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About the Author

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Eric has been a licensed General Contractor in California since 1986, After years of residential construction of various types, he began work in forensic consulting in 1995 including: destructive testing, root cause analysis, repair recommendations, and repair oversight. For the past seven years Eric has been managing operations for a competitive consulting firm managing projects throughout the United States. Working with some of the nation's largest builders Eric has been instrumental in improving quality in residential construction. Eric can be reached by calling 800-547-5125 Ext. 158 or by email at ellera@qualitybuilt.com

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Quality Built's Commitment

Quality Built is commited to being a visionary leader in the insurance, financial and

ENERGY REQUIREMENTS CAN ADD COMPLEXITY AND RISK TO WINDOW SELECTION AND INSTALLATION

The Evolution of Windows

A wave of construction defect litigation in the 80's and throughout the 90's set off a revolution in fenestration design, manufacturing and installation techniques; aimed at preventing water intrusion. During this period the construction industry was introduced to flashing, the need for sealants, and a myriad of complex installation details and standards. Manufacturers and architects updated details, installation instructions, and warranty documents to ensure that windows were viewed as an integral part of the exterior building envelope. Builders also gained heightened awareness of the need to compel adherence to these standards. For the most part, the industry changes have been successful and the concern over water intrusion from leaky windows has been greatly mitigated. Where do we go from here?

Today we are seeing a significant number of windows marketed as energy efficient or as meeting certain energy performance standards. It is important that the fenestration and construction industries focus on mitigating risk related to energy requirements including, but not limited to: U-Factor, SHGC, VT, AL, CR minimum standards for Title 24 (CA), and Energy Star. As a result of these constantly improving standards, the consumer's growing focus on energy efficiency, and the homeowner's increased level of knowledge in these areas, it is critical that builders (1) understand these changing standards, and (2) ensure these components will meet the expectations of the consumer communicated through the marketing efforts focused on "GREEN" building. The industry focus on reducing litigation has left an army of construction defect firms ready to test the marketed performance claims against measurable performance standards.

As a result of these new and ever changing standards, Builders have a growing list of items to consider before making fenestration selections. How will all of this affect the energy rating or HERS score? Will changes to the installation process be required? What

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additional or new documentation will be needed to defend energy-related claims? What types of disclaimers and/or warranty language should be included in the sales agreement? And most importantly, what information do we have now that will assist builders in making the most educated fenestration product selections today?

Some New Definitions with Windows Today

Most industry experts are familiar with the various ASTM standards for everything from the structural integrity of the frame to the impact-resistance of the glazing. However few builders fully understand the new ratings regarding energy performance. Some of these other terms may be familiar to many of us, but others have never heard or seen these ratings or may not understand how each definition fits into the context of mitigating risk related to energy efficiency. The most well-known standards agency for energy performance is the National Fenestration Ratings Council (NFRC). Definitions from the NFRC relating to energy efficiency of windows are provided here:

- U-Factor - This is a measure of thermal transmittance through the window product (mainly the glass itself, but the assembly as a whole). This can be thought of as the insulation rating for the window. In this case the lower the number the better. U-Factors ge
  nerally range from .2 to 1.2. The formula is: Btu/h·ft²·°F.
- Solar Heat Gain Coefficient - Simply speaking this is a measure of how
- solar heat transmits from the exterior to the interior of the window. This is becoming a significant issue with the new energy codes and stricter standards for marketing programs, such as Energy Star or Builder's Challenge. This coefficient is reported as a number from 0 to 1 with the smaller the number the more heat is blocked.

- Visible Transmittance - Simply the amount of light that will pass through the glazing product. Also measured from 0 to 1 the higher the number the more light transmitted.
- Air Leakage - A voluntary measure of the volume of air that will pass through the window assembly. Measured as cfm/sq ft. As the energy codes become increasingly stricter, specifically with the performance standards measured by a HERS index, this can become a greater issue for builders going forward.
- Condensation Resistance - Another voluntary measure of the potential for the window to resist the build-up of condensation on the interior surface of the glazing. While this is not a strict measurement predicting condensation, the relative number from 0 to 100 represents the potential with the higher the number the better. (NFRC.org, n.d.)

Who needs this information and why?

The selection of windows for a project is no longer simply a matter of cost and aesthetics. Today's purchasing manager and VP of Construction must be keenly aware of the benefits and pitfalls of the windows they select. States like California and programs like Energy Star® are taking a close look at the windows and offering incentives for increased energy efficiency and/or mandating openings that meet minimum criteria. In the past the sales person from the local window supplier could handle the selection as a measure of budget and appearance. Today all stakeholders must have a full understanding of each of the terms listed above in order to make an appropriate selection.

Using this information for fenestration selection.

More and more residential builders realize the need to retain energy consultants during the design process for their buildings. These consultants offer designs and fenestration selections that will help a builder meet minimum standards and/or qualify for available rebates. It is important to understand all of the rebates available to a builder and the costs associated with earning those rebates. Sadly, in some cases, the local costs to gain certification of certain levels of energy efficiency may outweigh the cost savings to be achieved. In addition to the benefits available through rebates, builders' Sales and Marketing teams are using energy efficiency as a value-added benefit to attract buyers. However, these marketing programs must be adopted with a caveat: to wit: builders should be wary of promising certain window performance levels to reduce energy usage, lest they have adequate documentation to support such claims. Otherwise, builders can face liability for misrepresentations in the sales process.

To get an idea of the sheer number of rebates available, the Efficient Windows Collaborative (Jan 2011) put together a comprehensive list of rebates available by state and municipality as well as web links to the various programs. This list, while extensive does not include some of the State programs like California's CAHP program or federal programs like Energy Star. Another source for State incentives is DSIRE™, a database of incentives available to consumers and builders both at the state and federal levels (DSIRE, n.d.). The bottom line is an extensive analysis is necessary to determine what window components will grant your project the greatest rebates and offer efficiency that you are comfortable including in marketing materials for your buyers. Remember that if the builder does not do their homework with regard to efficiency claims in marketing materials, the internet connected and increasingly sophisticated homeowner will.

Conclusion

Today, every builder is focused on building the best product available at the lowest cost. Most builders today have a strong understanding of the installation standards that will reduce water intrusion. Few fully understand the complex nature of energy efficiency nor do they have a handle on what exactly they are promising their home buyer in this area. An entire new industry has emerged to address these issues. This industry includes the experts ready to complete performance testing on homes to establish a new wave of litigation. The builder, to stay out of this litigation, needs to (1) understand the product being installed, (2) make appropriate selections that reduce costs without reducing efficiency, (3) verify these products are used on the site through the implementation of HERS verifications or third party inspections, and (4) ensure

marketing is appropriately communicating energy efficiency expectations to the home buyer. These tips can help a builder avoid the next wave of construction defect litigation just waiting to begin.

About Quality Built

Quality Built, headquartered in Fort Lauderdale, Florida, is a leading national construction quality assurance and inspection management company. Quality Built provides third-party quality assurance services and a full spectrum of quality and risk management solutions such as property condition assessments, tainted drywall assessments, building evaluations, data collection tools, collateral inspection services, reporting and support services on high-quality residential and commercial construction projects nationwide.

Quality Built is well known for its work in Total Quality Management and was one of first firms to transition from using a traditional quality assurance approach into implementing a proven, user-friendly and fully automated, online inspection system. Quality Built's proprietary software is cost efficient, paperless, fully customizable and completely scalable to handle the demands of most inspection and quality assurance protocols.

Quality Built's Quality Management System is ISO 9001:2008 registered

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Sincerely,

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