Look Twice!

Inventorying Pavement Markings for the City of Austin.
Our story of how we accomplished data inventory of our city crosswalks.

City of Austin
Austin Transportation Department
Signs & Markings Division

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Presentation Outline

- Background Information
- Developing the Project
- Collecting Spatial Inventory
- Maintaining the Dataset
- Lessons Learned
- On the Horizon
Background Information

- Austin is the capital of the state of Texas, the "Lone Star State".
- Square Miles: 278
- Acres: 177,945
- Population: 949,587 within city limits, but close to 2.1 million people in the Austin metropolitan region.
Assets in the Austin city limits

Signalized Intersections  
(Traffic Signals)  
Count: 996

Regulatory, Warning & Guide Signs  
Count: 160,000+
Pavement marking assets in the Austin

Crosswalks
• Count: ???

• In the past our department estimated the number at:

~ 10,000 crosswalks

• Extrapolated by using known assets: i.e. intersections, traffic signals, schools...
Questions Asked By Management

- When was the last time we performed maintenance on the asset?
- What is the condition of the asset?
- What material is it made of?
- Is it located at a signal? CBD? School?
- How many assets do we have?
- What assets have been installed in the field?
- How many crosswalks in the downtown area?
The Ask

- Estimate material needs.
- Estimate future maintenance costs.
- Development of Pavement Markings Maintenance Plan.
Cost Estimate for Changing Crosswalks

Change from Transverse (Standard) crosswalk type to Continental crosswalk.

MAINTENANCE APPROXIMATE COST ANALYSIS

- Transverse crosswalk: $450
- Continental crosswalk: $750
Pilot Project

PROOF OF CONCEPT

- Central Business District (CBD).
- Approximately 740 + classified crosswalk assets.

TOTAL COST

Approximately over $1.5 million for two years of maintenance.
Achievements of Pilot Project

Tackled an actual problem to show that data plays an important role in decision making.

Promoted data to show value and provide meaningful results for our organization.

With the success of the project, our department requested more data and supported an initiative to collect spatial asset inventory throughout the city.
Options for Data Collection

Option 1
- Contractor
- Field collection

Option 2
- Contractor
- Desktop collection

Option 3
- In-house
- Desktop collection

OPTION 3 – Chosen!

1. Less expensive
2. No RFP required.
3. Control timeline & data quality.
4. Design maintenance plan simultaneously.
The Support: Non-GIS & GIS staff

Used non-GIS team members
• Trained staff up (3 to 6 months)
  1. Started on ArcGIS Online web application
  2. One formal instructor-led ESRI GIS class
  3. Graduated to ArcMap desktop
  4. Editing moved to ArcGIS SDE environment

Additional GIS team members
• Hired (2) temporary GIS technicians for duration of project
Data Attributes - Iterations

Performance Measures

Questions from Management

Maintenance Forecasting

Pavement Markings Attributes

- INTERSECTION ID
- SEGMENT ID
- SHORT LINE TYPE
- SUBTYPE
- CBD
- SIGNAL INTERSECTION
- OTHER AREA
- SCHOOL
- MATERIAL
- ASSET CONDITION
- INSTALL DATE
- CREW ASSIGNED
  (Maintenance Area Plan)
Project Set-up

Grid System + Maintenance areas
Equally divided geographic areas/person

~100 grids

Documenting work flow process
• For training references, so training is painless.
Data Collection Obstacles

Digitization process changes

- Top & bottom of crosswalk → crosswalk centerline

Clarifying criteria for data collection

- Road ownership and maintenance information for what assets belong to the City
- Talked to Subject Matter Experts to resolve uncertainties
The Deadline

- Determine digitization goals
- Set up optimal timeline after you determine what is tangible for your team by assessing work load factors.
- Tracked data inventory progress weekly (every two weeks)
- Created spatial reports for management and team to keep us on track.
Maintaining the dataset markings + spatial crosswalk inventory = sustainable dataset

Key Features

Blue points: Crosswalk locations with install dates or maintenance dates.
Crosswalk maintenance plans for assets:

- Schools
- Traffic Signals
- Central Business District
- and everywhere else.

Proactive 😊
Reactive 😞
Lessons Learned

Define your criteria requirements in the beginning.
Save you time in the long run.

Expect to do data-clean up.
Things aren't going to be perfect. Look Twice!

Training Consistently & Increments.
Making sure team is editing and classifying the same so no surprises at the end.
Non-GIS folks can get trained up in short amount of time.

Use Subject Matter Experts.
Non-GIS staff, experts in subject area were incredibly valuable.

Spatial Progress Reports.
Were crucial to staying on track.

You CAN change the perception of GIS
Not just pretty maps
Next Steps

Currently in development

• Create ArcGIS Online Web Map/App maps for non-GIS staff.

• Enable field work force to update maintenance dates to keep data FRESH.

• Build an Operations Dashboard for reporting.
On the Horizon

Data collection effort for:

• Traffic Signal Poles
• Traffic Signal Cabinets
• Local Area Traffic Management (LATM) – speed mitigation devices
• Remaining unmapped pavement markings
Credits

GIS Technicians

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Signs & Markings Division
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