



National HVAC Design Report

ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 09)

HVAC Designer Responsibilities:												
<ul style="list-style-type: none"> • Complete one National HVAC Design Report for each system design for a house plan, created for either the specific plan configuration (i.e., elevation, option, orientation, & county) of the home to be certified or for a plan that is intended to be built with different configurations (i.e., different elevations, options, and/or orientations). Visit www.energystar.gov/newhomes/hvacdesign and see Footnote 2 for more information. • Obtain efficiency features (e.g., window performance, insulation levels, and infiltration rate) from the builder or Home Energy Rater. • Provide the completed National HVAC Design Report to the builder or credentialed HVAC contractor and to the Home Energy Rater. 												
1. Design Overview												
1.1 Designer name: _____ Designer company: Rockview Designs Date: September 16th, 2018 1.2 Select which party you are providing these design services to: <input checked="" type="checkbox"/> Builder or <input type="checkbox"/> Credentialed HVAC contractor 1.3 Name of company you are providing these design services to (if different than Item 1.1): _____ 1.4 Area that system serves: <input checked="" type="checkbox"/> Whole-house <input type="checkbox"/> Upper-level <input type="checkbox"/> Lower-level <input type="checkbox"/> Other 1.5 Is cooling system for a temporary occupant load? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 1.6 House plan: _____ Check box to indicate whether the system design is site-specific or part of a group: <input checked="" type="checkbox"/> Site-specific design. Option(s) & elevation(s) modeled: <input type="checkbox"/> Group design. Group #: 0 out of 0 total groups for this house plan. Configuration modeled: _____												
2. Whole-House Mechanical Ventilation Design										Designer Verified		
Airflow:												
2.1 Ventilation airflow design rate & run-time meet the requirements of ASHRAE 62.2-2010, 2013 or 2016										<input checked="" type="checkbox"/>		
2.2 Ventilation airflow rate required by 62.2 for a continuous system 56 CFM										-		
2.3 Design for this system: Vent. airflow rate: 56 CFM Run-time per cycle: 0 minutes Cycle time: 0 minutes										-		
System Type & Controls:												
2.4 Specified system type: <input type="checkbox"/> Supply <input type="checkbox"/> Exhaust <input checked="" type="checkbox"/> Balanced										-		
2.5 Specified control location: (e.g., Master bath, utility room)										-		
2.6 Specified controls allow the system to operate automatically, without occupant intervention										<input type="checkbox"/>		
2.7 Specified controls include a readily-accessible ventilation override and a label has also been specified if its function is not obvious (e.g., a label is required for a standalone wall switch, but not for a switch that's on the ventilation equipment)										<input type="checkbox"/>		
2.8 No outdoor air intakes designed to connect to the return side of the HVAC system, unless specified controls operate intermittently and automatically based on a timer and restrict intake when not in use (e.g., motorized damper)										<input type="checkbox"/>		
Sound:	2.9 The fan of the specified system is rated ≤ 3 sones if intermittent and ≤ 1 sone if continuous, or exempted									<input type="checkbox"/>		
Efficiency:												
2.10 If system utilizes the HVAC fan, then the specified fan type in Item 4.7 is ECM / ICM, or the specified controls will reduce the standalone ventilation run-time by accounting for hours when the HVAC system is heating or cooling										<input type="checkbox"/>		
2.11 If bathroom fans are specified as part of the system, then they are ENERGY STAR certified										<input type="checkbox"/>		
Air Inlet Location: (Complete this section if system has a specified air inlet location; otherwise check "N/A")										<input type="checkbox"/> N/A		
2.12 Inlet pulls ventilation air directly from outdoors and not from attic, crawlspace, garage, or adjacent dwelling unit										<input type="checkbox"/>		
2.13 Inlet is ≥ 2 ft. above grade or roof deck; ≥ 10 ft. of stretched-string distance from known contamination sources (e.g., stack, vent, exhaust, vehicles) not exiting the roof, and ≥ 3 ft. from known sources exiting the roof										<input type="checkbox"/>		
3. Room-by-Room Heating & Cooling Loads												
3.1 Room-by-room loads calculated using: <input checked="" type="checkbox"/> Unabridged ACCA Manual J v8 <input type="checkbox"/> 2013 ASHRAE Fundamentals <input type="checkbox"/> Other per AHJ										-		
3.2 Indoor design temperatures used in loads are 70°F for heating and 75°F for cooling										<input type="checkbox"/>		
3.3 Outdoor design temperatures used in loads: (See Footnote 12 and energystar.gov/hvacdesign/temps) County & State, or US Territory, selected: Larimer, CO Cooling season: 90 °F Heating season: 6 °F										-		
3.4 Number of occupants used in loads: 4										-		
3.5 Conditioned floor area used in loads: 2592 Sq. Ft.										-		
3.6 Window area used in loads: 330 Sq. Ft.										-		
3.7 Predominant window SHGC used in loads: 0.32										-		
3.8 Infiltration rate used in loads: Summer: 0.11 Winter: 0.22										-		
3.9 Mechanical ventilation rate used in loads: 56 CFM										-		
Loads At Design Conditions (kBtuh)												
			N	NE	E	SE	S	SW	W	NW		
Cooling	3.10 Sensible heat gain (By orientation)		20.9	21.9	20.5	22.0	21.0	21.8	20.2	21.6	-	
	3.11 Latent heat gain (Not by orientation)		0									-
	3.12 Total heat gain (By orientation)		20.9	21.9	20.5	22.0	21.0	21.8	20.2	21.6	-	
	3.13 Maximum – minimum total heat gain (Item 3.12) across orientations =		1.7 kBtuh					Variation is ≤ 6 kBtuh				
Heating	3.14 Total heat loss (Not by orientation)		43.1									-



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4. Heating & Cooling Equipment Selection						Designer Verified
4.1 Equipment selected per ACCA Manual S (see Footnote 18 & 19)						<input type="checkbox"/>
Air Conditioner / Heat Pump (Complete if air conditioner or heat pump will be installed; otherwise check "N/A")						<input type="checkbox"/> N/A
4.2 Equipment type: <input checked="" type="checkbox"/> Cooling-only air conditioner or <input type="checkbox"/> Cooling & heating heat pump						-
4.3 Condenser manufacturer & model: Amana ASX130301C*						-
4.4 Evaporator / fan coil manufacturer & model: Amana CA*FCAPF3137*6B						-
4.5 AHRI reference #:						-
4.6 AHRI listed efficiency: 11.5 / 13.5 EER / SEER Air-source heat pump: HSPF Ground-source heat pump: COP						-
4.7 Evaporator fan type: <input type="checkbox"/> PSC <input type="checkbox"/> ECM / ICM <input checked="" type="checkbox"/> Other:						-
4.8 Compressor type: <input checked="" type="checkbox"/> Single-speed <input type="checkbox"/> Two-speed <input type="checkbox"/> Variable-speed						-
4.9 Latent capacity at design conditions, from OEM expanded performance data: 0 kBtuh						-
4.10 Sensible capacity at design conditions, from OEM expanded performance data: 0 kBtuh						-
4.11 Total capacity at design conditions, from OEM expanded performance data: 0 kBtuh						-
4.12 Air-source heat pump capacity: At 17°F: 0 kBtuh At 47°F: 0 kBtuh <input checked="" type="checkbox"/> N/A						-
4.13 Cooling sizing % = Total capacity (Item 4.11) divided by maximum total heat gain (Item 3.12): 0 %						-
4.14 Complete this item if Condition B Climate will be used to select sizing limit in Item 4.15. Otherwise, check "N/A": <input type="checkbox"/> N/A						-
4.14.1 Load sensible heat ratio = Max. sensible heat gain (Item 3.10) / Max. total heat gain (Item 3.12) = 100%						-
4.14.2 HDD / CDD ratio (Visit energystar.gov/hvacdesigntemps to determine this value for the design location): 2.5						-
4.15 Check box of applicable cooling sizing limit from chart below:						-
Equipment Type (Per Item 4.2) & Climate Condition (Per Item 4.14)		Compressor Type (Per Item 4.8)				
		Single-Speed	Two-Speed	Variable-Speed		
For Cooling-Only Equipment or For Cooling Mode of Heat Pump in Condition A Climate		<input type="checkbox"/> Recommended: 90 – 115% Allowed: 90 – 130%	<input type="checkbox"/> Recommended: 90 – 120% Allowed: 90 – 140%	<input type="checkbox"/> Recommended: 90 – 130% Allowed: 90 – 160%		
For Cooling Mode of Heat Pump in Condition B Climate		<input type="checkbox"/> 90% - 100%, plus 15 kBtuh	<input type="checkbox"/> 90% - 100%, plus 15 kBtuh	<input type="checkbox"/> 90% - 100%, plus 15 kBtuh		
4.16 Cooling sizing % (4.13) is within cooling sizing limit (4.15)						<input type="checkbox"/>
Furnace (Complete if furnace will be installed; otherwise check "N/A")						<input type="checkbox"/> N/A
4.17 Furnace manufacturer & model: Amana AMSS920603BN						-
4.18 Listed efficiency: 92.1 AFUE						-
4.19 Total capacity: 49.1 kBtuh						-
4.20 Heating sizing % = Total capacity (Item 4.19) divided by total heat loss (Item 3.14): 114%						-
4.21 Check box of applicable heating sizing limit from chart below:						-
When Used for Heating Only			When Paired With Cooling			
<input type="checkbox"/> 100 - 140%			<input checked="" type="checkbox"/> Recommended: 100 – 140% Allowed: 100 – 400%			
4.22 Heating sizing % (4.20) is within heating sizing limit (4.21)						<input checked="" type="checkbox"/>
5. Duct Design (Complete if heating or cooling equipment will be installed with ducts; otherwise check "N/A")						<input type="checkbox"/> N/A
5.1 Duct system designed for the equipment selected in Section 4, per ACCA Manual D						<input checked="" type="checkbox"/>
5.2 Design HVAC fan airflow: Cooling mode 1059 CFM Heating mode 927 CFM						-
5.3 Design HVAC fan speed setting (e.g., low, medium, high): Cooling mode Medium Heating mode Medium						-
5.4 Design total external static pressure (corresponding to the mode with the higher airflow in Item 5.2): 0.8 IWC						-
5.5 Room-by-room design airflows documented below (which must sum to the mode with the higher airflow in Item 5.2)						-
Room Name	Design Airflow (CFM)	Room Name	Design Airflow (CFM)	Room Name	Design Airflow (CFM)	
1 Basement	2	12 Mudroom	47	23		
2 Closet 1	0	13 Open Area	0	24		
3 Closet 2	14	14 Powder	6	25		
4 Dining	87	15 Toilet	3	26		
5 Existing Bed 1	112	16		27		
6 Existing Bed 2	134	17		28		
7 Existing Living	218	18		29		
8 Fut Bedroom	32	19		30		
9 Kitchen	68	20		31		
10 Master Bath	65	21		32		
11 Master Bedroom	270	22		Total for all rooms		1059