An LRS-driven Approach to Sign Asset Management and Parking Analysis

James K. Graham
Mitch Caya
Not too long ago,

In a place where sign inventory used to be a real pain in the butt...
Sign Works
Contradicting parking signs in D.C. confuse drivers

By Sam Ford  June 18, 2014 - 05:57 pm

Dear Dr. Gridlock:

On Constitution Avenue NW between 10th and 12th streets in front of the Natural History Museum, I saw some poor tourists' cars parked away at 5 p.m., the street signs give contradictory parking hours.

On top of the pole a sign "No parking 4:00 to 6:30" that, another sign reads "hour parking 9:30 to 6:30"

I wonder how long these signs have been in place?

-- Suzanne McIntire, Arl

The lower sign, the green one, includes the version of the District parking rules, allowing parked for extended time evenings as long as the time. D.C. Mayor made that change.


### Sign Inventory Data

<table>
<thead>
<tr>
<th>WARD</th>
<th>SIGNS</th>
<th>SUPPORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18327</td>
<td>9331</td>
</tr>
<tr>
<td>2</td>
<td>37144</td>
<td>18685</td>
</tr>
<tr>
<td>3</td>
<td>29503</td>
<td>18799</td>
</tr>
<tr>
<td>4</td>
<td>26133</td>
<td>16826</td>
</tr>
<tr>
<td>5</td>
<td>26724</td>
<td>17324</td>
</tr>
<tr>
<td>6</td>
<td>36414</td>
<td>19666</td>
</tr>
<tr>
<td>7</td>
<td>18495</td>
<td>12904</td>
</tr>
<tr>
<td>8</td>
<td>13331</td>
<td>9552</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>206071</strong>*</td>
<td><strong>123087</strong></td>
</tr>
</tbody>
</table>

*Does not include street name signs

#### Example Sign In Ward 8

- **MUTCD:** R-NS-006
- **Day Start:** Monday
- **Day End:** Friday
- **Time Start:** 0700A
- **Time End:** 0930A
- **Time Start2:** 0400P
- **Time End2:** 0630P
- **Date Captured:** 2016-02-29
- **Arrow:** Bi-directional

[open globespotter](#)
CycloMedia

Snapshot

• Founded 30+ yrs ago in NL
• US HQ in Berkeley, CA
• Collecting imagery & LiDAR in US since 2013
• Collect & process nearly 400K linear miles annually
• Advanced machine learning techniques to automate asset analytics
• MS Azure Cloud delivery
• Street Smart Viewer Tool
• Currently host 1 petabyte of data on the Cloud
• Statewide & project-based options
Image Quality

- 100 MP Resolution
- 360° panoramic
- No seamlines or gaps
- Parallax free
- 3D imagery w/ X,Y,Z values
- Date, time, location
Image Metrics

- Geometrically accurate
- Each pixel geocoded
- Images synced to your LRS
- Measurement w/in 2cm
- Positional w/in 10cm
LiDAR Point Cloud

- Simultaneous collection leads to greater quality
- Provides the foundation for asset extraction
- 700,000 pts/second
- 100M range
- Can be hosted via the Cloud or delivered
D.C. DOT
Sign Inventory

- No existing sign inventory
- Field collection accuracy 2-3'
- Reduced time by > 50%
- 50% of cost for field collection
Adams Morgan, Washington, DC
Python-automation: Parking Restricted + Allowed
Cool Maps, bro

“That’s great...
But it’s not going to work”
Paper-based Requests
Paper-based Management
Signs are highly complex...
And they impact a lot of things
Signworks

- Custom-build, specific to DDOT workflows
- Manages sign assets from “cradle to grave”
- Sign Catalog: User control & update of sign types + design
- Sign Request: Workflow-managed sign changes
- Integrates with Cityworks (asset management system for work orders)
Signworks Feature Service (public)

https://maps2.dcgis.dc.gov/dcgis/rest/services/DDOT/Signworks/FeatureServer
Next Steps:

• Deploy to prod (currently still in UAT)
• Work on integrating QC/validations
• Make Cool Maps for Next Conference
The Team

Jon Jones  
Anji Kandi  
Osheen Safarian
Thank You

James K. Graham
James.Graham2@dc.gov

Mitch Caya
mcaya@cyclomedia.com