

# Sidewalk Data in the Age of the App: Tools For Asset Management

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## Abstract

Lack of adequate pedestrian-scale data has been identified as a major barrier to large-scale pedestrian planning and compliance with the Americans with Disabilities Act. Recent studies indicate that sidewalk presence, width and condition are important indicators of pedestrian facility quality and accessibility. The Georgia Institute of Technology has developed a tablet application that can be used to assess sidewalk quality. When attached to a basic wheelchair, a tablet automatically records video, GPS, gyroscope and accelerometer data. The data are post-processed to evaluate where sidewalks may be in need of repair or reconstruction. This system has been developed and field-tested using cases within the Atlanta region, and provides a model for future of sidewalk data collection and assessment in major metropolitan areas. The sidewalk assessment ratings developed by this project will provide a baseline for city-wide, regional, and state-wide sidewalk inventories, in order to improve transportation decision-making and quality of life. The sidewalk quality index ratings can be used by jurisdictions to prioritize pedestrian facility improvements and facilitate comprehensive pedestrian planning. The research team anticipates that the assessment system will have broad national application.



Transportation professionals and students at Transportation Camp South Un-conference at the Georgia Institute of Technology



Undergraduate research assistant collecting data



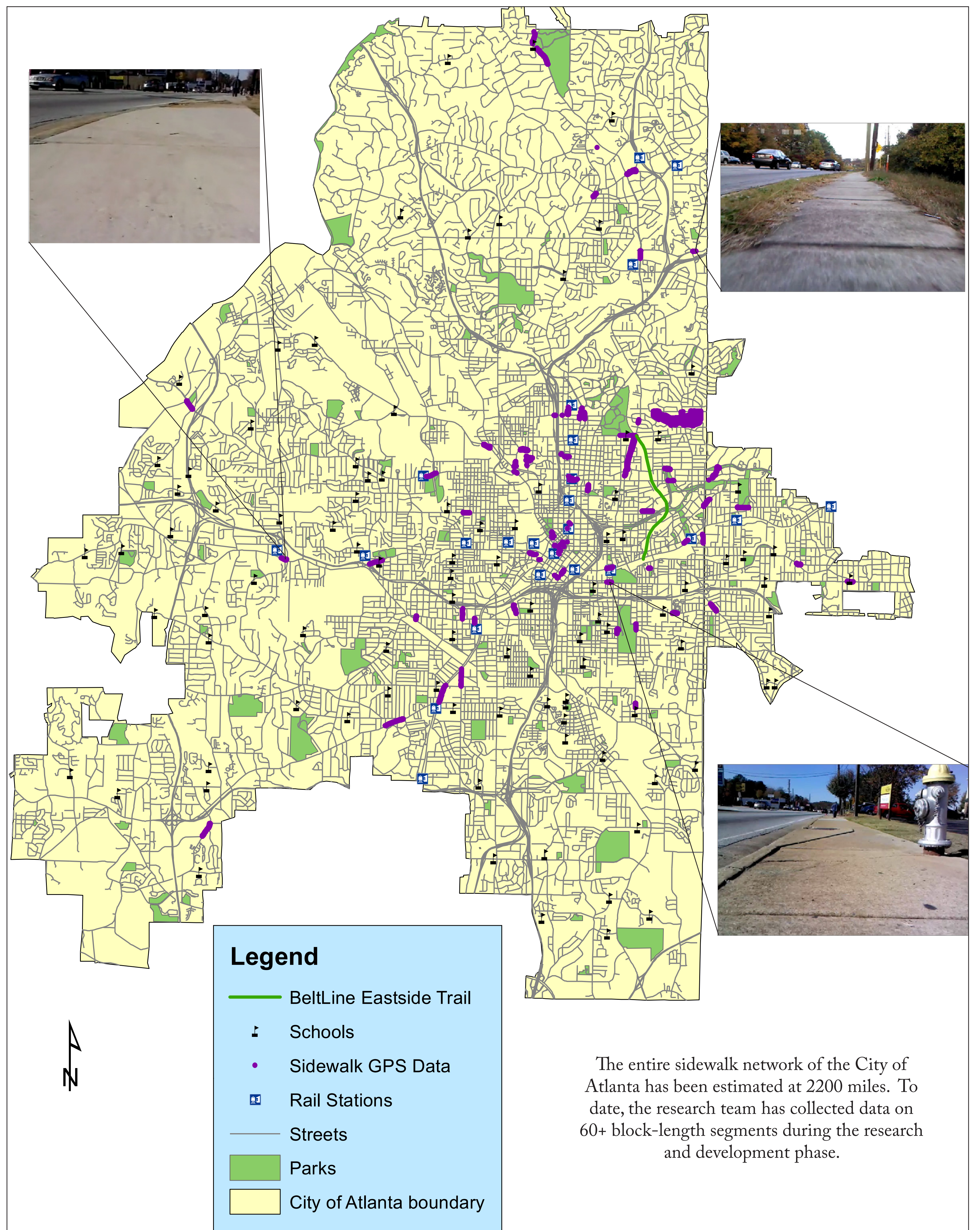
Graduate researcher presenting at a neighborhood association meeting

## Stakeholder Engagement

The research team has engaged with agency staff and local stakeholders throughout the research process. The research team has also presented and demonstrated the research project at numerous neighborhood planning unit meetings, to city staff, and to staff at the Atlanta Regional Commission. In order to ensure that data collection is cost-effective, the research team will work with local resident and student volunteers to collect sidewalk data in their neighborhoods. Outreach efforts have been geared toward generating interest in the research project, as well as gathering input on stakeholder priorities.

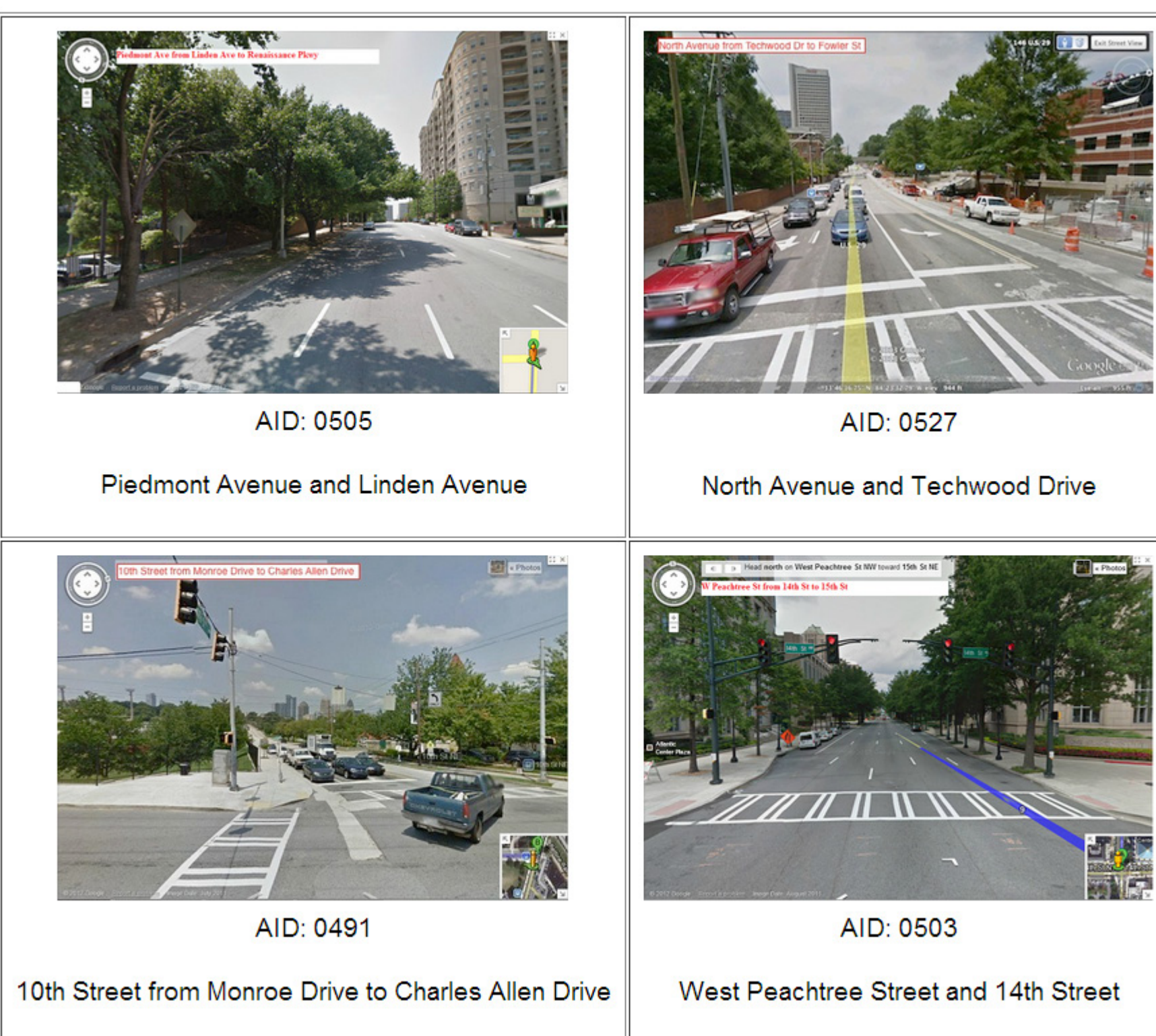
## Sidewalk Quality Expert Survey

The sidewalk quality survey asks users to assess 40 sidewalk segments in Atlanta, Georgia. The survey will be deployed to local, regional and national experts to gather baseline data on expected sidewalk quality ratings.



The entire sidewalk network of the City of Atlanta has been estimated at 2200 miles. To date, the research team has collected data on 60+ block-length segments during the research and development phase.

GIS map display of sidewalk data collected to date, created from raw GPS data and including examples of video data



Example of four selected sidewalk segments in the interactive online sidewalk quality survey



Example of start screen for videos included in online survey

	N/A	pros:	cons:
1 Grade	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 Cross-slope	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 sidewalk width	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 Cracks/maintenance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 Vertical clearance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 Obstructions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 Buffer/amenities (i.e. street furniture)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8 Gaps and changes in level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9 Curb ramp condition/presence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

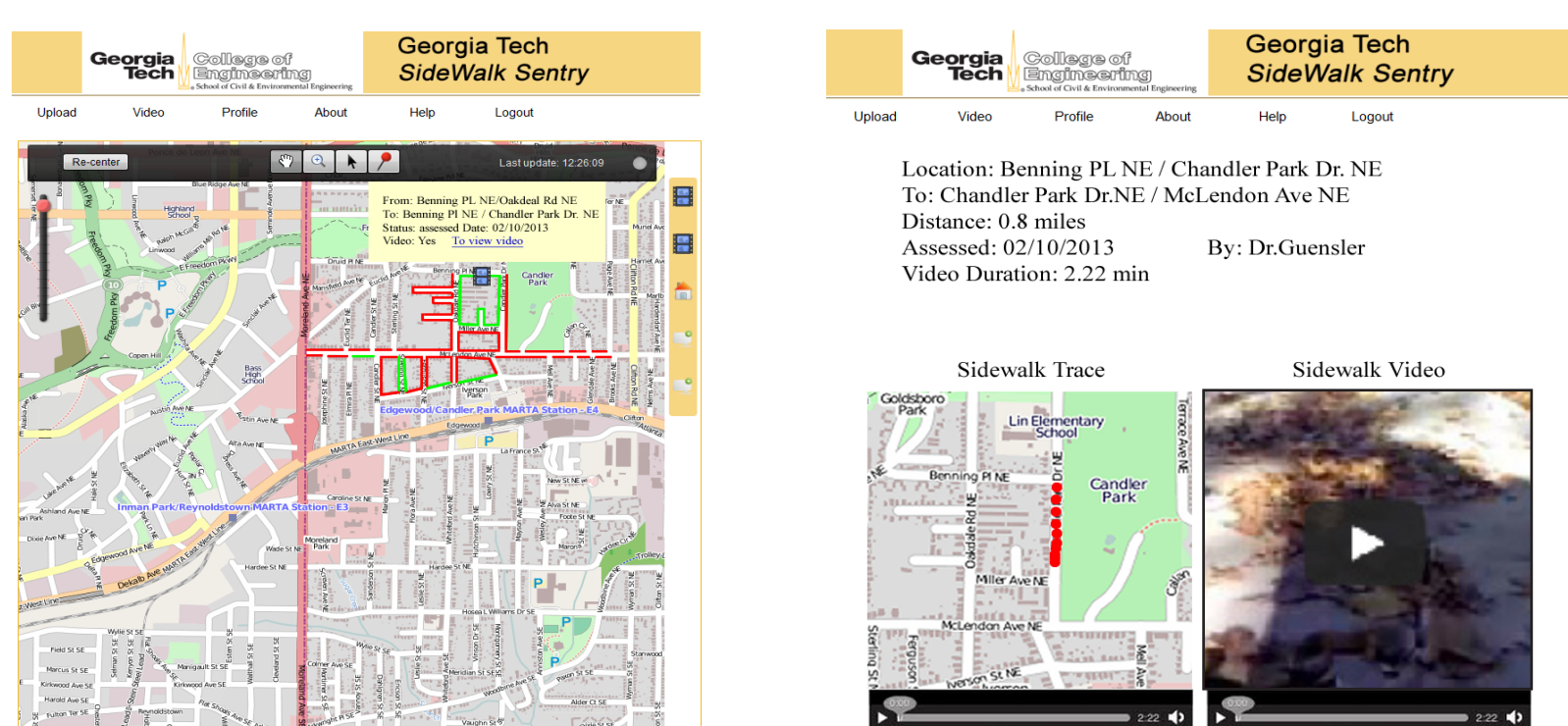
Examples of questions and information included in the online sidewalk quality expert survey.

## Sidewalk Quality Index Development

Researchers will develop a Sidewalk Quality Index system by:

- Correlating field data to survey results for case-study sidewalk segments
- Analyzing the significance of each measured quality parameter
- Creating a model comprised of weighted parameters from collected field-data and survey rankings
- Using the model to assign each sidewalk segment a composite Sidewalk Quality Index rating

Sidewalk Quality Index results will be made accessible through an online, Open Street Map enabled interface for use by stakeholders and decision makers.



Sidewalk Quality Index and collected data inventory as shown on Open Street Map

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\*Presenters, the full research team includes Evangelos Palinginis, Felipe Castrillon, Vetri Elango, Yanzhi Xu, Kari Watkins & Randall Guensler (Department of Civil and Environmental Engineering), and Ramik Sadana (College of Computing).



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