

Managing Sidewalk Maintenance in the 21st Century

2005 APWA International
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- Population 42,000
- 300+ miles of sidewalk

Reasons for Implementing a Sidewalk Program

- Liability
- Consistent Maintenance
- Accessibility Upgrades

Sidewalk Program Enhancements

- **1999:** Implemented 10-year inspection cycle
- **2003:** Developed database application and included enhanced paint markings and photos
- **2004:** Upgraded to mobile GIS for field inspection and mapping

Sidewalk Repairs 1987-1999



Sidewalk Repairs 1987-1999



- Based on street reconstruction schedule and complaints/injuries
- Repairs for a single year scattered throughout City
- Same area visited in multiple years

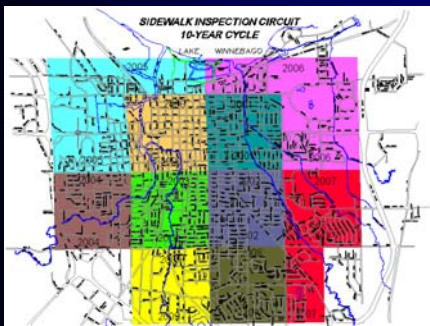
Repair Responsibility

- Painted dots indicate financial responsibility:
 - Green Dot:** Property owner's responsibility
 - Blue Dot:** City's responsibility
- Mandated repairs have three repair options:
 - Self repair by property owner (with permit)
 - Repair using property owner's private contractor
 - Repaired under City contract
 - City's contractor
 - Repair costs assessed to property tax

10-year Inspection Cycle

- Divides city into 10 inspection areas
- Oldest, most densely populated areas inspected first
- Allows more focused inspections and repairs
- Injuries and complaints outside of area are included each year

10-Year Inspection Cycle



Original Inspection Procedure

- Mark defective panels with green/blue dot and fill out inspection report by hand
- Use field notes to complete spreadsheet version of inspection report in office
- Send condemnation letter, inspection report and repair election form to each affected property owner

Original Inspection Report

Labels pointing to form fields:

- Parcel information
- Starting/ending points
- Reason for inspection
- Sidewalk Pass/Fail (by segment)
- Sidewalk totals
- Driveway dimensions
- Driveway totals
- Cutback totals
- Lot dimensions and walk width
- Comments

Sidewalk Management Database

Sidewalk Management Database

- Large number of properties in each inspection area generates significant amounts of data (1057 parcels inspected in 2004)
- Linked to tax database to provide current ownership for each property
- Automatically generates condemnation letters and inspection reports for each affected property
- Calculates estimated cost, tracks repair elections, and records as-built quantities for assessments

Digital Photos and Paint Marks

- House photo at time of inspection
- Photograph of each segment of defective sidewalk panels or driveway approach
 - Blue dot for defective panel paid for by City
 - Green dot for defective panel or approach paid for by property owner
 - Pink paint to highlight defect (crack, joint)



Sidewalk Database

Property/Inspection Selection Form

Parcel ID	Address	Inspect Date	Defects
PDL-15-17-14-41-015-00	429 W 117th St	10/23/2004	1
PDL-15-17-16-41-018-00	457 W 117th St	10/23/2004	1
PDL-15-17-16-41-026-00	460 W 117th St	10/23/2004	1
PDL-15-17-16-41-035-00	474 W 117th St	10/23/2004	1
PDL-15-17-16-41-032-00	460 W 117th St	10/23/2004	1
PDL-15-17-16-41-026-00	493 W 117th St	10/23/2004	1
PDL-15-17-16-41-031-00	500 W 117th St	10/23/2004	1
PDL-15-17-16-41-027-00	503 W 117th St	10/23/2004	1
PDL-15-17-16-41-029-00	526 W 117th St	10/23/2004	4
PDL-15-17-16-41-029-00	533 W 117th St	10/23/2004	4
PDL-15-17-22-22-279-00	198 187th St	10/23/2004	2
PDL-15-17-15-21-021-00	120 W 262 St	10/23/2004	2
PDL-15-17-14-14-024-00	506 47th St	10/23/2004	1

Sidewalk Database

Data Entry Form

Sidewalk Database

Inspection Report

Mobile GIS Application

Mobile GIS Components

- Desktop GIS (ArcView)
- Database Application (MS Access)
- Handheld Computer / GPS Receiver (Trimble GeoXT)



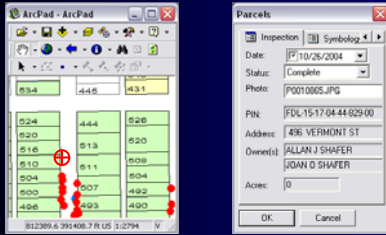
- ArcPad GIS mapping
- Electronic data entry forms
- 1-2 foot GPS accuracy (corrected)

Mobile GIS Benefits

- One-time data entry (all environments)
- Intelligent data entry forms
- Access to parcel maps and data in the field
- Record precise location of each defect
- All defects stored for re-inspection, repairs
- Enhanced mapping available in GIS

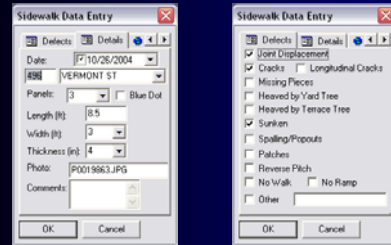
Mobile Application

Base Map and Parcel Data



Mobile Application

Defect Data Entry Forms



Enhanced GIS Mapping



Benefits of New Program

Impact of Database

	2003	2004
Number of properties inspected	720	1015
Number of reports issued	600	699
Number of follow-up inspections	145	25

Questions?

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