

# Specifying a Higher Standard for your Air Barrier

## A Program to provide Quality Assurance for the on-site application of Air Barrier Systems

By: Ryan Dalgliesh

### **Part 3 in a 3 Part Series of Improving Quality and Building Durability**

In the last article, we introduced some of the details of the Air Barrier Quality Assurance Program, what all is involved, the costs, the benefits and so forth. The term “Quality Assurance” is a term that I find still find many people do not fully understand. The whole concept of quality assurance often gets confused with quality control or inspections.

In discussing the program with individuals, there seems to be a lack of understanding of quality assurance vs. quality control, the fundamental differences between the two and what each function brings to the table. This is not unique to the air barrier quality assurance program or the construction industry, as these terms seem to be used interchangeably and misunderstood in all industries. In fact, what you will find is that these terms can be used together, although different in definition and scope in an overall quality management system to compliment each other.

To start off with, an understanding of these terms, we need to know how they are defined. The American Society of Quality tm (ASQ) is noted as being one of the world’s leading authority on quality and is an excellent resource that helps define these terms. This organization has more than 100,000 individual and organizational members and acts as a champion of the quality movement. The ASQ takes a look a this issue and says “quality assurance and quality control are used interchangeably to refer to ways of ensuring the quality of a service or a product. These terms however have different meanings” It further goes onto define these terms as follows:

**Assurance:** The act of giving confidence, the state of being certain or the act of making certain”

**Quality Assurance:** The planned and systematic activities implemented in a quality system so that quality requirements for a product or service will be fulfilled.

**Control:** An evaluation to indicate needed corrective responses; the act of guiding a process in which variability is attributable to a constant system of chance causes

**Quality Control:** The observation techniques and activities used to fulfill requirements for quality.

When we take a look at the construction industry, typically we rely upon two very different means of ensuring project quality; inspection and quality assurance. The American Institute of Steel Construction headquartered in Chicago, Ill provides a good explanation that says “essentially, inspection look at the end product while certification evaluates the processes and procedures used to manufacture the product”.

An article produced by this organization entitled “Certification ? Inspection ? What the difference and why should you care ?” provides good context to this discussion as it outlines the difference between inspection and having a contractor certification program.

The article further goes on to explain the differences that I found to really make sense.

*“Inspection is often referred to as quality control whereby the quality is “inspected in” On the other hand the article goes onto explain contractor certification by “Contractor certification is characterized by a quality assurance or total quality approach to controlling errors and non-conformances. Quality assurance is the prevention of quality problems through planned and systematic activities including documentation (Davies, 2003) – or simply put, the quality is “built in”.*

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As you can see from this explanation, it views quality assurance as building the quality into the system at the front end rather than trying to build in quality at the back end of the project. Due to the confusion that sometimes surrounds these terms, too often one is called on to replace the other with the rationale that “well just hire an inspector later for a couple of thousand dollars”. The problem with this analogy is that finding and fixing mistakes after they are made is expensive and time consuming.

Another organization that helps articulate the differences between Quality Assurance and Quality Control is the National Association of Home Builders Research Center (NAHB). This organization has been looking at the issue of quality assurance and quality of construction in the residential home building industry over the past 5 years. To that extent, they have developed a number of trade contractor certification programs and have developed quality resources for builders.

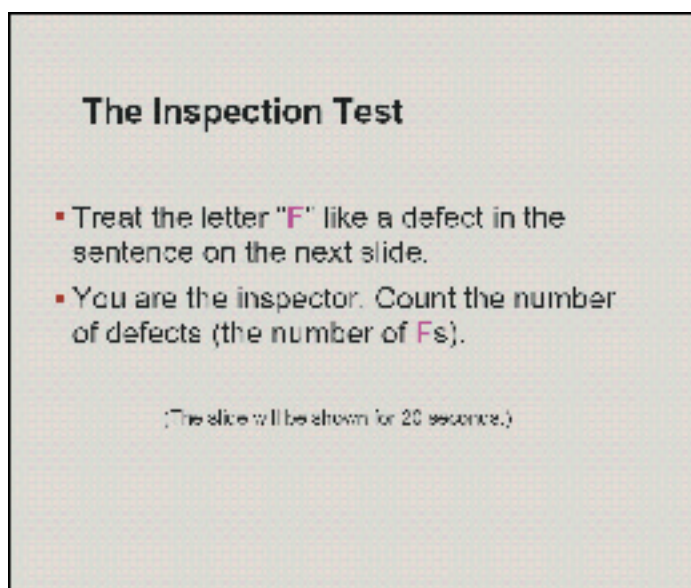
The NAHB Research Centre again provides insight and guidance into the term quality assurance vs. either quality control or inspection.

In regards to Quality Assurance, it defines it as a system that:

- “provides a documented process by which quality commitments are met”
- “establishes a benchmark for job-ready and job-complete conditions”
- “it is systematic and reproducible”
- “provides a mean of continuous improvement”

The article further goes onto look at the issue of inspection and if that alone would assure quality. It provided an excellent exercise to try, which I found has helped many people to go “the light just clicked on, I understand the difference”.

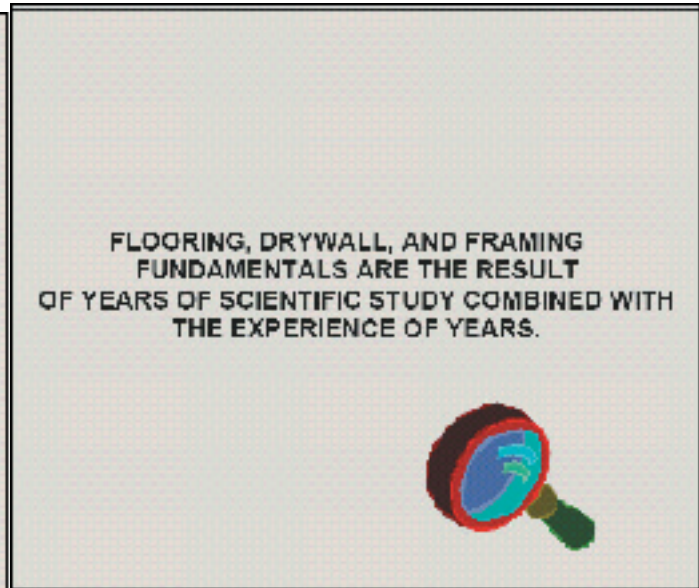
Try it for yourself, without cheating of course.....that’s why I have moved the answer slide to the end of the article for those that say “I got them all, no problem”. When I first tried it I found 4 of the “F”s. Other people I have tried it with only see 3, some 5. I think it really helps get the point across. So take a look at the second slide for about 20 seconds, write down how many “F”s you see and then go to the end of the article to get the answer. Once complete, continue reading the article.



**The Inspection Test**

- Treat the letter “F” like a defect in the sentence on the next slide.
- You are the inspector. Count the number of defects (the number of Fs).

(The slide will be shown for 20 seconds.)



**FLOORING, DRYWALL, AND FRAMING  
FUNDAMENTALS ARE THE RESULT  
OF YEARS OF SCIENTIFIC STUDY COMBINED WITH  
THE EXPERIENCE OF YEARS.**




Figure 1\_inspection test

Figure 2\_inspection test



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So, how many “F”s did you count ? There is a good chance that you did not get them all ! So what’s the point of the exercise ?

Well, simply that in the context of quality control, inspections alone do not catch all the defects and that this form of process requires constant supervision, mass inspections and continual re-work. In essence, inspections alone are only effective at finding problems.

So rather than treating the cause, is it not better to treat the symptom ? Is prevention a much better form and effective way of ensuring quality on a building project ? Would you not rather have it done the first time !

My father-in-law, who is a retired carpenter always says “measure twice, cut once”. This adage can be applied to quality on your building project, that is, to specify quality going into the project rather than inspecting for mistakes afterwards.

The issue of quality has become more of an issue for the construction industry over the last 10 years. With increased litigation, increased consumer expectations and a realization that quality assurance can benefit everyone involved, a tremendous amount of positive activity is taking place across North America. A number of groups and organizations are currently incorporating a form of quality assurance and a number are looking at quality assurance in improving their specific product or service. This bodes well for everyone involved in the construction industry as the focus in thinking shifts from reactive to pro-active activities.

The air barrier quality assurance program is committed to continuous improvement and assurance that the job will be done right, the first time. By incorporating this type of program into your building projects you are able to take a more pro-active and cost beneficial approach to ensure this important component of the building envelope is installed and performs as intended !

A number of other initiatives that will support the overall quality of the air barrier industry and assist in our knowledge have started over the last couple of years.

On the standards front, both the Canadian and U.S. markets are working respectively on developing air barrier standards. In Canada, the National Air Barrier Association has been a catalyst to get the standards ball rolling. The Underwriters Laboratories of Canada (ULC), in cooperation with industry has formed the air barrier committee and is currently working on developing standards for the air barrier industry. This committee is closely working with the Canadian Codes center on the 2010 National Building Code of Canada to ensure that air barrier issues are addressed in the code.

On the American side, ASTM has published two standards for the air barrier industry and has a number of other standards that continue to be worked on. One standard addresses air permeance test methods for materials, while the other is a test method for air barrier assemblies. Other work items include an installation standard, inspection standard, durability and air barrier components.

In order to increase our knowledge of real life air barrier performance, the Air Barrier Association of America has partnered with Oak Ridge National Laboratories (ORNL), with support from the U.S. Department of Energy and various air barrier manufacturers to do a 3 year air barrier research project. The intent of this research project would include the construction of a test facility to monitor real life performance of various air barrier materials, components and assemblies. The project is just getting started and will greatly assist in providing invaluable information on real life performance.

The upcoming years will be exciting for air barriers, as the industry continues to process and evolve. All these activities will assist building owners, designers and contractors to build quality into their projects to ensure energy efficient, durable and safe buildings.



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For more information on the Air Barrier Quality Assurance Program, please feel free to contact writer at the bpc Building Professionals Consortium or the respective trade associations.

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**Bibliography:**

Elwyn C. Davies, "Quality: a Historical Context", Engineering Management, April 2003

Bobbi Marstellar, "Certification? Inspection? What's the difference and why should you care?", American Institute of Steel Construction,

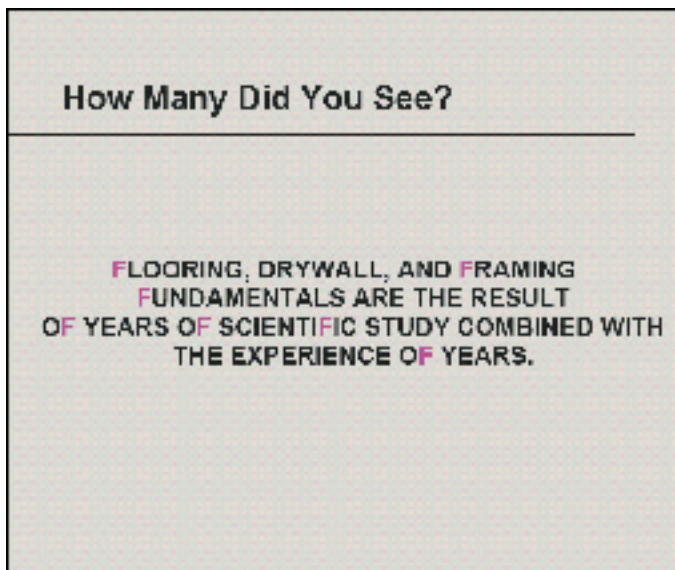
Frank Alexander, "Quality Assurance Systems: big builder 05 presentation", National Association of Home Builders Research Center, 2005

American Society of Quality, "Quality Assurance and Quality Control"

**About the Author**

Ryan Dalgleish is the Vice-President of the bpc Building Professional Consortium. He has been involved in the building envelope and building performance areas of construction in both the commercial and residential sectors for 10 years. Much of Mr. Dalgleish's time is spent on technology transfer and training and he has been a trainer, facilitator and project manager for 7 years in this area. Mr. Dalgleish also is involved in research, the development of training curriculum, and strategic planning for clients. Mr. Dalgleish's background and education has given him strong skills in financial management, market development and planning and association administration.

**Here the answer to the inspection test: There are 7**



**Figure 3\_inspection test answer**

