HOW TO REMOVE SIDEWALK TRIP HAZARDS ON TIGHT BUDGETS

Managing ADA Compliance, Risk, and Budget

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How to Remove Sidewalk Trip Hazards on Tight Budgets

Trip hazards on public sidewalks pose liability risks to cities and municipalities.

How do city managers, public works professionals and property owners keep sidewalks safe and accessible? What are the best ways to manage liability risks, budgets, and comply with ADA? These are common challenges facing city managers and property owners in California and across the country.

The good news is there are effective ways to remove trip hazards on concrete sidewalks and stretch budgets.

The goal of this special report is to explain cost-effective methods to remove trip hazards on concrete sidewalks. This report also includes a trip hazard checklist.

Who Is Responsible for Accessible and Safe Public Sidewalks?

Cities are responsible for managing accessible and safe public sidewalks and rights-of-way.

Holding easement rights, cities and public municipalities plan, specify, and oversee standards for public sidewalks. Although cities typically require property owners to pay or share in the costs of sidewalk repair and maintenance, cities are responsible for sidewalk accessibility and safety.

In 2003, the U.S. Supreme Court underscored cities’ responsibilities for sidewalks, in Barden versus the City of Sacramento. The case established a nationwide precedent, holding cities accountable for providing accessible public sidewalks.¹

In addition, on December 22, 2009, in an unprecedented federal court settlement in Oakland, California, the California Department of Transportation (Caltran) agreed to spend $1.1 billion over 30 years to make its California sidewalks accessible and safe.

¹ Disability Rights Advocates, Barden vs. Sacramento
http://www.dralegal.org/cases/public_entities/barden_v_sacramento.php
Because of the court rulings, city laws, charters, and codes claiming immunity from sidewalk injury, liability, and litigation are now more tenuous. Recently, the Michigan Supreme Court excluded highways, bridges, and sidewalks from government immunity to liability litigation.\(^2\)

Failure to inspect and repair trip hazards leads to lawsuits. Sidewalk liability claims are a financial burden on budgets.

Across the nation, in small, medium and large cities, trip and fall litigation is significant. The City of Los Angeles pays out about $4 million a year to settle trip and fall cases. At its peak, New York City paid $60 million in trip and fall liability claims in one year. In Barden versus the City of Sacramento, the plaintiffs won $80,000 in settlement awards, and the court ruled the City of Sacramento set aside 20% of its annual transport budget for 30 years to make public sidewalks accessible and safe.

About 20% of Americans have disabilities. Trip hazards challenge all citizens, but especially the old, young, disabled and those with canes, crutches, wheelchairs, and gait. Today’s litigious culture and abundance of accident attorneys increases the odds of lawsuits, raising liability risk when trip hazards exist on public sidewalks and rights-of-way.

Cities can reduce sidewalk risk by reducing trip hazards. Most trip and fall accidents are preventable.

**The Standard - Americans with Disabilities Act**

The U.S. Department of Justice uses the Americans with Disabilities Act (ADA) as the standard for public sidewalk accessibility and safety.

In the code of federal regulations (28 CFR Part 36), the ADA Standards for Accessible Design specifies a trip hazard as any vertical height of ¼ inch or more.\(^3\)

The code also specifies slope standards for vertical height differentials.

- a 1: 2 slope for a change in levels of ¼ to ½ inch
- a 1:8 to 1:10 slope for vertical heights of up to 3 inches

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\(^2\) Michigan Proactive Risk Control Solutions for Public Agencies – Sidewalk Liability Improvement Program


\(^3\) ADA Standards for Accessible Design

http://www.ada.gov/reg3a.html#Anchor-42424
To reduce risks, cities and property owners should remove trip hazards a ¼-inch or higher.

**Methods of Trip Hazard Removal**

There are four common methods to remove trip hazards.

1. Saw cutting
2. Grinding
3. Patching and ramping
4. Removing and replacing concrete slabs

Let’s examine each method and their impact on budgets and ADA compliance.

**Saw Cutting**

Saw cutting removes trip hazards up to two and a half inches in height.

Saw cutting minimizes concrete damage, as it cuts rather than grinds or pounds concrete. Its precision removes trip hazards in difficult to reach places, such as trip hazards adjoining fences, lampposts, walls, or trees. Because of its precision and quality, saw cutting complies with ADA slope standards. In addition, it meets OSHA recommendations for slip resistance, and uses dust abatement equipment. City professionals and citizens often praise the neat and clean appearance of saw cut sidewalks.

Saw cutting is cost competitive with grinding services offered by external vendors. And, it is about 10 times less expensive than removal and replacement of concrete. Saw cutting can extend the life of sidewalks that otherwise might be prematurely replaced.

On the other hand, patented saw cutting machinery designed for concrete sidewalk trip removal cannot be purchased for internal use. It is available as a service.

**Grinding**

Grinding is a common method to remove trip hazards of one inch or less on concrete sidewalks.

Although it may be possible to grind heights up to two inches in ideal conditions, grinding above heights of one inch can be problematic. Grinding machinery with rotary scarifiers or pounders can gouge, pit, chip, and crack concrete sidewalks, weakening sidewalk slabs and shortening their lifespan. Because of its issues, some city engineers do not allow grinding of heights over one inch.
Also, grinding cannot remove trip hazards in difficult to reach areas where trip hazards adjoin lampposts, trees, walls, and fences. Crosscuts of two adjoining slabs can be difficult with grinding, depending on hazard height differentials.

In difficult-to-reach areas, achieving ADA compliance for removal and slopes is tricky. Sidewalk appearance of grinding can be unsightly, if performed by an inexperienced grinder or when using the wrong grinding equipment.

Grinding using external vendors is roughly the same cost as saw cutting, although grinding tall and lengthy concrete trip hazards can be more time-consuming and costly than saw cutting.

**Patching and Ramping**

Patching pours concrete or asphalt on trip hazards. It is a fast, but temporary fix. Temperature changes can cause patches to expand and contract, exposing trip hazards again. Patches are prone to chipping and cracking. ADA slope compliance is questionable with heights greater than a half inch. Also, asphalt on concrete looks unsightly.

Because patching is temporary, causing repeated work on the same trip hazard, it adds to repair costs in the long run, eating away budgets.

**Removing and Replacing Concrete Sidewalks**

When trip hazards are higher than two and a half inches, replacement of sidewalks removes trip hazards. Sidewalk replacement is ADA compliant and looks great.

However, removing and replacing sidewalks is labor, time, and capital-intensive. Cities need to shut down sidewalks for several days. Often tree roots require inspection and special handling, including health checks, root pruning or barriers. Replacing one or two concrete slabs (5 or 10 feet) often does not make economic sense, tying up personnel, equipment, capital, and time. Planning cycles are longer for replacement than cutting or grinding, using capital budgets as opposed to maintenance budgets.

Removing and replacing sidewalks is costly. It can cost 10 times more than saw cutting or grinding.

**Managing Trip Hazards, Risks, and Budgets**

What are the best ways to manage ADA compliance, liability risks and budgets?

- Saw cut sidewalk trip hazards 2 ½ inches or less
- Remove and replace sidewalks with trip hazards above 2 ½ inches
Repair Method by Trip Hazard Severity – Height

<table>
<thead>
<tr>
<th>Remove &amp; Replace</th>
<th>Saw Cut</th>
<th>Saw Cut or Grind</th>
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Inches - not to scale

**Saw Cutting**

*Saw cut 2 ½ inches or less.*

When trip hazards range between a quarter inch and two and a half inches, saw cutting is the most effective method to remove trip hazards. Here is why.

- Complies with ADA standards for removal and slopes
- Meets OSHA recommended standards for slip resistance
- Appears clean and neat
- Cuts precisely removing trip hazards in difficult-to-reach places
- Removes hazards quickly
- Stretches budgets
  - costs about 10 times less than removal and replacement
  - similar in cost to grinding, when using external vendors

In summary, with trip hazards 2 ½ inches or less, saw cutting stretches budgets, by lengthening the life of concrete sidewalks that might otherwise be replaced.

**Removing and Replacing**

*Replace 2 ½ inches or higher.*

When trip hazards are higher than two and a half inches on several adjoining slabs, the most practical way to be ADA compliant is removing the existing concrete and replacing it.

**The Importance of Regular Maintenance**

Regular and systematic removal of trip hazards prevents a growing backlog of trip hazards. Because Los Angeles did not keep pace with sidewalk repair, it faces
decades of repair backlog.\textsuperscript{4} Neglecting or delaying trip hazard removal adds to the backlog of repair, exposing cities to continued liability risk.

**Trip Hazard Removal Checklist**

When surveying trip hazards, use a checklist to classify hazard location, severity, method of removal, and ADA compliance.

- Location of trip hazards
  - Address
  - Priority
- Length of trip hazards
- Height of trip hazards by severity
  - ¼ inch to 2 ½ inches
  - Greater than 2 ½ inches on several adjoining slabs
- Removal of hazards in difficult-to-reach places
  - Fences
  - Trees
  - Posts
  - Curbs
  - Walls
  - Crosscuts of two adjoining slabs
- Potential concrete damage (grinding)
  - Gouging
  - Pitting
  - Cracking
  - Chipping
- Tree care and maintenance with sidewalk replacement
  - Tree health
  - Root pruning
  - Root barriers
  - Removal
- Inspection - ADA compliance
  - Removal of trip hazards a ¼ inch and higher
  - 1: 8 to 1:10 slope for 3 inch or less height differentials
- Inspection - OSHA slip resistance recommendations
  - 0.50 coefficient of friction
- Inspection - clean and neat appearance
- Cost-effective use of budget
  - Cost of saw cutting, grinding, patching or replacement
  - Internal use of personnel, equipment, time, and capital
  - External use of vendors

\textsuperscript{4} Shoup, Donald, UCLA, (Nov 19, 2009) *Putting Cities Back on Their Feet*
Three California City Case Studies - Saw Cutting Method

City of Piedmont

The City of Piedmont needed to remove trip hazards cost-effectively, while avoiding tree damage. Grinding damaged trees and replacement of concrete was expensive. The City of Piedmont turned to saw cutting to make sidewalks safe, preserve trees, and stretch their budget.

“Safety is of primary importance for the city, and we had to find a solution that was quick, cost-effective, and would not harm the city’s tree. We had evaluated other methods, which shut down sidewalks from public use, damaged our trees, or required costly and time-consuming work. The (saw cutting) method is an immediate and effective solution that really stretches the city’s tax dollars. We can use this method again years from now and still avoid the cost of tearing out and repouring the walkways.”

Dave Frankel, Public Works Supervisor, City of Piedmont, CA

City of Berkeley

The City of Berkeley needed to make sidewalks safe and look attractive. The City used saw cutting to remove trip hazards because of its attractive appearance. The City’s residents reacted favorably to results of saw cutting.

“In Berkeley, it’s important to us that our sidewalks are both safe and attractive. (The saw-cut) method is fast, clean and ADA compliant. The reaction of our residents was positive….” Vincent Chen, Sr. Engineer, City of Berkeley, CA

City of Rohnert Park

The City of Rohnert Park needed to remove trip hazards and reduce liability risks without shutting down sidewalks and spending large amounts of money and time on replacing concrete sidewalks. They decided to use saw cutting. They estimated replacement of concrete sidewalks would have cost 10 times more than cutting.

“I was very impressed with the saw-cutting process and the result. And the process was very fast and never shut down the sidewalks, compared to several months and closure of the sidewalks to lay new concrete.”

Brad Rosaschi, Public Works Supervisor, City of Rohnert Park, CA

Cities in California use saw cutting to remove trip hazards and make sidewalks safe, while stretching budgets, minimizing tree damage, and enhancing sidewalk appearance.
Precision Concrete Cutting –
Saw Cutting Trip Hazard Removal Service

Precision Concrete Cutting (PCC) removes trip hazards using saw cutting. The company has been repairing sidewalks and removing trip hazards since 1992. The Company pioneered saw cutting trip hazard removal, developing and holding six U.S. patents.

Hundreds of cities, municipalities, universities, industrial and commercial customers across the country use Precision Concrete Cutting services, including hundreds of customers in California.

Precision Concrete Cutting can help you cut trip hazards.

- Complies with ADA standards
- Meets or exceeds OSHA recommendations for slip resistance
- Appears clean and neat
- Cuts precisely
- Removes hazards in difficult-to-reach places
- Removes trip hazards quickly
- Is price competitive and stretches budgets
- Provides detailed trip hazard surveys and estimates
- Issues line item invoices by specific trip hazard for clear audit trails
- Promotes clean and green – OSHA dust containment systems
- Satisfies pedestrians and citizens

For a free demonstration, survey and estimate of saw cutting, please contact Precision Concrete Cutting - Los Angeles & Central Coast Region.

Call 1-888-881-9816 or e-mail gary@safesidewalks.com.

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