

GENERAL NOTES	
1)	COMPLETE INSTALLATION OF THE MECHANICAL SYSTEM SHALL BE PER THE MOST CURRENT BUILDING, MECHANICAL, ENERGY, PLUMBING, FIRE AND HEALTH CODES AND REGULATIONS AS ADOPTED BY THE LOCAL JURISDICTIONS.
2)	ALL AIR-CONDITIONING UNITS WITHOUT INTERNAL TRAP SHALL HAVE A P-TRAP FOR THE CONDENSATE PAN WITH FLUG TESTS FOR CLEANING AND CONDENSATE PIPES SHALL BE DISCHARGED TO EXISTING CONDENSATE WASTE PIPING. VERIFY SIZE AND LOCATION AT SITE.
3)	MECHANICAL CONTRACTOR SHALL COORDINATE DIFFUSER LOCATIONS AND DUCT ROUTING CLEARANCES WITH THE STRUCTURAL, REFLECTED CEILING AND LIGHTING PLANS.
4)	PLUMBING CONTRACTOR SHALL COORDINATE PLUMBING VENT STACKS WITH THE EQUIPMENT TO MAINTAIN A MINIMUM OF 10 FT. FROM THE OUTSIDE AIR INTAKES.
5)	ALL FIRE RATED STRUCTURE SHALL BE FIRE DAMPERED. VERIFY WITH THE ARCHITECTURAL AND INSTALL PER THE LOCAL JURISDICTIONS.
6)	ALL AIR DISTRIBUTION OUTLETS SHALL HAVE VOLUME CONTROL DEVICES.
7)	ALL VOLUME DAMPERS IN NON-ACCESSIBLE CEILINGS SHALL HAVE A CONTROL ARM EXTENDED TO AN ACCESSIBLE LOCATION (TYPING REGULATORS OR ROTO-TEST). EXACT LOCATION OF CONTROL DEVICES VISIBLE IN FINISHED SPACES SHALL BE COORDINATED WITH THE ARCHITECT.
8)	ALL 90 DEGREE TRUNK DUCT ELBOWS SHALL BE SMOOTH-ROUND OR SQUARE WITH TURNING VANES.
9)	MECHANICAL CONTRACTOR SHALL LOCATE AND COORDINATE EXACT LOCATION OF PIPING AND DUCTWORK AND PENETRATIONS WITH THE STRUCTURE.
10)	MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL BE 6' OR AS SHOWN ON DRAWINGS.
11)	ALL DUCTWORK, EQUIPMENT AND PIPING SHALL BE SEISMICALLY SUPPORTED PER SMACNA AND LOCAL REGULATIONS.
12)	ALL AIR FILTERS SHALL HAVE EFFICIENCY BASED ON THE ASHRAE STANDARD 52-76 (ATMOSPHERIC DUST SPOT).
13)	ALL MECHANICAL EQUIPMENT SHALL CONFORM TO SMACNA AND LOCAL REGULATIONS FOR SEISMIC RESTRAINT (INCLUDING PIPING AND DUCTWORK).
14)	ALL EQUIPMENT AND ACCESSORIES IN CONCEALED SPACES REQUIRING ACCESS SHALL HAVE ACCESS DOORS.
15)	TOTAL SYSTEM SHALL BE WARRANTED FOR ONE YEAR, STARTING FROM THE TIME OF OWNER/ENGINEER'S FINAL ACCEPTANCE.
16)	HVAC NOTES: A) PROVIDE FLEXIBLE CONNECTION IN ALL DUCTS CONNECTING TO AIR MOVING EQUIPMENT AS CLOSE TO FAN AS POSSIBLE. FLEXIBLE CONNECTION SHALL CONSIST OF 6" OR MORE OF AIR TIGHT, FIREPROOF FLEXIBLE NEOPRENE COATED WOVEN FIBROUS GLASS MATERIAL VENT FABRICS, INC. B) ALL DUCTWORK SHALL BE SHEET METAL SOUND LINE RECTANGULAR SUPPLY AND RETURN DUCTS WITHIN 10 FEET FROM THE UNIT OPENINGS. C) ALL SUPPLY AND RETURN FLEXIBLE DUCTS SHALL BE CONSTRUCTED OF DOUBLE LAMINATION OF POLYESTER ENCAPSULATED STEEL WIRE HELIX FOR INNER CORE HIGH DENSITY FIBERGLASS INSULATION AND GRAY POLYESTER FILM WITH SPIRAL REINFORCEMENTS EQUAL TO "ATCO-70 SERIES" (MIN. POS. PRESS. = 6" W.G., NEG. PRESS. = 0.75" W.C.). D) PROVIDE LOCKABLE VOLUME DAMPERS IN ALL AIR DISTRIBUTION OUTLETS. E) DUCT HANGERS, SUPPORTS AND METHODS OF INSTALLATION SHALL CONFORM TO ASHRAE AND SMACNA RECOMMENDATIONS. F) DUCT SIZES SHOWN ON PLANS INDICATE INSIDE FREE AREA. G) ALL DUCTWORK SHALL BE CLASS 1 AIR DUCT AS APPROVED BY U.L.-181. H) DUCTS - SHEET METAL DUCTS SHALL BE INSULATED WITH THE INSULATION AND THICKNESSES AS SHOWN HEREIN (REDUCE THE INSULATION THICKNESS BY THERMAL VALUE OF SOUND LINING). 1. SUPPLY AIR DUCTS IN HEATED SPACE; NO INSULATION REQUIRED IF SOUNDLINED, OTHERWISE 1" THICK K = 0.23 @ 75 DEGREES F. 2. SUPPLY AIR DUCTS IN NON-HEATED SPACE, APPROXIMATELY 3" THICK K=0.23 @ 75 DEGREES F., TO PROVIDE A MINIMUM THERMAL RESISTANCE VALUE OF MINIMUM R-11. 3. SUPPLY AIR DUCTS OUTSIDE OF BUILDING SAME AS CONDITIONED SPACE EXCEPT WITH WEATHERPROOF BARRIER. 4. RETURN AIR DUCTS; SHALL HAVE SAME INSULATION AS THE SUPPLY AIR DUCTS. 5. EXHAUST AIR DUCTS; NO INSULATION REQUIRED. 6. INDOOR DUCTS HANDLING OUTSIDE AIR SHALL HAVE FIBERGLASS BLANKET WITH VAPOR BARRIER JACKET (S), 1" THICK, K = 0.23 @ 75 DEGREES F. (ALL DUCTWORK FOR THE BUILDING SUPPLY FAN AND OUTSIDE AIR INTAKES TO INDIVIDUAL HEAT PUMPS).
17)	THE CONTRACTOR SHALL NOT OPERATE THE EQUIPMENT FOR TEMPORARY HEATING OR VENTILATION DURING THE CONSTRUCTION. (ALL EQUIPMENT SHALL RUN FOR TESTING AND BALANCING PURPOSES ONLY). NOTIFY THE ENGINEER 48 HOURS (MINIMUM) IN ADVANCE TO ARRANGE A FINAL FIELD INSPECTION PRIOR TO COVERING UP THE CEILING.
18)	CONTRACTOR IS TO BRING UP THE DISCREPANCIES AND ITEMS WHICH ARE NOT SPECIFICALLY CALLED FOR OR SHOWN BUT ARE REQUIRED FOR A COMPLETE MECHANICAL SYSTEM AND AFFECT HIS CONTRACT PRIOR TO ENTERING AND SIGNING THE CONTRACT; AFTER AWARDING THE CONTRACT ALL SUCH ITEMS REQUIRED FOR A COMPLETE SYSTEM READY FOR THE OWNER'S BENEFICIAL USE SHALL BE FURNISHED AND INSTALLED INCLUDING ALL SUCH DISCREPANCY ITEMS MENTIONED ABOVE, AT NO ADDITIONAL COST TO THE OWNER AND PER LOCAL CODES, MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE STANDARDS WITH THE ARCHITECT/ENGINEER'S APPROVAL.
19)	ALL EQUIPMENT SUPPLIED FOR THESE SPECIFICATIONS SHALL BE FREE FROM DEFECTS IN MATERIAL, WORKMANSHIP, AND TITLE, AND SHALL BE OF THE KIND AND QUALITY DESCRIBED HEREIN. IF IT APPEARS WITHIN ONE YEAR FROM DATE OF FINAL ACCEPTANCE THAT EQUIPMENT DOES NOT MEET THE WARRANTIES ABOVE, THE CONTRACTOR SHALL IMMEDIATELY CORRECT ANY DEFECT AND SHALL RESTORE THE SYSTEM TO THE ORIGINAL SATISFACTORY CONDITIONS AT HIS EXPENSE. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF OTHER WARRANTIES, WHETHER WRITTEN, ORAL, IMPLIED OR STATUTORY. NO WARRANTY OF MERCHANTABILITY OF FITNESS FOR PURPOSE SHALL APPLY. (THE WARRANTY SHALL START FROM THE TIME OF ARCHITECT/ENGINEER'S FINAL ACCEPTANCE.)
20)	ENTIRE INSTALLATION OF ALL EQUIPMENT, CONTROL, PIPING, DUCTWORK AND RELATED ACCESSORIES SHALL BE PER BASIC OWNERS' STANDARDS. MECHANICAL CONTRACTOR IS TO FAMILIARIZE HIMSELF WITH THESE STANDARDS.
21)	MECHANICAL CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE ROUTING AND INSTALLATION FEASIBILITY OF ALL EQUIPMENT, PIPING AND DUCTWORK PRIOR TO SUBMITTING HIS BID AND INCLUDE IN HIS BID ADDITIONAL PIPING, DUCTWORK, FITTINGS, OFFSETS, ETC. WHICH MIGHT BE REQUIRED FOR A COMPLETE SYSTEM READY FOR OWNER'S BENEFICIAL USE.
22)	COORDINATE THE CONSTRUCTION SCHEDULE WITH THE ARCHITECT AND PERFORM ALL REQUIRED WORK IN STRICT ACCORDANCE WITH THE OWNER'S SCHEDULE.
23)	MECHANICAL CONTRACTOR SHALL PAY FOR AND OBTAIN ALL REQUIRED PERMITS AND CERTIFICATES REQUIRED BY THE AUTHORITIES HAVING JURISDICTION.
25)	ADJUST ALL EQUIPMENT AND PERFORM A COMPLETE AIR-BALANCING AND PUT ALL MECHANICAL SYSTEMS IN OPERATION AND SUBMIT A COPY BALANCING REPORTS TO THE OWNER/ARCHITECT.

SPLIT HEAT PUMP SCHEDULE								
DESIGNATION:	IHP-1	OHP-1	IHP-2	OHP-2	IHP-3A	IHP-3B	IHP-3C	OHP-3
ZONE/FLOOR:	UPPER LEVEL	UPPER LEVEL	MAIN LEVEL	MAIN LEVEL	BEDROOM	RECREATION RM	THEATRE	BASEMENT
MANUFACTURER:	TRANE	TRANE	TRANE	TRANE	MITSUBISHI	MITSUBISHI	MITSUBISHI	MITSUBISHI
MODEL:	TAM9A0C48V41	4TW7048	TAM9A0C48V41	4TW7048	MLZ-KP08NA	MLZ-KP12NA	MLZ-KP12NA	MXZ-3C30NA2
UNIT:	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	INDOOR	INDOOR	OUTDOOR
NOMINAL TONS	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.5
COOLING * ARI (MBH):	47.60	47.60	47.60	47.60	9.0	12.0	12.0	15.1
HEATING * LOW ARI (MBH):	29.80	29.80	29.80	29.80	12.0	15.0	15.0	23.7
SEER	17.0	17.0	17.0	17.0	17.0	17.0	17.0	19.0
COP (HSPF):	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.9 (10.6)
CFM:	1450	1450	1450	1450	212	297	297	297
ESP (IN-H2O):	.50"	.50"	.50"	.50"	.68 FLA	.68 FLA	.68 FLA	.68 FLA
INDOOR FAN HP(FLA):	3/4	3/4	3/4	3/4	---	---	---	---
OUTDOOR FAN(FLA):	---	---	---	---	---	---	---	---
COMPRESSOR RLA/LRA:	---	21.2/104	---	21.2/104	---	---	---	INVERTER
HEATER (KW)	7.2	7.2	7.2	7.2	---	---	---	---
MCA/MOCP:	34.6/50	28/45	34.6/50	28/45	1 AMP	1 AMP	1 AMP	22.1/25
VOLTAGE:	230	230	230	230	230	230	230	230
PHASE:	1	1	1	1	1	1	1	1
WEIGHT (LBS):	175	162	175	162	34	34	34	137
REMARKS:	(1)(2)(4)	(3)(4)(6)	(1)(2)(4)	(3)(4)(6)	(1)(2)(4)(7)	(1)(2)(4)(7)	(1)(2)(4)(7)	(3)(4)(6)(7)

(1) FULLY CASED COIL WITH CONDENSATE DRAINS, REFRIGERANT PIPING CONNECTIONS.
(2) INSTALL UNIT AS SHOWN AND AS RECOMMENDED BY THE MANUFACTURER AND IN COMPLIANCE WITH LOCAL CODES.
(3) R410A REFRIGERANT, COMPRESSOR SHORT CYCLE PROTECTOR, HIGH/LOW PRESS. SWITCH, DEFROST CONTROL, FILTER DRIER AND LIQUID SOLENOID VALVE, THERMOSTATIC EXPANSION VALVE, SINGLE POINT ELECTRICAL CONNECTION CONSULT MANUFACTURERS FOR ACCESSORIES REQUIRED DUE TO LOCATION OF INDOOR/OUTDOOR UNITS.
(4) EACH INDOOR/OUTDOOR UNIT SHALL HAVE THE STATE ENERGY CODE APPROVED CERTIFICATIONS IN ORDER TO MEET THE REQUIRED ENERGY RATINGS, TESTS & CERTIFICATIONS AS COMBINED UNITS.
(6) INCLUDE PROGRAMMABLE WSEC COMPLIANT THERMOSTAT.
(7) INCLUDE BRANCH BOX ACCESSORY.
NOTE: CONTRACTOR SHALL USE REFRIGERANT LONG LINE GUIDE FOR PIPE SIZING PER MANUFACTURER WHEN LINES EXCEED 50 FT IN LENGTH. VERIFY WITH MFG FOR EXACT SIZES.

ENERGY RECOVERY VENTILATOR (DOAS)	
DESIGNATION:	ERV-1
ZONE:	BASEMENT
MANUF:	LIFEBREATH
MODEL:	METRO 120F
DRIVE:	DIRECT
SUPPLY CFM:	60
EXHAUST CFM:	60
ESP (IN-H2O):	50"
HEAT RECOVERY SENSIBLE EFF. (HEATING):	80%
ELECTRIC HEATER - KW:	---
SUPPLY AIR TEMP (WINTER):	60 °F
HP:	---
MCA/MOCP:	154 WATTS
VOLTAGE:	120
PHASE:	1
WEIGHT:	---
REMARKS:	(1)

(1) ERV SHALL PROVIDE WHOLE HOUSE VENTILATION AND SHALL RUN CONTINUOUSLY.

Minimum Whole House Outside Air Ventilation Schedule 2018 IMC						
Equip. Tag	Zone Tag	Occupancy Category	Floor Area (sf)	0.01 x A floor	Number of Bedrooms (Min. of 1)	Proposed CFM Outdoor Air Intake Flow (Min. 30 cfm)
ERV-1	Residence	Residence	1709	17.1	1	25
IHP-1 & IHP-2	Residence	Residence	3910	39.1	5	77

ENERGY CODE NOTES:	
1)	THERMOSTATS SHALL BE A 7 DAY PROGRAMMABLE TYPE WITH A 5 DEGREE DEADBAND AND AUTOMATIC SETBACK CONTROL PER R403.
2)	HVAC EQUIPMENT SHALL MEET THE MINIMUM ENERGY EFFICIENCY RATINGS PER TABLES C403 WSEC.
3)	DUCT INSULATION AND SEALING SHALL MEET WSEC SECTION R403.3 REQUIREMENTS.
4)	PIPING INSULATION SHALL MEET THE REQUIREMENTS OF TABLE R403.4 WSEC.
5)	OUTSIDE AIR DUCTS SHALL BE INSULATED PER WSEC R403.3.7. OUTSIDE AIR DUCTS SHALL HAVE A MOTORIZED DAMPERS OR AUTOMATIC DAMPER FOR ALL OUTSIDE AIR INTAKES 403.2.4.4 WSEC.

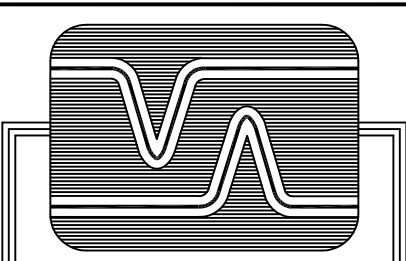
DESIGN CODES:	
ALL CODES WITH WASHINGTON STATE AMENDMENTS	
2018 RESIDENTIAL WASHINGTON STATE ENERGY CODE	
2018 INTERNATIONAL MECHANICAL CODE	
2018 UNIFORM PLUMBING CODE	
2018 INTERNATIONAL FIRE CODE	

FAN SCHEDULE	
DESIGNATION:	EF-1
ZONE:	BATH/TOILET/LAUNDRY
MANUF:	PANSONIC
MODEL:	FV-05-11VK2
TYPE:	CEILING
DRIVE:	DIRECT
CFM:	110
ESP (IN-H2O):	0.10"
SONES (dBA):	<0.3
HP FLA:	.10 AMPS
VOLTAGE:	120
PHASE:	1
WEIGHT:	---
REMARKS:	(1)(2)

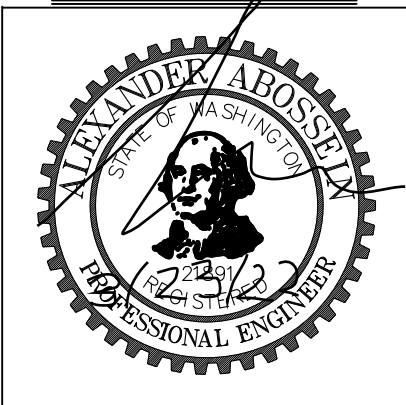
(1) SOURCE SPECIFIC FAN SHALL BE AMCA 210 OR HM 916.
(2) CONTROLLED BY LIGHT SWITCH

LEGEND		
SYMBOL	ABBREVIATION	DESCRIPTION
	TSTAT/SENSOR	THERMOSTAT/SENSOR
	---	DUCTWORK W/ TURNING VANE AND FLEX CONN.
	VD	VOLUME DAMPER
	---	RIGID DUCT
	---	FLEXIBLE DUCT
	---	ROUND SPIN-IN WITH V.D.
	FD	1 HR FIRE DAMPER
	SFD	2 HR SMOKE FIRE DAMPER
	CFD	CEILING RADIATION FIRE DAMPER
	---	1 HR FIRE RATED WALL
	---	2 HR FIRE RATED WALL
	CD	SQUARE CEILING DIFFUSER
	CG	SQUARE CEILING GRILLE
	CD	CONDENSATE DRAIN LINE
	---	SMOKE DUCT DETECTOR
	A.F.F.	ABOVE FINISHED FLOOR

SHEET INDEX	
M1.0	GENERAL NOTES, LEGEND & SHEET INDEX
M2.0	LOWER LEVEL FLOOR PLAN - HVAC
M3.0	MAIN LEVEL FLOOR PLAN - HVAC
M4.0	UPPER LEVEL FLOOR PLAN - HVAC
M4.0	SPECIFICATIONS



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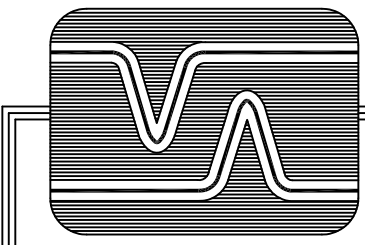
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SHEET TITLE:
GENERAL NOTES, SCHEDULES AND LEGEND

Revisions: _____ Date: _____
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Job No.: 222019
Date: 03/17/2022

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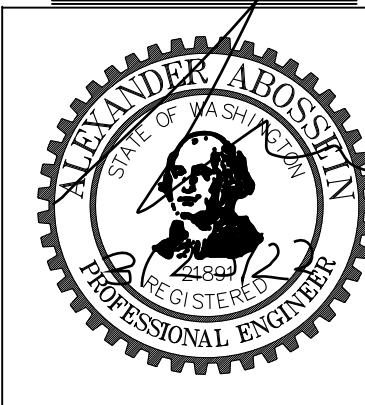
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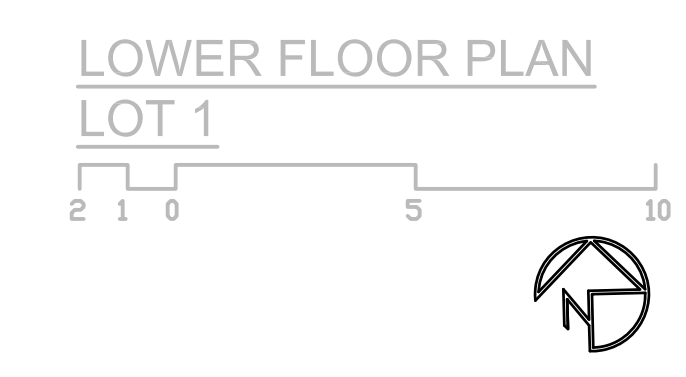
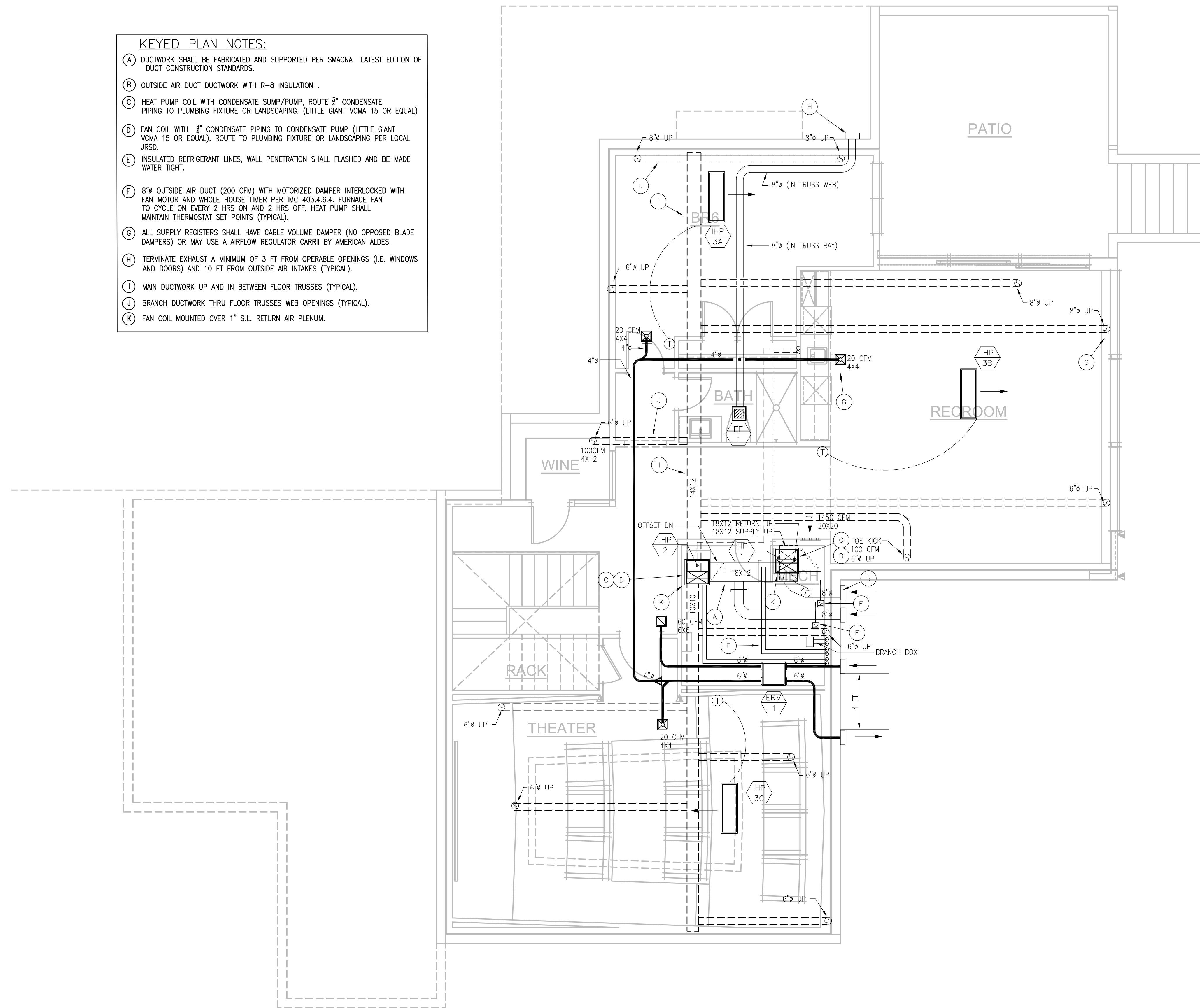
SHEET TITLE:
BASEMENT FLOOR PLAN
HVAC

Revisions: Date:
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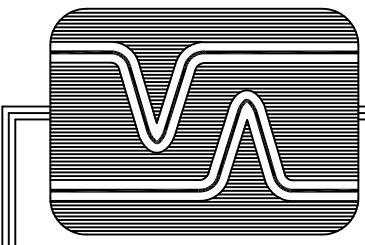
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- KEYED PLAN NOTES:**
- (A) DUCTWORK SHALL BE FABRICATED AND SUPPORTED PER SMACNA LATEST EDITION OF DUCT CONSTRUCTION STANDARDS.
 - (B) OUTSIDE AIR DUCT DUCTWORK WITH R-8 INSULATION .
 - (C) HEAT PUMP COIL WITH CONDENSATE SLUMP/PUMP, ROUTE 3" CONDENSATE PIPING TO PLUMBING FIXTURE OR LANDSCAPING. (LITTLE GIANT VOMA 15 OR EQUAL)
 - (D) FAN COIL WITH 3" CONDENSATE PIPING TO CONDENSATE PUMP (LITTLE GIANT VOMA 15 OR EQUAL). ROUTE TO PLUMBING FIXTURE OR LANDSCAPING PER LOCAL JRSO.
 - (E) INSULATED REFRIGERANT LINES, WALL PENETRATION SHALL FLASHED AND BE MADE WATER TIGHT.
 - (F) 8" OUTSIDE AIR DUCT (200 CFM) WITH MOTORIZED DAMPER INTERLOCKED WITH FAN MOTOR AND WHOLE HOUSE TIMER PER INC. 403.4.6.4. FURNACE FAN TO CYCLE ON EVERY 2 HRS ON AND 2 HRS OFF. HEAT PUMP SHALL MAINTAIN THERMOSTAT SET POINTS (TYPICAL).
 - (G) ALL SUPPLY REGISTERS SHALL HAVE CABLE VOLUME DAMPER (NO OPPOSED BLADE DAMPERS) OR MAY USE A AIRFLOW REGULATOR CARRI BY AMERICAN ALDES.
 - (H) TERMINATE EXHAUST A MINIMUM OF 3 FT FROM OPERABLE OPENINGS (I.E. WINDOWS AND DOORS) AND 10 FT FROM OUTSIDE AIR INTAKES (TYPICAL).
 - (I) MAIN DUCTWORK UP AND IN BETWEEN FLOOR TRUSSES (TYPICAL).
 - (J) BRANCH DUCTWORK THRU FLOOR TRUSSES WEB OPENINGS (TYPICAL).
 - (K) FAN COIL MOUNTED OVER 1" S.L. RETURN AIR PLENUM.



LOWER FLOOR PLAN-HVAC
SCALE: 1/4" = 1'-0"
North arrow pointing up.



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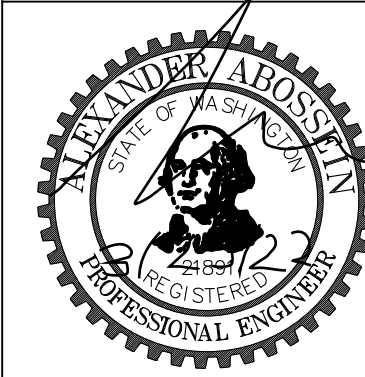
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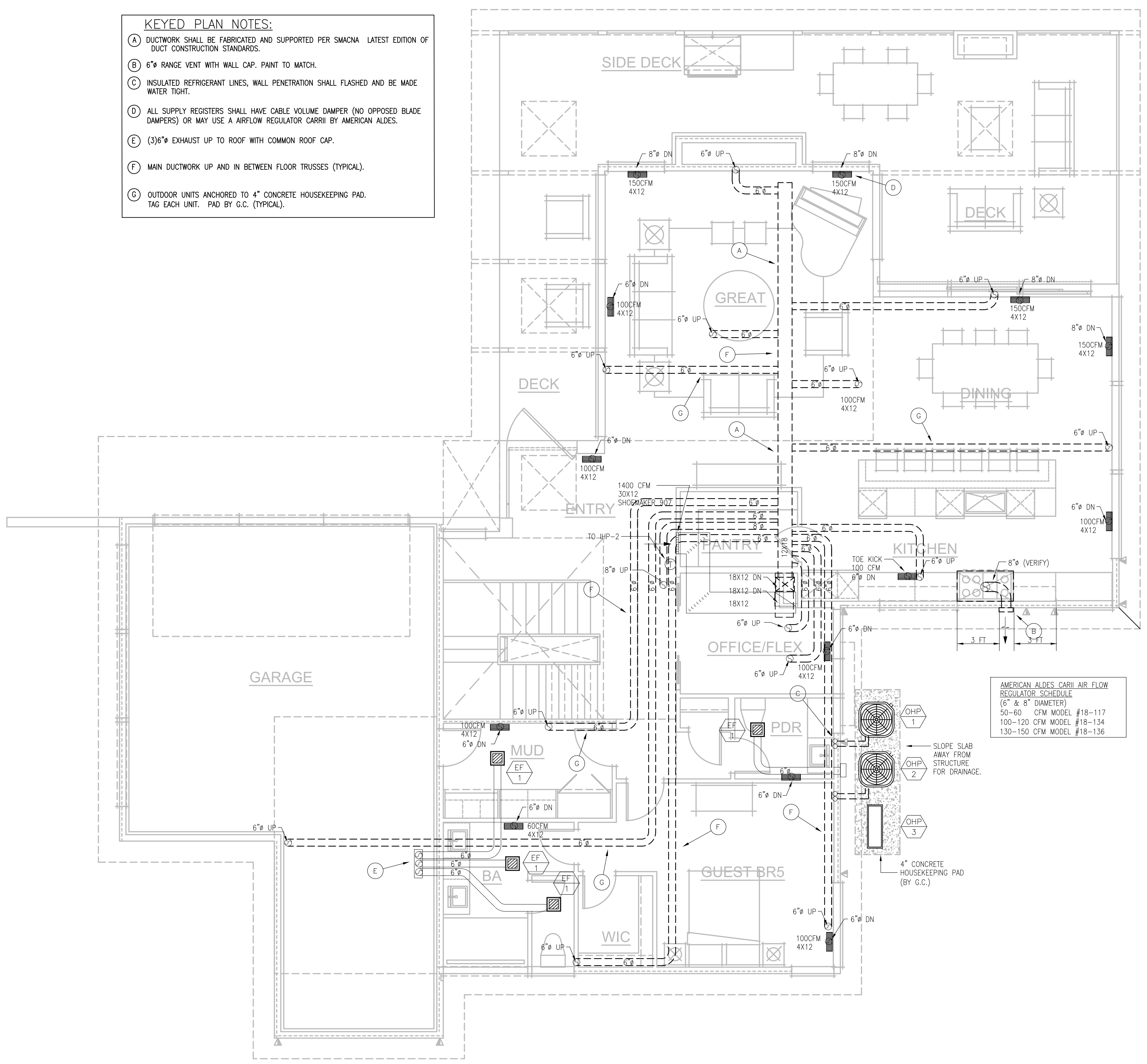
SHEET TITLE:
MAIN FLOOR PLAN - HVAC

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Date: 03/17/2022

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- KEYED PLAN NOTES:**
- A DUCTWORK SHALL BE FABRICATED AND SUPPORTED PER SMACNA LATEST EDITION OF DUCT CONSTRUCTION STANDARDS.
 - B 6" RANGE VENT WITH WALL CAP. PAINT TO MATCH.
 - C INSULATED REFRIGERANT LINES, WALL PENETRATION SHALL FLASHED AND BE MADE WATER TIGHT.
 - D ALL SUPPLY REGISTERS SHALL HAVE CABLE VOLUME DAMPER (NO OPPOSED BLADE DAMPERS) OR MAY USE A AIRFLOW REGULATOR CARRI BY AMERICAN ALDES.
 - E (3)6" EXHAUST UP TO ROOF WITH COMMON ROOF CAP.
 - F MAIN DUCTWORK UP AND IN BETWEEN FLOOR TRUSSES (TYPICAL).
 - G OUTDOOR UNITS ANCHORED TO 4" CONCRETE HOUSEKEEPING PAD. TAG EACH UNIT. PAD BY G.C. (TYPICAL).

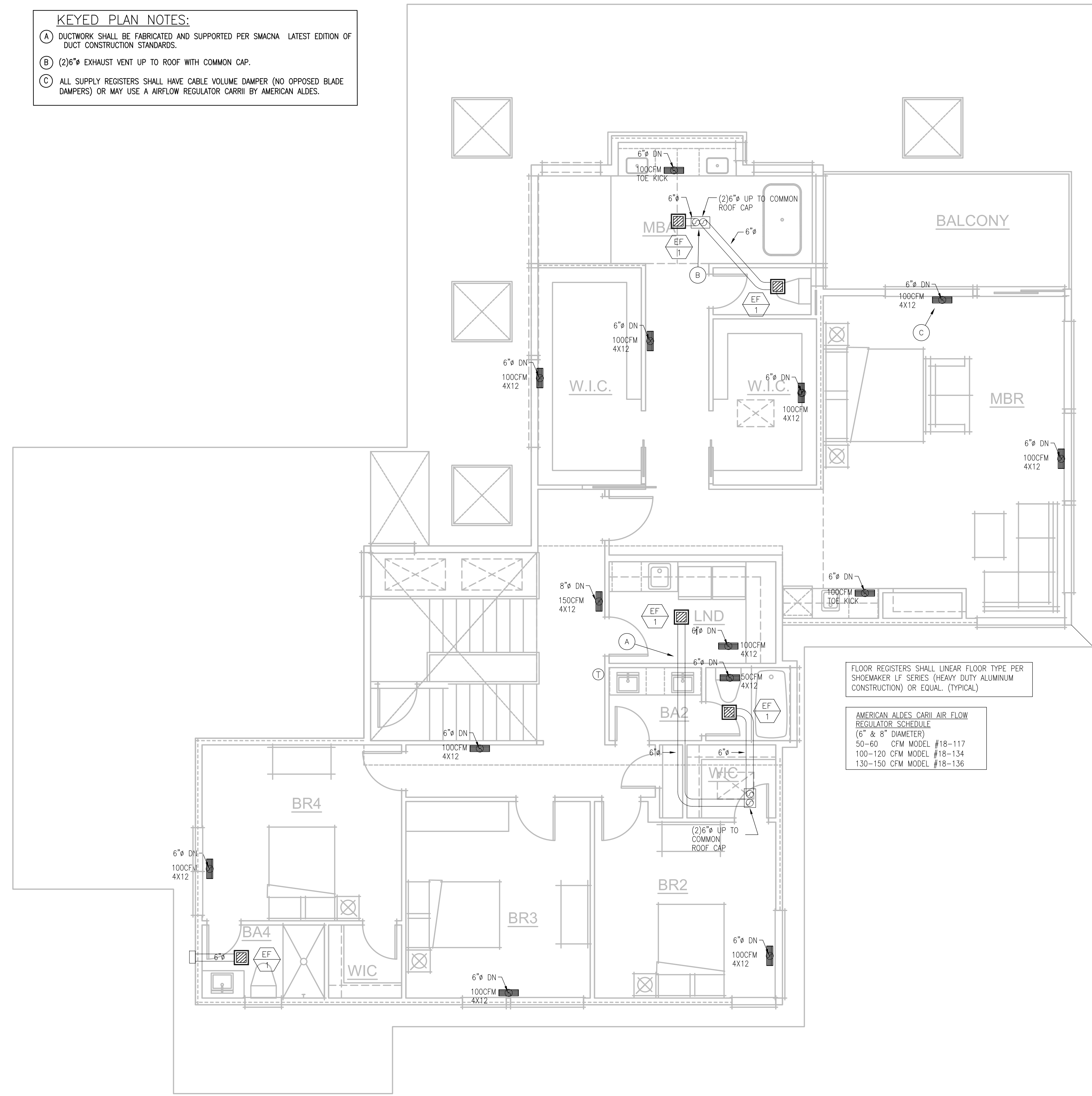


AMERICAN ALDES CARAIR AIR FLOW
REGULATOR SCHEDULE
(6" & 8" DIAMETER)
50-60 CFM MODEL #18-117
100-120 CFM MODEL #18-134
130-150 CFM MODEL #18-136



MAIN FLOOR PLAN-HVAC
SCALE: 1/4" = 1'-0"
NORTH

- KEYED PLAN NOTES:**
- (A) DUCTWORK SHALL BE FABRICATED AND SUPPORTED PER SMACNA LATEST EDITION OF DUCT CONSTRUCTION STANDARDS.
 - (B) (2)6" EXHAUST VENT UP TO ROOF WITH COMMON CAP.
 - (C) ALL SUPPLY REGISTERS SHALL HAVE CABLE VOLUME DAMPER (NO OPPOSED BLADE DAMPERS) OR MAY USE A AIRFLOW REGULATOR CARRI BY AMERICAN ALDES.



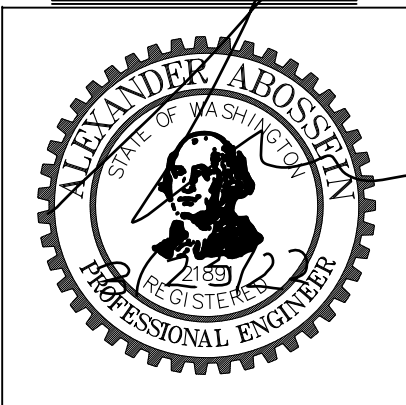
FLOOR REGISTERS SHALL LINEAR FLOOR TYPE PER SHOEMAKER LF SERIES (HEAVY DUTY ALUMINUM CONSTRUCTION) OR EQUAL. (TYPICAL)

AMERICAN ALDES CARIL AIR FLOW REGULATOR SCHEDULE (6" & 8" DIAMETER)
 50-60 CFM MODEL #18-117
 100-120 CFM MODEL #18-134
 130-150 CFM MODEL #18-136



UPPER FLOOR PLAN-HVAC
 SCALE: 1/4" = 1'-0"
 NORTH

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