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RFS DRAGONSKIN FIRE-RESISTANT COAXIAL CABLE: MEETING THE NEED FOR COMMUNICATIONS IN BURNING BUILDINGS

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EXECUTIVE SUMMARY

RFS Technologies learned about the public safety necessity and overall need for a coax cable that could withstand the 2-hour burn requirements and decided to take on the challenge. After three years of product engineering, development and testing, RFS Technologies is proud to introduce DragonSkin. DragonSkin is designed to meet National Fire Protection Association (NFPA) 72 requirements and is validated with UL 2196 certification. With DragonSkin, integrators can efficiently meet local authority having jurisdiction (AHJ) pathway survivability requirements. DragonSkin is helpful in new buildings when the conduit in the concrete does not reach all required locations. Additionally, the half-inch cable size and 6-inch bend radius make DragonSkin the logical choice when retrofitting an existing building.

PROTECTING EMERGENCY FIRST RESPONDERS AND THE PUBLIC

During the attacks on the World Trade Center on September 11, 2001, first responders had neither sufficient nor reliable communications within the large buildings. Modern building techniques and materials effectively block or degrade radio and cell phone coverage.

After 9/11, the importance of Distributed Antenna System (DAS) solutions intensified. DAS solutions are designed to provide adequate radio signals in areas that do not have enough radio frequency (RF) coverage. Installing a network of antennas, supported by a repeater network, provides the needed coverage.

The National Fire Protection Association (NFPA) passed an ordinance in 2007, revised in 2010 and 2013 (NFPA 72), mandating that all new buildings must provide radio coverage to ensure first responders have sufficient and reliable radio coverage in the event of an emergency. In addition, the International Fire Code enacted section 510 in 2009, and the code was updated with guidelines regarding emergency responder radio coverage.

Many states have adopted, or are in the process of adopting, codes that apply to first responders. Check with your authority having jurisdiction (AHJ) to investigate the codes for your area.

THE NFPA ORDINANCE (NFPA 72)

The NFPA 72 "covers the application, installation, location, performance, inspection, testing, and maintenance of fire alarm systems, supervising station alarm systems, public emergency alarm reporting systems, fire warning equipment and emergency communications systems (ECS), and their components."[1] Federal, state, and local municipalities across the United States have adopted the NFPA 72 as a standard in the enforcement of fire code regulation. Municipalities often adopt revisions of the code after years of review and amendments, making many local fire codes specific to their governing authorities.

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UNDERSTANDING NFPA 72 PATHWAY SURVIVABILITY REQUIREMENTS

12.4.1 PATHWAY SURVIVABILITY LEVEL 0

Level 0 pathways shall not be required to have any provisions for pathway survivability.

12.4.2 PATHWAY SURVIVABILITY LEVEL 1

Pathway survivability Level 1 shall consist of pathways in buildings that are fully protected by an automatic sprinkler system in accordance with NFPA 13 with any interconnecting conductors, cables, or other physical pathways installed in metal raceways.

12.4.3* PATHWAY SURVIVABILITY LEVEL 2

Pathway survivability Level 2 shall consist of one or more of the following:

1. 2-hour fire-rated circuit integrity (CI) or fire-resistive cable
2. 2-hour fire-rated cable system [electrical circuit protective system
3. 2-hour fire-rated enclosure or protected area
4. *Performance alternatives approved by the authority having jurisdiction

12.4.4 PATHWAY SURVIVABILITY LEVEL 3

Pathway survivability Level 3 shall consist of pathways in buildings that are fully protected by an automatic sprinkler system in accordance with NFPA 13 and one or more of the following:

1. 2-hour fire-rated circuit integrity (CI) or fire-resistive cable
2. 2-hour fire-rated cable system [electrical circuit protective system
3. 2-hour fire-rated enclosure or protected area
4. *Performance alternatives approved by the authority having jurisdiction

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UNDERSTANDING HOW UL 2196 SUPPORTS THE NFPA 72 REQUIREMENTS

The intent of the UL 2196 standard is to evaluate the integrity of power, control, instrumentation, and data cables for their ability to maintain circuit integrity when subjected to standard fire test exposure and the associated hose stream test.

SOLVING THE PUBLIC SAFETY 2-HOUR BURN CHALLENGE

Control wiring and power wiring requiring a 2-hour fire barrier shall be protected using any one of the following methods:

1. Communications cable in conduit in concrete [Figure 1]
2. 2-hour burn soffits [Figure 2]
3. Fire wrap option [Figure 3]
4. RFS DragonSkin solution [Figure 4]

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SOLVING THE PUBLIC SAFETY 2-HOUR BURN CHALLENGE

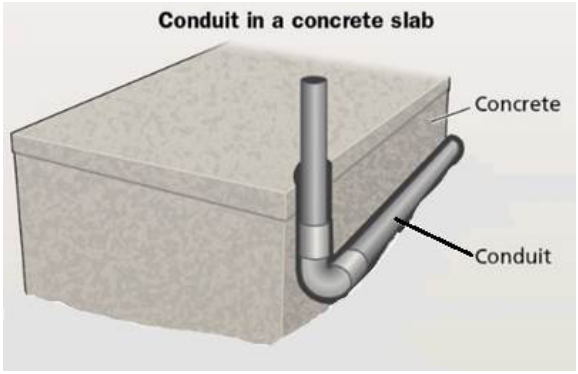

Figure 1. Communications cable in conduit in concrete

Figure 3. Fire wrap option

Figure 2. 2-hour burn soffits

Figure 4. RFS Technologies DragonSkin™ solution

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THE BENEFITS OF DRAGONSKIN

- First standalone communications cable to meet NFPA 72 Survivability Standard
- Verifies the cable survives 2 hours at temperatures up to 1,000 °C (1,850 °F) and the water spray test without conduit or additional wrapping
- Enables cellular and public safety radio communications to and from all floors of a burning building
- Ensures emergency responders and building occupants have reliable access to communications during severe fires
- CATVP Plenum-certified
- Meets certification for use in the environmental air handling space in buildings
- No conduit or cable wrapping required
- Reduces cable size and weight, simplifies installation
- Always maintains minimum bending radius
- Accelerates installations, especially in smaller spaces and older buildings
- Uses standard RFS Technologies connectors and installation techniques
- Eliminates the need for specialized parts or expertise

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CONCLUSION

DragonSkin provides a standalone solution to the NFPA 72 pathway survivability requirements. DragonSkin has provided AHJs and public safety communications officers with the most efficient, lowest total cost of ownership (TCO) alternative, allowing integrators to successfully implement fire-protected systems in the ever-growing retrofit market. Remember that RFS Technoloiges innovation has resulted in the only standalone cable that was designed to provide uninterrupted communications and save the lives of our first responders in high-temperature and on-fire environments.

REFERENCES

[1] NFPA 72: National Fire Alarm and Signaling Code. National Fire Protection Agency. https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=72

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