

# Acceptance Requirements for Nonresidential Site-built and Manufactured Fenestration

*2008 California Building Energy Efficiency Standards*

CEC Staff July 11, 2006

**DRAFT**

### **Description**

Acceptance Requirements are defined as the application of targeted verification checks conform to the acceptance criteria set forth in the Standards and to related construction documents (plans or specifications). Acceptance Requirements can effectively improve code compliance and help determine whether fenestration meets operational goals and whether it meets the efficiency and effectiveness of the product.

This proposal expands the Acceptance Requirements to include acceptance for site-built fenestration and manufactured fenestration where large amount of glass are being installed. For each different fenestration product specified requires an NFRC Label Certificate to be attached for each piece of fenestration. This is not practical for large commercial buildings. Therefore, each specified fenestration product will require an NFRC Label certificate with CPD (Certified Product Directory) number matching delivery receipt or purchase order, and listed efficiency matches current building plans.

The recommended Acceptance Requirements will address three key areas:

1. The installing contractor, engineer of record or owners agent is involved in the process of checking that the NFRC Label Certificate is located at the site and acceptance procedures in the standards are met,
2. The process of checking that the technology, practice, strategy or system was installed and performs according to design intent and,
3. The proposal establishes a Certificate of Acceptance that must be completed by the installing contractor, engineer of record, or agent of the owner prior to receiving an occupancy permit.

### **Benefits**

The energy benefits associated with this expanded Acceptance Requirement proposal for fenestration is to verify the actual fenestration efficiency being installed. Otherwise, if the thermal performance is worse than the actual specified values it can increase the solar heat gain of the building and indirectly increase the building cooling requirements.

This proposed requirement places an expectation on all fenestration installers to verify the specified fenestration actually is installed per current building plans. Additionally, the installing contractor, engineer of record or owners agent the installer will verify the NFRC Certificate Label and receipt or purchase order for each product line and cross verify with the building plans fenestration schedule to ensure the actual thermal performance are actually being installed according to the intent of the Standards.

## **Environmental Impact**

This measure will not have any adverse environmental impact.

## **Type of Change**

Mandatory Measure:

Fenestration acceptance through installer verification must pass acceptance requirements which can be listed in Section 143 of the 2008 Standards.

Prescriptive Requirement:

Ensure standards requirements to pass acceptance procedures.

Compliance Option:

No changes are proposed at this time but future options may account for strategies that improve, verification, reliability and reduce inefficient installed fenestration.

## **Measure Availability and Cost**

Contractors, installers, or responsible agent will conduct the acceptance verification or inspection. These individuals are responsible to the owner for the installation, in many cases, conduct verification prior to the owner accepting the work product. Costs for performing this verification are currently included in contractor bid rates as a part of their quality acceptance assurance process.

## **Useful Life, Persistence and Maintenance**

Verification or inspection is likely to assure proper fenestration thermal performance meets the building plans specification and product certification. If verification of the fenestration does not meet specified efficiencies, a new energy analysis with would be required in order meet energy compliance. If acceptance fails, no occupancy permit will be given by the building department until all acceptance procedures are passed.

## **Acceptance Testing**

This new process established for the 2008 Standards will be implemented for all site-built fenestration and manufactured fenestration which has an NFRC Certified Label Certificate and matches the building plans and the NFRC CPD matches the purchase order. Those steps include the following:

- Plans are properly documented specifying thermal efficiency for each installed fenestration product and notes to assure the design meets the intent of the Standards
- The installing contractor, engineer of record or owners agent reviews and verifies delivery receipt matches current building plans. Verify the NFRC Label Certificate matches NFRC CPD and purchase order.
- The installing contractor, engineer of record or owners agent documents through Certificate of Acceptance and submits to the building department prior to receiving an occupancy permit.

## **Cost Effectiveness**

The savings associated with verifying performance is an inherent part of the measure savings. Another way of stating this is that the current cost-effectiveness assumptions are based on the measure performing perfectly for the life of the measure. Therefore acceptance testing does not have to be cost-effective on its own, but as a package when considering the cost of the measure, cost of

verification and savings associated with the measure. The process itself will not be subject to a separate cost-effectiveness analysis independent of measure savings.

***Relationship to Other Measures***

This measure will impact the standards language of Section 143(a) and 143(b).

***Draft Standards Language***

To be determine at a later date.