

STATE OF OREGON

INTEROFFICE MEMO

BUILDING CODES DIVISION

JANUARY 19, 2006

To: Mark Long, Administrator
From: Ravi Mahajan, Facilities Engineer
Subject: Rainscreen fire hazard concerns

This memo summarizes my research and conclusions in response to concerns from individual task force members regarding the potential fire hazard posed by a drainage cavity behind the exterior cladding.

Research

National standards/testing bodies: I contacted Oregon Masonry Institute, Brick Industry of America, ICC Evaluation Services, and Underwriters Laboratories. None of these organizations were aware of any fire hazards, and they do not have any testing or research data in support or against this issue.

British Columbia: Neither Dave Ricketts, RDH Building Science, Inc., nor Bob Maling, Homeowner Protection Office, were aware of any fire hazards. Mr. Maling indicated that Canadian officials felt that the fire-blocking requirements of the building code for concealed cavities sufficiently addressed this issue.

Oregon State Fire Marshal: John Caul consulted with his colleagues across the state. The general conclusion was that a drainage cavity did not pose an issue provided the existing fire-blocking measures in the building code were followed. (I have attached the relevant sections of the building code.) In non-combustible construction, they concluded there would not be enough air flow to create much of a draft. In combustible construction, they felt that the limited increase in risk was warranted given the rising number of mold, mildew, and rot issues.

Conclusion:

Based on the research summarized above, using a drainage cavity behind exterior cladding does not pose a significant fire-hazard. These concerns are adequately addressed by requiring fire-blocking for the full depth of the drainage-cavity at each story and every 10'-0" on center horizontally. Furthermore, in the type of high-density construction common in multi-family housing, the exterior walls of the structure are required to be fire-rated, so the exterior wall would provide protection against the fire for the time-period for which it is rated.

Oregon Building Code requirements:

- "Weep holes provided in the outside wythe of masonry walls shall be at a maximum spacing of 33 inches on center. Weep holes shall not be less than 3/16 inches in diameter." (Section 2104.1.8, 2004 OSSC).
- "Flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior. Flashing shall be installed at ... exterior wall intersections with roof ... and similar locations where moisture could enter the wall." (Section 1405.3, 2004 OSSC).
- "Flashing and weepholes shall be located in the first course of masonry above finished ground level above the foundation wall or slab, and other points of support, including structural floor," (Section 1405.3.2, 2004 OSSC)
- "Fireblocking shall be provided in concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs as follows: a. vertically at the ceiling and floor levels, b. Horizontally at intervals not exceeding 10 feet." (Section 717.2.2, 2004 OSSC).
- "Fireblocking 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. ... rest of the section same as OSSC Section 717.2.2." (Section R602.8, ORSC).