How NBCS 2026 is Redefining the Role of Wires & Cables!

The revised National Building Code and Construction Standards (NBCS) 2026 reflects the growing recognition that electrical infrastructure is central to building safety, while emphasising on designing electrical systems for real-world operating conditions rather than minimum compliance requirements, writes **Amol Kalsekar, Director-Marketing, International Copper Association India (ICAI).**

When people think about building safety, they often think of visible safeguards such as fire exits, smoke detectors, sprinkler systems and emergency evacuation plans. Rarely do they think about the wires and cables hidden behind walls, ceilings, and floors. Yet, as buildings become increasingly electrified, connected, and intelligent, these invisible systems are emerging as one of the most critical determinants of safety, resilience, and operational continuity.

Without rigorous post-fire forensic investigation, the precise cause of building fires often remains uncertain. However, as per recently reported news articles, incidents such as the Vivek Vihar residential fire in Delhi underline the risks posed by ageing electrical systems, substandard materials, improper cable selection, and poor installation practices.

Traditionally, wires and cables were viewed primarily as conduits for transmitting electricity. Today, their role extends far beyond connectivity. They support essential systems such as fire detection and alarm networks, emergency lighting, access control, surveillance infrastructure, communication systems, building automation platforms, and renewable energy (RE) installations. In an era where buildings are expected to support uninterrupted operations while accommodating growing energy demands, electrical infrastructure has become a foundational element of modern construction.

This evolution is reflected in the recently revised National Building Code and Construction Standards (NBCS) 2026. More than a regulatory update, the standards represent a broader shift in how India approaches building safety. They recognise that electrical infrastructure can no longer be treated merely as a supporting utility. Instead, it has become a strategic component that influences how safely and effectively buildings perform throughout their lifecycle.

India's Electrification is Raising the Bar for Electrical Safety

India's built environment is undergoing a profound transformation. Residential communities are integrating rooftop solar systems, battery energy storage systems (BESS), and electric vehicle (EV) charging infrastructure. Commercial developments are increasingly dependent on intelligent building management systems (BMS), advanced heating, ventilation and air-conditioning (HVAC) installations, automated energy controls, and digital connectivity platforms. Critical infrastructure such as hospitals, airports, metro systems, and data centres now relies on sophisticated electrical networks to ensure uninterrupted operations.

NBCS 2026 signals a shift from reactive compliance towards proactive resilience. It recognises that electrical safety is not simply about preventing failures; it is about ensuring that buildings remain capable of supporting the demands of an increasingly technology-driven future.

As buildings become more energy intensive, the challenge is no longer limited to ensuring the availability of power. It is equally about ensuring that electrical systems remain safe and capable of supporting increasingly complex requirements over their lifecycle.

This shift has important implications for wiring and cable infrastructure. Every critical building function – from emergency lighting and fire alarms to access control systems, smoke management systems and communication networks – depends on the integrity of the underlying electrical network. The ability of these systems to perform when required is directly influenced by the quality, design, and reliability of the cable infrastructure supporting them.

At the heart of every cable system lies the conductor, which plays a fundamental role in determining electrical efficiency, thermal performance, and operational stability. Copper continues to be the preferred conductor material for most building applications because of its high electrical conductivity, excellent thermal characteristics, and long-term durability. Its ability to carry higher current loads with lower resistance helps minimise energy losses, maintain voltage stability, and reduce the risk of overheating under demanding operating conditions.

Building construction today accounts for nearly 40 percent of India's cable demand, making it the largest end-use segment for cable infrastructure. This reflects a simple reality: every major trend shaping the built environment – from digitalisation and clean energy integration to electric mobility – is increasing dependence on safe and dependable electrical networks. Decisions around conductor quality, cable selection, and system design are therefore no longer merely engineering considerations. They increasingly influence building performance, safety, and long-term sustainability.

Reliability Begins with Cable Infrastructure

The reality is that modern buildings are only as dependable as the electrical systems running behind their walls.

The quality of conductors, insulation systems, and protection devices ultimately determines how effectively electrical networks perform under both routine and adverse conditions. Together, they influence how buildings respond to changing loads, equipment failures, and emergency situations.

This is particularly important because electrical faults continue to be among the leading causes of building fires globally. Overloaded circuits, deteriorating insulation, poor-quality connections, inadequate conductor sizing, and ageing electrical systems can create vulnerabilities that often remain hidden until failure occurs. In increasingly complex buildings, such failures can have consequences that extend well beyond equipment damage, affecting occupant safety, critical services, and business continuity.

The challenge is compounded by changing patterns of electricity consumption. Buildings designed for one era of energy use are increasingly expected to support technologies of the next. Without corresponding upgrades to the electrical backbone, overheating, accelerated insulation degradation, and system failures become predictable outcomes rather than isolated incidents.

For years, wires and cables were often viewed through a procurement lens. That mindset is becoming increasingly difficult to justify. In today's buildings, the quality of cable infrastructure can influence everything – from energy efficiency and equipment performance to occupant safety.

NBCS 2026 and a New Approach to Building Safety

NBCS 2026 reflects the growing recognition that electrical infrastructure is central to building safety.

One of the most significant aspects of the revised standards is the emphasis on designing electrical systems for real-world operating conditions rather

than minimum compliance requirements. Modern buildings are expected to support significantly higher and more diverse electrical loads than those envisaged when earlier standards were developed.

Importantly, NBCS 2026 does not merely acknowledge these challenges; it responds to them through specific electrical safety provisions. The revisions reflect a growing recognition that many electrical failures are not caused by isolated component defects, but by systems that were never designed for the loads they are ultimately required to support.

The revised standards strengthen provisions around conductor sizing, fault protection, load planning, and overall system performance. One of the notable changes in NBCS 2026 is the expansion of the BIS copper-only conductor mandate from the earlier 16 sq mm threshold to 25 sq mm, extending further to 50 sq mm for multi-storey buildings, important public buildings, and high-load commercial structures.

The revision reflects growing concerns around electrical fire incidents, rising 24 x 7 power demand, and the need for greater reliability in increasingly electrified buildings. By reinforcing the use of copper conductors, the standards seek to enhance electrical safety and system resilience.

Furthermore, the NBCS 2026 also mandates the use of copper conductors in compact busbar systems, wherever applicable, further strengthening safe and reliable power distribution in modern buildings.

These are not merely specification changes. They reflect the reality that modern buildings require greater current-carrying capacity and thermal resilience than earlier generations of infrastructure. As electrical loads continue to increase, conductor performance becomes increasingly important in ensuring both safety and long-term system stability.

Similarly, NBCS 2026 aligns residual current protection more closely with internationally accepted life-safety practices through a 30-mA residual current device (RCD) sensitivity requirement. The standards also strengthen provisions around high-voltage electrical infrastructure, including enhanced cable requirements for dry-type transformer installations.

Equally significant is the expansion of load diversity considerations. HVAC systems, elevators, escalators, heat pumps, EV charging infrastructure, data centres, and other high-consumption applications are now more comprehensively incorporated into load planning frameworks. This addresses one of the most common causes of electrical stress in buildings: systems that are progressively loaded beyond their original design assumptions.

The standards also reinforce the importance of evaluating existing electrical infrastructure. By encouraging assessment and upgrading of legacy installations where necessary, NBCS 2026 acknowledges that electrical safety is not limited to new construction. Buildings already in operation must also remain capable of supporting evolving technologies and changing load profiles safely and efficiently.

Ultimately, NBCS 2026 signals a shift from reactive compliance towards proactive resilience. It recognises that electrical safety is not simply about preventing failures; it is about ensuring that buildings remain capable of supporting the demands of an increasingly technology-driven future.

Building Safer Cities for *Viksit Bharat*

India's aspiration to become a developed nation by 2047 will depend not only on the scale of infrastructure it creates, but also on how effectively that infrastructure performs over time.

NBCS 2026 acknowledges a reality that the industry has witnessed for years: the safety of a building is increasingly determined by the performance of the systems hidden behind its walls. While wires and cables may remain out of sight, they power critical services, enable life-safety systems, and support the infrastructure upon which modern economies depend.

As India builds for a more urban, digital and electrified future, wires and cables will play a far greater role than simply carrying power. They will determine how effectively buildings support critical services, adapt to evolving technologies, and perform when it matters most.

In that sense, NBCS 2026 is more than a revision of building standards. It is recognition that the future of building safety will depend as much on the strength of the electrical backbone as it does on the structures that surround it.

ABOUT THE AUTHOR

Amol Kalsekar is Director-Marketing at International Copper Association India (ICAI), where he leads initiatives for green and healthy buildings. With expertise in electrical safety and sustainability, he represents ICA India at key government and non-government bodies, including the Bureau of Indian Standards and Central Electricity Authority. He has successfully influenced electrical specifications for 25+ state public works departments and contributed to national building codes in India, Bangladesh, and Sri Lanka. He Kalsekar holds an MBA in Marketing Management from the University of Mumbai.