6. FLUE/VENT SYSTEM EXAMINATION

- All gas vents shall terminate outdoors.
- Gas vents located 4' or more from a vertical wall or similar obstruction shall ***extend at least 1' above the roof in accordance with CMC Chapter 8.***
  ~~•Extend at least 1' above the roof.~~
  ~~•Comply with Table 29-1.~~
- Gas vents located less than 4' from a vertical wall or similar obstruction shall terminate at least:
  - 2' above the highest point where they pass through the roof, and
  - 2' higher than any portion of the building within 10'.
- Gas vents shall terminate no closer to a door, openable window, or gravity air inlet than the following minimum distances:
  - 4' below, or
  - 4' horizontally from, or
  - 1' above.

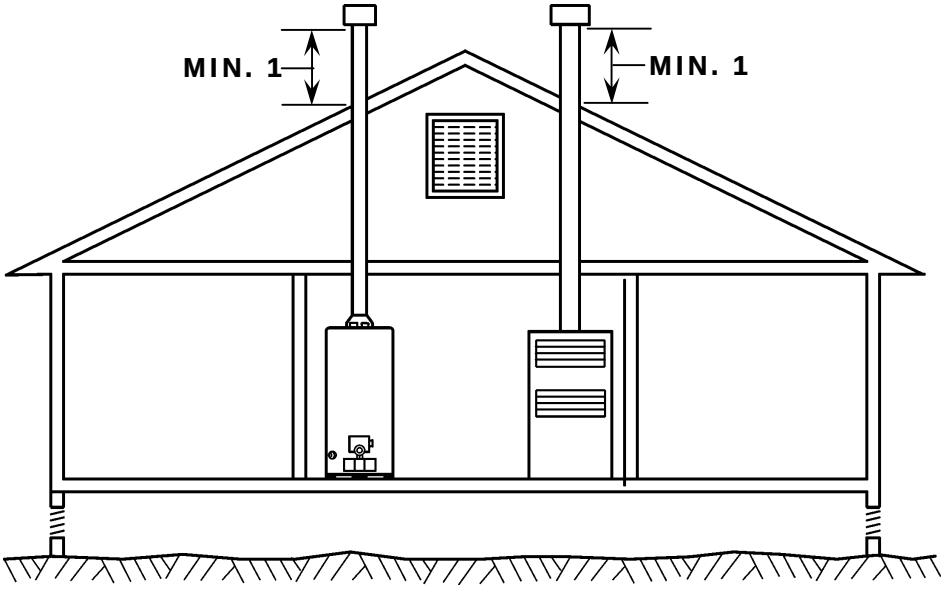
  Exception 1: Vent terminals for Direct Vent ~~furnaces~~*appliances*:
    - At least 9" away for inputs up to 50,000 Btu/hr.
    - At least 12" away for inputs 50,100 to 65,000 Btu/hr.

  Exception 2: Vent terminals for Forced or Induced Draft systems (e.g., induced draft space/water heater or condensing furnace):
    - At least 12" away.

~~Table 29-1: Vent Termination Above a Roof~~

~~MINIMUM HEIGHT FROM ROOF TO LOWEST DISCHARGE OPENING~~	
~~ROOF SLOPE (INCHES)*~~	~~HEIGHT ABOVE ROOF~~
~~Flat to 6/12~~	~~1' – 0"~~
~~Over 6/12 to 7/12~~	~~1' – 3"~~
~~Over 7/12 to 8/12~~	~~1' – 6"~~
~~Over 8/12 to 9/12~~	~~2' – 0"~~
~~Over 9/12 to 10/12~~	~~2' – 6"~~
~~Over 10/12 to 11/12~~	~~4' – 0"~~
~~Over 11/12 to 12/12~~	~~5' – 0"~~

~~*For other slopes, see CMC Chapter 8.~~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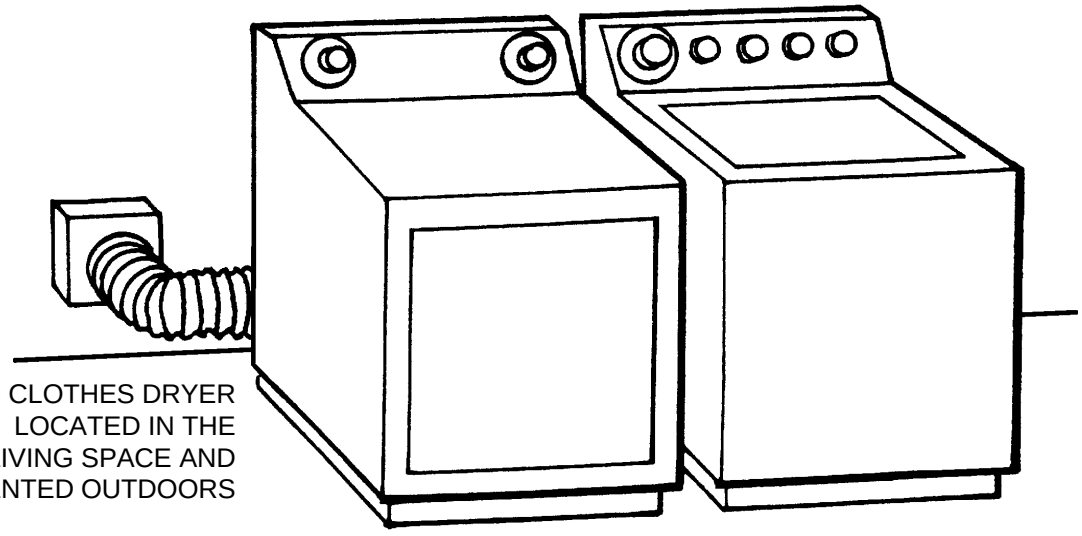
7. ADDITIONAL EXAMINATIONS OF NATURAL GAS APPLIANCES

- **Inoperable Gas Appliances**
  - **Inoperable natural gas appliances must be checked by a utility gas service technician (or designee), unless they are: (a) abandoned*, or (b) inaccessible*.**
- **Infiltration reduction measures shall not be installed if any of the following conditions is present:**
  - **Gas clothes dryer located in the living space but not exhausted outdoors**.**
  - **Return leak present that can draw in combustion products from the FAU or other open combustion appliances (e.g., in a garage or room containing supply or return plenum/ductwork).**
  - **Whole house fan vented into an attic that contains a gas water heater or an open combustion furnace with standing pilot.**
  - **Unvented combustion space heater (e.g., gas or kerosene unit) present in the living space.**
  - **Open combustion water heater present in a sleeping area.**
  - **Gas range present which has a space heater or incinerator that is not properly vented outdoors.**
  - ***Inoperable gas appliance.***



GAS CLOTHES DRYER LOCATED IN THE LIVING SPACE AND VENTED OUTDOORS

See Definitions.

****Termination in a crawlspace or basement is acceptable when the space: (a) has adequate cross-ventilation, (b) does not have a return air intake in the floor, and (c) does not contain an open combustion furnace or a combustion air vent located in the floor. Any dryer termination in an open combustion appliance enclosure/closet is not acceptable.***

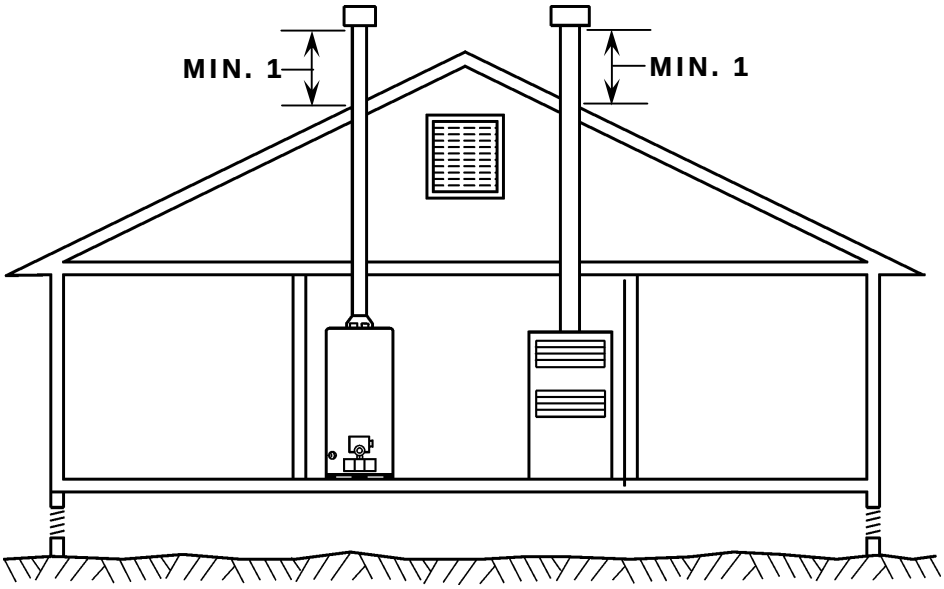
12. FLUE AND VENT SYSTEM EXAMINATION ~~AND REPAIR~~

- **All gas vents shall terminate outdoors.**
- **Flue and vent systems shall be free of:**
  - **Draft hood defects:**
    - **Improperly installed or positioned.**
    - **Multiple (stacked) draft hoods on a single appliance.**
    - ***Missing (no draft hood at all).***
  - **Disconnections or unsafe joints (e.g., loose, unsecured, etc.).**
  - **Holes or other hazardous conditions requiring repair.**
  - **Connection to a solid-fuel appliance chimney.**
- **Gas vents located ~~8'~~ *4'* or more from a vertical wall or similar obstruction shall *extend at least 1' above the roof in accordance with CMC Chapter 8.***
  ~~•Extend at least 1' above the roof.~~
  ~~• *Comply with Table 29-1.*~~
- **Gas vents located less than 4' from a vertical wall or similar obstruction shall terminate at least:**
  - ***2' above the highest point where they pass through the roof, and***
  - ***2' higher than any portion of the building within 10'*.**

~~*Table 29-1: Vent Termination Above a Roof*~~

~~*MINIMUM HEIGHT FROM ROOF TO LOWEST DISCHARGE OPENING*~~	
~~*ROOF SLOPE**~~	~~*HEIGHT ABOVE ROOF*~~
~~*Flat to 6/12*~~	~~*1' – 0"*~~
~~*Over 6/12 to 7/12*~~	~~*1' – 3"*~~
~~*Over 7/12 to 8/12*~~	~~*1' – 6"*~~
~~*Over 8/12 to 9/12*~~	~~*2' – 0"*~~
~~*Over 9/12 to 10/12*~~	~~*2' – 6"*~~
~~*Over 10/12 to 11/12*~~	~~*4' – 0"*~~
~~*Over 11/12 to 12/12*~~	~~*5' – 0"*~~

~~**For other slopes, see CMC Chapter 8.*~~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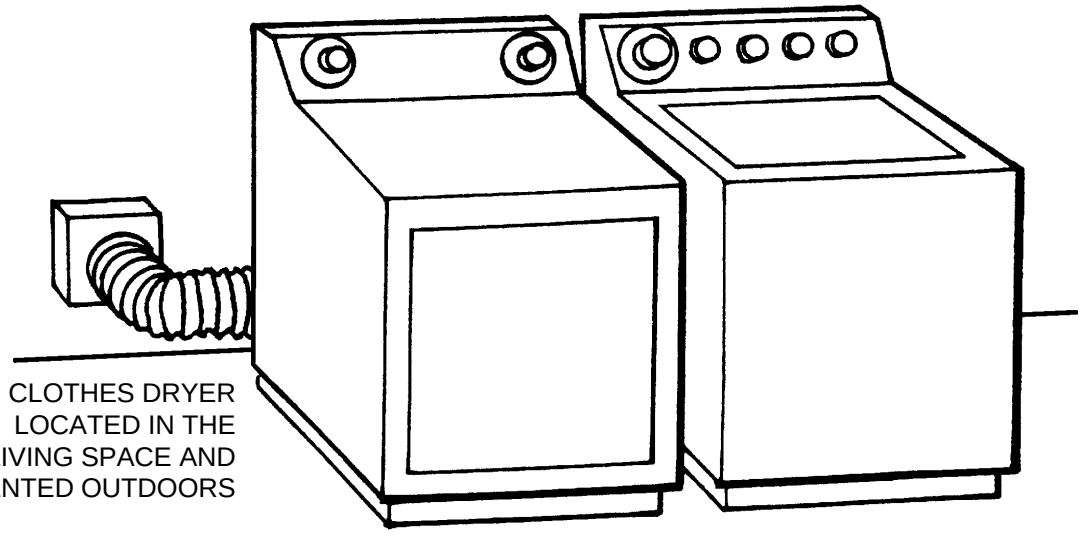
13. VISUAL APPLIANCE CHECKS

- **Inoperable Gas Appliances**
  - **Inoperable natural gas appliances must be checked by a utility gas service technician (or designee), unless they are: (a) abandoned*, or (b) inaccessible*.**
- **The following conditions are not acceptable when Infiltration Reduction Measures are installed:**
  - **Gas clothes dryer located in the living space but not exhausted outdoors**.**
  - **Return leak present that can draw in combustion products from the FAU or other open combustion appliances (e.g., in a garage or room containing supply or return plenum/ductwork).**
  - **Whole house fan vented into an attic that contains a gas water heater or an open combustion furnace with standing pilot.**
  - **Unvented combustion space heater (e.g., gas or kerosene unit) present in the living space.**
  - **Open combustion water heater present in a sleeping area.**
  - **Gas range present which has a space heater or incinerator that is not properly vented outdoors.**

· ***Inoperable gas appliance.***



GAS CLOTHES DRYER LOCATED IN THE LIVING SPACE AND VENTED OUTDOORS

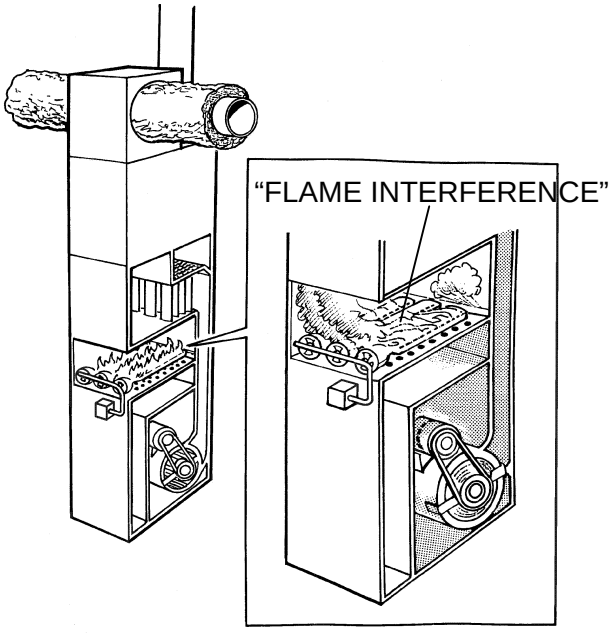
See Definitions

****Termination in a crawlspace or basement is acceptable when the space: (a) has adequate cross-ventilation, (b) does not have a return air intake in the floor, and (c) does not contain an open combustion furnace or a combustion air vent located in the floor. Any dryer termination in an open combustion appliance enclosure/closet is not acceptable.***

22. ADDITIONAL *APPLIANCE* EXAMINATIONS ~~OF COMBUSTION APPLIANCES~~

- *Burner Performance*
  - When the burner(s) ignite, checks shall be made for:
    - Delayed ignition.
    - Excessive roll-out.
  - Burner(s) shall be examined for flame abnormalities, including:
    - Large yellow flame (more than 50% yellow).
    - Soft lazy flame or smothering flame.
- *Heat Exchanger Examination on* Natural Gas Forced Air Heating Systems
  - Each accessible heat exchanger shall be inspected for cracks with a mirror and strong light.
  - The unit shall be further examined/serviced by a ~~qualified~~ *utility gas service* technician *(or designee)* if any of the following conditions is present:
    - Flame interference caused by the air handler in an FAU.
    - A visually-detected crack.
    - Other evidence of a defective heat exchanger.

~~?~~ - If a defect exists, the condition shall be corrected by a ~~*qualified*~~ *utility gas service* technician *(or designee), or designated contractor licensed to repair HVAC appliances.*



28. CO TESTING FOR NATURAL GAS SPACE AND WATER HEATING SYSTEMS

- **Appliance Ambient CO or Flue CO testing shall be performed.**
- **Appliance Ambient CO Tests**
  - **CO Tests shall be conducted per Items 14 – 18.**
- **Flue CO Tests**
  - **Test conditions prescribed in Item 25 shall first be established.**
  - **CO Tests shall be performed after a minimum of 5 minutes of burner operation.**
  - **Flue Gas CO measurements shall be:**
    - **Taken in combustion gases free of dilution air.**
    - **Conducted in accordance with Table 29-~~21~~21.**

Table 29-~~21~~21: Post-Repair/Replacement Flue CO Testing

APPLIANCE	*CO MAXIMUM PPM*		*NATURAL DRAFT MEASUREMENT LOCATION**
	"AS MEASURED"	*"AIR FREE"*	
Forced Air Furnace	—	*400*	*Inside each exhaust port separately*
Gravity Furnace	—	*400*	*Inside each exhaust port separately*
Wall Furnace	—	*200*	*Inside flue on each side of baffle*
Wall Furnace (Direct Vent)	—	*400*	*
Floor Furnace	—	*400*	*Inside each exhaust port separately*
Vented Room Heater	—	*200*	*Inside each exhaust port separately*
Water Heater	—	*200*	*Inside flue on each side of baffle*
Oven/Broiler	*225*	—	*Inside exhaust port*
Top Burner & Griddle	*25 (per burner)*	—	*Burner: 12" above flame* *Griddle: Inside port opening*
Gas Log	*25*	*400*	*Inside top edge of fireplace opening*

**For Induced Draft and Closed Combustion appliances, flue gas CO is measured at the flue termination when it is accessible from the ground.*