

CONCRETE CONSTRUCTION

February 2006

50
ANNIVERSARY

hanley wood

The World of Concrete

Striving for the Perfect Slab

Also: How to moisture
test concrete floors

Achieving quality in
suspended slabs

www.concreteconstruction.net

plastic shrinkage and settlement cracks, allowing the concrete to develop to its optimum long-term integrity. The steel fibers reduce drying shrinkage cracking that may occur over time, resulting in redistribution of stresses to larger areas of the concrete and more tightly held cracks. And because the fibers were distributed evenly throughout the concrete, this multi-dimensional secondary reinforcement is ensured to always be positioned correctly, providing 100% positive placement.

While performance is key in composite metal deck construction, the Novomesh 850 fibers minimized other challenges that the contractor faced while working on the elevated floors of the Census Bureau project—worker safety and timeline. Fibers eliminated the hazards inherent in cutting and placing reinforcement as well as tripping hazards which are a major concern in elevated construction. Novomesh 850 was simply added directly to the concrete mix at the onsite Superior Concrete batch plant requiring no extra installation. Nothing had to be hoisted or lifted; the fibers were simply pumped directly onto the decking as a component of the concrete mix and finished with standard techniques. And because there was no extra installation, Skanska was able to cut several days from its placement schedule, speeding up the overall construction timeline of the Census Bureau project.

The first phase of the Census Bureau project will be completed in

Project Participants

Project: U.S. Census Bureau, Suitland, Md.
General Contractor: Skanska USA, Houston

Structural Engineer: Walter P. Moore, Houston

Concrete: Superior Concrete Materials, Inc., a U.S. Concrete company, Lanham, Md.

Secondary Reinforcement: SI Concrete Systems, Chattanooga, Tenn.

Spring 2006, with employees scheduled to move into the first building by September 2006. Phase two of construction will include an additional 729,722 square feet and have 1506 parking spaces. Occupation of the second portion is set for March 2007.

Migutan provides joint sealing solutions

Deck expansion joint sealing is critical to parking structure performance and longevity. Even more critical than watertightness of joints is parking deck design that incorporates a structural slab waterproofing membrane under a wear-course or topping slab. Until the emergence of a watertight, purpose-designed system about 20 years ago, designers were left with the ineffective option of a buried looped membrane “band-aid” approach to address these critical joints.

For years, attempts have been made to seal expansion joints in asphalt-topped parking decks without tying the joint into the waterproofing on the structural slab. Over time failure usually occurs at the transition between the joint and membrane. Buried-membrane options offered today are merely a throw-back to band-aid solutions (buried-EPDM-membrane type products). But effective, watertight joint systems do exist. Specifically engineered to address the short-

comings of buried, sheet-membrane joint treatments that pre-date it by decades, these systems are all descendants of a product called MIGUTAN by EMSEAL.

Split-slab parking or plaza deck waterproofing involves a waterproofing membrane applied to a structural deck covered with a porous topping. When expansion joints are necessary, they must be waterproofed using a method and material that accommodates movement while reducing or eliminating the stresses that will cause a buried membrane to fail.

The joint system must also have a static integration with the deck waterproofing membrane. MIGUTAN provides a heavy-duty gland to accommodate movement at the joint that is integrated with the deck waterproofing tie-in but that is accessible for repair, if necessary, without disrupting the topping system.

In the “buried band-aid” approach, a strip of reinforced membrane is placed over joints and adhered to the parking deck or to the waterproofing deck membrane. The



problem with this is that the accumulation of water combined with freeze/thaw cycles, flex fatigue from movement, and abrasion between topping and buried components results in the inevitable rupture of the buried "band-aid." Repair then involves removing the entire surrounding top-

ping system and all adjacent landscaping to expose the membrane, usually rendering the space below unusable for the duration of the repair or replacement.

The MIGUTAN system is a combination of corrosion-free aluminum and stainless steel mounting rail components mechanically secured to the structural slab to provide a positive anchoring of the waterproofing components. The metal mounting compo-



Mounting rails are lowered into position into an epoxy leveling bed.

nents ensure that tension, compression, torsion, and other forces that result from joint movement are isolated from the critical connection of the deck waterproofing membrane to the side flashing sheets of the joint system. Its waterproofing components are all state-of-the-art thermoplastic, rubber materials. They can be heat-welded in the factory to address changes in plane and direction or also welded in the field with simple hot-iron tools.

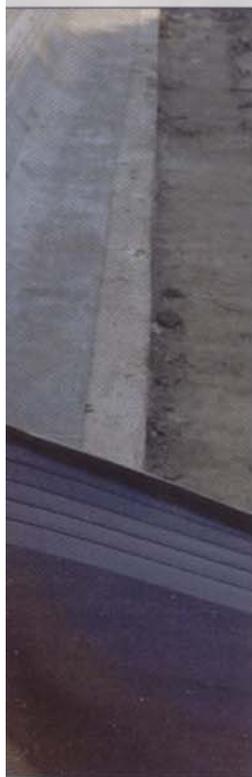
EMSEAL's MIGUTAN has an unrivaled track record in over 20 years of waterproofing plaza and split-slab deck, parking decks, stadium concourse, garden roof, and roadway expansion joints. The reputation for properly engineering these systems for watertightness, combined with the workmanship of trained contractors, and backed by manufacturer and installer commitment to addressing problems should they arise, are the cornerstones of the product's success.

The largest installation of this system on a single project is Atlantic Station in Atlanta. "The MIGUTAN System was the perfect heavy-duty solution for this monster elevated parking deck/retail/condo project," says Naren Patel, division manager

of Alpha Insulation & Waterproofing Company, Marietta, Ga. "The outcome was extremely successful. The joint still looks brand new. All of the transitions from road to sidewalk are holding up very well. The system has given the owner a uniform watertight parking deck that is capable of withstanding expansion/contraction movement from weather and also heavy traffic for years to come. The technical support provided by Emseal was terrific. This was an ideal model for similar projects across the country."

Band-aid joint treatments were historically the only choice available to designers and therefore were widely specified in years past. The existence of a market for better approaches is the direct consequence of owners having to spend a fortune replacing failed joints.

John Ruskin, a nineteenth-century commentator on architecture among other things warned: "It is unwise to pay too much, but it's worse to pay too little. When you pay too much you lose a little money—that is all. When you pay too little you sometimes lose everything, because the thing you bought was incapable of doing the things it was bought to do."



MIGUTAN system components—retainer legs installed onto structural slab, side flashing sheets, and movement gland—before installation of stainless steel retaining caps and before integration into the deck waterproofing membrane.