

Case Study: BlazeMaster® CPVC Fire Sprinkler System Retrofit Readies Residence Halls For Back to School



When five students died tragically in a fire at the University of North Carolina, Wake Forest University, Winston-Salem, N.C., embarked on an ambitious program to retrofit all campus housing with fire sprinkler systems.

The University was limited to work on the project during the summers when the number of students requiring campus housing was greatly reduced, from mid-May to mid-August. During the first summer, two buildings were completed, then four in the summer of 1998 and six in 1999.



The first residence hall at Wake Forest was retrofitted with a steel fire sprinkler system, which proved to be time and labor intensive. The design of the steel fire sprinkler system required extensive field survey, which could not be performed until students vacated the residence halls for summer recess. And, design and fabrication pushed the installation period perilously close to the date students returned from summer vacation.

Other challenges with retrofitting older residence halls include:

- installation tight against exposed ceilings
- installation in small spaces above existing dropped ceilings
- field revisions due to unforeseen obstructions

In addition, soffit, painting and alarm work had to be added to the already tight construction schedule. As a result, Wake Forest University officials were forced to consider limiting the size and scope of the work scheduled for each summer to ensure completion before the fall semester.

Contractor Recommends BlazeMaster® CPVC

When Worsham Sprinkler, Charlotte, NC, won the contract for the Wake Forest Student Apartments project in 1997, they recommended an alternative to steel fire sprinkler pipe to alleviate some of the challenges faced in the first installation. Worsham had used BlazeMaster® CPVC Fire Sprinkler Systems in similar jobs and they knew it led to faster, easier installations.

"We advised Wake Forest to use BlazeMaster® CPVC to ensure that the installation could be done on time and without the problems associated with the design and fabrication of steel pipe. We also wanted to demonstrate to Wake Forest the features and benefits of BlazeMaster® CPVC," said Carl Jackson, Vice President for the Charlotte office of Worsham.

Following the Student Apartments installation, Wake Forest sent some of its staff to visit a nearby university, where BlazeMaster® Fire Sprinkler Systems were being used for a dormitory retrofit. Recognizing that the retrofit proved successful even in large, older buildings, the Wake Forest staff approved BlazeMaster® CPVC for all campus housing.



BlazeMaster® CPVC Enters Residence Halls

In 1998, Worsham retrofitted two residence halls with BlazeMaster® Fire Sprinkler Systems. The Davis and Babcock residence halls total over 100,000 sq. ft. During the summer of 1999, they completed three more residence halls retrofits; Kitchin, Poteat and Huffman total 132,000 sq. ft.

Because CPVC pipe does not require pre-fabrication, the design time was reduced and field installation began immediately after the students vacated the residence halls. With CPVC, field changes were made quickly and easily. BlazeMaster® pipe was installed in many spaces where rigid, threaded pipe would have been extremely difficult.



According to Jackson, other materials would have required difficult, costly cutting and re-threading. CPVC pipe is lightweight and easy to work with. The result was an "on time" completion.

Other advantages of BlazeMaster® Fire Sprinkler Systems are long-term reliability due to its corrosion resistance, low flame spread, low smoke emission levels and a 50-year life expectancy based upon a safety factor of 2. Thus, CPVC piping lasts much longer and requires less maintenance compared to metallic piping systems.

In one summer, Worsham installed approximately 1,600 sprinkler heads, consisting of 800 heads to NFPA 13 standards in Kitchin and 800 heads to NFPA 13R standards in Poteat and Huffman. The entire fire protection retrofit, including sprinklers, smoke detection, painting and clean up, took just eight weeks during summer recess. According to Chris Lyons, job foreman, "No way could we have met this schedule without CPVC."

Fire Sprinklers put to the Test

In March 1999, at 8:30 p.m., a smoke detector tripped the fire alarm in one of the Wake Forest student residences. When the fire department arrived at the scene, they found one sprinkler head had operated and extinguished the fire. No one was injured. Total damage was under \$10,000.

According to David Brown, the manager Safety and Environmental Affairs at Wake Forest University, "We realized just how dangerously close we came to a tragedy that night. We believe the safety of our students comes before any price and the fire sprinkler retrofits were a small cost compared to the peace of mind of the parents of our students and our school administrators."

Another Summer Retrofit

In the summer of year 2000, Wake Forest will complete the final four campus housing retrofits. The ambitious program started in 1997 has been an unqualified success. The total cost of the fire protection program was minimal compared to the cost of losing students and damaging buildings as a result of a fire.