Ensuring Quality for Building Products

(Managing risks associated with the sourcing of components, design, assembly and installation of building products through the use of a quality plan) - a Paper from C R Prouse, Director at BEAL

Background

All owners and shareholders of businesses providing products to the building and construction sector, will be aware of the need to manage risks, especially since these will have a direct bearing on the credibility of their brand.

The most obvious method for managing risks, is through the use of a 'risk management plan - commonly referred to as a 'quality plan'.

Quality plans for business, using **ISO 9001** as the criterion, originally based on British Standard BS5750, have been around since 1987. **ISO 10005,** Quality management systems — Guidelines for quality plans, was first published in 2005. Both documents are considered essential in the development of reliable quality plans, whether for a manufacturer, importer/distributor, or installer of building products. For the manufacturer, the key purpose, is to ensure a defined quality and performance of a product when in use. For others, it is assurance of continuous compliance.

Risks that need to be managed

In 2008, the New Zealand Government introduced a revised CodeMark (product certification) Scheme. The scheme's rules required what was termed "a product quality plan" - but without specific requirements. This resulted in each approved 'product certification body', deciding what they believed were the appropriate quality plan requirements. It soon became apparent in the marketplace, that such a situation led to obvious inconsistency, to the point that some products appeared to have little, if any, effective risk management processes.

Which begs the crucial question, what risks ought to be managed?
From practical experience, here is a list of risks that the sector expect to be managed:

- quality of raw materials and or components used, being monitored/checked
- adequately detailed and accurate drawings showing how the product is to be constructed or installed
- proper identification of essential components
- adequately trained persons employed to construct or install any product that requires specialist knowledge
- pre-construction checklists - where appropriate
- post-construction checklists, with appropriate records being kept
- ideally, third-party certification, including oversight of the risks associated with the product.
- documentation on how non-compliant materials, components or products are to be managed or recalled - i.e. a quality plan

A Quality Plan for Building Products

Every quality plan needs to be based on a real-world approach to the management of risks, including the sourcing of materials or components, any manufacturing, prefabrication and the like, through to the final installation and checking of the product.
At a basic level, a simple classification of risk as being either 'high', 'medium' or 'low' could be used.
A definition for high risk could be based on those products for which there is either a history of failures, or the product has elements in the design or assembly or installation that are prone to error and faulty performance;
A definition for medium risk could be based on those products for which there is *some history* of failure, and for which there is also some aspect of the design or assembly or installation that is prone to error and faulty performance;
A definition for low risk could be based on those products for which there is no history of failure, other than the potential for error and faulty performance due to poor construction or installation.

Such a classification could then be used to decide the frequency and means for managing and monitoring the risks.

The following table sets out a rationale for implementing this classification:

High risk products or systems	Auditing shall be carried out at the Office/warehouse & sites on an annual basis	Where there have been three consecutive audits with no non-conformances, then every second year with remote audits between	Testing of products or components deemed to have a high risk of change, without a FQP, shall be carried out each year (key attributes only) or every third year with an audited Factory Quality Plan (FQP)
Medium risk products or systems	Auditing shall be carried out at the Office/warehouse & sites the first year, then every second year	Remote audits shall be carried out where there is no office and site audit	Testing of products or components deemed to have a medium risk of change, without a FQP, shall be carried out third year (key attributes only) or every fourth year with an audited FQP
Low risk products or systems	Auditing shall be carried out at the Office/warehouse & sites the first year, then every third year	Remote audits shall be carried out where there is no office and site audit	Testing of products or components deemed to have a low risk of change, without a FQP, shall be carried out each fourth year (key attributes only) or every fifth year with an audited FQP

Since there will be some form of documentation, there ought to be periodic reviews of this to ensure there hasn't been any changes or, if there have, that the changes have been reviewed and approved - ideally by a third party.

This might mean that every year, around the anniversary of any product assessment or certification, the manufacturer or distributor would have the documentation checked for changes and the way risks are managed, especially in the warehouse and at building sites - by what is referred to as auditing.

The Importance of Verification of Continuous Compliance

Currently, there is no regulated requirement for having a quality plan or, what form and content such a quality plan should contain. This leaves the public and especially Building Consent Authorities, with the question of what continuous means of verification of compliance, is in place. In other words, how does anyone know who and how, the risks associated with a product, are being managed.

In view of the preponderance to rely on BCA's in New Zealand to manage some or all of the risks associated with building products, providing a well-documented quality plan or copies of all the relevant checklists, ought to be part of every building consent application. While this may be a voluntary notion at present, maybe this ought to become mandatory at some stage, thus ensuring consistency of evidence of continuous compliance across the sector.

An obvious mechanism that would provide assurance across the sector, would be to have a third-party publish each manufacturer's checklists along with the audit reports for each product. This would be most useful to BCAs who see a multitude of consent applications with sometimes questionable evidence of compliance.

Another option to demonstrate continuous compliance, would be the publishing of all trained and approved persons able to assemble/install the product. Such a register would provide the public with a clear, transparent view of the level of risk management by the relevant manufacturer/distributor.

The most common means for verifying continuous compliance is of course, through a product certification process. Most certification schemes have 'scheme rules', in which the requirements for verification of compliance are described. There are several International Standards Organisation Standards and Guides to help with this, the most common being ISO 9001 and ISO 10005. One area of contention is the need for periodic retesting. While there is little published about such, the authorities and or product certification bodies need to take a balanced approach to their risk management and articulate their requirements to certificate-holders and the marketplace.

In Summary

The public, BCAs and especially the shareholders of companies that either manufacture or distribute building products, need to know that risks associated with a product, are being managed properly. Properly, means having a well-documented quality plan - ideally, one that is reviewed and audited by a third-party on a regular basis. Such a plan could use the categories of risk described above. Providing useful documentation when making an application for a building consent, would also be useful. In any event, having and implementing a quality plan is a sure indicator of the intentions of the manufacturer. Therefore, all manufacturers, be they local or based overseas, ought to be proactive in demonstrating how they manage risks associated with their products. Use of a well-developed third-party qualified quality plan, is the way to achieve this.

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