Safety Rest Area Asset Management:
Creating a GIS-Based Asset Management System

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Program Overview

VDOT’s Safety Rest Area and Welcome Center (SRA/WC) program is committed to the development and maintenance of the rest area and welcome center facilities for the safety of the motoring public on Virginia’s interstates. The program’s existence is consistent with the development of SRAs and WCs across the country, which is to improve motorist safety by reducing the number of fatigue-related accidents and illegal shoulder stops on interstate highways.

The SRA/WC program’s vision is to plan and deliver a high quality of operations, maintenance and repair strategies to provide safe, convenient, and accessible facilities to the traveling public.

Statewide Program

- 43 Safety Rest Areas and Welcome Centers statewide
- 37 million visitors per year
- $24 million annual budget for maintenance and operations
Project Summary

Timmons Group was given the task to create an asset inventory for all major VDOT Safety Rest Areas (SRAs) across the Commonwealth. That data would then be used to track and report deficiencies through a monthly inspection process. The backbone of the inventory process and monthly inspections is ArcGIS Online, using Collector for ArcGIS as the collection tool.
Project Goals

► Improve upon previous paper-based monthly inspection process
► Develop data model to support collection of all assets
► Develop GIS-Based asset inventory/repository
► Utilize COTS Esri software wherever possible
► Maintain up-to-date asset inventory for all SRAs
► Ability to track maintenance activities and lifecycle of VDOT Assets
► Tracking of property management contractor performance
► Continued GIS support & enhancement
Project Details- CAD/PDF Conversion and Data Prep

- Existing CAD files for all SRAs across the state
  - Building footprints
  - Interior layouts
  - Utility features
  - Planimetric Data
    - Parking Markings
    - Pavement Edges Curbs
  - Imagery
    - Parking spaces
    - Walkways
    - Exterior greenspaces
Project Details - Data Modelling

- Wide variety of desired assets made data modelling tricky
  - Utilities
  - Restroom facilities
  - Any VDOT-owned assets requiring maintenance

- Timmons Group Utilized ESRI’s Local Government Information Model as a starting place

- Client communication was key in building a data model to meet all business needs
  - Multiple meetings with VDOT and Louis Berger personnel to discuss business needs
  - Understanding what was VDOT Managed vs. what was managed by property management
Project Details - Data Collection

- Collector for ArcGIS was chosen as basis for fieldwork
  - Editing feature services hosted internally on our ArcGIS Server
- Highly configurable and support for related tables/features was key
- Offline collection capability was a necessity
- Trimble R1 GPS Receivers used for exterior data collection
Project Details - Data Cleanup

- Organizing assets based on CAD Data location
- Some miscellaneous features were migrated to appropriate feature classes
  - Client communication was key here as well
- Attribute standardization through domains
- Topology checks - smoothing of harsh edges on polygons and lines based on imagery
- Ensured relationships between features and attachments were maintained
Project Details - Data Cleanup
Project Details- GIS-Based Reporting Process

- GIS assets accessed through Collector for ArcGIS
  - Inspectors use Collector for ArcGIS to create monthly inspection reports and attach deficiency records to appropriate features
  - Deficiencies determine funds appropriated to property management company for maintenance and replacement activities
- Allows for historical tracking of deficient assets to improve ROI
- Automated cloud-based processes look for new or recently edited inspection records to generate an excel report
  - Report captures deficiencies/attachments and scores categories of assets based on performance metrics then attaches that report to the related record in the GIS.
Project Details - SpringCM Integration

- GIS stores asset inventory/deficiencies but is not intended to be the official repository of inspection reports.
- During the inspection approval process by inspectors, supervisors, and VDOT, inspection report drafts are generated and automatically uploaded to SpringCM (Secure cloud-based content management system).
- Once VDOT and Property Management approve report, the final report is sent to SpringCM and the report is closed for editing in the GIS.
- After agreed-upon period the outdated attachments are retired from the GIS and live permanently in SpringCM.
Data Hand-Off - ArcGIS Online Migration

- Following cleanup and QAQC processes, collected data was published to VDOT’s ArcGIS online organization as a hosted feature service
- Sandbox environment was configured for testing purposes as well as a production version
- Webmaps for Collector and Web App Builder apps were created for VDOT to verify inventory and approve monthly inspections
Data Hand-Off - Contractor/VDOT Personnel Training

- Timmons Group created training documentation for VDOT Staff as well as the contractors who would be performing monthly inspections
- Hosted training sessions to on-board contractors and VDOT staff onto the new inspection and reporting processes
Data Hand-Off - Continued GIS Support

- Additional data collection around wastewater facilities
- Continued support for ArcGIS Online update introductions
- Continued support for automated inspection report tool and minor enhancements as desired
Future Efforts

► Utilization of Operations Dashboard
  ► Tracking wastewater operations
  ► Monitor inspection report processing durations

► ADA Inspections and Data creation
  ► Implementation of Survey 123-based ADA inspection process
  ► Automated reporting of ADA deficiencies
    ► Operations dashboard
    ► Excel reports
Project Initiation/Configuration

ADA Checklist for Existing Facilities

Based on the 2010 ADA Standards for Accessible Design

Produced by:
Institute for Human Centered Design
www.HumanCenteredDesign.org

ADA National Network
www.ADAata.org
Questions on the ADA 800-949-4232 voice/TTY
Questions on checklist 617-695-0685 voice/TTY
ADAInfo@NewEnglandADA.org

Interpreting the Checklist

### Priority 1 – Approach & Entrance

1.1 Is there at least one route from site arrival points (parking, passenger loading zones, public sidewalks and public transportation stops) that does not require the use of stairs? [See 2010 ADA Standards for Accessible Design – 206.2.1]

- [ ] Yes
- [ ] No

If yes, location of route:

### Parking

Accessible parking spaces should be identified by size, access aisle and signage.

1.2 If parking is provided for the public, are an adequate number of accessible spaces provided? [208.2]

- [ ] Yes
- [ ] No

<table>
<thead>
<tr>
<th>Total Spaces</th>
<th>Accessible Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 25</td>
<td>1</td>
</tr>
<tr>
<td>26 - 50</td>
<td>2</td>
</tr>
<tr>
<td>51 - 75</td>
<td>3</td>
</tr>
<tr>
<td>76 - 100</td>
<td>4</td>
</tr>
<tr>
<td>100+ see 2010 Standards 208.2</td>
<td></td>
</tr>
</tbody>
</table>

1.3 Of the accessible spaces, is at least one a van accessible space?* [208.2.4]

- [ ] Yes
- [ ] No

*For every 6 or fraction of 6 parking spaces required by the table above, at least 1 should be a van accessible space.
Interpreting the Checklist

2.8 Do all objects on circulation paths through public areas, e.g., fire extinguishers, drinking fountains, signs, etc., protrude no more than 4 inches into the path?

- [ ] Yes  [ ] No

**Measurement:**

- [ ] Yes  [ ] No

**Or**

If an object protrudes more than 4 inches, is the bottom leading edge at 27 inches or lower above the floor? [307.2]

- [ ] Yes  [ ] No

**Measurement:**

- [ ] Yes  [ ] No

**Or**

Is the bottom leading edge at 80 inches or higher above the floor? [307.4]

- [ ] Yes  [ ] No

**Measurement:**

Photo #: 

2.9 Are there elevators or platform lifts to all public stories?

- [ ] Yes  [ ] No

Note: Vertical access is not required in new construction or alterations if a facility is less than three stories or has less than 3,000 square feet per story, unless the facility is a shopping center, shopping mall, etc.
Designing the Survey
Survey123

3.5.6 Is there clear floor space beyond the arc of the door swing between the closed position and 45-degree open position? [703.4.2]*
- Yes
- No

Is the baseline of the lowest character is at least 48 inches above the floor and the baseline of the highest character is no more than 60 inches above the floor? [703 4.1]*
- Yes
- No

Measurement of Center of text (Inches)*
- If measurement is greater than 100 inches input 999
- 60
Pilot: Dinwiddie North SRA

VDOT
Virginia Department of Transportation

TIMMONS GROUP
ADA Facilities Inspections
Reporting Process: Operations Dashboards

► Packaged in a story map, the Operations Dashboards allowed us to present the data we collected in an easy user-friendly interface.
Reporting Process Continued

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