

## **ABANDONED CABLE REVISITED WITH SOLUTIONS – Stop The Insanity**

Written by Frank Bisbee, President of Communication Planning Corp.

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Cabling contractors, service providers, managers, tenants and building owners need to work cooperatively to ensure that all parties understand their responsibilities to comply with the National Electrical Code (NEC) provisions on removing or tagging abandoned or unused communications cabling in buildings.

### **Stop the Insanity!**

Cabling without labeling is not just stupid. It is insane. Consumers spend billions of dollars building their communications infrastructure highways. These financial commitments are often not treated as an investment in an asset. Cabling networks are not an expense. Certain basic practices and policies will prevent this cabling facility asset from becoming a liability. On the front end of an installation project the contract for materials and service should be retained with floor plans and drawings. Add to that the performance test results from the certification process for the cable and the absolute requirement for labeling at both ends of the cable as well as the connecting facilities (jacks and patch panels). Now you have an asset, which may be reused, recycled, or transferred to another user. This simple process may reduce or eliminate a big ticket for the removal of abandoned cable.

### **Value added practices**

Michael Shannahan, VP Operations – Communication Planning Corp. (Jacksonville, FL) said “We require our technicians to carry and use the DYMO Industrial Rhino Pro 5000 or 6000 Labeling System to every job. All of our cable installations are tested with the Fluke Networks DTX 1800 & OptiFiber Cable analyzer.” Shannahan said the results are saved and given to the customer on a CD and a printed version along with cut sheets, material specifications and as built information. This makes administering the facility faster and less expensive.

### **National Electrical Code**

Abandoned cable is defined in the National Electrical Code (NEC) as “ accessible installed communications cable that is not terminated at both ends at a connector or other equipment and not identified “For Future Use” with a tag.”

The NEC establishes the performance issue, but does not assign financial responsibility for removal and disposal of the abandoned cable. The inspector for the AHJ generally will specify what cables have to be removed in order for the job to pass electrical inspection. Failure to get a certificate for occupancy is a nightmare.

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The NEC includes rules intended to ensure safety during installation, use and/or disposal of materials, components, fixtures, and systems. The NEC is developed and revised every three years by the National Fire Protection Association (NFPA), the secretariat to the Code. In 2002, a new provision to this code required the removal of abandoned cable. This was the first major change to cabling requirements in the NEC in more than 20 years. Cabling is the only combustible material allowed in the ceiling plenum, thus the changes were made to reduce the fuel, smoke, and toxic gas potential caused by an excess of unused cabling. The 2005 version of the NEC also reflected this provision. No change for this requirement is proposed in the NEC 2008. NEC 2002 Article 770.3(B) for optical fiber and Article 800.52(B) for communications cabling states that all accessible abandoned cable, unless marked for future use, must be removed. Abandoned cable can easily be found in hospitals, schools and office buildings that were built many years ago, and then expanded in recent years. Particularly vulnerable and in need of urgent corrective action is the healthcare industry and the education sector, where abandoned cables abound and safety concerns are a high priority.

The NEC requirements do not have the effect of law; however, the majority of jurisdictions in the United States adopt the NEC by reference into local building and fire codes, which are then enforced by the local authority having jurisdiction (AHJ). If your jurisdiction adopted the NEC 2002 or 2005, you must be aware of its potential impact on your site and projects.

### **IMPORTANT NOTE**

Any cable that does not meet the permitted use specifications should be removed immediately. For example: cable not rated CMP (for use in return air plenum spaces) that has been installed in the return air plenum is big “no-no”.

### **New language added to leases**

Many building owners are adding additional language to the leases to address the abandoned cable responsibility. BOMA (Building Owners & Managers Association cautions their members: “Your leases should clearly state that tenants must remove any cabling that is abandoned during the term of their tenancy, and/or your license agreements should require service providers to remove all wires upon the termination of the contract. We recommend that you review your leases and license agreements to ascertain exactly who was responsible for the installation and/or abandoning of the cabling and whether you have recourse to recover any of the funds needed to remove the wire. Next, make any amendments necessary if you are not already protected by these agreements.” The National Association of Industrial and Office Properties (NAIOP) is likewise advising its members of the potential problems and risks associated with abandoned cable removal code. Commercial real estate interests are quietly gearing up for this issue as many cities are beginning to enforce the new code on cabling. Numerous municipalities are beginning to address the abandoned cable issue, including Dallas, Baltimore, Atlanta, Denver, San Francisco, Los Angeles and Seattle.

### Waste disposal nightmares

With no code focused on the volume of abandoned cable that is found in a typical office building today, the volume has grown to biblical proportions. According to Dupont in a recent presentation to BICSI, there is “over 60 billion feet of cable installed in plenum spaces” alone in the U.S. workplace. As much as 11 ½ million miles of abandoned cable may be still there.

Computer technology demanded cabling upgrades as transmission speeds continued to soar. Category 3 cabling was followed by Category 4 and 5 cabling, then Category 5e, and now we have Cat 6 and 6A cables. 10 gigabit Ethernet is also pushing the envelope. Until the NEC 2002, there was no rule saying that the old cable needed to be removed, often it was simply left in place.

By the time the codes began catching up to the problem, so much cable was tangled in the average office building's plenum that no one really wanted to address it. Many buildings in localities where the AHJ is still using the 1999 (or early) edition of the National Electrical Code are not required to remove abandoned cable, even if the volume is so great that it may be interrupting the flow of air in HVAC plenum spaces or weighing down suspended ceilings.

During the development cycle of the cables from pre-Category 3 cables until today, there are many different materials used in the construction of cables. For example, plenum cables (CMP) began with DuPont Teflon® FEP jackets and all Teflon insulation. Then the insulation migrated to several different fluoropolymers. The jackets evolved to fire resistant PVC as the demand for Teflon exceeded the supply. Later shortages of FEP (Teflon) resulted in hybrid constructions of 4x0, 3x1, 2x2, and 0x4. This myriad of cables with different constructions has made the recycling effort into a nightmare. Labor wise it is not feasible to separate these cables for recycling efforts. However, the copper contained in the cables is a no-brainer because of the sky rocketing value of the metal. Most of the jacketing and insulating material becomes un-recyclable waste.

### Safety Concerns

“The fire is not the only safety problem,” says John Michlovic, manager of technical services and marketing for H.H. Robertson Floor Systems. The plastics used in the insulation and jacketing may also release toxic gasses and smoke in a fire scenario. The fire doesn't necessarily ignite the cabling jackets immediately, but the heat can cause it to release clear or white toxic gases that are highly dangerous. These gases can be blind you or shutdown your respiratory system. Incapacitation of the building occupants is a real problem that is not

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addressed by the testing or the NEC.

"Plenum rated cabling may start burning in 35 to 40 seconds to a couple of minutes," says Michlovic. "Currently, there's no toxic gasses-developed criteria for plenum-rated cable, no fuel load standard. Worst of all, there are no toxicity standard and no acid level requirements."

Current industry estimates: 1,000 feet of four-pair unshielded twisted pair (UTP) cable weighs about 24 pounds -10 pounds of copper and 14 pounds of plastic jacketing and insulation.

"When cables are installed in a plenum air handling space, exposure to airflow makes the risk from heat or fire generated toxic gasses and smoke especially dangerous for building occupants when fire breaks out," says John Moritz, principal of JMME consulting firm, well-known safety advocate and NFPA/NEC expert.

Fluoropolymer (like DuPont Teflon® FEP) insulated and/or jacketed cabling releases many toxic gases under heat decomposition. Some of the deadly gasses like Hydrogen Fluoride are highly reactive. HF gas, when in contact with any moisture, including humidity, forms hydrofluoric acid. Moritz said, "Hydrofluoric acid is so corrosive that it can destroy most glass and eat away most metals and metal oxides. The damage potential posed by HF to the human body is immediate and it can affect your eyes, throat, and lungs incapacitating someone on exposure. Incapacitation can and does lead to many fire related causalities." Remember: Safety is too important to ignore.

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