



Residential New Home Construction Checklist

A separate permit is required for each address. Address/PID: _____

All materials and the installation of all materials must comply with the Minnesota State Building Code and the manufacturers' installation specifications for each product.

SUBMISSION CHECKLIST (Incomplete applications **will not** be accepted)

- Completed and signed Building Permit Application
- Application, (include all License/Bond Numbers, as well as contact phone numbers and email addresses)
- A copy of this page; completed and signed
- 1 sets of structural building plans (floor plans and elevations)
- 1 sets of site plans illustrating building dimensions, lot lines and setbacks
- 1 sets of plans indicating braced wall lines for each floor
- New Construction Energy Code Compliance Certificate (attached)
- Worksheet E-1 ("Residential Combustion Air Calculation Method") (attached)
- Table 501.3.1 form ("Procedure to Determine Makeup Air Quantity for Exhaust Equipment") (attached)
- New Construction Energy Code Lighting Schedule (attached and allowed to be a deferred submittal).
- Note: Additional information may be required by the plans examiner

Check all items below that will be included in the construction of the home.

Note: All items checked below may need to be installed and completed before a Certificate of Occupancy can be issued. If any of the items are not checked, but are added to the plan after the building permit has been issued, an additional permit will be required.

- Finished Basement
- Deck
- 3-Season Porch
- Gas Fireplace - Quantity: _____
- Masonry/Wood Fireplace - Quantity: _____
- In-Floor Heat –hydronic
- Geothermal System
- Other: _____
- Retaining Wall – If over 48" in height include structural engineer sealed design.
- Complete Septic System Design.

Foundation Information				
Foundation Type	<input type="checkbox"/> Masonry	<input type="checkbox"/> Poured Wall	<input type="checkbox"/> ICF	<input type="checkbox"/> Wood
Foundation Thickness	<input type="checkbox"/> 8-inch	<input type="checkbox"/> 10-inch	<input type="checkbox"/> 12-inch	<input type="checkbox"/> Other _____
ICF Only	<input type="checkbox"/> 5.5-inch	<input type="checkbox"/> 7.5-inch	<input type="checkbox"/> 9.5-inch	<input type="checkbox"/> Other _____
Design Criteria	<input type="checkbox"/> Conventional	<input type="checkbox"/> Engineered	<input type="checkbox"/> IRC Tables	

Maximum Foundation Wall Height: 4' 5' 6' 7' 8' 9' 10' Other _____
Vertical Reinforcement Size and Spacing _____ reinforcing _____ inches o.c. Horizontal Reinforcement Size and Spacing _____ reinforcing _____ inches o.c.
Waterproofing/Damp-proofing (product type) Above grade: _____ Below grade: _____
Foundation Drainage System Type _____

Applicant's Printed Name

Date

Applicant's Signature

Energy Code Compliance Certificate

Date Certificate
Posted



Mailing Address of the Dwelling or Dwelling Unit	City
Name of Residential Contractor	MN License Number

THERMAL ENVELOPE										RADON CONTROL SYSTEM	
Insulation Location	Total R-Value of all Types of Insulation	Type: Check All That Apply								Passive (No Fan)	
		Non or Not Applicable	Fiberglass, Blown	Fiberglass, Batts	Foam, Closed Cell	Foam Open Cell	Mineral Fiberboard	Rigid, Extruded Polystyrene	Rigid, Isocyanurate	Active (With fan and monometer)	
Below Entire Slab										Location (or future location) of Fan:	
Foundation Wall										Other Please Describe Here	
Perimeter of Slab on Grade											
Rim Joist (1st Floor)											
Rim Joist (2nd Floor+)											
Wall											
Ceiling, flat											
Ceiling, vaulted											
Bay Windows or cantilevered areas											
Floors over unconditioned area											
Describe other insulated areas											

Building envelope air tightness:	Duct system air tightness:
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Windows & Doors	Heating or Cooling Ducts Outside Conditioned Spaces
Average U-Factor (excludes skylights and one door) U:	Not applicable, all ducts located in conditioned space
Solar Heat Gain Coefficient (SHGC):	R-value

MECHANICAL SYSTEMS						Make-up Air <i>Select a Type</i>	
Appliances	Heating System		Domestic Water Heater		Cooling System		
Fuel Type						Not required per mech. code	
Manufacturer						Passive	
Model						Powered	
Rating or Size	Input in BTUS:		Capacity in Gallons:		Output in Tons:	Interlocked with exhaust device. Describe:	
Efficiency	AFUE or HSPF%				SEER /EER	Other, describe:	
Residential Load Calculation	Heating Loss		Heating Gain		Cooling Load		Location of duct or system:
						Cfm's	
						" round duct OR	
						" metal duct	

MECHANICAL VENTILATION SYSTEM						Combustion Air <i>Select a Type</i>	
Describe any additional or combined heating or cooling systems if installed: (e.g. two furnaces or air source heat pump with gas back-up furnace):						Not required per mech. code	
Select Type						Passive	
Heat Recover Ventilator (HRV) Capacity in cfm's:	Low:		High:		Other, describe:		
Energy Recover Ventilator (ERV) Capacity in cfm's:	Low:		High:		Location of duct or system:		
Balanced Ventilation capacity in cfm's:							
Location of fan(s), describe:						Cfm's	
Capacity continuous ventilation rate in cfm's:						" round duct OR	
Total ventilation (intermittent + continuous) rate in cfm's:						" metal duct	



Residential Combustion Air Calculation

Residential Combustion Air Calculation Method
(for Furnace, Boiler, and/or Water Heater in the Same Space)

Step 1: Complete vented combustion appliance information:

Furnace/Boiler:
 ___ Draft Hood ___ Fan Assisted ___ Direct Vent Input: ___ Btu/hr.
 (Not fan Assisted) & Power Vent

Water Heater:
 ___ Draft Hood ___ Fan Assisted ___ Direct Vent Input: ___ Btu/hr.
 (Not fan Assisted) & Power Vent

Step 2: Calculate the volume of the Combustion Appliance Space (CAS) containing combustion appliances. The CAS includes all spaces connected to one another by code compliant openings. CAS volume: _____ ft³

Step 3: Determine air Changes per Hour (ACH)¹

Default ACH values have been incorporated into Table E-1 for use with Method 4b (KAIR Method). If the year of construction or ACH is not known, use method 4a (Standard Method).

Step 4: Determine Required Volume for Combustion Air.

4a. Standard Method

Total Btu/hr. input of all combustion appliances (DO NOT COUNT DIRECT VENT APPLIANCES) Input: ___ Btu/hr.

Use Standard Method column in Table E-1 to find Total Required Volume (TRV) TRV: _____ ft³

If CAS Volume (from Step 2) is **greater than** TRV then no outdoor openings are needed.

If CAS Volume (from Step 2) is **less than** TRV then go to **STEP 5**.

4b. Known Air Infiltration Rate (KAIR) Method

Total Btu/hr input of all fan-assisted and power vent appliances
 (DO NOT COUNT DIRECT VENT APPLIANCES) Input: ___ Btu/hr.

Use Fan-Assisted Appliances column in Table E-1 to find

Required Volume Fan Assisted (RVFA) RVFA: _____ ft³

Total Btu/hr. input of all non-fan-assisted appliances Input: ___ Btu/hr.

Use Non-Fan-Assisted Appliances column in Table E-1 to find

Required Volume Non-Fan-Assisted (RVNFA) RVNFA: _____ ft³

Total Required Volume (TRV) = RVFA + RVNFA TRV = ___ + ___ = _____ ft³

If CAS Volume (from Step 2) is **greater than** TRV then no outdoor openings are needed.

If CAS Volume (from Step 2) is **less than** TRV then go to **STEP 5**.

Step 5: Calculate the ratio of available interior volume to the total required volume.

Ratio = CAS Volume (from Step 2) **divided by** TRV (from Step 4a or Step 4b) Ratio = ___/___ = ___

Step 6: Calculate Reduction Factor (RF).

RF = 1 **minus** Ratio RF=1 - ___ = ___

Step 7: Calculate single outdoor opening as if all combustion air is from outside.

Total Btu/hr. input of all Combustion Appliances in the same CAS (EXCEPT DIRECT VENT) Input: ___ Btu/hr.

Combustion Air Opening Area (CAOA):

Total Btu/hr. **divided by** 3000 Btu/hr. per in² CAO A = ___/3000 Btu/hr. per in² = ___ in²

Step 8: Calculate Minimum CAO A.

Minimum CAO A = CAO A **multiplied by** RF Minimum CAO A = ___ x ___ = ___ in²

Step 9: Calculate Combustion Air Opening Diameter (CAOD)

CAOD = 1.13 **multiplied by the square root of** Minimum CAO A CAOD = 1.13 x $\sqrt{\text{Minimum CAO A}}$ = ___ in

Table 501.3.1
Procedure to Determine Makeup Air Quantity for Exhaust Equipment in Dwellings
Use the Appropriate Column to Estimate House Infiltration

	One or multiple power vent or direct vent appliances or no combustion appliances ^A	One or multiple fan-assisted appliances and power vent or direct vent appliances ^B	One atmospherically vented gas or oil appliance or one solid fuel appliance ^C	Multiple atmospherically vented gas or oil appliances or solid fuel appliances ^D
1a) pressure factor (cfm/sf)	0.15	0.09	0.06	0.03
b) conditioned floor area (sf) (including unfinished basements)				
Estimated House Infiltration (cfm): [1a x 1b]				
2. Exhaust Capacity				
a) continuous exhaust-only ventilation systems (cfm): (not applicable to balanced ventilation systems such as HRV)				
b) clothes dryer	135	135	135	135
c) 80% of largest exhaust rating (cfm): (not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)				
d) 80% of next largest exhaust rating (cfm): (not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)	not applicable			
Total Exhaust Capacity (cfm): [2a+2b+2c+2d]				
3. Makeup Air Requirement				
a) Total Exhaust Capacity (from above)				
b) Estimated House Infiltration (from above)				
Makeup Air Quantity (cfm): [3a – 3b] (if value is negative, no makeup air is needed)				
4. For Makeup Air Opening Sizing, refer to Table 501.3.2				

- A Use this column if there are other than fan-assisted or atmospherically vented gas or oil appliances or if there are no combustion appliances.
- B Use this column if there is one fan-assisted appliance per venting system. Other than atmospherically vented appliances may also be included.
- C Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil appliance per venting system or one solid fuel appliance.
- D Use this column if there are multiple atmospherically vented gas or oil appliances using a common vent or if there are atmospherically vented gas or oil appliances and solid fuel appliances.

	One or multiple power vent or direct vent appliances or no combustion appliances ^A	One or multiple fan-assisted appliances and power vent or direct vent appliances ^B	One atmospherically vented gas or oil appliance or one solid fuel appliance ^C	Multiple atmospherically vented gas or oil appliances or solid fuel appliances ^D	Passive makeup air opening duct diameter ^{E, F, G}
Type of opening or system	(cfm)	(cfm)	(cfm)	(cfm)	(cfm)
Passive Opening	1-36	1-22	1-15	1-9	3
Passive Opening	33-66	23-41	16-28	10-17	4
Passive Opening	67-109	42-66	29-46	18-28	5
Passive Opening	110-163	67-100	47-69	29-42	6
Passive Opening	164-232	101-143	70-99	43-61	7
Passive Opening	233-317	144-195	100-135	62-83	8
Passive Opening with Motorized Damper	318-419	196-258	136-179	84-110	9
Passive Opening with Motorized Damper	540-679	333-419	231-290	143-179	11
Powered Makeup Air ^H	>679	>419	>290	>179	not applicable

A Use this column if there are other than fan-assisted or atmospherically vented gas or oil appliances or if there are no combustion appliances.

B Use this column if there is one fan-assisted appliance per venting system. Other than atmospherically vented appliances may also be included.

C Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil appliance per venting system or one solid fuel appliance.

D Use this column if there are multiple atmospherically vented gas or oil appliances using a common vent or if there are atmospherically vented gas or oil appliances and solid fuel appliance(s).

E An equivalent length of 100 feet of round smooth metal duct is assumed. Subtract 40 feet for the exterior hood and ten feet for each 90-degree elbow to determine the remaining length of straight duct allowable.

F If flexible duct is used, increase the duct diameter by one inch. Flexible duct shall be stretched with minimal sags.

G Barometric dampers are prohibited in passive makeup air openings when any atmospherically vented appliance is installed.

H Powered makeup air shall be electrically interlocked with the largest exhaust system.

