

Home Address: Unit S2	City: Boise State	: ID Zir	p Code:	
System Description <sup>2</sup> FC-102A and FC-102B	Cooling system for temporary occupant load	? ³ Yes □ No		
1. Whole-Building Mechanical Ventilation Desi	gn <sup>4</sup>	Builder Verified <sup>5</sup>	Cont. Verified <sup>6</sup>	N/A
1.1 Ventilation system installed that has been design but not limited to, requirements in Items 1.2-1.5.	ned to meet ASHRAE 62.2-2010 requirements including,		ď	-
	to the return side of the HVAC system unless the system atically based on a timer and to restrict outdoor air intake		□J/	-
1.3 Documentation is attached with ventilation system     of each ventilation cycle.	n type, location, design rate, and frequency and duration	Ø	Ġ/	-
	t fans designed to operate during all occupiable hours.			
least once per day and at least 10% of every 24 l				
	eters used in the design calculations shall reflect home to be b			
temperatures, home orientation, number of bedrooms, or infiltration rate, mechanical ventilation rate, presence of	onditioned floor area, window area, predominant window perfo MERV6 or better filter, and indoor temperature setpoints = 70°	rmance and in F for heating:	15ulation level 75°F for coolii	s, na.
	☑ 2009 ASHRAE ☐ Other:			-
	☐ Manual D ☑ Other: Engineer	V		
	□ OEM Rec. ☑ Other: Engineer			-
2.4 Outdoor Design Temperatures: 9 Location: Boise		2		
2.5 Orientation of Rated Home (e.g., North, South):				
2.6 Number of Occupants Served by System: 10	2			
2.7 Conditioned Floor Area in Rated Home:	552 Sq. Ft.	<b>2</b>		
2.8 Window Area in Rated Home:	20 Sq. Ft.			
2.9 Predominant Window SHGC in Rated Home: 11	<del></del>			-
	Summer: average Winter: average			
2.11 Mechanical Ventilation Rate in Rated Home:	35 CFM			-
2.12 Design Latent Heat Gain:	561 BTUh	<u> </u>		-
2.13 Design Sensible Heat Gain:	7,047 BTUh			-
2.14 Design Total Heat Gain:	7,608 BTUh			- :
2.15 Design Total Heat Loss:	5,947 BTUh	2		-
2.16 Design Airflow: <sup>13</sup>	Equipment supply CFM	Ø		-
2.17 Design Duct Static Pressure: 14	In. Water Column			2
2.18 Full Load Calculations Report Attached 15		•		-
3. Selected Cooling Equipment, If Cooling Equ	ipment to be Installed			
3.1 Condenser Manufacturer & Model:	Samsung model JXH24	Ø		
3.2 Evaporator / Fan Coil Manufacturer & Model:	Samsung model JNH12			
3.3 AHRI Reference #: <sup>16</sup>	205291854			
3.4 Listed Efficiency:	11.4 EER 18 SEER			
3 71	ixed orifice	0	0	
	ariable (ECM / ICM) □ Other:	0		
3.8 Listed Sys. Latent Capacity at Design Cond.: 18	BTUh			0
3.9 Listed Sys. Sensible Capacity at Design Cond.: 18				
3.10 Listed Sys. Total Capacity at Design Cond.: 18	22,000 BTUh	9		
3.11 If Listed Sys. Latent Capacity (Value 3.8) ≤ Desi certified dehumidifier installed	gn Latent Heat Gain (Value 2.12), ENERGY STAR			Ø
3.12 Listed Sys. Total Capacity (Value 3.10) is 95-11 nominal size 8, 19	5% of Design Total Heat Gain (Value 2.14) or next	Ø		
3.13 AHRI Certificate Attached <sup>16</sup>				v
4. Selected Heat Pump Equipment, If Heatpump				
	or Ground-Source:COP	2		
	Efficiency:COP 20	2		
4.3 Performance at 47°F: Capacity 25000 BTUh	Efficiency: COP <sup>20</sup>			



5. Selected Furnace, If Furnace to be Installed		Builder Verified <sup>5</sup>	Cont. Verified <sup>6</sup>	N/A
5.1 Furnace Manufacturer & Model:				Ø
5.2 Listed Efficiency:AFUE				Ø
5.3 Listed Output Heating Capacity:BTUh				Ø
5.4 Listed Output Heat. Cap. (Value 5.3) is 100-140% of Design Total Heat Los nominal size 8.21	ss (Value 2.15) or next			Ø
6. Refrigerant Tests - Run system for 15 minutes before testing				
Note: If outdoor ambient temperature at the condenser is ≤ 55°F or, if known, below the cooling cycle, then the system shall include a TXV, and the contractor shall mark	the manufacturer-recommended min k "N/A" on the Checklist for Section 6	imum operati & 7. <sup>22</sup>	ng temperatu	ire for
6.1 Outdoor ambient temperature at condenser:	°F DB			
6.2 Return-side air temperature inside duct near evaporator, during cooling mo	de: °F WB			
6.3 Liquid line pressure:	psig			
6.4 Liquid line temperature:	°F DB			
6.5 Suction line pressure:	psig			
6.6 Suction line temperature:	°F DB			Ø
7. Refrigerant Calculations				
For System with Thermal Expansion Valve (TXV):				
7.1 Condenser saturation temperature:	6.3)			0
7.2 Subcooling value: °F DB (Value 7.1 - V	alue 6.4)			
7.3 OEM subcooling goal: °F DB				Ø
7.4 Subcooling deviation:	alue 7.3)			Ø
For System with Fixed Orifice:				
7.5 Evaporator saturation temperature: °F DB (Using Value 6	6.5)			
7.6 Superheat value: °F DB (Value 6.6 – V	/alue 7.5)			Ø
7.7 OEM superheat goal: °F DB (Using superh	eat tables and Values 6.1 & 6.2)			v
7.8 Superheat deviation: °F DB (Value 7.6 – V	'alue 7.7)			
7.9 Value 7.4 is ± 3°F or Value 7.8 is ± 5°F				2
7.10 An OEM test procedure (e.g., as defined for a ground-source heat pump) super-heat process and documentation has been attached that defines thi		ing or		Ø
8. Electrical Measurements – Taken at electrical disconnect while compo	nent is in operation			
8.1 Evaporator or furnace air handler fan: amperage	line voltage			
8.2 Condenser unit: amperage	line voltage			<b>U</b>
8.3 Electrical measurements within OEM-specified tolerance of nameplate value	е			
9. Air Flow Tests				
9.1 Air volume at evaporator: CFM				V
9.2 Test performed in which mode? ☐ Heating ☐ Cooling		,		2
	st Hole Location: 23			<b>!</b>
9.4 Supply duct static pressure: (WC Test Hole Location: <sup>23</sup>				V
9.5 Test hole locations are well-marked and accessible <sup>23</sup>				
9.6 Airflow volume at evaporator (Value 9.1), at fan design speed and full opera system design (Value 2.16) or within range recommended by OEM	ting load, ± 15% of the airflow requ	lired per		
10. Air Balance			m and olisia m	
10.1 Balancing report prepared and attached indicating the room name and des individual room airflows measured and documented through one of the follows.	owing options:		n addition, t	ınaı
10.1.1 Measured by contractor using ANSI / ACCA 5 QI-2007 protocol, docreport, & verified by contractor to be within the greater of ± 20% or 2	25 CFM of design airflow <sup>24</sup> , OR;			<b>e</b>
10.1.2 To be measured, documented, and verified by a Rater per Item 1.4.	2 of the HVAC System QI Rater Ch	ecklist		2
11. System Controls				-
11.1 Operating and safety controls meet OEM requirements		1		0
<ul> <li>12. Drain pan</li> <li>12.1 Corrosion-resistant drain pan, properly sloped to drainage system, included condensate <sup>25</sup></li> </ul>	d with each HVAC component that	produces		
HVAC Company Name: Advanced Heating And Cooling	Credentialing Organizati	on: ACCA /	AE / Othor	
HVAC Contractor Name: Caleb Knutson HVAC Contractor Sign			5/8/23	
Builder Name: 5 Suidane Builder Signature: 5	David hilding	Date	The second second	23



This Checklist is designed to align with the requirements of ASHRAE 62.2-2010 and published addenda and ANSI / ACCA's 5 QI-2007
protocol, thereby improving the performance of HVAC equipment in new homes when compared to homes built to minimum code.
However, these features alone cannot prevent all ventilation, indoor air quality, and HVAC problems (e.g., those caused by a lack of
maintenance by occupants). Therefore, this Checklist is not a guarantee of proper ventilation, indoor air quality, or HVAC performance.

This Checklist applies to ventilation systems; to split air conditioners, unitary air conditioners, air-source heat pumps, and water-source (i.e., geothermal) heat pumps up to 65,000 Btu / h with forced-air distribution systems (i.e., ducts) and to furnaces up to 225,000 Btu / h with forced-air distribution systems (i.e., ducts). All other permutations of equipment (e.g., boilers, mini-split / multi-split systems) and distribution systems are exempt. If the ventilation system is the only applicable system installed in the home, then only Section 1 shall be completed.

One Checklist shall be completed for each system and provided to the Rater.

- 2. Description of HVAC system location or area served (e.g., "whole house", "upper level", "lower level").
- 3. Check "Yes" if this system is to handle temporary occupant loads. Such a system may be required to accommodate a significant number of guests on a regular or sporadic basis and shall be handled by a supplemental cooling system (e.g., a small, single-package unit or split-coil unit) or by a system that can shift capacity from zone to zone (e.g., a variable volume system).
- 4. The person responsible for the heating, cooling, & ventilation design shall be responsible for completing Sections 1 and 2 of this Checklist.
- 5. For Sections 1 through 5, the 'Builder Verified' column shall be used to indicate items verified by the builder (or a firm or HERS Rater hired by the builder). If any Items have been marked 'Builder Verified', then the builder is responsible for these Items and must sign this Checklist. Note that builders are not permitted to verify any Items in Sections 6-12.
- 6. For Sections 1 through 5, the 'Cont. Verified' column shall be used to indicate Items verified by the credentialed contractor (or a firm or HERS Rater hired by the contractor). In contrast, for Sections 6 through 12, the 'Cont. Verified' column shall <u>only</u> be used to indicate Items verified by the credentialed contractor (i.e., neither a builder, nor a firm, nor a HERS Rater are permitted to verify Sections 6 12). The credentialed contractor is responsible for these Items and shall sign this Checklist.
- For proper procedures, exceptions, and selection methods see ASHRAE 62.2-2010 and published addenda. All components shall be
  designed and installed per local codes, manufacturers' installation instructions, engineering documents, and regional ENERGY STAR
  program requirements.
  - The system shall have at least one supply or exhaust fan with associated ducts and controls. Local exhaust fans are allowed to be part of an exhaust ventilation system. Outdoor air ducts connected to the return side of an air handler are allowed to be part of a supply ventilation system if manufacturer requirements for return air temperature are met.
- 8. Heating and cooling loads shall be calculated, equipment shall be selected, and duct systems shall be sized according to the latest editions of ACCA Manuals J, S, & D, respectively, 2009 ASHRAE Handbook of Fundamentals, or other methodology approved by the Authority Having Jurisdiction. The HVAC system design shall be completed for the specific configuration (e.g., plan, elevation, option, and orientation) of the home to be built except as permitted herein.
  - For each house plan with multiple configurations (e.g., orientations, elevations, options), the loads shall be calculated for each potential configuration. If the loads across all configurations vary by  $\leq 25\%$ , then the largest load shall be permitted to be used for equipment selection for all configurations, subject to the over-sizing limits of ACCA Manual S. Otherwise, the contractor shall group the load for each configuration into a set with  $\leq 25\%$  variation and equipment selection shall be completed for each set of loads.
  - For each house plan with multiple configurations, the room-level design airflows shall be calculated for each potential configuration. If the design airflows for each room vary across all configurations by  $\leq 25\%$  or 25 CFM, then the average room-level design airflow shall be permitted to be used when designing the duct system. Otherwise, the contractor shall group the room-level design airflow for each configuration into a set with  $\leq 25\%$  or 25 CFM variation and the duct design shall be completed for the average airflow of that set.
- If the design conditions are dictated by a code or regulation, then the requirements of the lawful or controlling authority supersedes the Manual J or ASHRAE default design values. Otherwise, the default values shall be used. The values for the geographically closest location shall be selected or a justification provided for the selected location.
- 10. The number of occupants among all HVAC systems in the home must be equal to the number of bedrooms, as defined below, plus one. Occupants listed for systems that are indicated in the header as a cooling system for temporary occupant loads, as described in Footnote 3, shall be permitted to exceed this limit.

A bedroom is defined by RESNET as a room or space 70 sq. ft. or greater size, with egress window and closet, used or intended to be used for sleeping. A "den", "library", or "home office" with a closet, egress window, and 70 sq. ft. or greater size or other similar rooms shall count as a bedroom, but living rooms and foyers shall not.

- have a sill height of not more than 44 inches above the floor; AND
- have a minimum net clear opening of 5.7 sq. ft.; AND
- have a minimum net clear opening height of 24 in.; AND
- have a minimum net clear opening width of 20 in.; AND
- be operational from the inside of the room without the use of keys, tools or special knowledge.
- 11. "Predominant" is defined as the SHGC value used in the greatest amount of window area in the home.
- 12. Infiltration rate shall reflect value used in confirmed or projected HERS rating for rated home. Alternatively, use "Average" or "Semi-loose" values for the cooling season infiltration rates and "Semi-tight" or "Average" values for the heating season infiltration rates, as defined by ACCA Manual J, Eighth Edition, Version Two.



- 13. Design airflow is the design value(s) for the blower in CFM, as determined by using the manufacturer's expanded performance data to select equipment, per ACCA Manual S procedures.
- 14. Design duct static pressure shall account for the installation of a MERV 6 or higher filter.
- 15. The load calculation for the home shall be provided, documenting all design elements and all resulting loads, including but not limited to the values listed in Items 2.1 through 2.17.
- 16. All evaporators and condensing units shall be properly matched as demonstrated by an attached AHRI certificate. If an AHRI certificate is not available, a copy of OEM-provided catalog data indicating acceptable combination selection and performance data shall be attached.
- 17. If the whole-house ventilation system utilizes the HVAC air handler, then the fan speed type shall be ECM / ICM and variable speed, or include a controller (e.g., smart cycler) that reduces the ventilation run time by accounting for hours when HVAC system is heating or cooling the home.
- 18. Listed system capacity at design conditions is to be obtained from the OEM expanded performance data.
- 19. For cooling systems, the next largest nominal piece of equipment may be used that is available to satisfy the latent and sensible requirements. Single-speed systems generally have OEM nominal size increments of ½ ton. Multi-speed or multi-stage equipment may have OEM nominal size increments of one ton. Therefore, the use of these advanced system types can provide extra flexibility to meet the equipment sizing requirements.
- 20. Items 4.2 and 4.3 are not applicable to ground-source heat pumps.
- 21. For warm air heating systems, the output capacity must be between 100% and 140% of calculated system load unless a larger size is dictated by the cooling equipment selection.
- 22. Either factory-installed or field-installed TXV's may be used. For field-installed TXV's, ensure that sensing bulbs are insulated and tightly clamped to the vapor line with good linear thermal contact at the recommended orientation, usually 4 or 8 o'clock.
- 23. Examples of return or supply duct static pressure measurement locations are: plenum, cabinet, trunk duct, as well as front, back, left or right side. Test hole locations shall be well marked and accessible.
- 24. Ducts shall not include coiled or looped ductwork except to the extent needed for acoustical control. Balancing dampers or proper duct sizing shall be used instead of loops to limit flow to diffusers. When balancing dampers are used, they shall be located at the trunk to limit noise unless the trunk will not be accessible when the balancing process is conducted. In such cases, Opposable Blade Dampers (OBD) or dampers located in the duct boot are permitted.
- 25. Condensate pan shall be made of corrosion-resistant materials, to include galvanized steel and plastic. Drain pan shall drain condensate to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drainage system; and shall be equipped with a backflow prevention valve when drained to a shared drainage system, such as a storm water management system.



Home Address: Unit S1	City: Boise State	: ID Zir	o Code:	
System Description <sup>2</sup> FC-102A and FC-102B	Cooling system for temporary occupant load	? ³ Yes □ No		
1. Whole-Building Mechanical Ventilation Des		Builder Verified 5	Cont. Verified <sup>6</sup>	N/A
1.1 Ventilation system installed that has been desibut not limited to, requirements in Items 1.2-1.5	gned to meet ASHRAE 62.2-2010 requirements including,	Ø	Q <sup>'</sup>	-
	ct to the return side of the HVAC system unless the system natically based on a timer and to restrict outdoor air intake	Ø	D/	-
, , ,	em type, location, design rate, and frequency and duration	<b>2</b>	Ø	-
1.4 If present, continuously-operating vent. & exhaust fans designed to operate during all occupiable hours.				Ø
least once per day and at least 10% of every 24				Ø
temperatures, home orientation, number of bedrooms,	neters used in the design calculations shall reflect home to be b conditioned floor area, window area, predominant window perfor f MERV6 or better filter, and indoor temperature setpoints = 70°	rmance and ir	nsulation level	s,
	☑ 2009 ASHRAE ☐ Other:			-
2.2 Duct Design Method:	☐ Manual D ☑ Other: Engineer			
2.3 Equipment Selection Method: ☐ Manual S	□ OEM Rec. □ Other: Engineer	V		-
2.4 Outdoor Design Temperatures: 9 Location: Bois	se 1%: 95 °F 99%: 10.! °F			-
2.5 Orientation of Rated Home (e.g., North, South):		V		-
2.6 Number of Occupants Served by System: 10	2			-
2.7 Conditioned Floor Area in Rated Home:	548 Sq. Ft.	Ø		-
2.8 Window Area in Rated Home:	20 Sq. Ft.			-
2.9 Predominant Window SHGC in Rated Home: 11	0.46	<b>2</b>		-
2.10 Infiltration Rate in Rated Home: 12	Summer: average Winter: average	<b>2</b>		-
2.11 Mechanical Ventilation Rate in Rated Home:	35 CFM	<b>2</b>		-
2.12 Design Latent Heat Gain:	561 BTUh			
2.13 Design Sensible Heat Gain:	7,215 BTUh			-
2.14 Design Total Heat Gain:	7,775 BTUh			
2.15 Design Total Heat Loss:	5,981 BTUh			-
2.16 Design Airflow: <sup>13</sup>	Equipment supply CFM			-
2.17 Design Duct Static Pressure: 14	In. Water Column			0
2.18 Full Load Calculations Report Attached <sup>15</sup>		<u> </u>		-
3. Selected Cooling Equipment, If Cooling Equ	upment to be Installed			-
3.1 Condenser Manufacturer & Model:	Samsung model JXH24	0		
3.2 Evaporator / Fan Coil Manufacturer & Model:	Samsung model JNH12	0		
3.3 AHRI Reference #: 16	205291854			
3.4 Listed Efficiency:	11.4 EER 18 SEER	Ø		
	Fixed orifice			
3 71	R-410a	<u> </u>		
	Variable (ECM / ICM) □ Other:			
3.8 Listed Sys. Latent Capacity at Design Cond.: <sup>18</sup> 3.9 Listed Sys. Sensible Capacity at Design Cond.: <sup>1</sup>	BTUh BTUh			
3.10 Listed Sys. Total Capacity at Design Cond.: 18	22,000 BTUh			
3.11 If Listed Sys. Latent Capacity (Value 3.8) ≤ Descertified dehumidifier installed		0		2
3.12 Listed Sys. Total Capacity (Value 3.10) is 95-1 nominal size <sup>8, 19</sup>	15% of Design Total Heat Gain (Value 2.14) or next	0		
3.13 AHRI Certificate Attached <sup>16</sup>				<b>0</b>
4. Selected Heat Pump Equipment, If Heatpum	p to be Installed	-		
	F or Ground-Source: COP	2		
4.2 Performance at 17°F: Capacity 25000 BTUI	Efficiency: COP <sup>20</sup>	<b>9</b>		
4.3 Performance at 47°F: Canacity 25000 BTH	Efficiency: COP 20	P	П	



5. Selected Furnace, if Furnace to be installed Verified 5			Verified <sup>6</sup>	N/A
5.1 Furnace Manufacturer & Model:				Ø
5.2 Listed Efficiency: AFUE				Ø
5.3 Listed Output Heating Capacity: BTUh				<b>U</b>
5.4 Listed Output Heat. Cap. (Value 5.3) is 100-140% of Design Total Heat Loss ( nominal size 8,21	Value 2.15) or next			Ø
6. Refrigerant Tests - Run system for 15 minutes before testing			7-3	"
Note: If outdoor ambient temperature at the condenser is ≤ 55°F or, if known, below the the cooling cycle, then the system shall include a TXV, and the contractor shall mark "N	manufacturer-recommended min	imum operati	ng temperatu	ire for
6.1 Outdoor ambient temperature at condenser:	"F DB	O. 7.		Ø
	°F WB			
6.2 Return-side air temperature inside duct near evaporator, during cooling mode:				
6.3 Liquid line pressure:	psig			
6.4 Liquid line temperature:	°F DB			回
6.5 Suction line pressure:	psig			回
6.6 Suction line temperature:	°F DB			N
7. Refrigerant Calculations				
For System with Thermal Expansion Valve (TXV):				
7.1 Condenser saturation temperature:                               °F DB (Using Value 6.3)				0
7.2 Subcooling value: °F DB (Value 7.1 - Value	6.4)			Ø
7.3 OEM subcooling goal: °F DB				Ø
7.4 Subcooling deviation: °F DB (Value 7.2 – Value	7.3)			Ø
For System with Fixed Orifice:				
7.5 Evaporator saturation temperature:				Ø
7.6 Superheat value: °F DB (Value 6.6 – Value	e 7.5)			
7.7 OEM superheat goal:	tables and Values 6.1 & 6.2)			Ø
7.8 Superheat deviation: °F DB (Value 7.6 – Value	e 7.7)			Ø
7.9 Value 7.4 is ± 3°F or Value 7.8 is ± 5°F				V
7.10 An OEM test procedure (e.g., as defined for a ground-source heat pump) has super-heat process and documentation has been attached that defines this pr		ing or		N
8. Electrical Measurements - Taken at electrical disconnect while componer	nt is in operation			-55
8.1 Evaporator or furnace air handler fan: amperagelii	ne voltage			V
8.2 Condenser unit: amperage li	ne voltage			
8.3 Electrical measurements within OEM-specified tolerance of nameplate value				<b>Ø</b>
9. Air Flow Tests				
9.1 Air volume at evaporator: CFM				7
9.2 Test performed in which mode? ☐ Heating ☐ Cooling				<b>7</b>
	lole Location: 23			
	fole Location; 23			
9.5 Test hole locations are well-marked and accessible <sup>23</sup>	N-1	755		
9.6 Airflow volume at evaporator (Value 9.1), at fan design speed and full operating system design (Value 2.16) or within range recommended by OEM	load, ± 15% of the airflow requ	ired per	0	
10. Air Balance				_
10.1 Balancing report prepared and attached indicating the room name and design individual room airflows measured and documented through one of the following.		ırn register.	n addition, f	inal
10.1.1 Measured by contractor using ANSI / ACCA 5 QI-2007 protocol, docum report, & verified by contractor to be within the greater of ± 20% or 25 C	ented by contractor on the bala	ncing		2
10.1.2 To be measured, documented, and verified by a Rater per Item 1.4.2 of		ecklist		2
11. System Controls				
11.1 Operating and safety controls meet OEM requirements				Ø
12. Drain pan				
12.1 Corrosion-resistant drain pan, properly sloped to drainage system, included wi condensate <sup>25</sup>	th each HVAC component that	produces		Ø
HVAC Company Name: Advanced Heating And Cooling	Credentialing Organizati	on: ACCA /	AE / Other	
HVAC Contractor Name: Caleb Knutson HVAC Contractor Signatu	1 manual management		5/8/23	
Builder Name: 5 Builder Signature: 5	Dand hely	Date	5/242	23



1. This Checklist is designed to align with the requirements of ASHRAE 62.2-2010 and published addenda and ANSI / ACCA's 5 QI-2007 protocol, thereby improving the performance of HVAC equipment in new homes when compared to homes built to minimum code. However, these features alone cannot prevent all ventilation, indoor air quality, and HVAC problems (e.g., those caused by a lack of maintenance by occupants). Therefore, this Checklist is not a guarantee of proper ventilation, indoor air quality, or HVAC performance.

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One Checklist shall be completed for each system and provided to the Rater.

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- 4. The person responsible for the heating, cooling, & ventilation design shall be responsible for completing Sections 1 and 2 of this Checklist.
- 5. For Sections 1 through 5, the 'Builder Verified' column shall be used to indicate items verified by the builder (or a firm or HERS Rater hired by the builder). If any Items have been marked 'Builder Verified', then the builder is responsible for these Items and must sign this Checklist. Note that builders are not permitted to verify any Items in Sections 6-12.
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- For proper procedures, exceptions, and selection methods see ASHRAE 62.2-2010 and published addenda. All components shall be designed and installed per local codes, manufacturers' installation instructions, engineering documents, and regional ENERGY STAR program regulirements.
  - The system shall have at least one supply or exhaust fan with associated ducts and controls. Local exhaust fans are allowed to be part of an exhaust ventilation system. Outdoor air ducts connected to the return side of an air handler are allowed to be part of a supply ventilation system if manufacturer requirements for return air temperature are met.
- 8. Heating and cooling loads shall be calculated, equipment shall be selected, and duct systems shall be sized according to the latest editions of ACCA Manuals J, S, & D, respectively, 2009 ASHRAE Handbook of Fundamentals, or other methodology approved by the Authority Having Jurisdiction. The HVAC system design shall be completed for the specific configuration (e.g., plan, elevation, option, and orientation) of the home to be built except as permitted herein.
  - For each house plan with multiple configurations (e.g., orientations, elevations, options), the loads shall be calculated for each potential configuration. If the loads across all configurations vary by  $\leq 25\%$ , then the largest load shall be permitted to be used for equipment selection for all configurations, subject to the over-sizing limits of ACCA Manual S. Otherwise, the contractor shall group the load for each configuration into a set with  $\leq 25\%$  variation and equipment selection shall be completed for each set of loads.
  - For each house plan with multiple configurations, the room-level design airflows shall be calculated for each potential configuration. If the design airflows for each room vary across all configurations by  $\leq 25\%$  or 25 CFM, then the average room-level design airflow shall be permitted to be used when designing the duct system. Otherwise, the contractor shall group the room-level design airflow for each configuration into a set with  $\leq 25\%$  or 25 CFM variation and the duct design shall be completed for the average airflow of that set.
- 9. If the design conditions are dictated by a code or regulation, then the requirements of the lawful or controlling authority supersedes the Manual J or ASHRAE default design values. Otherwise, the default values shall be used. The values for the geographically closest location shall be selected or a justification provided for the selected location.
- 10. The number of occupants among all HVAC systems in the home must be equal to the number of bedrooms, as defined below, plus one. Occupants listed for systems that are indicated in the header as a cooling system for temporary occupant loads, as described in Footnote 3, shall be permitted to exceed this limit.

A bedroom is defined by RESNET as a room or space 70 sq. ft. or greater size, with egress window and closet, used or intended to be used for sleeping. A "den", "library", or "home office" with a closet, egress window, and 70 sq. ft. or greater size or other similar rooms shall count as a bedroom, but living rooms and foyers shall not.

- have a sill height of not more than 44 inches above the floor; AND
- have a minimum net clear opening of 5.7 sq. ft.; AND
- have a minimum net clear opening height of 24 in.; AND
- have a minimum net clear opening width of 20 in.; AND
- be operational from the inside of the room without the use of keys, tools or special knowledge.
- 11. "Predominant" is defined as the SHGC value used in the greatest amount of window area in the home.
- 12. Infiltration rate shall reflect value used in confirmed or projected HERS rating for rated home. Alternatively, use "Average" or "Semi-loose" values for the cooling season infiltration rates and "Semi-tight" or "Average" values for the heating season infiltration rates, as defined by ACCA Manual J, Eighth Edition, Version Two.



- 13. Design airflow is the design value(s) for the blower in CFM, as determined by using the manufacturer's expanded performance data to select equipment, per ACCA Manual S procedures.
- 14. Design duct static pressure shall account for the installation of a MERV 6 or higher filter.
- 15. The load calculation for the home shall be provided, documenting all design elements and all resulting loads, including but not limited to the values listed in Items 2.1 through 2.17.
- 16. All evaporators and condensing units shall be properly matched as demonstrated by an attached AHRI certificate. If an AHRI certificate is not available, a copy of OEM-provided catalog data indicating acceptable combination selection and performance data shall be attached.
- 17. If the whole-house ventilation system utilizes the HVAC air handler, then the fan speed type shall be ECM / ICM and variable speed, or include a controller (e.g., smart cycler) that reduces the ventilation run time by accounting for hours when HVAC system is heating or cooling the home.
- 18. Listed system capacity at design conditions is to be obtained from the OEM expanded performance data.
- 19. For cooling systems, the next largest nominal piece of equipment may be used that is available to satisfy the latent and sensible requirements. Single-speed systems generally have OEM nominal size increments of ½ ton. Multi-speed or multi-stage equipment may have OEM nominal size increments of one ton. Therefore, the use of these advanced system types can provide extra flexibility to meet the equipment sizing requirements.
- 20. Items 4.2 and 4.3 are not applicable to ground-source heat pumps.
- 21. For warm air heating systems, the output capacity must be between 100% and 140% of calculated system load unless a larger size is dictated by the cooling equipment selection.
- 22. Either factory-installed or field-installed TXV's may be used. For field-installed TXV's, ensure that sensing bulbs are insulated and tightly clamped to the vapor line with good linear thermal contact at the recommended orientation, usually 4 or 8 o'clock.
- 23. Examples of return or supply duct static pressure measurement locations are: plenum, cabinet, trunk duct, as well as front, back, left or right side. Test hole locations shall be well marked and accessible.
- 24. Ducts shall not include coiled or looped ductwork except to the extent needed for acoustical control. Balancing dampers or proper duct sizing shall be used instead of loops to limit flow to diffusers. When balancing dampers are used, they shall be located at the trunk to limit noise unless the trunk will not be accessible when the balancing process is conducted. In such cases, Opposable Blade Dampers (OBD) or dampers located in the duct boot are permitted.
- 25. Condensate pan shall be made of corrosion-resistant materials, to include galvanized steel and plastic. Drain pan shall drain condensate to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drainage system; and shall be equipped with a backflow prevention valve when drained to a shared drainage system, such as a storm water management system.



Home Address: Unit 2C	City: Boise State	e: ID Zi	p Code:	
System Description <sup>2</sup> FC-103A, FC-103B and FC-103C Cooling system for temporary occupant load? <sup>3</sup> Yes □ No ☑				
1. Whole-Building Mechanical Ventilation Design <sup>4</sup>			Cont. Verified <sup>6</sup>	N/A
1.1 Ventilation system installed that has been design but not limited to, requirements in Items 1.2-1.5.	ned to meet ASHRAE 62.2-2010 requirements including,	Ø	ď	-
	t to the return side of the HVAC system unless the system atically based on a timer and to restrict outdoor air intake		र्छ	-
<ol> <li>Documentation is attached with ventilation system of each ventilation cycle.</li> </ol>	m type, location, design rate, and frequency and duration	Ø	प्	-
1.4 If present, continuously-operating vent. & exhaust fans designed to operate during all occupiable hours.				Ø
least once per day and at least 10% of every 24				0
temperatures, home orientation, number of bedrooms, of	eters used in the design calculations shall reflect home to be a conditioned floor area, window area, predominant window perf MERV6 or better filter, and indoor temperature setpoints = 70	ormance and ir	nsulation level	S,
	☑ 2009 ASHRAE ☐ Other:	<u> </u>		Ĭ -
2.2 Duct Design Method:	☐ Manual D ☐ Other: Engineer	Ø		
2.3 Equipment Selection Method: ☐ Manual S	□ OEM Rec. □ Other: Engineer			-
2.4 Outdoor Design Temperatures: 9 Location: Boise	1%: 95 °F 99%: 10.! °F			-
2.5 Orientation of Rated Home (e.g., North, South):	North			-
2.6 Number of Occupants Served by System: 10	3			-
2.7 Conditioned Floor Area in Rated Home:	983 Sq. Ft.			
2.8 Window Area in Rated Home:	176 Sq. Ft.			
2.9 Predominant Window SHGC in Rated Home: 11	0.46			-
12	Summer: average Winter: average	<b>2</b>		
2.11 Mechanical Ventilation Rate in Rated Home:	60 CFM			-
2.12 Design Latent Heat Gain:	842 BTUh			-
2.13 Design Sensible Heat Gain:	18,978 BTUh			-
2.14 Design Total Heat Gain:	19,820 BTUh			-
2.15 Design Total Heat Loss:	13,084 BTUh	Ø		-
2.16 Design Airflow: <sup>13</sup>	Equipment supply CFM			-
2.17 Design Duct Static Pressure: 14	In. Water Column			0
2.18 Full Load Calculations Report Attached <sup>15</sup>	<del></del>			
3. Selected Cooling Equipment, If Cooling Equ	ipment to be installed			
3.1 Condenser Manufacturer & Model:	Samsung model JXH36			
3.2 Evaporator / Fan Coil Manufacturer & Model:	Samsung model RNS07 and RNS09	Ø		
3.3 AHRI Reference #: 16	205291855	包		
3.4 Listed Efficiency:	10.9 EER 18.0 SEER	Ø		
ÿ ,1	ixed orifice			
0 71	R-410a			
<ul> <li>3.7 Fan Speed Type: <sup>17</sup> ☐ Fixed ☐ V</li> <li>3.8 Listed Sys. Latent Capacity at Design Cond.: <sup>18</sup></li> </ul>	'ariable (ECM / ICM) □ Other:			
3.9 Listed Sys. Sensible Capacity at Design Cond.:	BTUh BTUh			
3.10 Listed Sys. Total Capacity at Design Cond.: 18	36,000 BTUh			
3.11 If Listed Sys. Latent Capacity (Value 3.8) ≤ Desi certified dehumidifier installed				Ø
3.12 Listed Sys. Total Capacity (Value 3.10) is 95-11 nominal size <sup>8, 19</sup>	5% of Design Total Heat Gain (Value 2.14) or next	Ø		
3.13 AHRI Certificate Attached <sup>16</sup>				V
4. Selected Heat Pump Equipment, If Heatpump	to be Installed			
	or Ground-Source:COP			
4.2 Performance at 17°F: Capacity 36,000 BTUh				
4.3 Porformance at 47°E: Canacity 36,000 BTUb	Efficiency: COP 20			



5. Selected Furnace, If Furnace to be Installed	Builder Verified <sup>5</sup>	Cont. Verified <sup>6</sup>	N/A
5.1 Furnace Manufacturer & Model:			包
5.2 Listed Efficiency: AFUE			Ø
5.3 Listed Output Heating Capacity: BTUh			<b>2</b>
5.4 Listed Output Heat. Cap. (Value 5.3) is 100-140% of Design Total Heat Loss (Value 2.15) or next nominal size 8.21			0
6. Refrigerant Tests - Run system for 15 minutes before testing Note: If outdoor ambient temperature at the condenser is ≤ 55°F or, if known, below the manufacturer-recommended the cooling cycle, then the system shall include a TXV, and the contractor shall mark "N/A" on the Checklist for Section	minimum operat	ing temperatu	ure for
6.1 Outdoor ambient temperature at condenser:  °F DB	110 & 7.		V
6.2 Return-side air temperature inside duct near evaporator, during cooling mode: °F WB			<u> </u>
6.3 Liquid line pressure:			
6.5 Suction line pressure: psig			
6.6 Suction line temperature:°F DB			
7. Refrigerant Calculations			
For System with Thermal Expansion Valve (TXV):  7.1 Condenser saturation temperature:  °F DB (Using Value 6.3)			0
7.2 Subcooling value: °F DB (Value 7.1 - Value 6.4)			0
7.3 OEM subcooling goal:   *F DB  (value 7.1 = value 0.4)	,		0
7.4 Subcooling deviation:   °F DB (Value 7.2 – Value 7.3)			0
For System with Fixed Orifice:			
7.5 Evaporator saturation temperature: "F DB (Using Value 6.5)			
7.6 Superheat value: "F DB (Value 6.6 – Value 7.5)			
7.7 OEM superheat goal: "F DB (Using superheat tables and Values 6.1 & 6.2	,		
7.8 Superheat deviation: °F DB (Value 7.6 – Value 7.7)	,		2
7.9 Value 7.4 is ± 3°F or Value 7.8 is ± 5°F			Ø
7.10 An OEM test procedure (e.g., as defined for a ground-source heat pump) has been used in place of sub-consuper-heat process and documentation has been attached that defines this procedure	cooling or		
8. Electrical Measurements – Taken at electrical disconnect while component is in operation			
8.1 Evaporator or furnace air handler fan: amperageline voltage			
8.2 Condenser unit: amperageline voltage			v
8.3 Electrical measurements within OEM-specified tolerance of nameplate value			v
9. Air Flow Tests			
9.1 Air volume at evaporator: CFM			V
9.2 Test performed in which mode? ☐ Heating ☐ Cooling			Ø
9.3 Return duct static pressure:IWC Test Hole Location: <sup>23</sup>			
9.4 Supply duct static pressure: IWC Test Hole Location: <sup>23</sup>			Ø
9.5 Test hole locations are well-marked and accessible <sup>23</sup>			
9.6 Airflow volume at evaporator (Value 9.1), at fan design speed and full operating load, ± 15% of the airflow r system design (Value 2.16) or within range recommended by OEM	equired per		v
10. Air Balance			
10.1 Balancing report prepared and attached indicating the room name and design airflow for each supply and individual room airflows measured and documented through one of the following options:		In addition, f	inal
10.1.1 Measured by contractor using ANSI / ACCA 5 QI-2007 protocol, documented by contractor on the base report, & verified by contractor to be within the greater of ± 20% or 25 CFM of design airflow <sup>24</sup> , OR	;		<b>0</b>
10.1.2 To be measured, documented, and verified by a Rater per Item 1.4.2 of the HVAC System QI Rater	Checklist		
11. System Controls			
11.1 Operating and safety controls meet OEM requirements  12. Drain pan			<b>Ø</b>
<ol> <li>12.1 Corrosion-resistant drain pan, properly sloped to drainage system, included with each HVAC component t condensate <sup>25</sup></li> </ol>	hat produces		<b>2</b>
HVAC Company Name: Advanced Heating And Cooling Credentialing Organi	zation: ACCA /	AE / Other	
HVAC Contractor Name: Caleb Knutson HVAC Contractor Signature:	Date	5/8/23	
Builder Name: 5 1560 Buildwa Builder Signature: 5 1) Prin Filler	Date	5/22/	23



This Checklist is designed to align with the requirements of ASHRAE 62.2-2010 and published addenda and ANSI / ACCA's 5 QI-2007
protocol, thereby improving the performance of HVAC equipment in new homes when compared to homes built to minimum code.
However, these features alone cannot prevent all ventilation, indoor air quality, and HVAC problems (e.g., those caused by a lack of
maintenance by occupants). Therefore, this Checklist is not a guarantee of proper ventilation, indoor air quality, or HVAC performance.

This Checklist applies to ventilation systems; to split air conditioners, unitary air conditioners, air-source heat pumps, and water-source (i.e., geothermal) heat pumps up to 65,000 Btu / h with forced-air distribution systems (i.e., ducts) and to furnaces up to 225,000 Btu / h with forced-air distribution systems (i.e., ducts). All other permutations of equipment (e.g., boilers, mini-split / multi-split systems) and distribution systems are exempt. If the ventilation system is the only applicable system installed in the home, then only Section 1 shall be completed.

One Checklist shall be completed for each system and provided to the Rater.

- 2. Description of HVAC system location or area served (e.g., "whole house", "upper level", "lower level").
- 3. Check "Yes" if this system is to handle temporary occupant loads. Such a system may be required to accommodate a significant number of guests on a regular or sporadic basis and shall be handled by a supplemental cooling system (e.g., a small, single-package unit or split-coil unit) or by a system that can shift capacity from zone to zone (e.g., a variable volume system).
- 4. The person responsible for the heating, cooling, & ventilation design shall be responsible for completing Sections 1 and 2 of this Checklist.
- 5. For Sections 1 through 5, the 'Builder Verified' column shall be used to indicate items verified by the builder (or a firm or HERS Rater hired by the builder). If any Items have been marked 'Builder Verified', then the builder is responsible for these Items and must sign this Checklist. Note that builders are not permitted to verify any Items in Sections 6-12.
- 6. For Sections 1 through 5, the 'Cont. Verified' column shall be used to indicate Items verified by the credentialed contractor (or a firm or HERS Rater hired by the contractor). In contrast, for Sections 6 through 12, the 'Cont. Verified' column shall <u>only</u> be used to indicate Items verified by the credentialed contractor (i.e., neither a builder, nor a firm, nor a HERS Rater are permitted to verify Sections 6 12). The credentialed contractor is responsible for these Items and shall sign this Checklist.
- For proper procedures, exceptions, and selection methods see ASHRAE 62.2-2010 and published addenda. All components shall be
  designed and installed per local codes, manufacturers' installation instructions, engineering documents, and regional ENERGY STAR
  program requirements.
  - The system shall have at least one supply or exhaust fan with associated ducts and controls. Local exhaust fans are allowed to be part of an exhaust ventilation system. Outdoor air ducts connected to the return side of an air handler are allowed to be part of a supply ventilation system if manufacturer requirements for return air temperature are met.
- 8. Heating and cooling loads shall be calculated, equipment shall be selected, and duct systems shall be sized according to the latest editions of ACCA Manuals J, S, & D, respectively, 2009 ASHRAE Handbook of Fundamentals, or other methodology approved by the Authority Having Jurisdiction. The HVAC system design shall be completed for the specific configuration (e.g., plan, elevation, option, and orientation) of the home to be built except as permitted herein.
  - For each house plan with multiple **configurations** (e.g., orientations, **elevations**, options), the loads shall be **calculated** for each potential configuration. If the loads across all configurations vary by  $\leq 25\%$ , then the largest load shall be permitted to be used for equipment selection for all configurations, subject to the over-sizing limits of ACCA Manual S. Otherwise, the contractor shall group the load for each configuration into a set with  $\leq 25\%$  variation and equipment selection shall be completed for each set of loads.
  - For each house plan with multiple configurations, the room-level design airflows shall be calculated for each potential configuration. If the design airflows for each room vary across all configurations by  $\leq 25\%$  or 25 CFM, then the average room-level design airflow shall be permitted to be used when designing the duct system. Otherwise, the contractor shall group the room-level design airflow for each configuration into a set with  $\leq 25\%$  or 25 CFM variation and the duct design shall be completed for the average airflow of that set.
- 9. If the design conditions are dictated by a code or regulation, then the requirements of the lawful or controlling authority supersedes the Manual J or ASHRAE default design values. Otherwise, the default values shall be used. The values for the geographically closest location shall be selected or a justification provided for the selected location.
- 10. The number of occupants among all HVAC systems in the home must be equal to the number of bedrooms, as defined below, plus one. Occupants listed for systems that are indicated in the header as a cooling system for temporary occupant loads, as described in Footnote 3, shall be permitted to exceed this limit.

A bedroom is defined by RESNET as a room or space 70 sq. ft. or greater size, with egress window and closet, used or intended to be used for sleeping. A "den", "library", or "home office" with a closet, egress window, and 70 sq. ft. or greater size or other similar rooms shall count as a bedroom, but living rooms and foyers shall not.

- have a sill height of not more than 44 inches above the floor; AND
- have a minimum net clear opening of 5.7 sq. ft.; AND
- have a minimum net clear opening height of 24 in.; AND
- have a minimum net clear opening width of 20 in.; AND
- be operational from the inside of the room without the use of keys, tools or special knowledge.
- 11. "Predominant" is defined as the SHGC value used in the greatest amount of window area in the home.
- 12. Infiltration rate shall reflect value used in confirmed or projected HERS rating for rated home. Alternatively, use "Average" or "Semi-loose" values for the cooling season infiltration rates and "Semi-tight" or "Average" values for the heating season infiltration rates, as defined by ACCA Manual J, Eighth Edition, Version Two.



- 13. Design airflow is the design value(s) for the blower in CFM, as determined by using the manufacturer's expanded performance data to select equipment, per ACCA Manual S procedures.
- 14. Design duct static pressure shall account for the installation of a MERV 6 or higher filter.
- 15. The load calculation for the home shall be provided, documenting all design elements and all resulting loads, including but not limited to the values fisted in Items 2.1 through 2.17.
- 16. All evaporators and condensing units shall be properly matched as demonstrated by an attached AHRI certificate. If an AHRI certificate is not available, a copy of OEM-provided catalog data indicating acceptable combination selection and performance data shall be attached.
- 17. If the whole-house ventilation system utilizes the HVAC air handler, then the fan speed type shall be ECM / ICM and variable speed, or include a controller (e.g., smart cycler) that reduces the ventilation run time by accounting for hours when HVAC system is heating or cooling the home.
- 18. Listed system capacity at design conditions is to be obtained from the OEM expanded performance data.
- 19. For cooling systems, the next largest nominal piece of equipment may be used that is available to satisfy the latent and sensible requirements. Single-speed systems generally have OEM nominal size increments of ½ ton. Multi-speed or multi-stage equipment may have OEM nominal size increments of one ton. Therefore, the use of these advanced system types can provide extra flexibility to meet the equipment sizing requirements.
- 20. Items 4.2 and 4.3 are not applicable to ground-source heat pumps.
- 21. For warm air heating systems, the output capacity must be between 100% and 140% of calculated system load unless a larger size is dictated by the cooling equipment selection.
- 22. Either factory-installed or field-installed TXV's may be used. For field-installed TXV's, ensure that sensing bulbs are insulated and tightly clamped to the vapor line with good linear thermal contact at the recommended orientation, usually 4 or 8 o'clock.
- 23. Examples of return or supply duct static pressure measurement locations are: plenum, cabinet, trunk duct, as well as front, back, left or right side. Test hole locations shall be well marked and accessible.
- 24. Ducts shall not include coiled or looped ductwork except to the extent needed for acoustical control. Balancing dampers or proper duct sizing shall be used instead of loops to limit flow to diffusers. When balancing dampers are used, they shall be located at the trunk to limit noise unless the trunk will not be accessible when the balancing process is conducted. In such cases, Opposable Blade Dampers (OBD) or dampers located in the duct boot are permitted.
- 25. Condensate pan shall be made of corrosion-resistant materials, to include galvanized steel and plastic. Drain pan shall drain condensate to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drainage system; and shall be equipped with a backflow prevention valve when drained to a shared drainage system, such as a storm water management system.



Home Address: Unit 2B	City: Boise	State:	ID Zip	Code:	
System Description <sup>2</sup> FC-103A, FC-103B and FC-103	C Cooling system for tempo	rary occupant load?	<sup>3</sup> Yes □ No		
1. Whole-Building Mechanical Ventilation Des	gn⁴		Builder Verified <sup>5</sup>	Cont. Verified, <sup>6</sup>	N/A
1.1 Ventilation system installed that has been design but not limited to, requirements in Items 1.2-1.5.	ned to meet ASHRAE 62.2-2010 requir	rements including,	v	ď	-
1.2 Ventilation system does not utilize an intake duc is designed to operate intermittently and autom- when not in use (e.g., motorized damper).			Ø	ð	-
1.3 Documentation is attached with ventilation syste     of each ventilation cycle.	m type, location, design rate, and freque	ncy and duration	•	ref	-
1.4 If present, continuously-operating vent. & exhaust	st fans designed to operate during all occ	cupiable hours.			Ø
1.5 If present, intermittently-operating whole-house valuest once per day and at least 10% of every 24	hours.				Ø
2. Heating & Cooling System Design 4,8 - Param temperatures, home orientation, number of bedrooms, infiltration rate, mechanical ventilation rate, presence of	conditioned floor area, window area, predor	minant window perfor	mance and in	sulation level	S,
	☑ 2009 ASHRAE ☐ Other:		✓		-
2.2 Duct Design Method:	☐ Manual D ☑ Other: Engineer	ľ	V		
2.3 Equipment Selection Method: ☐ Manual S	☐ OEM Rec. ☑ Other: Engineer	İ	Ø		
2.4 Outdoor Design Temperatures: 9 Location: Bois		= 1			-
2.5 Orientation of Rated Home (e.g., North, South):	North				-
2.6 Number of Occupants Served by System: 10	3	Ì			-
2.7 Conditioned Floor Area in Rated Home:		Sq. Ft.	·		-
2.8 Window Area in Rated Home:		Sa. Ft.	<u> </u>		_
2.9 Predominant Window SHGC in Rated Home: 11	0.46	, , , , , , , , , , , , , , , , , , ,			_
2.10 Infiltration Rate in Rated Home: 12	Summer: average Winter: average		v		-
2.11 Mechanical Ventilation Rate in Rated Home:		FM	<u> </u>		
2.12 Design Latent Heat Gain:		BTUh	<u> </u>		
2.13 Design Sensible Heat Gain:		3TUh	<u> </u>		
2.14 Design Total Heat Gain:		BTUh			
2.15 Design Total Heat Loss:		3TUh			
2.16 Design Airflow: <sup>13</sup>		CFM .			
2.17 Design Duct Static Pressure: 14		n. Water Column			- 0
2.18 Full Load Calculations Report Attached 15	"	1. Water Column	<u> </u>		-
3. Selected Cooling Equipment, If Cooling Equ	inment to be installed				-
3.1 Condenser Manufacturer & Model:	Samsung model JXH36		<b>2</b>		
3.2 Evaporator / Fan Coil Manufacturer & Model:	Samsung model RNS07 and RNS09	-			-
3.3 AHRI Reference #: <sup>16</sup>	205291855	İ			
3.4 Listed Efficiency:	10.9 EER 18.0 SEER	1	<b>1</b>		
	ixed orifice		<b>2</b>		
3.6 Refrigerant Type: ☑ F	R-410a		•		
	'ariable (ECM / ICM) ☐ Other:		Ø		
3.8 Listed Sys. Latent Capacity at Design Cond.: 18		TUh			9
3.9 Listed Sys. Sensible Capacity at Design Cond.: 18		TUh			0
3.10 Listed Sys. Total Capacity at Design Cond.: 18		TUh			
3.11 If Listed Sys. Latent Capacity (Value 3.8) ≤ Des certified dehumidifier installed		L			Ø
3.12 Listed Sys. Total Capacity (Value 3.10) is 95-1 nominal size <sup>8, 19</sup>	I5% of Design Total Heat Gain (Value 2.	14) or next	2		0
3.13 AHRI Certificate Attached <sup>16</sup>					Ø
4. Selected Heat Pump Equipment, If Heatpum					
· —	For Ground-Source:COP Efficiency:COP <sup>20</sup>	-			
4.2 Performance at 47°F: Capacity 36,000 BTUh	-	-	<u> </u>		



5. Selected Furnace, If Furnace to be Installed	Builder Verified <sup>5</sup>	Verified <sup>6</sup>	N/A
5.1 Furnace Manufacturer & Model:			2
5.2 Listed Efficiency: AFUE			Ø
5.3 Listed Output Heating Capacity:BTUh			Ø
5.4 Listed Output Heat. Cap. (Value 5.3) is 100-140% of Design Total Heat Loss (Value 2.15) or next nominal size 8.21			0
6. Refrigerant Tests - Run system for 15 minutes before testing	1		
Note: If outdoor ambient temperature at the condenser is ≤ 55°F or, if known, below the manufacturer-recommended mit the cooling cycle, then the system shall include a TXV, and the contractor shall mark "N/A" on the Checklist for Section 6	nimum operati i & 7. <sup>22</sup>	ng temperatu	ire for
6.1 Outdoor ambient temperature at condenser: °F DB			Ø
6.2 Return-side air temperature inside duct near evaporator, during cooling mode: °F WB			
6.3 Liquid line pressure: psig			V
6.4 Liquid line temperature:°F DB			0
6.5 Suction line pressure:psig			Ø
6.6 Suction line temperature: °F DB			V
7. Refrigerant Calculations			
For System with Thermal Expansion Valve (TXV):			
7.1 Condenser saturation temperature:			Ø
7.2 Subcooling value: °F DB (Value 7.1 - Value 6.4)			
7.3 OEM subcooling goal:			Ø
7.4 Subcooling deviation: °F DB (Value 7.2 – Value 7.3)			Ø
For System with Fixed Orifice:			
7.5 Evaporator saturation temperature:			
7.6 Superheat value:			Ø
7.7 OEM superheat goal: "F DB (Using superheat tables and Values 6.1 & 6.2)			
7.8 Superheat deviation:   "F DB (Value 7.6 – Value 7.7)			<b>2</b>
7.9 Value 7.4 is ± 3°F or Value 7.8 is ± 5°F			
7.10 An OEM test procedure (e.g., as defined for a ground-source heat pump) has been used in place of sub-coo super-heat process and documentation has been attached that defines this procedure	ling or		Ø
8. Electrical Measurements – Taken at electrical disconnect while component is in operation			
8.1 Evaporator or furnace air handler fan: amperageline voltage			<u> </u>
8.2 Condenser unit: amperageline voltage			
8.3 Electrical measurements within OEM-specified tolerance of nameplate value			v
9. Air Flow Tests			
9.1 Air volume at evaporator: CFM			Ø
9.2 Test performed in which mode? ☐ Heating ☐ Cooling			
9.3 Return duct static pressure: IWC Test Hole Location: <sup>23</sup>			Ø
9.4 Supply duct static pressure: IWC Test Hole Location: <sup>23</sup>			
9.5 Test hole locations are well-marked and accessible <sup>23</sup>			
9.6 Airflow volume at evaporator (Value 9.1), at fan design speed and full operating load, ± 15% of the airflow requestern design (Value 2.16) or within range recommended by OEM	uired per		V
10. Air Balance			
10.1 Balancing report prepared and attached indicating the room name and design airflow for each supply and ret individual room airflows measured and documented through one of the following options:		n addition, f	inal
10.1.1 Measured by contractor using ANSI / ACCA 5 QI-2007 protocol, documented by contractor on the bala report, & verified by contractor to be within the greater of ± 20% or 25 CFM of design airflow <sup>24</sup> , OR;	incing		Ø
10.1.2 To be measured, documented, and verified by a Rater per Item 1.4.2 of the HVAC System QI Rater Cl	necklist		2
11. System Controls			
11.1 Operating and safety controls meet OEM requirements			Ø
12. Drain pan			
12.1 Corrosion-resistant drain pan, properly sloped to drainage system, included with each HVAC component that condensate <sup>25</sup>	produces		Ø
HVAC Company Name: Advanced Heating And Cooling Credentialing Organization	ion: ACCA /	AE / Other	
HVAC Contractor Name: Caleb Knutson . HVAC Contractor Signature:		5/8/23	27
Builder Name: 5 Vissev 1344 Ams Co. Builder Signature: 5 David Telam	Date:	7/24/2	3



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protocol, thereby improving the performance of HVAC equipment in new homes when compared to homes built to minimum code.
However, these features alone cannot prevent all ventilation, indoor air quality, and HVAC problems (e.g., those caused by a lack of
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This Checklist applies to ventilation systems; to split air conditioners, unitary air conditioners, air-source heat pumps, and water-source (i.e., geothermal) heat pumps up to 65,000 Btu / h with forced-air distribution systems (i.e., ducts) and to furnaces up to 225,000 Btu / h with forced-air distribution systems (i.e., ducts). All other permutations of equipment (e.g., boilers, mini-split / multi-split systems) and distribution systems are exempt. If the ventilation system is the only applicable system installed in the home, then only Section 1 shall be completed.

One Checklist shall be completed for each system and provided to the Rater.

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- 8. Heating and cooling loads shall be calculated, equipment shall be selected, and duct systems shall be sized according to the latest editions of ACCA Manuals J, S, & D, respectively, 2009 ASHRAE Handbook of Fundamentals, or other methodology approved by the Authority Having Jurisdiction. The HVAC system design shall be completed for the specific configuration (e.g., plan, elevation, option, and orientation) of the home to be built except as permitted herein.
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A bedroom is defined by RESNET as a room or space 70 sq. ft. or greater size, with egress window and closet, used or intended to be used for sleeping. A "den", "library", or "home office" with a closet, egress window, and 70 sq. ft. or greater size or other similar rooms shall count as a bedroom, but living rooms and foyers shall not.

- have a sill height of not more than 44 inches above the floor; AND
- have a minimum net clear opening of 5.7 sq. ft.; AND
- have a minimum net clear opening height of 24 in.; AND
- have a minimum net clear opening width of 20 in.; AND
- be operational from the inside of the room without the use of keys, tools or special knowledge.
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- 12. Infiltration rate shall reflect value used in confirmed or projected HERS rating for rated home. Alternatively, use "Average" or "Semi-loose" values for the cooling season infiltration rates and "Semi-tight" or "Average" values for the heating season infiltration rates, as defined by ACCA Manual J, Eighth Edition, Version Two.



- 13. Design airflow is the design value(s) for the blower in CFM, as determined by using the manufacturer's expanded performance data to select equipment, per ACCA Manual S procedures.
- 14. Design duct static pressure shall account for the installation of a MERV 6 or higher filter.
- 15. The load calculation for the home shall be provided, documenting all design elements and all resulting loads, including but not limited to the values listed in Items 2.1 through 2.17.
- 16. All evaporators and condensing units shall be properly matched as demonstrated by an attached AHRI certificate. If an AHRI certificate is not available, a copy of OEM-provided catalog data indicating acceptable combination selection and performance data shall be attached.
- 17. If the whole-house ventilation system utilizes the HVAC air handler, then the fan speed type shall be ECM / ICM and variable speed, or include a controller (e.g., smart cycler) that reduces the ventilation run time by accounting for hours when HVAC system is heating or cooling the home.
- 18. Listed system capacity at design conditions is to be obtained from the OEM expanded performance data.
- 19. For cooling systems, the next largest nominal piece of equipment may be used that is available to satisfy the latent and sensible requirements. Single-speed systems generally have OEM nominal size increments of ½ ton. Multi-speed or multi-stage equipment may have OEM nominal size increments of one ton. Therefore, the use of these advanced system types can provide extra flexibility to meet the equipment sizing requirements.
- 20. Items 4.2 and 4.3 are not applicable to ground-source heat pumps.
- 21. For warm air heating systems, the output capacity must be between 100% and 140% of calculated system load unless a larger size is dictated by the cooling equipment selection.
- 22. Either factory-installed or field-installed TXV's may be used. For field-installed TXV's, ensure that sensing bulbs are insulated and tightly clamped to the vapor line with good linear thermal contact at the recommended orientation, usually 4 or 8 o'clock.
- 23. Examples of return or supply duct static pressure measurement locations are: plenum, cabinet, trunk duct, as well as front, back, left or right side. Test hole locations shall be well marked and accessible.
- 24. Ducts shall not include coiled or looped ductwork except to the extent needed for acoustical control. Balancing dampers or proper duct sizing shall be used instead of loops to limit flow to diffusers. When balancing dampers are used, they shall be located at the trunk to limit noise unless the trunk will not be accessible when the balancing process is conducted. In such cases, Opposable Blade Dampers (OBD) or dampers located in the duct boot are permitted.
- 25. Condensate pan shall be made of corrosion-resistant materials, to include galvanized steel and plastic. Drain pan shall drain condensate to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drainage system; and shall be equipped with a backflow prevention valve when drained to a shared drainage system, such as a storm water management system.



Home Address: Unit 2A	City: Boise	State:	ID Zip	Code:	
System Description <sup>2</sup> FC-103A, FC-103B and FC-103	C Cooling system for temporar	ry occupant load?	³ Yes □ No	Ø	
1. Whole-Building Mechanical Ventilation Des	ign <sup>4</sup>		Builder Verified <sup>5</sup>	Cont. Verified <sup>6</sup>	N/A
1.1 Ventilation system installed that has been design but not limited to, requirements in Items 1.2-1.5.	ned to meet ASHRAE 62.2-2010 requirem	nents including,	V	G C	-
1.2 Ventilation system does not utilize an intake duc is designed to operate intermittently and autom when not in use (e.g., motorized damper).			Ø		-
1.3 Documentation is attached with ventilation syste     of each ventilation cycle.	m type, location, design rate, and frequency	y and duration	Ø		-
1.4 If present, continuously-operating vent. & exhaus					Ø
1.5 If present, intermittently-operating whole-house least once per day and at least 10% of every 24	hours.				Ø
2. Heating & Cooling System Design 4,8 - Param temperatures, home orientation, number of bedrooms, infiltration rate, mechanical ventilation rate, presence of	conditioned floor area, window area, predomin	nant window perfora	mance and in	sulation level:	S,
	☑ 2009 ASHRAE □ Other:		Ø		-
2.2 Duct Design Method:	☐ Manual D ☑ Other: Engineer	Ì	P		
2.3 Equipment Selection Method: ☐ Manual S	☐ OEM Rec. ☐ Other: Engineer		Ø		-
2.4 Outdoor Design Temperatures: 9 Location: Bois		Ì			-
2.5 Orientation of Rated Home (e.g., North, South):	North	Ì			-
2.6 Number of Occupants Served by System: 10	3	t	<u> </u>		-
2.7 Conditioned Floor Area in Rated Home:	891 Sq.	Ft	<u> </u>		-
2.8 Window Area in Rated Home:	163 Sq.	1	<u> </u>		
2.9 Predominant Window SHGC in Rated Home: 11	0.46	· · · · · · · · · · · · · · · · · · ·			
2.10 Infiltration Rate in Rated Home: 12	Summer: average Winter: average	+			
2.11 Mechanical Ventilation Rate in Rated Home:	55 CFN	NA -	0		
2.12 Design Latent Heat Gain:	842 BTU	-			
2.13 Design Sensible Heat Gain:	15,363 BTU				
	16,205 BTU	-			-
2.14 Design Total Heat Gain:     2.15 Design Total Heat Loss:	14,961 BTU	-	0		
2.16 Design Airflow: <sup>13</sup>	Equipment supply CFM	-			
		H			-
2.17 Design Duct Static Pressure: 14	ın. v	Water Column			
2.18 Full Load Calculations Report Attached 15	Summand de la desadada d		Ø		-
Selected Cooling Equipment, If Cooling Equ     Condenser Manufacturer & Model:	Samsung model JXH36				
3.2 Evaporator / Fan Coil Manufacturer & Model:	Samsung model RNS07 and RNS09	-			
3.3 AHRI Reference #: 16	205291855		0		
3.4 Listed Efficiency:	10.9 EER 18.0 SEER	-			
-	ixed orifice		2		
3.6 Refrigerant Type: ☑ F	R-410a		Ø		
3.7 Fan Speed Type: <sup>17</sup> ☐ Fixed ☐ \(\sigma\)	/ariable (ECM / ICM) □ Other:		Ø		
3.8 Listed Sys. Latent Capacity at Design Cond.: 18	BTU	Jh			Ø
3.9 Listed Sys. Sensible Capacity at Design Cond.: 1		1-			
3.10 Listed Sys. Total Capacity at Design Cond.: 18	36,000 BTU				
3.11 If Listed Sys. Latent Capacity (Value 3.8) ≤ Des certified dehumidifier installed					<b>1</b>
3.12 Listed Sys. Total Capacity (Value 3.10) is 95-1 nominal size <sup>8, 19</sup>	15% of Design Total Heat Gain (Value 2.14	l) or next	e		
3.13 AHRI Certificate Attached <sup>16</sup>					Ø
4. Selected Heat Pump Equipment, If Heatpum					
	or Ground-Source: COP		<u> </u>		
	Efficiency: COP 20  Efficiency: COP 20	-			
4.3 Performance at 47°F: Capacity 36,000 BTUh	Elliciency: COP		V		



5. Selected Furnace, If Furnace to be Installed		Builder Verified <sup>5</sup>	Cont. Verified <sup>6</sup>	N/A
5.1 Furnace Manufacturer & Model:				0
5.2 Listed Efficiency:	AFUE			V
5.3 Listed Output Heating Capacity:	BTUh			Ø
5.4 Listed Output Heat. Cap. (Value 5.3) is 100-140% of Des nominal size <sup>8,21</sup>	sign Total Heat Loss (Value 2.15) or next			Ø
6. Refrigerant Tests - Run system for 15 minutes before tests				
Note: If outdoor ambient temperature at the condenser is ≤ 55°F the cooling cycle, then the system shall include a TXV, and the cooling cycle.	or, if known, below the manufacturer-recommended mini- contractor shall mark "N/A" on the Checklist for Section 6	mum operati & 7. <sup>22</sup>	ng temperatu	ire for
6.1 Outdoor ambient temperature at condenser:	°F DB			Ø
6.2 Return-side air temperature inside duct near evaporator,	during cooling mode: °F WB			Ø
6.3 Liquid line pressure:	psig			Ø
6.4 Liquid line temperature:	°F DB			Ø
6.5 Suction line pressure:	psig			0
6.6 Suction line temperature:	\$5.9 °F DB			0
7. Refrigerant Calculations				-
For System with Thermal Expansion Valve (TXV):				
	DB (Using Value 6.3)			0
	DB (Value 7.1 - Value 6.4)			0
7.3 OEM subcooling goal: °F I	DB			0
7.4 Subcooling deviation: °F I	DB (Value 7.2 – Value 7.3)			Ø
For System with Fixed Orifice:	***************************************			
7.5 Evaporator saturation temperature: °F I	DB (Using Value 6.5)			
7.6 Superheat value: °F I	DB (Value 6.6 – Value 7.5)			
	DB (Using superheat tables and Values 6.1 & 6.2)			Ø
7.8 Superheat deviation: °F I	DB (Value 7.6 – Value 7.7)			Ø
7.9 Value 7.4 is ± 3°F or Value 7.8 is ± 5°F				Ø
7.10 An OEM test procedure (e.g., as defined for a ground-s super-heat process and documentation has been attach		ng or		v
8. Electrical Measurements - Taken at electrical disconi	nect while component is in operation			
8.1 Evaporator or furnace air handler fan: amperaç	geline voltage			Ø
8.2 Condenser unit: ampera	geline voltage			V
8.3 Electrical measurements within OEM-specified tolerance	of nameplate value			
9. Air Flow Tests	- · · · · · · · · · · · · · · · · · · ·			
9.1 Air volume at evaporator:CFM				Ø
9.2 Test performed in which mode? ☐ Heating ☐ 6	Cooling	[		Ø
9.3 Return duct static pressure:	IWC Test Hole Location: 23			
9.4 Supply duct static pressure:	IWC Test Hole Location: 23			V
9.5 Test hole locations are well-marked and accessible <sup>23</sup>				
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HVAC Company Name: Advanced Heating And Cooling	Credentialing Organization			
	AC Contractor Signature:		5/8/23	20
Builder Name: 5 Visser Building Build	der Signature: 5 Jan 10 Fielding	Date	SILL	13



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