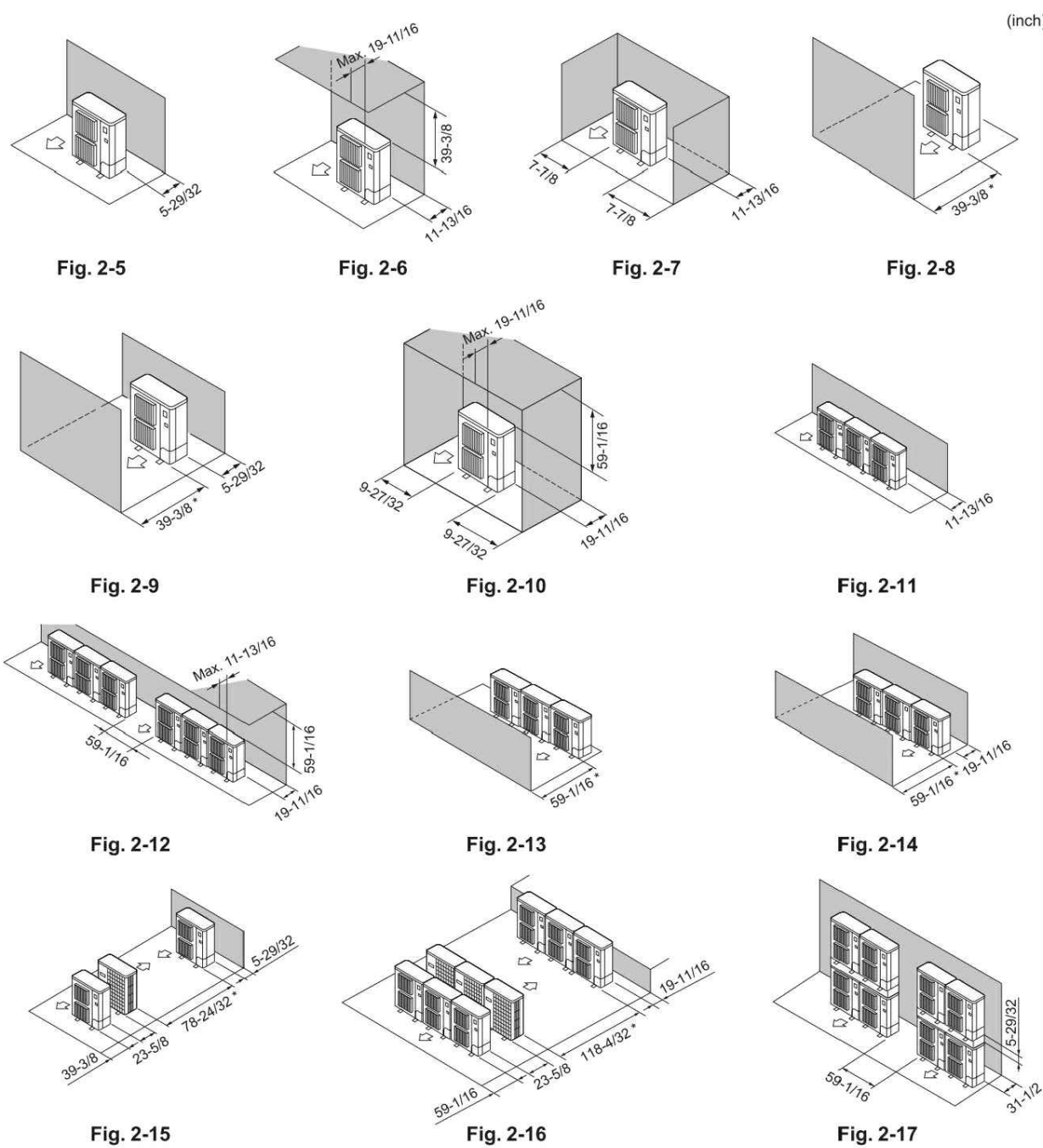


MITSUBISHI HEAT PUMP INSTALLATION REQUIREMENTS

2. Installation location



2.5.2. When installing a single outdoor unit

Minimum dimensions are as follows, except for Max., meaning Maximum dimensions, indicated.

Refer to the figures for each case.

① Obstacles at rear (Fig. 2-5)

② Obstacles at rear and above (Fig. 2-6)

③ Obstacles at rear and sides (Fig. 2-7)

④ Obstacles at front (Fig. 2-8)

⑤ Obstacles at front and rear (Fig. 2-9)

⑥ Obstacles at front and rear (Fig. 2-10)

⑦ Obstacles at rear, sides, and above (Fig. 2-11)

⑧ Do not install the optional air outlet guides for upward airflow.

2.5.3. When installing multiple outdoor units

Leave 1" (25 mm) space or more between the units.

① Obstacles at rear (Fig. 2-11)

② No more than 3 units must be installed side by side. In addition, leave space as shown.

③ Do not install the optional air outlet guides for upward airflow.

④ Obstacles at front (Fig. 2-13)

⑤ When using the optional air outlet guides, the clearance is 39-3/8" (1000 mm) or more.

⑥ Obstacles at front and rear (Fig. 2-14)

⑦ When using the optional air outlet guides, the clearance is 39-3/8" (1000 mm) or more.

⑧ Single parallel unit arrangement (Fig. 2-15)

⑨ When using the optional air outlet guides installed for upward airflow, the clearance is 39-3/8" (1000 mm) or more.

⑩ Multiple parallel unit arrangement (Fig. 2-16)

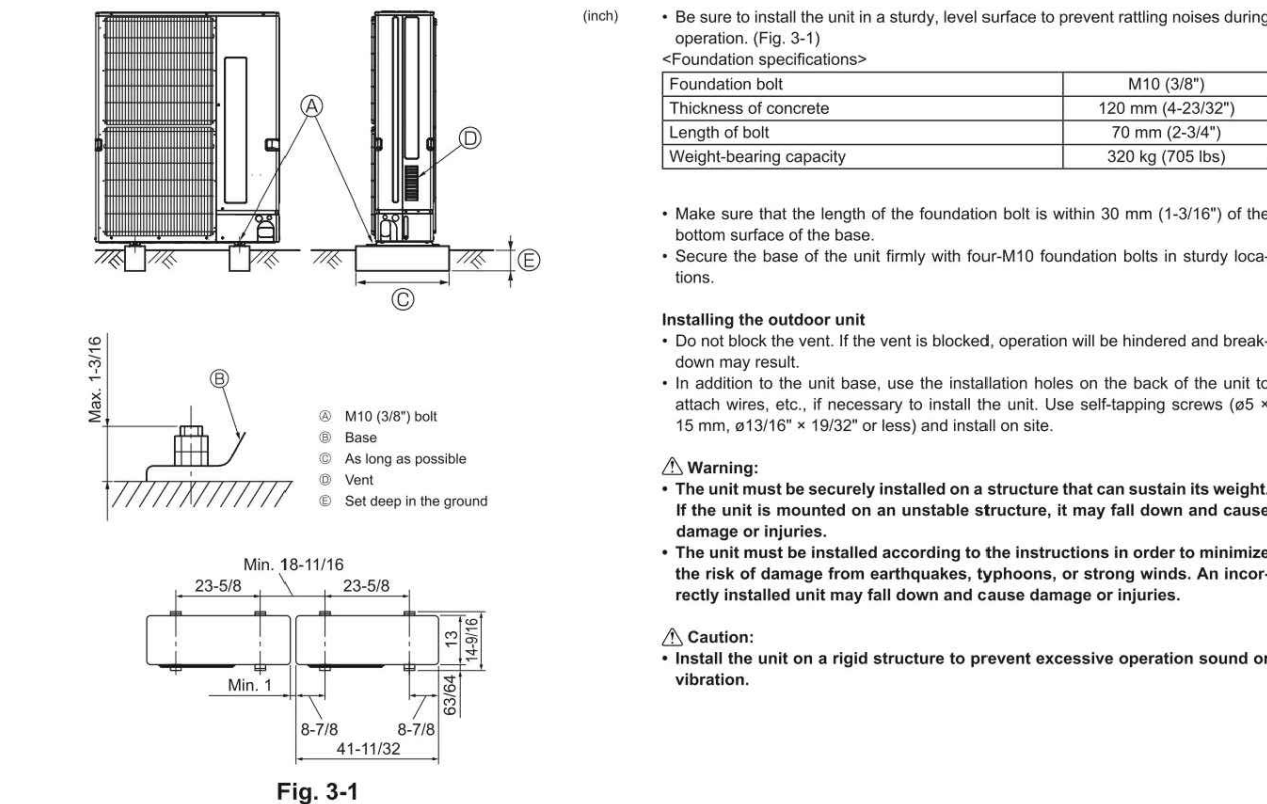
⑪ When using the optional air outlet guides installed for upward airflow, the clearance is 59-11/16" (1500 mm) or more.

⑫ Stacked unit arrangement (Fig. 2-17)

⑬ The units can be stacked up to 2 units high.

⑭ No more than 2 stacked units must be installed side by side. In addition, leave space as shown.

3. Installing the outdoor unit



4. Installing the refrigerant piping

4.1. Precautions for devices that use R410A refrigerant

Refer to page 2 for procedures not included below on using air conditioners with R410A refrigerant.

• Use ester oil, ether oil, alkylbenzene oil (small amount) as the refrigeration oil applied to the flared sections.

• Use 0.025 copper phosphorus, for copper and copper alloy seamless pipes, to connect the refrigerant pipes. Use refrigerant pipes with the thickness specified in the table to the below. Make sure the insides of the pipes are clean and do not contain any harmful contaminants such as sulfuric compounds, oxidants, debris, or dust.

△ Warning:

When installing or relocating, or servicing the outdoor unit, use only the specified refrigerant (R410A) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines.

If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards. The use of any refrigerant other than that specified for the system will cause mechanical failure or system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.

ø1.35 mm (1/4 inch), ø9.52 mm (3/8 inch)	Thickness 0.8 mm (1/32 inch)
ø1.2 mm (1/2 inch)	Thickness 1.0 mm (5/16 inch)
ø1.58 mm (5/8 inch), ø19.05 mm (3/4 inch)	Thickness 1.0 mm (5/16 inch)

△ Caution:

Follow the instructions below to prevent abrasive components contained in sandpaper and cutting tools from entering the refrigerant circuit because those components can cause failures of the compressor and valves.

• To deburr pipes, use a reamer or other deburring tools, not sandpaper.

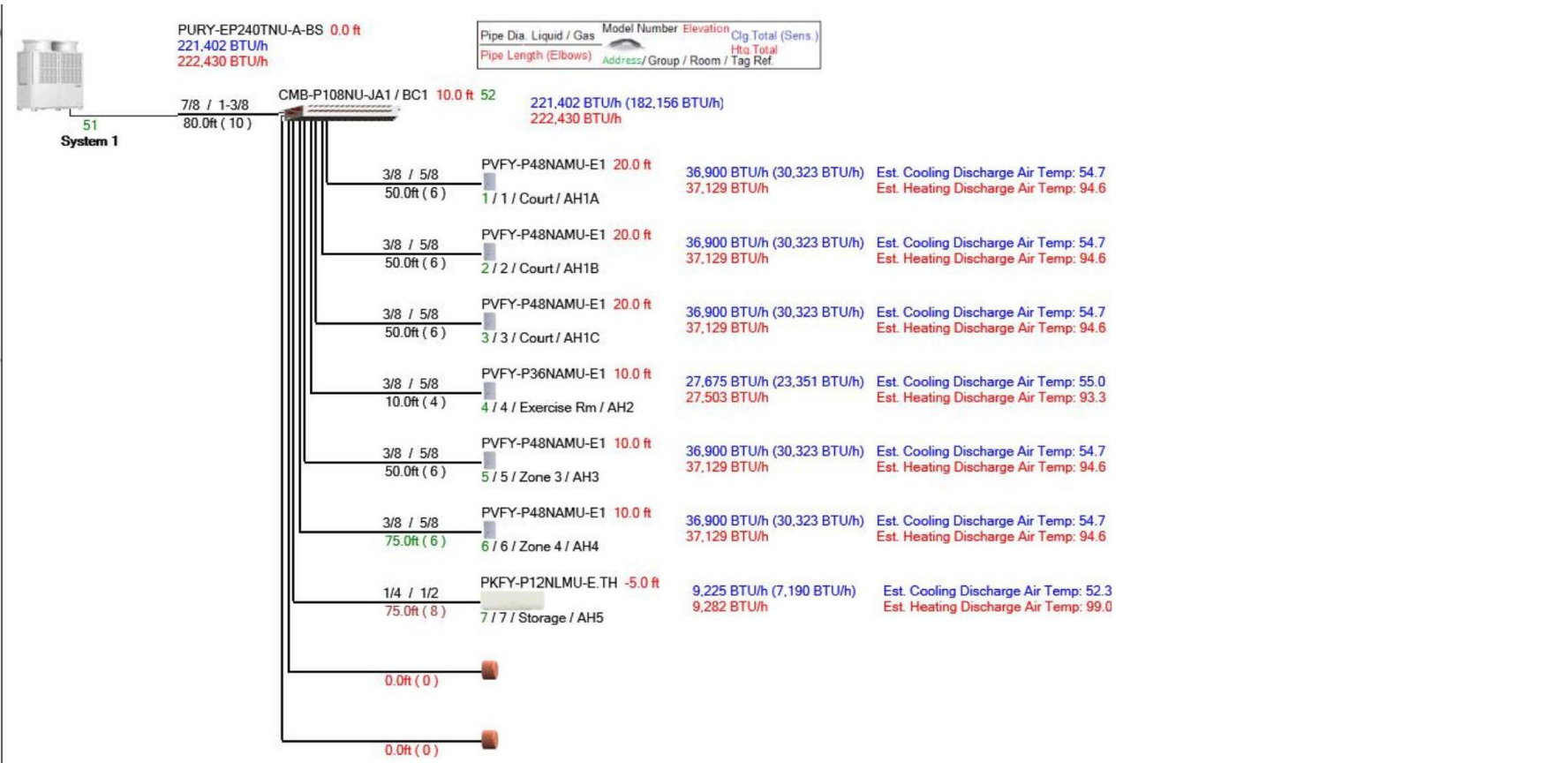
• To cut pipes, use a pipe cutter, not a grinder or other tools that use abrasive materials.

• When cutting or deburring pipes, do not allow cutting chips or other foreign matters to enter the pipes.

• If cutting chips or other foreign matters enter pipes, wipe them off the insides of the pipes.

MITSUBISHI DIAMOND DESIGNER

Indoor Units:	Capacity:	7.7 to 50
	388 / 130 to 360 (120/20)	
	* Connected capacity is not actual capacity.	
Total Pipe Length:	1253 / 2382.6	feet
Furthest Actual:	1550 / 541.0	feet
Furthest Equiv.:	1643 / 623.0	feet
Furthest IU from BC Actual:	75.0 / 197.0	feet
Furthest IU from BC Thru Sub BC Actual:	88.1 / 176.8	feet
Furthest IU from BC Thru Sub BC Equiv.:	0.0 / 0.0	feet
Correction Factors		
Outdoor Unit Capacity:	1.00	1.00
Temperature:	1.01	1.00
Piping Length:	0.91	0.97
Debiting:	0.90	
User Density:	1.00	1.00
Total Density:	0.92	0.89
Additional Refrigerant:	56.84	lb
Total Refrigerant Amount:	62.95	lb
Conditions (°F)		
Cooling		
Indoor DB	75.0	Humidity 50.0%
Indoor WB	62.5	
Outdoor DB	93.0	
Heating		
Indoor DB	70.0	
Outdoor DB	35.0	Humidity 100.0%
Outdoor WB	38.8	



GENERAL NOTES

- MECHANICAL EQUIPMENT AND DUCT OPENINGS SHALL BE PROTECTED DURING STORAGE AND ROUGH INSTALLATION PER CAL GREEN SECTION 4.504.1 TO REDUCE THE AMOUNT OF DUST OR DEBRIS WHICH MAY COLLECT IN THE SYSTEM.
- DUCT INSTALLATION SHALL BE IN CONFORMANCE WITH CHAPTER 6 OF THE 2022 CMC OR AS RECOMMENDED BY ACCA MANUALS D, J, S, SMACNA MANUALS, AND/OR THE ASHRAE HANDBOOK IF APPROVED BY OFFICIALS HAVING JURISDICTION. CARE SHALL BE EXERCISED TO SEAL ALL JOINTS AND SEAMS TO PREVENT AIR LEAKAGE.
- FLEXIBLE VIBRATION ISOLATION CONNECTORS SHALL BE INSTALLED IN SHEET METAL DUCTWORK AT THE UNIT IN BOTH THE SUPPLY AND AIR INTAKE; THESE SHALL NOT EXCEED 10.0 INCHES IN LENGTH. DUCTWORK SHALL BE PROPERLY ALIGNED AT THESE CONNECTORS WITHOUT ANY OFFSET.
- WHERE SHOWN ON THE MECHANICAL PLAN AND IF NECESSARY FOR OTHER LOCATIONS, PROVIDE RECTANGULAR DUCT OF EQUIVALENT CROSS SECTIONAL AREA TO THE ROUND DUCT SHOWN TO CLEAR OBSTRUCTIONS. PROVIDE SMOOTH TRANSITIONS WHEN THE DUCT SHAPE CHANGES.
- METAL DUCTWORK SHALL BE INSTALLED IN A WORKMAN-LIKE MANNER IN ACCORDANCE WITH ACCEPTABLE PRACTICE GIVEN IN THE ASHRAE HANDBOOK OR THE SMACNA "LOW PRESSURE DUCT CONSTRUCTION STANDARDS" MANUAL. RIGID SHEET METAL DUCTS SHALL BE AT LEAST THE MINIMUM THICKNESS REQUIRED FOR THEIR LARGEST DIMENSION AND/OR THE STATIC PRESSURE TO WHICH THEY SHALL BE SUBJECTED. THEY SHALL BE PROVIDED WITH TURNING VANES OR LONG RADIUS BENDS BOTH TO REDUCE THE PRESSURE LOSS AND TO PROVIDE A MORE UNIFORM VELOCITY DISTRIBUTION DOWNSTREAM FROM THE BEND. ALL DUCT SEAMS AND JOINTS SHALL BE AIRTIGHT AND SMOOTH FITTING. THESE SHALL BE SEALED WITH PRODUCTS SUCH AS MASTIC AND/OR FOIL-BACKED TAPE RECOMMENDED BY THE MANUFACTURER FOR THE LOCATION WHERE THEY WILL BE USED.
- RIGID DUCTWORK EXPOSED TO VIEW SHALL BE INSTALLED IN SUCH A MANNER AS TO PRESENT A NEAT APPEARANCE. THE DUCTS SHALL BE PARALLEL TO ADJACENT ARCHITECTURAL SURFACES AND HAVE AS FEW JOINTS AS POSSIBLE.

- ALL METAL DUCTS SHALL BE SECURELY SUPPORTED, HUNG, OR SUSPENDED BY METAL HANGERS, STRAPS, OR BRACKETS AND THE SUPPORT MATERIAL IN CONTACT WITH THE DUCT, OR EXTERNAL INSULATION, SHALL NOT BE LESS THAN 0.75 INCHES WIDE. THE HANGER SPACING FOR METAL DUCT SHALL NOT BE MORE THAN 10 FEET FOR RECTANGULAR DUCT OR 12 FEET FOR ROUND DUCT. HANGERS EXPOSED TO VIEW SHALL BE PLUMB AND NEAT IN APPEARANCE. ALL RECTANGULAR METAL DUCTS 24 INCHES OR WIDER AND ALL EXTERIOR DUCTS SHALL BE CROSS BROKEN OR BEADED TO PROVIDE ADDITIONAL SUPPORT. DUCTS SHALL BE INSULATED WITH FIBERGLASS DUCT INSULATION TO PROVIDE A MINIMUM DUCT INSULATION VALUE OF R-6. WYE BRANCHES AND DIFFUSER BOOTS SHALL BE INSULATED ON THEIR EXTERIOR SURFACES UNLESS THEY ARE EXPOSED TO THE WEATHER. ARE EXPOSED TO VIEW, OR COULD BE DAMAGED DURING OCCUPANCY OF THE BUILDING. ANY INSULATING MATERIAL USED SHALL MEET THE APPROPRIATE SPECIFICATIONS REQUIRED BY ASTM E-84, C-553; NEPA 90B; AND UL 181. SUCH INSULATION SHALL HAVE 100% COVERAGE AND BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- FLEXIBLE AIR DUCT SHALL BE UL LISTED CLASS 1 AIR DUCT MADE WITH A POLYESTER INTERIOR, A MOISTURE IMPERVIOUS SLEEVE AND INSULATION HAVING AN OVERALL R-VALUE NO LESS THAN 6. FOIL COVERED DUCT SHALL BE USED IN LOCATIONS WHERE HIGH RADIANT HEAT LOADS MAY BE EXPECTED. PERFORMANCE AND ASSEMBLY SHALL BE IN STRICT ACCORDANCE WITH DETAILS LISTED IN THE FLEXIBLE DUCTWORK MANUFACTURER'S APPLICATIONS MANUAL OR THE SMACNA "FLEXIBLE DUCT PERFORMANCE STANDARDS AND FLEXIBLE DUCT INSTALLATION STANDARDS". TIGHT FITTING MECHANICAL CLAMPS AND MASTIC RECOMMENDED FOR THE LOCATION SHALL BE USED TO SEAL ALL JOINTS. PARTICULAR ATTENTION SHALL BE TAKEN TO AVOID KINKS, SHARP BENDS, OR OTHER SUCH OBSTRUCTIONS IN THE DUCT. FACTORY MADE FLEXIBLE AIR DUCTS SHALL BE INSTALLED ACCORDING TO THEIR INSTALLATION INSTRUCTIONS AND STANDARDS SET BY THE CODE. DUCT WORK SHALL USE PRESSURE-SENSITIVE TAPES, MASTICS, AEROSOL SEALANTS OR OTHER CLOSURE SYSTEMS MEETING APPLICABLE UL 181A AND B REQUIREMENTS. DRAWBANDS USED WITH FLEXIBLE DUCTS SHALL BE EITHER STAINLESS-STEEL, WORM DRIVEN HOSE CLAMPS OR UV-RESISTANT NYLON DUCT TIES. IN ADDITION, DRAWBANDS MUST HAVE A MINIMUM TENSILE STRENGTH RATING OF 150 POUNDS AN DB

OUTDOOR HEAT PUMPS

Tag Reference	Model Number	Nominal Cooling Capacity (BTU/h)	Nominal Heating Capacity (BTU/h)	Cooling Efficiency IER/EEER [SEER]	Heating COP @ 47°F [HSPF]	Design Cooling Outdoor Temp DB (°F)	Design Heating Outdoor Temp WB (°F)	Corrected Cooling Total Capacity (BTU/h)	Corrected Heating Capacity (BTU/h)	Electrical 208/230 or [460V]				Notes / Options
										Voltage / Phase	MCA 208/230 or [460V]	RFS	MOCP	
HP1	PURY-EP240TNU-A-BS	240,000	250,000	19.6/10.5 [-]	3.2 [-]	90.0	34.0	221,402	222,430	208/230V/3-phase	82-75	100/90	125/125	

INDOOR AIR HANDLERS

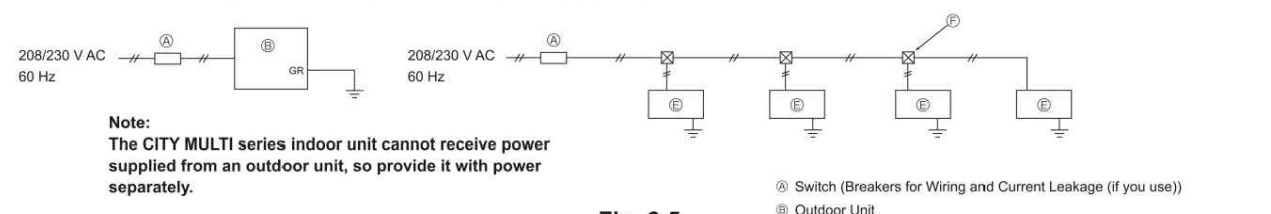
Tag Reference	Room Name	Model	Type	Nominal Cooling Capacity (BTU/h)	Nominal Heating Capacity (BTU/h)	Cooling Design Entering Temp DB/WB (°F)	Heating Design Entering Temp DB/WB (°F)	Corrected Capacity					Refrig Pipe Dim Liquid/Suc tion (inch)	Fan Speed Setting	Peak Fan Airflow (cfm)	Max Fan ESP Setting 208V/230 V (IN WG)	Voltage / Phase	Electrical MCA/MFS	Notes / Options
								Cooling Diversity Full/Partial	Cooling Total Capacity (BTU/h)	Cooling Sensible Capacity (BTU/h)	Heating Diversity Full/Partial	Heating Capacity (BTU/h)							
AH1	(3) COURT ZONE 3 ZONE 4	PVIFY-P48NAMU-E-1	Multi-P osition	48,000	54,000	75.0/62.5	70	FULL DEMAND	36,900	30,323	FULL DEMAND	37,129	3/8 / 5/8	HIGH	1,400	0.3/0.5/0.8	208/230V/1-phase	5.63/5.63/15	1, 2, 3
AH2	EXERCISE ROOM	PVIFY-P36NAMU-E-1	Multi-P osition	36,000	40,000	75.0/62.5	70	FULL DEMAND	27,675	23,351	FULL DEMAND	27,503	3/8 / 5/8	HIGH	1,095	0.3/0.5/0.8	208/230V/1-phase	4.13/4.13/15	1, 2, 3
AH3	BASEMENT	PKFY-P12NLMU-E.TH	Multi-P osition	12,000	13,500	75.0/62.5	70	FULL DEMAND	9,225	7,190	FULL DEMAND	9,282	1/4 / 1/2	HIGH	297	0.3/0.5/0.8	208/230V/1-phase	0.24/3.15	1, 2, 3
BBX	COURT	CMB-P108NU-JA-1	Multi-P osition	-	-	75.0/62.5	70	FULL DEMAND	-	-	FULL DEMAND	-	7/8 / 1-1/8	-	-	-	208/230V/1-phase	0.83/0.97	1, 2
ERV	-	ERV250TE	Multi-P osition	-	-	75.0/62.5	70	FULL DEMAND	-	-	FULL DEMAND	-	-	HIGH	244	0.3/0.5/0.8	110/120V/1-phase	3.00/3.00/15	1, 2, 4

MITSUBISHI EQUIPMENT ELECTRICAL WIRING DIAGRAM

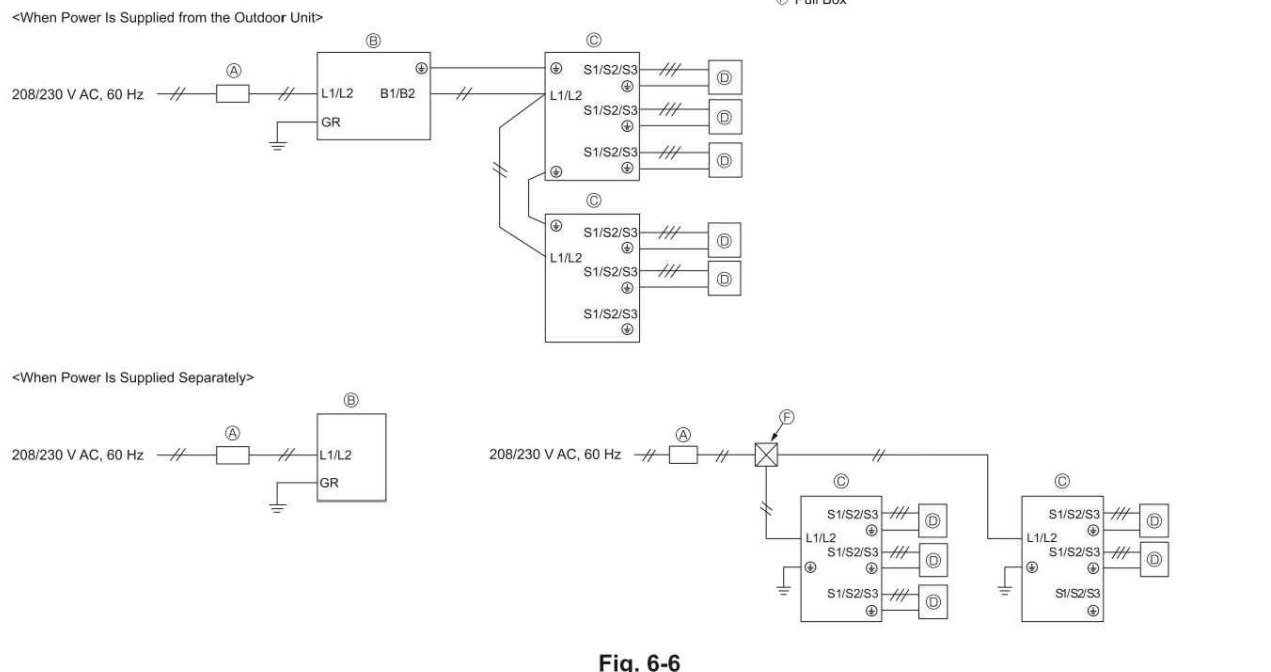
6. Electrical work

6.4. Wiring of main power supply and equipment capacity

Schematic Drawing of Wiring: When Not Using a Branch Box (Example) (Fig. 6-5)



Schematic Drawing of Wiring: When Using a Branch Box (Example) (Fig. 6-6)



Thickness of Wire for Main Power Supply and On/Off Capacities

*When power is supplied separately							
Model	Power Supply	Minimum Wire Thickness (mm² [AWG])		Breaker for Wiring*1	Breaker for Current Leakage (if you use)	Minimum circuit ampacity	Maximum rating of over current protector device
Outdoor Unit	364SN4M 238/230VAC 60 Hz Branch Box	Main Cable*2	5.3 [AWG]10.3 [AWG]10.3 [AWG]	30 A	30 A 30 mA 0.1 sec. or less	29 A	40 A
		Ground	8.4 [AWG]8.4 [AWG]8.4 [AWG]	40 A	40 A 30 mA 0.1 sec. or less	30 A	45 A
		Refer to installation manual of Branch Box.					38 A
*When power is supplied from the outdoor unit							
Model	Power Supply	Minimum Wire Thickness (mm² [AWG])		Breaker for Wiring*1	Breaker for Current Leakage (if you use)	Minimum circuit ampacity	Maximum rating of over current protector device
Outdoor Unit	364SN4M 238/230VAC 60Hz Branch Box	Main Cable*2	12.4 [AWG]12.4 [AWG]12.4 [AWG]	40 A	40 A 30 mA 0.1 sec. or less	35 A	50 A
		Ground	13.3 [AWG]13.3 [AWG]13.3 [AWG]	45 A	45 A 30 mA 0.1 sec. or less	42 A	50 A
		Refer to installation manual of Branch Box.					44 A

*1. Please follow applicable federal, state, or local codes to prevent potential leakage/electric shock. Or install a ground fault interrupt for the prevention of leakage and electric shock.

IMPORTANT
If a current leakage breaker is used, it should be compatible with higher harmonics as this unit is equipped with an inverter. The use of an inadequate breaker can cause the incorrect operation of inverter.

*2. Use copper supply wires. Use the electric wires over the rating voltage 300 V.

- CONNECT REFRIGERANT LINES TO REFRIGERANT HEADER PER MANUFACTURER'S INSTALLATION GUIDELINES
- PROVIDE CONDENSATE DRAIN LINE IN ACCORDANCE TO CMC 802.9
- PROVIDE IQAIR PERFECTPRO MERV 16, MODEL 2025 AIR FILTER SYSTEM.
- PROVIDE 2 WASHABLE MERV 6 AIR FILTERS AND OPTIONAL HEPA FILTER (MANUFACTURER PART # 21996).

REGISTERS & LOUVERS

SYMBOL	TYPE	MANUF. & MODEL	REMARKS
S1	4" x 12" SUPPLY, 146 CFM, 8" DIA. DUCT	TITUS CT-480	1, 2
S2	6" x 12" SUPPLY, 233 CFM, 10" DIA. DUCT	TITUS CT-480	1, 2
S3	12" x 24" SUPPLY, 512 CFM, 14" DIA. DUCT	EFFECTIV KOO SERIES (4X2 NOZZLE QTY, 4-59/64" DIA.)	1, 2
R1	6" x 24" SUPPLY, 146 CFM, 8" DIA. DUCT	TITUS CT-480	1, 2
R2	6" x 30" SUPPLY, 485 CFM, 14" DIA. DUCT	TITUS CT-480	1, 2
R3	6" x 40" SUPPLY, 647 CFM, 16" DIA. DUCT	TITUS CT-480	1, 2
R4	12" x 30" SUPPLY, 1,145 CFM, 20" DIA. DUCT	TITUS CT-350R	1, 2
R5	20" x 24" SUPPLY, 1,555 CFM, 20" DIA. DUCT	TITUS CT-350R	1, 2
EF	13" x 13" SUPPLY, 110 CFM, 6" DIA. DUCT	PANASONIC WHISPERGREEN FV-05-11VKS2	1, 2

- ALL CEILING MOUNTED REGISTERS SHALL BE TRIMLESS/FLUSH, COLOR TBD BY OWNER
- COORDINATE REGISTER MODEL AND PLACEMENT WITH OWNER

DRAWING SHEET INDEX

- M0.1 SCHEDULES AND NOTES
- M0.2 ACCA MANUAL J HEATING AND COOLING CALCULATIONS
- M2.1 BASEMENT AND 1ST FLOOR HEATING AND COOLING PLAN

ABBREVIATIONS

AH	AIR HANDLER	HRV	HEATING RECOVERY AND VENTILATION UNIT
CD	CEILING DIFFUSER	HWC	HOT WATER COIL
CR	CEILING RETURN	HWR	HOT WATER RETURN
CWC	CHILLED WATER COIL	KW	KILOWATTS
CWR	CHILLED WATER RETURN	LAT	LEAVING AIR TEMPERATURE
CU	CONDENSING UNIT	LWT	LEAVING WATER TEMPERATURE
CC	COOLING COIL	LV	LOUVER
D	DAMPER	LSR	LOW SIDE SUPPLY
DHW	DOMESTIC HOT WATER	OA	OUTSIDE AIR
EF	EXHAUST FAN	P	PUMP
FC	FAN COIL	RA	RETURN AIR
F	FURNACE	SA	SUPPLY AIR
HE	HEAT EXCHANGER	T	THERMOSTAT
HP	HEAT PUMP	TK	TOE KICK
HC	HEATING COIL	WH	WATER HEATER

MAJOR EQUIPMENT INSTALLATION

- INSTALLATION SHALL MEET ALL LOCAL AND NATIONAL CODES PERTAINING TO THE INSTALLATION AND OPERATION OF PLUMBING EQUIPMENT. UNLESS OTHERWISE REQUIRED BY THESE STANDARDS, THE EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
- IF "OR EQUAL" EQUIPMENT IS TO BE USED, IT MUST MEET THE PERFORMANCE SPECIFICATIONS FOR THE EQUIPMENT LISTED, AND SHALL RECEIVE PRIOR APPROVAL FROM THE MECHANICAL ENGINEER. ALL REQUESTS FOR SUBSTITUTION SHALL BE FURNISHED WITH SUFFICIENT ENGINEERING DATA TO DEMONSTRATE THAT THE PROPOSED EQUIPMENT FULL MEETS ALL THE PERFORMANCE LEVELS OF THE EQUIPMENT ORIGINALLY SPECIFIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE ENGINEERING FOR STRUCTURAL, ELECTRICAL, DUCT SIZING, ETC. CAUSED BY ANY SUBSTITUTION.
- UNITS SHALL BE INSTALLED TO PROVIDE THE CLEARANCE OR CLEARANCES SPECIFIED BY THE MANUFACTURER OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
- UNITS SHALL HAVE SUITABLE SUPPORT TO PREVENT TRANSMISSION OF OBJECTIONABLE NOISE OR VIBRATION GENERATED BY THE EQUIPMENT TO THE STRUCTURE. OUTDOOR, GROUND MOUNTED, UNITS SHALL BE LOCATED ON A LEVEL, ONE PIECE, CONCRETE PAD.
- PROVIDE AND INSTALL LOW VOLTAGE CONTROL WIRING IN CONDUIT INSTALLED BY THE MECHANICAL OR PLUMBING CONTRACTOR USING METHODS CONTAINED IN THE ELECTRICAL SPECIFICATIONS. ALL WIRING OF LINE VOLTAGE CONTROLS TO BE ACCOMPLISHED BY THE ELECTRICAL CONTRACTOR.
- CONTRACTORS SHALL CO-ORDINATE WITH THE ELECTRICAL CONTRACTOR TO ENSURE THAT ALL ELECTRICAL ACCESSORIES SUCH AS MOTOR STARTERS, CONTROL RELAYS, CIRCUIT BREAKERS, ETC. REQUIRED TO MAKE A FULLY FUNCTIONAL SYSTEMS ARE PROVIDED.

ACCA MANUAL J HEATING AND COOLING LOADS



Project Name:

Address:

OUTDOOR DESIGN CONDITIONS

Weather station: Escondido

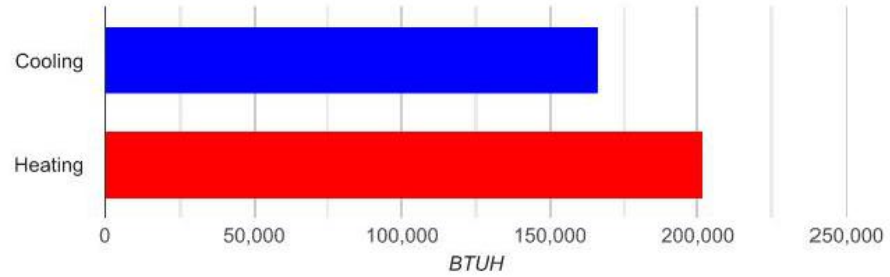
Summer Outdoor F: 93 Summer Indoor F: 75 Design Grains: 12 Daily Range: High
Winter Outdoor F: 35 Winter Indoor F: 70 Cooling RH: 50 Elevation (Ft): 660

LOAD CALCULATION TOTALS

HVAC System: default

Heated square footage: 15,639 Heating BTUH: 201,366
Cooled square footage: 15,639 Cooling BTUH: 165,869
Heated volume (above grade CF): 250,397 CFM: 7,751
Cooled volume (above grade CF): 250,397 Sensible cooling: 153,476
Exposed wall area (SF): 13,082 Latent cooling: 12,393
SHR: 0.928

Load Calculation



Approved ACCA MJ8 Calculations

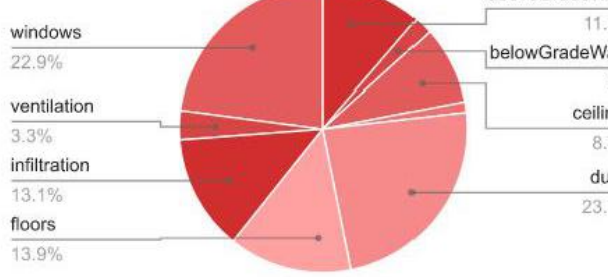
Calculations are based on the ACCA Manual J 8th Edition and are approved by ACCA. All computed calculations are estimates on building use, weather data, and inputted values such as R-Values, window types, duct loss, etc. Equipment selections should meet both the latent and sensible gain as well as building heat loss.



HEATING AND COOLING LOADS

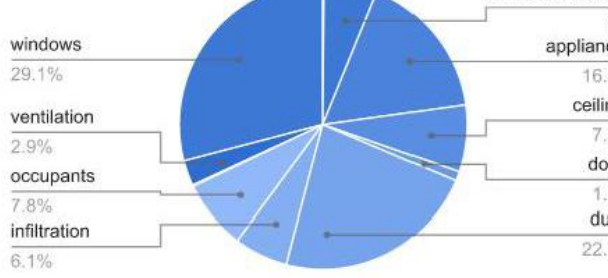
HEATING LOADS		
SECTION	AREA	HEAT LOSS
aboveGradeWalls	10,004	22,759
belowGradeWalls	2,660	4,003
ceilings	15,639	17,516
doors	144	2,369
ducts	0	47,674
floors	15,639	27,964
infiltration	0	26,309
skylights	0	0
ventilation	0	6,563
windows	2,934	46,211
Totals		201,366

Heating Loads



COOLING LOADS			
SECTION	AREA	SENSIBLE	LATENT
AEDExcursion	0	270	0
aboveGradeWalls	10,004	9,949	0
appliances	0	26,438	1,120
belowGradeWalls	2,660	0	0
ceilings	15,639	12,511	0
doors	144	1,760	0
ducts	0	36,944	697
floors	15,639	0	0
infiltration	0	7,121	2,935
occupants	0	6,800	6,000
plants	0	0	250
skylights	0	0	0
ventilation	0	3,375	1,391
windows	2,934	48,208	0
Totals		153,476	12,393

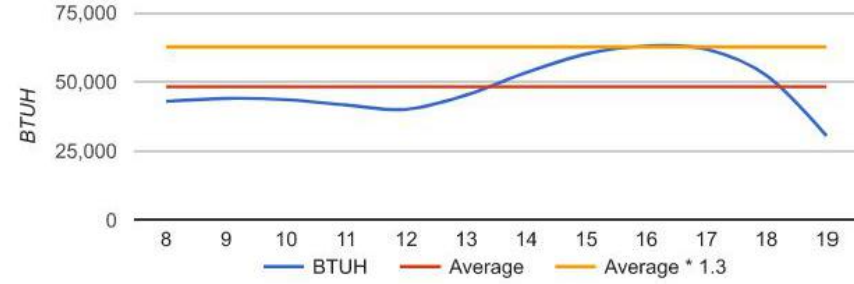
Cooling Loads



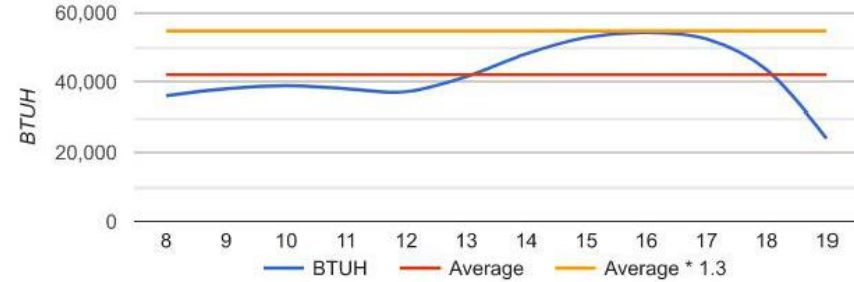
FENESTRATION LOADS

Warning (0): This application has glass areas that produced relatively large cooling loads for part of the day. Zoning may be required to overcome spikes in solar load for one or more rooms. A zoned system may be required, or some rooms may require zone control (provided by individual, motorized, thermostatically controlled dampers).

AED Graph (mid-summer)



AED graph (fall)

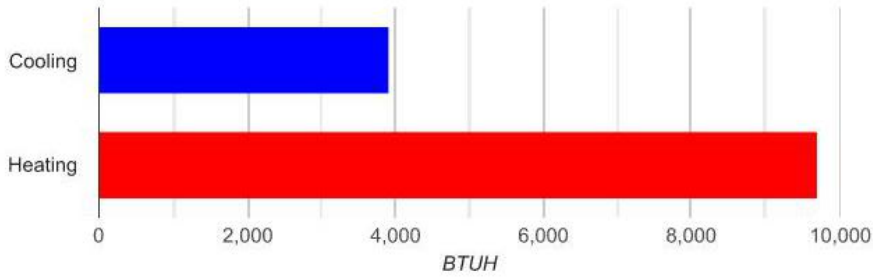


ROOM DETAIL

Room name: Air Conditioned Storage Space

Heated square footage: 1,922 Total Cooling BTUH: 3,950
Cooled square footage: 1,922 Total Heating BTUH: 9,691
Heated volume (above grade CF): 0 CFM: 197
Cooled volume (above grade CF): 0
Exposed wall area (SF): 0

Load Calculation

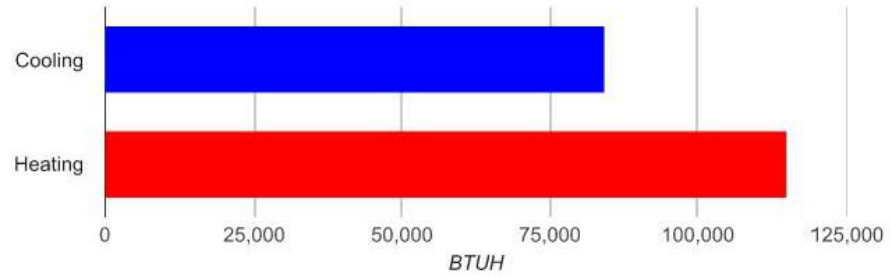


ROOM DETAIL

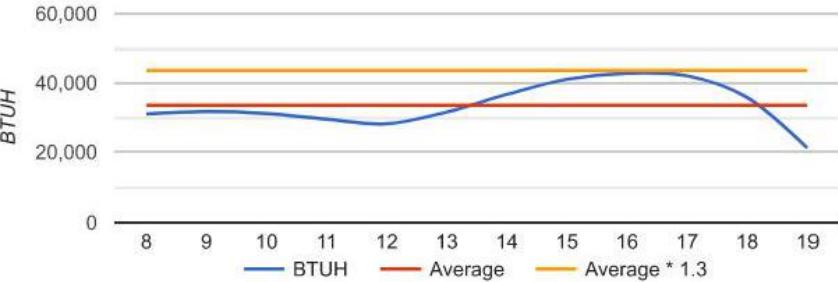
Room name: Court

Heated square footage: 8,107 Total Cooling BTUH: 84,101
Cooled square footage: 8,107 Total Heating BTUH: 115,648
Heated volume (above grade CF): 188,461 CFM: 4,948
Cooled volume (above grade CF): 188,461
Exposed wall area (SF): 8,648

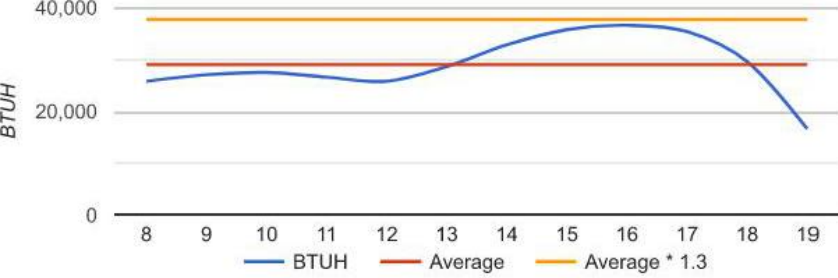
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

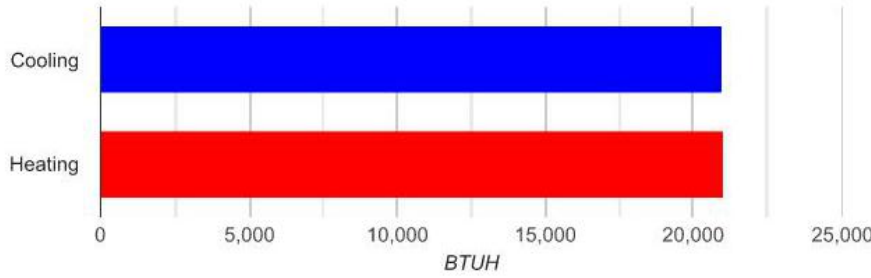


ROOM DETAIL

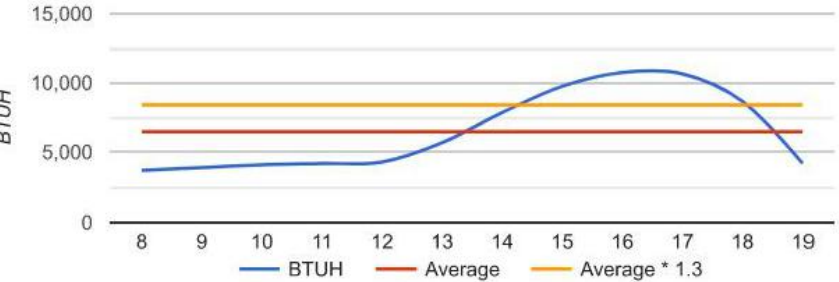
Room name: Exercise Room

Heated square footage: 1,820 Total Cooling BTUH: 20,928
Cooled square footage: 1,820 Total Heating BTUH: 21,031
Heated volume (above grade CF): 20,020 CFM: 1,092
Cooled volume (above grade CF): 20,020
Exposed wall area (SF): 1,221

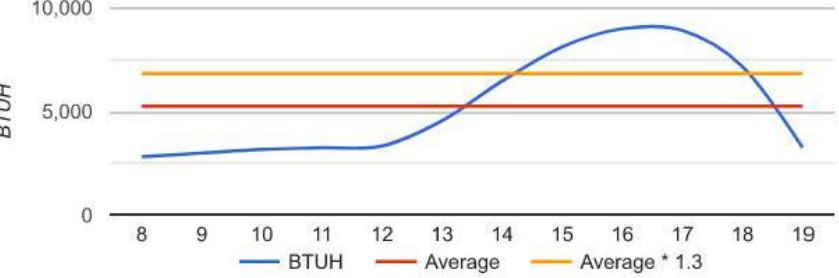
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

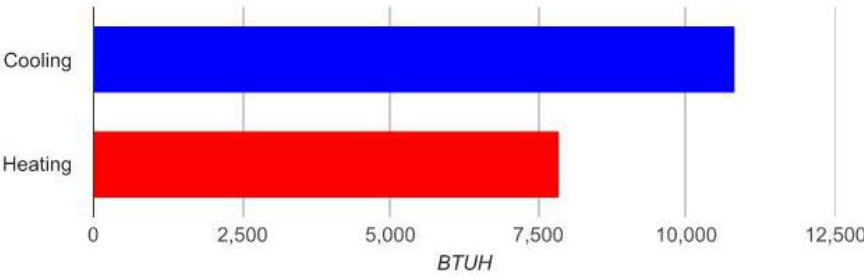


ROOM DETAIL

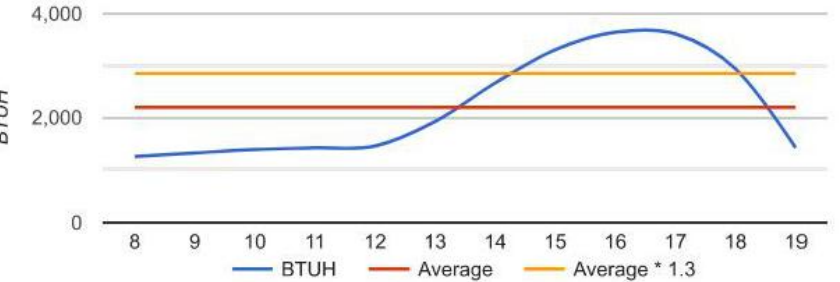
Room name: Kitchen

Heated square footage: 622 Total Cooling BTUH: 10,807
Cooled square footage: 622 Total Heating BTUH: 7,444
Heated volume (above grade CF): 6,842 CFM: 509
Cooled volume (above grade CF): 6,842
Exposed wall area (SF): 440

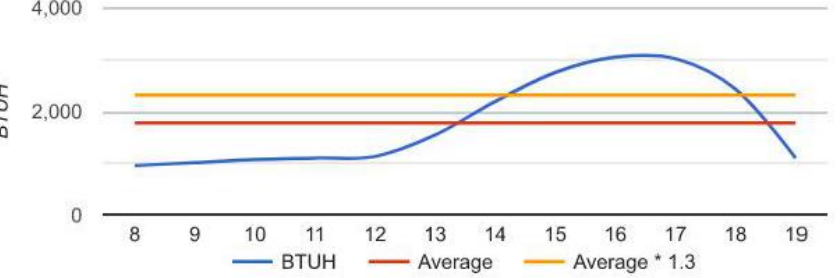
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

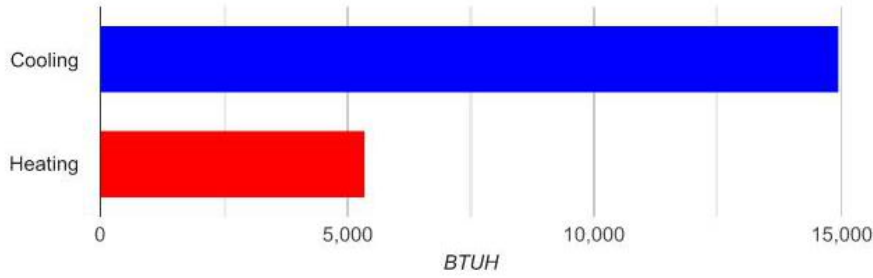


ROOM DETAIL

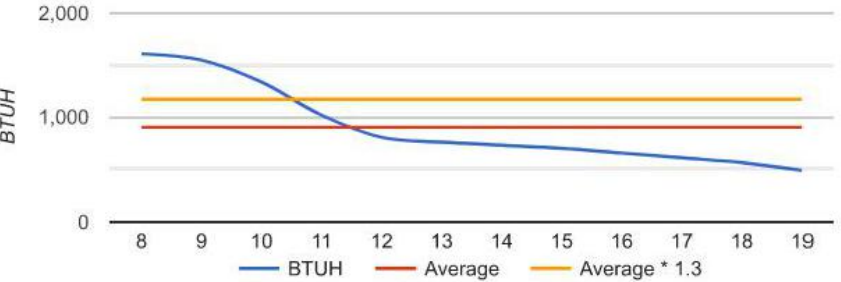
Room name: Kitchen + Dining + Living + Laundry + Powder 2

Heated square footage: 766 Total Cooling BTUH: 14,938
Cooled square footage: 766 Total Heating BTUH: 5,352
Heated volume (above grade CF): 9,575 CFM: 665
Cooled volume (above grade CF): 9,575
Exposed wall area (SF): 300

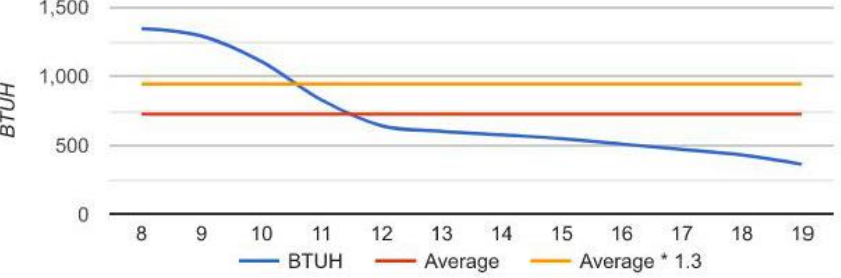
Load Calculation



AED Graph (mid-summer)



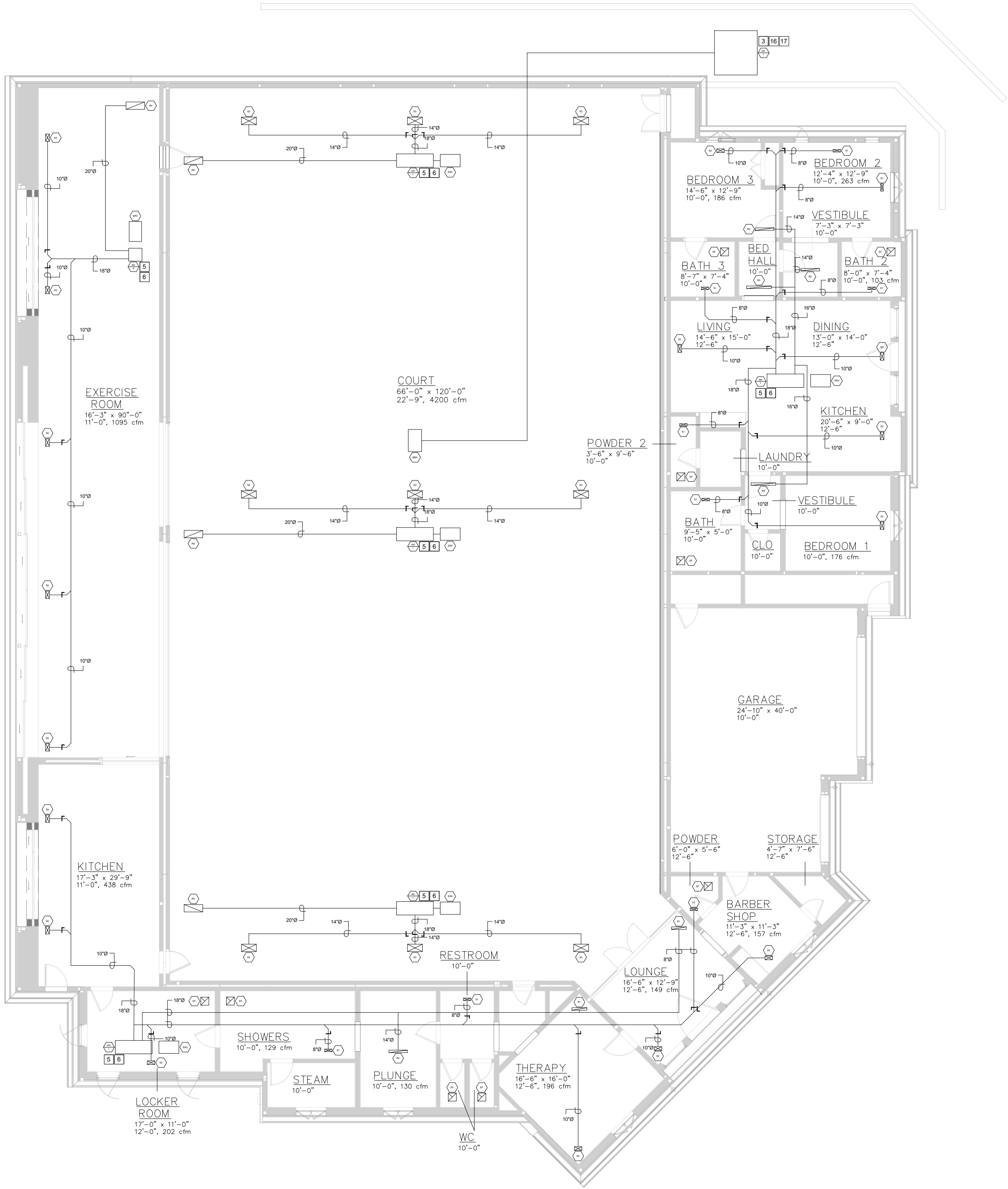
AED graph (fall)



HEATING AND COOLING PLAN

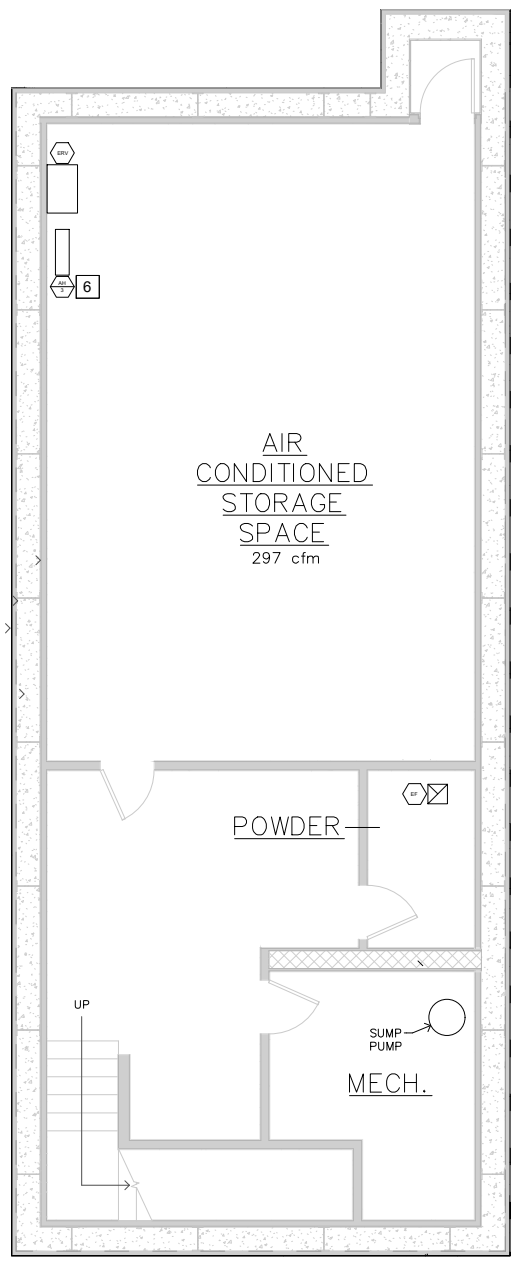
SHEET NOTES

Zone	Room	SF	Cooling	Heating	CFM
1	Court	8107	84101	115048	4048
2	Exercise	1820	20928	21031	1002
3	Kitchen	622	10807	7844	509
	Locker	228	3427	5154	158
	Steam + Showers	299	1953	3548	95
	Plunge + Restroom	361	2411	3127	109
	Therapy	252	3579	4753	156
	Lounge	289	2564	3765	114
	Barber Shop + Storage + Powder	236	3234	3444	140
4	Bedroom 1	279	3150	2175	147
	Kitchen + Dining + Living	766	14938	5352	665
	Bath 2	74	1761	1354	77
	Bedroom 2	208	3718	4247	174
	Bedroom 3	256	2973	2663	138
5	Storage Space	1822	3906	9691	197

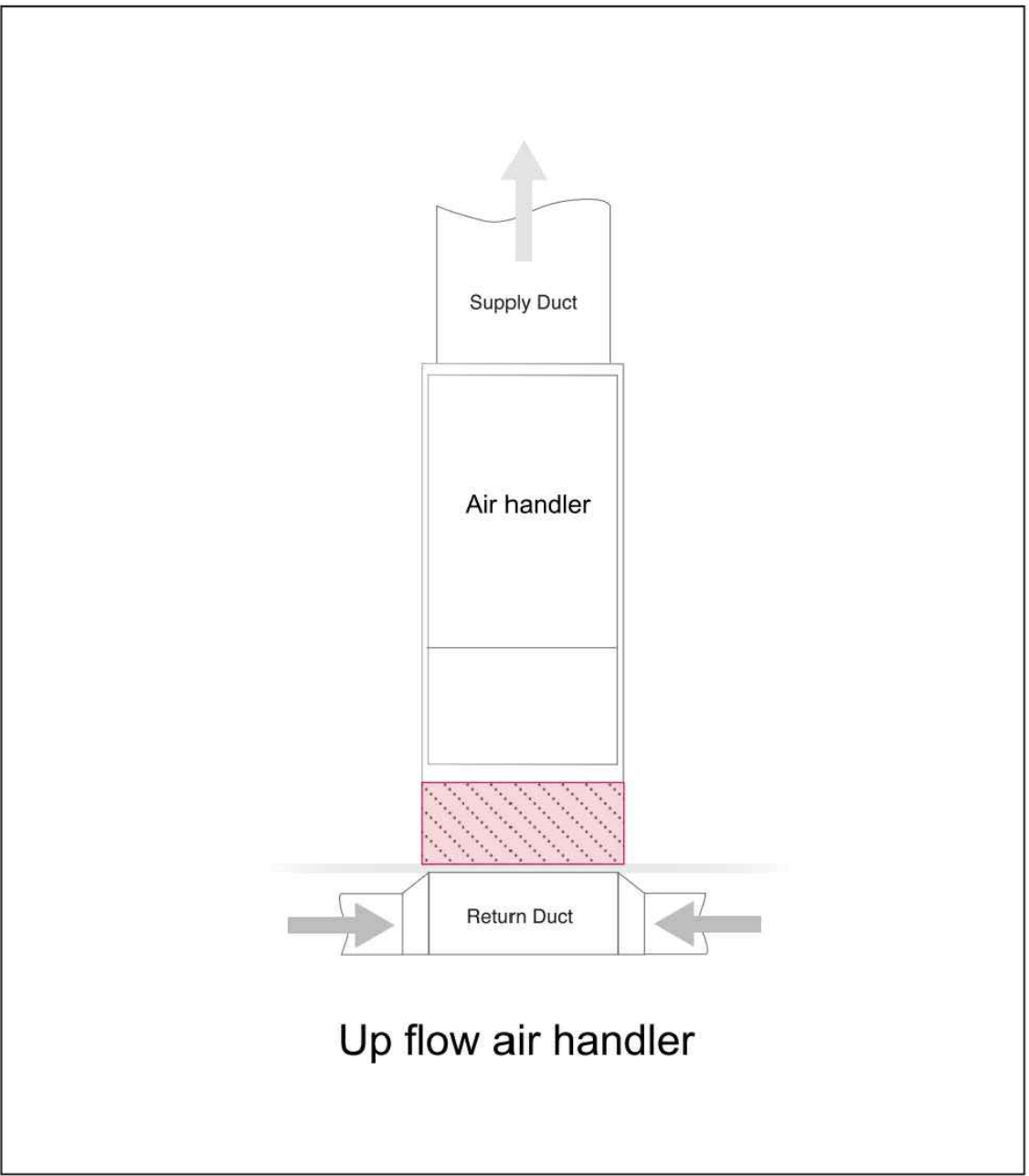


1 1ST FLOOR HEATING AND COOLING PLAN
SCALE: 1/16" = 1'-0"

- 1
- MOUNT IN ATTIC SPACE PER MANUFACTURERS INSTALLATION MANUAL.
THE FOLLOWING SHALL BE PROVIDED:
1. MIN 30"X30" ACCESS (SEE ARCH SHEETS) IN THE CEILING, WITHIN 20 FEET OF UNIT, COORD W/ARCH AND GC. ACCESS SHALL BE LARGE ENOUGH TO ALLOW FOR EQUIPMENT REMOVAL.
2. A PERMANENT ELECTRIC OUTLET AND LIGHTING FIXTURE CONTROLLED BY A SWITCH LOCATED AT THE PASSAGEWAY OPENING SHALL BE PROVIDED AT OR NEAR THE AIR HANDLER.
- 2
- DUCTS SHALL NOT PREVENT ACCESS TO ANY PART OF THE ATTIC SPACE. CONTRACTOR TO FIELD VERIFY ACCESS POINTS. A MINIMUM VERTICAL CLEARANCE OF 18 INCH SHALL BE PROVIDED UNDER DUCTS WHERE IT IS REQUIRED TO MOVE UNDER DUCTS TO ACCESS AREAS OF THE ATTIC SPACE. CONTRACTOR SHALL TRANSITION DUCTS TO EQUIPMENT RECTANGULAR DUCT WHERE NECESSARY.
- 3
- A. MOUNT OUTDOOR HEAT PUMP UNIT ON THE GROUND ON A CONCRETE SLAB THAT EXTENDS NOT LESS THAN FOUR INCHES ABOVE THE ADJOINING GROUND LEVEL.
B. PROVIDE CONDENSATE DRAIN LINE IN ACCORDANCE WITH CMC 802.9.
C. PROVIDE ACCESS PANEL AND CLEARANCE REQUIREMENTS PER MANUFACTURERS INSTALLATION REQUIREMENTS.
D. CONNECT REFRIGERANT LINES FROM THE OUTDOOR COMPRESSOR UNIT TO THE BRANCH BOX AND FROM THE BRANCH BOX TO THE AIR HANDLERS.
- 4
- UNLESS OTHERWISE NOTED ALL ACCESSIBLE SUPPLY BRANCHES SHALL HAVE MANUAL VOLUME CONTROL DAMPERS FOR BALANCING. WHERE INACCESSIBLE ALL SUPPLY GRILLES SHALL HAVE FACTORY OPPOSED BLADE DAMPER (OBD) FOR VOLUME BALANCING.
- 5
- AIR HANDLERS (AHS), ENERGY RECOVERY VENTILATORS (ERVS), AND THE BRANCH BOX (BBX) SHALL BE MOUNTED IN THE ATTIC. ALL MAIN AND BRANCH DUCTS SHALL BE RIGID ROUND AND MOUNTED IN CEILING JOIST AND ALL REGISTERS SHALL BE CEILING MOUNTED. CONFIRM ALL DUCT JOIST PENETRATIONS WITH STRUCTURAL ENGINEER. ALL ERVS SHALL BE INTERLOCKED WITH THE AIR HANDLER IN VENTILATION MODE AND CONNECTED WITH A 6-INCH DIAMETER OVAL DUCT.
- 6
- FOR ALL AIR HANDLERS PROVIDE IQAIR PERFECTPRO MERV 16 AIR FILTER, MODEL 2025. FOR ALL ERVS PROVIDE 2 WASHABLE MERV 6 AIR FILTERS AND OPTIONAL HEPA FILTER, MANUFACTURER PART # 21996. INSTALL PER MANUFACTURER'S GUIDELINES.
- 7
- ALL ENVIRONMENTAL AIR DUCTS, VENTS, AND EXHAUSTS SHALL NOT TERMINATE LESS THAN 3 FEET FROM THE PROPERTY LINE OR OPENINGS IN THE BUILDING, AS PER CMC 502.2.1.
- 8
- THE VENTILATION SYSTEM IS REQUIRED TO MEET CEC IAQ STANDARDS. IT SHALL BE EQUIPPED WITH A MULTI-SPEED AND A TIME DELAY MODULE.
- 9
- PROVIDE AN OPTIONAL LUTRON OCCUPANCY SENSOR, MODEL # MS-OPS5AM, OR AN EQUIVALENT MODEL IF APPROVED BY THE ARCHITECT. THE SENSOR SHOULD INCLUDE AN LED NIGHT LIGHT.
- 10
- PROVIDE CONDENSATION SENSOR MODULE TO SATISFY HUMIDISTAT CONTROL PER CAL GREEN CODE SECTION 4.506.
- 11
- CONFIRM FAN HAS A BUILT-IN BACKDRAFT DAMPER, IS ENERGY STAR RATED, AND IS CERTIFIED BY THE HOME VENTILATING INSTITUTE (HVI).
- 12
- WHOLE-HOUSE INDOOR AIR QUALITY (IAQ) VENTILATION IS PROVIDED BY CONTINUOUSLY OPERATED BATHROOM EXHAUST FAN PER ASHRAE STANDARD 62.2. SEE TITLE 24 FOR CONTINUOUS EXHAUST VENTILATION CALCULATION.
- 13
- PROVIDE 3/4" UNDERCUT ABOVE FINISHED FLOOR (AFF) FOR ALL BATHROOMS, POWDER ROOMS, AND WATER CLOSETS.
- 14
- INCLUDE A FACTORY-INSTALLED WEATHERHOOD, 6-INCH DIA., GALV., 80 CFM TO PROTECT THE EXHAUST FANS.
- 15
- ENSURE THE RANGE HOOD VENTS TO THE OUTSIDE IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. FOR RANGE HOODS ABOVE 400 CFM, MAKE-UP AIR IS REQUIRED. CONTRACTOR SHALL CONFIRM THE RANGE HOOD'S SPECIFICATION.
- 16
- SECURE THE ACCESS PORT FOR THE CONDENSER'S REFRIGERANT CIRCUIT WITH A LOCKING, TAMPER-RESISTANT CAP TO PREVENT UNAUTHORIZED ACCESS PER CMC 1105.11.
- 17
- THE SUCTION LINE (COOLING REFRIGERANT LINE) THAT CONNECTS TO THE OUTDOOR COMPRESSOR UNIT SHALL BE INSULATED AND PROTECTED FROM PHYSICAL DAMAGE OR EXPOSURE TO SUNLIGHT, MOISTURE, WIND, AND EQUIPMENT MAINTENANCE USING A METAL SHROUD, PAINTED CANVAS, OR PLASTIC COVER PER ENERGY 150.0(M)9.
- 18
- THE COMBINED HORIZONTAL AND VERTICAL LENGTH OF THE DRYER EXHAUST MUST NOT EXCEED 14 FEET, INCLUDING TWO 90-DEGREE ELBOWS (SUBTRACT 2 FEET FOR EACH ADDITIONAL 90-DEGREE ELBOW IN EXCESS OF TWO), UNLESS PERMITTED OR REQUIRED BY THE DRYER MANUFACTURER'S TERMS OF LISTING AND APPROVED BY THE AHJ PER CMC 504.4.2.1.



2 BASEMENT HEATING AND COOLING PLAN
SCALE: 1/16" = 1'-0"



3 IQAIR FILTER INSTALLATION EXAMPLE
SCALE: N/A