



TOWNSHIP OF HILLSBOROUGH

COUNTY OF SOMERSET

Hillsborough Township Municipal Complex

The Peter J. Biondi Building

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Hillsborough, NJ 08844



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Building Department

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SAMPLE GUIDE FOR 1&2 FAMILY DWELLING BASEMENTS Rev 4-3-2014

THIS GENERIC GUIDE IS NOT ALL INCLUSIVE AND DOES NOT ADDRESS ALL CONDITIONS

Based on the 2009 International Residential Code – New Jersey edition

1. Please submit two sets of scaled drawings. All drawings should indicate owner's name, address of job site, block and lot number. The Homeowner may prepare the plans if the proposed project is located at the homeowner's primary residence. The homeowner must sign all pages of the drawings and must sign the affidavit on the inside of the application jacket, otherwise a New Jersey licensed Architect or New Jersey licensed Professional Engineer must prepare the plans.

(CONTRACTORS CANNOT PREPARE PLANS)

2. Required Inspections.

- (1) Rough Electrical.
- (2) Rough Plumbing Underground *if applicable*.
- (3) Rough Plumbing Venting, Waste, Water and Gas pressure test.
- (4) Framing (after rough inspection approvals from other sub codes).
- (5) Insulation.
- (6) Above Ceiling (Building and Electric) Draft Stopping *if applicable* (drop ceilings or open trusses over 1000 sq. ft).
- (7) Final inspection FIRE ELECTRIC PLUMBING BUILDING

3. INFORMATION REQUIRED FOR PLAN REVIEW

Plans shall be drawn to scale and include the following information on the plan.

- a. Code design information. N.J.A.C. 5:23- 6.6 & 2009 IRC N.J. edition.
- b. Entire floor plan and LABEL EACH ROOM for their intended use.
- c. Stairways, Landings, Guards and Graspable Handrails.
- d. Indicate finished ceiling height and material being used.
- e. Indicate door locations / swing, windows, plumbing cleanouts and electrical panels.

- f. Indicate all mechanical and laundry equipment and their fuel type, bath and kitchen fixtures, fireplaces, bilco doors and other exterior exits and stairwells. For fuel burning appliances provide combustion air work sheet on page 6.
 - g. Legal Basement Bedrooms: Indicate location, minimum egress requirements.
 - h. Provide a Wall Section including: Plate, wall frame size and material, fire blocking and draft stopping, air space, insulation R-value, ceiling finish, wall finish and floor finish.
 - i. Plumbing layout, ejector pump pit locations if applicable, water, waste and gas riser diagrams for all new equipment.
 - j. Electrical layout: Switch, receptacle, lighting, smoke detector and C.O. detector.
- **Major Structural changes** i.e. Removal of columns, load bearing walls, enlarging masonry openings requiring lintels are required to have detailed structural information and supporting documents. The assistance of a New Jersey registered Architect or Engineer may be helpful for this aspect of work.
 - **Wood in contact with masonry: R-317** Where wood is in contact with masonry or subject to decay damage, material used must be pressure preserved and listed for the use. Fasteners into this material must be listed and rated for the application.
 - **Framing: NON- LOAD Bearing Walls: R-602.5** Wall framing may consist of wood or metal studs framed (16 inch O.C. or 24 inch O.C.) Interior non-load bearing walls shall be capped with at least a single top plate. Provide adequate fasteners **for** walls to remain rigid and in place. Framing shall not be connected to ductwork or supported by drywall facings. In **wood** construction **Framing Nails** in treated material shall be hot-dipped galvanized, stainless steel, silicon bronze or copper.
 - **Fire blocking: R302.11** Fire blocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. Fire blocking shall be provided in the following locations.
 1. In concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs: as follows.
 - 1.1 Vertically at the ceiling and floor levels.
 - 1.2 Horizontally at intervals not exceeding 10 feet.
 2. At all interconnections between concealed vertical and horizontal spaces such as occurs at soffits, drop ceilings and cove ceilings.
 3. In concealed spaces between stair stringers at the top and bottom run.
 4. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion.
 - **Under stair protection: R302.7 as preceded by N.J.A.C. 5:23 6.6-(e)15 and R302.11** Enclosed accessible space under stairs shall have walls, under-stair surface and any soffits protected on the enclosed side with ½” gypsum board.

- **Fire block material: R-302.11.1 Except** as provided in R302.11 Item 4, Fire blocking shall consist of 2-inch nominal lumber, or two thickness of 1 inch nominal lumber with broken laps, or one thickness of 23/32 inch wood structural panels with joints backed by 23/32 inch wood structural panel or one thickness of 3/4 inch particle board with joints backed with 3/4 inch particle board, 1/2 inch gypsum board, or 1/4 inch cement-based mill board. Batts or blankets of mineral wool or glass fiber (not fiberglass insulation) or other approved material installed in such a manner as to be **Securely Retained** in place shall be permitted as an acceptable fire block. Batts or blankets of mineral wool or glass fiber shall be permitted for compliance with the 10 foot horizontal Fire blocking in walls using parallel rows of studs or staggered studs
- **Draft Stopping: R302.12** When there is usable space both above and below concealed space of a floor / ceiling assembly, draft stops shall be installed so that the area of the concealed space does not exceed 1,000 sq. ft. Draft stopping shall divide the concealed space into approximately equal area.
 - Drop ceiling area below the floor framing.
 - Floor framing that is constructed of open web floor trusses or perforated members.

Draft stopping shall be installed parallel to the floor frame down to the top of drop or drywall ceiling. Draft stopping material: Min. 1/2 Drywall, 3/8" plywood or other approved material. **The Integrity of all draft stops shall be maintained**

- **Insulation: N.J.A.C. 5:23- 6.6-15** When the work being performed creates or exposes the entire framing of any wall, floor, ceiling or roof assembly that is part of the building thermal envelope (encloses conditioned space) insulation meeting the minimum R-13 shall be installed that fills the cavities of the framed assembly. Insulation must be installed with vapor barrier to the warm side of the home and fastened to wall frame to remain permanently in place. Refer to manufacturer's instructions.
- **Interior Finishes: R-302.9** Wall and ceiling finishes shall have a flame spread classification of not greater than 200 and a smoke development index of not greater than 450.
- **Drop ceilings:** Drop ceilings shall be installed per manufacturer's specifications. Lighting fixtures, fans and diffusers shall be supported by the track and not by the tile.
- **Guards: R-312** Guards shall be a minimum 36 inches above any walking surface that is 30 inches or more above the floor and have balusters or other construction such that a sphere of 4 inches cannot pass through any opening. The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway are permitted to be of such size that a 6 inch sphere cannot pass through. Stairways with a vertical rise of 30 inches or more are required to have guards on open sides measuring 34 inches or more above the leading edge of the tread.

Exception: Opening in required guards on the sloped sides of stairs shall not allow a sphere of 4 3/8 inches pass through.

- Guards shall be designed and constructed such for a concentrated load of 200 pounds applied at any point and in any direction along the top railing member.
 - The infill area of a guard shall be designed and constructed for a horizontal concentrated load of 50 pounds applied on a one foot area in any point of the system, including intermittent rails or other elements serving this purpose.
- **Stairways: R-311.7** Minimum 6' 8" headroom at all points in the stairwell and 36 inches **clear** width required. Maximum rise is 8 ¼ inches and minimum tread depth is 9 inches. When a tread depth is less than 11 inches a minimum ¾ inch and maximum 1 ¼ inch nosing shall be provided. The largest rise and tread shall not exceed the smallest rise and tread by 3/8 inch. Open rises are permitted to a maximum of 4 inches. All stairways are required to have a landing the full width of the staircase and minimum 36 inches in the direction of travel. Landing shall be firm and level. Stairways shall be fire blocked.
 - **Handrails: R-311.7.7** At least one graspable handrail shall be provided on any stairway with **4** or more rises. Handrails shall be minimum 30 inches to 38 inches high measured vertically from the sloped plane of the adjacent tread. Handrails shall be continuous from a point above the top riser to the lowest riser. Ends shall be returned to a post or wall. Minimum space from handrail to wall / surface is 1 ½ inches and may project into clear opening max 4.5 inches. Handrails shall be smooth and splinter free and have a minimum 1 ¼ inch to a maximum 2 circular cross section. Other handrails that comply with section IRC 311.5.6.3 #1&2 may be permissible, please submit details
 - **Requirements for Bedrooms: R-310** Each sleeping room shall have at least one operable emergency escape and rescue opening. Such opening shall be within the sleeping room and open directly into a public way, yard and court that open directly to a public way. Emergency escape and rescue opening may be a door or window.
 - Minimum window open area shall be **5.7** square feet.
 - Minimum required open area of **20** inch width.
 - Minimum required open area of **24** inch height.
 - The maximum sill height from finished floor shall be 44 inches.
 - For required **Window Wells** see R310.2 for requirements.
 - For **bulkhead enclosures** see R310.3 for requirements.
 - Hardwired smoke detectors shall be installed (1) in each new bedroom and (1) in the immediate vicinity of the bedrooms in accordance with NFPA 72.
 - Carbon monoxide detector shall be installed in the immediate vicinity of each sleeping area, if the home has a fuel burning appliance or attached garage. N.J.A.C.5:23-3.20 (c)
 - Carbon monoxide may be battery operated, hardwired or of the plug in type.

4. Plumbing:

- Provide waste, water and venting riser diagram for all new fixtures.
- Provide a gas riser diagram for any new fuel fired equipment.
- Provide manufacturer's specifications and installation instruction for sewage ejector systems.

- Please refer to the Plumbing Sub-code for additional information if needed.

5. Electrical: Based on the 2011 National Electric Code

- Plans must show locations of all receptacles, switches, lighting, phone CATV, smoke detector low voltage and other.
- Receptacles to be spaced as per Article 210.52.
- Receptacles to be of the Tamper Resistant Type 406.12.
- Each unfinished area to have at least 1 GFCI protected receptacle 210.52(G)(2).
- Each space finished or unfinished to have at least 1 switch controlled luminaire 210.70(A)(1).
- Stairwell shall be illuminated (Switch at the top and Bottom of the stairs) (Two 3 way switches) 210.70(A)(2)(c).
- All new circuits included in the new finished living space to be Arc fault protected 210.12(a).
- All electrical panel's shall have a minimum of 36 inch front clearance and 30 inch side clearance 110.26.
- All fixtures and boxes in suspended ceilings to be fastened to the ceiling grid 410.36(B) (screws, rivets, clips, etc).
- Minimum 1-20 Amp Branch circuit to be provided for bathroom receptacle outlet 210.11 (C) (3).
- Please refer to the Electrical Sub-code for additional information if needed.

6. The following New Building Element is not required for a basement alteration in an existing dwelling; however, it is should be considered:

- **Habitable rooms: R-303.1 and R303.2** All habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural ventilation shall be through windows, doors, louvers or other approved openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The minimum area to the outdoors is 4 percent of the floor area being ventilated. Mechanical light and ventilation may be used provided it meets the requirements of section R303.1 and R303.2
7. **Combustion Air:** Combustion air is required to keep your fuel burning appliances operating correctly. Please refer to the manufacturer's specification for combustion air and for minimum clearances around fuel burning equipment and their exhaust duct work. Please follow the table provided.

COMBUSTION AIR CALCULATIONS

For Gas and Oil Fuel burning appliances obtaining combustion air from the interior

1. Total Appliance BTU input rating: *Label on units will provide BTU input rating*
 _____ + _____ + _____ + _____ = _____ Total BTU
 Furnace(s) Water Heater(s) Other Other

2. _____ Total BTU :- 1000 x 50 = _____ Required Cubic Footage

3. Area of basement

<u>Room</u>	<u>Length</u>	x	<u>Width</u>	x	<u>Height</u>	=	_____	Cu. Ft.
_____	_____	x	_____	x	_____	=	_____	Cu. Ft.
_____	_____	x	_____	x	_____	=	_____	Cu. Ft.
_____	_____	x	_____	x	_____	=	_____	Cu. Ft.
_____	_____	x	_____	x	_____	=	_____	Cu. Ft.

Total Cubic Feet _____

4. The total cubic area must meet or exceed the totals from line 2
5. Available air from adjacent rooms in the basement can be used to meet the requirement of the minimum cubic area required through use of air transfer grills. Combustion Air may be obtained from the exterior if the requirements from line 4 is not satisfied

Combustion air cannot be drawn from Bathrooms, Bedrooms & Garages

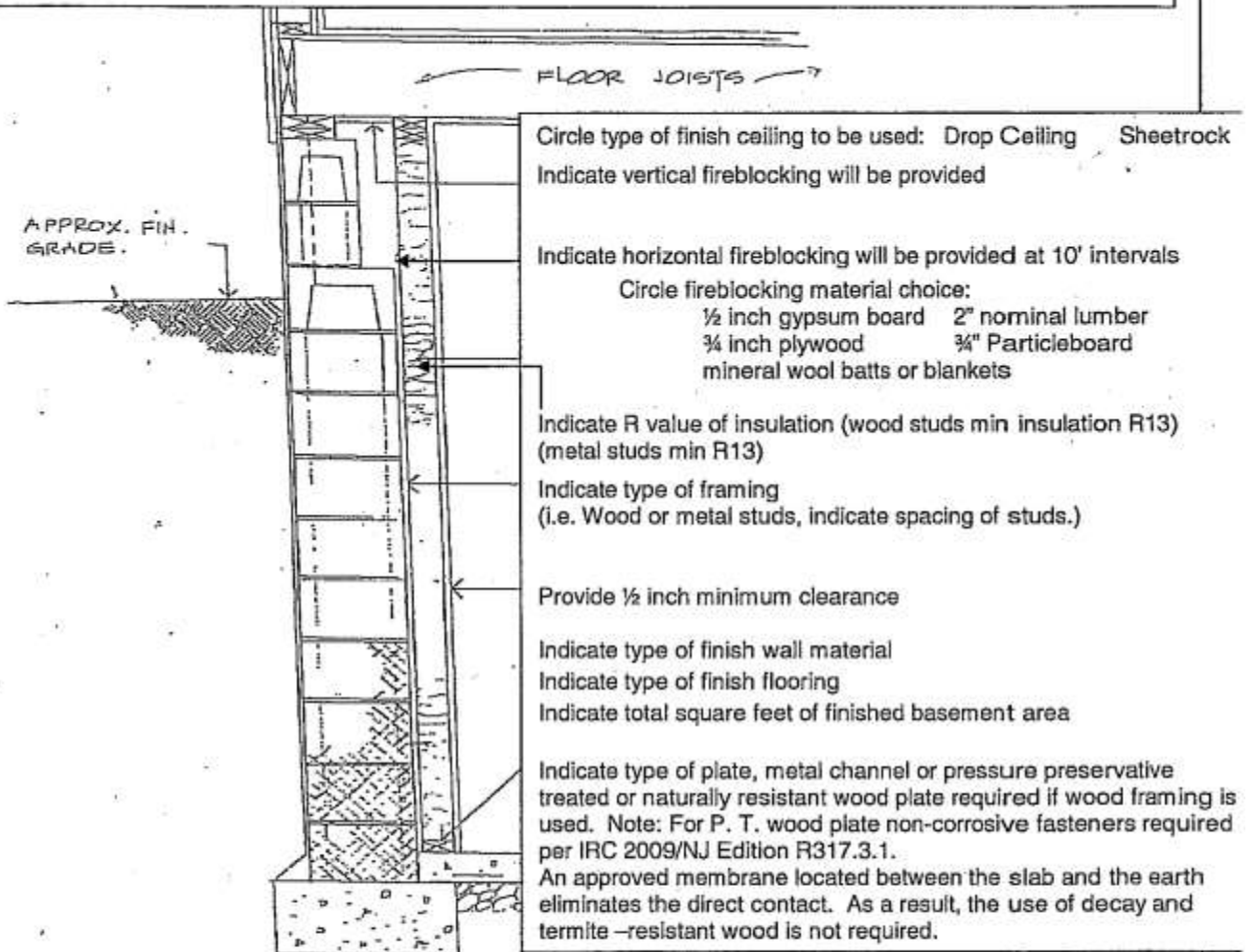
6. The first Grill shall commence one foot from the ceiling.
 The second Grill shall commence one foot from the floor.
 (louver doors may not meet this requirement)

7. Transfer grills shall have a clear open area of 1 inch per 1000 BTUs.
 _____ :- 1000 = _____ Square inches (Minimum of 100 sq. in.)
 BTU input

8. Louver Length x Width x Coefficient = Unobstructed Opening
 _____ x _____ x .75 = _____ Metal Louver
 _____ x _____ x .25 = _____ Wood Louver

APPLICANT MUST SUBMIT TWO COPIES OF PLANS. SHOW ENTIRE BASEMENT FLOOR PLAN AND WALL CROSS SECTION

LABEL USE OF EACH ROOM ON FLOOR PLAN



Wall Section-

Finished Basement Requirements

Scale: 3/4" = 1'-0"

11.7 SUMPS AND EJECTORS

11.7.1 Building Subdrains

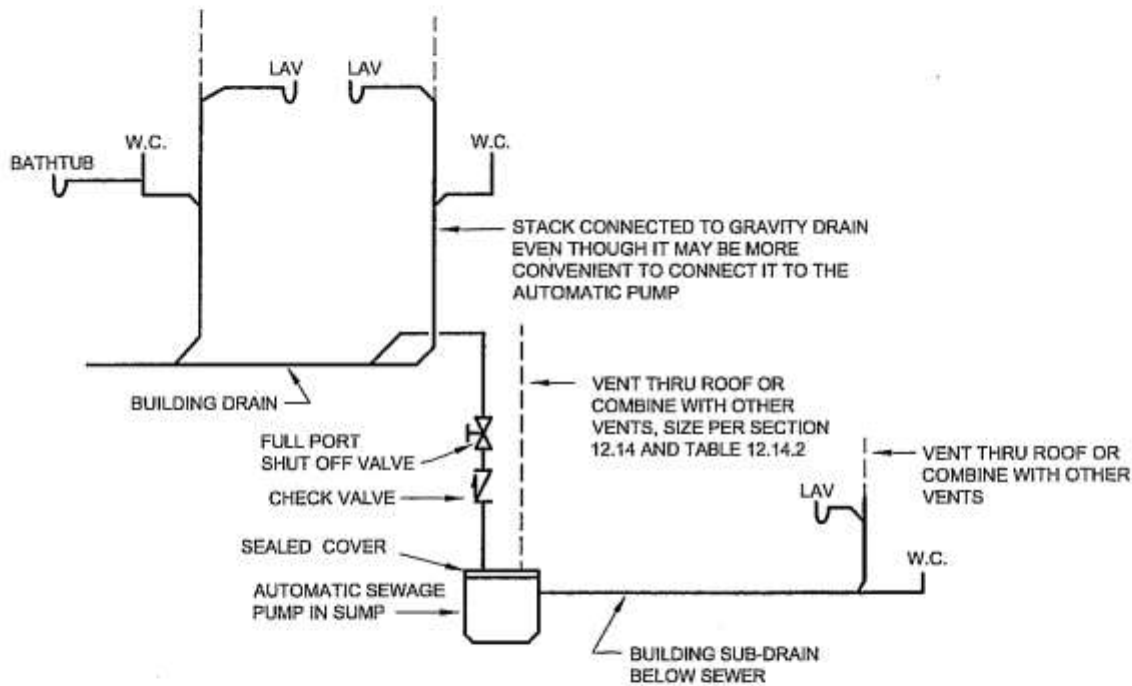
a. Building sanitary drains that cannot be discharged by gravity shall be discharged into a sump pit from which the contents shall be lifted and discharged into the building gravity drainage system by automatic pumping equipment or by an equally efficient method approved by the Authority Having Jurisdiction.

b. Only drains that must be lifted for gravity discharge shall be connected to such sump pits. All other drains shall discharge by gravity.

EXCEPTION: Existing buildings.

c. Sump pits shall be a minimum of 15 inches in diameter and 18 inches deep, and be accessible, tightly covered, and vented.

See Figure 11.7.1



NOTES:

1. Sewage pumps and ejectors must have audible, visual, or combination high level alarms per Section 11.7.11.

Figure 11.7.1
A BUILDING SUBDRAIN AND SEWAGE PUMP

11.7.2 Reserved

11.7.3 Reserved