Copper in Architecture Handbook Keeps Pace with Technology

This comprehensive architectural guide to installing all manner of copper building materials remains today in constant demand, a staple and familiar desktop companion for architects, builders, engineers, and other construction practitioners. Today, however, “desktop” has an entirely new meaning.

Conceived by the Copper Development Association (CDA) and market development arm of the copper and brass industry in the United States, in cooperation with the Canadian Copper & Brass Development Association (CCBDA), the handbook was initially printed in 1991. The print version included a set of diecuts containing computer-aided design (CAD) compatible details and illustrations—all was transferred to a single CDS/HIB Book.

Recently, the complete contents were made available on the CDA website, www.copper.org, in digital PDF format, thus allowing users the option of printing out pages for the ultimate in user convenience—and much to the delight of those who still want a PDF printout to have at its available cost. The digital drawings can also be downloaded from the CDA website as DWG files for use with CAD programs.

“Copper in Architecture Handbook: Greening Fire Sprinkler Systems with Copper is today’s construction environment, archi-
tects, engineers and builders have a new mantra: Make it green. Make it safe. Make it last. This imperative thread through the building envelope to materials and building practices, and to also mechanical systems such as heating, air conditioning and water supply systems, including fire sprinkler systems—a critical component of commercial and, increasingly, residential structures.

While various piping materials can be used for sprinkler systems, copper is often recommended, especially in systems or applications where the delivery of clean water from the system is desired to maintain the purity of the water as it goes through the building community. Copper is also noted to be the “greenest” of all metals used in buildings in general and sprinkler systems in particular. Copper’s sustainability and long life are key attributes that can extend the life of structures.

There are many other reasons why copper tube and fittings are ideal for fire sprinkler systems. Fire Resistance—Unlike some piping materials, copper does not burn, support combustion or emit toxic fumes when exposed to flame. It will not transport fire through floors, walls and ceilings and offers an effective water pressure when heated. Although fire temperatures can easily reach 1,500°F, copper has a melting point of nearly 2,000°F, making it an impressive heat sink.

Superior Flow—Providing capacity data is critical to maximizing a system’s effectiveness. Thin-wall copper tubing offers superior flow rates compared to other, similar-size pipe materials. The oxide film that forms on the inner surface of copper tubing acts as a protective barrier against the possibility of the tube wall getting too thin, reducing the potential that a system will clog.

Ease of Installation—From initial delivery to final installation, lightweight copper helps get jobs done quickly. Copper is also able to be cut, marked, and handled, unlike competing materials such as heavy steel pipe and plastic pipe systems. Copper systems are easier to install. Small-diameter copper tubing, which is typically copper-coil or flat rectangular pipe, reduces the gap between their thermal starting point and the desired indoor-air temperature. Direct exchange ground-source systems that use copper tubing, like the Gore unit, are also more efficient and considered superior to systems that circulate water through plastic in-ground refrigerant. Copper, the company states, can provide a direct-exchange system's full range of effectiveness.

Company vice president David Wiggs says Earth To Air is the first heat pump system engineered to operate with the new, environmentally-compatible R-410A refrigerant as a heat exchange medium. Old systems use R-22, which is ozone-depleting. R-22 (Freon) refrigerant is no longer available, he says, and the EPA from new installations after 2010. The new systems promise energy savings of up to 40%, says Wiggs. A bonus: “The system will pay for itself in as little as 30 months,” Wiggs says.”

Currently, there are many other reasons why copper tube and fittings are ideal for fire sprinkler systems:

- Fire Resistance—Unlike some piping materials, copper does not burn, support combustion or emit toxic fumes when exposed to flame.
- Superior Flow—Providing capacity data is critical to maximizing a system’s effectiveness.
- Ease of Installation—From initial delivery to final installation, lightweight copper helps get jobs done quickly.
- Superior Flow—Providing capacity data is critical to maximizing a system’s effectiveness.
- Ease of Installation—From initial delivery to final installation, lightweight copper helps get jobs done quickly.