

# The Station House

A News Letter for AHJ's,

## Building Code Revised For Non-Metallic Piping for Sprinkler Retrofits



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Chicago joined the country's other 50 largest cities this week by allowing the use of BlazeMaster® CPVC fire sprinkler systems for high-rise retrofits. This marks the first time in history that Chicago high rises will be able to install anything other than metallic fire sprinkler pipe. The move was in direct response to the approval by City Council of the new ordinance that mandates sprinklers in older commercial buildings. Under this ordinance, building owners have up to 12 years to retrofit their commercial high rises.

As building owners scramble for ways to comply with the new sprinkler ordinance, the approval of non-metallic options like BlazeMaster CPVC is considered especially timely. In proposals presented to City Council members, BlazeMaster CPVC representatives were able to demonstrate the superior affordability of CPVC over traditional metallic systems. Much of the savings results from lower installed costs, since BlazeMaster pipe can be installed in significantly less time than a metal system.



"We were able to demonstrate the substantial cost savings of installing a BlazeMaster CPVC fire sprinkler system," said Jeff Gibson, Great Lakes Regional Manager for BlazeMaster Fire Sprinkler Systems. "Beyond cost, we sold the CPVC alternative on its ease of installation advantages, which not only benefit building owners, but also the tenants. Our system is not welded or threaded, which means there are no cutting oils to be cleaned up, there is less noise to disrupt tenants and there is no risk of fire from a soldering torch. With our system, contractors can actually work around tenants with much less disruption."



A previous section in the Chicago Building Code had required that only metal pipe could be used in fire sprinkler installations. A new section, approved by Council on December 15, supersedes the old section and allows that any sprinkler piping meeting or exceeding the requirements of NFPA 13-2002 can now be used.

*(Reprinted in part from Noveon Blaster)*

## Electronic Accelerator Proves Performance

Temple Inland,

a large forest, paper, and insurance company found that for many years, mechanical accelerators for dry pipe sprinkler systems had been erratic in performance, and also had presented maintenance problems within their facilities. Headquartered in Texas, Temple owns Guaranteed Insurance, Lumberman's, and the labeled forest products division.

On April 21, 2005, working with Tyco Fire & Building Products and Rudd Fire Protection of Tyler, Texas, a test of the new QRS Electronic Accelerator was arranged at a Temple location in Diboll, Texas. The existing system that was selected protected a vital 'press' area of Texas Inland's Particle-Board plant. The system was controlled by a 1998 Model Central AF Dry Pipe Sprinkler Valve.

*...valve trip time was reduced to **ONE SECOND**, and water delivery time*

(The valve is scheduled to be replaced by a new Tyco Model DPV-1 Dry Pipe Valve.)

The first of four tests was done with the system in an 'as is' state with the existing mechanical accelerator. The system had been tested two weeks prior to the testing, and the results were 2-1/2 minutes for full flow to the Inspector's Test Connection. Following the test and the disappointing results, Temple Inland had Rudd Fire do repeated flushing of the dry system to remove scale and deposits from the piping. In the first of the four tests, the valve trip time was 58 seconds, and an additional 10 seconds were required for water delivery to the Inspector's Test Connection. The total overall time was one minute and eight seconds (1:08).

A second test was conducted with the mechanical accelerator disabled. The test actually yielded a result that was *lower* without the accelerator in service! The valve trip time was 55 seconds, and the water delivery time was again 10 seconds. The total overall time was one minute and five seconds (1:05). The mechanical accelerator (although disabled for this test) was disassembled and inspected to investigate the difference. As with most mechanical accelerators,



1. QRS Quick Release Switch
2. Solenoid Valve
3. Model DPV-1 Dry Pipe Valve

### Features and Benefits

- *Easier to Install, Set and Maintain than Mechanical Accelerators*
- *Can Be Used to Replace Mechanical Accelerators*
- *Operation of the Dry Pipe Valve within Four Seconds*
- *Built-in Low Pressure and High Pressure Alarm Supervision*
- *Proven Electric Release Technology*
- *Battery Back-up in the Event of Primary Power Failure*
- *Fully Packaged Kit*

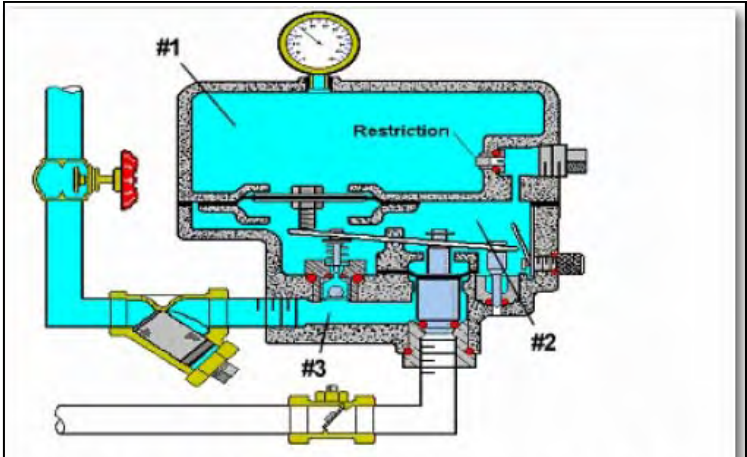
# QRS (Quick Response Switch) Electronic Accelerator

Rudd Fire Protection installed the QRS Electronic Accelerator and a third test was conducted. The valve trip time was reduced to **one second**, and the water delivery time was sixteen (16) seconds. The overall water delivery time was seventeen seconds! (Note, the water delivery time actually increased due to the higher air pressure that was in the system at the time of valve trip. This is explained in detail in the Dry System White Paper that is available on the [www.tyco-fire.com](http://www.tyco-fire.com) website.)

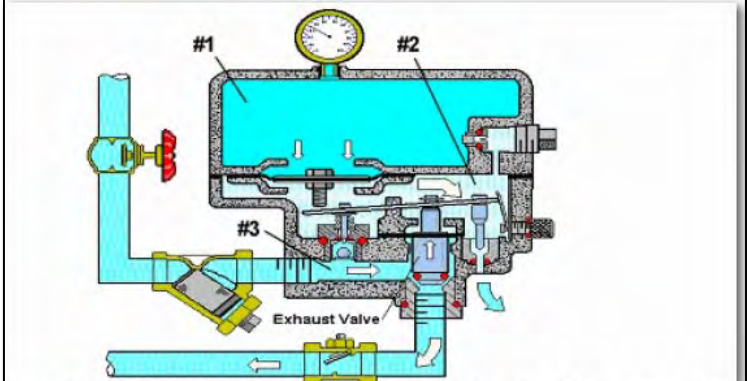
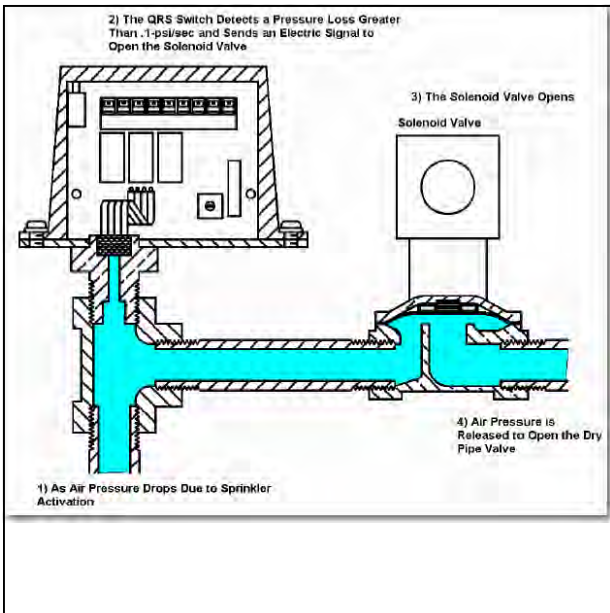
A fourth test was conducted with the QRS Electronic Accelerator, and the initial system air pressure was reduced by nearly 50% to assess the water delivery time. The valve trip time remained one second, but, with less air pressure in the system at the time of valve trip, the water delivery time after valve trip was reduced to nine seconds! The overall water delivery time for the fourth trip test was ten (10) seconds!

Impressed by the results and the simplicity of the Tyco Fire & Building Products' QRS Electronic Accelerator, Temple Inland

Information and technical 'White Papers' dealing with accelerators and dry system performance can be accessed at the Tyco Fire & Building Products' website at [www.tyco-fire.com](http://www.tyco-fire.com). Copies can be found in the 'Literature' section of the website.



Section View of a Mechanical Accelerator in the Set Position



Upon 2 psi Differential Pressure (Chamber 1 & 2) – Accelerator Trips

has stated that they will not only be changing existing mechanical accelerators within their facilities to the QRS/EA, and will also promote the device within their trade group magazine.

The QRS Electronic Accelerator is just another example of Tyco's ingenuity and dedication to improving fire protection systems.

## Fire Sprinklers Never Sleep— Success Stories

An article in the *Greeley Tribune* in December 27, 2004, stated that a fire started about 4:51 a.m. Sunday on the sixth floor of a senior high rise when a 57-year old resident, who had been cooking, fell asleep. Firefighters credit an updated fire system for waking the man and extinguishing the fire before it spread.

The man at Greely Manor was awakened by the apartment's smoke detector. He saw the fire on the stove and tried to extinguish it but couldn't because the smoke and heat were too intense.

As he escaped the apartment, the fire sprinkler head discharged and extinguished the fire. By the time firefighters arrived, the fire had been extinguished.

Had the smoke detectors and fire sprinklers not been in place this morning, the outcome would have been dramatically different, said Dale Lyman of the Union Colony Fire/Rescue.

Greely Manor was recently retrofitted with fire sprinklers in all living areas, and it's owner was awarded the "Community Safety Business Award" in 2003 by Union Colony Fire/Rescue.

Properly installed and maintained automatic fire sprinkler systems help save lives, Lyman said. Fire sprinkler systems react quickly and can dramatically reduce the heat, flames and smoke produced.

No one in the 13-story building was injured and the damage was limited to about \$1000.

*Reprinted from FPC Magazine*

PENNSYLVANIA— Two sprinklers controlled a fire in a plant that processed cooking oils and grease, activating the fire alarm system, which alerted the fire department.

The single-story, steel-frame building, which covered 56,000 square feet (5,202 square meters), had concrete block walls and a wooden built-up roof.

## Welding 101 (Further Tips Can be Found on our Web-Site)

### Welding Fire Protection Piping 101

By Walter J. Sperko, P.E.

#### Welding Procedures and Welder Qualification for Fire Protection Piping

Fire protection piping has an easy life compared to other piping systems. Not much flowing through it. Only occasional pressure changes. Practically no temperature changes, so stresses due to expansion or contraction are not a concern. Fluid being carried is not explosive or flammable. About all it has to do is contain water reliably and provide it to sprinkler heads when it's needed. It's biggest enemy is corrosion.

Like welds in all piping systems, fire protection piping welds need to be adequate for the service. NFPA 13 does not require radiographic examination or other expensive inspection of piping system welds, but it does require that the shop fabricator and installing contractor have Welding Procedure Specifications (WPSs) that provide detailed direction to the welder on how to make the weld. It also requires that his welders be qualified to the same standard. NFPA-13 says:

6.5.2.13.2 Qualification of the welding procedure to be used and the performance of all welders and welding operators shall be required and shall meet or exceed the requirements of AWS B2.1,

*Specification for Welding Procedure and Performance Qualification.*

In addition to AWS B2.1, the 2006 edition will permit qualification following ASME Section IX *Welding and Brazing Qualifications*.

When NFPA 13 requires qualification to one of these standards, it means that the WPS has to address certain elements of how to do welding that the codes call "variables;" among these are:

- Welding process or processes (i.e., stick, MIG, flux core, etc.)
- Base metal (i.e., A-53, A-139, etc.)
- Electrode type (i.e., E7018, ER70S-2, E71T-1, etc.)
- Design of the groove (i.e., Single-vee, single-bevel, U-groove, etc.) or fillet
- Position (Most WPSs allow all-position welding, although shop welding may be limited to flat position where the pipe is rotated and the welding torch is held steady at the top of the pipe during welding)
- Progression (when welding with the pipe horizontal and the weld vertical, the welder can start welding at the bottom of the pipe and proceed to the top when welding "uphill" or he can start at the top and proceed to the bottom when welding "downhill." Contrary to popular opinion, welds made using downhill progression are equal in quality to those made using uphill progression when made by a skilled welder)
- Preheat temperature (The minimum temperature of the pipe before and during welding, typically

50°F.) ... *Please visit our web site for full report: [www.tyco-fire.com](http://www.tyco-fire.com)*

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## Remember State Fire Marshal, Your VRP Statistics Are Attached ...

Your state's Voluntary Replacement Program Statistics are attached to this Newsletter. The Statistics for the VRP are state and Program specific. You may distribute these statistics or this newsletter to your constituents. We encourage you to pass along the information contained in this newsletter and the positive progress that is being made in the VRP.

### New Residential Sprinkler Optimized For High Rise Buildings

Residential sprinklers have been successfully controlling fires in single family homes, condominiums, apartments as well as many other occupancies. They can be used in almost all areas considered a living domicile, and have been optimized to accommodate the reasonably low flow requirements that are defined in NFPA 13D and NFPA 13R.

However, NFPA 13R calls for the protection of buildings with a maximum of four-stories. Anything higher than four stories must be designed with the requirements of NFPA 13, which do have residential sprinkler criteria, however the rules are a lot tougher. The main problem is that the sprinkler flow requirements double in the high rise buildings.

#### Low pressure? No pressure!

Homes, dormitories, hotels, and apartments (greater than four stories) are all candidates for the LFI 6.9 K-factor sprinkler. The key is in the large orifice, which provides the same water with much lower pressure, when it counts.\*

\*High rise buildings have a dramatically different water requirement with a 0.1 density.

- LFI meets the industry's **LOWEST** pressure requirements
- LFI is ideal for NFPA 13 Residential designs
- Large K-factor = lower pressure and smaller pipe sizes
- Approved for use with the Tyco Fire and Building products line of BlazeMaster® CPVC systems



The solution to the residential high rise sprinkler problem has been found. Simply make a residential sprinkler with a much larger orifice!

Tyco Fire & Building Products is pleased to introduce it's newest model of residential sprinklers: the **LF II 6.9K**

#### Flows and Pressures for 0.1 Density

Maximum Coverage Area Ft. x Ft.	Maximum Spacing Ft.	Minimum Flow and Pressure for Horizontal Ceiling	
		6.9 K Pendant and Concealed Pendant	5.8 K Pendant
16' x 16'	16'	25.6 GPM <b>13.8 psi</b>	25.6 GPM 19.5 psi
18' x 18'	18'	32.4 GPM <b>22 psi</b>	32.4 GPM 31.2 psi
20' x 20'	20'	40 GPM <b>33.6 psi</b>	40 GPM 47.5 psi



Your Family's Best Line of Defense!

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The LFI 6.9K has a significantly larger orifice or opening. This allows the use of large



require-ments with the benefit of significant pressure savings. This saves money for the user