

General Description:

- **Location:**
Grand Rapids, Michigan
- **Profile:**
Hospital Campus
- **Project:**
Building Envelope Program, Evaluation

Services Provided:

- Evaluation
- Green Roof / Plaza Deck
- Structural Review

Challenge:

- Building Location
- Sterile Environment
- Design Development

Solution:

- Field Scanning
- Structural Analysis
- Quality Assurance Testing



Spectrum Health Blodgett Campus

Spectrum Health, the largest healthcare provider in South-west Michigan and the largest employer in Grand Rapids, needed an assessment of their Blodgett Campus. Located in the center of the Blodgett Campus is the main courtyard and lies directly over the Hospitals Central Services, which provides the sterilization and orga-

included in a campus Building Envelope Program, previously performed by StructureTec. This resulted in a recommendation for a full system replacement of the plaza waterproofing.

With the project being in a locked location, highly visible to the public eye, and adjacent to patient rooms there were several difficulties that



Plaza Waterproofing / Green Technology

the StructureTec team was faced with. First, the sterile environment below the area of work was to remain in operation, uninterrupted during construction even though StructureTec was removing the entire existing waterproofing system. Also, Spectrum Health needed

nization of surgical instruments for the entire campus. Not long after completion of the building's construction was there leakage experienced at the ground level and below-grade areas of the courtyard. Multiple repair projects have since been performed over the years with limited, short-term success and with leakage always returning. The critical, sanitary and sterile nature of the area below the courtyard forced the hospital to install an elaborate labyrinth of catch pans and drainage piping, beneath the concrete deck, to capture and redirect the leakage. The area was

them to develop the design of a new courtyard/ healing garden, which had structural capacity concerns after multiple drawings of the original construction were discovered.

To overcome these challenges StructureTec partnered with a landscape architect to provide design services for the new healing garden layout. In order to address the structural concerns StructureTec first had to determine the as-built construction. This information was critical in determining the capacity of the deck which then directly impacted the amount of materials and design of the healing garden that can



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be placed on the deck. To do this a combination of field scanning technologies and methods were used to locate and size the reinforcement steel. A structural analysis was then completed and capacity guidelines were provided to the owner and landscape architect.

To address the building-locked nature of the project all demolition debris was removed in covered, wheeled carts. Disruption to interior operations was limited by the transportation of the debris and new materials being restricted to typical downtimes for the hospital, early morning hours and early evening hours.

To minimize the disruptions of the demolition process saw-cutting and other sectioning techniques were used in place of typical jack-hammering/impact methods. Not only did this reduce the noise levels for adjacent patient rooms, it also limited the disruption and potential impact to the central services operations below.

As a result of the structural capacity limits new, light weight soil blends and large foam blocks were employed to reduce the weight of the materials with minimal impact to the healing garden design.

By employing a duel layer system, during the

replacement of the waterproofing system, the sensitive nature of the operations below were addressed. The first layer of the system was a squeegee applied rubberized liquid that could be applied as soon as the concrete was cleaned after removal of the old BUR membrane. This initial layer also served as a primer and surface leveler for the flexible, self-adhering membrane (single-ply). The entire deck was prepared with this initial layer allowing the primary membrane to be installed in the largest/monolithic method possible.

This duel layer system minimizes the detailing required, which provides less opportunity for future leakage. In addition, no penetrations were allowed through the waterproofing system for the landscaping.

As a final quality assurance check, the entire area (75' x 75') was submerged under 2-inches of water for 24 hours. Minor repairs were required at 42 seam locations, even though no leakage was experienced below. A 2nd, 24 hour water test was then completed with no leakage.

The Healing Garden is currently one of the highlight features of the hospital's Blodgett Campus, which serves as a beautiful oasis for patients looking for serenity. ■



Installation of duel layer system during construction phase

FEATURES

Scientific approach to problem-solving

Developed saw-cutting and sectioning techniques

Employed a duel layer waterproofing system

Used light weight soil blends and large foam blocks

BENEFITS

Eliminated the cause of the problem, not just effect

Minimized disruptions of the demolition process

Provided less opportunity for future leakage

Reduced weight of the materials with minimal impact