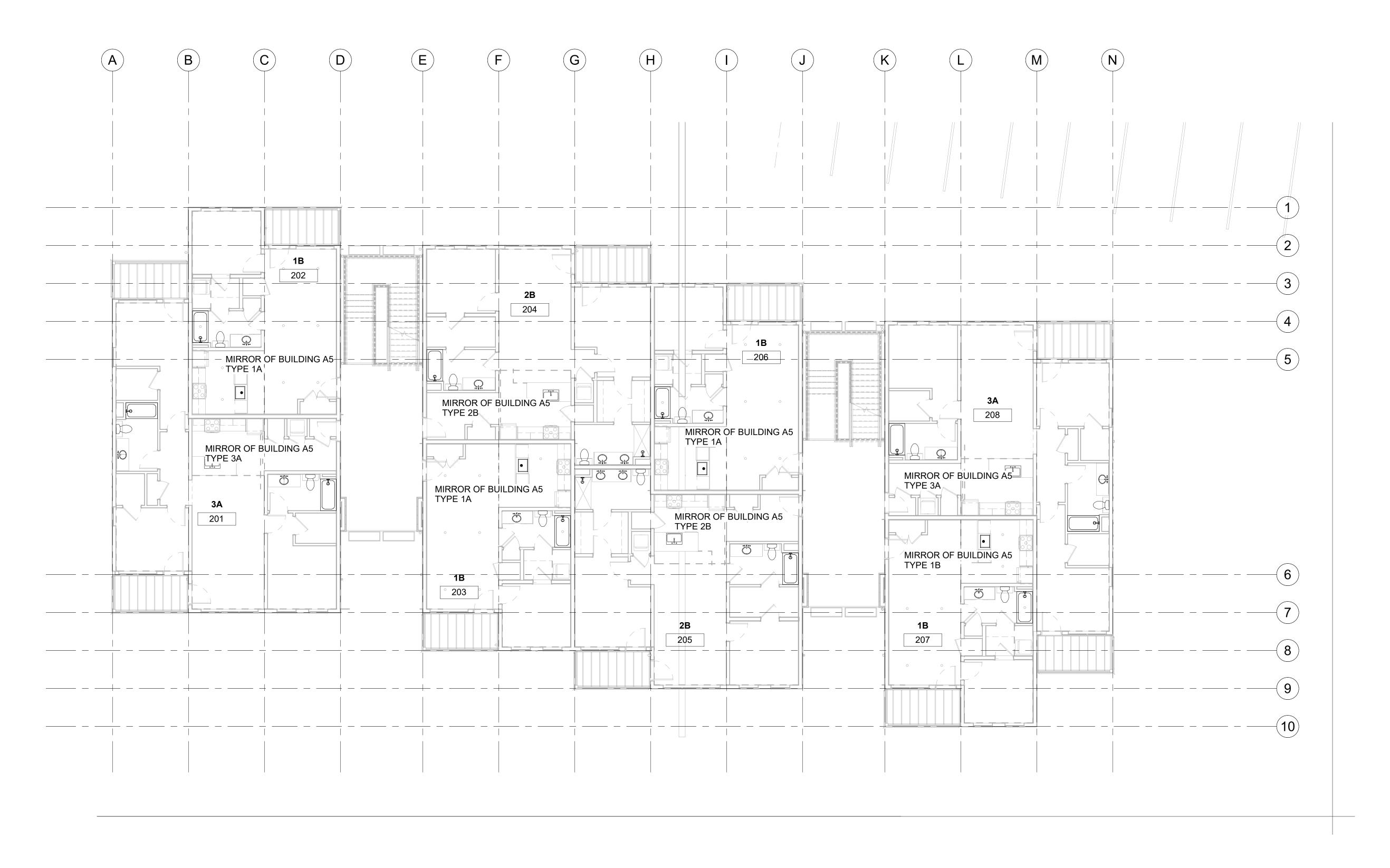
GENERAL NOTE:

THIS PLAN IS A MIRROR COPY OF BUILDING A5.

PLEASE REFER TO A5 FOR LAYOUTS.

M6.101

REV #	ISIONS DATE	DE	SCRIPTION	
#	11-JUN-21		MIT SET	
1		XX		
2		XX		
3		XX		
4		XX		
5		XX		
6		XX		
		SEF	NEIL ENGINEERING RVICES S RESERVED.	
	ENGINE	N	ING SERVICES	
	1480 C	AKBI HAT <i>A</i>	RIDGE COURT AN, VIRGINIA 3139	
	PHO		304-372-3501	
PRO	DJECT #:		K118	
DA	ΓE:		11-JUN-2021	
SCA	ALE:		1/8" = 1'-0"	
DRA	AWN BY:		RAC	
APF	PROVED I	3Y:	PJO	
ME	CHAN	IC		



1 MECHANICAL SECOND FLOOR PLAN 1/8" = 1'-0"

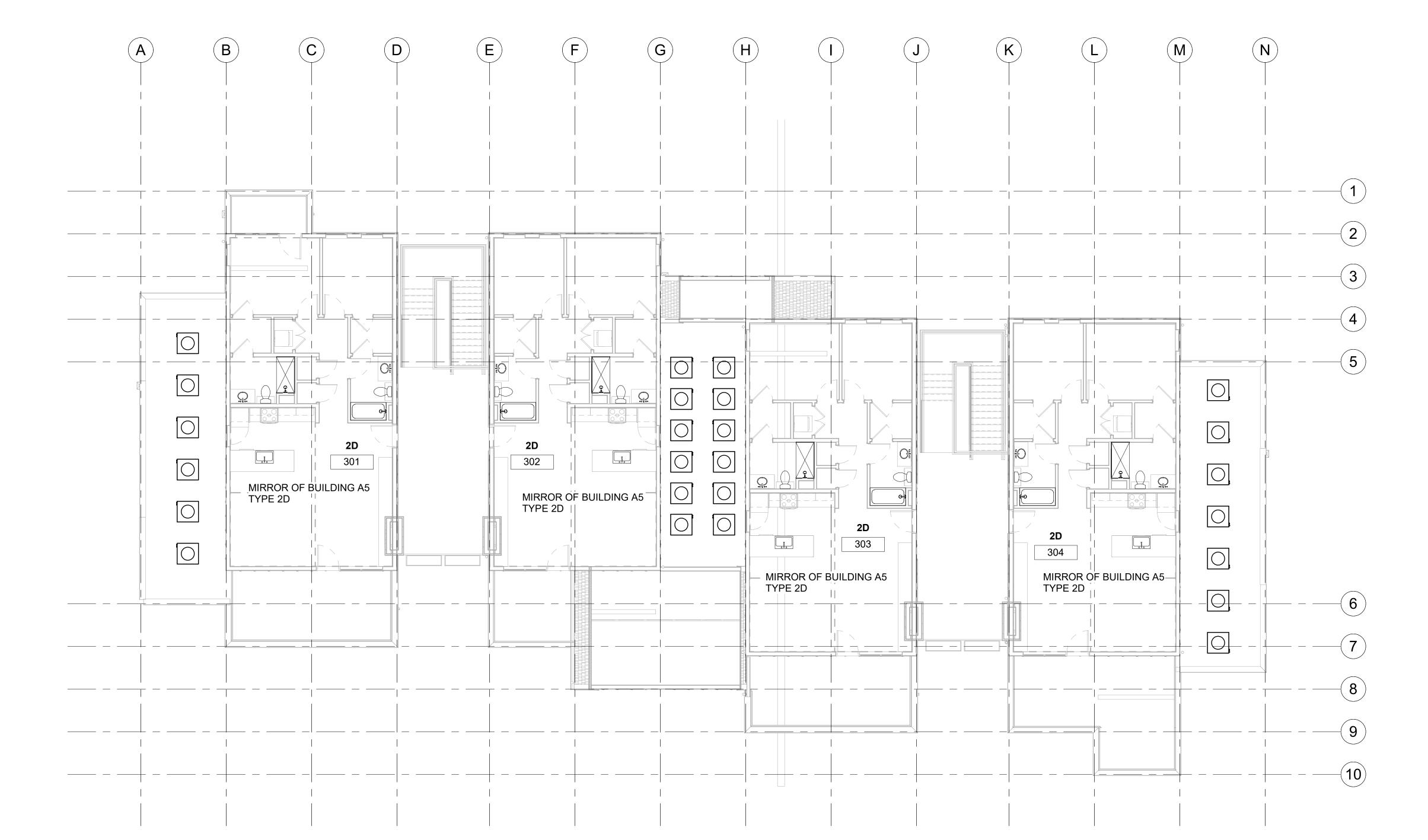
GENERAL NOTE:

THIS PLAN IS A MIRROR COPY OF BUILDING A5.

PLEASE REFER TO A5 FOR LAYOUTS.

REV	ISIONS			
#	DATE	DE	SCRIPTION	-
#	11-JUN-21	PER	MIT SET	
1		XX		
2		XX		
3		XX		
4		XX		
5		XX		
6		XX		
	COPYRIGH [*]		NEIL ENGINEERING RVICES	
	ALL R	IGHT	S RESERVED.	4
	ENGINE	ER	ING SERVICES	
	POW	'HAT <i>A</i> 2:	RIDGE COURT AN, VIRGINIA 3139	-
		NE: 8	304-372-3501 -	_ =
PRO	DJECT #:		K118	
DAT	ΓΕ:		11-JUN-2021	
SCA	ALE:		1/8" = 1'-0"	
DRA	AWN BY:		RAC	=
APF	PROVED I	3Y:	PJO	٦ إ
ME	ECHAN	IIC	AL	_ c
			OOR PLAN	
			· · · · · · · · · · · · · · · · ·	>

M6.102



1 MECHANICAL THIRD FLOOR PLAN 1/8" = 1'-0"

GENERAL NOTE:

THIS PLAN IS A MIRROR COPY OF BUILDING A5.

PLEASE REFER TO A5 FOR LAYOUTS.

M6.103

- THE WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE REFERENCED CODES AND STANDARDS: 1.1. LOCAL AUTHORITY HAVING JURISDICTION (AHJ) REQUIREMENTS
- 1.2. ALABAMA BUILDING CODE 2015, INCLUDING: IBC/2015 - INTERNATIONAL BUILDING CODE 1.2.1. NFPA 70/2014 - NATIONAL ELECTRICAL CODE 1.2.2. NFPA 72/2013 - NATIONAL FIRE ALARM CODE
- 1.2.3. 2015 INTERNATIONAL MECHANICAL CODE 1.3. ADAAG - AMERICANS WITH DISABILITIES ACT ACCESSIBILITY **GUIDELINES**
- 1.4. ANSI AMERICAN NATIONAL STANDARDS INSTITUTE 1.5. ASHRAE — AMER. SOC. OF HEATING. REFRIG. AND AIR COND.
- **ENGINEERS** 1.6. ASTM — AMERICAN SOCIETY FOR TESTING AND MATERIALS 1.7. NFPA - NATIONAL FIRE PROTECTION ASSOCIATION 1.8. OSHA — OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION 1.9. SMACNA - SHEET METAL AND AIR COND. CONTRACTORS NAT'L
- 1.10. UL UNDERWRITERS LABORATORIES, INC. CONFORM TO THE BUILDING CODE AND LOCAL AUTHORITIES HAVING
- JURISDICTION (AHJ). OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND FEES REQUIRED.
- CONFORM TO DIV 0, DIV 1 AND THE GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT. COORDINATE SCHEDULE FOR ALL WORK WITH AND FOR APPROVAL BY THE
- COORDINATE WORK FROM OTHER TRADES AND BUILDING STRUCTURE PRIOR
- TO INSTALLATION. MAKE MINOR ADJUSTMENTS AS REQUIRED FACILITATING 6. ALL EQUIPMENT, MATERIALS AND SYSTEMS SHALL BE LISTED AND
- CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. (UL), AS SUITABLE FOR THE CONTRACTOR IS RESPONSIBLE FOR THE "MEANS AND METHODS" OF THE WORK. WORK SHALL CONFORM TO THE NECA 1 - "STANDARD OF INSTALLATION" AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE
- MANNER. INSTALL AND APPLY ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE SUBMITTALS WHERE
- INSTALL AND PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE, DIRT, AND DEBRIS AND CLEAN AND REPAIR AS REQUIRED. DO NOT USE
- COMPRESSED AIR FOR CLEANING. 10. <u>Warranty:</u> Provide Warranty on Workmanship and Materials. WARRANTY SHALL COVER ALL COSTS FOR PARTS, LABOR, ASSOCIATED TRAVEL, AND EXPENSES FOR A PERIOD OF ONE YEAR FROM COMPLETION OF SYSTEM ACCEPTANCE. WARRANTY SHALL APPLY EQUALLY TO BOTH HARDWARE AND SOFTWARE. PERSONNEL SUPPORTING THIS WARRANTY AGREEMENT SHALL PROVIDE ON-SITE OR OFF-SITE SERVICE IN A TIMELY MANNER AFTER FAILURE NOTIFICATION TO THE VENDOR. THE MAXIMUM ACCEPTABLE RESPONSE TIME TO PROVIDE THIS SERVICE AT THE SITE SHALL BE 24 HOURS, MONDAY THROUGH FRIDAY AND 48 HOURS ON
- SATURDAY AND SUNDAY. SUBMITTALS:
- 11.1. PROVIDE SUBMITTALS ON EQUIPMENT AND MATERIALS. 11.2. SUBMITTAL REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE PLANS AND SPECIFICATIONS.

11.3. OPERATION OF THE SYSTEMS REMAINS THE RESPONSIBILITY OF THE

- CONTRACTOR. 11.4. REVIEW OF A SPECIFIC ITEM DOES NOT INCLUDE OR IMPLY APPROVAL OF AN ASSEMBLY (OF WHICH THE ITEM IS A
- COMPONENT). 11.5. ALL DEVIATIONS FROM THE PROJECT ENGINEERING DRAWINGS AND SPECIFICATIONS SHALL BE EXPLICITLY NOTED IN SUBMITTALS BY COVER LETTER OR WILL BE CONSIDERED NON-COMPLIANT AND REJECTED, REGARDLESS OF SUBMITTAL REVIEW STATUS. DEVIATIONS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONTRACT DOCUMENTS UNLESS SEPARATELY NEGOTIATED WITH THE
- 11.6. THE CONTRACTOR, BY SUBMITTING A PROPOSED SUBSTITUTION, ACCEPTS ALL RESPONSIBILITY FOR COORDINATING ALL CHANGES AND ABSORBING ALL COSTS DUE TO PROPOSED SUBSTITUTED EQUIPMENT TO INCLUDE, BUT NOT LIMITED TO: COORDINATION WITH AND CHANGES AFFECTING OTHER TRADES, ADDITIONAL CIRCUITS, IMPACT OF ADDITIONAL LOADS, CIRCUIT CHARACTERISTICS, AND SINGLE-POINT CONNECTION KITS.

SECTION 15080-INSULATION:

- 1. ALL PRODUCTS IN THE CONDITIONED AIRSTREAM (INCLUDING PLENUMS) SHALL BE NONCOMBUSTIBLE AND SHALL COMPLY WITH NFPA 90A FLAME/SMOKE/FUEL CONTRIBUTION RATING OF 25/50/0 AND COMPLY WITH UL181 EROSION LIMITATIONS. FIRE HAZARD RATINGS SHALL BE DETERMINED BY NFPA-255 "METHOD OF TEST OF SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS", ASTM E84, OR UL723.
- 2. INSTALL INSULATION PER MANUFACTURERS INSTRUCTIONS.
- 3. ON SUPPLY AIR AND OUTSIDE AIR DUCTS ENSURE THAT THE VAPOR BARRIER IS CONTINUOUS AND SEALED AT ALL PENETRATIONS.
- 4. PIPING EXPOSED TO WEATHER SHALL BE PROVIDED WITH A WEATHER-PROOF MEMBRANE. 5. BLANKET FIBERGLASS: FLEXIBLE FIBROUS GLASS, FLAME RETARDANT

FACTORY LAMINATED FOIL- SKRIM-KRAFT (FSK) VAPOR BARRIER, 2"

- STAPLING FLANGE, MAXIMUM VAPOR PERMEANCE OF .02 PERM/IN., MINIMUM DENSITY OF 1.0 LB/CF, MAXIMUM CONDUCTIVITY PER 1" THICKNESS OF .28 AT 75°F MEAN TEMPERATURE. BASED ON KNAUF DUCT WRAP.
- 6. SCHEDULE (INSULATION BASED ON KNAUF):
 - SUPPLY DUCTWORK ABOVE CEILINGS 1-1/2" BLANKET TYPE GRILLE BOOTS 1-1/2" BLANKET TYPE
 - RETURN/TRANSFER DUCTWORK: LINER WHERE NOTED, OTHERWISE: GRILLE BOOTS 1" LINER
 - **OUTSIDE AIR DUCTWORK:** 2" 1LB DENSITY BLANKET

EXHAUST DUCTWORK:

INDOOR REF PIPING OUTDOOR REF PIPING

1" CLOSED CELL ELASTOMERIC 1-1/2" CLOSED CELL ELASTOMERIC W/ WEATHERPROOF

SECTION 15767—HEATERS: **ELECTRIC UNIT HEATERS:**

1. WALL ELECTRIC HEATERS (WH) — RECESSED WALL MOUNTED ELECTRIC UNIT HEATER WITH INTEGRAL THERMOSTAT, LOUVERED FRONT COVER, DISCONNECT SWITCH, AND HEATING ELEMENT.

SECTION 15770-SPLIT SYSTEM AIR CONDITIONERS:

OUTDOOR STANDARD SPLIT SYSTEM HEAT PUMP (HP):

- 1. STANDARD EFFICIENCY, SPLIT SYSTEM HEAT PUMP, COMPRESSOR TO BE INTERNALLY PROTECTED AGAINST HIGH PRESSURE, TEMPERATURE, AND EXTERNALLY BY A FACTORY INSTALLED HIGH PRESSURE SWITCH. PROVIDE REMOVABLE ACCESS PANEL TO ELECTRICAL BOX. FURNISH FULLY CHARGED AND FACTORY WIRED. UNIT SHALL OPERATE WITH R-410A. PROVIDE WITH 5-YEAR LIMITED PARTS WARRANTY AND 5-YEAR LIMITED COMPRESSOR
- 2. CONSTRUCTED OF PRE-PAINTED STEEL, INTERNALLY PROTECTED HERMETIC COMPRESSOR WITH INTERNAL DISCHARGE LINE SOLID CORE FILTER DRIER, CRANKCASE HEATER, AND HARD START KITS (FOR UNITS WITH REFRIGERANT LINE LENGTHS OVER 100 FT). CONDENSER COILS CONSTRUCTED OF COPPER
- TUBING AND ENHANCED ALUMINUM COILS. INSTALL UNIT ON PLASTIC HOUSEKEEPING PAD (WITH NEOPRENE BETWEEN PAD AND ROOF) OR 4x4 WEATHER TREATED LUMBER WITH NEOPRENE PADS

INDOOR STANDARD SPLIT SYSTEM AIR HANDLING UNIT (AHU):

BETWEEN UNIT AND LUMBER.

1. COMPACT AND STURDY CABINET IS PROTECTED WITH A DURABLE FINISH AND INSULATED TO PREVENT SWEATING. PROVIDE WITH ALUMINUM FIN COILS AND ELECTRIC HEATERS.

- 2. FOR UNITS MOUNTED VERTICALLY, PROVIDE FLOAT SWITCH ON CONDENSATE OVERFLOW CONNECTION. FOR UNITS MOUNTED HORIZONTALLY PROVIDE CONDENSATE DRAIN PAN UNDER UNIT WITH FLOAT OR WATER DETECTOR WITHIN THE PAN. UPON A DETECTION OF WATER IN THE PAN OR CONDENSATE OVERFLOW CONNECTION, UNIT SHALL BE SHUT DOWN.
- 3. PROVIDE NON-PROGRAMMABLE DIGITAL THERMOSTAT FOR ALL RESIDENTIAL 4. PROVIDE DUCTED INDOOR UNIT WITH SUPPLY AND RETURN PLENUMS AS
- INDICATED. PLENUMS TO BE SIZED AS SMALL AS POSSIBLE FOR CONNECTIONS. LINE WITH 1" INSULATION FOR SOUND DAMPENING.

5. PROVIDE WITH INTERNAL FILTER RACK AND 1"THICK FILTER.

SECTION 15820-DUCTWORK ACCESSORIES:

- 1. <u>WALL CAPS (EXTERIOR WALL):</u> PROVIDE WALL CAPS FOR ALL DRYER AND BATHROOM EXHAUST DUCTS AND OUTSIDE AIR DUCTS AT EXTERIOR WALL PENETRATIONS. WALL CAPS SHALL BE ALUMINUM CONSTRUCTION. PROVIDE DRYER AND EXHAUST DUCTS WITH BUILT IN DAMPER. BASED ON SEIHO MODEL SFZC. COLOR TO BE DETERMINED BY THE ARCHITECT.
- 2. FIRE DAMPERS: CURTAIN TYPE WITH BLADES OUT OF THE AIR STREAM (HIGH HAT TYPE) WITH 1-1/2" HOUR UL RATINGS APPROVED FOR USE IN 2 HOUR RATED WALLS AND 1-HOUR RATED FLOOR ASSEMBLIES. PROVIDE WITH FUSIBLE LINK AND CLOSURE SPRING FOR USE IN VERTICAL DUCTWORK (HORIZONTALLY MOUNTED).
- CEILING MOUNTED RADIATION DAMPER: INSULATED, 2-BLADE, 22 GA GALVANIZED STEEL FRAME AND BLADES, SPRING OPERATED WITH 212°F FUSIBLE LINK. BASED ON ARROW MODEL A91 (RECTANGULAR) AND A97
- 4. VOLUME DAMPERS (MANUAL): BLADES AND FRAME SHALL BE OF EXTRUDED ALUMINUM OR GALVANIZED STEEL CONSTRUCTION. PROVIDE SINGLE BLADE DAMPERS PER SMACNA FIG 2-12, FIGURE B ON RECTANGULAR DUCTS LESS THAN 30" IN WIDTH AND 12" OR LESS IN DEPTH AND MULTI-BLADE DAMPERS PER SMACNA FIGURE 2-13, FIGURE A ON LARGER RECTANGULAR DUCTS. ROUND DUCT VOLUME DAMPERS SHALL BE SINGLE BLADE MOUNTED ON A CONTINUOUS SHAFT. EQUIP WITH LOCKING QUADRANT AND END BEARINGS. PROVIDE HANDLE EXTENSION ON EXTERNALLY INSULATED DUCTWORK.

SECTION 15830-FANS:

- 1. FANS SHALL BE UL LISTED AND AMCA CERTIFIED. ELECTRICAL DEVICES SHALL CONFORM TO NEMA STANDARDS. WIRING SHALL CONFORM TO NEC.
- 2. MOTORS SHALL BE NON-OVERLOADING, HIGH EFFICIENCY TYPE. MOTORS DESIGNED FOR VARIABLE SPEED SHALL BE DESIGNED AND RATED FOR USE WITH VFDs.
- 3. CEILING MOUNTED (WITHIN RATED DROPPED CEILING): FORWARD CURVED INJECTION MOLDED POLYPROPYLENE FAN WHEEL, 22 GAUGE GALVANIZED STEEL INLET BOX, ISOLATED MOUNTED DIRECT MOTOR, MOUNTED TO ONE PIECE GALVANIZED STAMPED STEEL INTEGRAL MOTOR MOUNT/INLET, BACKDRAFT DAMPER, AND WHITE HIGH IMPACT STYRENE INJECTED MOLDED GRILLE PROVIDE WITH INTEGRAL RADIATION DAMPER. BASIS OF DESIGNS COOK MODEL GC.

SECTION 15850-GRILLES, REGISTERS, AND DIFFUSERS:

- 1. PROVIDE AS INDICATED IN THE GRD SCHEDULE. PROVIDE ALL GRDs WITH INTEGRAL VOLUME DAMPERS OR WITH VOLUME EXTRACTORS AS INDICATED. COLOR OF THE GRILLES TO BE DETERMINED BY ARCHITECT. PERFORMANCE OF THE GRILLES IS A MAXIMUM OF 700 FPM OR A NC LEVEL OF 30 OR LESS FOR SIZE AND CFM INDICATED.
- 2. INSTALL WITH AIR TIGHT CONNECTION TO DUCTWORK. COORDINATE MOUNTING CONDITIONS WITH ARCHITECTURAL.
- CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENTS.

SECTION 15890-METAL DUCTWORK:

- 1. UNLESS OTHERWISE NOTED, RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED OF HOT ROLLED STEEL CONTINUOUSLY ANNEALED AND HOT DIPPED GALVANIZED SHEET OR COIL, MINIMUM G-90, 0.90 OZ/SF COATING SUITABLE FOR FORMING WITHOUT FLAKING OR PEELING, SUITABLE FOR WELDING OR SOLDERING. ZINC COATING SHALL NOT BE IMPAIRED FROM DOUBLE SEAMING, BREAKING OR ROLL FORMING. 14 GA. AND LIGHTER CONFORMING TO ASTM A 527: 13 GA AND HEAVIER CONFORMING TO ASTM A
- 2. DRYER VENT SHALL BE 26 GA. MINIMUM.
- 3. UNLESS OTHERWISE NOTED, ROUND DUCTWORK SHALL BE CONSTRUCTED OF G-90 GALVANIZED STEEL WITH THE FOLLOWING MINIMUM GAUGES: <15" DIA. = 24 GAUGE, 15"-26" DIA. = 22 GAUGE.
- INSULATED ROUND FLEXIBLE DUCT (MAX LENGTH 8') IS ALLOWED FOR BRANCH CONNECTIONS TO DIFFUSERS AND GRILLES ABOVE LAY-IN CEILINGS. INSULATED ROUND FLEXIBLE DUCTWORK SHALL BE UL181, CLASS 1 AND SUITABLE FOR LOW PRESSURE APPLICATIONS OF NOT LESS THAN 3" W.C. CONNECT TO METAL DUCT WITH STAINLESS STEEL DRAW BANDS.
- ALL DUCT SIZES SHOWN ON PLANS ARE INSIDE CLEAR (AIRFLOW) DIMENSIONS. NO ALLOWANCE HAS BEEN MADE FOR DUCT LINER OR DOUBLE
- 6. FABRICATE AND SUPPORT IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
- 7. PROVIDE ALL HANGERS AND SUPPORTS AS REQUIRED.

WALL DUCTWORK WHERE REQUIRED.

- 8. PROVIDE DOUBLE WALL TURNING VANES IN ALL LOW PRESSURE SUPPLY, RETURN, AND EXHAUST DUCTS . TURNING VANES ARE NOT REQUIRED WHERE RADIUS ELBOW FITTINGS WITH R=1.5 OR GREATER ARE USED.
- 9. SEAL DUCT JOINTS AIR TIGHT. PROVIDE AIR TIGHT SEAL WITH VOLUME DAMPERS AT ALL TAPS OFF MAIN DUCT TO DIFFUSERS.

10. SCHEDULE:

<u>System</u> Lp Supply Return-Relief Gen. Exhaust	<u>Section</u> Note 1 All	PRESSURE CLASS 2" 2" 2"	SEAL CLASS A C C
DRYER VENT	ALL	- 2 "	SPOT WELD

MECHANICAL GENERAL NOTES:

PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION, AND OTHER SERVICES NECESSARY TO SATISFACTORILY COMPLETE ALL MECHANICAL WORK INDICATED ON THE CONTRACT DOCUMENTS. ALL SPECIFICATIONS, NOTES, OR SYMBOLS MAY NOT BE APPLICABLE FOR THIS TENANT. CONTRACTOR SHALL CAREFULLY REVIEW PLANS AND DETAILS FOR ACCURATE EXTENT OF WORK REQUIRED.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROCUREMENT OF ALL APPLICABLE BUILDING PERMITS, INSPECTIONS, AND OTHER REQUIRED ADMINISTRATIVE DUTIES TO COMPLETE ALL INDICATED WORK REQUIREMENTS.

DESIGN CONSIDERATIONS:

- SUMMER: 95°F DB, 75°F WB OUTDOOR TEMPERATURE: WINTER: 17°F DB SUMMER: 75°F DB. 45-60% R.H. INDOOR TEMPERATURE
- WINTER: 70°F DB *HUMIDITY WILL VARY WITH OUTDOOR CONDITION
- MECHANICAL VENTILATION WILL BE PROVIDED PER IMC SECTION 403 AND TABLE 403.3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH IBC 2015, IMC 2015 AND ANY ADDITIONAL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

ALL MATERIALS WITH ELECTRICAL REQUIREMENTS SHALL BE UL LISTED FOR THE INTENDED APPLICATION.

PHASING AND WORK PERFORMANCE:

VENTILATION AND DISTRIBUTION:

THE CONTRACTOR SHALL COORDINATE ALL PHASING AND STAGING/STORAGE OF MATERIALS AND WORK WITH THE GENERAL CONTRACTOR. A WRITTEN GUARANTEE FOR THE PERIOD OF AT LEAST ONE YEAR AFTER SUBSTANTIAL COMPLETION SHALL BE TURNED OVER TO THE OWNER ON ALL MATERIALS AND WORK DONE BY THE CONTRACTOR. ALL MATERIALS INSTALLED SHALL ALSO BE PROVIDED WITH THE MAXIMUM AVAILABLE GUARANTEE FROM THE MANUFACTURER.

CLEAN UP AND PROTECTION OF AREA: THE CONTRACTOR SHALL CLAIM ALL RESPONSIBILITY FOR PROTECTION OF THE AREAS INVOLVED, INCLUDING ANY AREAS INVOLVED IN THE TRANSPORTATION AND STORAGE OF EQUIPMENT DURING CONSTRUCTION. THE CONTRACTOR SHALL CONSISTENTLY MAINTAIN A WORK ENVIRONMENT THAT IS CLEAN AND PROTECTED FROM UNAUTHORIZED PERSONS AND DAMAGE DUE TO CONSTRUCTION. AFTER COMPLETION OF ALL CONSTRUCTION, THE CONTRACTOR SHALL CLEAN ALL AREAS INVOLVED IN THE CONSTRUCTION PROCESS, TO THE OWNER'S APPROVAL. ALL REFUSE INVOLVED DUE TO CONSTRUCTION SHALL BE PROPERLY AND PROMPTLY DISPOSED OF AT AN ON SITE LOCATION.

CONSTRUCTION TYPE: A-3 USE GROUP: OCCUPANCY:

- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO SHOW THE GENERAL ROUTING. LOCATION. AND SIZE OF EQUIPMENT. PIPING AND/OR DUCTWORK. THE CONTRACTOR SHALL MAKE ALLOWANCES FOR ALL MATERIALS AND LABOR NECESSARY TO MAKE FINAL CONNECTIONS. NOT ALL NECESSARY OFFSETS OR FITTINGS ARE SHOWN, BUT SHALL BE PROVIDED WHERE REQUIRED. THE CONTRACTOR SHALL PROVIDE ALL ACCESSORIES, SUPPORTS, AND HANGERS TO ALLOW FOR COMPLETE AND FUNCTIONAL SYSTEMS. ALL WORK SHALL MEET OR EXCEED PUBLISHED OR ACCEPTED STANDARDS OF QUALITY WORKMANSHIP, AND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS AND/OR INSTALLATION INSTRUCTIONS. THE INTENT OF THESE CONTRACT DOCUMENTS IS TO PROVIDE COMPLETE FUNCTIONING SYSTEMS.
- INSTALL ALL DEVICES IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- COORDINATE THE PROPER GRILLE STYLE AND FRAME STYLE WITH THE FINAL APPROVED CEILING CONSTRUCTION AND INSTALL GRILLES, REGISTERS, AND DIFFUSERS.
- DUE TO THE SMALL SCALE OF THE DRAWINGS, THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY TO COORDINATE THE AIR OUTLET AND INLET LOCATIONS WITH THE CEILING PLANS, LIGHTING PLANS, SECTIONS AND/OR DETAILS.
- PROVIDE SUBMITTALS ON ALL EQUIPMENT AND CONTROLS FOR APPROVAL.
- PROVIDE OWNER TRAINING ON ALL EQUIPMENT.
- PROVIDE START-UP OF ALL EQUIPMENT.
- WELDING, CUTTING, OR BURNING: THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM OF 72 HOURS ADVANCE NOTICE PRIOR TO PERFORMING ANY WELDING, CUTTING, OR BURNING WITHIN THE BUILDING. NO WELDING, CUTTING, OR BURNING SHALL OCCUR WITHOUT GENERAL CONTRACTOR APPROVAL. WHERE WELDING, CUTTING, OR BURNING ARE NECESSARY, NON-COMBUSTIBLE SHIELDS SHALL BE USED AND SUITABLE FIRE EXTINGUISHING EQUIPMENT SHALL BE MAINTAINED NEARBY.
- FABRICATION OF STEEL SUPPORTS: FABRICATE FROM STEEL ANGLES, CHANNELS OR PLATES IN ACCORDANCE WITH ASTM.
- THERMOSTAT LOCATIONS ARE GENERAL. THERMOSTATS SHALL BE LOCATED ADJACENT TO DOORS OR NEAR RETURN GRILLES. COORDINATE FINAL THERMOSTAT LOCATIONS WITH ARCHITECT AND/OR OWNER.

MECHANICAL LEGEND DESCRIPTION SYMBOL DESCRIPTION <u>SYMBOL</u> DUCT SIZE (FIRST FIGURE SIDEWAYS RETURN OF SIDE SHOWN DIMENSION) SIDEWAYS SUPPLY FLEXIBLE CONNECTION DIFFUSER TO BE PROVIDED WITH RADIATION DAMPER 20x20 TRANSITION DIFFUSER TAG WITH AIRFLOW FIRE DAMPER W/ DOOR UNDERCUT ACCESS DOOR THERMOSTAT (48"AFF) AIR TIGHT CONNECTION SMOKE DETECTOR OFF DUCT MAIN OCCUPANCY SENSOR 4-WAY THROW SUPPLY ACCESS DOOR IN SIDE DIFFUSER WITH FLEX OF WALL OR DUCT DUCT CONNECTION <u>AHU-1</u> EQUIPMENT NUMBER RETURN DIFFUSER 1-HOUR RATED WALL 2-HOUR RATED WALL ____ HEAT PUMP WITH COIL AND MATCH LINE MAINTENANCE CLEARANCE _ . . _ . . _ . . _ BOUNDARY LINE; REFER TO MANUFACTURER'S MANUAL. ZDZONE DAMPER MOTORIZED DAMPER; М USED FOR BYPASS AIR

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Α	AMPERES	GA	GAUGE
AD	ACCESS DOOR	HP	HORSEPOWER
AHU	AIR HANLDING UNIT	HZ	FREQUENCY
BTU	BRITISH THERMAL UNIT	KW	KILOWATT
BTUH	BRITISH THERMAL UNIT PER HOUR	LAT	LEAVING AIR TEMPERATURE
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
DB	DRYBULB	NTS	NOT TO SCALE
DE	DRYER EXHAUST	OA	OUT SIDE AIR
DN	DOWN	PD	PRESSURE DROP
DWG	DRAWING	PH	PHASE
DX	DIRECT EXPANSION	PSI	POUNDS PER SQUARE INCH
EA	EXHAUST AIR	PVC	POLYVINYL CHLORIDE
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EF	EXHAUST FAN	RD	RADIATION DAMPER
ESP	EXTERNAL STATIC PRESSURE	RL	REFRIGERANT LIQUID
°F	DEGREE FAHRENHEIT	RPM	REVOLUTIONS PER MINUTE
FD	FIRE DAMPER	RS	REFRIGERANT SUCTION
FLA	FULL LOAD AMPERES	SA	SUPPLYAIR
FPM	FEET PER MINUTE	TYP	TYPICAL
FT	FEET	WB	WET BULB
		WH	WALL HEATER

MECHANICAL DRAWING LIST

- M7.001 MECHANICAL NOTES, SPECIFICATIONS, LEGEND, DETAILS AND ABBREVIATIONS
- M7.002 MECHANICAL SCHEDULES AND DETAILS

AHU NOTES:

PLENUMS.

ACTIVATES SWITCH.

1. MOUNT INDOOR AIR HANDLING UNIT IN

NEEDED TO SUPPORT UNIT.

DRAIN IN MECHANICAL CLOSET.

4. PROVIDED LINED RETURN AND SUPPLY

VERTICAL POSITION. PROVIDE FRAME AS

PROVIDE RETURN AIR PLENUM WITH FILTER.

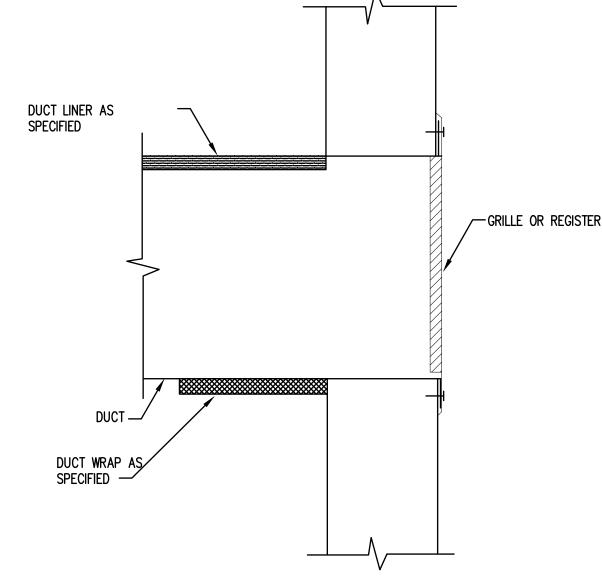
PIPE CONDENSATE DRAIN DOWN TO FLOOR

PROVIDE FLOAT SWITCH IN AHU DRAIN PAN

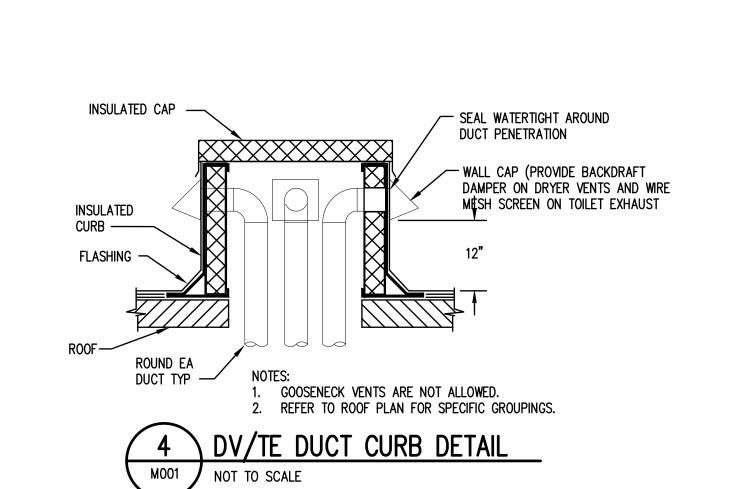
OVERFLOW CONNECTION. FLOAT SWITCH TO

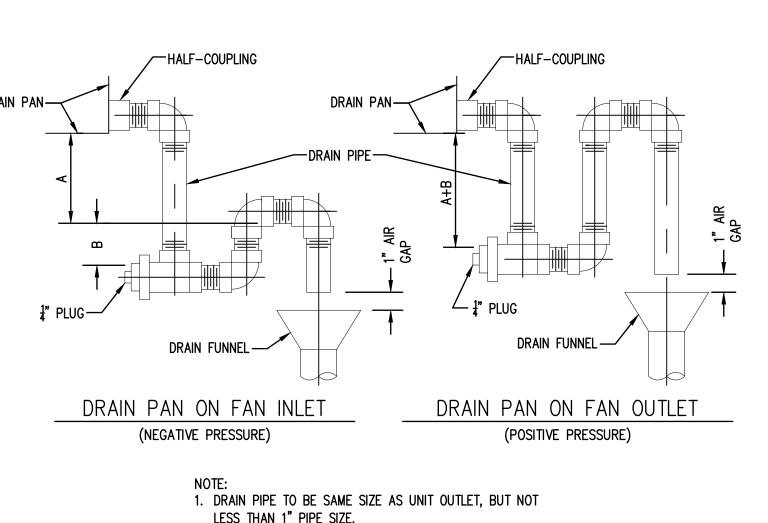
SHUT DOWN UNIT IF CONDENSATE LEVEL

M7.101 - MECHANICAL FIRST FLOOR PLAN M7.102 - MECHANICAL SECOND FLOOR PLAN



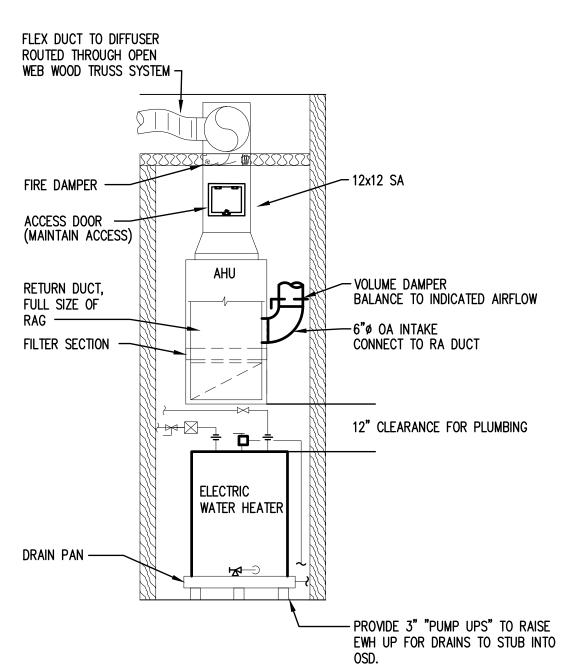






2. "A"=SYSTEM STATIC IN INCHES AT DRAIN POINT. "B"=1/2 SYSTEM STATIC IN INCHES AT DRAIN POINT.



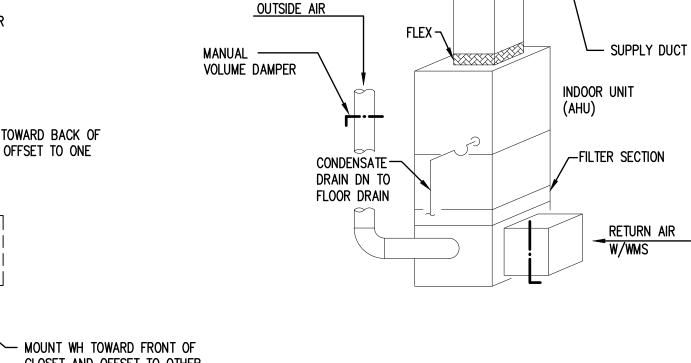


 PROVIDE LINED SUPPLY PLENUM. PROVIDE FLOAT SWITCH IN AHU DRAIN PAN OVERFLOW CONNECTION. FLOAT SWITCH TO SHUT DOWN UNIT IF CONDENSATE LEVEL ACTIVATES SWITCH. 5. ALLOW SUFFICIENT SPACE FOR MAINTENANCE. INCLUDING FILTER REPLACEMENT. - MOUNT AHU TOWARD BACK OF CLOSET AND OFFSET TO ONE MOUNT WH TOWARD FRONT OF CLOSET AND OFFSET TO OTHER

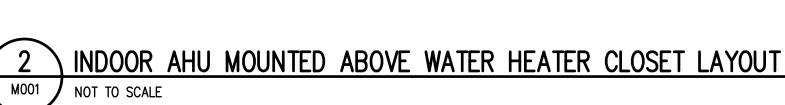
MOUNT INDOOR AHU IN VERTICAL

POSITION. PROVIDE FRAME AS NEEDED TO SUPPORT UNIT.

2. PIPE CONDENSATE DRAIN DOWN TO OPEN SITE DRAIN IN MECHANICAL



VERTICALLY MOUNTED AHU DETAIL M001 / NOT TO SCALE





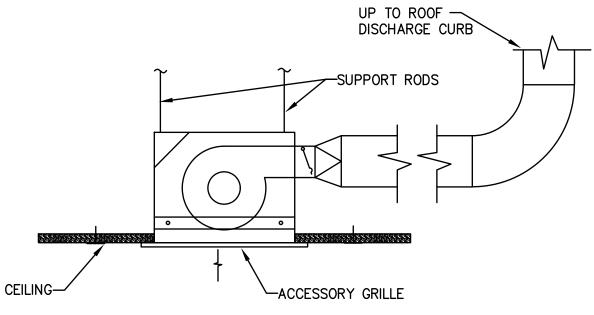
Ш

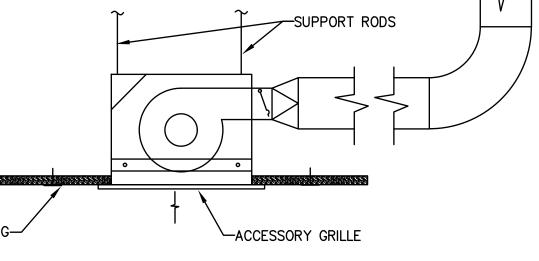
REVISIONS

Ш

 ∞

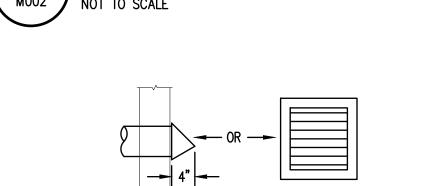
FAN S	SCHEDULE:											
				BLADE	TOTAL	FAN	МО	TOR DATA	4	SELECTION I	BASED ON	
UNIT NO.	SERVING	TYPE	CFM	TYPE	STATIC H₂O	RPM	HP	VOLTS	РН	MANUFACTURER	MODEL	REMARKS
EF-1	RESIDENTIAL BATHROOM	CEILING MTD	50	FC	0.35	750	27W	120	1	COOK	GC-128	CONTROLL BY SWITCH





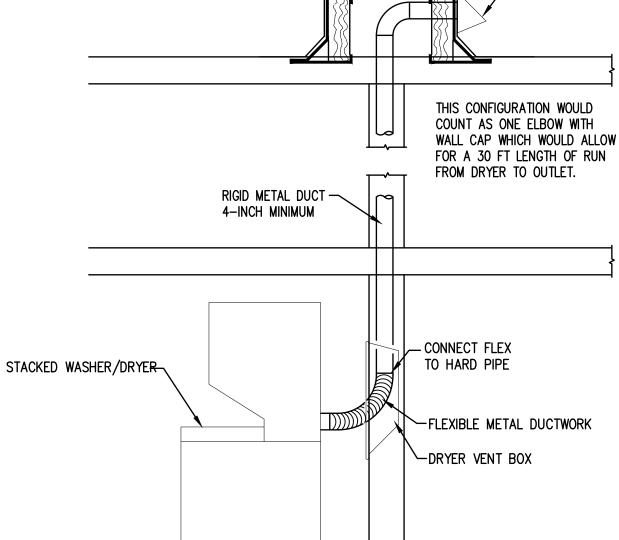


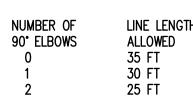
M002



LOUVERED FACE

\ WALL CAP DETAIL



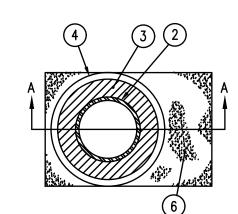


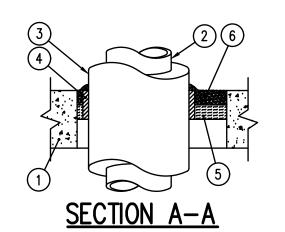
NOTE: (2) 45° ELBOWS = (1) 90° ELBOW

BELOW IS THE CHART ON THE MAXIMUM DRYER LENGTHS PER THE DRYER
MANUFACTURER. IT IS UP TO THE HVAC CONTRACTOR TO VERIFY LINE
LENGTHS PER THE INSTALLED PRODUCT AND COMPARE TO THE CHART
BELOW. NOTE THAT THE LONGEST RUN IS AFFECTED BY THE TYPE OF
WALL CAP USED. THE PREFERRED WALL CAP TYPE IS SHOWN UNDER
WALL CAP SPECIFICATION. SMALLER OR DIFFERENT CONFIGURATIONS OF
THE WALL CAP WILL AFFECT THE LINE LENGTH OF THE DRYER EXHAUST
AND NEED TO BE EVALUATED PRIOR TO INSTALLATION.

NUMBER OF	LINE LENGTH
90° ELBOWS	ALLOWED
0	35 FT
1	30 FT
2	25 FT







1. Floor orWall Assembly — Min 4—1/2 in. thick lightweight or normal weight (100—150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks* Max area of square, rectangular or circular opening is 45 sq in. with max dimension of 9 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Pipe — Nom 3 in. diam (or smaller) Type L (or heavier) copper pipe or nom 2-1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe. One or more insulated pipes may be installed with a min clearance of 1/2 in. maintained between insulated pipes and with a min clearance of 1/4 in. maintained between insulated pipe and sides of through opening. Pipes to be rigidly supported on both sides of floor or wall assembly.

3. Pipe Insulation — Plastics# — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing with skin. When nom 2-1/2 or 3 in. diam insulated steel or copper pipe is used, T Rating is 1/2 hr. When max 2 in. diam insulated steel or copper pipe is used, T rating is See Plastics# (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

4. Fill, Void or Cavity Materials* - Wrap Strip - Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. wide strips. One nom 2 in. wide strip tightly-wrapped around pipe insulation (Item 3) with the foil side exposed and slid into through opening such that the top edge is flush with top surface of floor. When a single insulated pipe is installed in a circular through opening and when the max annular space between the insulated pipe and the sides of the through opening is 3/8 in., the wrap strip layer may be secured in place with pressure—sensitive tape. In all other situations, the wrap strip layer shall be secured in place with min No. 18 gauge galv steel tie wire. In wall assemblies, the wrap strip layer is to be installed on the insulated pipe in the same manner used for floor assemblies but shall be installed symmetrically on both sides of the wall.

3M COMPANY - Type FS-195+

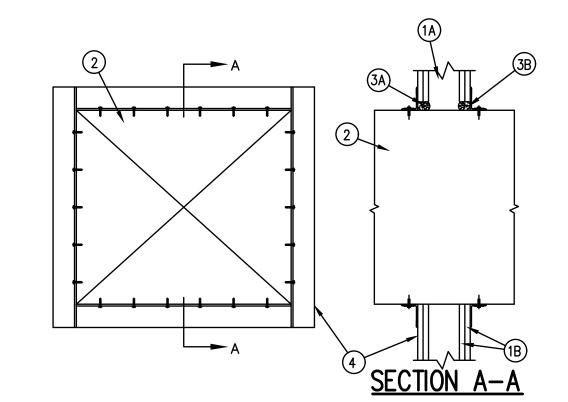
5. Packing Material — Min 1 in. thick mineral wool batt insulation firmly packed into opening with its top surface recessed min 1 in. from top surface of the floor. In wall assemblies, packing material to be firmly packed into opening on both sides of wall and recessed min 1 in. from wall surface. When a single insulated pipe (with wrap strip layer) is installed in a circular through opening and when the max annular space between the wrap strip layer and the sides of the through opening is 1/8 in., no forming material

6. Fill, Void or Cavity Materials* — Caulk or Sealant — Applied to fill through opening to a min depth of 1 in. In floor assemblies, fill material to be installed flush with top surface of floor. In wall assemblies, fill material to be installed flush with wall surface on both sides of wall.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant. (The W Rating applies only when FB-3000 WT sealant is used.)

*Bearing the UL Classification Marking

\ PIPE THROUGH CONCRETE FIRESTOP DETAIL



1. Wall Assembly — The 1 and 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs – Wall framing shall consist of steel channel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional 3-1/2 in. (89 mm) wide steel studs shall be used to completely frame opening. B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max size of opening to be 1216 sq in. (188.5 cm2) with a max dimension of 38 in. (965 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant – Nom 36 by 30 in. (914 by 762 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm) (point contact) to max 2 in. (51 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of floor or wall assembly.

3. Firestop System — The details of the firestop system shall be as follows:

A. Packing Material (Optional) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction—fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

B. Fill, Void or Cavity Material* - Caulk or Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At the point contact location between duct and wallboard, a min 1/4 in. (6 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant

C. Retaining Angles — Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap wall surfaces of a min of 1 in. (25 mm). Angles attached to duct on both sides of wall with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC.

*Bearing the UL Classification Marking

8 DUCT THROUGH GYPSUM FIRESTOP DETAIL M002 NOT TO SCALE

GRILLE, REGISTER AND DIFFUSER SCHEDULE:

		TYPE		;	SERVIC	E		MOUNT	NG DATA					СО	NSTRU	CTION E	ATA						SELECTION BA	SED ON	
UNIT NO.	G	R	D	SA	RA	EA	CEILING	DUCT	FLOOR	WALL	SHAPE	MATERIAL	COLOR		ACCES	SORIES	3		F	PATTER	N		MANUFACTURER	MODEL	REMARKS
	G	K	ט	SA	IVA	LA	CEILING	DOCT	FLOOR	VVALL	SHAPE	WATERIAL	COLOR	VD	RC	VE	Р	1-W	2-W	3-W	4-W	E/R	MANOFACTORER	WODEL	
S-1		Х		Х			Х				RECT	ALUMINUM	TBD	Х					Х				USAIRE	102M	
S-2			Х	Х			Х				SQUARE	STEEL	TBD	Х							х		KRUEGER	1400	24x24 PANEL
S-3			Х	Х			Х				LINEAR	ALUMINUM	TBD	Х					Х				KRUEGER	DFL	2 SLOT, 1" SLOT WIDTH
R-1	Х				Х					Х	RECT	STEEL	TBD	Х								Х	KRUEGER	S80	0° DEFLECTION



		SU	PPLY FAI	N DATA		CC	OOLING	DATA		F	HEATING DA	TA	UNIT E	LECTRIC	C DATA	SELECTION	BASED ON		
UNIT NO.	SERVING	NOMINAL CFM RANGE	ESP Delta P IN H ₂ O	OA CFM	NO.	CAPACITY MBH	EA ⁻ DB °F	T °F WB °F	SEER @ARI	CAPACITY MBH	INDOOR EAT DB °F	OUTDOOR COND. DB °F	VOLT	PH	МОСР	MANUFACTURER	MODEL	OUTDOOR UNIT	REMARKS
AHU-DOG SPA	DOG SPA	300	0	0	1	9.0	80	67	23.0	12.0	70	47	208	1		FUJITSU	ASU9RLF1	AOU9RLFW1	ELECTRIC FED FROM OUTDOOR UN
AHU-MAINT.	MAINTENANCE	300	0	0	1	9.0	80	67	23.0	12.0	70	47	208	1		FUJITSU	ASU9RLF1	AOU9RLFW1	ELECTRIC FED FROM OUTDOOR UN

SPLIT SYSTEM OUTDOOR UNIT SCHEDULE - MINI SPLIT

0. 	, . _	20011	01111	, O. I.			<u> </u>													
			UV	nit data				FAN	MOTOR(S))	COMPRE	SSOR(S)	U	NIT ELECT	TRIC DATA	L	SELECTION	BASED ON		
UNIT NO.	SERVING	CAPACITY MBH	COND. S	S. SUCT. °F	SEER	REFRIG. TYPE	NO.	HP	RPM	TOTAL CFM	NO.	STEPS	MCA	MOCP	VOLT	PH	MANUFACTURER	MODEL	INDOOR UNIT	REMARKS
HP-DOG SPA	AHU-DOG SPA	9	95	45	23.0	R-410A	1	-		995	1	1	10	15	208	1	FUJITSU	AOU9RLFW1	ASU9RLF1	SINGLE ZONE ORIENTATION
HP-MAINT.	AHU-MAINT.	9	95	45	23.0	R-410A	1	-		995	1	1	10	15	208	1	FUJITSU	AOU9RLFW1	ASU9RLF1	SINGLE ZONE ORIENTATION

SPLIT SYSTEM OUTDOOR UNIT SCHEDULE (14 SEER) - CONVENTIONAL

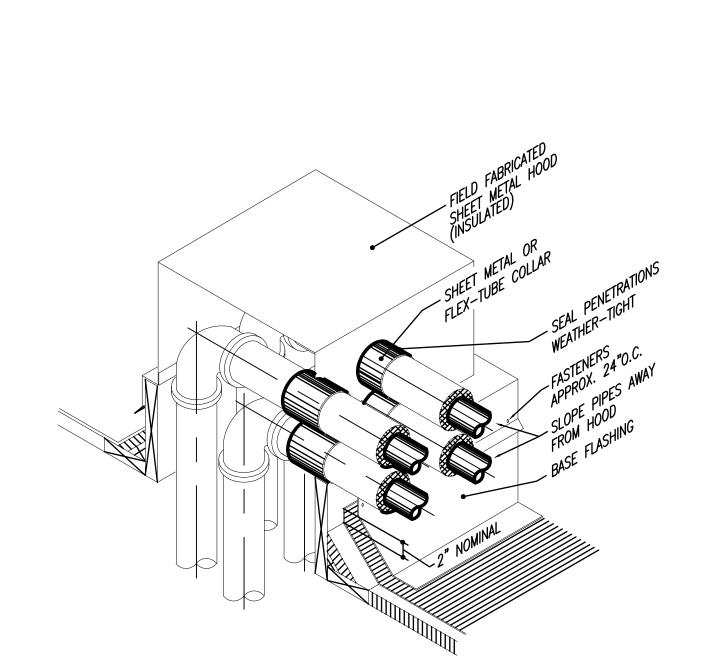
Washington Co.	10.11 17.007.000. 198.00 198.00 100 12.007 1000.00																						
				UNIT DATA	(FAN	DATA			COMPR	ESSOR(S)	U	NIT ELECT	TRIC DATA	4	SELECTIO	N BASED ON	PAIF	RED WITH	
UNIT TAG	SERVING	CAPACITY MBH	COND. EAT °F	S. SUCT. °F	SEER	REFRIG. TYPE	NO.	HP	RPM	TOTAL CFM	NO.	STEPS	LRA	RLA	MCA	MOCP	VOLT	PH	MANUF.	MODEL	MANUF.	MODEL	REMARKS
HP-LEASING LOBBY	AHU-LEASING LOBBY	18	95	45	15	R-410A	1	1/12	800		1	1	48	9	11.8	20	208	1	CARRIER	25HBC518A0030	CARRIER	FX4DF019L008	
HP- UPSTAIRS DINING	AHU-UPSTAIRS DINING	24.0	95	45	15.0	R-410A	1	1/12	800	-	1	1	58.3	12.8	16.5	25	208	1	CARRIER	25HBC524A0030	CARRIER	FX4DF025L008	
HP-FITNESS	AHU-FITNESS	48.0	95	45	15.0	R-410A	1	1/4	800	=	1	1	117	21.8	28.5	40	208	1	CARRIER	25HBC548A0030	CARRIER	FX4DF049L015	
HP-YOGA	AHU-YOGA	36.0	95	45	15.0	R-410A	1	1/5	800	-	1	1	79	16.7	22.1	35	208	1	CARRIER	25HBC536A0030	CARRIER	FX4DF037L015	
HP-OFFICE/ENTRY	AHU-OFFICE/ENTRY	36.0	95	45	15.0	R-410A	1	1/5	800	-	1	1	79	16.7	22.1	35	208	1	CARRIER	25HBC536A0030	CARRIER	FX4DF037L015	

SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE - CONVENTIONAL

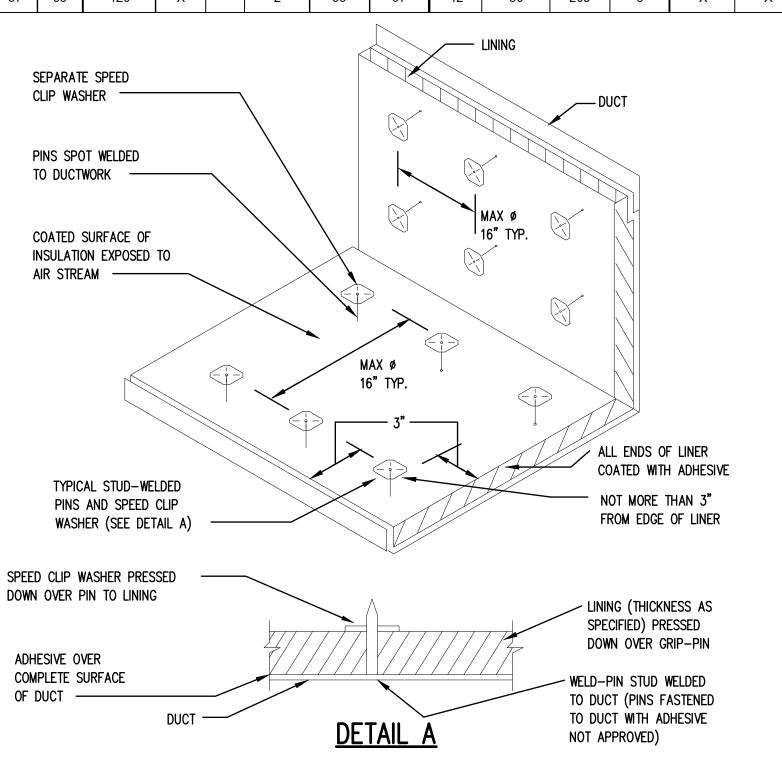
			SUPPLY	FAN DA	ATA			COOLING	DATA			HE	EATING DAT	'A	ELEC	. HEATIN	NG COIL	DATA	UN	IIT ELEC	TRIC DA	ATA	SELECTION	BASED ON	
UNIT TAG	SERVING	NOMINAL CFM RANGE	ESP Delta P IN H ₂ O	OA CFM	HP	RPM	TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH		T °F WB °F	@ADI	CAPACITY MBH	INDOOR EAT DB °F	OUTDOOR COND. DB °F	KW	VOLT	PH	NO. STEPS	VOLT	PH	MCA	МОСР	MANUFACTURER	MODEL	REMARKS
AHU-LEASING	LEASING LOBBY	600	0.5		1/3	1050	18.0	17.0	80	67	15.0	15.7	70	17	3.8	208	1	1	208	1	26	30	CARRIER	FX4DF019L008	PAIRED WITH HEATER KFCEH0501N05
AHU-UPSTAIRS DINING	UPSTAIRS DINING	800	0.5		1/3	1050	24.0	22.0	80	67	15.0	15.7	70	17	3.8	208	1	1	208	1	26	30	CARRIER	FX4DF025L008	PAIRED WITH HEATER KFCEH0501N05
AHU-FITNESS	FITNESS	1600	0.5		3/4	1050	48.0	43	80	67	15.0	47.1	70	17	11.3	208	3	1	208	3	47.7	50	CARRIER	FX4DF049L015	PAIRED WITH HEATER KFCEH1601315
AHU-YOGA	YOGA	1200	0.5		1/2	1050	36.0	32.0	80	67	15.0	47.1	70	17	11.3	208	3	1	208	3	47.7	50	CARRIER	FX4DF037L015	PAIRED WITH HEATER KFCEH1601315
AHU-OFFICE/ENTRY	OFFICE/ENTRY	1200	0.5		1/2	1050	36.0	32.0	80	67	15.0	47.1	70	17	11.3	208	3	1	208	3	47.7	50	CARRIER	FX4DF037L015	PAIRED WITH HEATER KFCEH1601315

PACKAGED ROOF TOP UNIT SCHEDULE.

PACKE	AGED ROOF	IUF	OINI	ЗСПЕ	DULE.																									
				SUPPL	Y FAN DATA			CC	OOLING DATA					HEAT	ING DATA			UNIT ELEC	TRICAL D	ATA			ACC	ESSORIE	S*		SELEC	TION B/	ASED ON	
UNIT NO.	SERVING	SA CFM		ESP Delta P (IN H ₂ O)	KW RPM	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	1	STAGES REFR	IG.	ENTERING AII DB WB CC °F °F DE	OND.	INPUT CAPACITY (MBH) N		STAGES	DB °F CON DB °	H MCA	MOCP	VOLT		EC=ECO RC=ROO EC				T EH=E		MANUFACT	URER	MODEL	REMARKS
RTU-1	LODGE	2900		1	1.0 1234	91.3	67.81	12.6	2 R410)A 80	0.0 67 9	95	120 X		2	65 97	42	50	208	3	X	X	Х			X	TRANE	=	YHC092F3RMA	

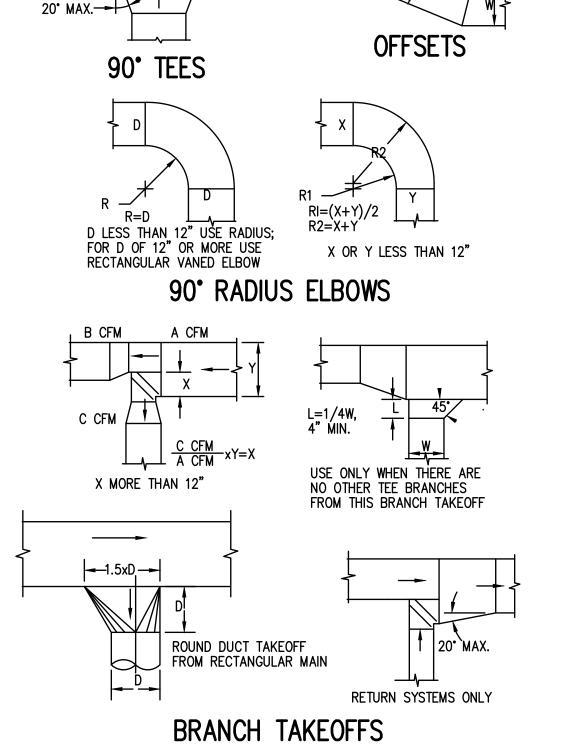


REFRIGERANT PIPING ROOF DETAIL M002 NOT TO SCALE

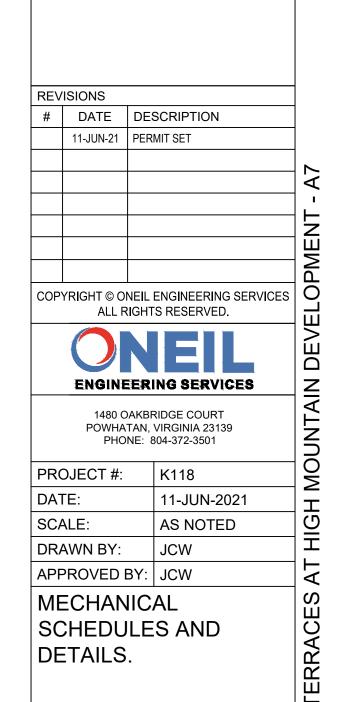


6 SOUND LINING INSTALLATION DETAIL

M002 NOT TO SCALE



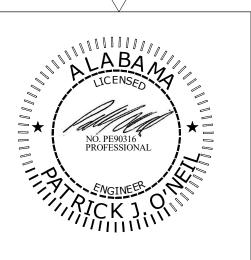
7 DUCT DETAILS M002 NOT TO SCALE

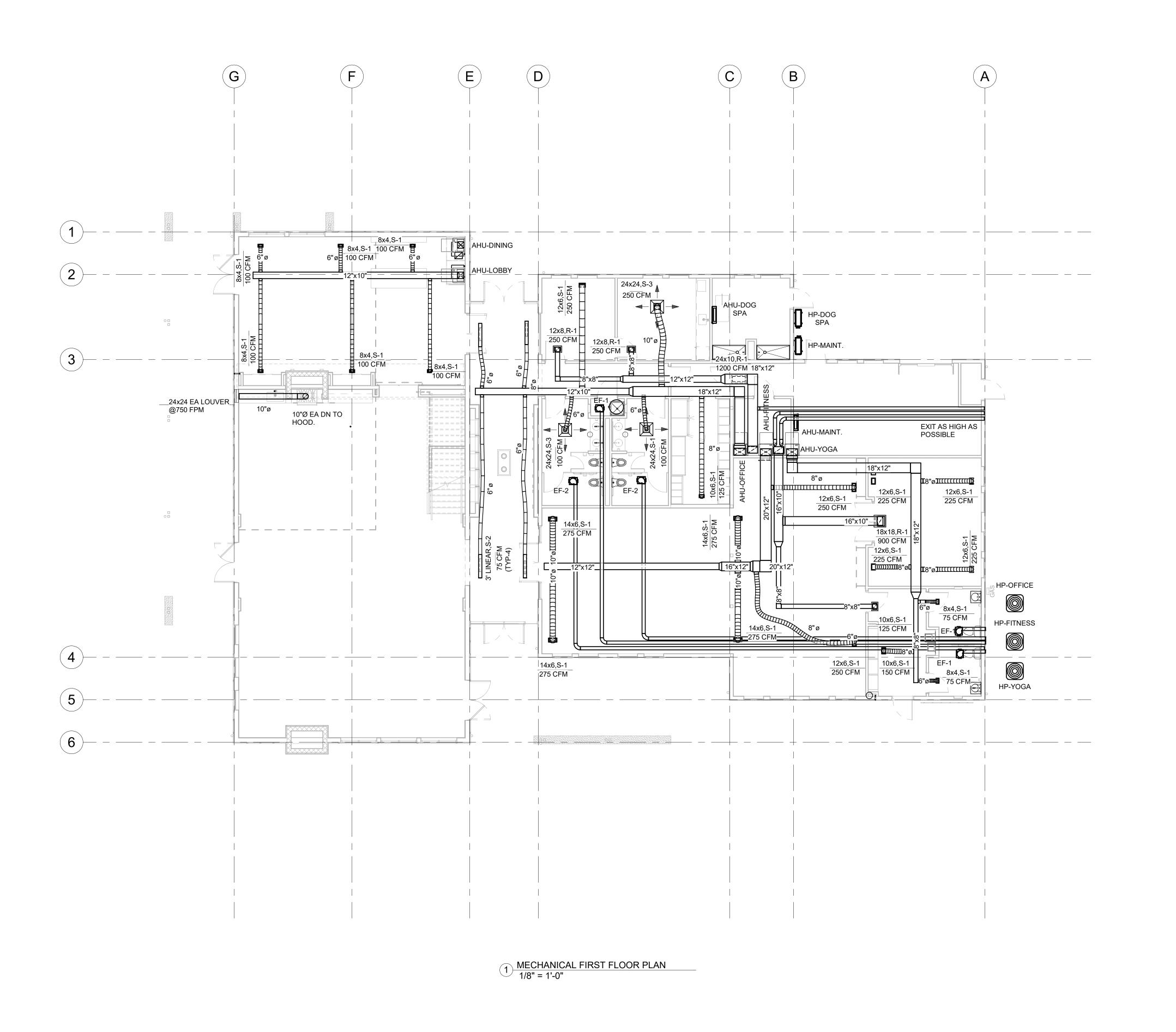


 \triangleleft

FRR

OPME



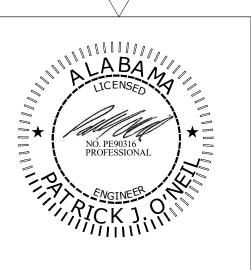


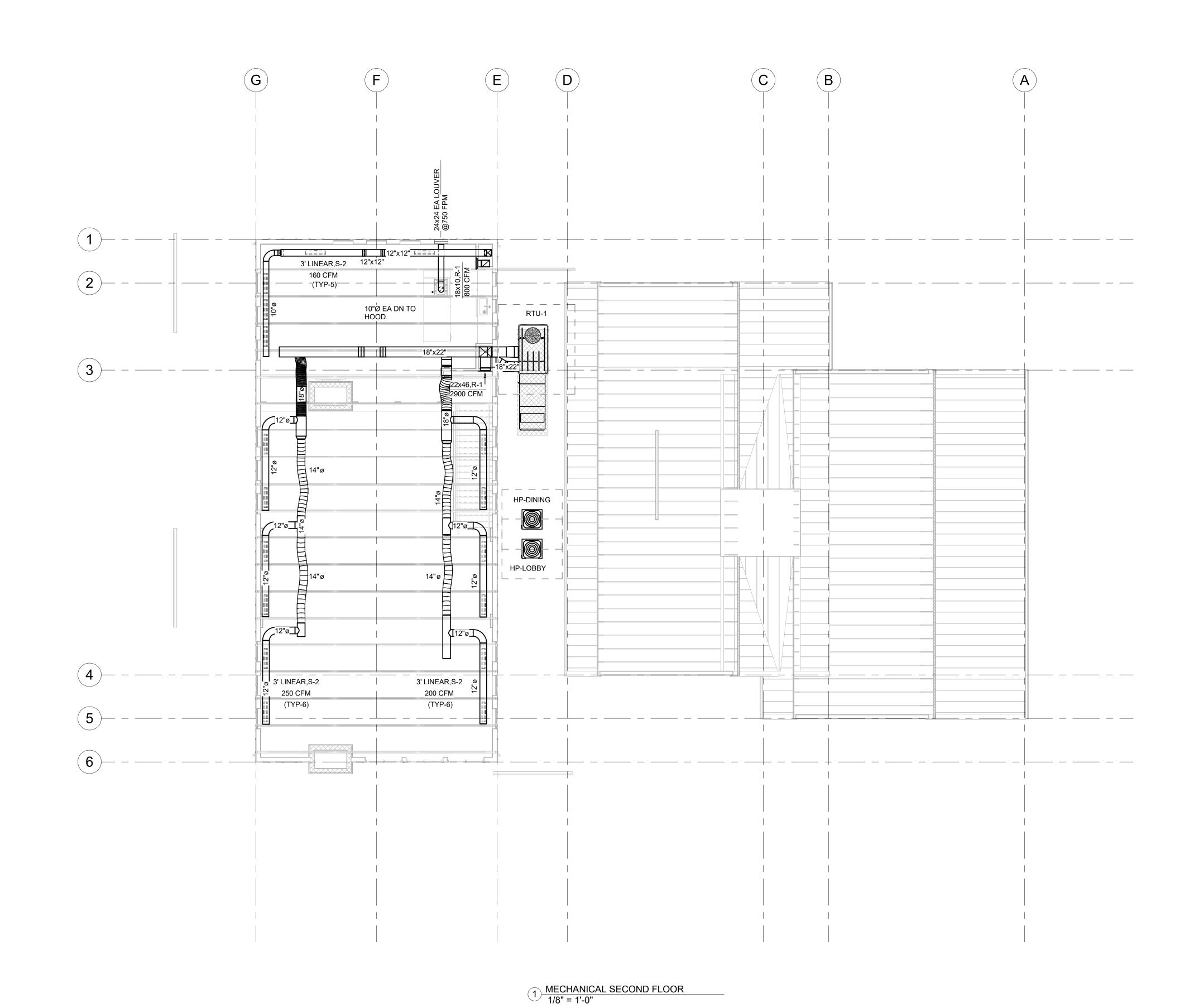
REVISIONS
DATE DESCRIPTION # 11-JUN-21 PERMIT SET
1 XX 4 XX
5 XX
6 XX
COPYRIGHT © ONEIL ENGINEERING SERVICES
ALL RIGHTS RESERVED. ONEIL ENGINEERING SERVICES 1480 OAKBRIDGE COURT POWHATAN, VIRGINIA

23139 PHONE: 804-372-3501 11-JUN-2021 1/8" = 1'-0"

PROJECT #: K118-C SCALE: DRAWN BY: APPROVED BY: PJO MECHANICAL FIRST FLOOR PLAN

M7.100





REVISIONS

DATE DESCRIPTION

11-JUN-21 PERMIT SET
1 XX

ENGINEERING SERVICES

1480 OAKBRIDGE COURT POWHATAN, VIRGINIA

23139 PHONE: 804-372-3501

11-JUN-2021

1/8" = 1'-0"

PROJECT #: K118-C

APPROVED BY: PJO

MECHANICAL SECOND FLOOR PLAN

SCALE:

DRAWN BY: