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Building Healthcare Facilities for a Changing Climate

February 18, 2025 – Turner Construction Company is leading the way in addressing the essential need for building healthcare facilities that prioritize resiliency, functionality, safety, and sustainability.

Turner's recently topped-out healthcare project—Massachusetts General Hospital—demonstrates how sustainability and resilience are integrated into healthcare construction to meet the challenges posed by climate risks.

Massachusetts General Hospital



The Massachusetts General Hospital (MGH) Phillip and Susan Ragon Building in Boston exemplifies resilient and sustainable healthcare design and construction. This 1.9-million-square-foot redevelopment, a collaboration between Turner and Walsh Brothers, is being built to meet Boston's ambitious 2050 carbon reduction goals while enhancing operational resilience. Turner's preconstruction team played a pivotal role in the introduction of design strategies, evaluating costs, and driving implementation solutions to ensure the project's long-term resiliency and adoption to the energy transition.

“We have witnessed weather events that have impacted hospitals’ ability to operate, jeopardizing patient care,” said **Brian Chase**, Turner’s Vice President & Construction Executive on the MGH project. “It is imperative to properly manage the design and construction of resiliency elements in our new healthcare facilities to minimize these impacts.”

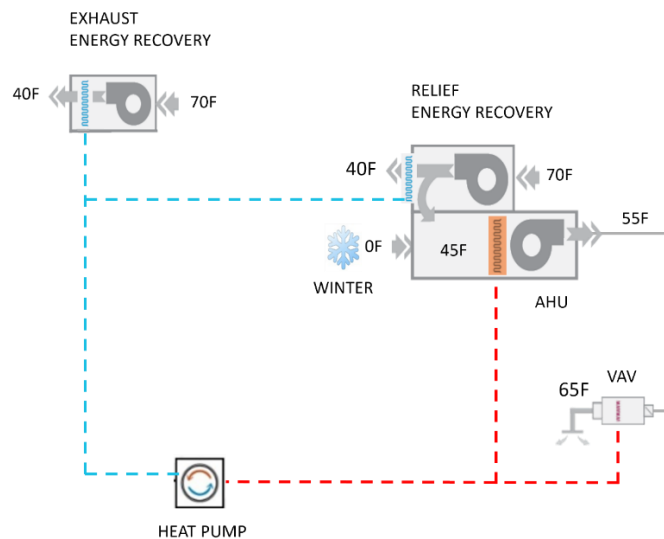
The project features include:

- **Climate-responsive systems:** Wind-resistant designs and flood barriers to mitigate risks from severe weather.
- **Resilient infrastructure:** Systems adapted through extensive risk assessments to enhance functionality and safety, including a design to operate as a “96-hour island” under shelter-in-place provisions, ensuring continuous operations during emergencies.
- **Sustainability integration:** A 90% reduction in emissions compared to baseline code buildings.

Building upon these sustainability efforts, MGH also sets a new benchmark for reducing operational carbon emissions in energy-intensive healthcare facilities. Amidst Boston’s push to decarbonize its built environment, the Ragon Building demonstrates the potential for significant carbon emissions reductions with minimal first-cost investments.

Healthcare buildings, particularly in cold climates like Boston, face unique energy challenges as large quantities of outside air must be either warmed or dehumidified before entering the facility. Turner and the design team (mechanical engineer BR+A) addressed this challenge by designing an innovative heat pump configuration that extracts energy from the building’s warm exhaust air and transfers it for pre-heat and re-heat via a water-to-water heat pump.

BR+A’s Energy Recovery Approach:



This “exhaust-source heat pump” is sized for approximately 20% of the building’s peak heating load but reduces emissions by nearly 90% because buildings operate at part-load conditions for most of the year. By targeting the majority of operating hours rather than designing for the rare peak, the team maximized the potential for carbon emissions savings. This high-performance strategic approach avoids unnecessary costs associated with overdesigning for peak conditions, delivering significant environmental and financial returns.

Turner, one of the few General Contractors experienced in implementing such advanced systems, continues to leverage this technology across the life sciences and healthcare industries, both for new projects and retrofits of existing buildings.

“At Turner, we understand that sustainable healthcare design and construction is more than weatherproofing buildings; it’s about purposely creating a healthcare workplace that is resilient to climate change and engineered with high performance solutions that lower emissions and prepare buildings for the energy transition,” said **Peter Hamill**, Turner’s Senior Vice President and Project Principal. “These projects exemplify how collaboration and innovation can create facilities that meet climate challenges as well as provide impactful solutions for the long-term operational life of a healthcare project. It is projects like this that help pave the way for a sustainable future.”

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About Turner Construction Company

Our vision is to be the highest value provider of construction services. We deliver our services on complex and challenging building projects of all types and sizes throughout North America and in 30 countries around the world. We seek to create a healthy, prosperous, and sustainable future for our people, clients, partners, and the planet. We have earned a reputation for integrity, working safely, and driving innovation. With a focus on creating an environment where people can be at their best, be authentic, and be treated with respect and dignity, the company is widely recognized as a great place to work. The firm is a subsidiary of HOCHTIEF, an engineering-led global infrastructure solutions provider with leading positions in North America, Australia and Europe and a rapidly expanding presence in high-tech, energy transition and sustainable infrastructure markets. To learn more about Turner visit www.turnerconstruction.com.