

KIMMEL CENTER ROOF A CHALLENGE

By Bob Cuje

George Shaeffer, the project director for the Kimmel Center for the Performing Arts in Philadelphia, set out to develop a unique structure that would be a focal center for the city and would rival leading performing arts centers worldwide. It is not surprising, therefore, that the design and construction of this new facility in the center of downtown was extremely complicated. These complexities presented a number of challenges for the chosen roofing contractor, EDA Roofing Corporation of Philadelphia.

The \$265 million Kimmel Center consists of two theatres enclosed in a glass structure. The ends of the walls on the vaulted glass ceiling are glass suspended on cables on a steel arch. This dynamic end wall is constantly moving. In high winds, it can deviate as much as 18 inches.

The roof area consists of 40 different elevations with some on concrete deck and the others on metal. The entire roof area is 45,000 square feet with some sections being as large as 3,100 square feet and the smallest only 15 square feet. Because of the complexity of the job, limited accessibility, and the inability to use either torches or asphalt, a fully-adhered EPDM roofing membrane was selected for the pro-



ject. Both tapered and flat stock insulation were used.

According to Harry Bolick, project architect for Rafael Vinoly Architects PC of New York, "The building will be viewed from many adjacent buildings so we needed to create a tight roof

with simple, minimal, elegant lines and still achieve a guarantee from the manufacturer. We decided on fully-adhered EPDM because it seemed to be the most versatile for the number of conditions we had."

One issue that had to be addressed was the fact that the glass-vaulted ceiling terminated at the roof surface. As a result, rainwater drains from the glass-vaulted ceiling onto the roof, which can turn to ice in the winter. This potential required putting pavers on the roof and walking pads under the pavers to act as splash guards.

"This project was like putting a puzzle together," said Ed D'Angelis, president of EDA Roofing. "The skylight comes down to the roof like a 'V' and we had to design a flashing detail to go in and out of the 'Vs.'" Dominic Salatto and Alan Siedel, technical representatives with Johns Manville, the materials manufacturer chosen for the project, provided technical assistance on JM's UltraGard® EPDM and ISO 1™ insulation. With JM support, Bolick felt secure to challenge some standard detailing and still achieved a warranted roof.

According to Bolick, the moving walls on either end of the structure also presented an interesting challenge. "To make an acceptable seal between the roof and the window wall, we had to make a union. This required close coordination between the window and roofing manufacturer for this detail to be successful. The jurisdiction of the two systems worked in unison to achieve a good seal in this dynamic situation," he said.

"The roofing system had to have AutoCAD drawings to scale that we could look at throughout construction, and EDA Roofing provided those for us," said Bolick. "Mark Nuzzi, the foreman for EDA Roofing, was very knowledgeable and had a common-sense logic and understanding of the architect's intention."

Coordination was also extremely important. Materials had to be loaded between 4 and 5 a.m. because streets had to be closed. Materials were marked with a letter so that they could be delivered to the correct roofing areas. There were a number of trades working simultaneously, with the roof and the glass being installed at the same time.

Safety was also a primary consideration, so there was a full-time safety director. Because none of the parapets met OSHA height requirement, the roofers had to be tied off and wore full body harnesses.

General contractor on the project was L.F. Driscoll of Bala Cynwyd, Pennsylvania. In addition to Harry Bolick, the architectural team consisted of John Kinnaird and Sandra McKee. Tom Callagan was the general superintendent for EDA Roofing Corp. n

ABOUT THE AUTHOR

Bob Cuje is Marketing Manager for Johns Manville Roofing Systems Group, headquartered in Denver, CO. A Berkshire Hathaway company, JM has been in business since 1858, employs 10,000 people and operates 55 manufacturing facilities in North America, Europe, and China. Additional information may be found at www.jm.com.

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