FINISHED BASEMENTS

(Based on the 1999 Connecticut Building Code, Specifically R4 Construction Using The 2003 Edition Of IRC with The Connecticut Addendum)

Please submit the following:

1. Existing Floor Plan

2. Proposed Floor Plan

To be shown on plans:

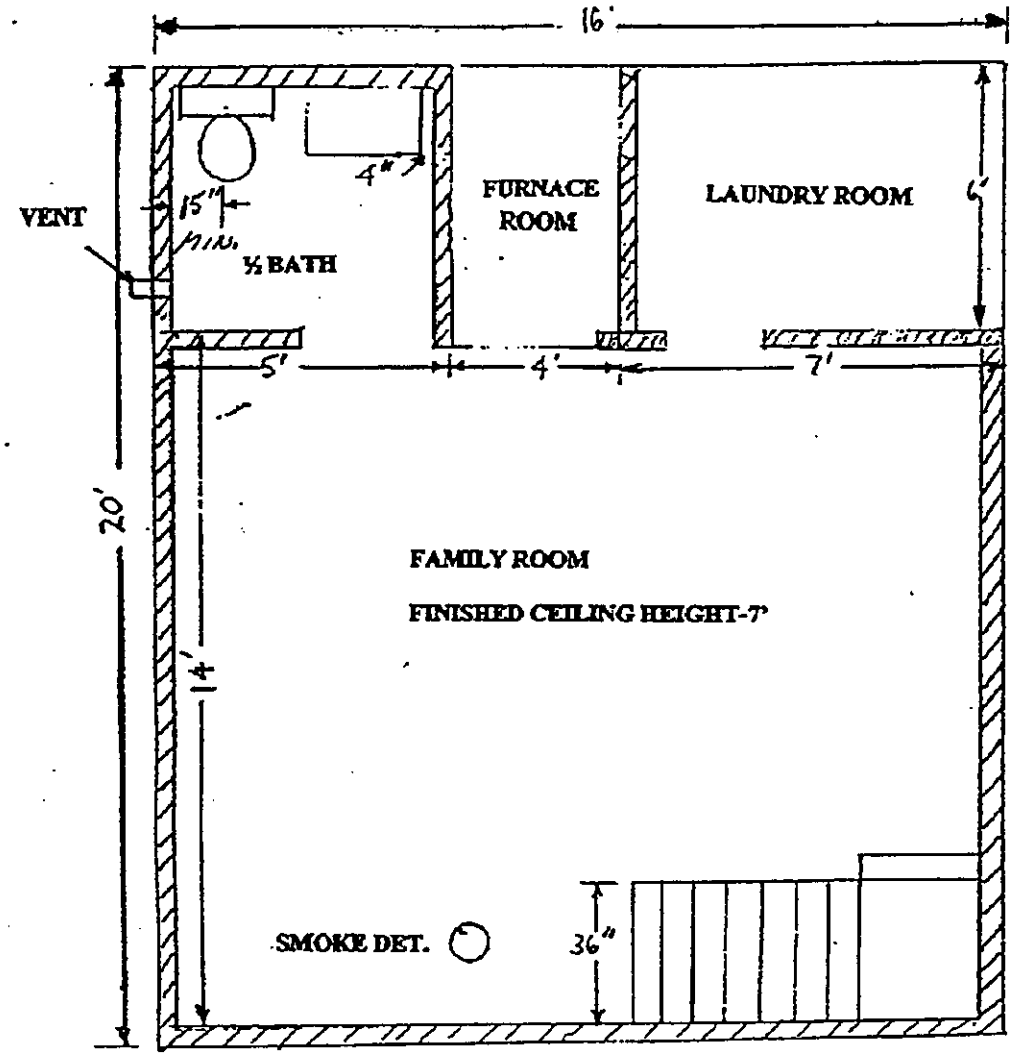
- Show all dimensions
- Show finished ceiling height to finished floor
- Show floor type (concrete, wood sleepers, carpet, tile, etc.)
- Show room use (family room, study, office, etc.)
- Show wall construction and anchorage (example-2x4 16 OC)
- Show insulation type and R-value
- Show pressure treated plate (any wood coming into contact with concrete must be pressure treated)
- If enclosing furnace area, show source of combustion air (indicate oil, gas, or electric heat)
- Show smoke detector location
- Show stair detail (show tread and rise, ceiling height, stair width, railing height)

If Bathroom is included in proposed plans, please include the following:

- Show ceiling height in bathroom to finished floor
- Show either a window or vent to outside
- Show spacing between fixtures and from fixtures to walls

Please see attached example and requirements for additional information.

EXAMPLE ONLY

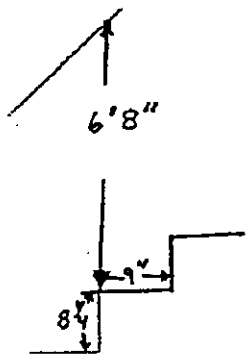


NAME _____

ADDRESS _____

▨ = NEW WALLS
2X4 16 OC
2X4 P.T. PLATE
R-13 INSUL.
½" SHTRCK

STAIR DETAIL



Address:_____ Permit No._____

Town of Brookfield Building Department
Calculations for Combustion Air

This form must be filled out for all of the following Permits:

1. All new homes
2. All finished basements
3. All boiler, furnace, and water heater replacements

What is the total combined gross btu ratings of all appliances located in the boiler room or rooms?

_____

What is the volume of this room? (length x width x height) _____

Does the volume equal more than 50 cu. ft. for each 1,000 btu's of combined appliance ratings?

_____

If it does, combustion air is not required.

If it is less than 50 cubic feet for each 1,000 btu's of combining rating, combustion air is required.

How will compliance with combustion air be achieved? Check one below.

a.) interior air_____
for interior air, what is the volume of the room the air is being taken from_____
b.) air directly from the exterior of the building thru screened openings_____
c.) air directly from the outside thru horizontal ducts_____

What is the calculated size of each opening?_____

Where will each opening be located?_____

Copies of your calculations must be submitted to the Building Official

I attest that I have done the above required calculations based on Chapter 17 of the 2003 IRC Mechanical Code or Chapter 7 of the 2003 IMC

Signed_____

Printed Name_____

Company_____

What is the total gross btu ratings for all fuel burning appliances?

Example:	2 furnaces at 100,000 btu's =	200,000 btu's
	1 water heater at 85,000 btu's =	85,000 btu's
Total		285,000 btu's

How many cubic feet are contained in the room that the appliances are located?

Example:

The room is 40 feet long by 28 feet wide by 7 foot 6 inches high.
This equals 8,400 cubic feet.

The code requires a room to be 50 cubic feet for each 1,000 btu's of appliances.
So, in the above illustration, we have 285,000 btu's, so we would need 50 x 285 or 14,250 cubic feet. So, for the above example, the room the boiler is in would be defined as a confined space, so we would need to introduce Combustion air.

Where we get the air for combustion will determine what size openings are required.

If we are getting the air from an interior space we will need 1 square inch for each 1,000 btu's of combined rating. For the above example, we will need each opening to be 285 square inches. One opening within 12 inches of the ceiling and one opening within 12 inches of the floor.

If we are getting air directly from the outside through louvers, we will need 1 square inch for each 4000 btu's. This will require 72 square inches but the code has set 100 square inches as the minimum size opening for combustion air. So, we will require 2 openings 100 square inches each located as above.

If we are getting air from the outside through horizontal ducts, we will require 1 square inch for each 2000 btu's. So, for the above example, we will require 2 openings, each opening to be 285 divided by 2 = 143 square inches located as above.

Remember, if an interior source is being used, the space we are getting the air from must meet the 50 cubic feet for each 1000 btu's rule also. The size of the boiler room can be combined with the size of the room that the air is being taken from to achieve this volume. All calculations must be approved by the Building Official.

Section 710

Opening obstructions

Metal louvers free air is 75%.
Wooden louvers free air is 25%.

(Amd) **R311.5.1 Width.** Stairways shall not be less than 36 inches in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4.5 inches on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31.5 inches where a handrail is installed on one side and 27 inches where handrails are provided on both sides.

Exceptions:

1. The width of spiral stairways shall be in accordance with Section R311.5.8.
2. The width of existing stairways serving existing unfinished attics or existing unfinished basements being converted to habitable space shall not be less than 32 inches in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4 inches on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 28 inches where a handrail is installed on one side and 24 inches where handrails are provided on both sides.

(Amd) **R311.5.2 Headroom.** The minimum headroom in all parts of the stairway shall not be less than 6 feet, 8 inches measured vertically from the sloped plane adjoining the tread nosing or from the floor surface of the landing or platform.

Exception: The minimum headroom in all parts of existing stairways serving existing unfinished attics or existing unfinished basements being converted to habitable space shall be 6 feet, 6 inches, measured as above.

(Amd) **R311.5.3.1 Riser height.** The maximum riser height shall be 8 ¼ inches. The riser shall be measured vertically between leading edges of adjacent treads.

Exception: The maximum riser height of existing stairs serving existing unfinished attics or existing unfinished basements being converted to habitable space shall be 9 inches, measured as above.

The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch.

(Amd) **R311.5.3.2 Tread depth.** The minimum tread depth shall be 9 inches. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge.

Exception: The minimum tread depth of existing stairs serving existing unfinished attics or existing unfinished basements being converted to habitable space shall be 8 inches, measured as above.

The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch. Winder and circular stairway treads shall have a minimum tread depth of 9 inches measured as above at a point 12 inches from the sides where the treads are narrower. Winder treads shall have a minimum tread depth of 6 inches at any point. The greatest winder tread depth at the 12-inch walk like within any flight of stairs shall not exceed the smallest by more than 3/8 inch. The greatest circular tread depth at any walking line within any circular flight of stairs, measured at a consistent distance from a side of the stairway, shall not exceed the smallest by more than 3/8 inch.

(Amd) **R311.5.6.2 Continuity.** Handrails for stairways shall be continuous for the full length of each flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight. Handrail ends shall be returned to a wall or shall terminate in newel posts or safety terminations. Handrails adjacent to a wall shall have a space of not less than 1½ inches between the wall and the handrails.

Exceptions:

1. Handrails shall be permitted to be interrupted by a newel post at a level landing.
2. The use of a volute, turnout, starting easing or starting newel shall be permitted over the lowest tread.

(Amd) **R313.1.1 Alterations and additions.** When alterations or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the entire dwelling shall be provided with smoke detectors located as required for new dwellings. The smoke detectors shall have a power source in accordance with Section R313.2.

Exceptions:

1. The smoke detectors may be battery operated and are not required to be interconnected when other remodeling considerations do not require the removal of the appropriate wall and ceiling coverings to facilitate concealed interconnected wiring.
2. Alterations to the exterior surfaces of dwellings including, but not limited to re-roofing, re-siding, window replacement and the construction of decks without roofs are exempt from the requirements of this section.

(Amd) **305.1 Minimum height.** Habitable rooms, hallways, corridors, bathrooms, toilet rooms, laundry rooms, and basements shall have a ceiling height of not less than 7 feet. The required height shall be measured from the finished floor to the lowest projection from the ceiling.

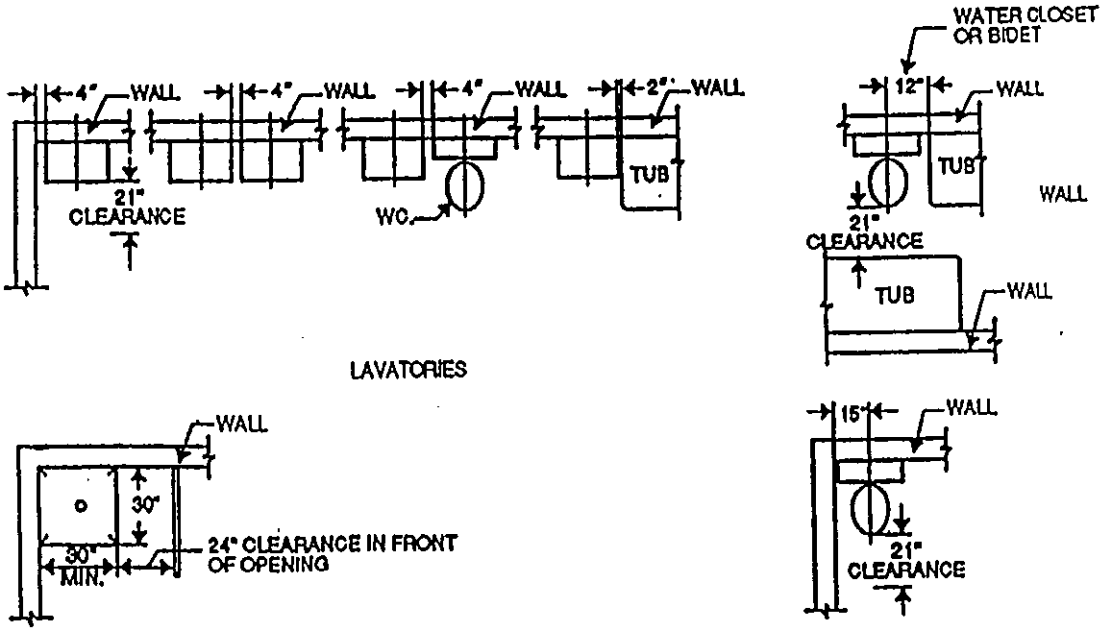
Exceptions:

1. Beams, girders, pipes, ducts, or other obstructions spaced not less than 4 feet on center shall be permitted to project not more than 6 inches below the required ceiling height.
2. Basements without habitable spaces shall have a ceiling height of not less than 6 feet, 8 inches. Beams, girders, pipes, ducts, or other obstructions shall be permitted to project not more than 4 inches below the required ceiling height.
3. Not more than 50 percent of the required area of a habitable room or space is permitted to have a sloped or furred ceiling less than 7 feet in height. No portion of the required floor area shall be less than 5 feet in height.
4. Bathrooms are permitted to have sloped or furred ceilings, but shall have a minimum ceiling height of 6 feet, 8 inches over the fixtures and at the front clearance area for the fixtures as shown in Figure R307.2. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6 feet, 8 inches above a minimum area 30 inches by 30 inches at the showerhead.
5. Ceiling height in existing basements being converted to habitable space shall be not less than 6 feet, 10 inches clear except under beams, girders, pipes, ducts, or other obstructions where the clear ceiling height shall be a minimum of 6 feet, 6 inches.

TOILET, BATH AND SHOWER SPACES

307.1 Privacy required. Every water closet, bathtub or shower required by this code shall be installed in a room which will afford privacy to the occupant.

307.2 Space required. Fixtures shall be spaced as per Figure 307.2.



For SI: 1 inch = 25.4 mm.

FIGURE 307.2

FIRE STOPPING

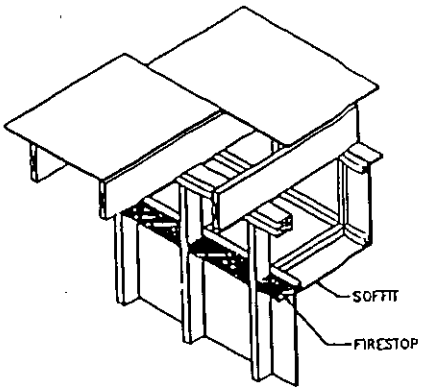


FIGURE 602.7c
FIRESTOPPING — FURRED SOFFIT

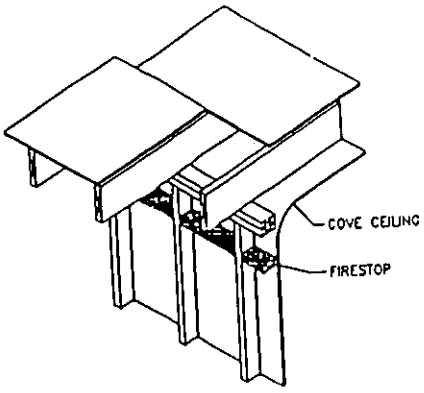


FIGURE 602.7e
FIRESTOPPING — COVE CEILING

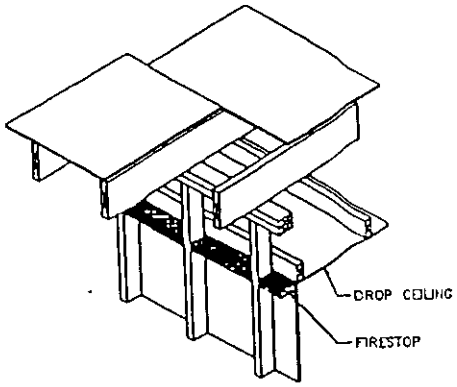
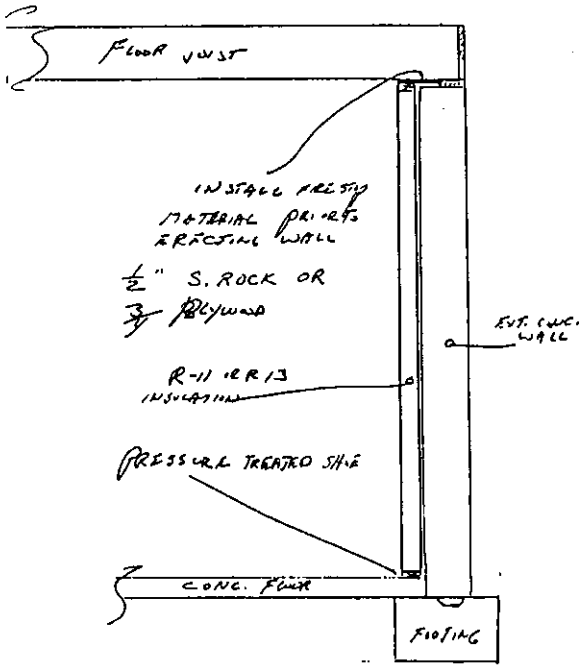


FIGURE 602.7d
FIRESTOPPING — DROPPED CEILING



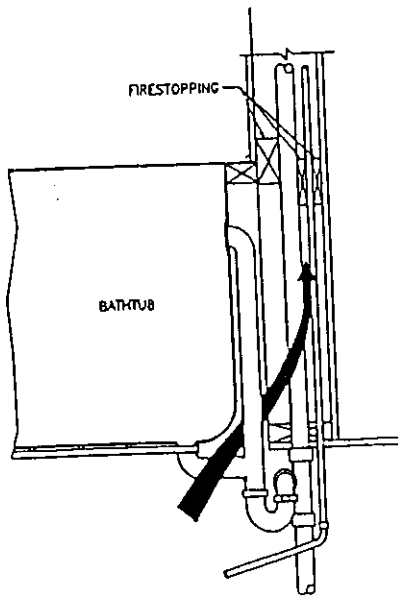


FIGURE 602.7f
FIRESTOPPING — AT TUB

1. In concealed spaces of stud walls and partitions, including spaces at the ceiling and floor levels (see Figures 602.7a and 602.7b).

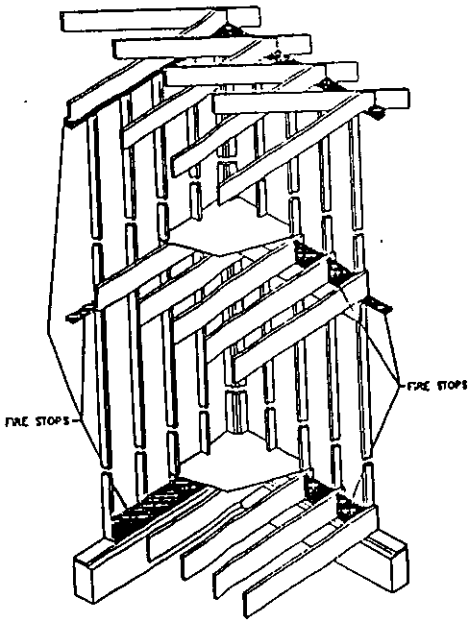


FIGURE 602.7a
FIRESTOPPING — BALLOON FRAMING

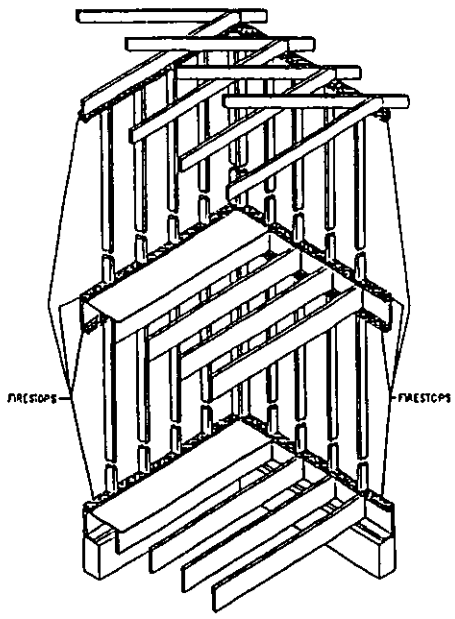


FIGURE 602.7b
FIRESTOPPING — PLATFORM FRAMING

2. At all interconnections between concealed vertical and horizontal spaces such as soffits (Figure 602.7c), dropped ceilings (Figure 602.7d) and cove ceilings (Figure 602.7e). Interconnections such as shown in Figure 602.7f for a bathtub installation must also be firestopped.