

Managing Sidewalk Maintenance in the 21st Century

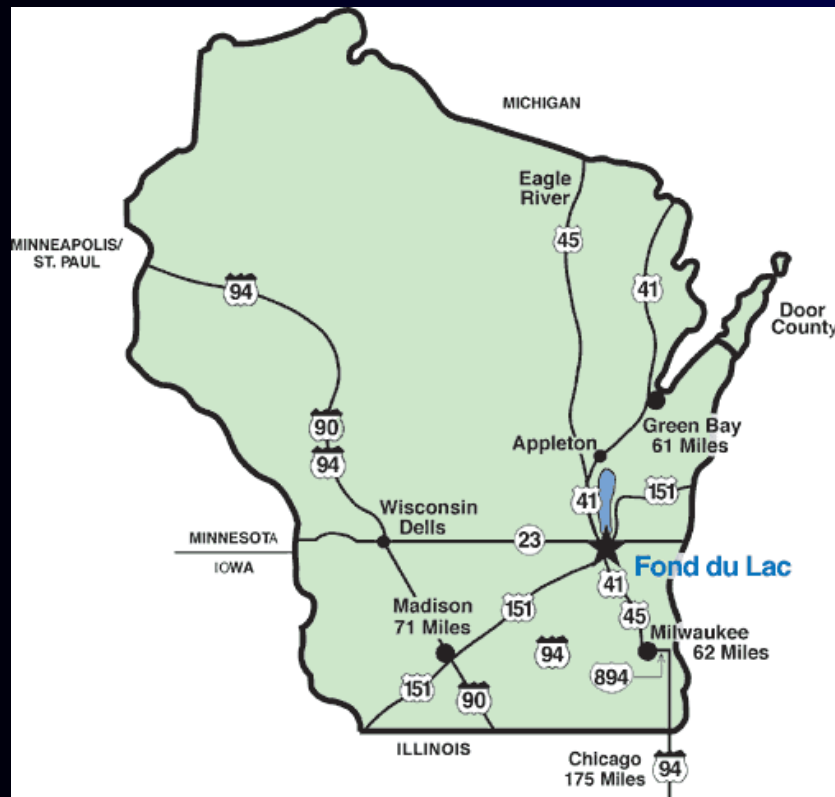
2005 APWA International
Public Works Congress and Exposition

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- Population 42,000
- 300+ miles of sidewalk

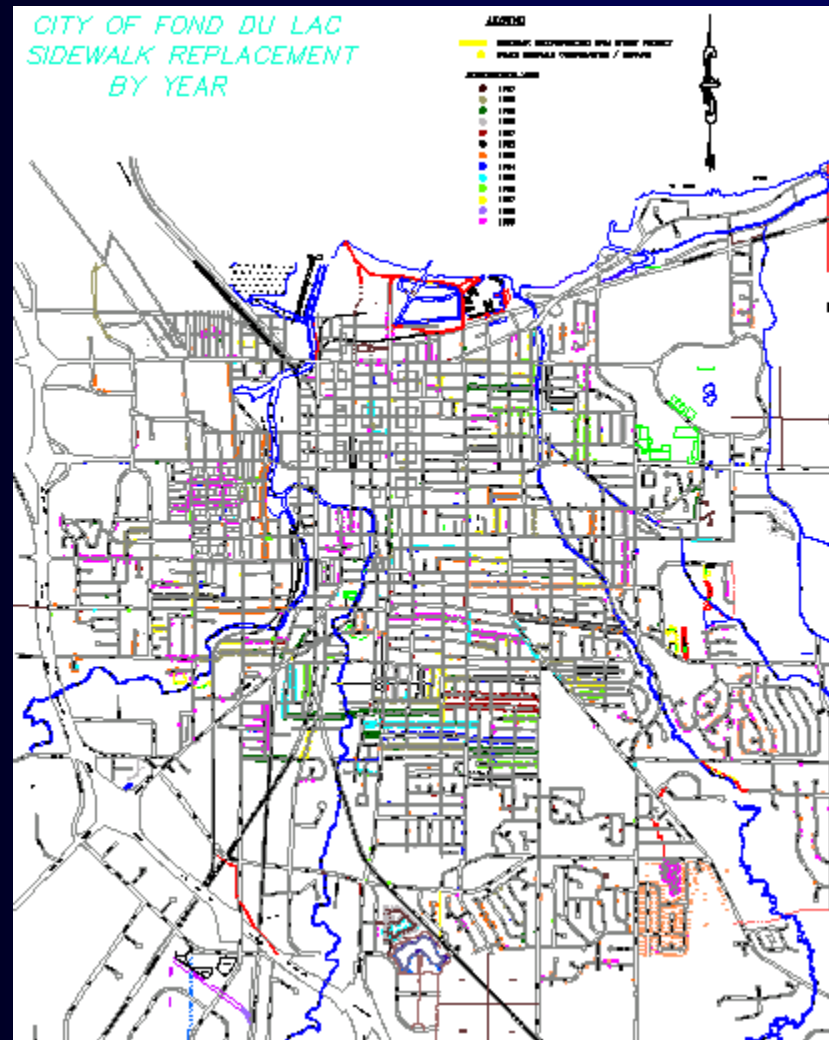
Reasons for Implementing a Sidewalk Program

- 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



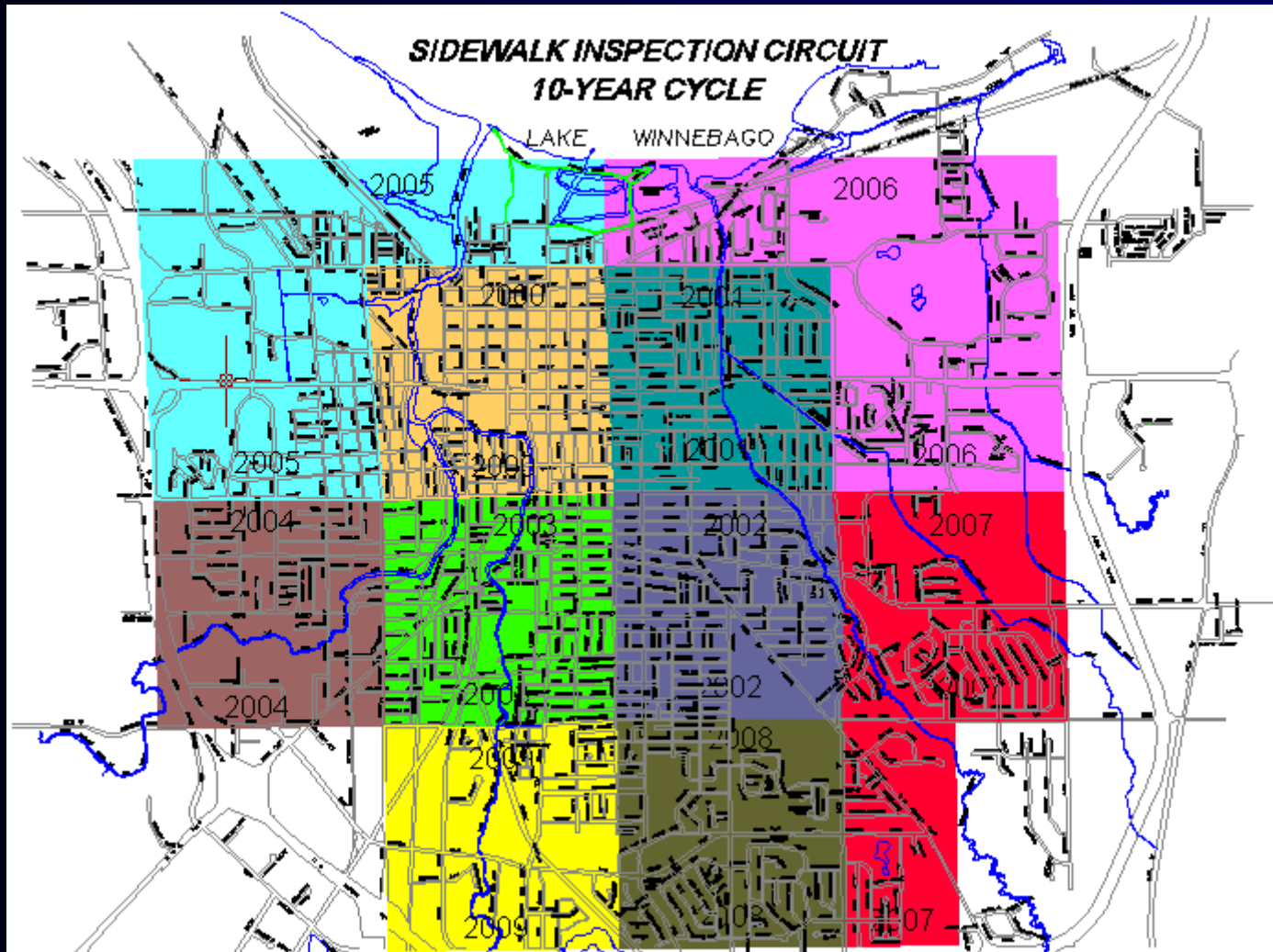
Repair Responsibility

- 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

Parcel information

Starting/ending points

Reason for inspection

Sidewalk Pass/Fail
(by segment)

Sidewalk totals

Driveway dimensions

Driveway totals

Cutback totals

SIDEWALK/DRIVE APPROACH INSPECTION REPORT

City of Fond du Lac, Wisconsin
Engineering and Traffic Division

Address: 537 Bragg Street Front lot length 90
 Parcel #: F.D.L-15-17-16-12-387-00 Side lot length 107.8
 Date of inspection: _____ Width of front walk 4.5

Starting point: _____ Ending point: _____

North _____ South _____
 South _____ North _____
 East _____ West _____
 West East

Reason for inspection _____ (C, R, O, R, I, S, I)
C=Complaint, R=Routine Insp, O=Owners Request, S=St Const, I=Injury

SIDEWALK

From:	To:	Good	Condemned	
0	10.5	x		0
10.5	15		x	4.5
15	18.5	x		0
18.5	28.5		x	10
28.5	35.2	x		0
35.2	60.3		x	25.1
60.3	90	x		0
0				0
0				0
Total if sidewalk condemned				39.6
Total of 4.5' sidewalk condemned				178.2
Total of 6' sidewalk condemned				

DRIVEWAY APPROACH

Current size 7 x 24
 Type of approach G (C, A, G, GR, O)
C=Concrete, A=Asphalt, G=Gravel, GR=Grass/soil, O=Other

Width	Length	
		0 \$ For approach to be replaced
24	7	168 \$ For approach to be constructed

CUTBACKS

	Width	Length	Total	
Driveway 6"			0	
Approach 6"			0	
Total of ft of 6" cutbacks				0
Service Walks			0	
Garage Walks			0	
Total of ft of 4" cutbacks				0

Notes

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

Filter/Sort Criteria

The screenshot shows a window titled "Select Inspection" with the following sections:

- Area:** Radio buttons for Sidewalk Only, Approach Only, and Both (selected).
- Responsibility:** Radio buttons for Green Dot, Blue Dot, and Both (selected).
- Records:** Radio buttons for Defects Only (selected) and All Inspections.
- Sort By:** Radio buttons for Parcel ID and Address (selected).

Parcel ID	Address	Inspect Date	Defects
FDL-15-17-16-41-015-00	429 W 11TH ST	3/23/2004	1
FDL-15-17-16-41-018-00	457 W 11TH ST	3/23/2004	5
FDL-15-17-16-41-034-00	460 W 11TH ST	3/23/2004	1
FDL-15-17-16-41-033-00	474 W 11TH ST	4/13/2004	1
FDL-15-17-16-41-032-00	490 W 11TH ST	4/13/2004	1
FDL-15-17-16-41-026-00	493 W 11TH ST	3/23/2004	1
FDL-15-17-16-41-031-00	500 W 11TH ST	4/13/2004	1
FDL-15-17-16-41-027-00	501 W 11TH ST	3/23/2004	1
FDL-15-17-16-41-030-00	526 W 11TH ST	3/23/2004	4
FDL-15-17-16-41-029-00	531 W 11TH ST	3/23/2004	4
FDL-15-17-23-22-279-00	195 18TH ST	9/3/2004	1
FDL-15-17-15-21-071-00	120 W 2ND ST	8/23/2004	2
FDL-15-17-14-14-824-00	586 4TH ST	4/12/2004	1

Buttons at the bottom: View, View All, New, Delete, Close, Green Report, Blue Report.

Parcel/Address List

Inspection Date

Total Number of Defects

Sidewalk Database

Data Entry Form

Parcel Information

Inspection Details

Defect Photo

House Photo

Measurements

GPS Coordinates

Sidewalk Defects

Driveway Approach
Measurements and
Condition

Data Entry Form

Parcel ID: FDL-15-17-09-42-301-00
Address: 86 N SEYMOUR ST

Inspection Date: 10/12/2004 Inspector: JCW
Reason for Inspection: Routine Inspection
 Action Required
Issue Date: 5/6/2005 Inspection ID: 735

Green Dot Report
Blue Dot Report
 Follow Up Required
Phone:

041012 171.jpg

Inspection | Estimate | Repair | Final Quantities | Closure

Sidewalk Approach

Blue Dot Defect ID: 1409

041012 173.jpg

Comments:

Sidewalk Data

Width (ft): 4.5 Length (ft): 25 OBJECTID: 1329
Squares: 5 Thickness (in): 4
Northing: 386,880.20 Easting: 811,639.17
Fronting Road: NEWPORT AV

Joint Displacement Cracks Longitudinal Cracks
 Sunken Patches Pieces Missing
 Heaved by Tree - Private Tree Heaved by Tree - Street Tree
 Reverse Pitch Improper Grade Wedges
 Spalling/Popouts No Walk in Place No Ramp
 Other

Approach Data

Gravel Length (ft):
 Grass/Soil Width at Sidewalk (ft):
 Concrete Width at Curb (ft):
 Asphalt

Record: 2 of 2
Record: 1 of 1 (Filtered)

Sidewalk Database

Inspection Report

Inspection Report

 **Sidewalk Management Program**
Form 8.29-B
Sidewalk/Driveway Approach Inspection Report

Parcel ID Number: FDL-15-17-16-12-387-00 Inspection Date: 3/3/2004 Inspector: JCW
Property Address: 537 BRAGG ST Inspection ID: 1333 Reason: Routine Inspection
Owner(s): KATHLEEN E HEINECKE

Mailing Address:
K E HEINECKE
537 BRAGG ST
FOND DU LAC, WI 54935



Number of squares: 1 Joint Displacement Sunken
Length of Repair (ft): 4.42 Longitudinal Cracks Cracks
Sidewalk Width (ft): 4.50 Missing Pieces Spalling/Popouts
Fronting Street: BRAGG ST Heaved by Tree Reverse Pitch
Northing: 384,816.59 Easting: 811,721.78 Patches Wedges
Reference Point: Improper Grade No Walk in Place
Start (ft): End (ft): Other:
Comments:



Defect ID: 1855
Estimated Cost: \$76.58

Number of squares: 4 Joint Displacement Sunken

Page: 1

Mobile GIS Application

Mobile GIS Components

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



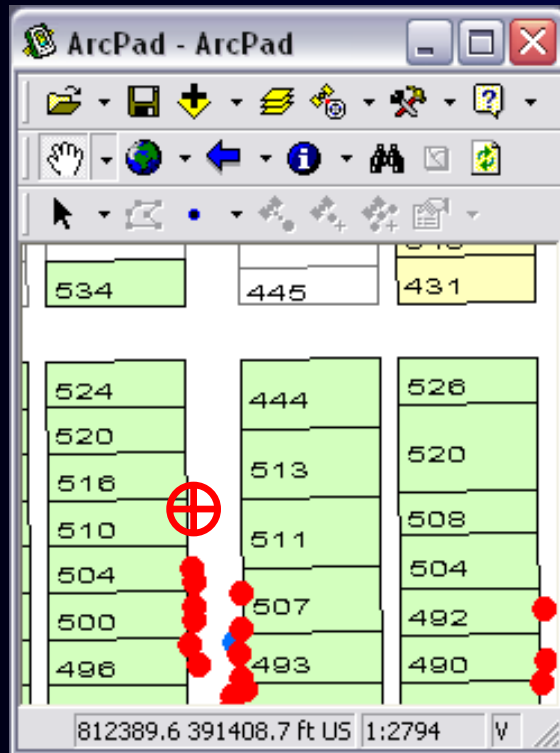
- ArcPad GIS mapping
- Electronic data entry forms
- 1-2 foot GPS accuracy (corrected)

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

Sidewalk Data Entry [X]

Defects Details [Navigation]

Date: 10/26/2004

498 VERMONT ST

Panels: 3 Blue Dot

Length (ft): 8.5

Width (ft): 3

Thickness (in): 4

Photo: P0019863.JPG

Comments: [Text Area]

OK Cancel

Sidewalk Data Entry [X]

Defects Details [Navigation]

- Joint Displacement
- Cracks Longitudinal Cracks
- Missing Pieces
- Heaved by Yard Tree
- Heaved by Terrace Tree
- Sunken
- Spalling/Popouts
- Patches
- Reverse Pitch
- No Walk No Ramp
- Other [Text Field]

OK Cancel

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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