"Fairness and Value in Field Chamber Water Testing"

By: Greg L. Cunningham

What is fair when the project specifications require field chamber water testing for windows, storefronts, window walls and curtain walls? And, how does field chamber water testing bring value to a project? Good questions. Unfortunately for the Owner, in today's economy it appears to come down to how much is in the budget for chamber testing rather than how much the testing could save the project long-term if undetected problems occur and persist.

If the specifications do not include wording regarding field water testing this could become a matter of interpretation. The General Contractor, Glazing Subcontractor, and Manufacturer could comprehend proper testing criteria in very different ways and disagree about the correct method. To be fair to all parties involved a separate pre-testing meeting should be held to discuss the performance rating or warranted water pressure performance testing criteria, the specification wording, the laboratory test results for the product and the shop drawings to determine what should be in place before testing begins. This meeting should include everyone that may be affected by the testing results, but especially knowledgeable Owner representation.

After the field chamber water testing criteria is decided and documented, the negative water testing pressure will be pinpointed for use in the field chamber water tests. The negative water testing pressure will depend upon the testing method according to either AAMA 503 or ASTM E-1105. The AAMA guidelines are restrictive pertaining to who is certified to perform the test using their guidelines and what water pressure is recommended. The AAMA guidelines support and protect the installer, manufacturers and the product supplier.

The ASTM guidelines follow a less restrictive but more proactive risk management testing procedure more favorable from the standpoint of the Architect and Owner that allows them to decide on the testing negative water pressure. The two guidelines do not really differ on the testing equipment, the water spray rack apparatus or the chamber. The water pressure for testing refers to how much water a glazing pocket will hold and how fast it weeps versus how much negative pressure is put into the chamber before it overflows or leaks. Most glazing systems can be made to leak if enough negative water pressure is created in the test chamber. The goal should be field testing procedures in keeping with the rated performance negative pressure the system was tested for in the laboratory during development or as closely as possible considering the materials and configurations. The laboratory testing results from a qualified testing laboratory should be submitted for review and included as part of the submittal process whether field testing is required or not.

Before onsite testing begins, the Consultant should review the conditions and shop drawings one final time to make certain that all approved components are in place. Components include all internal sealants, end dams, water diverters, external sealants, perimeter sealants and gasketing required by the manufacturer's installation manual. If anything is missing all parties should be notified that the testing cannot be conducted until all the components are in place in keeping with the approved shop drawings. If the missing components can be installed immediately without jeopardizing test results the testing can proceed. If not, the testing must be rescheduled until the test specimen or specimens can be completed and are ready for field chamber water testing. However, testing needs to be conducted prior to installation of interior finishes including drywall, wall and floor treatments. Interior conditions need to be visible to facilitate early water entry detection.

As the purchaser, the biggest potential for risk falls to the Owner who trusts that he's buying a worthwhile product. Likewise, the greatest reward will come to the Owner with the enjoyment of a quality product confirmed by outstanding performance. It's the Consultant's job to assist to identify good adequate performance criteria and with testing to document installed product performance to provide the Owner assurance of a quality installed product anticipated to provide long-term performance. The Architect, General Contractor, and Glazing Contractor should be prepared for project field chamber water testing for verification that their team has chosen and provided a quality product to the Owner.