Habitable Basement Checklist
7th edition 780 CMR
One and Two Family Dwelling Code

-Building permit application 5110.1: A building permit is required to construct a habitable basement.

A proposed construction plan shall be submitted with the permit application noting the following information: use of space, ceiling height, wall construction type, insulation R-value, window and door sizes, lighting and ventilation, carbon monoxide/smoke detector location, emergency escape openings

-Moisture Control 5318.1: In all framed walls, floors and roof/ceilings comprising elements of the building thermal envelope, a vapor retarder shall be installed on the warm-in-winter side of the insulation.

-Basement insulation 6106.2.2: When the basement is a conditioned space, the basement walls shall be insulated. When insulating basement walls, the R-value shall be applied from the top of the basement wall to a depth of ten feet below grade or to the top of the basement floor, whichever is less.

The following location shall require the use of an approved species and grade of lumber, **pressure treated:**

-Wall frame 5319.1-3: Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separated from such slab by an impervious moisture barrier.

-Ceiling height 5305.1: Habitable rooms…basements shall have a ceiling height of not less than 7'. Exception 1: Beams and girders spaced not less than four feet on center may project not more than six inches below the required ceiling height **Alteration of existing spaces 9305 exception 5:** Ceiling heights in basement or cellar spaces shall be a minimum of 6'8" but discrete projections below ceilings in basement or cellar spaces due to structure and/or HVAC ductwork/piping shall be allowed to a minimum height of 6'6" if in the opinion of the building official such ceiling heights and projections are not unduly hazardous to the occupants.

-Emergency escape openings in habitable basements and sleeping rooms: 5310.1 Emergency Escape and Rescue Required.

Basements with habitable space and every sleeping room shall have at least one openable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Where emergency escape and rescue openings are provided they shall

have a sill height of not more than 44 inches (1118 mm) above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with 780 CMR 5310.3. The net clear opening dimensions required by 780 CMR 5310 shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with 780 CMR 5310.2.

5310.1.1 Minimum Opening Area. All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.530 m2).

Exceptions:

1. Grade floor openings shall have a minimum net clear opening of five square feet (0.465 m2).

2. Double hung windows used for emergency escape shall be permitted to have a net clear opening of 3.3 square feet (0.31 m2) provided that at least one operable sash meets the minimum height and width required by 780 CMR 5310.1.2 and 5310.1.3 and operational constraints defined by 780 CMR 5310.1.4.

5310.1.2 Minimum Opening Height. The minimum net clear opening height shall be *24* inches (508 mm).

5310.1.3 Minimum Opening Width. The minimum net clear opening width shall be *20* inches (610 mm).

5310.1.4 Operational Constraints. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys or tools.

5310.2 Window Wells. The minimum horizontal area of the window well shall be nine square feet (0.84 m2), with a minimum horizontal projection and width of 36 inches (914 mm). The area of the window well shall allow the emergency escape and rescue opening to be fully opened.

-**Light 5303.1**: Habitable rooms shall be provided with aggregate glazing area of not less than 8% of the floor area of such rooms. Exception 2. The glazed area may be omitted where the ventilation requirement is met and artificial light is provided capable of producing an average illumination of six footcandles over the area of the room at a height of 30 inches above the floor level.

-**Ventilation 5303.1**: Natural ventilation shall be through windows, doors, louvers or other approved openings to the outdoor air. The minimum openable area to the outdoors shall be 4% of the floor area being ventilated. Exception 1. The glazed areas need not be openable where the opening is not required by 780 CMR 5310 (emergency escape openings) and an approved mechanical ventilation system is provided capable of producing 0.35 air change per hour in the room or a whole house mechanical ventilation system is installed capable of supplying outdoor ventilation air of 15 cubic feet per minute per occupant computed on the basis of two occupants for the first bedroom and one occupant for each additional bedroom.

-**Bathrooms ventilation/glazing area 5303.3**: Bathrooms shall be provided with aggregate glazing area in windows of not less than 3 square feet, ½ of which must be openable. Exception: The glazed areas shall not be required where artificial light and a mechanical ventilation system are provided. The minimum ventilations rates shall be 50cfm for intermittent ventilation or 20cfm for continuous ventilation. Ventilation air form the space shall be exhausted directly to the outside.

-**Bathroom ceiling height 5305.1 exception 4**: Bathrooms shall have a minimum ceiling height of 6' 8".

-**Smoke detector required locations 5313.2.9**: One in each bedroom, outside each sleeping room, near the base of the stairs.

-**Carbon monoxide detectors required locations 5313.4.3**: One carbon monoxide detector shall be installed on each story of a dwelling unit, including basements and cellars.

-**Combustion air 6702.1:** Where the volume of the space in which fuel-burning appliances are installed is greater than 50 cubic feet per 1,000 Btu/h of aggregate input rating...normal infiltration shall be regarded as adequate to provide combustion air. **Confined spaces 6702.2:** If the space does not meet the criterion listed above, two permanent openings to adjacent spaces shall be provided so that the combined volume of all spaces meets the criterion. One opening shall be within 12" of the top and one within 12 inches of the bottom of the space. Each input shall have a free area equal to a minimum of one square inch per 1,000 Btu/h input rating of all appliances installed within one space, but not less than 100 square inches.

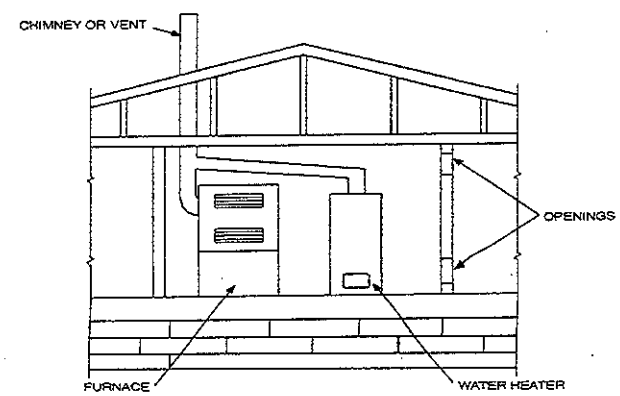

figure 6702.2