



## Automated Asset Management Proposal

Ocala, FL

May 03<sup>rd</sup> , 2022

# **Proposal for the City of Ocala, FL**

**Prepared for:**

**Tom Casey**

**Infrastructure Operations Division Head**

**Ocala**

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May 03<sup>rd</sup> , 2022

Tom Casey, Infrastructure Operations Div. Head  
City of Ocala  
1805 Northeast 30<sup>th</sup> Ave, Building 300  
Ocala, FL 34470

Thank you for your interest in StreetScan. Municipalities worldwide are faced with aging infrastructure and limited budget resources to repair and maintain them. Having the ability to monitor the health of your street network through an abundance of data collected via multiple vehicle-mounted sensors allows your staff to properly allocate repair and maintenance budgets. This is now made possible in an affordable, objective way utilizing StreetScan's advanced mobile sensing vehicle and online web-based app.

Our service offering includes:

- Data Collection: vehicle survey of paved lane miles.
- Data Processing of pavement condition and assets.
- Data Visualization: pavement monitoring system including StreetScan's Pavement Rating (SPR) Report.
- Pavement Management Plan: maintenance and budget options, suggestions and scenarios; optional cloud-based access with robust interactive planning and budgeting tools.
- ADA Sidewalk width
- ADA Ramp Compliance
- 360 Degree Imagery

Also available (see Appendices for more details):

- Optional asset extractions including pavement markings, traffic signs, utility assets, street lighting, sidewalks, curbs, trees, etc.

If approved by the city council on May 17<sup>th</sup> ; the start date will be on July 05<sup>th</sup> with a finish date of October 07<sup>th</sup> by StreetScan in 2022.

On behalf of the team at StreetScan, we are pleased to submit this proposal for your review. We strive to be as accurate as possible in our initial projections and cost estimates, and look forward to meeting with you soon to discuss any questions you may have.

Yours truly,



Stan Karlin  
Manager, Sales and Marketing

## 1.ABOUT US

At StreetScan, we come to work each day because we want to solve our clients' biggest problems when it comes to monitoring their street assets. We have a Smart City Mobile Sensing Service Offering targeted at providing clients with an intelligent, objective and affordable way to manage those assets.

Throughout the history of business, people have used data to make more informed decisions. StreetScan enables exactly this for our municipal clients.

Municipalities no longer have to send inspectors into the field for pavement surveys. Now, they can leverage the power of data to improve their decision-making abilities.

This all came about as a result of a 2009 groundbreaking project at Northeastern University that received more than \$18 million in funding over a 5-year period. This stamp of approval was due to the power of the project to end localized pavement inspections and enable continuous network-wide health monitoring of roadways.

What kind of technology made this possible? Versatile Onboard Traffic Embedded Roaming Sensors (VOTERS). A framework, prototype and blueprint were successfully designed and developed, and in 2015, StreetScan was launched as a spin-off of the project. It is our comprehensive, advanced hardware and software turn-key solution that distinguishes us from the competition. More importantly, it provides street asset monitoring at a reasonable cost for our clients.

2017 saw the emergence of our current Smart City Service Offering and we have combined this service with our pavement management offering. Clients save time, money and no longer require additional field surveys. Our ScanCars can enable municipalities and other clients to extract and monitor critical assets such as pavement condition, traffic signage, pavement markings, streetlights and other transportation infrastructure assets.

We embrace progress. In 2018, StreetScan launched Streetlogix. This extensively customizable, web-based GIS asset management software has changed the landscape for municipalities. Municipalities can now optimize their budget within a user-friendly GIS environment. The system provides objective information on the current state of their infrastructure and makes maintenance and repair recommendations, including the prioritization of roadway projects. Using unprecedented data visualization and budget optimization tools, our clients have been creating defensible data-driven Capital Improvement Plans while successfully justifying their budgeting requests.

The most important thing you need to know about StreetScan is our data-driven approach. It will change the way you monitor your street assets – for the better and for the future.



**Powered by AI**

## 2. OUR TEAM



**Stanley Karlin – Manager, Sales & Marketing** – As the Manager of Sales & Marketing at StreetScan, Stan brings over 25 years of experience in selling & marketing exclusively to the public sector. Stan came to StreetScan after selling his municipal software company where he served as the Chief Marketing Officer, and is eager to promote StreetScan's new technologies and solutions to local governments. He received his M.Ed. From Temple University in Instructional Design & has used this knowledge to help better explain complex solutions in marketing.



**David M. Vines – Sr. Project Manager** – David will provide project management leadership for the road condition assessment of the municipal road network. As the primary point of client contact, David will coordinate the project from the kickoff meeting to project delivery. He will provide geotechnical support for route creation, results publishing and end-user training on software functionality. David joined StreetScan as a Research and Development Engineer and was instrumental in the initial setup of the firm. He received his Ph.D. in Civil Engineering and a MS in Structural Engineering from Northeastern University in Boston, MA, as well as a B.S. in Civil Engineering from Valparaiso University in Valparaiso, IN.



**Ivano Teti – Customer Success Manager, Streetlogix** – Ivano provides ongoing support to our customers from their onboarding of Streetlogix through the long term, ensuring they reach their goals for integrating asset management technologies to enhance their daily operations. He brings over 13 years' experience in sales and management, with a strong knowledge of the traffic, transit signal and detection industry. Prior to joining Streetlogix, Ivano managed accounts and inside sales at Electromega Ltd. where he provided adaptable and cost-efficient traffic solutions to Ontario municipalities alongside external partners such as Leotek, Siemens, and others. Ivano has completed management courses at Concordia University's John Molson School of Business in Montreal, QC.

### 3.THE STREETSCAN SYSTEM

StreetScan's automated data collection and algorithm-based roads prioritization software can help optimize your road budget and provide user-friendly analytics about the status of your roads and sidewalks.



#### Data Collection

StreetScan's vehicles equipped with multi-sensor systems detect pavement & sidewalk surface distresses without interrupting traffic flow.

#### Data Processing

Optimized algorithms evaluate and prioritize repairs of assets, including pavement, sidewalks, traffic signs, and more.

#### GIS Analytics

Collected data goes into Streetlogix, our unique **cloud-based application**, allowing municipalities to visualize and manage road assets in order to schedule maintenance within a user-friendly GIS environment.



## 4. STREETLOGIX SOFTWARE

### 4.1 ASSET MANAGEMENT SOFTWARE

Streetlogix's **Asset Management Module** is a cloud-based mapping, analysis, and decision-making tool for the public sector. Use it to create maps, analyze data and plan road repairs, sidewalk projects, traffic signs and right-of-way budgeting decisions. Your data and maps are stored in a secure and private infrastructure and can be configured to meet your mapping and IT requirements.

#### Asset Management Key Features:

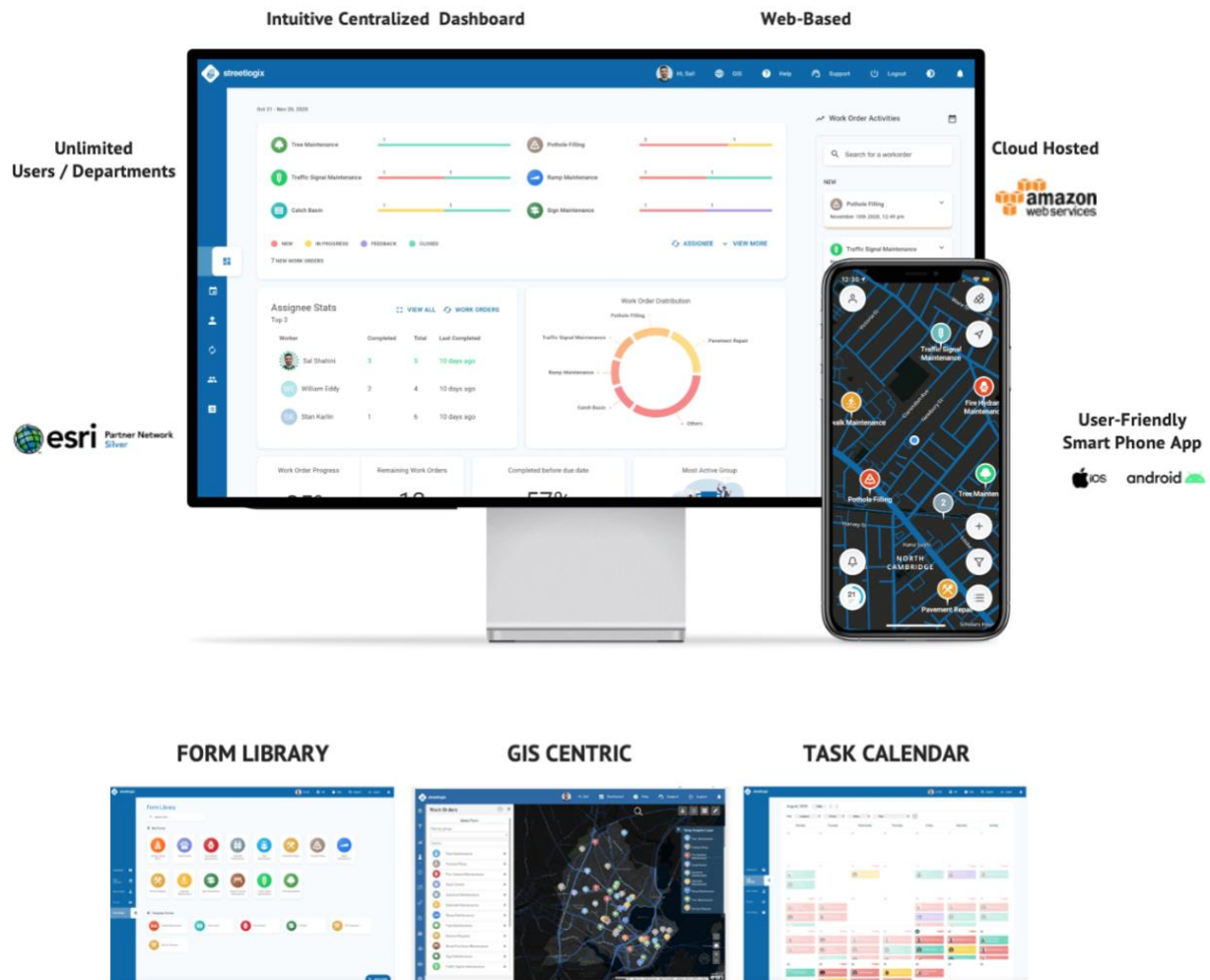




## 4.2 WORK ORDER MANAGEMENT SYSTEM

Streetlogix's **Work Order Management System** brings greater organization, efficiency, and accountability to your task management planning, allowing you to effectively schedule, track and manage all work orders, as well as monitor work order performance metrics in a centralized dashboard. Plus, you can track and complete work orders in the field using our app on your mobile device.

### Work Order Key Features:



## 4.3 CITIZEN ENGAGEMENT APP

Streetlogix's **Citizen Engagement App** empowers your residents to submit service requests while enabling you to easily monitor the submissions. Our 311 application ensures your residents that each request is heard, acknowledged and tracked. It is simple to use, easy to set up, and allows automatic updates for residents on efforts to keep their community functioning. Streetlogix Citizen Engagement app helps you build a collaborative, transparent and stronger community.

### Resident Online Form:

The four screenshots illustrate the user flow for submitting a service request via the Citizen App:

- Screenshot 1:** The initial screen with a map view of the service area and a list of recent complaints on the right.
- Screenshot 2:** The 'Enter details' screen where the user selects a 'Type of Complaint' from a dropdown menu.
- Screenshot 3:** The 'Enter details' screen showing a list of complaint types: Search Basin, Dead Animal, Light Fixture, Other, Truck, Pipe Leakage, and Support.
- Screenshot 4:** The 'Enter details' screen with form fields for First Name, Last Name, Email Address, Street Address, City, State, and Postal Code.

### Layout Editor:

*Seamless integration  
with Work Order App*


The screenshot displays the 'Service Request' layout editor, which includes a table of complaints and a sidebar with navigation options.

Type	Reported By	Address	Submission Date	Status	Source
13	Pipe Leakage	Salem Shulins 131 South 1st Street, Austin, TX, USA	January 19, 2021	New	Call
4	Other	Salem Shulins 3301 Touchstone St, Austin, TX 78705, USA	December 22nd 2020	In Progress	Citizen App
7	ADA Ramp	Salem Shulins 1804 Vance Ct, Austin, TX 78703, USA	December 22nd 2020	New	Citizen App
4	Bridge	Roman Roman Atlantic Ocean	December 16th 2020	In Progress	Citizen App
5	Support	Senier de vil et middeweg, Brossard, QC J4W 0A6, Canada	December 16th 2020	New	Citizen App
4	Light Fixture	16016 Montclair Lane, 55117 545, Canada	December 16th 2020	In Progress	Citizen App


## 5. PRICING OVERVIEW

### 5.1 SERVICES SELECTED



PAVEMENT MANAGEMENT				
	SERVICES INCLUDED	CENTERLINE MILES	\$/CL	TOTAL
StreetScan DATA COLLECTION	ScanCar Data Collection	360 mi	\$120	\$43,200
	Data Processing			
	Processed Data Results			
Mobilization and Setup Cost				\$7,889
TOTAL				\$51,089
DISCOUNT (10%)				(\$5,109)
TOTAL w/ Discount				\$45,981

SIDEWALK MANAGEMENT				
	SERVICES INCLUDED	SIDEWALKS MILES	\$/MI	TOTAL
 DATA COLLECTION	ScanCart Data Collection	225 mi	\$211	\$47,475
	Data Processing			
	Sidewalk Videos			
	Processed Data Results			
Mobilization and Setup Cost				\$7,920
TOTAL				\$55,395
DISCOUNT (20%)				(\$11,079)
TOTAL w/Discount				\$44,316

ADA Ramps and Sidewalk Width Data Collection			
SERVICES INCLUDED	Center Line Miles	\$/CLM	TOTAL
ADA Sidewalk Width	225	\$40	\$9,000
ADA Ramp Compliance	3,375	\$12	\$40,500
Project Mobilization			\$5,000
<b>Total</b>			<b>\$54,500</b>

STREETLOGIX SOFTWARE MODULE PRICING					
 streetlogix MODULES	POPULATION	ANNUAL LICENSE	ANNUAL DATA	IMPLEMENTATION FEE	TOTALS
<b>ASSET MANAGEMENT</b>	59,253	\$10,000	\$1,250	\$3,500	\$7,375 - 50% Off

## 5.2 FINAL TOTAL

	SERVICES AND SOFTWARE	STANDARD
 DATA COLLECTION  	Pavement Asset Management Services	\$45,981
	Sidewalk Asset Management Services	\$44,316
	360 Degree Imagery Package	Included
	ADA Ramps and Sidewalk Width Data Collection	\$54,500
	Streetlogix Asset Management Software	\$7,375
<b>II TOTAL</b>		<b>\$152,172</b>

# Annex

## APPENDIX A – SCOPE OF WORK AND DELIVERABLES

### ROAD AND SIDEWALK ASSESSMENT SERVICE

StreetScan offers a technology-based Pavement Management approach for continuous health monitoring of your road network. Combining years of R&D at Northeastern University, StreetScan's vehicles and web-based app Streetlogix save you time and make your repair dollars go further. We have developed a 4-step process to effectively Scan, Process and Manage your road data.

#### STEP 1: DATA COLLECTION

##### Roads

Vehicle Deployed: ScanCar



StreetScan utilizes 3D imaging technology to measure road defects, such as cracking and bumps. The 3D imaging cameras provide a 8' (2.4m) of lateral road coverage and seamless road coverage in the direction of travel at speeds up to 65 mph (72kph). A 360 degree camera system provides imagery of the road surface and ROW. An Inertial Measurement Unit (IMU) enabled GNSS position system provides position location, even in the event of intermittent GPS satellite coverage.

##### Sidewalks

Vehicle Deployed: ScanCarts



StreetScan has developed a technology stroller-based approach which captures all the necessary distress & ADA data. We currently have 5 Carts in our fleet. StreetScan utilizes 2D imaging technology to measure sidewalk defects, such as Uplifts, Bumps, Holes, Cracking & Surface Texture. An IMU mounted on the cart measures tilt, slope & accelerations. A laptop computer is used for controlling data collection. An encoder on each wheel of the ScanCart's rear wheels provides accurate linear displacement along with a GPS, providing position information.

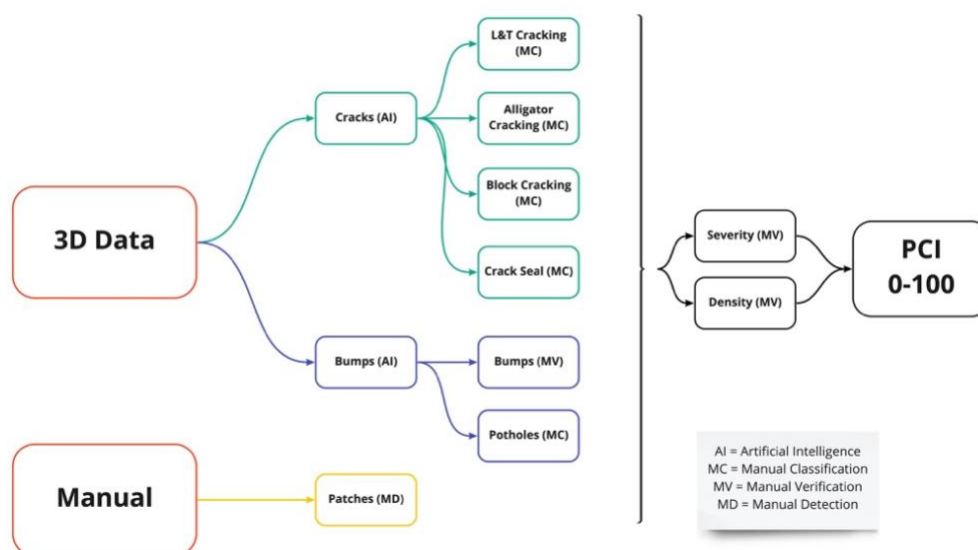
## STEP 2: DATA EXTRACTION

### Roads

The collected data (TBs/day) is uploaded to the StreetScan server, where automated software processes the raw sensor data. Using advanced processing algorithms, the sensors' raw data is converted into meaningful parameters representing different aspects of pavement condition. Several of our key indicators are fused to determine the **StreetScan Pavement Rating (PCI)** for each road segment. StreetScan's GIS specialists segment the pavement evaluation data from intersection to intersection and populate the database allocated to the segment.

### Sidewalks

StreetScan's basic approach uses a weighted failures scheme per linear distance for a given sidewalk segment. Individual failure or feature types are given various weightings depending on their contribution to perceived sidewalk condition. As an example, an uplift is considered to have more impact to the sidewalk quality than aggregate loss, so it is given a greater weighting in the rating formula.



### Sidewalk Algorithm



## STEP 3: DATA VISUALIZATION AND ANALYTICS

### Roads

Municipal staff will be given access to Streetlogix, our GIS web-based application, in order to view and analyze all collected survey data in addition to data from other sources to assist in decision making.

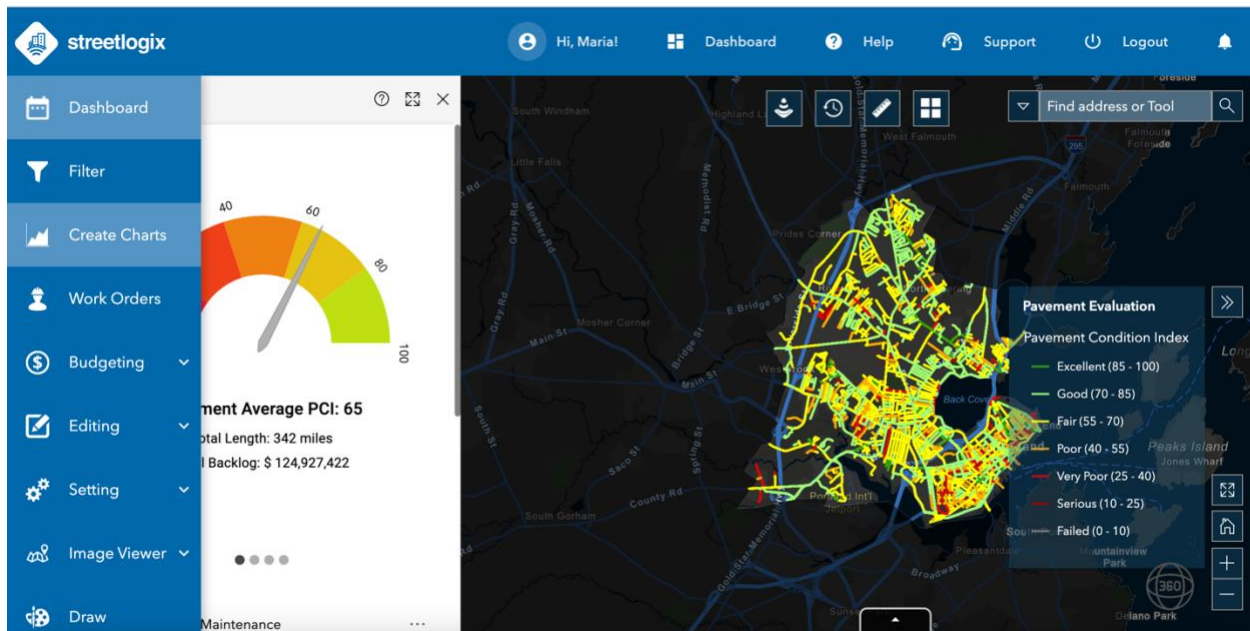
This provides staff an easy-to-use tool to quickly review PCI results, distress data and 360 images along with pavement history and other data that the municipality wants to be integrated. All data is hosted in the cloud, allowing users to login from anywhere on any computer to view the results. Streetlogix has many data import and export features making it compatible with any existing GIS solution concerning asset management. Streetlogix provides powerful data visualization and management tools including 360 viewer and extensive charts and dashboards (example below).

### Sidewalks

Municipalities are given access to our GIS web-based application, Streetlogix, in order to view and analyze all collected survey data in addition to data from other sources to assist in decision making.

This provides clients an easy-to-use tool to quickly review sidewalk condition results, distresses and sidewalk images. All data is hosted in the cloud allowing users to login from anywhere on any computer to view the results. Streetlogix has many data import and export features making it compatible with any existing GIS solution. Streetlogix provides powerful data visualization and management tools including 360 viewer and extensive charts and dashboards (example below).

### Portal view: Overall stats and available layers





## STEP 4: MAINTENANCE PLANNING

### Roads

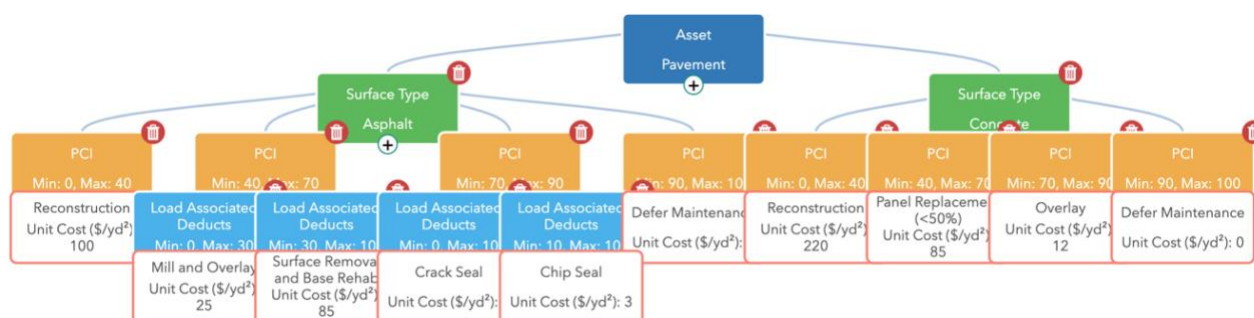
Once the inventory condition database and GIS web-app have been finalized, the work on implementing the pavement management side of the software begins. While pavement condition indicators are concerned with the current condition of the network, the management side of the process concerns itself with the analysis of condition, prediction of future condition, generation of maintenance options and pavement management scenarios. At this stage, the Client's preferred repair methods and associated costs are used to customize our Streetlogix asset management module. The results are compiled and reported to the client in our Streetlogix software and as a digital storymap.

Our decision-trees are highly customizable and we work with staff to tailor it to ensure our AI will provide the necessary maintenance and repair suggestions. All decision trees & underlying data will be editable by staff.

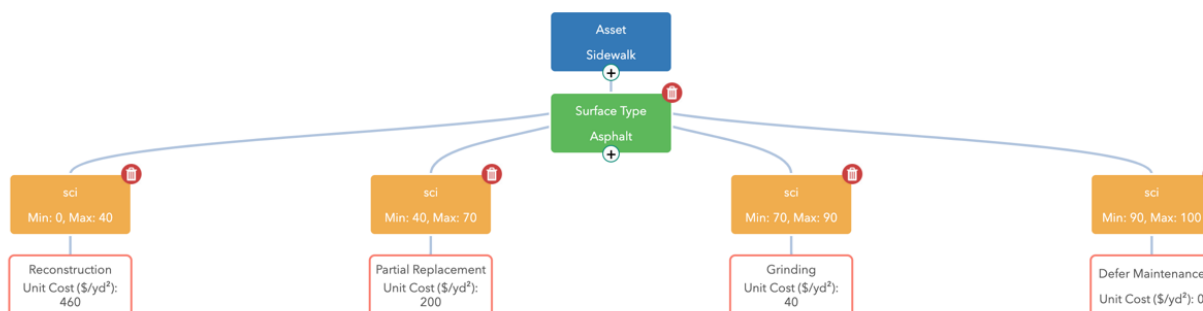
### Sidewalks

Once the inventory condition database and GIS web-app have been finalized, the work on implementing the sidewalk management side of the software begins. While sidewalk condition indicators are concerned with the current condition of the network, the management side of the process concerns itself with the analysis of conditions, prediction of future conditions, generation of maintenance options and sidewalk management scenarios. At this stage, the Client's preferred repair methods and associated costs are used to customize our sidewalk management modules. The results are compiled and reported to the client in our Streetlogix software and as a pdf document.

#### Roads:



#### Sidewalks:



## APPENDIX B – OPTIONAL SERVICES AND ASSET COLLECTION

StreetScan leverages AI with Semantic Segmentation in order to process the attributes which are included as part of the Work Order Module. As a result we guarantee over 80% accuracy of detecting all assets within the right of way but is subject to error due to obstructions or miss classifying the asset. 360 Imagery has the lowest margin of error and therefore is reliant on the imagery processed to obtain the assets.

### Paving Markings

Through StreetScan's existing collected data, our geospatial engineering team can extract pavement markings and insert them into a separate GIS layer. All data is accessible through Streetlogix. A visual review of the markings determine their current condition and whether maintenance is required.

Attributes	Description
Category*	Left Turn, Right Turn, Crosswalk, etc.
Location*	Global Positioning System (GPS) location (+/- 5 meters)
Condition	The analysis will be conducted from intersection to intersection and given a rating of either Good, Fair or Critical. If the length of the road is longer than 1,000 ft, the analysis will be broken up into 1,000 ft segments

\*Attributes included for the basic Pavement Marking inventory

*\* Measurement device has a rated accuracy of 0.1 degrees. However, in practice due to variations in ground surface and location where measurement is take, measured value can typically vary +/- 1 degree*

### Sidewalk GIS Database

StreetScan provides sidewalk locations, determined from existing data sources (satellite imagery, Google StreetView or ScanCar images) if available. All data is provided as a GIS layer.

Deliverable:

- GIS layer of sidewalk locations

### Curb GIS Database

StreetScan provides curb locations, determined from front or side facing imagery. Data is provided as a GIS layer.

Deliverable:

- GIS layer of the linear features where curbs are present

### Traffic Signage

StreetScan's traffic sign asset management service provides a simple solution for the Municipality to quickly and efficiently manage its traffic signs. StreetScan utilizes an algorithm to automatically locate traffic signs saving you time and money. Our geospatial engineering team then undergoes a rigorous Q&A process and collects multiple unique attributes. Traffic sign quantities are estimated at 1/8 of municipal population. Charges will be for actual number identified; please inform us if you have more accurate estimates.

Attributes	Description
Sign Category*	Regulatory, Warning, Guide, School, Recreation, Information, General
Sign Name*	Federal or State MUTCD designation or custom designation for specialized signs
GPS Location*	Global Positioning System (GPS) location (+/- 5 meters)
Sign & Post Condition	Good, Fair, Critical rating assessed through review of daytime digital images

\*Attributes included for the basic sign inventory

## **Catch Basins**

StreetScan provides catch basin locations, determined from existing data sources (satellite imagery, Google StreetView or ScanCar images) if available. All data is provided as a GIS layer.

Deliverable:

- GIS Layer of catch basin

## **Manhole**

StreetScan provides location of circular Manhole access points which are visible in the road imagery data. All data is provided as a GIS layer.

Deliverable:

- GIS layer of manhole locations

## **Tree GIS Database**

StreetScan provides tree locations which are situated in the right of way, determined from existing data sources satellite imagery, Google StreetView or ScanCar images if available. All data is provided as a GIS Layer.

Deliverable:

- GIS layer of tree location

## **Streetlight GIS Database**

Utilizing the ScanCar's cameras, StreetScan has the ability to review already collected data and extract the necessary street lighting attributes. A new street lighting data layer will be accessible through Streetlogix.

Attributes	Description
GPS Location	Global Positioning System (GPS) location (+/- 5 meter)

## **ADA Sidewalk Width**

StreetScan will manually calculate the sidewalk width from the 3D Data collected as this feature is not automated.

## **ADA Ramp Compliance Survey**

StreetScan's ADA ramp compliance criteria is based on the 2010 Americans with Disabilities Act (ADA) standards. StreetScan measures all ADA slopes associated with compliance using a digital level. The level used is M-D Building Products 93975 Smart Tool Adam Digital Slope Walker. All measurements are reviewed by quality control technicians and compliance is determined.

**Compliance Measurements**

StreetScan determines ADA ramp compliance based on the measurements shown below.

- Ramp Length (inches)
- Ramp Width (inches)
- Ramp's Cross Slope (%)
- Ramp's Running Slope (%)
- Landing Length (inches)
- Landing Width (inches)
- Landing's Cross Slope (%)
- Landing's Running Slope (%)
- Left Flare (%)
- Right Flare (%)
- Roadway Cross Slope (%)
- Roadway Running Slope (%)
- Detectable Warning Presence (Y/N)
- Detectable Warning Condition (Good/Fair/Critical)
- Material of Detectable Warning
- Sidewalk Surface Quality (Good/Fair?Critical)
- Obstruction

**Accuracy:**

Attributes	Description
<b>GPS Location</b>	Global Positioning System (GPS) location (typically +/- 1.5 meters)
<b>Ramp Slope / Cross Slope</b>	Angle (+/- 0.5 Percent)
<b>Road Slope / Cross Slope</b>	Angle (+/- 0.5 Percent)
<b>Flare Slopes</b>	Angle (+/- 0.5 Percent)
<b>Ramp Width Compliance</b>	Measure (+/- 1 inch)
<b>Landing Area Compliance</b>	Measures (+/- 1 inch) and angles (+/- 0.5 Percent)

Deliverables:

- GIS Layer with ramp location & missing ramps
- Image of ramps/no ramp
- Compliance
- Measured Attributes (shown above)

## APPENDIX C – OUR CLIENTS

### REFERENCES & ADDITIONAL INFORMATION

#### City of New Bedford, MA

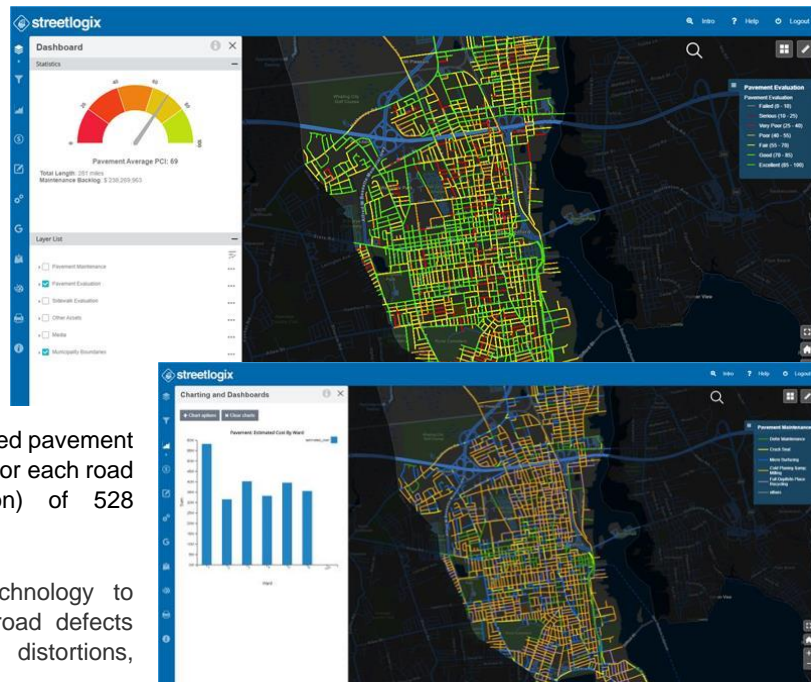
##### Project Objective:

StreetScan was contracted by the City of New Bedford to perform a road assessment survey that would objectively collect pavement condition and ROW data and provide a custom pavement management plan.

##### Project Description:

In the spring of 2019, StreetScan collected pavement condition, texture and roughness rating for each road segment (intersection to intersection) of 528 centerline miles.

The system utilized 3D imaging technology to measure the severity and extent of road defects including cracking, bumps, surface distortions, surface texture and potholes.



Additionally, the City selected StreetScan's Enhanced visualization package consisting of 360° HD camera that captured optical imagery of the road surface and right-of-way. StreetScan provided curb locations, determined from front or side facing imagery, via a GIS layer. The mandate included the assessment of 268 pavement markings.

The City added a Sidewalk and Ramp Assessment Survey to be carried out in the spring of 2020.

##### Project Outcome:

StreetScan delivered a custom pavement management plan and decision-making solutions via Streetlogix, StreetScan's GIS web-based software, whose algorithm utilizes PCI, road usage data and a cost benefit analysis to determine road maintenance, repair costs and prioritization per segment. Budgeting and planning tools allow for editable short- and long-term planning as well as level of service analysis with target PCI.

Project Contacts	
City of New Bedford, MA	Adam Hart, Supervising Civil Engineer (508) 9791550 x 67332 / <a href="mailto:adam.hart@newbedford-ma.gov">adam.hart@newbedford-ma.gov</a>
StreetScan	Salar Shahini, Chief Data Officer (617) 399-8236 / <a href="mailto:salar.shahini.s@streetscan.com">salar.shahini.s@streetscan.com</a>

## City of Portland, ME

### Project Objective:

The City of Portland, ME, selected StreetScan to perform a mobile sensing survey of City's road network and prepare custom Maintenance and Repair suggestions.

The mandate comprised the assessment of traffic signs, pavement markings and Streetlight Lux Levels.

### Project Description:

Data collection for the project included:

- 221 centerline miles of city-maintained roadways
- 21,847 traffic signs inventoried
- 2,585 pavement markings (line features: lane dividers, bike lanes, etc.)
- 4,429 pavement markings (point features: left arrow, bicycle marking, etc.)

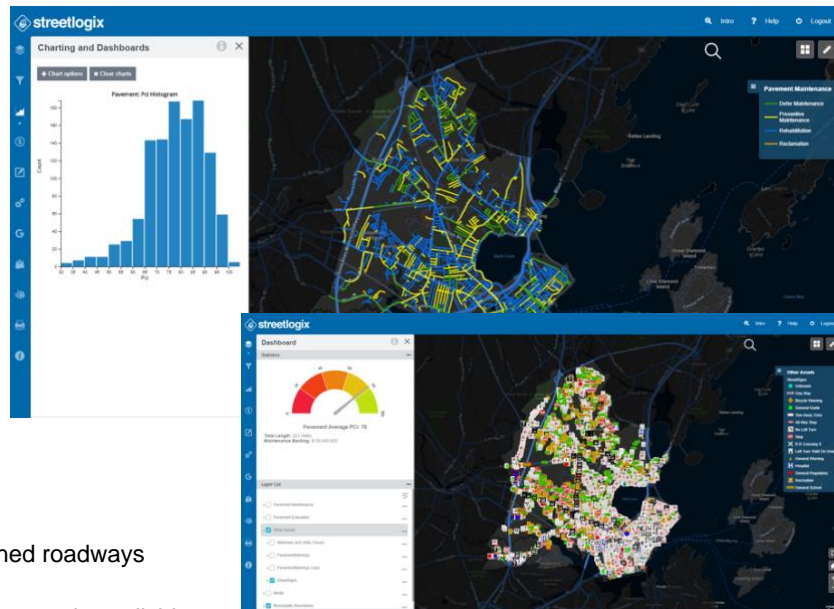
StreetScan used specialized ScanVan vehicles to assess the condition of roadways in normal traffic flow. During the survey, imagery collected from 2D Camera systems were used to locate pavement markings and traffic sign locations. Consequently, Manual on Uniform Traffic Control Devices (MUTCD) attributes were extracted from the traffic sign images by our technicians.

A Streetlight Lux Level Pilot was also performed. Utilizing a vehicle equipped with light sensors, StreetScan surveyed the Municipality at night to collect light level illumination data and provided a GIS layer also accessible through its web-based software.

### Project Outcome:

Data collection was completed in December 2016. Survey results were placed in Streetlogix, a customizable, GIS web-based application, whose algorithm utilizes PCI, road usage data and a cost benefit analysis to determine road maintenance, repair costs and prioritization per segment. Budgeting and planning tools allow for editable short- and long-term planning as well as level of service analysis with target PCI.

A second road data collection was performed in October 2019.



Project Contacts	
<b>City of Portland, ME</b>	Christopher Branch, Public Works Director (207) 874-8801 / <a href="mailto:cbranch@portlandmaine.gov">cbranch@portlandmaine.gov</a>
<b>StreetScan</b>	Salar Shahini, Chief Data Officer (617) 399-8236 / <a href="mailto:salar.shahini.s@streetscan.com">salar.shahini.s@streetscan.com</a>



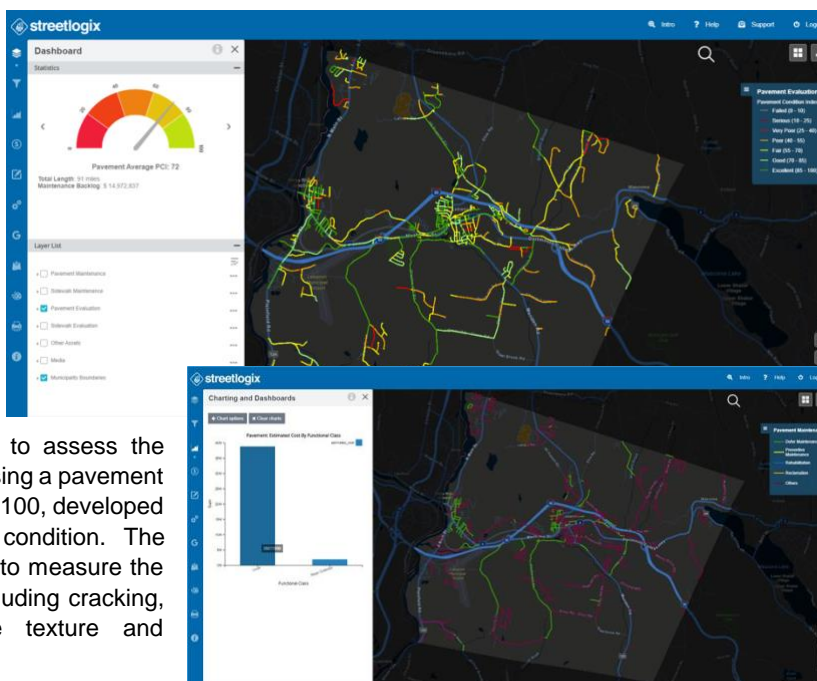
## City of Lebanon, NH

### Project Objective:

Perform a mobile sensing survey of the City's road and sidewalk network to assess its current condition and prepare custom Maintenance and Repair suggestions.

### Project Description:

In the summer of 2019, StreetScan utilized specialized ScanVan vehicles to assess the condition of 96 miles of roadway and, using a pavement condition index scale which runs from 0-100, developed a Municipal-wide inventory of road condition. The system utilizes 3D imaging technology to measure the severity and extent of road defects including cracking, bumps, surface distortions, surface texture and potholes.



For sidewalk assessments, StreetScan deployed mobile carts with high definition video capture capability to assess the condition of 30 miles of sidewalk. Through analysis techniques, sidewalk distresses such as cracking, aggregate loss, uplifts and surface distortion were identified, which were then used to calculate sidewalk condition ratings on a scale of 0 to 100—with 0 being the worst and 100 being ideal

### Project Outcome:

Results from the survey were placed in Streetlogix, providing an enriched view of the City's street network with color-coded pavement conditions and other assets, along with images for every scanned road and a range of decision-making tools

Project Contacts	
City of Lebanon, NH	James Donison, Director of Public Works (603) 448-3112 / <a href="mailto:james.donison@lebanonnh.gov">james.donison@lebanonnh.gov</a>
StreetScan	Salar Shahini, Chief Data Officer (617) 399-8236 / <a href="mailto:salar.shahini.s@streetscan.com">salar.shahini.s@streetscan.com</a>

**Sample of other Clients:**



City of Gainesville, FL



County of Tippecanoe, IN



City of Hillsboro, OR



City of Kilgore, TX



City of Parma Heights, OH



City of Lafayette, IN



City of New Bedford, MA



City of Spokane Valley, WA



Town of Somers, CT



Town of Dover, NJ



City of Portland, ME



City of Sidney, OH



City of Greenwood, AR



City of Castle Pines, CO



County of Tulsa, OK



City of Barrie, ON



Town of Beverly, MA



Town of Hampstead, QC



## CASE STUDY



# Data-driven approach enables Lorain to prioritize and justify roadway repairs

### OVERVIEW

#### User

City of Lorain, OH

#### Challenge

To replace a labor-intensive, subjective approach to assess its roads, the City needed a data-driven way to evaluate the condition of its roadway network.

#### Solution

- StreetScan's mobile sensing vehicle
- Streetlogix street asset management software

#### Results

The City now has the data and software tools to prioritize road repairs, eliminate outside influences and spend its money more efficiently through better planning.

*The City of Lorain is located in northeastern Ohio on Lake Erie, approximately 30 miles west of Cleveland. With over 60,000 residents, Lorain has numerous historical sites and activities to participate in for both residents and visitors and is home to the Charles Berry Bridge, the second-largest bascule bridge in the world.*

#### The Challenge

Like many municipalities in North America, Lorain was utilizing a visual assessment to gather information on the status of its road network. This subjective and labor-intensive method motivated the City to embrace a faster, objective, and transparent way to assess roadway conditions and determine which roads needed repair, along with how and in what order they needed to be repaired. Lorain's small engineering group was also receiving numerous complaints from residents. "Everyone thinks their street is in poor condition and we needed the ability to properly prioritize maintenance and improvements in a data-driven, scientific approach," said Guy Singer, Lorain's Deputy Director of Engineering.

### The Solution

Lorain embarked on a rigorous RFP process to select a pavement management provider and proceeded to interview the top three candidates. StreetScan was selected by a committee. “The attribute that the committee believed set StreetScan apart from other vendors was their Streetlogix asset management software,” explained Singer.

StreetScan performed a City-wide condition assessment using its Smart City Mobile Sensing Technology. This automated method was developed to provide municipalities with a fast, objective analysis, ensuring that repair and maintenance decisions are based on complete and up-to-date data.

StreetScan’s mobile-sensing vehicle travelled 272 centerline miles of roads to assess road conditions in normal traffic flow and, using a pavement condition index scale which runs from 0-100 (with 0 being the worst and 100 being ideal), developed a City-wide inventory of road conditions. The system utilizes 3D imaging technology to aid in the detection of various road defects. The automated detection results, combined with extensive human QA/QC, provided reliable and accurate surface condition estimates.

### The Results

Lorain’s overall pavement condition index (PCI) was rated at an average PCI of 66, with 84.4% of the roads above a critical PCI condition of 55. Only 6% of the roads were rated as ‘very poor’ or ‘serious’.

All survey results were placed in the Streetlogix platform, a powerful GIS asset management software that provides the City unprecedented tools to develop capital improvement plans and perform projections on their roadway conditions. Streetlogix AI-engine utilizes PCI, road usage data and a cost benefit analysis to determine road maintenance, repair costs and prioritization per segment. Budgeting and planning tools allow for editable short- and long-term planning as well as level of service analysis with target PCI.

### The Benefit

City Staff is now able to interactively share, edit, and view the up-to-date roadway data on a common platform, as well as perform budget planning and develop multi-year capital improvement & maintenance programs. “With Streetlogix, we plan to develop a system that accurately estimates the road maintenance required year to year. This will create an iterative process for us that we believe will improve as we move into the future,” concluded Singer.

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*Guy Singer*  
*Deputy Director of Engineering*  
*City of Lorain, OH*

