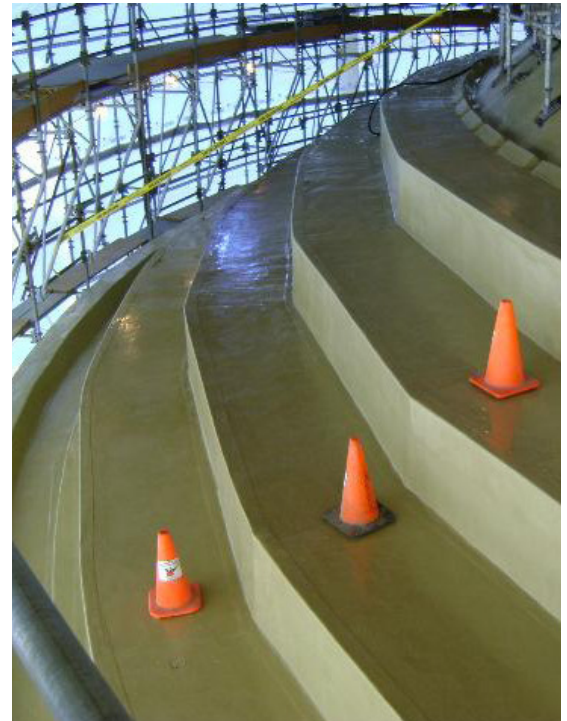


MIT Building - Cambridge, Massachusetts



Massachusetts Institute of Technology - Waterproofing the Dome

In 1916, Massachusetts Institute of Technology relocated its campus from Boston to neighboring Cambridge. After nearly 100 years of service, the waterproofing membrane under the famous dome began to reach the end of its service life. As a result, water began to infiltrate the building and cause damage to the interiors and contents of the library located directly under the dome.

MIT contacted Simpson, Gumperts & Heger Engineering Firm located in Waltham, MA to help design a solution to the water infiltration problem in 2008. The design team recognized that only a long term solution would be considered for this project. The extent of the work would be great including staging the entire dome as well as removing and re-installing a majority of the existing limestone finish.

Since fasteners were going to be installed through the new waterproofing membrane to secure the limestone, fluid applied waterproofing systems were considered as the penetrations could be tied in the seamless membrane. The construction process was going to take place during on-going business hours. Therefore, minimization of disruption was also a consideration.

A no odor, solvent-free, harmless product applied at ambient temperature seemed favorable. Kemperol® 2K-PUR resin system manufactured by Kemper System, Inc. fit the bill. The self-flashing resin system adheres to the substrate over the entire surface and presents an economic alternative to conventional waterproofing materials, especially on complex surfaces.

Construction began in the Summer of 2009. The limestone finish located on the lower 1/3rd of the dome was removed and set aside for re-use. The limestone finish located on the rising wall section of the stepped perimeter was also set aside for re-use. The red copper standing seam roof on the horizontal section of the stepped areas was sent to be recycled. The existing 4 ply hot asphalt waterproofing membrane was mechanically removed down to a clean, sound concrete substrate.

After the removal and surface preparation, Kempertec® EP-Primer was applied to all surfaces and allowed to cure. Once the primer was cured, Kemperol® 2K-PUR resin system waterproofing membrane was installed onto all surfaces. The full fleece reinforcement ensured a consistent membrane thickness of 70 mils over the entire surface. The limestone was then re-installed. A new red copper standing seam roof was installed on the horizontal surfaces of the stepped perimeter. A 25 Year No Dollar Limit Warranty was issued by Kemper System. The service life of the new membrane is expected to exceed 50 years. to preserve the building as well as the knowledge that resides in the MIT library.

Kemper System - over 50 years of experience in cold liquid-applied resins

Kemper System is a leading manufacturer of liquid-applied waterproofing and roofing systems for high profile applications. Kemper System fleece-reinforced, cold-applied resin membranes reliably protect the most renowned buildings such as the Empire State Building, the Freedom Tower, Fenway Park, Madison Square Garden, Falling Water, Woodruff High Museum of Art. Building Owners and property managers base their trust on a proven performance of over 50 years. Kemper System focuses on sustainable products with renewable resources and solvent-free applications.

Building Owner:

MIT, DOME Bldg. #10

Contractor:

Phoenix Bay State Construction

Year of completion:

2011

Surface size:

7,000 sq. ft.