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Earthwork Risks & Rewards

Project Specs in Concrete Repair
Deciphering Curtain Wall Durability
Concrete Pavement Incompatibility



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Earthwork bidding is influenced by factors ranging from site constraints and local regulations to trucking availability and contract terms. Success is most readily achieved when documentation is comprehensive without shifting risk to the bidder-contractor.

Doug Brinley, CSI, CDT, CCS, AIA, LEED AP

**36 Project Specifications in Concrete Repair—
Methodology or mythology?**

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Supplementary cementing materials (SCMs) and chemical admixtures have made concrete pavement mixtures increasingly complex. This has raised the potential for incompatibility—interactions between ingredients can indirectly lead to reduced strength and durability.

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54 Random Beauty—Understanding metallic paints
Due to their unique appearance, metallic coatings can add visual vibrancy to a project. However, to ensure the appropriate effect is achieved, design professionals should understand how visible light reflects off the metallic flakes, along with other factors.

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**70 Testing Curtain Wall Durability—A new perspective
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A curtain wall's long-term structural safety and watertightness are among its crucial attributes. Test methods and procedures—including new research by the authors—can assist in developing a durability rating system for gauging the sealing properties of these building envelope assemblies.

*Charles Chang, Jong J. Lou, PhD, PE, Ali M. Memari, PhD, PE,
and Raymond Ting, PhD, PE*

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The First NE Transfer and Recycling Station (Shoreline, Washington) project involved construction of a waste management facility on a brownfield site. Successful earthwork coordination necessitated the specifier separate risks into discrete elements characterized by the basis for measurement, along with natural, artificial, and human endeavor contingencies.

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*Photo courtesy Soundview Aerial Photography
(www.soundviewaerial.com)*

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Opening the Door to Universal Access



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With a larger percent of the population aging and facing declining mobility, providing universal accessibility is becoming increasingly important for building owners. Ever since the *Americans with Disabilities Act (ADA)* came into effect, specifiers, architects, engineers, and project managers have had to comply with the regulation while maximizing architectural appeal and function. *ADA* demands an intentional or “knowing-act” switch or button be mounted no higher than 1219.2 mm (48 in.) from the finished floor. Unfortunately, many of the efforts to satisfy this requirement have been less than optimal.

When placed too high or too low, many traditional door switches can be difficult or impossible for wheelchair users who lack sufficient use of their limbs. Further, switch locations can be problematic for a child in a wheelchair, who may have to lean out to reach a high switch or angle a limb just right to trip a low one. These switches can also be difficult for users carrying large items or pushing gurneys or strollers.

Easy, universal door access is becoming a vital issue in commercial and institutional industries. In healthcare, for instance, door access is not only an issue for patients,

residents, and visitors, but also for staff, says Jeanette Peter, a certified registered nurse anesthetist (CRNA) at a Level I trauma center in Southern California.

“Healthcare facilities tend to have heavy fire doors designed to isolate areas,” she says. “These can require significant upper body strength to open. Even when automatic push plates are added, the placement of these can be difficult to access for those with mobility, balance, or flexibility issues.”

When healthcare providers repeatedly open doors that require awkward body mechanics, they can also be at risk of straining or injuring themselves. This is particularly true when moving patients or heavy equipment such as beds or carts, which can make opening doors more difficult.

“Wheeling a patient down the hall on a heavy bed and leaning over it to open the door takes a toll,” says Peter. “When I hurt my right hand, I had to do everything left-handed. I’ve stopped opening doors with my hands and try to use my hips whenever possible.”

Some newer styles of automatic door switches can provide the design flexibility to efficiently fulfill any new installation or retrofit project, while providing access for those with any level of mobility.

Closing the gap in access

Input from architects has led automatic door equipment manufacturers to develop new styles of products that can solve some of the problems with high/low switches. For example, the device pictured at right has long, pillar-like dimensions with a fully actionable center column—this switch can be activated and allow the door to be opened from any height or angle of approach. When mounted 76.2 mm (3 in.) from the floor, as recommended by some wheelchair and scooter manufacturers, such products not only comply with ADA guidelines, but also provide unconditional door access.

Those in wheelchairs can activate these types of switches by touching them with their footrest, while others can bump it at any level with part of their body or using a cane, walker, or gurney. These switches—and others following similar design principles—can also save doors from the dings, chips, and scratches received when carts are banged into them trying to enter or exit.

Maggie Villarreal, an administrator at an assisted living facility in Torrance, California, says this hardware can have an additional benefit.

“Preserving the independence and quality of life of residents as long as possible is the goal of assisted living facilities,” she explains. “To this end, giving unconditional door access to anyone, whether they’re mobility challenged or simply have their hands full, is vital.”

Indiana University began automating doors to comply with ADA standards a number of years ago. Initially, they provided two pushbuttons—one at standard height and a second one about 178 mm (7 in.) off the ground for a high/low configuration. This allowed those in wheelchairs to use their footpads to operate the door. It was also helpful when people were carrying objects and did not have their hands free. However, there were still challenges with the setup, says David Walter, an architect with the university and part of the team responsible for the design, construction, and remodeling of buildings across multiple campuses.

“The high/low switches still didn’t fully accommodate our campus population, and they required us to install two switch boxes with two sets of wires running back to the controller,” he says. “Sometimes straps, backpacks, and coat pockets would catch. Clothing would get ripped or the push buttons and electrical boxes would get damaged.”

In addition to reducing the need for two switch boxes, tapered product models can have other functional values—they can more easily deflect hard-hitting carts and

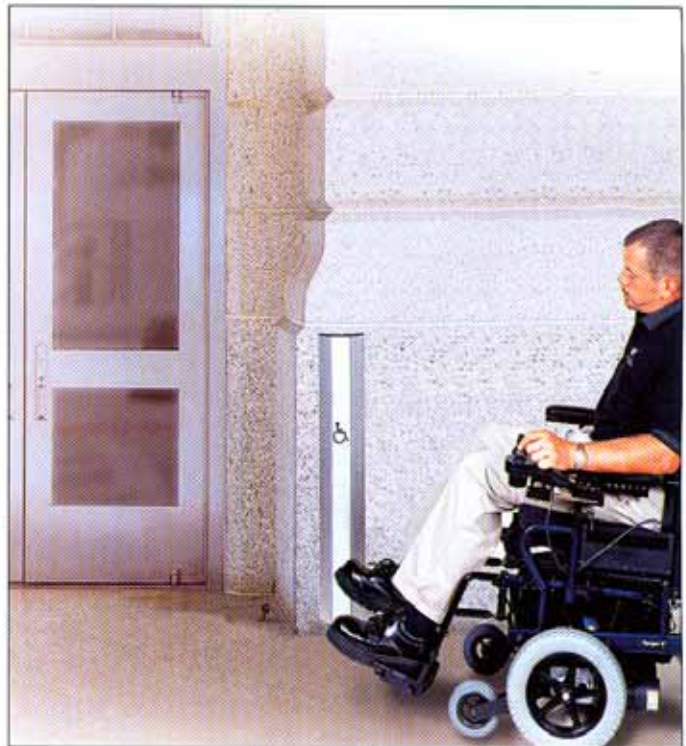


Photo courtesy Wixik

When placing switches for automatic doors, location is key—too high or low can mean reduced accessibility. The dimensions of some newer products can more effectively accommodate those in wheelchairs and/or those whose hands are full.

conveyances, as their dimensions reduce the concentration of force along an edge.

“Because the switch is beveled with no corners or sharp edges, it is safer than typical switches and there’s nothing to be caught on,” Walter adds. “It requires just one electrical box, not two, and is impervious to weather. We use it inside or out equally well on a range of buildings from academic, administrative, and residence halls to athletic facilities and parking garages.”

Newer styles of switches should possess the ability to be mounted on both walls or commercial-height bollards for aesthetic and practical reasons. The opportunity to place the switch, an intercom, and a card reader at 90 degrees to each other on a single bollard can help cut clutter and expense, while easing entry for employees requiring after-hours building access.

Whether new construction or a retrofit, installation of door switches can be simplified when there are flexible connection options. For example, surface wiring with a 12.7-mm (0.5-in.) conduit can speed retrofit applications, while wireless systems make cutting materials like terrazzo unnecessary. Mounting access to both single- and double-gang flush electric boxes also increases flexibility, as it eliminates the time and expense of adapting to existing box conditions in retrofits. ♡