PRESERVED WOOD FOR TODAY'S ENVIRONMENT

FASTENER USE FOR TREATED LUMBER USED IN INTERIOR ENVIRONMENTS

It is generally recognized that the potential for fastener corrosion in forest products based building materials used in an interior exposure environment is minimal because the equilibrium moisture content of the wood is maintained at a level that does not support corrosion reactions.

The USDA Forest Products Laboratory General Technical Report FPL-GTR-113 reprinted by the Forest Products Society as the Wood Handbook in 1999 provides a compilation of equilibrium moisture contents in wood exposed to outdoor atmosphere in several US locations. The information is based on relative humidity and temperature data collected by the US National Climatic Data Center over a period of 30 years. The report indicates that under normal dry conditions in interior applications, the equilibrium moisture content of the wood in service will be below 19%. Baker, 1988 reported that the corrosion rate of metals is very low in wood where the moisture content is below about 18% on a dry basis. Based on that information, the performance of fasteners in ACQ® treated wood used in an interior exposure environment will be similar to that observed with untreated and TimberSaver® treated wood.

However, it must also be recognized there may be a greater corrosion potential of fasteners used with untreated, TimberSaver treated or ACQ treated wood if failure of the building envelope occurs and the lumber is exposed to high moisture conditions. That possibility should be taken into account when selecting fasteners and metal connectors.

The end tags used on ACQ treated wood make general recommendations to use hot-dip galvanized or stainless steel fastening systems on the basis that most treated wood is used in outdoor environments where it is frequently exposed to moisture from the weather.

Fasteners and metal connectors that are used with ACQ treated and TimberSaver treated lumber must comply with national and local building code specifications.

The International Residential Code Fastener Statement – Section R319.3 provides for an exception regarding the requirement that fasteners in contact with pressure treated wood be "hot-dipped galvanized steel or stainless steel, silicon bronze or copper." That same position is reflected in the International Building Code section 2303.1.8.5. This exception allows for the use of one-half inch or greater steel bolts as anchors for attaching pressure treated sill plates to concrete foundations (see attached). CSI agrees with the fastener specifications listed under the IRC and IBC for ACQ pressure treated wood.

Attachment – Section 319.3 of the 2003 International Residential Code – International Code Council

Reference:
Andrew Baker, 1988.
Corrosion of metals in preservative treated wood. Pages 99-101 in: Wood Protection Techniques and the Use of Preservative treated wood in construction. Forest Products Society, Proceedings 47358, M. Hamel, editor.

rally durable or pressure preservatively treated wood shall be used for those portions of wood members that form the structural supports of buildings, balconies, porches or simi-lar permanent building appurtenances when such members are exposed to the weather without adequate protection from a roof, eave, overhang or other covering that would prevent moisture or water accumulation on the surface or at joints between members. Depending on local experience, such members may include:

1. Horizontal members such as girders, joists and decking.
2. Vertical members such as posts, poles and columns.
3. Both horizontal and vertical members.

R319.1.3 Posts, poles and columns. Posts, poles and columns supporting permanent structures that are embedded in concrete in direct contact with the ground or embedded in concrete exposed to the weather shall be approved pressure preservatively treated wood suitable for ground contact use.

R319.1.4 Wood columns. Wood columns shall be approved wood of natural decay resistance or approved pressure preservatively treated wood.

Exceptions:

1. Posts or columns which are either exposed to the weather or located in basements or cellars, supported by piers or metal pedestals projecting 1 inch (25.4 mm) above the floor or finished grade and 6 inches (152 mm) above exposed earth, and are separated therefrom by an approved impervious moisture barrier.
2. Posts or columns in enclosed crawl spaces or unexcavated areas located within the periphery of the building, supported by a concrete pier or metal pedestal at a height greater than 8 inches (203mm) from exposed ground, are separated therefrom by an impervious moisture barrier.

R319.2 Quality mark. Lumber and plywood required to be pressure preservatively treated in accordance with Section R319.1 shall bear the quality mark of an approved inspection agency that maintains continuing supervision, testing and inspection over the quality of the product and that has been approved by an accreditation body that complies with the requirements of the American Lumber Standard Committee treated wood program.

R319.2.1 Required information. The required quality mark on each piece of pressure preservatively treated lumber or plywood shall contain the following information:

1. Identification of the treating plant.
2. Type of preservative.
3. The minimum preservative retention.
4. End use for which the product was treated.
5. Standard to which the product was treated.
6. Identity of the approved inspection agency.
7. The designation "Dry," if applicable.

Exception: Quality marks on lumber less than 1 inch (25.4 mm) nominal thickness, or lumber less than nominal 1 inch by 5 inches (25.4 mm by 127 mm) or 2 inches by 4 inches (51 mm by 102 mm) or lumber 36 inches (914 mm) or less in length shall be applied by stamping the faces of exterior pieces or by end labeling not less than 25 percent of the pieces of a bundled unit.

R319.3 Fasteners. Fasteners for pressure preservative and fire-retardant-treated wood shall be of hot-dipped galvanized steel, stainless steel, silicon bronze or copper.

Exception: One-half-inch (12.7 mm) diameter or greater steel bolts.

SECTION R320
PROTECTION AGAINST TERMITES

R320.1 Subterranean termite control. In areas favorable to termite damage as established by Table R301.2(1), methods of protection shall be by chemical soil treatment, pressure preservatively treated wood in accordance with the AWPA standards listed in Section R319.1, naturally termite-resistant wood or physical barriers (such as metal or plastic termite shields), or any combination of these methods.

R320.1.1 Quality mark. Lumber and plywood required to be pressure preservatively treated in accordance with Section R320.1 shall bear the quality mark of an approved inspection agency which maintains continuing supervision, testing and inspection over the quality of the product and which has been approved by an accreditation body which complies with the requirements of the American Lumber Standard Committee treated wood program.

R320.2 Chemical soil treatment. The concentration, rate of application and treatment method of the termiticide shall be consistent with and never less than the termiticide label.

R320.3 Pressure preservatively treated and naturally resistant wood. Heartwood of redwood and eastern red cedar shall be considered termite resistant. Pressure preservatively treated wood and naturally termite-resistant wood shall not be used as a physical barrier unless a barrier can be inspected for any termite shelter tubes around the inside and outside edges and joints of a barrier.

R320.3.1 Field treatment. Field cut ends, notches and drilled holes of pressure preservatively treated wood shall be retreated in the field in accordance with AWPA M4.

R320.4 Foam plastic protection. In areas where the probability of termite infestation is "very heavy" as indicated in Figure R301.2(6), extruded and expanded polystyrene, polyisocyanurate and other foam plastics shall not be installed on the exterior face or under interior or exterior foundation walls or slab foundations located below grade. The clearance between foam plastics installed above grade and exposed earth shall be at least 6 inches (152 mm).

Exceptions:

1. Buildings where the structural members of walls, floors, ceilings and roofs are entirely of noncombus-