Owens Corning Sustainable Solutions Specified For New World Trade Center Construction

The World Trade Center (WTC) site is arguably the most extraordinary construction site anywhere in the world. More than a decade after the tragic September 11, 2001 attacks, rebuilding the 16-acre WTC site in lower Manhattan represents a momentous undertaking.

From innovative architectural design and engineering precision to thoughtful product specification and world-class workmanship, every step of the reconstruction process reflects a commitment to excellence. Ultimately the New WTC site will be comprised of five elements, including five new skyscrapers (One, 2, 3, 4 and 7 WTC), the National September 11 Memorial and Museum, the World Trade Center Transportation Hub, 550,000 square feet of retail space and a Performing Arts Center.

As a leading producer of commercial building materials, glass-fiber reinforcements and engineered materials for composite systems, Owens Corning™ products were specified in several WTC sites including One World Trade Center, the World Trade Center Transportation Hub and the National September 11 Memorial. Product solutions were selected to deliver performance and help meet sustainable building goals. Owens Corning™ FOAMULAR® Extruded Polystyrene (XPS) Insulation, Thermafiber® Insulation and Advantex® Corrosion Resistant Glass Reinforcements will be incorporated into the construction of these structures.

"As an American company with our world headquarters based in Toledo, Ohio, Owens Corning is proud to have our broad portfolio of composite and commercial solutions contributing to the success of the New World Trade Center construction," said Joe Ochoa, Vice President and General Manager, Engineered Insulation Systems, Owens Corning. "The process to rebuild the World Trade Center site is creating a new benchmark for the future of commercial sustainable building."

One World Trade Center

The construction of One World Trade Center has transformed New York City's skyline. Soaring above Manhattan at 1,776 feet, One World Trade Center is now America's tallest building—and a new, iconic New York landmark.

Built on the northwest corner of the site where the twin towers once stood, the 2.6-million-square-foot building will include office space, an observation deck, world-class restaurants, and broadcast and antennae facilities slated to open for business in 2014.

Under the leadership of architects Skidmore, Owings and Merrill, structural engineers WSP Group, Tishman Construction and The Port Authority of New York and New Jersey, the One World Trade Center construction and operation will incorporate the latest technologies and sustainable solutions to maximize efficiency. In keeping with this goal, the construction will conform to the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) Gold standard.

Owens Corning™ Thermafiber® Mineral Wool Insulation was specified to help support fire protection, sound control and energy conservation in One World Trade Center. Also, the product selection contributes to the overall sustainable building goals as Thermafiber® Mineral Wool Insulation products contain a minimum 70 percent recycled content that is non-combustible, inorganic and mold-resistant.

With a proven history of performance for more than 30 years and extensive testing by Underwriters Laboratories (UL), Thermafiber® FireSpan® Curtain Wall Insulation was used in conjunction with Thermafiber® Safing™ Insulation to achieve outstanding fire protection in curtain wall and perimeter fire containment systems. Additionally, a custom-designed Impasse® Insulation Hanger System was also developed to make installation simple, accurate and fast.

The National September 11 Memorial

Elsewhere at the WTC site, the National September 11 Memorial is located at the site of the former WTC complex. It serves as a tribute of remembrance and honor to the 2,983 victims who were killed in the September 11th attacks in New York City, Washington, DC, Pennsylvania, and the February 1993 WTC bombing.

Entitled "Reflecting Absence," the design by architect Michael Arad and landscape architect Peter Walker was selected from a worldwide design competition that included more than 5,000 entrants from 63 nations. This poignant Memorial was officially unveiled on the 10th anniversary of 9/11 attacks in a dedication ceremony for victims' families and opened to the public the following day.

Occupying an eight-acre plaza set within the footprints of the original Twin Towers, the Memorial has two recessed reflecting pools that are each nearly an acre in size and feature the largest man-made waterfalls in North America.

In addition to the external beauty of the Memorial, special attention was paid to the internal workings to help the Memorial plaza become one of the most sustainable plazas ever constructed.

A team of project engineers, specifiers and representatives from Industrial Fiberglass Specialties, a full service provider of FRP composites, spent three years perfecting the design and engineering to ensure the 600,000 gallons of water in each of the vast reflecting pools would continuously flow without any disruptions.

Industrial Fiberglass Specialties also provided the guided specifications for the quality and performance standards needed in fire resistant FRP composite piping system. As part of this process, it was determined that composite piping for larger-diameter sections should be specified as it is roughly one-third the weight of stainless steel pipe making it easy to install in the tight space constraints.

Industrial Fiberglass Specialties custom-fabricated 4,300 lineal feet of 12" and 16" diameter FRP composite pipe using a dual-wound construction designed to handle corrosive water treatment chemicals and avoid the complications that might occur with some metal alloys.

To create the FRP composite pipe's interior liner, structural wall and exterior fire retardant reinforcement, Industrial Fiberglass Specialties utilized Owens Corning™ Advantex® Corrosion Resistant Glass Fiber Reinforcements. Both the inner and outer layers of the FRP composite pipe are reinforced with boron-free Advantex® E-CR glass fiber reinforcement.

Introduced to the market in the late 1990's, Advantex® Corrosion Resistant Glass Reinforcements is a proven composite product that offers excellent performance in composites facing harsh corrosive environments.

World Trade Center (WTC) Transportation Hub

Major progress can also be seen at the World Trade Center Transportation Hub. Expected to open in mid-2015, the Hub will significantly expand transit access and bring dramatic architectural beauty to downtown Manhattan.

Designed by renowned architect Santiago Calatrava, the $3.9 billion hub will serve as the new home to the Port Authority Trans-Hudson (PATH). Located close to the northeast corner of the World Trade Center site at Church and Fulton Streets (between Towers 2 and 3), the hub's primary function will be linking virtually all forms of mass transit. This includes connecting to 13 subway lines via the Fulton Street Transit Center and other terminals, and linking pedestrians to the World Financial Center (WFC) and its ferries through an underground concourse.

The Hub will also make the rebuilt WTC easier to access for the expected 250,000 daily visitors and commuters and link them to other parts of the city and region. As a result of this activity, the Port Authority expects the hub to generate $3.7 billion per year in direct economic activity.

During the 10-year construction period, approximately 10,000 construction jobs have been created to bring the 800,000-square-foot transportation hub's innovative design features to life. Notable architectural features include a largely column-free interior space with retractable 150-foot-high, glass-and-steel "wings" that allow natural light reach the rail platforms 60 feet below street level.

Padilla Construction and Wolkow-Braker Roofing are among the New York City-based companies awarded contracts to work on the Transportation Hub. To-date, Wolkow-Braker Roofing installed FOAMULAR® 404 XPS insulation and Padilla Construction has installed 50,000 square feet of the moisture resistant 2" thick Owens Corning™ FOAMULAR® 1000 Insulation in a temporary waterproofing application under the Hub's concrete deck due to the product's resistance to both moisture and physical damage.

In spring of 2014, Padilla Construction will install an additional 120,000 square feet of Owens Corning™ FOAMULAR® 1000 Insulation in a sandwich construction consisting of waterproofing membrane, drainage board, insulation and concrete.

Owens Corning™ FOAMULAR® extruded polystyrene (XPS) rigid foam insulation is certified for recycled content and indoor air quality and contributes to the overall sustainability goals for the New World Trade Center site.

Owens Corning™ FOAMULAR® insulation delivers exceptional moisture resistance and provides long-term durability and performance by retaining its high R-value. Available in a variety of compressive strengths, it is also the first XPS foam certified by Scientific Certifications Systems (SCS) to contain a minimum of 20 percent pre-consumer recycled content. Owens Corning's™ FOAMULAR® XPS insulation also has the distinction of being the only foam insulation available with a limited lifetime warranty[1] for the life of the home or building.

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For more about Owens Corning™ FOAMULAR® insulation and applications that can benefit from XPS insulation, visit: www.OCBuildingSpec.com.

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1. *See actual warranty for complete details, limitations and requirements at www.owenscorning.com.*

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