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SMART THINKING WITH FIBEROPTIC NETWORKS

The world we live in is becoming "smarter", with smart homes, smart buildings and—perhaps the smartest of the smart—smart healthcare. Healthcare facilities are investing billions of dollars in their access networks to meet the ever-increasing demand for high-bandwidth broadband and WiFi networks.

To meet these demands, more access layer switches and additional copper infrastructure are being deployed, further driving the demand to acquire valuable, potentially revenue-generating space. But the question is: How do you get longevity out of these billion dollar infrastructures while ensuring that future demands are met as technology continues to evolve?

The answer: **fiber**.

Deploying fiberoptic networks (passive or active) will not only ensure that future high-bandwidth demands are met with the use of a single fiber strand, but also reclaim valuable square-footage on each floor by eliminating the need for access layer switches and associated mechanical and electrical support. This in turn lowers not only CapEx, but OpEx costs as well.

In short: Fiber provides a cutting-edge network that frees up floor and above-ceiling space. It doesn't get much smarter than that.

JB&B sees the heart of healthcare design as maximizing patient wellness and an improved healing environment.

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COMMISSIONING FOR WELLNESS

The aim of an isolation room is to prevent cross-transmission or cross-infection of patients, visitors or staff. So it's critical that such a room operates within the design airflow and pressure differential parameters. And the only method to confirm that an isolation room will be truly functional is by commissioning all the components associated with the room.

Exhaust fans need to be confirmed for airflow and static pressure prior to taking room readings at the exhaust valves. The same can be said for the supply air, which must track the exhaust airflow in order to maintain a negative airflow differential. Air balancing has to be performed by a Certified Balancer and confirmed by the Commissioning Provider. The Commissioning Provider also needs to inspect isolation rooms early on to identify any concerns with the integrity of the room envelope. Once the finishes in the room start to take shape, patches in walls become exponentially more difficult to fix.

Isolation isn't fun for patients or their visitors. While we can't control the overall psychological experience of isolation, we can certainly control the functional performance of the isolation room through proper commissioning—and trust that a peak-performance environment can contribute to a patient's sense of well-being.

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STRIKING THE BALANCE BETWEEN CARBON REDUCTION AND IMPROVED CARE

The NYC Carbon Challenge is indeed a challenge for Owners overall, but it's a tougher climb for healthcare facility managers with campus central plants. Hospitals operate 24/7, and many NYC institutions are running plants with large-scale older equipment, inherently inefficient and with high carbon emission rates.

Retrofitting these plants can be costly. For the near team, decreasing energy consumption can help move the needle. But while reduction of electricity usage through retrofit of basic controls for lighting and equipment can make a difference, it won't achieve the dramatic reductions slated for the long term.

At the same time, health systems are looking toward the future in terms of their ability to provide quality patient care. Institutions continue to progress and expand through renovations of existing buildings and construction of new buildings, and every project is a chance to make a real difference.

Technologies in building envelope construction have redefined "high-performance". Renewables are growing more impactful. The design of a new building can replace an oil-burning central plant with a modern, efficient plant to support the campus. These and other options call for careful analysis in terms of benefits and overall payback.

All in all, the ultimate challenge is negotiating the interface of reduced carbon emissions and improved quality of care.

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VIRTUAL REALITY: THE BRAVE NEW WORLD IN HEALTHCARE DESIGN

Improvements in technologies and processes, as well as simply the organic growth of an institution, business or facility, challenge owners to adapt existing facilities and/or build new facilities to accommodate the newly evolved needs.

New technologies can influence the layout of spaces; new equipment can require design and infrastructure upgrades. Understanding how these abstract factors actually translate into concrete design and construction parameters can be difficult and cumbersome for stakeholders to grasp.

The use of Virtual Reality (VR) and/or Augmented Reality (AR) is a great tool that allows the user to actually inhabit a design space and provides valuable feedback that can help clients, architects, engineers, and contractors visualize design issues and thereby save time and money.

VR/AR can be used to communicate OR layouts to end users, such as doctors and nurses, who, by virtually inhabiting the layout, can more realistically evaluate whether it meets their needs in terms of space, procedures and flexibility, allowing them to suggest improvements as the design is progressing.

Through the use of VR/AR stakeholders can get a valuable foretaste of how they'll interact with the space and provide feedback on constraints, layout, materials, and desired changes in all phases of design, through construction and even into occupancy.

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INFECTION PREVENTION AS AN INTEGRAL PART OF THE DESIGN PROCESS

Infection control and pathogen transmission—via air, water and contact—are of prime importance for the healthcare environment. The astute application of MEP technologies, the placement and location of equipment, air filtration and legionella control are all components that need to be woven into the design of the MEP systems and work seamlessly and efficiently with the architectural design.

AIR

- Air quality – filtration, air change rates and bacteria-killing technologies
- Containment – positive or negative types of spaces; flexible central air handling systems
- Environmental comfort – well-maintained humidity levels; patient control of room temperature

WATER

- Disinfection – early flushing and chlorination of installed systems
- Filtration – particulate filtration and copper silver ionization systems
- Distribution – elevate hot water temperatures to kill legionella and fully recirculate hot water distribution

CONTACT

- Standardized work environment; same-handed patient rooms
- Deletion of privacy curtains
- In-room bed pan washers for reduction in transporting contaminated waste

All these measures need to be designed in a simple, maintainable, resilient, redundant, flexible and scalable manner to support the ever-changing needs of the healthcare environment. The integration of state-of-the-art MEP technologies with the clinical design of the space is critical to help reduce HAIs (Hospital Acquired Infections) and improve patient experience.

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