

Florida Polytechnic University – Lakeland, FL, USA

Project overview

MAPEI self-leveling and moisture-mitigation products were used to prepare the second-floor concrete surface of the Innovation, Science and Technology Building at Florida Polytechnic University. In addition, benchmarking studies of *Ultraplan® 1 Plus* self-leveler and *Planiseal® MVR* epoxy coating for moisture reduction were carried out by an independent engineering service for a quality-control process.



Project information

Project category: Institutional

Period of construction: 2014

Year of MAPEI involvement: 2014

MAPEI coordinators: Amy Neumann and Darin Weisemiller

Project owner: Florida Polytechnic University

MAPEI distributor: Specified Surfaces

Original designer: Santiago Calatrava

Architects: Santiago Calatrava and Alfonso Architects

General contractor: Skanska

Surface-preparation contractor: Specialty Solutions, Inc.

Project manager: Bill Greene – Specialty Solutions, Inc.

Photographer: Amy Neumann

Project size: 10,500 sq. ft. (975 m²)



MAPEI products used

- *Planiseal MVR*
- *Primer T™*
- *Ultraplan 1 Plus*



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MAPEI prepares the surfaces for university's Innovation, Science and Technology Building

Started as a university of engineering and technology, Florida Polytechnic University is designed to be different so that graduates possess the talent and job-ready skills to stand out from the crowd. While other top engineering universities have centers of innovation, Florida Poly was established on April 20, 2012, as a wholly innovative university dedicated to the principle that innovation occurs when research and creativity are applied to real-world challenges. Florida's only public university dedicated to science, technology, engineering and mathematics (STEM) was created to be both a rigorous academic institution and a powerful resource for high-tech industries.

The university's Innovation, Science and Technology Building was designed by famed architect Santiago Calatrava. Christopher Hawthorne wrote about the design in *Architect* magazine's October 2014 issue: "In plan, the building is straightforward and elegant. Two double-loaded corridors lined in polished concrete, one at ground level and another on the second floor, curve in a gentle oval arc around the building. The lower one opens onto classrooms on its outer edge and to studio space, labs, and an auditorium in the center of the building. Upstairs, the corridor has faculty and administrative offices on the outside and, to the inside, some small conferences and study rooms as

well as the building's functional and architectural heart: a multipurpose library and study space with a soaring ceiling that is known as 'the Commons'. Two grand staircases, one on each end of the oval, lead to the upper floor." Light is provided to both levels by 94 robotic louvers on the roof that move to accommodate changing sunlight patterns.

MAPEI products on the jobsite

Before installation of a wood floor in the center of the second-floor space, a program was undertaken by MAPEI distributor Specified Surfaces to establish a quality-control process for moisture reduction and surface leveling on concrete slabs. The Florida Polytechnic project served as a benchmark of the process.

Universal Engineering Sciences performed tensile and flatness testing of the second-floor concrete deck in order to evaluate the performance characteristics of the installation of **Planiseal MVR** epoxy coating for moisture mitigation, plus **Primer T** and **Ultraplan 1 Plus** for leveling.

The tensile testing was performed before slab treatment to evaluate the tensile strength to the concrete substrate.

Existing floor-flatness and floor-levelness values were also obtained at this time. After the moisture-mitigation and leveling treatments, the same tests were performed to evaluate the moisture-mitigation component for bond strength as well as improvements in floor flatness and levelness.

The use of **Ultraplan 1 Plus** showed an improvement of 39% in flatness and 16.5% in levelness of the substrate. The field-test results of the bond strength demonstrated that the bond strength of **Planiseal MVR** was greater on diamond-ground concrete than on shotblasted concrete, leading MAPEI to make adjustments to its surface-preparation requirements for the company's ASTM F3010-13 compliant membranes.

Specified Surfaces has used these benchmark results as the basis for specifications for subsequent moisture-mitigation/self-leveling projects that they have undertaken.

With architects, contractors, installers, distributors and manufacturers working together, the construction industry can use science and technology to supply innovative products for innovative projects.

