

# The Year in Review

BY DAN KAUFMAN

## What can we learn by examining trends in corrective action requests?

**CORRECTIVE ACTION REQUESTS, OR CARs,** are an important tool used by Quality Management Company (QMC) auditors to help audited firms improve their quality processes. And studying trends in the types of CARs issued is a good way to give our Certified firms guidance in areas that might require attention. In 2007, we asked our auditors to take a slightly different approach when evaluating procedures for potential CARs. In a nutshell, they are focusing on customer-critical issues—issues that can have an immediate impact on the product going out the door. While the auditors continue to review processes and procedures (remember, they are not product inspectors!), they are keying in on issues that can have the most impact on the final product. Thus, fabricators and erectors—and their customers—experience a “real-time” benefit from the audit process.

Of course, AISC Certified fabricators and erectors are still expected to perform their own “self-audits” to review their procedures, in order to find and fix issues before the AISC audit takes place. To help firms in this regard, QMC is emphasizing the “concerns” section of the audit report, which documents areas of the firm’s operations that require further internal review. If a concern is recorded in an AISC audit, then it is expected that the fabricator or erector will use their internal corrective action procedure to resolve the problem. If that doesn’t happen by the next year’s audit, a CAR would be issued the following year. Overall, this change in focus should result in a change in the distribution of audit corrective actions, and makes it difficult to directly compare our 2006 and 2007 data.

### The Big Picture

Even though statistically the data can’t be compared, the distribution of audit corrective actions does not show a profound change from 2006 (Fig. 1). In 2006, the most-issued corrective action was process control, as it was again in 2007. That should not be too surprising, as problems in pro-

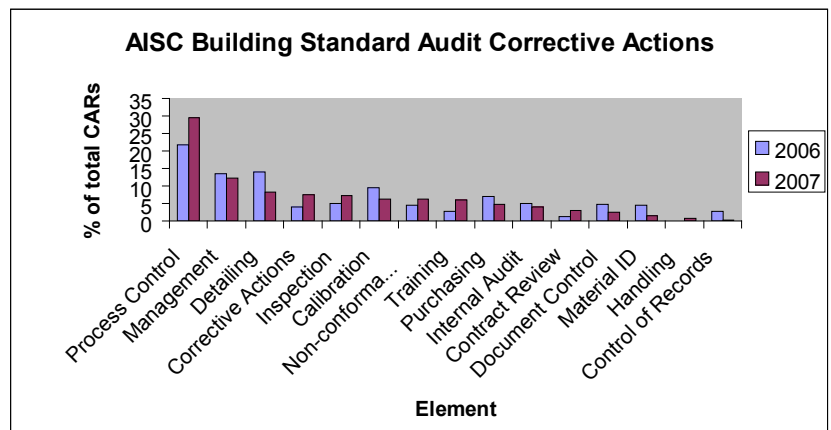


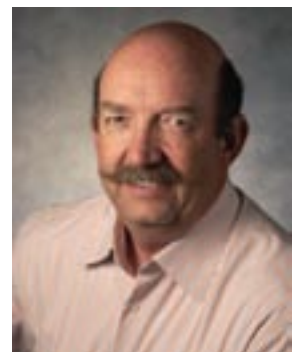
Figure 1. Corrective action requests, 2006 vs. 2007.

cess control are most likely to immediately affect product shipments. The top three CAR categories for 2007 were process control, management, and detailing, in that order. In 2006, the same three categories made up the top three, but management and detailing were nearly tied for second place.

### Welding Worries

Digging down to the next level, the most common CARs under process control were welding, and bolting (Fig. 2). The other potential process control issues—surface preparation, painting, and maintenance—were barely on the radar. Digging deeper still, the major welding problem was the misuse of weld procedure specifications (WPSs). Incorrectly written, missing, out-of-date, or incomprehensible procedures can have the same end result: poor welds.

The next major welding issue was documentation of welder qualifications. Typically, missing records regarding welder process continuity were the cause. AWS requires documentation that a welder uses a particular welding process once every six months. Process refers to a type of weld, such as GMAW or FCAW, not a specific position or specific WPS. Some shops only use a single process, so



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in that case, documentation can be a record that a welder was welding in the required time period. A relatively simple system can help avoid the expense of re-qualification.

Finally, the third welding standout was storage of consumables. Low-hydrogen welding rods must be kept in a proper oven, and unfinished rolls of welding wire left on shelves need protection from moisture. This falls somewhere between a house-keeping issue and management issue; it's not difficult to cover the leftover spools with a plastic bag or to have at least a small rod oven working for low-hydrogen rods.

### Bolting Bothers

Bolting issues made up the next largest process-control CAR. The causes were from two sources: testing and storage. The demonstration of bolt tension testing, which is required every three years (one full audit cycle), was not done or not done correctly. The next bolting contributor was bolt storage. High-strength bolts are really precision devices—carefully machined, heat-treated, and manufacturer-lubricated—that create consistent clamping forces when tightened in a repeatable process. It's a system that lets engineers predict and control the connective forces in a structure, even while using random human beings to tighten the bolts. Letting the threads of bolts or nuts deteriorate ruins any chance of a bolt system to achieve repeatable tensioning.

### Management Miscues

Second to process control CARs, management CARs appeared due to two situations: quality system goals and management review meetings. Firms should keep in mind that goals don't have to be complicated or hard to track, and that they are chosen by the firm, not specified by AISC. The goals can be changed if they become problematic in the future, but they should always make sense in relation to product quality. As an example, tracking maintenance costs for parking lot paving does not relate to product quality. Goals involving customer satisfaction make the most sense to us Certification types, but again, it's up to the fabricator or erector to make that choice.

A management review meeting is the other contributor to an audit's corrective actions written within the management area. A management review meeting could be done by simply taking the bullet points in section 5.2 of the *Standard for Steel Building Structures* and using them as agenda items to assess your quality

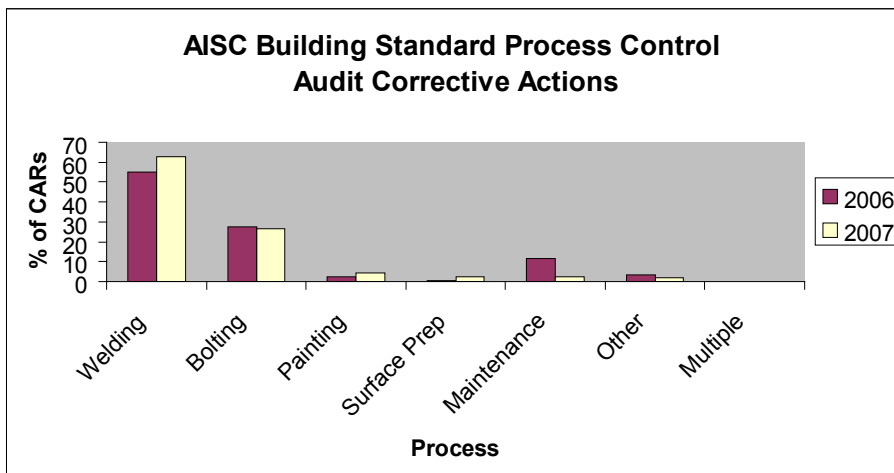


Figure 2. Process-control CARs, broken down by subcategory.

AUDIT CORRECTIVE ACTION CATEGORY	POTENTIAL REMEDY
Weld Procedure Specification	Make WPSs available and known to welders
Welder Qualification	Track welding process used
Welding Consumables	Use rod ovens when required, and cover partial spools
Bolt Tension Testing	Have a clear procedure for testing
Bolt Storage	Keep bolts clean and dry
Management Goals	Keep goals simple and easy to track
Management Review Meeting	Have a standard agenda
Checking of Drawings	Follow procedures and specify checking with detailing standards
Qualifications of Checkers	Use employee numbers

Figure 3. Recommendations for avoiding common CARs.

system. Not every item discussed has to be perfectly executed and completed, but the points need to be discussed for status. The object is to review whether or not the quality system is working for you.

### Detailing Details

Finally, the third major contributor to corrective actions, detailing, is there for the same two reasons as in previous years: unchecked drawings observed during audits, or drawings checked by somebody whose qualifications were not documented. Although some contract detailers may be reluctant to give out checkers' qualifications for fear of losing their more advanced employees, it's

completely acceptable to use an employee number or other code as identification. Even with these common detailing CARs, the total number of detailing audit corrective actions written was down significantly from 2006, although some or all of that reduction may be attributable to our new focus on customer-critical issues.

### Summing it Up

So there we have another year's information. We've included a table (see Fig. 3) with some potential recommendations to help avoid these common CARs in the future. We hope you will use this information to set up your own internal review systems or to improve your current one. **MSC**