

Dry Rot Problem and Solutions

By: William R. Bloom

Experience indicates that most of the legal problems originating with Home Owner Association complaints against Architects and Structural Engineers initially starts from one predominate source, WATER. This is usually water that leaks through roofs, decks, walls, windows, or water that is constantly in contact with unprotected wood.

“...caused by fungi which feed on the cellulose of the wood.”

Dry Rot is one major source of complaint with exposed wood, and a source of legal problems for design professionals. Dry rot is the decay of wood products caused by fungi which feed on the cellulose of the wood. These fungi must have food, moisture, air, and warmer temperatures in order to survive. In California, and many other states, all these requirements for fungi growth are available, if there is a frequent source of moisture to exposed wood.

Exposed wood on decks, balconies, stairs, siding, etc. that is frequently wetted by garden hose cleaning, sprinkler sprays or morning dew, has the potential for dry rot. The end grain of wood pulls this moisture into the cells by capillary action. Also, moisture trapped between wood-to-wood and wood-to-steel surfaces soaks into the cells. When this wetting action fully saturates the cell walls of the wood, the decay producing fungi will start to grow and break down the cellulose or wood fibers. As the wood decays, it becomes punk-like in character and tends to act like a sponge. Periodic wetting of the wood will maintain the moisture content and conditions necessary for the fungi growth. The surface of the wood, being drier than the inner core, is the last place for decay to visually appear.

The dry rot primarily occurs where:

1. Water ponds on exposed wood and lacks proper drainage.
2. Water soaks into the end grain of unprotected wood.
3. Water is trapped between wood contact surfaces, and soaks into the side grain.

The solution to the dry rot problem involves three areas:

1. Architectural treatment and water proofing to avoid wood being exposed to the moisture.
2. Using Pressure Treated Lumber.
3. Using Decay Resistant Lumber species.

Water proofing a structure is normally the responsibility of Architects and others with expertise in this specialty. This is beyond the scope of involvement of most Structural Engineers. Exposed wood elements should be covered and protected, and have sufficient slope for drainage. An example of this is roof framing that is protected by a water proofed eave. Through many expert opinions, it has become apparent that paint and stains on exposed wood do not afford adequate protection against dry rot. Adequate water proofing is a must. Metal flashing and caps can also be fabricated that will keep water off the critical areas of exposed wood. The designer's primary goal should be to keep water off structural wood.

“Exposed wood elements should be covered and protected...”

Using pressure treated lumber is another solution to the dry rot problem. Detailed information on pressure treatments and their uses can be obtained from the American Wood Preservers Institute (AWPI, www.preservedwood.com). Exposed glulam members need to be pressure treated after fabrication. The use of pressure treated lumber in exposed conditions needs careful architectural

consideration. Pressure treated lumber is not always architecturally appealing. It is usually green in color and has prong marks. Also, its ability to accept stain and paint may be limited. It should be noted that solid sawn members can also check and split after treatment, resulting in untreated, exposed areas within the split.

Pressure treated lumber that has been cut or drilled after treatment also requires treating of the cut ends and drilled holes. A sample specification should require that these cuts and holes be liberally coated, allowing for some drying time between coats.

The use of Decay Resistant Lumber species is another solution. In the building codes, the heartwood of cedars and redwood are listed as “Wood of Natural Resistance to Decay”. The heartwood of cedars and redwoods are resistant, or very resistant, to dry rot decay. Glulam members can be fabricated of these woods, but all laminations need to be of cedar or redwood heartwood. The allowable stresses of these woods are different than the more commonly used Douglas Firs.

Water infiltration is not the only source of legal problems for our profession, but “From Experience” it seems to be the initial one that most often opens up pandora's box of problems. ■



William Bloom has been designing and analyzing structures for over 30 years, and is the president of STB Structural Engineers, Inc., in Lake Forest California.

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