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Project of the Month: Tocci Building Companies completes \$12.7 million, 14,000 s/f Marlborough Hospital Oncology Center

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The new year is bringing new resources to Marlborough patients and families coping with cancer as the Marlborough Hospital Oncology Center prepares to open its Cancer Pavilion.

The new 14,000 s/f, \$12.7 million cancer treatment wing is nearing completion at the rear of the Union Street Hospital and will make updated treatments available to local patients, including a linear accelerator for radiation oncology, a CT Simulator for diagnostic imaging, and outpatient medical oncology services. Marlborough Hospital currently offers outpatient medical oncology, but the project will make radiation oncology services available for the first time.

The facility is part of the UMass Memorial Health Care Cancer Center of Excellence and combines the skills and knowledge of multidisciplinary teams of cancer specialists with an accredited cancer program - all in one location. The new pavilion will bring cancer services under one roof with a dedicated patient entrance and parking.

The construction of the Cancer Pavilion marks another first, it will be the first New England healthcare project to be completed under an Integrated Project Delivery (IPD) contract. IPD is a contract form and method in which project stakeholders including the owner, architect, general contractor, engineering consultants, and subcontractors work as one group to optimize results, increase value to the owner, reduce waste, and maximize efficiency through all phases of the project. All parties are contractually incentivized to meet the same objectives through shared financial risk and reward. Using IPD, the Marlborough Hospital Cancer Pavilion was able to set aggressive cost targets to meet mutually agreed upon goals.

To facilitate the intense intellectual collaboration that a cutting-edge facility like the Cancer Pavilion requires, Tocci Building Companies of Woburn, MA and The S/L/A/M Collaborative of Glastonbury, CT/Boston, MA used Virtual Design and Construction/Building Information Modeling (VDC/BIM) technology to coordinate design and construction. Hospital staff were able to evaluate the building in 3D computer models before construction started to examine usability such as: paths to supplies, locations of patient bathrooms, and distance patients must walk to the treatment areas. BIM enabled the integrated team to review the structure in 3D and spot problems more easily than it could with a traditional 2D blueprint. Patients on the planning team explained the challenges they face getting daily treatments, thus helping the designers/builders eliminate wasted steps upfront.

Designed to be constructed and maintained with environmentally friendly materials, the Cancer Pavilion was designed with Leadership in Energy and Environmental Design (LEED) in mind and features a healing garden for its patients. "The garden creates a warm and welcoming entry to the new cancer pavilion," said Jeremy Garczynski, assistant project manager at Tocci. "It provides an inviting setting that makes patients feel more comfortable through the use of warm woods, indirect

lighting, and comfortable seating."

The centerpiece of the project is a linear accelerator that provides TrueBeam radiation therapy- a fully integrated system that coordinates imaging, patient positioning, motion management and treatment to administer more precise dosages. The technology lets doctors increase patient safety and comfort while tackling the most complex treatments, including radiosurgery and removing tumors. The facility will be able to produce high quality images with a 25% lower radiation dose and cut treatment time in half.

Construction of the vault to house the high-tech accelerator required advanced construction techniques. "The pouring of the LINAC vault was a milestone in itself with nearly 50 trucks delivering 500 cubic yards of concrete in one day," said Joe Cavallaro, project manager at Tocci. "We used the BIM to plan and construct the vault's 2'-6' thick walls and 3'-6' ceiling. The precision of each pour and penetration was critical to containing the radiation."

Tocci's use of BIM/VDC on the 14,000 s/f project is part of a continuing trend in the construction industry to employ BIM on smaller and smaller projects. "Every year, use of BIM becomes more vital to design and construction practices," said Laura Handler, director of virtual design and construction at Tocci. "It has been Tocci's standard operating procedure since our initial implementation in 2006. Owners know that it improves project performance throughout the full lifecycle. At this point, they expect us to use BIM."

Marlborough Hospital opted to use BIM/IPD to deliver a faster and more cost efficient project and chose Tocci for its reputation for pioneering use of those practices. Tocci won Constructech's Gold Vision Award for its work as program manager of the \$500 million, 1.73 million s/f Alexandria Center Kendall Sq. (ACKS) campus in Cambridge, and its CEO John Tocci will receive the Collaboration Forum's Pioneer Award- the only national award for IPD excellence- later this month.

The project has been an extremely cooperative endeavor, and the hospital has received abundant support from the community it serves.

Marlborough Hospital received a \$100,000 grant from the Cummings Foundation through the foundation's OneWorld Boston program, which owns and operates the nearby New Horizons assisted living facility.

Other organizations have contributed to the hospital's capital campaign to defray the cost of the expansion, including the Marlborough Knights of Columbus, Council 81.

"It's all about giving back to the community," said council members Donald McCormack and Paul Harrington, whose council contributed \$1,000 toward the expansion. "This center is truly a beacon of hope for our community," said Ellen Carlucci, Marlborough Hospital's Vice President of Development, Marketing, and Communications. "Many of us have a friend or family member who has been touched by cancer. And being able to receive comprehensive, high-quality cancer care right here, close to home and family, is a true benefit."

Project team included:

Construction Manager: Tocci Building Companies

Architect: The S/L/A/M Collaborative

Consulting Engineers: Fitzemeyer & Tocci Associates, Inc.

Misc. Metals: Tims Fabricators, Inc.

Marketing: Nickerson PR

Fire Protection: Covenant Fire Protection

Interior Design: Delorey Contract Interiors

GeoEnvironmental Engineer: GZA GeoEnvironmental, Inc.

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