



## sitenotes

### Modernizing Construction Oversight & Creating an AI/ML-Ready GIS Data Platform

*AI is ultimately the rise of data. Communities that produce clean, GIS-first, machine-ready data today will be best positioned to benefit from AI, digital twins, and modern asset-lifecycle systems. The key is to break the problem into small building blocks, choose the right one to start with—GIS-based construction data, in our case—and rapidly build from there.*

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#### Background

The City of Greeley, CO—home to more than 112,000 residents and one of the fastest-growing cities in the United States—is undergoing more than \$2B in planned development. Annual capital spending totals roughly \$30–40 million, and roadway mileage is projected to grow from today’s 1,200 lane-miles to nearly 2,000 by 2040. Yet until recently, construction oversight operated much as it had for decades: inspections documented on paper or Word files, and as-builts created as redlined printouts of plan sheets or notes in a field book.

#### The problem

These paper-based workflows failed the FAIR principles: they were not **F**indable, **A**ccessible, **I**nteroperable, or **R**eusable. Once a project closed, the record of what was built, where, and how became nearly impossible to retrieve. The simple question—“Where did I put that sidewalk?”—often required digging through boxes of paper or calling staff who might no longer be with the city.

There was no data flow across the asset lifecycle. Design data was unused in construction, and construction data unused in asset management. Daily inspection reports had to be written by hand, rewritten into Word documents, and emailed as PDFs; pay applications, schedules, risks, and cost tracking were all managed separately. These overlapping, decentralized workflows cost inspectors and project managers hours of office time each day while generating low-value, duplicative deliverables.

#### The approach

As a mid-sized community with limited staffing and financial resources, Greeley had to prioritize software investments carefully. Following Bent Flyvbjerg’s philosophy, the City chose not to modernize the entire asset lifecycle at once but to break the problem into small, modular “lego” pieces that could scale over time. Applying the 80/20 Pareto principle, leadership identified the highest-value starting point: digitizing construction oversight and capturing GIS-based as-builts (what was built, where, and how)—data that, if not recorded during construction, would be lost forever. This clarity allowed the City and Sitenotes to design and roll out an initial deployment in just six weeks.

Before Sitenotes, Greeley evaluated four other commercially available software, including a pilot with a legacy transportation-focused vendor. That software was project-driven rather than asset-lifecycle focused, and it emphasized administrative inspection tasks instead of strategic, data-centric workflows. The pilot lacked flexibility and ease of use. To address these shortfalls, Greeley was considering stitching

together multiple disparate systems—until they encountered Sitenotes at a conference and immediately recognized the potential to address the root problems they had been trying to solve.

### **The solution**

Greeley deployed Sitenotes as its field-first, GIS-based construction data platform, beginning with the \$18 million Keep Greeley Moving (KGM) pavement and sidewalk rehabilitation program and ultimately expanding it across all Public Works projects citywide. Construction inspection shifted from an administrative reporting task to strategic digital as-built capture. Using easy-to-deploy Trimble survey devices integrated with Sitenotes' intuitive iOS and Android apps, inspectors collected sub-inch-accurate geometries, dimensions, and quantitative progress across more than 100 existing asset corridors—data now available not only for construction oversight but also for long-term asset maintenance.

### **Impact & outcomes**

The entire field-to-office workflow changed. Inspectors now capture daily progress, issues, and conditions directly in the field, while sub-inch GIS geometries greatly reduce time spent reconciling quantities with contractors. Staff across Public Works —field and office—share real-time visibility into every corridor—eliminating reliance on end-of-day emails and phone calls. Pay applications processed in Sitenotes are faster, clearer, and more collaborative, giving Greeley the option to move from monthly to weekly billing cycles. Most importantly, construction oversight is now transparent, standardized, and far easier for staff at all levels to manage, with ready access to the information they need.

Sitenotes also gave Greeley something entirely new: **AI- and ML-ready GIS-based connected construction data**. Because each field record ties directly to upstream design and downstream assets, a single dataset now supports GIS-based progress analytics, pay applications, real-time design verification, ESRI asset overlays, and soon, Cityworks (Trimble Unity Maintain) integration. Engineers can visually compare design intent to as-built conditions, and maintenance teams finally have accurate geometries and material histories. National research shows that agencies employing lifecycle-management practices can reduce long-term asset costs by up to 40 percent. Greater shared visibility is also reducing coordination risks that AASHTO estimates contribute 2–4 percent of project cost overruns across the industry.

Finally, by capturing and communicating GIS-enabled, sub-inch as-builts, the city is strengthening public trust—essential for demonstrating performance, securing future tax revenues, and earning resident support for continued infrastructure investment.

### **Going forward**

Greeley is now extending Sitenotes to the 60% of projects it doesn't own but must manage—private developer work and utility ROW—to capture a complete citywide digital as-built record.

The city is also exploring a regional data consortium with Northern Colorado municipalities and Colorado DOT to pool digital as-builts data for better ML-driven estimating, design, and contractor optimization.

### **Conclusion**

What began as a simple need—“*Where did I put that sidewalk?*”—has evolved into one of the nation's most forward-looking infrastructure data strategies. Greeley has built a reusable and growing data foundation that becomes more valuable with every project. The city has shown how a mid-sized agency can leapfrog traditional constraints, modernize construction oversight, and position itself for an AI-enabled future—setting a model that agencies of all sizes across the nation are now beginning to follow.