

Unusual solutions

CitiRoof installs a roof system and domes on GrandView at Annapolis Town Centre

by Ashley St. John

GrandView at Annapolis Town Centre is a new 16-story condominium building in Annapolis, Md. The building includes one-, two- and three-bedroom residences, as well as office space and a hotel, and offers views of Annapolis and the Chesapeake Bay.

The building, which is owned by Sturbridge Homes, has become a visible landmark because of three 38-foot-diameter architectural metal domes on its roof.

“Gilbane Building Co., Providence, R.I., a general contracting company for whom we have successfully completed many large and complicated projects, requested we get involved with the project,” says Tim Maloney, chairman of CitiRoof Corp., Columbia, Md. “We were asked to figure out the logistics of the domes as they were unprecedented in their scope and complexity. We also were asked to install an EPDM roof system on the roof’s low-slope portions.”





Project name: GrandView at Annapolis Town Centre
Project location: Annapolis, Md.
Project duration: February 2008-July 2008
Roof system types: EPDM and metal-fabricated domes
Roofing contractor: CitiRoof Corp., Columbia, Md.
Roofing manufacturers: Carlisle SynTec Inc., Carlisle, Pa., and Lancaster Domes, Mount Joy, Pa.

A solution

CitiRoof began by researching manufacturers who would be able to produce the large domes.

"Our senior estimator, Lonnie Downey, researched and came up with several possibilities that could work," Maloney says. "After lengthy analysis and engineering, we recommended Lancaster Domes, Mount Joy, Pa., to manufacture the components because the company builds grain silos. However, even Lancaster Domes had never made a dome that large."

Lancaster Domes agreed to manufacture all the pieces for the domes, but CitiRoof would be required to assemble and install them.

"It took about six months to engineer the domes with many visits to the manufacturing plant with the general contractor, architects, owner and the engineer we hired," Maloney says. "After numerous shop drawings and revisions as directed by our engineer, the engineering process was complete."

Multiple projects

CitiRoof had a crew of six workers working on the domes and a crew of 12 working on the roof's 55,000 square feet of multiple-level low-slope portions.

"The roof system—a Carlisle SynTec Inc. 20-year total system—consisted of a concrete deck, $\frac{1}{8}$ -inch-per-foot tapered 5-inch-thick polyisocyanurate insulation with an R-value of 30 and a fully adhered 60-mil-thick white EPDM membrane adhered with Olybond™ adhesive," Maloney says. "Extensive waterproofing with a custom paver system was installed around the rooftop pool, which included a secondary roof system under the pool area."

The domes, which are made of 24-gauge galvanized steel coated with Kynar® polyvinylidene fluoride in a copper patina-look, each have a steel angle iron base ring that forms the diameter at the bottom and a



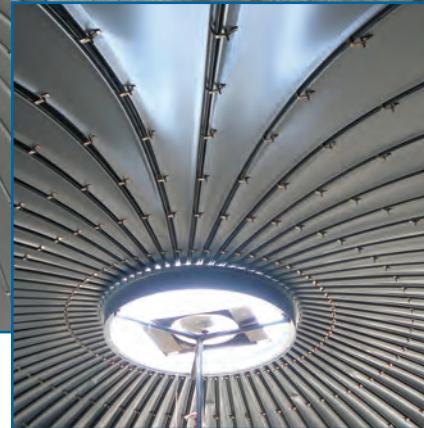
(Far left) After being lifted 150 feet with a crane to the condominium building's rooftop, the three domes were welded in place.



(Middle) A worker installs material over a 4-foot opening at a dome's top ring.



(Top right) The 38-foot-diameter domes were assembled on the ground.



(Bottom right) A view of one of the dome's interior; each dome is formed of 66 triangular fixed standing-seam panels held together by stainless-steel clips.

Photos provided by CitiRoof Corp.,
Columbia, Md.

top ring where a 4-foot opening is covered by matching material. Each dome is formed of 66 thin triangular fixed standing-seam panels held together by stainless-steel clips.

CitiRoof assembled the three domes on the ground during the course of five days and lifted them 150 feet with a crane to the rooftop where they were welded in place.

“It was a learning experience for everyone on our team,” says Lee Goldhammer, CitiRoof’s president. “We worked closely with Lancaster Domes to coordinate the procedure, add the structural reinforcement required by our engineer, and assemble and lift the domes. We appreciated that most of the work was done on the ground, which greatly increased the safety factor for our crew.”

However, certain safety precautions were taken.

“The workers installing the domes were completely restrained with full-body harnesses and were 100 percent tied-off,” Maloney says.

Tackling challenges

Assembling and installing the domes presented some challenges to CitiRoof, several resulting from the domes’ size.

“We had to assemble the domes $\frac{1}{8}$ of a mile from the building site because there was no room at the building site,” Maloney says. “We then had to transport them down a narrow street that had to be cleared completely—we even had to temporarily remove a street sign because the domes wouldn’t fit past it.”

“We also had to keep the domes tied to the ground during assembly so the wind wouldn’t pick them up,” Maloney continues. “Every aspect had to be thought through thoroughly.”

And there were some last-minute concerns regarding lifting the domes to the roof.

“We had to do some calculations for lifting the domes by a single point at their centers; the domes were so heavy, we didn’t want to rack them out of shape by lifting them from three or four points,”

Maloney says. “We took time to add additional structural framing for the lifting process so we could lift the domes from one point.”

The finished product

The project was finished in July, about one month later than anticipated because of some last-minute factors, such as the structural framing process for lifting. However, the domes on GrandView at Annapolis Town Centre are a highly visible testament to CitiRoof’s hard work.

“When you’re driving toward the Chesapeake Bay bridge, you can see the huge domes dominating the skyline toward Annapolis,” Maloney says.

And CitiRoof was pleased with the project’s outcome.

“The whole job was incredibly unique, especially tackling the domes, which had never been done in the past,” Maloney says. “And seeing the last dome being welded into place on top of the building was rewarding.”



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