

APPLICATION BULLETIN
Copper/Brass/Bronze

COPPER FIRE SPRINKLER SYSTEM

**Peabody Court Hotel
Baltimore, Maryland**



COPPER DEVELOPMENT ASSOCIATION INC.

THE SPRINKLER CONTRACTOR

Since its founding in 1979, Fire-Mak Sprinkler Systems, Inc. has successfully completed over 300 commercial and residential projects. Fire-Mak's sister company, Automatic Sprinkler Design Associates, was incorporated in 1972, and has designed over 700 projects to date.

According to Jim Makibbin, the companies' president, "It's a very competitive market, but we've

managed to stay incredibly busy. This is partly because we are so cost conscious, and always looking for new ways to produce high quality work at a reasonable price. For many applications this means using copper."

Fire-Mak selects the best pipe material for each job based on the specific requirements. They have found that copper makes economic sense for most light hazard applications like hotels, offices, apartments, and condominiums. Here, pipe sizes are relatively small, so copper is very price competitive. According to Makibbin, copper with T-Drill can reduce labor costs by up to 30%, compared with steel systems.

THE INSTALLATION

The Peabody Court Hotel is a stately landmark in Baltimore, located adjacent to Mt. Vernon Square Park. Originally constructed in 1930, the building had gradually fallen into disrepair. In 1983, a joint venture group, The Hospitality Task Force, initiated total renovation of the building. The interior was completely gutted, and all new finishes, and mechanical systems were to be installed, including a fire sprinkler system.

The sprinkler system was to conform with the NFPA-13 standard, but with the new fast response residential sprinkler heads.

All 105 rooms in the hotel required sprinklering, but the choice of pipe materials was left to the individual bidders. Fire-Mak submitted the lowest bid, calling for a hybrid system, with copper branch lines on the guest floors, and schedule 10 steel risers.

The installed sprinkler system uses the best available technology to insure maximum fire safety for the building and its occupants. The quick response sprinkler heads react to a fire in only one fifth the time of conventional sprinkler heads, extinguishing the blaze at its source, before it can spread to cause major damage.

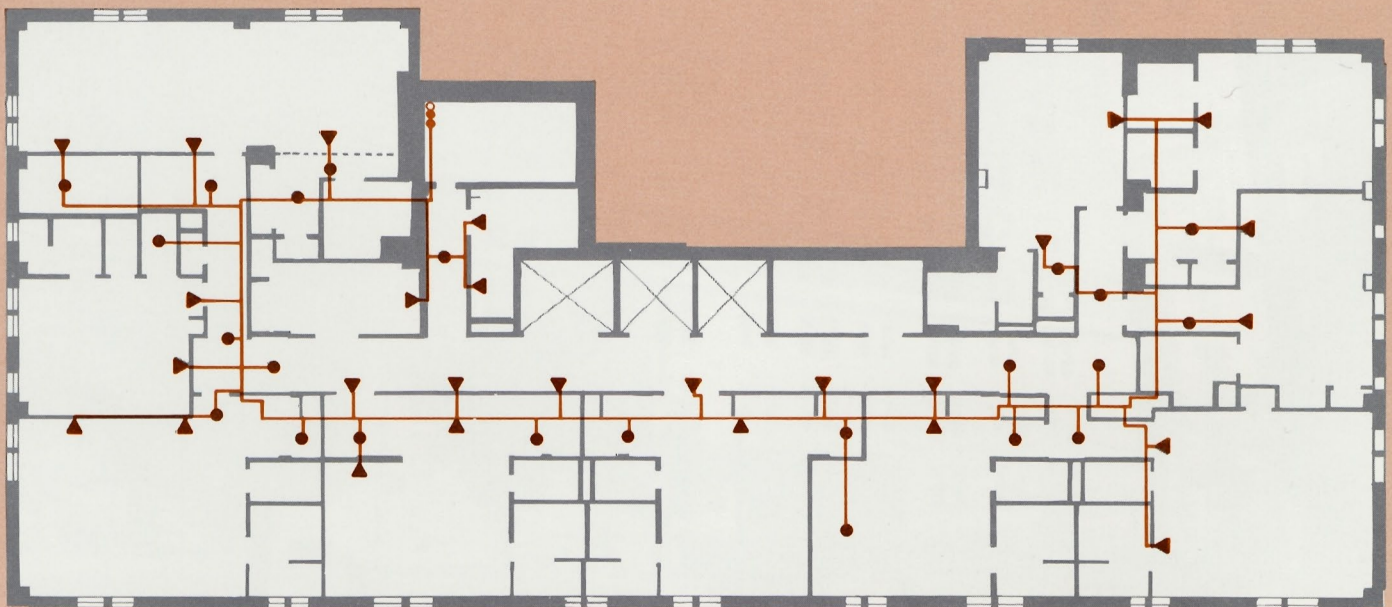


Figure 1: Sprinkler plan for typical floor in Peabody Court Hotel.

TECHNICAL DISCUSSION

When Fire-Mak was asked to bid on the sprinkler system, they faced a number of difficult technical problems. According to Frank Wells, project engineer with Fire-Mak, "The building was quite old, and there were a number of obstructions not marked on the plans. We also needed to compete for limited mechanical space with the various other trades. This meant the job had to be field fabricated."

Copper was the logical choice, since it allowed easier field fabrication, and since the smaller piping could fit more easily in tight spaces. All T-connections were made right on the job, using a T-Drill, since exact branch locations often depended on where you could "squeeze between" the other mechanical systems. According to Makibbin, "Our competitors all bid the job in steel, but we knew we could do it for less in copper." He estimates that copper with T-Drill saves between 10% and 15% on the total cost of such jobs.

In addition to the Peabody Court Hotel, Fire-Mak has installed dozens of other copper systems in a wide variety of buildings. For most of these, the competition bid steel systems and lost. According to Makibbin, "We get the best economy by installing hybrid systems, where schedule 10 steel is used for the larger mains, and copper for the lines under 2 inches."

"One of copper's greatest advantages is its flexibility for rerouting around unexpected obstacles, like ductwork. A lot of time is wasted when the workmen end up standing around, waiting for someone to get back with a missing steel piece." Repairs are also easier than with steel, since there are no screwed connections. Faulty sections are just cut out, the ends reamed, and a new section installed.

For a wide variety of jobs, Fire-Mak now considers copper and T-Drill the only logical choice.

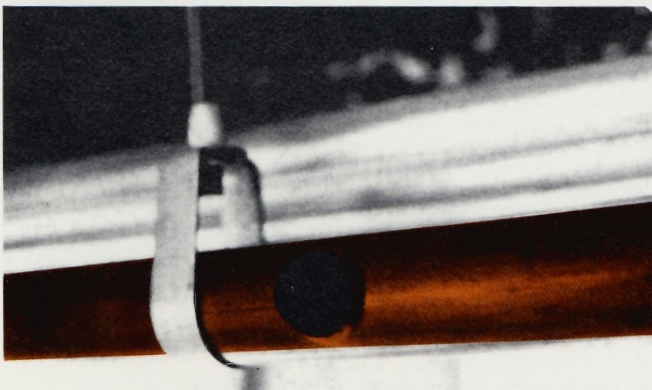


Figure 2: T-Drill branch line takeoff.

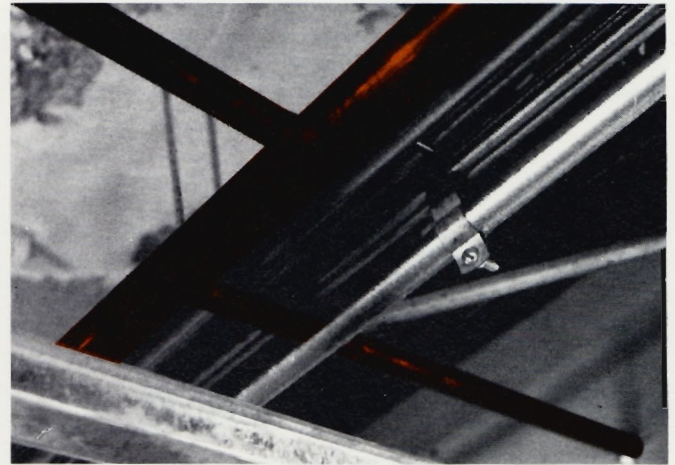


Figure 3: Typical branch connections.

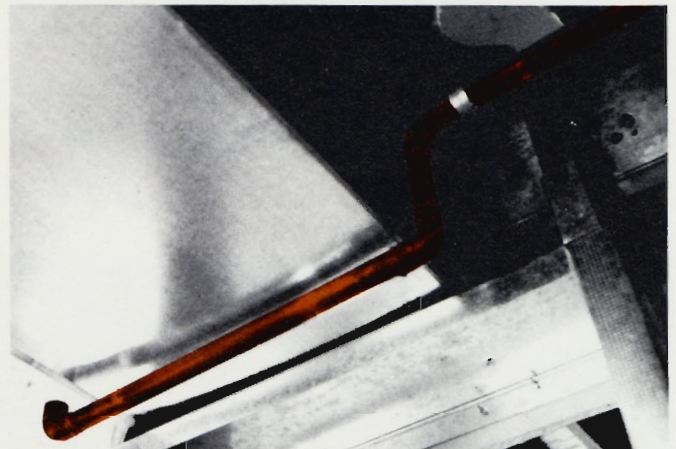


Figure 4: Site modifications to adjust for ductwork.



Figure 5: Tube run with field installed T-connection.

SUMMARY DATA

Project Peabody Court Hotel, Baltimore, Maryland

Description 14 story, 105 room hotel, originally built in 1930, and currently undergoing total renovation. Individual rooms and suites vary from 370 to 650 square feet.

Sprinkler Contractor FIRE-MAK Sprinkler Systems, Inc.
3107 Lorena Avenue
Baltimore, Maryland 21230
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Sprinkler System NFPA-13 type system with copper branch lines and Schedule 10 steel risers. The system includes 467 quick response residential sprinkler heads, and 3254 feet of copper tube.

Basis for Copper Selection Major cost savings, numerous obstructions, variations from plans and space limitations made site fabrication necessary.

Owner Hospitality Task Force,
Baltimore, Maryland

Architect Frank Gant Architects
Baltimore, Maryland

General Contractor Leslie Construction Co., Inc.
Baltimore, Maryland

Statistical Information

(Guest Sections)

no. of units =	105
total sprinkler heads =	467
heads per unit sprinkled =	4.5 (av.)
tube per unit =	32 ft. (av.)
tube & pipe use by size =	
copper:	
3/4 in.	1107 ft. (33%)
1 in.	585 ft. (17%)
1 1/4 in.	1121 ft. (34%)
1 1/2 in.	441 ft. (13%)
steel:	
4 in.	99 ft. (3%)
Total	3353 ft. (100%)
estimated copper fitting use =	
ells	389
adapter C x F	467
reducers	9
Total	865



Figure 6: View from Peabody Court Hotel.

NOTICE: This Application Bulletin has been prepared for the use of fire protection contractors and others involved in the design and installation of fire sprinkler systems. It has been compiled from information supplied by the referenced fire sprinkler contractor and by consulting organizations that Copper Development Association Inc. believes to be competent sources for such data. However, CDA assumes no responsibility or liability of any kind in connection with the Bulletin or its use by any person or organization and makes no representations or warranties of any kind thereby.

