

## Cross Slope—It's Not About Skiing

by Mark A. Goska, AIA, MBA

Imagine your department just completed construction of a brand-new facility on your campus. Everyone is excited about the project's completion and the grand opening of the facility for use. You're standing at the front of the building, admiring how beautiful it looks and patting yourself on the back for a job well done. Then you notice a student in a wheelchair traveling along the newly constructed sidewalk. As the student passes by, you notice he appears to be struggling to keep his balance as the wheelchair appears to be leaning over one side. You think to yourself, funny, the sidewalk looks flat, but it isn't. What happened?

The situation is not uncommon and involves compliance with the Americans with Disabilities Act (ADA). While most of us are familiar with running slope—the slope that is parallel to the direction of travel, in fact it is cross slope—the slope that is perpendicular to the direction of travel, which is probably the source of more challenges with ADA compliance. Why is cross slope such an issue of concern? Because it impacts the very balance of a wheelchair and the safety of the person using it.

A cross slope that is too steep (greater than a slope of 1:50, or 1 inch in 50 inch) changes the balance of a wheelchair and the user by moving the balance of the weight from the center to the downward side of the chair. In order to compensate for this imbalance, the user of the wheelchair must lean to in the uphill direction.

---

**Mark Goska is the health facilities architect at the University of Alabama at Birmingham. E-mail him at [mgoska@fab.uab.edu](mailto:mgoska@fab.uab.edu). This is his first article for Facilities Manager.**



This is fine if you have the mobility to lean, but what about the users who have little if any mobility to move or lean? They are forced to lean in whatever direction the slope dictates and hope that they will successfully traverse the sidewalk without falling over. When thinking about the impact of cross slope and how it impacts the balance of people and vehicles and equipment with wheels, I am

reminded of the recent study that the government study conducted with farm tractors and the need to either install a roll bar or a cab in order to protect the farmer from injury if the tractor rolled over. I still remember seeing examples of tractors plowing the cross slope of a field toppling over because the balance of the vehicle was unstable due to the slope. This is the same situation with wheelchairs.

There are many reasons these problems with cross slope occur: for example, if the natural terrain of the site has a slope greater than 1:50, or if the design professional does not include cross slope requirements in their sidewalk design, or if the contractor fails to shoot the grades before installing the walks to make sure that the slope is within ADA compliance. Another reason for this oversight that many design professionals stop the scope of their work at the property



**This cross slope is too steep and is an example of what happens when finish grades and spot elevations are not checked and confirmed by the design professional during construction.**



***This cross slope is within the requirements of ADA.***

line and fail to include the public access ways in their ADA study. This oversight may be due to the fact that we as facilities managers do not instruct the design professional to confirm that the accessible route meets the requirements of ADA.

Why is the accessible route so important when designing a project? The Americans with Disabilities Act Accessibility Guidelines (ADAAG) defines Accessible Route as, "A continuous unobstructed path connecting all accessible elements and spaces of a building or facility. Interior accessible routes may include corridors, floors, ramps, elevators, lifts, and clear floor space at fixtures. Exterior assessable routes may include parking access aisles, curb ramps, crosswalks at vehicular ways, walks, ramps, and lifts." This is a lot to look at when determining ADA compliance. In some cases, the project is such that all the components that make up the accessible route are contained within the project site. However, in many instances where parking is spread throughout the campus, determining that the accessible route is in compliance becomes more of a challenge.

So, what can we as facilities managers do to help ensure that cross slope is addressed when undertaking a project? First of all, we need to

adjust the scope of the project to extend beyond the property line of the project site. How far beyond may be limited to the adjacent public sidewalks, curb ramps, and cross walks, or it may start at the parking lot if designated parking for the proj-

ect has been identified. Secondly, the design professional should be instructed to include slope requirements for running slope and cross slope within the construction/bidding documents. This should be done using both spot elevations as well as grading contours.

The design professional should clearly identify the accessible route early in the design to help insure that the components that make up this route are in compliance with ADA. At least on accessible route is required for ADA compliance. Facilities managers should pay close attention to the site plans when conducting their review of the construction documents to make sure that the design professional(s) have included both spot elevations and grading contours along the designated accessible route(s).

Once construction activities are underway, it is important to make sure that the contractor installs the

## **Pick the Low Hanging Fruit**

- Typical Cleaning Cost: Over \$2.00 per Square Foot
- Typical Setup Cost: \$0.005 - \$0.02 per Square Foot
- Typical Productivity Gains: 4% - 14%
- Five Year ROI: 1,900% - 27,000%
- Typical Conclusions: No Brainer to NO BRAINER

**Cleaning Management Software™**  
for custodial workforce optimization

**[www.contractron.com](http://www.contractron.com)**

elements of the accessible route as required by the contract documents. The contractor should be required to shoot the grades and spot elevations and consideration should be given to engage the project civil engineer and/or landscape architect to shoot the grades and spot elevations along the accessible independently route independently of the contractor to ensure the route is in compliance.

Taking these precautions should help to make sure that the accessible route has been installed correctly and will help eliminate the cost and time delay of having to remove and reinstall a compliant route and reduce the exposure of legal action to the institution.

By its very nature, cross slope is a component of ADA compliance that probably receives little attention, but could be the biggest cause of for



*This project, which is currently under construction, is an example of a public sidewalk that is not in compliance with ADA requirements and the bounds of the new project appear to stop at the property. Fortunately, this condition was recognized during design review, prior to bid/award and the demolition/reinstallation of the public sidewalk was included in the overall project scope.*

concern and sleepless nights for facilities managers when undertaking a new building project. By being aware of the impact to the users of the facility and the legal exposure to the institution that an improper cross slope can cause, and by engaging the design professional at the beginning of a project, one can go a long way in helping to ensure that the project will be a successful one when completed. ¶

## DRITHERM®

**Underground  
Pipe Insulation  
Corrosion  
Protection**

- Over 300 miles of Piping Protection Since 1967
- Closed Cell - 100% Hydrophobic Product
- Creates Dry, Stable, System Environment
- Ideal for New Piping Systems/Repairs/Tanks
- Engineered Design for System Reliability

 **DRITHERM  
INTERNATIONAL INC.**

339 Changebridge Rd. - Suite 1B • Pine Brook, NJ 07058  
Phone: (973) 808-2255 • (800) 343-4188  
[www.dritherm.com](http://www.dritherm.com)

### **Advertise Job Openings on APPA's Job Express**

Find the facilities professional with the right tools on Job Express—APPA's premier job-listing service, which features job descriptions for all levels within the facilities department. Eight-week posting rates are:

**Members:** \$510 for up to 500 words and \$730 for 501-800 words.

**Nonmembers:** \$650 for up to 500 words and \$870 for 501-800 words.

For details, visit:

[www.appa.org/jobexpress](http://www.appa.org/jobexpress)