The High Cost Of Bad Sidewalk Data:

The Case For Audit-Ready Sidewalk Inventories for Cities and Universities (2025)

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EXECUTIVE SUMMARY

Bad data wastes 4–5% of sidewalk budgets; 2-10X as much as is spent on typical inventory costs.

Bad or incomplete inventories drive rework, duplicate inspections, delays, and disputes, eating away at sidewalk budgets and reducing cities capacity to make sidewalk repairs.

Solution

Build a PROWAG-aligned, audit-ready baseline; maintain it with rolling updates; convert interpreted data into actionable plans with clear priorities.

Outcomes

- Faster, fairer prioritization with objective risk indexes
- Lower total program cost
- Defensible, time-stamped record of conditions and proof of active, efficient improvement plans.

ROI

Year-1 citywide baseline; rolling 5-year updates. Capturing a material share of the typical 4–5% bad-data leakage funds repairs.

Next Steps

- Request a sample data package to review fields, thresholds, and actionable outputs and reporting.
- Define a pilot zone and a KPI set
- Lock deployment plan, KPIs, and update cadence.

“Without data on sidewalk conditions, the City’s approach has been scattershot at best. Having an inventory… would help the City prioritize available funding for the types of repairs at locations that bring the most value.”

- Los Angeles City Controller Ron Galperin

WHY NOW

COMPLIANCE DEADLINES

Access Board issued the final PROWAG in 2023, and USDOT adopted enforceable standards effective Jan 17, 2025.

DEFENSIBILITY

Los Angeles paid $35M+ for sidewalk-injury claims between 2016 and 2021; Controller flagged lack of a citywide condition assessment as a root problem.

BUDGET PRESSURE

Councils and boards expect measurable ROI and progress reporting.

Bad sidewalk data is costly

Address Root Cause

- Build an audit ready baseline
- Keep it current with 5-year rolling updates

Shift Dollars to Repairs

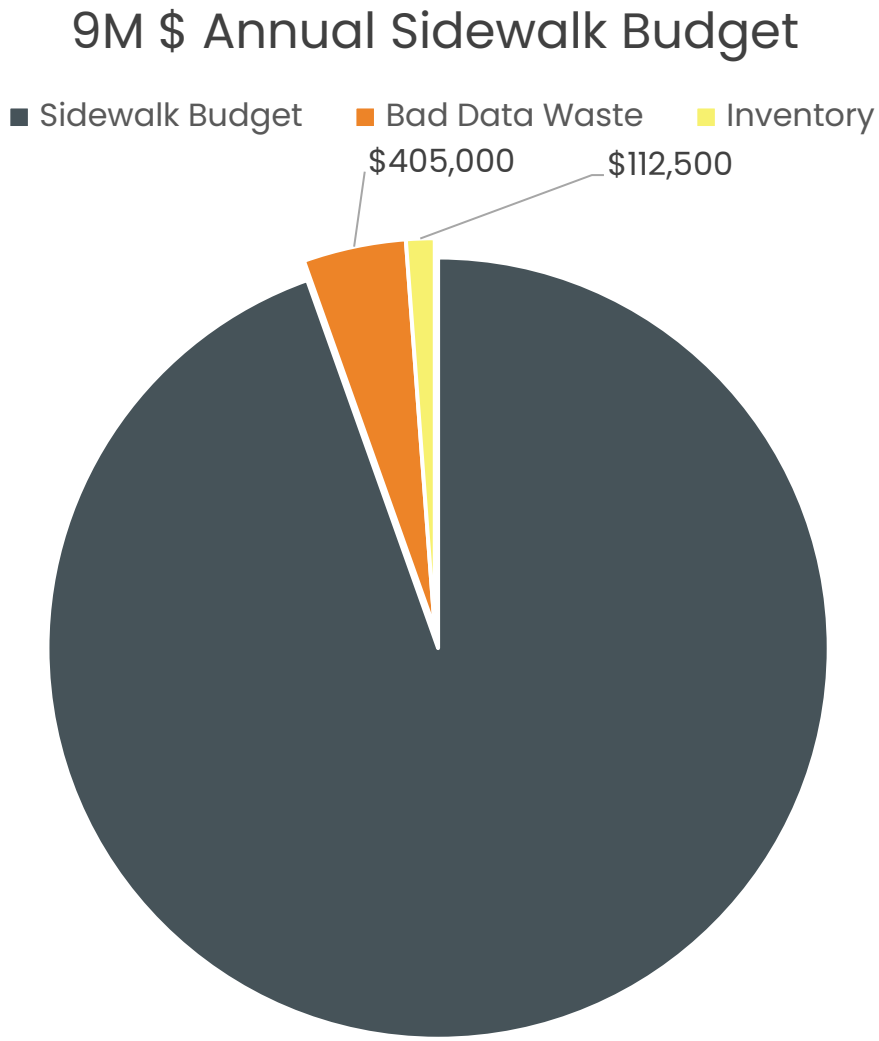
- Work from big-picture perspective
- Reduce bad data spend and litigation dollars

BAD DATA WASTES 4–5%[1] OF SIDEWALK WHILE ONLY 0.5–2%[2] OF SIDEWALK PROGRAMS ARE SPENT ON INVENTORY COSTS

Where the budget leaks

- Rework: inaccurate data leads to re-assessments and redesigns
- Duplication: overlapping inspections due to poor inventory record upkeep
- Disputes: On top of these construction costs, weak documentation and no defensible ADA plan leave cities and universities open to claims exposure

Bottom Line: More comprehensive, more accurate data leads to fewer do-overs with more repairs completed per dollar.



1 PLANGRID + FMI, "CONSTRUCTION DISCONNECTED: THE HIGH COST OF POOR DATA AND MISCOMMUNICATION" (2018) FINDS ~48% OF REWORK IS CAUSED BY POOR DATA/MISCOMMUNICATION. NAVIGANT CONSTRUCTION FORUM, "THE IMPACT OF REWORK ON CONSTRUCTION & SOME PRACTICAL REMEDIES" (AUG 2012) ESTIMATES REWORK AVERAGES ~7.25–10.89% OF TOTAL CONSTRUCTION COST (INCL. INDIRECTS). **2** PBIC & America Walks, "Sidewalk Inventories: A Tool for Equity and ADA Compliance" (webinar slide deck, July 26, 2023), inventory costs usually ≤1% of the responsible department's budget; Falls, L.C., "Long-Term Cost-Benefit Analysis of Pavement Management Systems: Case Study for Alberta Transportation" (TRB, 1994), PMS ~2.5% of rehabilitation budget. We use 0.5–2% to reflect scope variation.

San Diego: Hidden Inventory Costs

Inventory costs happen even when they're not budgeted.

- San Diego has no sidewalk inventory budget and uses complaint-based inspections instead.[a]
- These inspections still cost the city, without giving them a complete, defensible inventory
- A 2024 Grand Jury finding pointed to this lack of inventory as a root cause in an oversight report which commented on the cities 2.9M trip and fall claims.

Sidewalk Claims FY2023 ($2.9M): San Diego County Civil Grand Jury, Maintaining San Diego's Sidewalks: But It's Not My Sidewalk! **Sidewalk Inspection Cost Estimate FY2023**: Based on City of San Diego Open Data Portal, Get It Done — Requests Closed in 2023 (7,987 ADA-measurable requests) see appendix for more on cost estimate calculations; City of San Diego Development Services Dept., Information Bulletin 502: Fee Schedule. **Sidewalk Inventory Budget**: "City staff cited several reasons for not performing a reassessment of sidewalk quality: The assessment costs money that is not budgeted…" City of San Diego Office of the Independent Budget Analyst (IBA), Report 24-32

HOW IT PLAYS OUT

NEW YORK CITY: DUPLICATE INSPECTIONS AND MISSING DATA

In the Trees & Sidewalks program, auditors found 23% duplication of surveys and cases where design work restarted because files were missing.

Takeaway: No single source of truth leads to re-surveys, rework, and schedule slip.

PORTLAND, OR: REPEAT POURS FROM MISMATCHED RECORDS

A City Auditor Fraud Hotline report found a curb-ramp corner that was poured multiple times due to unclear responsibilities, miscommunication, and incomplete project records.

Takeaway: Misaligned data produces expensive do-overs and delayed accessibility.

NEW YORK CITY: $53.5M IN SIDEWALK INJURY CLAIMS

NYC's Comptroller reports $53.5M paid for sidewalk personal-injury claims in FY2023, which included allegedly fraudulent slip-and-fall claims.

Takeaway: Without provable, time-stamped conditions, disputes increase, and dollars leave the program.

COST

WHAT “AUDIT-READY” MEANS

BIG-PICTURE ORIENTED

“The City of San Diego does not have an accurate and complete view of the inventory of damaged sidewalk locations, which impairs the City’s ability to plan for and prioritize needed repairs.”

- San Diego County Grand Jury finding (2024)

- **ACCURATE**

Precise measurements taken with calibrated tools for PROWAG ready tolerances, dense sampling.

- **COMPLETE**

Every block, ramp, and crossing mapped, leaving no blind spots.

- **REPEATABLE**

Standardized collection playbook data format on each mile of sidewalk matches format of every other mile.

- **DEFENSIBLE**

Full PROWAG data for every inventory item including timestamps, photos, and exact locations to back decisions.

- **ACTIONABLE**

Mapped, ranked, interpreted data in GIS-ready layers

FROM DATA TO WORK ORDERS

Collect Data

- Dax gathers inventory along scripted Routs

QC & GIS Ingest

- Daxbot completes QC process & creates exports

Prioritize

- Daxbot works with consultants to determine compliance plan from a risk-management perspective

Bid Quantities

- Pull counts from attributes
- Bundle work packages

Work Orders

- Sync with your CMMS/work-order tools
- Track status back to GIS

DATA DELIVERY & ROLES (RACI)

	Define	Collect	QC	Prioritize	Report
ADA Coordinator	A	I	I	A	A
Public Works	C	C	C	C	C
GIS Team	C	I	I	C	C
Daxbot	C	R	R	C	R
Eng/Compliance	C	A	A	R	A
Legal	I	I	I	C	C

R = Responsible A = Accountable C = Consulted I = Informed

Formats:

GeoPackage / FGDB

Layers & fields:

IDs, geometry, pass/fail flags, over-tolerance metrics, DCS score, media links, timestamps

QC & acceptance:

Attribute completeness target. Randomized data checks to attain data accuracy confidence.

Cadence:

Year-1 baseline; Years 2–6+ rolling updates

WHAT WE MEASURE

- **SEGMENTS: WIDTHS, SLOPES, UPLIFTS, AND ACCESS BARRIERS**
- **TIMESTAMPS, COORDINATES, AND PHOTOGRAPHIC EVIDENCE FOR EVERY SIDEWALK SEGMENT AND INVENTORY ITEM**
- **CONTEXT AWARE RISK INDEX (DCS^{a}) FOR EVERY SIDEWALK SEGMENT AND INVENTORY ITEM**

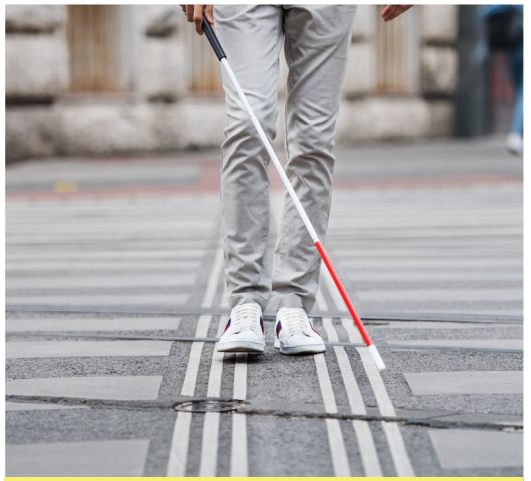
Full PROWAG Sidewalk, Trail, and Interior Walkway Inventories, including:

Sidewalks & Walkways

Width, cross & running slopes, uplifts and obstructions.

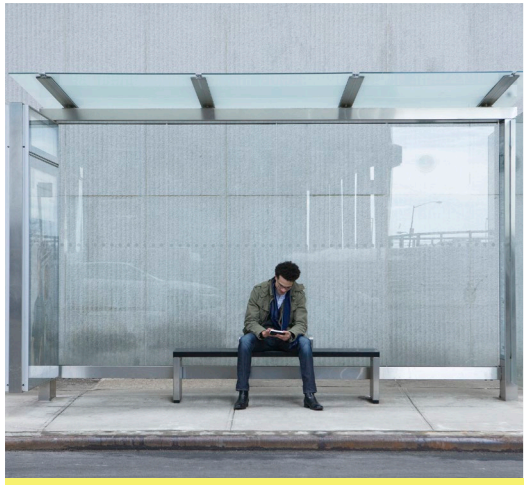
Curb Ramps

Type & width, running & cross slope, flare slopes, counter slope, turning & clear spaces, DWS type & size, grade breaks, and surface type.



Crosswalks

Type, width, travel path width, cross & running slope, vertical offsets, and surface type.



Transit stops, Asset Inventories, & More

FIT TEST: METHODS VS OUTCOMES

	Clipboards[c]/ Manual	Mobile App[d]	Vehicle-mounted LiDAR[e]	311 / Complaints[f]	Dax Data[j]
Accurate[a]	*Semi*[b]	*Semi*	⊘	⊘	✓
Complete	⊘	*Semi*	*Semi*	⊘	✓
Repeatable[g]	⊘	*Semi*	*Semi*	⊘	✓
Defensible	*Semi*	✓	*Semi*	⊘	✓
Actionable[h]	*Semi*	✓	*Semi*	⊘	✓

Note: street-level capture can miss sidewalk-level details due to occlusion (cars, canopy, setbacks).

INTRODUCING DAX ADA ROBOTS

ACCURACY

Equipped with lab-calibrated onboard inclinometers and a triple suite of lasers for precise measurements. Tread-based SLAM and RTK GPS ensure locational accuracy. Data is processed through a rigorous QC process.

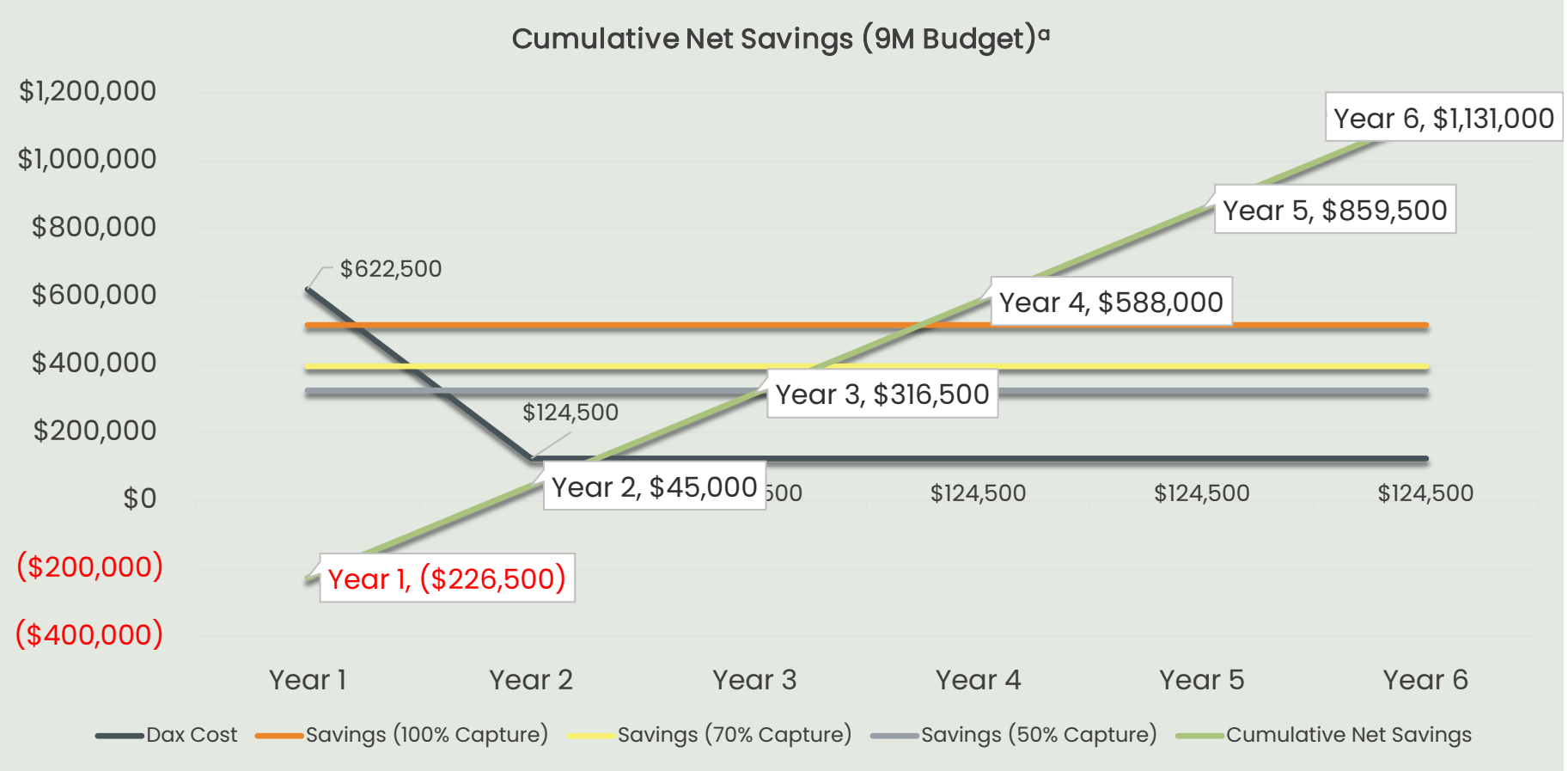
DEFENSIBILITY

Every data point is analyzed and mapped to PROWAG by accessibility experts, with time-stamped data records and geotagged media.

ACTIONABILITY

RTK-guided capture with centimeter locational accuracy, dense along-route sampling of slopes, uplifts, & widths, and delivered in GIS-ready layers.

ECONOMIC MODEL: COST VS. SAVINGS



Year-1: Citywide/campus baseline

Years 2–6+: Light rolling inventory updates (achieves complete update every 5 years)

Savings drivers: fewer re-surveys/duplication, faster prioritization & procurement, reduced disputes

Net effect: Redirect a meaningful share of the typical 4–5% "bad-data" leakage to actual repairs, reduce claims expenditure.

Based on: Mid-sized city with 830 miles of sidewalk, population of 200K, and a sidewalk budget $9M/yr, including 112.5K legacy yearly inventory costs, 405K waste due to bad data (based on independent studies). **Includes** complete sidewalk survey year 1, then 5-year rolling inventory update. Savings apply from Year 1; cumulative net includes 70% capture of bad data waste as conservative default.

FAQ

Why do we need DCS if we already have PROWAG measurements?

Pass/fail proves compliance; DCS (0–100) adds a fair, “worst-first” priority so budgets and work orders target the biggest risks first.

Will we still need field verification?

Possibly, but only targeted checks (edge cases, constructability, utilities). The dataset is actionable out of the box; field verification is a light QA loop to confirm exceptions before crews mobilize, not a second survey.

“The ground data being collected (by Dax) can be analyzed in the office… without the need for multiple site visits.” - **Linda Fontes, City of Irvine PIO, via GovTech**

How does this reduce claims risk?

Implementing a Dax sidewalk evaluation with rolling updates helps reduce claim frequency and severity by identifying and prioritizing the highest-risk defects for early abatement, and it creates the time-stamped records that plaintiffs’ counsel and insurers/adjusters look for to show you acted reasonably under ADA requirements and state tort standards.

Does this make money sense?

Sidewalk programs commonly lose 4–5% of their budgets to bad data. By implementing reliable, accurate, rolling updates, budget leakage to bad data can be reduced, and that money put into repairs. Daxbot’s assessments are also about half the cost of traditional methods, which further improves ROI.

How does Dax scale?

The more Dax robots utilized on sidewalks, the faster evaluation goes. Dax has assessed sidewalks for small towns with less than 10 miles of sidewalks to large municipalities with 1000 miles or more.

NEXT STEPS

NEXT STEPS

Get Proof

Request a sample data package. Review fields, thresholds, outputs & reporting.

Test it Out

Define a pilot zone & KPI set (10–20 route miles), and set your acceptance **criteria**

Create Deployment Plan

Run the numbers and see what makes sense. Lock deployment plan, KPIs & update cadence.

APPENDIX

[a]What we measure: Dax DCS Score

Inventory items are compiled into a “risk map” using a Dax Compliance Score (DCS). DCS turns sidewalk, curb-ramp, and crosswalk measurements into a single score you can act on. It’s designed for cities and universities that need a clear, fair way to decide what to fix first.

What it’s based on:

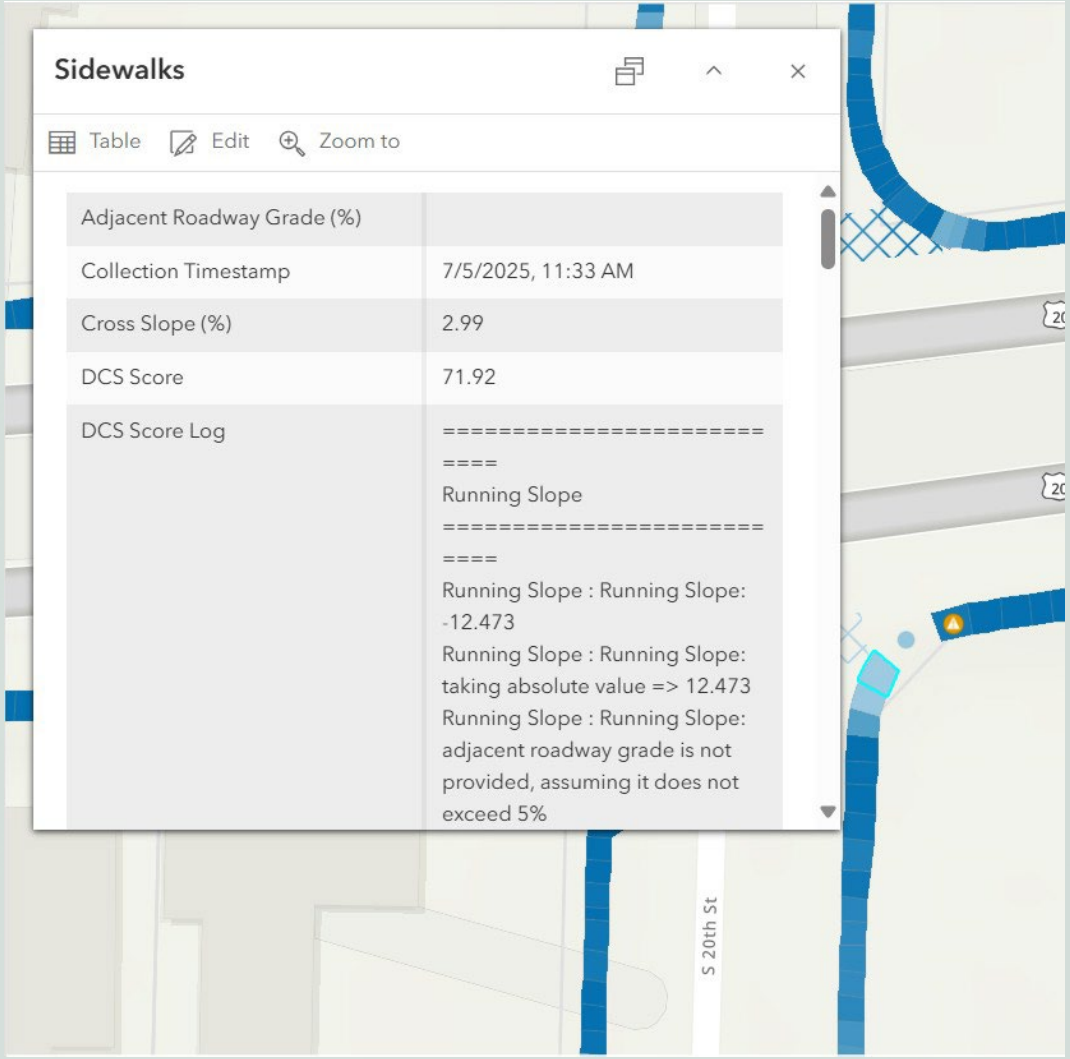
- Built on PROWAG tolerances and refined from the Illinois Compliance Index (ICI)
- Uses dense, robot-collected data and smooth, point-by-point scoring (missing data gets partial credit so gaps don’t skew results).

What it measures:

- A 0–100 score per asset.
- Sidewalks: cross slope, vertical displacement, width.
- Crosswalks: width, cross slope.
- Curb ramps: ramp slopes/width, detectable warnings, gutter/turning space, etc.

How it prioritizes risk:

- Lower score equals higher risk.
- Produces a transparent “worst-first” list for budgeting, work orders, and progress tracking.



APPENDIX

San Diego: Hidden Inventory Costs

A. Based on City of San Diego Open Data Portal, Get It Done — Requests Closed in 2023 dataset. Calculated as follows:
   1. Scope the dataset: Keep only rows where service_name equals Sidewalk Repair Issue, ROW Maintenance, or Vegetation Encroachment.
   2. Normalize text (service_name_detail + public_description, lowercased) and apply deterministic ADA rules: all Sidewalk Repair Issue equal ADA; Vegetation only if it mentions blocked pedestrian route/curb-ramp; ROW Maintenance only if it mentions sidewalk/curb/curb-ramp/crosswalk/pedestrian obstruction.
   3. Count ADA-measurable (7,987); then validate with a random sample (n=400) → $\hat{p}$ = 0.745, 95% Wilson CI = [0.700, 0.785] (sanity check only).
   4. Compute inspection-hours: ADA-measurable = 7,987 requests × 1.0 hr/request = 7,987 hours.
   5. Convert hours to dollars: 7,987 hr × $164.87/hr = $1,316,816.69. ($164.87/hr source: City of San Diego Information Bulletin 502 (IB-502) / User Fee Schedules for Public Right-of-Way inspection/project management hourly billing.)

Economic model: cost vs savings:

A. Assumptions:
Dax sidewalk inventory: $622,500 for city-wide year 1 baseline.
Dax inventory rolling 5-year update (years 2–6): $124,500/yr.
Avoided bad-data waste: statistical midpoint 4.5% of $9m: $405k/yr (70% capture of bad data waste = $283.5k/yr less waste)
Replacing legacy inventory spend: $112,500/yr.
Year 1: cost $622,500 vs. Savings $396k: net -$226.5k
Years 2–6+: cost $124.5k vs. Savings $396k. Net savings: $271.5k/yr.

Fit test: methods vs outcomes

A. Accurate: audit-ready tolerances, tight enough for PROWAG calls (e.g., 2.0% cross-slope; ¼–½" level changes)
B. "Semi": achievable with calibrated tools, dense sampling, and strong QC; prone to variance, gaps, or costly re-visits across a city.
C. Clipboards: assumes wheel + digital level recorded on paper forms; optional photos; no guaranteed GPS track.
D. Mobile app: ESRI field maps/survey123 or similar with geotagged photos and edit history. Phone IMU values are not treated as engineering measurements; accuracy relies on external tools and operator entry.
E. Vehicle-mounted lidar: fast coverage but sidewalk details are often occluded; needs additional ground truth.
F. 311/complaints: reactive signal, not an inventory; lacks measurement provenance.
G. Repeatability: requires scripted route methodology, standardized capture profiles, and version-controlled exports for valid before/after comparisons.
H. Actionable: means gis-ready layers with attribute completeness to compute bid quantities and fix lists without a second survey pass.
I. Mobile app defensibility: user ids, timestamps, and attachment rules are enforced.
J. Dax robots: determinations based on rtk-guided capture, time-stamped tracks, geotagged media, and gis-ready exports

APPENDIX

METHODOLOGY: HOW IT'S CAPTURED (DATA COLLECTION)

Routes are Geocoded

Daxbot creates "invisible" GPS routes for data collection.

Mobile Trailers Deployed

Mobile charging trailers are deployed along Dax's active route. Dax obey traffic rules and are equipped with flags for visibility

Dax Gathers Data

Dax collects data autonomously. When needed, they are controlled remotely by Dax operators, so no field handler is required.

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