

Safe Sidewalks: Implementing a Systematic Maintenance Program

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A Short History of Sidewalks



Roman, Pompeii



Wooden, Michigan, 1915



Brick, Manhattan, KS



Concrete tiles, KCMO

Problems Underfoot...

- Sidewalks essential to urban transportation system
- Deterioration occurs gradually
- Repairs historically a low priority
- Confusion over responsibility
- Competition for limited funds
- Deferred maintenance backlog grows
- Potential hazards/ liability risk increase
- Injury claims and lawsuits expand



Challenges and Consequences

- Federal funding is not available ... many state and local **government agencies have severely constrained resources for monitoring, inspecting, and maintaining sidewalks**. Not only does this problem relate to walkability and accessibility, there are also **liability consequences related to poor, inadequate, or infrequent inspection and maintenance**.

Ref: A Guide for Maintaining Pedestrian Facilities for Enhanced Safety, FHWA , p.1

Typical Approaches

- Do nothing
- Limit to complaints only
 - temporary repairs only
 - few permanent repairs
- Neighborhood inspections
 - property owner pays to repair
 - city and owner share cost
 - city pays all cost
 - special assessment district



Will Our Sidewalks Look Like This?





Why Bother?

- Disabled and elderly need accessible, safe sidewalks
- Urban living trend by Millennials and Boomers
- Revitalization/stabilization of older neighborhoods
- Newer areas want sidewalks where none exist
- Recreation and environmental focus
- Shift away from auto-centric transportation modes



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Safe Sidewalks Vital



Reference: Sally Flocks President & CEO, PEDS ProWalk /ProBike 2010 Paying for Sidewalk Maintenance Whose Responsibility?

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Responsibility for Maintenance

“many city charters assign the owner of the adjacent property with responsibility for sidewalk upkeep. It is common for city charters to specify that the city cannot be held liable for any accident or injury due to sidewalk conditions.”

Ref: FHWA Designing Sidewalks and Trails for Access Ch. 4 - Sidewalk Design Guidelines

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Bad Sidewalks Breed Lawsuits



Reference: Sally Flocks President & CEO, PEDS ProWalk / ProBike
2010 Paying for Sidewalk Maintenance Whose Responsibility?



Actual Lawyers' Webpage

Sidewalk Slip-and-Fall Causes

Our law firm files lawsuits for clients injured as a result of:

Failure to repair concrete flag stones or curbs

Obstructions on the sidewalk

Lack of hazard warnings, cones or markers

Lack of clearing trash or debris on the sidewalk

Failure to clear ice and snow

Property owners in close proximity with the sidewalks are responsible for keeping sidewalks safe for pedestrians. It is also their responsibility to obtain liability insurance that covers slip- or trip-and-falls on the sidewalks in front of their buildings. **There may be a lawsuit against the City of ...for a slip and fall accident.**





A Plan of Action

GOAL: A comprehensive, systematic, proactive, equitable, efficient, economical sidewalk maintenance program.

Objectives:

- Complete city-wide inspection and inventory
- Criteria based on Pavement Distress Manual
- Not an ADA Compliance program (different factors)
- Single, accessible database, continually updated
- Well-defined repair process and schedule
- Hazard mitigation first priority
- Coordinate with other programs to maximize efficiency

A Simple Inventory Record



Inventory Record Contains:

- sidewalk ID #
- address (may approximate some)
- x/y coordinates
- length
- Width
- date constructed
- summary of inspections
- summary of work orders

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Criteria

Surface Defects



'D' Cracking



Linear Cracking



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Criteria

Settlement



Faults or Vertical Displacement



Gap



Joint spall



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Look For Other Correctable Sidewalk Maintenance Problems



Missing /broken utility box covers



Illegal or improper signage



guy wires



Non-permissible street furniture, receptacles, vending devices, etc.



encroachments



Overgrown vegetation

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A Simple Inspection Method

- City divided into mile-sections and quarter-mile quadrants
- Teams use programmable GPS devices
- Data downloaded every day
- Used Seasonal employees and Maintenance Workers on alternate duty



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New Technology for Field Data

- Tablets/ Pads
- Smart Phones
- Apps:
 - ArcPad
 - Collector
 - GeoODK



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Mapping The Field Data



2" + Faults

Mapping identifies the concentration and distribution of defects. This aids in developing efficient approaches to repairs.



Tabulating the Data

DEFECT	INITIAL	5 YEARS LATER
D CRACKING	591	1,176
FAULTS	27,716	21,474
GAP	1,152	1,250
JOINT SPALLING	2,548	1,916
LINEAR CRACKING	18,220	21,388
SETTLED	248	281
SURFACE DEFECT	3,286	5,902



Check and Re-Inspect

- Re-inspect prior to major contract work
 - street rehabilitation / reconstruction projects
 - selected Neighborhood sidewalk replacement program
- Re-inspect entire city on 7-year cycle.
 - 15% of sidewalk system annually
 - note sidewalks repaired or new installations since last inspection.

Keeping the Database Updated

Additions to the system:

- residential subdivisions
- commercial, industrial, utilities
- thoroughfare construction (CIP)
- neighborhood in-fill (by petition)
- residential Street Reconstruction
- institutional development



Repairs : Options to Choose From

- Priority to faults (trip hazards)
- Three-prong approach:
 - Temporary patch
 - Grinding
 - Full-slab replacement



Not Considered:

- mud-jacking
- horizontal-cutting
- slab-lifting



The Root of the Problem

- Tree roots the cause of most sidewalk displacements
- present challenges in making full repairs
- solutions include restrictions on type of trees and prohibiting planting in narrow right-of-way





Community Involvement

According to FHWA, "A public agency must maintain its walkways in an accessible condition, with only isolated or temporary interruptions in accessibility. 28 CFR §35.133.



AARP Volunteers inspect sidewalks in Charlotte, NC



Improving Accessibility

Effective maintenance programs are quick to identify conditions that can impede access and respond with repairs. **Assessing sidewalks for accessibility** should be an **integral part of maintenance survey** programs.



Ref: FHWA Designing Sidewalks and Trails for Access ,Ch. 4 - Sidewalk Design Guidelines



Sidewalk Maintenance and ADA

Maintenance projects do not automatically require simultaneous improvements to pedestrian accessibility under the ADA. ... maintenance activities provide an opportunity to move closer to meeting accessibility obligations.



Ref: A Guide for Maintaining Pedestrian Facilities for Enhanced Safety, FHWA , p.4

Atlanta Assesses Sidewalks

Cracked and crumbling sidewalks do not meet ADA-requirements. The problem grew due to delayed maintenance and lack of funds resulting in more and more lawsuits. **Amassing a solid database is a good start.** Officials can **maximize** the impact of their **limited sidewalk budgets by using the system to assign the highest repair priority to sidewalks that do not conform to ADA requirements**



GA Tech School of Engineering inspects 2500 miles of Atlanta sidewalks.
<http://www.ce.gatech.edu/node/6202>

A Coordinated Replacement Plan

- Annual Sidewalk and curb replacement
- Annual street overlay
- Thoroughfare street widening
- Residential street reconstruction
- Residential property owner work
- Utility repair/relocation projects
- Storm sewer projects
- Traffic signal improvement projects
- Developer projects
- State, County and adjacent city projects



DUH! No Coordination!



Proactive : Preventive Measures

- Flowable Fill at utility cuts plus 2 year warranty
- Materials used: brick, asphalt, concrete, gravel, rubber
- Concrete mix: granite, fiber, ASR additive, color
- Thickness may vary at location (i.e., ramp, driveway)
- Joint tooling & use of joint material
- Joint locations outside the curb returns
- Tree restrictions



Liability of Non-standard Materials

Slate tiles (gray squares) are not on list of acceptable materials for this city. Installed without proper permit.

Slick when wet; subject of injury lawsuit against municipality and abutting property owner. City and owner both deny knowledge of who installed and when.



More Than Just The Sidewalk



The crosswalk pavement between curb ramps must be navigable. Note the rough asphalt and concrete in the pedestrian and wheelchair path.



Topography and infrastructure pose difficulties in placing curb ramps but must be resolved to avoid dangerous situations .



Access for Temporary Closures

The needs and control of ...**pedestrians with disabilities through a TTC zone shall be an essential part of maintenance operations.**

When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the **temporary facilities shall include accessibility features .**



Ref: Sections 6A.01 and 6G.05 in the MUTCD.



Success!

- Better communications & information access
- Improved efficiency, effectiveness, responsiveness
- Enhanced public safety
- Quicker resolution of claims
- Increased support from elected officials
- Accurate data for budgeting





For More Information...

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Perils for Pedestrians, episode 124

John Z. Wetmore

<http://www.pedestrians.org/episodes/details121to150/episode124.htm>



What Do We Do Now?



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Code Enforcement Needed



Excavation in
Sidewalk,
Philadelphia

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