

## STATE BUILDING CODE INTERPRETATION NO. I-5-01

February 9, 2001

The following is offered in response to your letter in which you request a formal interpretation of section 3104 of the 1995 CABO One and Two Family Dwelling Code portion of the 1999 State Building Code.

**Question:** Does section 3104 of the 1995 CABO One and Two Family Dwelling Code portion of the 1999 State Building Code allow the use of 1 ¼ inch crushed rock (or smaller) for bedding DWV pipe under a basement slab in residential construction?

**Answer:** Crushed rock of small size (1/2 inch or less) is acceptable bedding material for both ABS and PVC underslab DWV piping, but 1 ¼ inch is not acceptable.

ABS DWV is governed by ASTM standard D 2661-91, which references ASTM D 2321 for underground installation. D 2321, at section 5.5, states that while the maximum particle size for embedment is limited to material passing a 1 ½ inch sieve, smaller material may be required for small diameter pipe. Section X1.9 of D 2321 states that limiting particle size to ¾ inch or less to embed pipes from 8 inch through 15 inch enhances the placement of the material, while for smaller pipes a particle size of about 10% of the pipe diameter is recommended. In addition, D 2661 at section x3.1, limits angular particle size to ½ inch and rounded particle size to ¾ inch. The maximum size rock that can be used for a 6 inch or 4 inch ABS underground DWV pipe, is therefore ½ inch crushed rock, or ¾ inch river rock. Smaller dimensions of such products are also acceptable.

DWV pipe made of PVC is governed by ASTM standard D 2665-91b, which does not reference the D 2321 standard. Information contained in the D 2665 standard at section x1.10 states that building drains under floor slabs shall be on undisturbed soil or a layer of selected and compacted backfill so that no settlement will be encountered. Section 3104 of the CABO Code states that where trenching is over-excavated, backfill that supports pipe shall be compacted earth, sand, fine gravel or similar granular material. It is my interpretation that ½ inch or smaller crushed rock or ¾ inch or smaller river rock is a similar granular material and can be used as bedding for PVC DWV as well.