United States
Environmental Protection
Agency

Indoor Environments Division
Office of Radiation and
Indoor Air

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Passive Radon Control System for New Construction

Architectural Drawings
of:

1) Passive radon control system
2) Crawlspace radon control system
3) Additional fan for active system

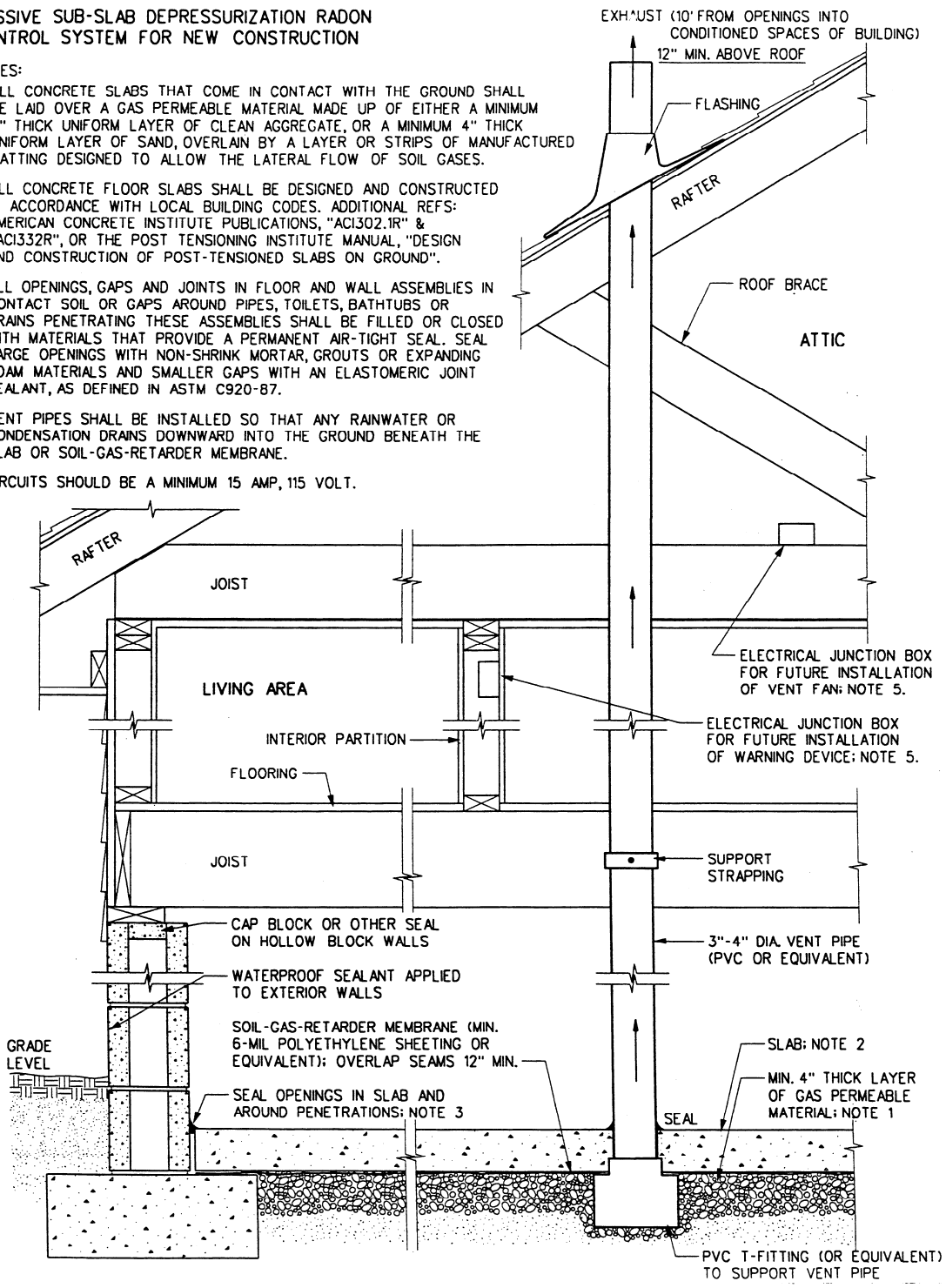
for one and two -family dwellings

These architectural drawings are intended for use by architects, home builders, designers, radon mitigators and others interested in the installation of passive radon control systems in one and two -family dwellings. For more information on radon and radon-resistant new construction call 1-800-55RADON or see the EPA web page: www.epa.gov/iaq

PASSIVE SUB-SLAB DEPRESSURIZATION RADON CONTROL SYSTEM FOR NEW CONSTRUCTION

NOTES:

1. ALL CONCRETE SLABS THAT COME IN CONTACT WITH THE GROUND SHALL BE LAID OVER A GAS PERMEABLE MATERIAL MADE UP OF EITHER A MINIMUM 4" THICK UNIFORM LAYER OF CLEAN AGGREGATE, OR A MINIMUM 4" THICK UNIFORM LAYER OF SAND, OVERLAIN BY A LAYER OR STRIPS OF MANUFACTURED MATTING DESIGNED TO ALLOW THE LATERAL FLOW OF SOIL GASES.
2. ALL CONCRETE FLOOR SLABS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL BUILDING CODES. ADDITIONAL REFS: AMERICAN CONCRETE INSTITUTE PUBLICATIONS, "ACI302.1R" & "ACI332R", OR THE POST TENSIONING INSTITUTE MANUAL, "DESIGN AND CONSTRUCTION OF POST-TENSIONED SLABS ON GROUND".
3. ALL OPENINGS, GAPS AND JOINTS IN FLOOR AND WALL ASSEMBLIES IN CONTACT SOIL OR GAPS AROUND PIPES, TOILETS, BATHTUBS OR DRAINS PENETRATING THESE ASSEMBLIES SHALL BE FILLED OR CLOSED WITH MATERIALS THAT PROVIDE A PERMANENT AIR-TIGHT SEAL. SEAL LARGE OPENINGS WITH NON-SHRINK MORTAR, GROUTS OR EXPANDING FOAM MATERIALS AND SMALLER GAPS WITH AN ELASTOMERIC JOINT SEALANT, AS DEFINED IN ASTM C920-87.
4. VENT PIPES SHALL BE INSTALLED SO THAT ANY RAINWATER OR CONDENSATION DRAINS DOWNWARD INTO THE GROUND BENEATH THE SLAB OR SOIL-GAS-RETARDER MEMBRANE.
5. CIRCUITS SHOULD BE A MINIMUM 15 AMP, 115 VOLT.



Radon Passive System Guidelines

- Before the concrete floor is poured in the basement a permeable layer of gravel (1/4" or larger) needs to be used for the final grading. This will allow the radon to move below the house to a vent pipe. This can also be accomplished by using perforated drain pipe inside the interior of the footer and include a few runs across the middle, if the basement square footage is larger than 1500 square feet.

- Next the radon pipe (3"or 4" PVC) is installed in location that will allow the pipe run through an interior wall to the roof. The efficiency of the system is greatest if the pipe can be run straight to the roof with no horizontal runs. A "T" fitting is glued on the bottom of the pipe and is inserted in the gravel. If drain tile is used the pipe is fastened to it.

- If a large section of the basement is crawlspace with exposed soil this area will need to be covered with a sturdy 6mil plastic that is sealed to the walls and a pipe inserted also.

- Before the concrete is poured a 6mil poly covers the soil or gravel. The poly is overlapped by 12". This not only helps contain the radon but also help keep ground moisture from migrating up into the concrete slab.

- After the floor is poured urethane caulk is used to seal all cracks and expansion joints.

- Where the pipe exits the roof it must be at least 10 feet from any windows that can be opened. The radon pipe needs to be at least 12" above the plane of the roof.

- Finally, have the electrician place an outlet in the attic less than 6 feet from the radon pipe. If a fan is needed in the future you are all set to just plug it in.