This article provides a road map through the prescriptive requirements of our Codes and Standards via the six Ws of document selection as applied to fire alarm systems, i.e. “where”, “when”, “who”, “how”, “what” and “why”. For simplicity reasons, and the fact that the author of this article resides in Ontario, I will primarily use Ontario references throughout, with my apologies to technicians who work and reside outside of the “Big Smoke” and have a much better understanding of the larger Canadian applications. Also, I plan on expanding on this topic, when I present at this year’s Annual Technical Seminar in Toronto on May 3, 2007.

In summary, this article will discuss the first of three possible solutions that will be provided during my seminar presentation.

1. We must improve our ability to select the right document for our applications.
2. You, the fire protection professional, must have a clear understanding of the interrelationship between your work in the fire alarm industry and the prescriptive requirements of our Codes and Standards.
3. By understanding these requirements you will avoid waste of time, improve effectiveness, and achieve industry-leading competitiveness.

Generally people believe that they are safe when they are in a building, and they are because:

- Canada is a world leader in the development of comprehensive, yet practical, construction codes;
- The governmental authority, to ensure the public is safe, reviews the building following renovations, expansions or upgrades (i.e. new fire alarm system);
- New buildings are designed and reviewed for compliance to the Building Code;
- Following completion of construction, new buildings are reviewed by the local authorities before an occupancy permit is granted; and
- Fire Code requires owners to maintain their life safety building systems and train the occupants for evacuation during an emergency.

As fire protection professionals, we are obligated to comply with the requirements of the Codes and Standards. If compliance to these requirements were as simple as completing a census form or checklist, then perhaps the numerous discussions fire alarm technicians have on this subject, mirrored with the service companies’ continued training programs, would cease to exist.

So, why do the requirements dictated by the Authorities appear to be inconsistent? Typically, the commercial, industrial and residential property portfolio managers or Owners representatives, who are responsible for overseeing multiple buildings over many jurisdictions, will protest regarding these inconsistencies.

So, why do the deficiencies dictated by the fire alarm service providers appear to be inconsistent? Manometer readings for the duct smoke detectors are provided annually for the downtown highrise fire alarm, but not for the suburban highrise duct smoke detectors. A property manager’s discussions with two different fire alarm service companies on this subject will often result in two different recommendations, such as, “that section of the
ULC Standard is not enforced in this area,” and/or “we do not perform the manometer test”.

Perhaps some local fire inspectors are reading from the wrong version of the Fire Code, thus enforcing an amended article. Or conversely, maybe the service provider is not aware of the current requirements, and since the fire inspector has not challenged them, the service provider continues to perform a suspect or incomplete service.

With all the changes made to CAN/ULC-S536-04 and CAN/ULC-S537-04 by the 1997 ULC versions (CAN/ULC-S536-97 and CAN/ULC-S537-97), you would think fire alarm technicians working from the CAN/ULC-S536-04 and CAN/ULC-S537-04 for three years now are completely familiar with these Standards and their application. Especially since the 2006 Building Code is in force and references these Standards.

Where do we go from here? With all these challenges regarding the application of the Codes and Standards, I suggest one of a number of possible solutions.

**We must improve our ability to select the right document for our applications.**

Often, due to the pressures of everyday life, we get caught up in the moment or issue, without stepping back and reflecting on the simple procedures to determine the correct application. So let’s simplify our approach to document selection for a moment and review some general and simplistic rules of thumb. The five Ws of document selection as applied to fire alarm systems, i.e. “where”, “when”, “who”, “how”, “what” and “why” are provided as follows:

1. **“Where is it required” – BUILDING CODE**

   If you wish to know where a manual pull is required, consult the 2006 edition of the Ontario Building Code. Division B, Clause 3.2.4.17 (1) (a) “near the principal entrance to the building” and (b) “near every required exit”

   **Tip:** Watch out for the “and” “or” statements in the Code. They could get you in trouble.

2. **“When do I test or maintain ” – FIRE CODE**

   If you wish to know when a fire alarm system is to be inspected or tested then consult Section 6.3 of the Ontario Fire Code. When can you relocate a manual station if there is a high incidence of false alarms? In Ontario, Sentence 6.3.1.7(1) “… approved, manual pull stations for a fire alarm system in a building may be relocated if there is a high incidence of false alarms in the building”

   **Tip:** Watch out for the “Bold” lettering; this is a defined term. “Approved” means approved by the Chief Fire Official (Section 1.2).
3. **“Who” is responsible**


Who is responsible? The Ontario Fire Code, Sentence 1.1.1.1(1) “the owner or the owner’s authorized agent is responsible for carrying out the provisions of this Code.”

Great, the Owner is responsible. Interesting that this is the first sentence in the Fire Code.

Who can test fire alarm systems annually? In Ontario, Clause 1.1.5.3(1) (a), “have successfully completed a program or course acceptable to the Fire Marshal.” The CFAA program is an accepted program in Ontario.

Who can install fire alarm systems? In Ontario, The Occupational Health and Safety Act and Regulations for Construction Projects requires electrical work to be performed by persons qualified under the Trades and Qualification Act.

OHSA (O. Reg. 213/91, s. 181 (1): O. Reg. 631/94, s. 6) states:

“No worker other than an electrician certified under the Trades Qualification and Apprenticeship Act to do electrical work or a person with equivalent qualifications by training and experience shall connect, maintain or modify electrical equipment or installations .”

In both Ontario and Manitoba, a certified Journeyperson Electrician must perform the installation of fire alarm systems. Manitoba has provided an alternate path for fire alarm technician qualifications. This is in the form of an “M” class limited electrical licence, as follows.

The Province of Manitoba, Department of Labour has indicated that any individual who has successfully completed the CFAA education program, holds a certificate of completion, and can present same along with a letter from their employer stating that they have practical experience in the fire alarm service industry for a period greater than two years is eligible to receive a “M” class limited electrical licence upon payment of the prescribed fees. An “M” class license is defined as a limited specialized trade license. Please note that this license is a limited specialized trade license for the purpose of inspection, testing, repair and maintenance of fire alarm systems only.

4. **“How do you do it” – Standards**

Earlier in this article, I provided an example of the Building Code defining where a manual pull is required. The Building Code does not provide specific information regarding how to install the manual pull. This information is provided in the CAN/ULC-S524-06, Installation of Fire Alarm Systems. For example 5.2.1 states, “Manual stations
shall be installed not less than 1200mm and not more than 1400mm above the finished
floor level measured from the centre of the manual station.”

The **how to verify** a newly installed manual station is found in the CAN/ULC-S537-04,
Verification Of Fire Alarm System.

The **how to inspect and test** a manual station is found in the CAN/ULC-S536-04,
Inspection and Testing Of Fire Alarm System.

5. **“What went wrong” – Update to Codes and Standards and Training**

The great thing about human nature is that we typically learn from our mistakes. The
Codes and Standards have evolved based on this simple paradigm. So let’s look at some
lessons learned:


A fire in a 30-storey highrise apartment resulted in six fatalities.
The emergency electrical system failures during this fire included:

- Emergency lighting
- Fire alarm system
- Emergency voice paging system.

Here are a couple of examples of what the authorities did.

1. **Developed new training courses for supervisory staff of residential high-rise**
   (December 1996 press release):

   “The Office of the Fire Marshal (OFM) is pleased to announce a new training course
   for supervisory staff of residential highrise buildings in Ontario. This course was
developed by the OFM in cooperation with the City of Toronto Fire Department and
the City of North York Fire Department in response to recommendations from the
2 Forest Laneway Coroner’s Inquest.

   “It is intended to provide vital fire safety information to building owners, property
managers, building superintendents, security, or other persons who are designated as
“supervisory staff” in high-rise apartment buildings under Section 2.8 of the Ontario
Fire Code.”

2. **Modified the 1997 Ontario Fire Code to identify only qualified persons are allowed to**
   work on and test fire alarm systems

   OFC Sentence 1.1.5.3(1)(a) “have successfully completed a program or course
acceptable to the Fire Marshal.” Prior to this change in the fire code there were no
requirements for qualification on existing fire alarm systems.
5. “Why did it Happen” – Code Updates

The National Research Council Institute for Research in Construction’s Canadian Codes Centre plays a vital role in the process of understanding why something went wrong and how to improve it by providing technical and administrative support to the Canadian Commission on Building and Fire Codes (CCBFC). The CCBFC and its related committees are responsible for the development of the national model construction codes of Canada. These codes are the following:

- National Building Code of Canada 2005
- National Fire Code of Canada 2005
- National Plumbing Code of Canada 2005
- National Farm Building Code of Canada 1995
- National Housing Code of Canada and Illustrated Guide 1998

The CCBFC oversees the work of a number of technical standing committees whose members apply their experience from involvement in past fires (lessons learned) to develop and improve the codes that protect the health and safety of Canadians.

Representing all major facets of the construction industry, CCBFC members include building and fire officials, architects, engineers, contractors, and building owners as well as members of the public. They serve as individuals, not as designated appointees of any organization.

The Institute for Research in Construction’s (IRC), through the Canadian Codes Centre, ensures that the best available knowledge from across Canada and around the world is brought to bear on the development of the national codes. Through its association with the IRC, the CCBFC has ready access to scientists, engineers and state-of-the-art facilities, enhancing Canada’s position as a world leader in the development of comprehensive, yet practical, construction codes.

Conclusion:

As fire protection professionals we are obligated to comply with the requirements of the Codes and Standards. Our continued efforts to stay up to date, and apply the right document for the job, will ensure safer buildings for all Canadians.