MEMORANDUM

TO: Members
Board of Rules and Appeals

DATE: September 18, 2003
Revised: February 19, 2004

FROM: for Robert Barnes, Chairman
Building Subcommittee
Board of Rules and Appeals

SUBJECT: **Analysis of Anchors in Windows and Doors**

On September 16, 2003, the subcommittee met with the Product Control Division's staff of the Building Code Compliance office and representatives from the fenestration industry consisting of fastener manufacturers, fenestration manufacturers, and consulting engineers. Over 34 members of the industry were present.

The purpose of the meeting was to establish consensus in the industry on the level of detail required for the anchor verification calculations submitted to obtain a Miami-Dade County Notice of Acceptance, and how published and unpublished information can be used to substantiate the calculations. The following items were discussed and reached consensus.

1. Bending Calculation:
   Where a screw is shown to be installed in a cantilevered condition on an NOA drawing submittal, the calculations are to consider a pure bending condition. The full moment arm is to be considered as measured from the surface of the substrate to the point where the load is applied on the screw. If the frame is shimmed with a type of shim complying with the requirements of the building code and capable of resisting the frame's rotation, consider only ½ of the total moment arm.
2. Fastener Yield:
   Use allowable yield as specified by an adopted material standard, or as listed on the fastener's NOA. For an ASTM A325 or SAE grade 5 steel fastener use F_y = 92000 psi and F_u = 120000psi.
3. 4/3 Allowable Wind Increase:
   Allow to use the 4/3 allowable stress increase until building code is modified. The wood temporary load allowable increase of 1.6 shall be limited to 4/3.
4. Screw Diameter:
   Use the average diameter for full threaded screws, and the shank diameter for screws containing a shank.
5. Combined Loads Equation:
   Since case hardened screws have a short yield curve and the diameters of the screws being considered is small, in a bending calculation the bending stress will typically control. Therefore, it will be easier to use the straight line equation vs. a parabolic equation.

Thank you for your consideration on this matter.