MNSPECT LLC
HELPING YOU COMPLY WITH THE CODE

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RESIDENTIAL NEW HOME CONSTRUCTION

- Each address requires a separate permit.
- 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 forwarded to the Building Inspections Department for plan review.)
  - ☐ Completed and signed Building Permit Application, Plumbing Permit Application and Mechanical Permit Application (include all License/Bond Numbers, as well as contact phone numbers and email addresses).
  - ☐ A copy of this page, completed and signed.
  - ☐ 2 sets of structural building plans (floor plans and elevations)
  - ☐ 2 sets of site plans illustrating building dimensions, lot lines and setbacks
  - ☐ 2 sets of plans indicating braced wall lines for each floor
  - ☐ Braced wall line worksheet (attached)
  - ☐ Roof/floor truss plan/layout
  - ☐ 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)
  - ☐ Certificate of Grading (if applicable)
  - ☐ 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 – Wirsbo
  - ☐ Geothermal System
  - ☐ Other: _____
  - ☐ Retaining Wall - maximum height = _____ (retaining walls are measured from the bottom of the footing to the top of the wall)
  - ☐ **Septic System (Township permits only) – Please check that you have contacted the Township Septic Inspector – Building permit CANNOT be issued until septic approval is received.**
- FOUNDATION INFORMATION

Typical Footing Size	_____ x _____			
Foundation Type	Masonry ☐	Poured Wall ☐	ICF ☐	Wood ☐
Foundation Thickness	8-inch ☐	10-inch ☐	12-inch ☐	Other _____
ICF Only	5.5-inch ☐	7.5-inch ☐	9.5-inch ☐	Other _____
Design Criteria	Conventional ☐	Engineered ☐	IRC Tables ☐	

Maximum Foundation Wall Height: 4' 5' 6' 7' 8' 9' 10' Other _____

Vertical Reinforcement Size and Spacing _____rebar _____ inches o.c.

Waterproofing/Damp-proofing (product type) Above grade: _____Below grade:_____

Foundation Drainage System Type _____

_____ _____
Applicant's Signature Date

PERMIT CARD AND APPROVED PLANS (throughout the project) shall be:

POSTED prior to start of work - **VISIBLE** from street or driveway - **ACCESSIBLE** to the inspector

INSPECTION REQUIREMENTS:

- **MUST** schedule during office hours **AT LEAST** one business day prior to required inspection. If a specific date and/or time will be required, more notice may be needed – please plan ahead. A re-inspection fee may be charged for failure to cancel an inspection for which you are not ready, or for failure to pass an inspection.
- Office Hours: Monday - Friday • 8:00 a.m. - 4:30 p.m.
- Phone: (952) 442-7520 or (888) 446-1801
- **Permit card and approved plans MUST be on site for each inspection and should be protected from the weather.**
- Post address on construction site and visible from the street.

Inspections: See your permit card to determine which of the following inspections are required for your project. The card and plans must be on site for EVERY inspection!

- **Site inspection (prior to excavation):** Refer to Site Inspection Checklist that will come back with your approved plans – all items on the checklist must be complete prior to the inspection. The Site Inspection Checklist MUST be on site for the inspection.
- **Footings:** After forms and reinforcing are in place, but PRIOR TO POURING CONCRETE.
- **Poured Wall/Core Fill:** After forms and reinforcing are in place, but PRIOR TO POURING CONCRETE. For block walls (core-fill), rebar must be in place.
- **Foundation/Drainage (often referred to as the backfill inspection):** Prior to backfilling. Exterior drainage system, waterproofing, exterior insulation and wall bracing must be in place. IF a foundation as-built survey is required by the municipality, the survey MUST be submitted AND approved before the foundation inspection will be performed.
- **Radon Rough-In:** Prior to pouring slab. Under slab radon piping installed, and installation of 4" rock or sand base complete. Note: If a sand base is used, geotextile drainage matting must be installed.
- **Under Slab Vapor Retarder:** (Can take place at the same time as the radon rough-in.) Min 6' mil poly installed (with minimum 12" lap).
- **Braced Wall Panel Inspection**
- **Framing: All plumbing, mechanical, fireplace, fire sprinkler and electrical rough-ins (if applicable) must be approved prior to this inspection.** (See handouts for those items for details about their rough-in and final inspections.) In addition to the approved plans, truss specs and any required engineering must be available at this inspection. Fire-blocking and wall bracing must be in place.
- **Energy Efficiency (insulation and vapor barrier):** All insulation, chutes, and poly must be installed, and poly taped and sealed, for this inspection. The wall and roof sheathing must be protected on the exterior, and the roof must be shingled.
- **Drywall/Fire Rated Assemblies (if applicable):** Assemblies must be installed per approved plans.
- **Lath (if applicable):** After weep screed, paper, and kick-out flashing are applied, but BEFORE BROWN COAT.
- **Final: All plumbing, mechanical, fireplace, fire sprinkler and electrical finals (if applicable) must be approved prior to this inspection.** The attic insulation and building certificates must be provided/posted. See the New Home Final Checklist (attached) for a list of items that must be complete.

Warning: The inspector may issue an order to remove materials to verify compliance with the MN State Building Code and manufacturer's installation requirements.
If a re-inspection is required, a re-inspection fee will apply. The permit holder (the signing applicant) or the permit holder's representative must meet the inspector at the site to provide access. The re-inspection will not be conducted if the re-inspection fee is not paid.

Note: The State of Minnesota requires that all residential building contractors, remodelers, roofers, plumbers, and electricians obtain a state license unless they qualify for a specific exemption from the licensing requirements. Any person claiming an exemption must provide a copy of a Certificate of Exemption from the Department of Labor & Industry to the Municipality before a permit can be issued. To determine whether a particular contractor is required to be licensed or to check on the licensing status of individual contractors, please call the Minnesota Department of Labor & Industry at 651-284-5065 or toll free 1-800-342-5354.

Note: For specific code requirements, please contact the Building Inspection Department at 952-442-7520 or 888-446-1801 or e-mail: info@mnspect.com.

NEW HOME FINAL -CHECKLIST

P F N/A **EXTERIOR**:

□ □ □ Address posted, secured, visible from the street fronting the property (contrasting color, min. 4" numbers/letters) (R319.1)

□ □ □ Exterior exhaust clearances

□ □ □ Grading: vegetation established or Sediment/Erosion Control in place

□ □ □ Earth-wood separation – 6" (R317.1(5))

□ □ □ Stucco exterior – weep screed clearance 4" above earth or 2" above paved areas (R703.6.2.1)

□ □ □ Protective covering over exposed exterior waterproofing and/or insulation, extends a minimum of 6" below grade (R402.1.1)

□ □ □ Ventilation intake/exhaust outlets have permanent, weather-resistant ID labels (R403.5.15)

□ □ □ Grade falls 6" over the first 10' (R401.3) or swales are present

□ □ □ Impervious surfaces within 10' of foundation are sloped ≥ 2% away from building

□ □ □ Exterior wall penetrations sealed from weather/rodents (703.1)

□ □ □ Roofing: kick-out flashing (where required) (R903.2.2)

□ □ □ Roofing: ventilation as required (R806.2)

□ □ □ Ramps (if installed) (R311.8)

□ □ □ Deck: handrails (R311.7.7) and guardrails (R312.1)

□ □ □ Steps and landing to house (R311.3), and handrails (R311.7.7)

□ □ □ Stairway illumination (R311.7.9)

GARAGE:

□ □ □ Garage fire separations: walls/ceiling (302.6)

□ Sealed: attic access (see "General" item below) (RE402.2.4)

□ □ □ Door 1: Garage overhead door meets 90 mph rating (R301.2.1)

□ □ □ Door 1: GDO Test: reverse, sensors, obstruction, resistance (R309.4)

□ □ □ Door 2: Garage overhead door meets 90 mph rating (R301.2.1)

□ □ □ Door 2: GDO Test: reverse, sensors, obstruction, resistance (R309.4)

□ □ □ Garage door to home is solid wood, solid steel, or honeycomb core steel not less than 1-3/8" thick, or is labeled as 20-minute fire rated (R302.5.1)

□ □ □ Steps to home

GENERAL:

□ □ □ Smoke detector on each floor (installed and working) – interconnected (R314)

□ □ □ Smoke detector outside of each sleeping room (installed and working) – interconnected (R314.3 and R314.4)

□ □ □ Carbon monoxide detector outside of each sleeping room (10') (R315.1.1)

□ □ □ Safety glazing on windows/doors where required (R308)

□ □ □ Blocked patio doors (where required) (R312.2)

□ □ □ Attic insulation card, insulation installer's certification and builder's certificate signed/posted (R401.3)

□ □ □ Blower door test results – 3 air changes per hour (RE402.4.1.2)

□ □ □ Light (natural or artificial) in every habitable room (R303.1)

□ □ □ Minimum 75% of lamps in permanently installed fixtures are high-efficiency (RE404.1)

□ □ □ Hallway/corridor widths 3' (R311.6) *(This section continued on next page…)*

P F N/A **GENERAL (continued)**

□ □ □ Ceiling height 7' (R305.1)

□ □ □ Skylights (if installed) (R308.6)

□ □ □ Main entry door: 32" clear width, side hinged (R311.2)

□ □ □ Air intake separation (R303.5.1)

□ □ □ Attic access: 22x30 and sealed (R807.1)

□ □ □ Exposed poly is fire rated (302.10.1)

□ □ □ Gas line shut-off on all gas appliances, AGA-approved flex connector – grounded CCST tubing (if required)

BEDROOM(S):

1 2 3 4

□ □ □ □ Cranks on windows, egress size and sill height (R310.1)

□ □ □ □ Window fall protection (R312.2)

□ □ □ □ Heat register covers installed

□ □ □ □ Smoke detector

BATHROOM(S):

1 2 3 4

□ □ □ □ Ventilation (natural or mechanical) (R303.3)

□ □ □ □ Shower walls 6' above floor (R307.2)

P F N/A **UTILITY ROOM:**

□ □ □ Sump hooked up, discharge in yard or tile along street

□ □ □ Sump cover screwed down and sealed

□ □ □ Water meter sealed

STAIRS:

□ □ □ Rise, run, ceiling height, width, illumination, landings (R311.7)

□ □ □ Handrails: height, gap/handroom, continuous, structural strength (R311.7.8)

□ □ □ Guardrails: openings, structural strength (R312.1)

□ □ □ Concealed space under stairs (R302.7)

BASEMENT/CRAWL SPACE:

□ □ □ Exposed poly is fire rated (302.10.1)

□ □ □ ½" drywall installed on underside of floor joists (R501.3)

□ □ □ Crawl space access: 18" x 24" floor; 16" x 24" wall (R408.4)

□ □ □ Crawl space ventilation (R408.1)

PERMIT CARD:

□ □ □ Mechanical final - signed

□ □ □ Fireplace final (if applicable and separate permit) - signed

□ □ □ Plumbing final - signed

□ □ □ Sprinkler final (if applicable and separate permit) - signed

□ □ □ Electric final - signed

□ □ □ Building final - signed

□ □ □ Site inspection was completed (if required)

New Construction Energy Code Compliance Certificate

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Per R4013 Certificate. A building certificate shall be posted on or in the electrical distribution panel.	Date Certificate Posted
Mailing Address of the Dwelling or Dwelling Unit	**Municipality**
Name of Residential Contractor	**MN License Number**

THERMAL ENVELOPE

Insulation Location	Total R-Value of all Types of Insulation	Type: Check All That Apply								
		Non or Not Applicable	Fiberglass, Blown	Fiberglass, Batts	Foam, Closed Cell	Foam Open Cell	Mineral Fiberboard	Rigid, Extruded Polystyrene	Rigid, Isocynurate	Other Please Describe Here
Below Entire Slab										
Foundation Wall										
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										

RADON CONTROL SYSTEM

- ☐ Passive (*No Fan*)
- ☐ Active (*With fan and monometer or other system monitoring device*)

Location (or future location) of Fan:

Building envelope air tightness:		**Duct system air tightness:**	

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

MECHANICAL SYSTEMS

Appliances		Domestic Water Heater	Cooling System
Fuel Type			
Manufacturer			
Model			
Rating or Size	Input in BTUS:	Capacity in Gallons:	Output in Tons:
Efficiency	AFUE or HSPF%		SEER /EER

Residential Load Calculation	Heating Loss	Heating Gain	Cooling Load

MECHANICAL VENTILATION SYSTEM

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):

Select Type

☐	Heat Recover Ventilator (HRV) capacity in cfms:	Low :		High:	
☐	Energy Recover Ventilator (ERV) capacity in cfms:	Low :		High:	
☐	Balanced Ventilation capacity in cfms:				

Location of fan(s), describe:

Capacity continuous ventilation rate in cfms:

Total ventilation (intermittent + continuous) rate in cfms:

Make-up Air *Select a Type*

- ☐ Not required per mech. code
- ☐ Passive
- ☐ Powered
- ☐ Interlocked with exhaust device. Describe:
- ☐ Other, describe:

Location of duct or system:

- ☐ Cfm's
- ☐ " round duct OR
- ☐ " metal duct

Combustion Air *Select a Type*

- ☐ Not required per mech. code
- ☐ Passive
- ☐ Other, describe:

Location of duct or system:

- ☐ Cfm's
- ☐ " round duct OR
- ☐ " metal duct

1346.6012 IFGC APPENDIX E, WORKSHEET E-1.

IFGC Appendix E, Worksheet E-1

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

Step 1: Complete vented combution appliace information:

Furnace/Boiler:
____ Draft Hood (Not fan Assisted) ____ Fan Assisted & Power Vent ____ Direct Vent Input: _____Btu/hr

Water Heater:
____ Draft Hood (Not fan Assisted) ____ Fan Assisted & Power Vent ____ Direct Vent Input: _____Btu/hr

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:_____ft^3

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: _____ ft^3

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: _____ ft^3

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: _____ ft^3

Total Required Volume (TRV) = RVFA + RVNFA TRV = _____ + _____ = _____ ft^3

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 in^2 CAOA = _____ /3000 Btu/hr per in^2 = _____ in^2

Step 8: Calculate Minimum CAOA.

Minimum CAOA = CAOA ***multiplied by*** RF Minimum CAOA = _____ x _____ = _____ in^2

Step 9: Calculate Combustion Air Opening Diameter (CAOD)

CAOD = 1.13 ***multiplied by the square root of*** Minimum CAOA CAOD = 1.13 x $\sqrt{\text{Minimum CAOA}}$ = _____in

[1]If desired, ACH can be determined using ASHRAE calculation or blower door test. Follow procedures in Section 304.

1346.6014 IFGC APPENDIX E, TABLE E-1.

IFGC Appendix E, Table E-1 Residential Combustion Air Required Volume (Required Interior Volume Based on Input Rating of Appliances)					
		Known Air Infiltration Rate (KAIR) Method (ft^3)			
Input Rating	Standard Method	Fan Assisted		Non-Fan-Assisted	
(Btu/hr)	(ft^3)	1994[1] to Present	Pre 1994[2]	1994[1] to Present	Pre 1994[2]
5,000	250	375	188	525	263
10,000	500	750	375	1,050	525
15,000	750	1,125	563	1,575	788
20,000	1,000	1,500	750	2,100	1,050
25,000	1,250	1,875	938	2,625	1,313
30,000	1,500	2,250	1,125	3,150	1,575
35,000	1,750	2,625	1,313	3,675	1,838
40,000	2,000	3,000	1,500	4,200	2,100
45,000	2,250	3,375	1,688	4,725	2,363
50,000	2,500	3,750	1,875	5,250	2,625
55,000	2,750	4,125	2,063	5,775	2,888
60,000	3,000	4,500	2,250	6,300	3,150
65,000	3,250	4,875	2,438	6,825	3,413
70,000	3,500	5,250	2,625	7,350	3,675
75,000	3,750	5,625	2,813	7,875	3,938
80,000	4,000	6,000	3,000	8,400	4,200
85,000	4,250	6,375	3,188	8,925	4,463
90,000	4,500	6,750	3,375	9,450	4,725
95,000	4,750	7,125	3,563	9,975	4,988
100,000	5,000	7,500	3,750	10,500	5,250
105,000	5,250	7,875	3,938	11,025	5,513
110,000	5,500	8,250	4,125	11,550	5,775
115,000	5,750	8,625	4,313	12,075	6,038
120,000	6,000	9,000	4,500	12,600	6,300
125,000	6,250	9,375	4,688	13,125	6,563
130,000	6,500	9,750	4,875	13,650	6,825
135,000	6,750	10,125	5,063	14,175	7,088
140,000	7,000	10,500	5,250	14,700	7,350
145,000	7,250	10,875	5,438	15,225	7,613
150,000	7,500	11,250	5,625	15,750	7,875
155,000	7,750	11,625	5,813	16,275	8,138
160,000	8,000	12,000	6,000	16,800	8,400
165,000	8,250	12,375	6,188	17,325	8,663
170,000	8,500	12,750	6,375	17,850	8,925
175,000	8,750	13,125	6,563	18,375	9,188
180,000	9,000	13,500	6,750	18,900	9,450
185,000	9,250	13,875	6,938	19,425	9,713
190,000	9,500	14,250	7,125	19,950	9,975
195,000	9,750	14,625	7,313	20,475	10,238
200,000	10,000	15,000	7,500	21,000	10,500
205,000	10,250	15,375	7,688	21,525	10,763
210,000	10,500	15,750	7,875	22,050	11,025
215,000	10,750	16,125	8,063	22,575	11,288
220,000	11,000	16,500	8,250	23,100	11,550
225,000	11,250	16,857	8,438	23,625	11,813
230,000	11,500	17,250	8,625	24,150	12,075

[1]The 1994 date refers to dwellings constructed under the 1994 Minnesota Energy Code. The default KAIR used in this section of the table is 0.20 ACH.
[2]This section of the table is to be used for dwellings constructed prior to 1994. The default KAIR used in this section of the table is 0.40 ACH.

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.

Table 501.3.2 Makeup Air Opening Sizing Table for New and Existing Dwellings					
	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)	(inches)
Passive Opening	1-36	1-22	1-15	1-9	3
Passive Opening	37-66	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	420-539	259-332	180-230	111-142	10
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.

Permit Number / Project:_____ Wind Speed:_____mph

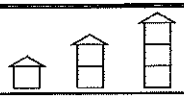
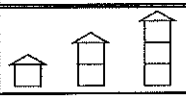
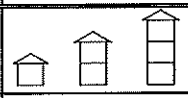
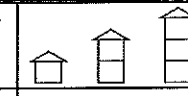
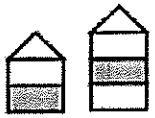
Braced wall line ID →																	
Story → / Braced wall line criteria ↓																									
Average spacing to next parallel BWL (ft)																	
Tabular required length of bracing (ft)																	
Adjust tabular value	Exposure factor (see table)	X			X			X			X			X			X			X			X		
	Roof eave-to-ridge height factor (see table)	X			X			X			X			X			X			X			X		
	Wall height factor (see table)	X			X			X			X			X			X			X			X		
	Number of BWLs factor (in plan direction) 2 BWLs = 1.0 3 BWLs = 1.3 4 BWLs = 1.45 ≥ 5 BWLs = 1.6	X			X			X			X			X			X			X			X		
	Omit interior finish material factor = 1.4	X			X			X			X			X			X			X			X		
	Interior gypsum board fastener spacing reduced to 4" o.c., factor = 0.7	X			X			X			X			X			X			X			X		
Adjusted required length of bracing (ft) →																									
Braced Wall Panels on Braced Wall Line	Contributing length per Table R602.10.5 / Partial credit per Table R602.10.5.2 for intermittent methods only	BWP ↓	Method	Contributing length (ft)		Method	Contributing length (ft)		Method	Contributing length (ft)		Method	Contributing length (ft)		Method	Contributing length (ft)		Method	Contributing length (ft)		Method	Contributing length (ft)		Method	Contributing length (ft)	
		1																								
		2		+			+			+			+			+			+			+			+	
		3		+			+			+			+			+			+			+			+	
		4		+			+			+			+			+			+			+			+	
		5		+			+			+			+			+			+			+			+	
		6		+			+			+			+			+			+			+			+	
		7		+			+			+			+			+			+			+			+	
Total contributing length of wall bracing →																									
Total contributing ≥ adjusted required?			Y - N			Y - N			Y - N			Y - N			Y - N			Y - N			Y - N			Y - N	
Spacing	BWPs spaced ≤ 20' edge-to-edge		Y - N - NA			Y - N - NA			Y - N - NA			Y - N - NA			Y - N - NA			Y - N - NA			Y - N - NA			Y - N - NA	
No. of BWPs	Length of BWL (ft)																								
	BWL has min. 2 BWPs or BWL ≤ 16' has 1-48" BWP		Y - N			Y - N			Y - N			Y - N			Y - N			Y - N			Y - N			Y - N	
BWL ends	BWP at or begins within 10' of end		Y - N	Y - N		Y - N	Y - N		Y - N	Y - N		Y - N	Y - N		Y - N	Y - N		Y - N	Y - N		Y - N	Y - N		Y - N	Y - N	
	Continuous sheathing only: end condition per Figure R602.10.7		1 2 3 4 5	1 2 3 4 5		1 2 3 4 5	1 2 3 4 5		1 2 3 4 5	1 2 3 4 5		1 2 3 4 5	1 2 3 4 5		1 2 3 4 5	1 2 3 4 5		1 2 3 4 5	1 2 3 4 5		1 2 3 4 5	1 2 3 4 5		1 2 3 4 5	1 2 3 4 5	
BWL compliance			Pass	Fail		Pass	Fail		Pass	Fail		Pass	Fail		Pass	Fail		Pass	Fail		Pass	Fail		Pass	Fail	

TABLE R602.10.3(1)
BRACING REQUIRED BASED ON WIND

≤90 MPH	Minimum total length of braced wall panels required along each bracedwall line (ft) [a]				
	BWL SPACING	LIB	GB	DWB, WSP, SFB, PBS, PCP, HPS, CS-SFB	CS-WSP, CS-G, CS-PF
	10	3.5	3.5	2.0	2.0
	20	7.0	7.0	4.0	3.5
	30	9.5	9.5	5.5	5.0
	40	12.5	12.5	7.5	6.0
	50	15.5	15.5	9.0	7.5
	60	18.5	18.5	10.5	9.0
	10	7.0	7.0	4.0	3.5
	20	13.0	13.0	7.5	6.5
	30	18.5	18.5	10.5	9.0
	40	24.0	24.0	14.0	12.0
	50	29.5	29.5	17.0	14.5
	60	35.0	35.0	20.0	17.0
	10	NP	10.5	6.0	5.0
	20	NP	19.0	11.0	9.5
	30	NP	27.5	15.5	13.5
	40	NP	35.5	20.5	17.5
	50	NP	44.0	25.0	21.5
	60	NP	52.0	30.0	25.5

Footnotes:
a. Linear interpolation allowed

TABLE R602.10.3(2) WIND ADJUSTMENT FACTORS

Adjustment	Story/Supporting	Cond.	Factor [a,b]
Exposure Category	One-story structure	B	1.00
		C	1.20
		D	1.50
	Two-story structure	B	1.00
		C	1.30
		D	1.60
	Three-story structure	B	1.00
		C	1.40
		D	1.70
Roof Eave-to-Ridge Height Adjustment	Roof only	≤5 ft	0.70
		10 ft	1.00
		15 ft	1.30
		20 ft	1.60
	Roof + 1 floor	≤5 ft	0.85
		10 ft	1.00
		15 ft	1.15
		20 ft	1.30
	Roof + 2 floors	≤5 ft	0.90
		10 ft	1.00
		15 ft	1.10
		20 ft	NP
Wall Height Adjustment	Any story	8 ft	0.90
		9 ft	0.95
		10 ft	1.00
		11 ft	1.05
		12 ft	1.10

Footnotes:
a. Linear interpolation is permitted
b. Total adjustment factor is the product of all appliable adjustment factors

TABLE R602.10.5 MINIMUM LENGTH OF BRACED WALL PANELS

METHOD		MINIMUM LENGTH (in) [a] Wall Height (ft) 8 ft	9 ft	10 ft	11 ft	12 ft	Contributing Credit Length (in)
DWG, WSP, SFB, PBS, PCP, HPS		48 in	48 in	48 in	53 in	58 in	Actual [b]
GB		48 in	48 in	48 in	53 in	58 in	Double sided = Actual
							Single sided = .05 x actual
LIB		55 in	62 in	69 in	NP	NP	Actual [b]
ABW		28 in	32 in	34 in	38 in	42 in	48 in
PFH	Support in roof only	16 in	16 in	16 in	18 in [c]	20 in [c]	48 in
	Supporting roof + 1 story	24 in	24 in	24 in	27 in [c]	29 in [c]	48 in
PFG		24 in	27 in	30 in	33 in [c]	36 in [c]	1.5 x actual [b]
CS-G		24 in	27 in	30 in	33 in	36 in	Actual [b]
CS-PF		18 in	18 in	20 in	22 in [c]	24 in [c]	Actual [b]
CS-WSP CS-SFB	Adjacent Opening Height						
	≤ 64 in	24 in	27 in	30 in	33 in	36 in	Actual [b]
	68 in	36 in	27 in	30 in	33 in	36 in	
	72 in	27 in	27 in	30 in	33 in	36 in	
	76 in	30 in	29 in	30 in	33 in	36 in	
	80 in	32 in	30 in	30 in	33 in	36 in	
	84 in	35 in	32 in	32 in	33 in	36 in	
	88 in	38 in	35 in	33 in	33 in	36 in	
	92 in	43 in	37 in	35 in	35 in	36 in	
	96 in	48 in	41 in	38 in	36 in	36 in	
	100 in		44 in	40 in	38 in	38 in	
	104 in		49 in	43 in	40 in	39 in	
	108 in		54 in	46 in	43 in	41 in	
	112 in			50 in	45 in	43 in	
	116 in			55 in	48 in	45 in	
	120 in			60 in	52 in	48 in	
	124 in				56 in	51 in	
	128 in				61 in	54 in	
	132 in				66 in	58 in	
	136 in					62 in	
	140 in					66 in	
	144 in					72 in	

Footnotes:
a. Linear interpolation allowed
b. Use actual provided if is ≥ min. length
c. Max header height is 10', however it may be increased to 12' with pony wall per Table R602.10.6.4

TABLE R602.10.5.2 PARTIAL CREDIT FOR BRACED WALL PANELS LESS THAN 48 INCHES IN ACTUAL LENGTH[a]

Actual Length of Braced Wall Panel (in)	Contributing Length of BWP	
	8 ft wall height	9 ft wall height
48	48	48
42	36	36
36	27	NA

Footnotes:
a. Linear interpolation is permitted