AGREEMENT FOR SERVICES
BY AND BETWEEN

STREETSCAN CANADA ULC
AND
THE CORPORATION OF THE TOWN OF GODERICH

THIS AGREEMENT is made this _____ day of _____, 2020, by and between THE CORPORATION OF THE TOWN OF GODERICH, hereinafter called the MUNICIPALITY, with its head office and clerk located at 57 West Street, Goderich, N7A 2K5, and STREETSCAN CANADA ULC, with offices at 575 Dupret Street, Verdun QC H3E1X2 Canada, hereinafter called STREETSCAN (together the "PARTIES").

WITNESSETH, for the consideration hereinafter set forth, the parties hereto agree as follows:

ARTICLE 1 - ENGAGEMENT OF STREETSCAN

The MUNICIPALITY hereby engages STREETSCAN, and STREETSCAN hereby accepts the engagement to perform certain pavement inspection and management services for the MUNICIPALITY.

ARTICLE 2 - SCOPE OF SERVICES

The Scope of Services will be performed in accordance with STREETSCAN'S proposal to the MUNICIPALITY submitted December 20, 2019 (attached hereto as Exhibit A) (herein referred to as the "PROJECT").

This AGREEMENT represents the full and complete agreement between the PARTIES. Terms and conditions may be changed or additional terms added only by written amendment to this AGREEMENT signed by both PARTIES.

ARTICLE 3 - RESPONSIBILITIES OF THE MUNICIPALITY

The MUNICIPALITY, without cost to STREETSCAN, shall do the following in a timely manner so as not to delay the services of STREETSCAN:

3.1 Designate in writing a person to act as the MUNICIPALITY's representative with respect to work to be performed under this AGREEMENT, such person to have complete authority to transmit instructions, receive information, interpret, and define the MUNICIPALITY's policies and decisions with respect to materials, equipment elements and systems pertinent to the work covered by this AGREEMENT.

3.2 The MUNICIPALITY's representative will coordinate with officials and other MUNICIPALITY employees who have knowledge of pertinent conditions and will confer

with STREETSCAN regarding both general and special considerations relating to the PROJECT.

3.3 Assist STREETSCAN by placing at STREETSCAN'S disposal all available information pertinent to the PROJECT or requested by STREETSCAN including previous reports and other historical data relative to design or construction of the roadways in the MUNICIPALITY.

3.4 Arrange for access to and make all provisions for STREETSCAN to enter upon public and private lands as required for STREETSCAN to perform its work under this AGREEMENT.

3.5 Furnish STREETSCAN all needed topographic, property, boundary and right-of-way maps. Data provided in standard GIS file formats are preferred.

We require a target road GIS layer with segmentation, either from the client or from the Provincial Database. If neither is available, we can create it from a list of target roads from intersection to intersection or as otherwise directed, charging STREETSCAN's standard engineering billing rates. If MUNICIPALITY requests a different segmentation after the processing has begun, results will be delayed, and STREETSCAN will charge engineering rate for implementing the segmentation change.

STREETSCAN will use MUNICIPALITY's pavement maintenance methods and pricing for the pavement maintenance plan, if it is provided by the end of the data collection. Otherwise we'll use our default pavement maintenance methods and pricing. Subsequent changes are billed at STREETSCAN's standard engineering billing rates.

3.6 Cooperate with and assist STREETSCAN in all additional work that is mutually agreed upon.

3.7 Pay STREETSCAN for work performed in accordance with the terms specified herein.

ARTICLE 4 - TIME OF PROJECT

STREETSCAN will initiate work under this AGREEMENT following formal acceptance of this AGREEMENT by the MUNICIPALITY. STREETSCAN agrees to provide services described herein in a timely manner. The PARTIES recognize that the services being provided by STREETSCAN are subject to impact by weather, labor, fire, construction, and technological issues that may cause delays during the pavement inspection period. STREETSCAN agrees to use its best efforts to avoid delays.

ARTICLE 5 - PAYMENTS TO STREETSCAN

5.1 Fees. For services performed under this AGREEMENT, the MUNICIPALITY agrees to pay STREETSCAN the total amount set forth in the chart below, subject to the revisions directed by paragraph 5.2, based on those services selected by the MUNICIPALITY as set forth in the below chart after review of the proposal:

PAVEMENT MANAGEMENT				
	SERVICES INCLUDED	**CENTERLANE KMS**	**$/CL**	**STANDARD**
STREETSCAN DATA COLLECTION	ScanVan Data Collection	79 km	$200	$15,800
	Data Processing			
	Pavement Facing Imagery			
	Pavement Mgmt. Plan			
Mobilization and Setup Cost				$233
TOTAL				$16,033

SIDEWALK MANAGEMENT				
	SERVICES INCLUDED	**SIDEWALKS KMS**	**$/KM**	**STANDARD**
STREETSCAN DATA COLLECTION	ScanCart Data Collection	67 km	$171	$11,457
	Data Processing			
	Sidewalk Videos			
	Sidewalk Mgmt. Plan			
Mobilization and Setup Cost				$466
TOTAL				$11,923

TOTAL PROJECT COST	**$27,956**
FCM Rebate (80% of project cost up to $50,000)	**$22,365**
TOTAL w/ FCM Rebate	**$5,591**

5.2 Reconciliation. The parties hereby acknowledge that the total amount set forth above may be subject to adjustment based on the actual lane miles surveyed, which will not be known until STREETSCAN'S field work is complete. MUNICIPALITY agrees to pay for all services set forth in the above chart based on the actual lane miles surveyed, whether more or less than set forth above or estimated in the proposal.

5.3 Monthly Payment. Fees for this PROJECT shall be billed monthly as they accrue based upon the services performed or other agreed upon milestones. The MUNICIPALITY agrees to make payment to STREETSCAN upon receipt of the monthly invoice.

5.4 Remedies. If the MUNICIPALITY fails to make any payment due STREETSCAN for services and expenses within thirty (30) days after receipt of STREETSCAN's statement therefor, STREETSCAN may, after giving seven (7) days' written notice to the

MUNICIPALITY, suspend services under this AGREEMENT. Unless payment is received by STREETSCAN within seven (7) days of the date of the notice, the suspension shall take effect without further notice. In the event of a suspension of services, STREETSCAN shall have no liability to the MUNICIPALITY for delay or damage caused the MUNICIPALITY because of such suspension of services.

5.5 Costs of Collection. The MUNICIPALITY agrees to pay all collection related costs that STREETSCAN incurs enforcing the terms of this AGREEMENT, including attorney's fees.

ARTICLE 6 - GENERAL PROVISIONS

6.1 Standard of Care

The services provided by STREETSCAN shall be performed in accordance with generally accepted professional practice consistent with that degree of skill and care ordinarily exercised by similar professionals performing similar services under the same or similar circumstances and conditions. STREETSCAN makes no other representations or warranties, whether expressed or implied, with respect to the services rendered hereunder.

6.2 Risk Allocation/Limitation of Liability

6.2.1 STREETSCAN is not responsible for any delay, disruption or liabilities caused by the failure or the inability of any state, federal, local, or other authority to review or take other appropriate action on a timely basis with respect to services performed by STREETSCAN under this AGREEMENT.

6.2.2 STREETSCAN shall be liable only to the extent that its negligence is the proximate cause of any injury or damage to the MUNICIPALITY. In the event that STREETSCAN is adjudicated or otherwise found to be jointly negligent, STREETSCAN'S liability shall be limited to the proportion or degree of its actual negligence, and recovery against STREETSCAN shall be limited to STREETSCAN'S percentage share of the joint negligence as applied against the total amount recoverable.

6.3 Dispute Resolution

This Agreement shall be deemed to have been made in Ontario and the validity, interpretation and performance of this Agreement shall be governed by and construed in accordance with the substantive law of the Province of Ontario, excluding, however, such laws as pertain to conflicts of law. STREETSCAN and the MUNICIPALITY forever renounce and waive their right to a trial by jury with respect to any demand, claim or counterclaim arising under this Agreement. Except for claims for injunctive relief, STREETSCAN and the MUNICIPALITY agree that all other claims, disputes and controversies between them arising under this Agreement shall be finally resolved by binding arbitration conducted by the Canadian Arbitration Association, ADR Chambers Canada or such other person or arbitration service as the parties mutually agreed upon. Either STREETSCAN or the MUNICIPALITY may demand arbitration by providing the

other party 10 days' notice that notifying party is filing for arbitration. All arbitration proceedings will take place in Toronto, Ontario. The arbitrator(s) may grant compensatory damages and costs to the prevailing party (but not punitive or exemplary damages) and that the costs of arbitration shall be borne equally by STREETSCAN and the MUNICIPALITY, except that STREETSCAN and the MUNICIPALITY shall bear their own attorneys' fees. This right to arbitration will not preclude or affect in any manner the rights of STREETSCAN to equitable relief hereunder.

6.4 Governing Law and Territorial Jurisdiction

The AGREEMENT shall be governed by and interpreted in accordance with the laws of the Province of Ontario. Any litigation which arises between the PARTIES shall be initiated and pursued exclusively in the judicial region of Toronto.

6.5 Comprehensive General Liability Insurance

STREETSCAN shall secure and maintain, for the duration of this PROJECT, the following Comprehensive General Liability Insurance policy or policies at no cost to the MUNICIPALITY.

With respect to the operations STREETSCAN performs STREETSCAN shall carry:

Comprehensive General Liability Insurance providing a combined single limit of Five Million Dollars ($5,000,000) for bodily injuries, death, and property damage to others.

6.6 Automobile Liability Insurance

STREETSCAN shall secure and maintain for the duration of this PROJECT, Automobile Liability Insurance covering the operation of all motor vehicles, including those hired or borrowed, used by STREETSCAN in connection with this AGREEMENT, in the following amount:

6.6.1 Not less than One Million Dollars ($1,000,000) for all damages arising out of injury to or destruction of property in any one accident or occurrence. Umbrella policy provides an additional Four Million Dollar ($4,000,000) limit for a total of Five Million Dollars ($5,000,000) occurrence combined.

6.7 Employment and Labour Laws

6.7.1 STREETSCAN shall comply with all provincial legislation and regulations as regards all of it employees at the PROJECT.

6.8 Non-Discrimination In Employment – STREETSCAN

STREETSCAN agrees and certifies that in providing the services described herein, it shall not discriminate against any employee or applicant because of race, color, religion, age, sex, sexual orientation, or national origin. STREETSCAN further agrees to be bound by

and abide by any and all applicable governmental regulations pertaining to non-discrimination.

6.9 Precedence

These Terms and Conditions shall take precedence over any inconsistent or contradictory provisions contained in any proposal, contract, purchase order, requisition, notice to proceed, or like document regarding STREETSCAN'S services.

6.10 Severability

If any of these Standard Terms and Conditions shall be finally determined to be invalid or unenforceable in whole or part, the remaining provisions hereof shall remain in full force and effect, and be binding upon the parties hereto. The parties agree to reform this AGREEMENT to replace any such invalid or unenforceable provision with a valid enforceable provision that comes as close as possible to the intention of the stricken provision.

6.11 Survival

ARTICLE 6 shall survive the completion of services under this AGREEMENT and the termination of this AGREEMENT for any cause.

6.12 Force Majeure

Neither MUNICIPALITY nor STREETSCAN shall be considered in default in the performance of its obligations hereunder if such obligations were prevented or delayed by any cause beyond the reasonable control of the party which include, but are not limited to acts of God, labor disputes, or civil unrest.

The party affected by force majeure shall inform the other parties in writing regarding the particulars of the event of force majeure, and shall, within fifteen (15) days from the occurrence of such event, provide a report to the other parties explaining the reason for which the obligations cannot be performed in whole or in part and delayed performance is necessary and the proposed remedy.

6.13 Execution in Counterparts.

This Agreement may be executed in one or more counterparts. Each counterpart will be an original, but all such counterparts will constitute a single instrument.

ARTICLE 7 - TERMINATION

7.1 The obligation to provide further services under this AGREEMENT may be terminated by either party upon thirty days' written notice in the event of substantial failure by the other

party to perform in accordance with the terms hereof through no fault of the terminating party.

7.2 If the PROJECT is suspended or abandoned in whole or in part for more than three months, STREETSCAN shall be compensated for all services performed prior to receipt of written notice from the MUNICIPALITY of such suspension or abandonment, together with other direct costs then due and all Termination Expenses as defined in Paragraph 7.3. If the PROJECT is resumed after being suspended for more than three months, the PARTIES agree that STREETSCAN'S compensation shall be adjusted to the market rates for the services selected by the MUNICIPALITY at the time the PROJECT is resumed.

7.3 In the event of termination by the MUNICIPALITY under Paragraph 7.1 upon the completion of any phase of the PROJECT, progress payments due STREETSCAN for services rendered through such phase constitute payment for such services. In the event of any such termination, STREETSCAN will be paid for all unpaid services and unpaid other direct costs, plus all Termination Expenses. Termination Expenses means additional other direct costs directly attributable to termination, which, if termination is at the MUNICIPALITY'S convenience, shall include an amount computed as 10 percent of total compensation for the PROJECT earned by STREETSCAN to the date of termination.

ARTICLE 8 - OWNERSHIP AND USE OF DOCUMENTS

8.1 MUNICIPALITY shall retain ownership of all processed work product including, but not limited to, field data, analyses, calculations, notes and other records relating to the project prepared by STREETSCAN.

8.2 Following delivery of final results, MUNICIPALITY will be able to access all results for a period of one year from the date of delivery. STREETSCAN agrees to maintain the MUNICIPALITY'S web-based Streetlogix portal for their access and will maintain a backup version of the data onsite and through cloud-based services. MUNICIPALITY'S initial license for this access is active for 1 year and sold with the initial proposal.

8.3 At the conclusion of the one-year period referenced in 8.2, MUNICIPALITY has the option to renew its access subscription on an annual basis. Renewals are good for one (1) year and must be paid in a one-time payment made at the beginning of the renewal term. STREETSCAN reserves the right to withhold access pending receipt of the renewal payment. Renewal pricing is based on the surveyed lane km and is subject to adjustment for inflation based on the most recent annual Consumer Price Index for All Urban Consumers (CPI-U) in the Greater Toronto Area (GTA). Any and all renewals will be handled by the execution of an additional subscription agreement. The renewal period will not begin until payment is received by STREETSCAN. Renewals may be made as long as the MUNICIPALITY desires access to the data. Non-payment of the renewal notice, once the renewal has begun, will lead to removal of the web-based portal from STREETSCAN'S server and termination of MUNICIPALITY'S access to their data.

ARTICLE 9 – CONFIDENTIALITY

MUNICIPALITY agrees not to disclose any of STREETSCAN'S confidential or proprietary information to any person unless requested in writing from STREETSCAN and approved in writing by STREETSCAN, and agrees to bind its employees, officers, and agents to this same obligation.

ARTICLE 10 – SOLE REMEDY

Notwithstanding anything to the contrary contained herein, MUNICIPALITY and STREETSCAN agree that their sole and exclusive claim, demand, suit, judgment, or remedy against each other shall be asserted against each other's corporate entity and not against each other's shareholders, directors, officers, or employees.

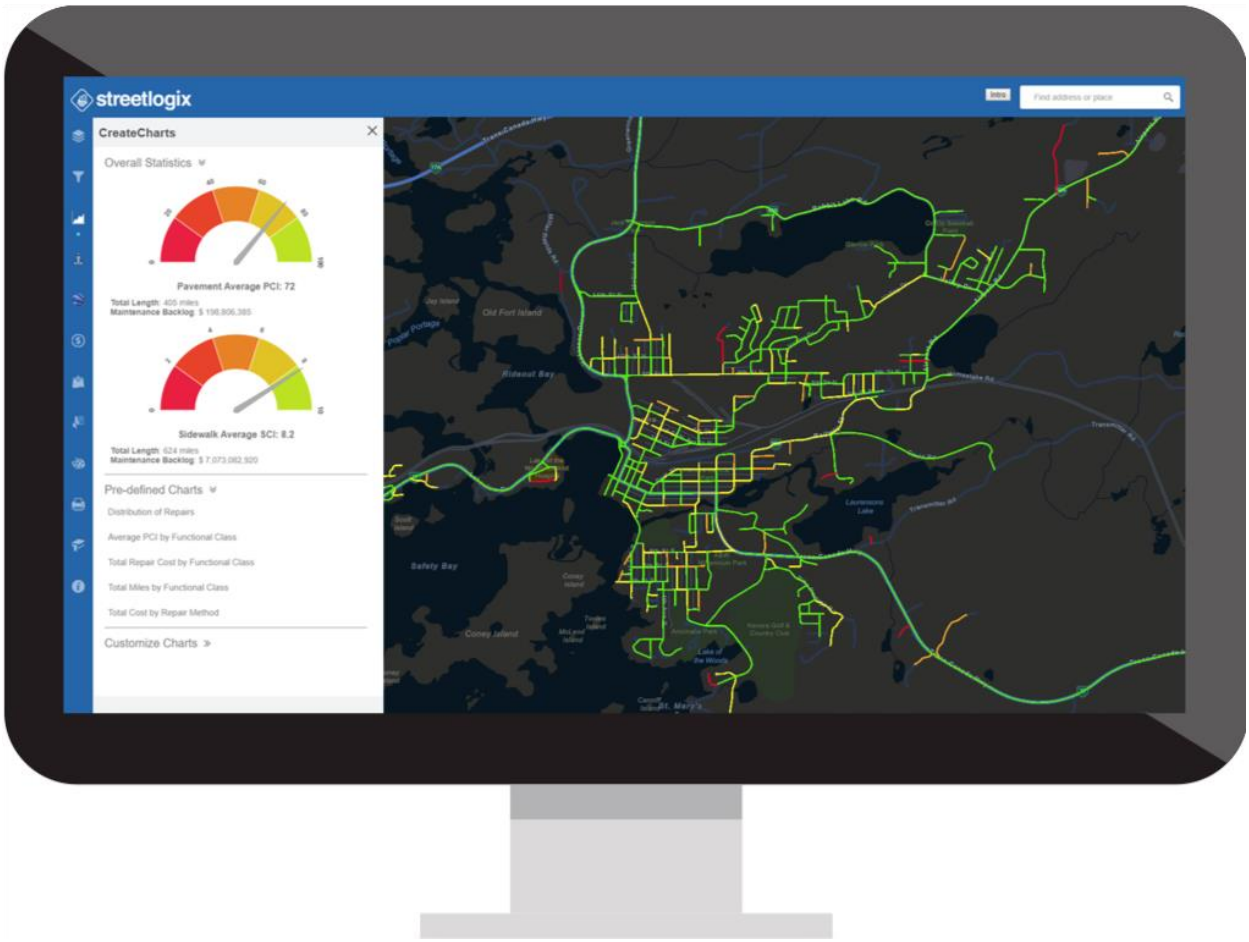
IN WITNESS WHEREOF, the parties hereto have executed this AGREEMENT the day and year first above written.

ACCEPTED FOR: STREETSCAN CANADA ULC	THE CORPORATION OF THE TOWN OF GODERICH
By Its _____	By: _____
_____	_____
_____	_____
_____	_____

LAS | AMO Business Services

STREETSCAN

Exhibit A



Road and Sidewalk Assesment Service Proposal

(Revised to Remove Software Fees)

Town of Goderich

December 20, 2019

Proposal for the Town of Goderich

Prepared for:

Larry McCabe, CAO

Chip Wilson, Director of Operations

Town of Goderich

212 Elizabeth St

Goderich, ON N7A3A9

Prepared by:

StreetScan Canada ULC

Michelle Hjort

Michelle.hjort@streetscan.com

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December 20, 2019

Larry McCabe, CAO
Chip Wilson, Director of Operations
Town of Goderich
212 Elizabeth St
Goderich, ON N7A3A9

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 km.
- Data Processing of pavement condition and assets.
- Data Visualization: pavement monitoring system including Pavement Condition Index (PCI) Report – integrated into your existing GIS or optional cloud-based access.
- Pavement Management Plan: maintenance and budget options, suggestions and scenarios; optional cloud-based access with robust interactive planning and budgeting tools.

Also available (see Appendices for more details):

- 360° imagery Viewer
- Optional asset extractions including pavement markings, traffic signs, utility assets, street lighting, sidewalks, curbs, trees, etc.

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,

Michelle Hjort
Director, Business Development – Canada

1. ABOUT STREETSCAN

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.

STREETSCAN streetlogix

Powered by AI

2. ABOUT LAS

Local Authority Services (LAS) was created in 1992 by the Association of Municipalities of Ontario (AMO). LAS is a preferred provider of competitively-priced and sustainable business services for Ontario municipalities and the broader public sector, helping its customers “save money, make money, and build capacity.”

LAS ROADS ASSESSMENT SERVICE

Roughly one third of Ontario’s municipal roads network is in poor to very poor condition, and facing a $30 Billion funding shortfall over the next 10 years. LAS offers a better way to assess your roads network through an automated pavement inspection and management service.

The Roads Assessment Service includes:

- Advanced mobile sensing and road condition data gathering
- Data handling, processing, algorithms and analysis
- Customizable data analysis software and visualization in a secure web-based GIS application

Pavement management engine for repair and maintenance decision making:

3. OUR TEAM

Michelle Hjort, Director of Business Development- Canada – Michelle has extensive experience in working with municipalities to coordinate infrastructure and asset management initiatives providing project management support and liaising between operations and municipal stakeholders. She is skilled at providing effective communication with and between staff, councils and citizens to understand new technologies and to quantify the benefits and value of the project. Her experience includes working with over sixty Ontario Municipalities to complete their LED street light conversions.

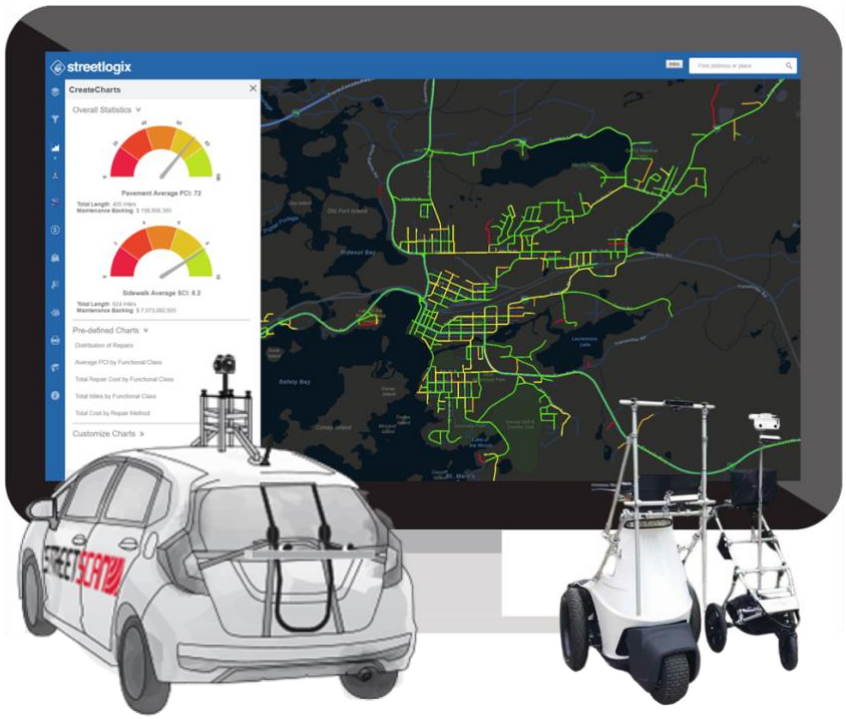
Dan Kirkby, P.E. – Director of Operations – As the Director of Operations at StreetScan, Dan provides project management, leads the daily operational management of field and office staff and provides geotechnical support for route creation, results publishing and end-user training on software functionality. Dan coordinates the technical team and operations team and manages project scheduling. He received his BESc in Civil Engineering from Western University in 2002 and his MEng in Geomatics Engineering from the University of New Brunswick in 2011. Over the last 15 years, Dan has worked in various engineering and project management positions in the private sector as well as while serving nine years in the Canadian Forces as an Army Engineering Officer.

Salar (Sal) Shahini Shamsabadi – GIS Director and Data Scientist – Sal works on integrating and leveraging information from large geospatial datasets for developing asset management, sensor fusion and life-cycle cost analysis models. He received his B.S. in Geomatics Engineering from the University of Tehran in 2012 and his M.S. in Civil Engineering in 2014 from Northeastern University where he developed StreetScan's GIS web application for asset monitoring and management. Sal has received multiple awards over the last few years (Best Innovation Award at RISE, Best Paper Award at SAGEEP, Dean's Scholarship Award at Northeastern Uni.), which encouraged him to pursue his passion for using data-driven methods to support better decision making.

Chris McGill, Lead Field Technician – As the Lead Field Technician at StreetScan, Chris directs the field survey team for both pavement and sidewalk management projects. He holds a Business Diploma from Fanshawe College where he graduated from in 2005. Chris possess over five years experience working and supervising GIS field survey projects, successfully completing well over 100 projects across Ontario, Quebec, British Columbia and the USA.

4. 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.

5. PRICING OVERVIEW

5.1 ASSET MANAGEMENT

PAVEMENT MANAGEMENT				
	SERVICES INCLUDED	**CENTERLANE KMS**	**$/CL**	**STANDARD**
STREETSCAN DATA COLLECTION	ScanVan Data Collection	79 km	$200	$15,800
	Data Processing			
	Pavement Facing Imagery			
	Pavement Mgmt. Plan			
Mobilization and Setup Cost				$233
TOTAL				$16.033
Potential FCM Asset Management Grant (80% of Project Cost up to $50,000 Maximum) MAMP Program is expected to re-open in Q1 2020				($12,826)
TOTAL w/ Discount				**$3,207**

SIDEWALK MANAGEMENT				
	SERVICES INCLUDED	**SIDEWALKS KMS**	**$/KM**	**STANDARD**
STREETSCAN DATA COLLECTION	ScanCart Data Collection	67 km	$171	$11,468
	Data Processing			
	Sidewalk Videos			
	Sidewalk Mgmt. Plan			
Mobilization and Setup Cost				$466
TOTAL				$11,934
DISCOUNT (80%)				($9,547)
TOTAL				**$2,387**

5.2 OPTIONAL SERVICES AND ASSETS

One of our unique advantages is the ability for our clients to extract, assess and obtain actionable data from other Municipal assets utilizing the same data collected for the Pavement Management Survey. Below is a list of additional assets we can process from the collected data. This is set up as an a-la-carte menu so you can pick and choose the assets to meet your asset management needs.

Assets	Unit CL=Centerline	QTY (est.)	Price ($/Unit)	TOTAL COST
Assets Extracted from ScanVan Dataset (Pavement Management Service Required)				
Enhanced Visualization Package	CL-KM	79	$30	$2,370
Pavement Markings	CL-KM	79	$50	$3,950
Sidewalk GIS Database	CL-KM	79	$30	$2,370
Curb GIS Database	CL-KM	79	$40	$3,160
Traffic Signage (5 Attributes)	Signs	954	$4	$3,814
Traffic Signage (9 Attributes)			$6	$5,721
Catch Basins	Catch Basins	1,580	$4	$6,320
Metal Objects (Manholes/Valves)	Metal Objects	2,370	$1	$2,370
Tree GIS Inventory	Trees	1,580	$3	$4,740
Street Lighting GIS Database	Lights	600	$4	$2,400
Assets Extracted from ScanCart Dataset (Sidewalk Management Service Required)				
Sidewalk Width	S-KM	67	$40	$2,680
Ramp Compliance	Ramp	1,005	$8	$8,040

Assumptions: (please let us know if you have more accurate numbers)

All asset quantities are estimated based on lane or centerlane kms except for:

- Traffic Signs are estimated at 1/8 of the municipal population
- Street Lighting is 1/10 of the municipal population
- Catch Basins are estimated at CL-KM multiplied by 20
- Metal Objects (Manholes & Valve) are estimated at CL-KM multiplied by 30
- Tree Inventory is estimated at CL-KM multiplied by 20
- Ramp Inventory is estimated at Sidewalk KM multiplied by 15

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, bumps, surface distortions and surface texture. 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: SideCarts

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 3D 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.

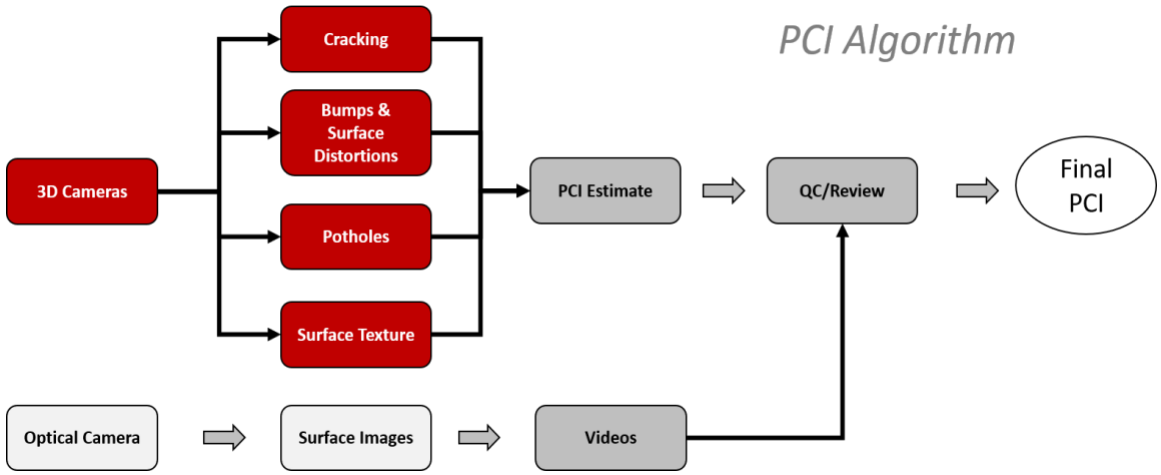
STEP 2: DATA EXTRACTION

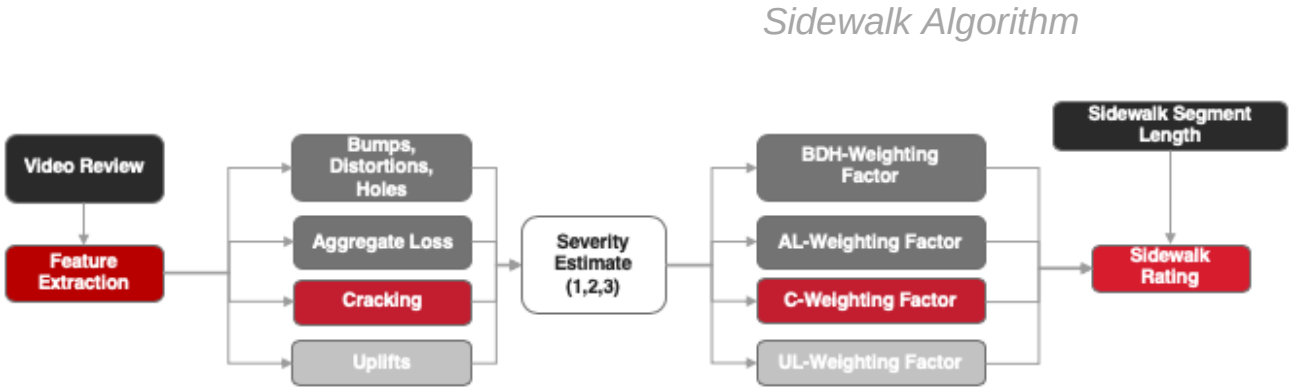
Roads

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 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.





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.

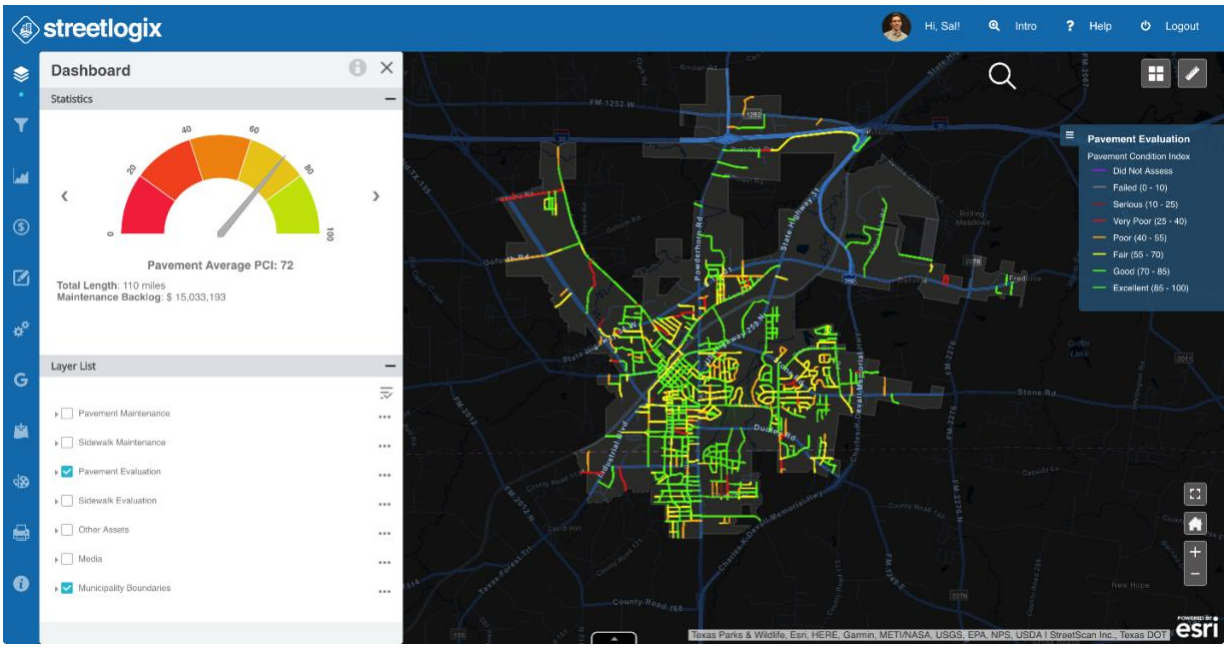
This provides staff an easy-to-use tool to quickly review PCI results, distress data and 360 images along with pavement history and other data that the city wants to be integrated. All data is hosted in the cloud, allowing users to login from anywhere on any computer to view the results. Streetlogix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

Portal view: Overall stats, available layers and PCI



STEP 4: MAINTENANCE PLANNING

Roads

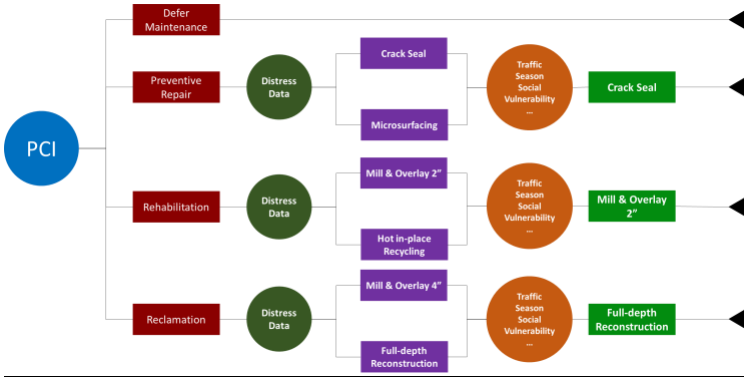
Once the inventory condition database and GIS web-app have been finalized, the work on implementing the pavement management side of the software begins. While pavement condition indicators are concerned with the current condition of the network, the management side of the process concerns itself with 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 road management modules. The results are compiled and reported to the client in our Streetlogix software and as a pdf document.

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

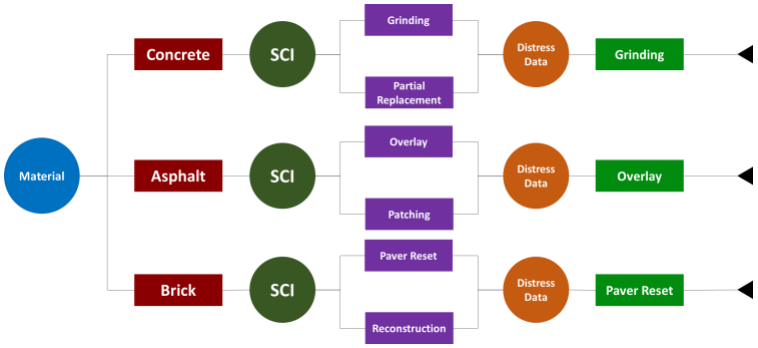
Sidewalks

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

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.
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
Location	Global Positioning System (GPS) location (+/- 5 meters)
Pavement Marking Image	Accessible in StreetLogix Portal
Color	White, Yellow etc.

** 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 ScanVan 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.

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

Attributes	Description
Sign Category*	Regulatory, Warning, Guide, School, Recreation, Information, General
Sign Type*	Federal or State MUTCD designation or custom designation for specialized signs
Position on Post	Sign's relative position, in column and row notation, among all signs mounted on the same structure
Sign Photo*	Digital image
Post Type	U-Channel, Round, Square, Light Pole, Signal Mast, etc.
Post Material	Steel, Wood, Concrete, etc.
GPS Location*	Global Positioning System (GPS) location (+/- 5 meters)
Position	Left, Right, Overhead, Center
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 ScanVan images) if available. All data is provided as a GIS layer.

Deliverable:

- GIS Layer of catch basin

Roadway Manhole Objects (Valve & Manhole Covers)

StreetScan provides location of circular Manhole or other similar shaped 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 ScanVan images if available. All data is provided as a GIS Layer.

Deliverable:

- GIS layer of tree location
- Geotagged images of each tree

Streetlight GIS Database

Utilizing the ScanVan'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)
Type	Cobra Head, Decorative/Ornamental
Wattage	Fixture output power (ballast not factored for non-LED lights)
Technology	LED, other
Pole Type	Wood, Metal, Concrete
Fixture Photo	Digital Image

Ramp Compliance Survey

StreetScan will determine the compliance of ADA Ramps, measuring the following attributes: ramp slope & cross slope, road slope & cross slope, flare slopes, ramp width, landing area, tactile pad (present/not present/condition). As part of this service, StreetScan provides imagery of all ramps and a GIS data layer accessible in Streetlogix, showing location of ADA ramps and all measured properties.

Deliverables:

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

Attributes	Description
GPS Location	Global Positioning System (GPS) location (typically +/- 1.5 meters)
Image	Image of Ramp
Ramp Slope / Cross Slope	Angle (+/- 1 Degree)*
Road Slope / Cross Slope	Angle (+/- 1 Degree)*
Flare Slopes	Angle (+/- 1 Degree)*
Ramp Width Compliance	Yes/No
Landing Area Compliance	Yes, No/Obstructed
Tactile Pad	Present/Not Present & Condition

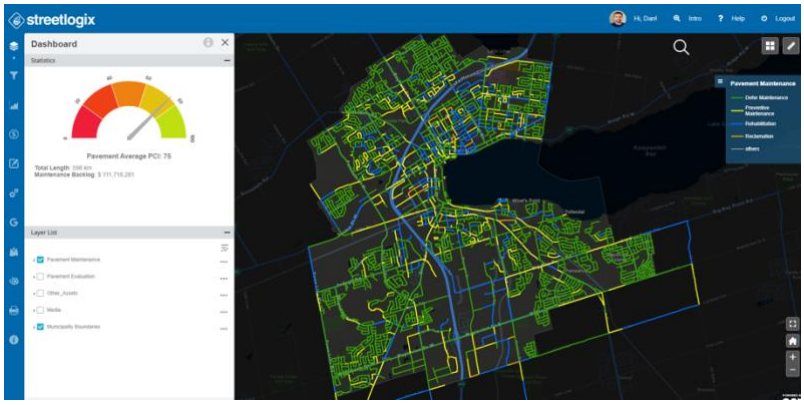
APPENDIX C – OUR CLIENTS

REFERENCES & ADDITIONAL INFORMATION

City of Barrie, ON

Project Objective:

StreetScan was selected by the City of Barrie to assess the conditions of 593 centerline kilometers of City-maintained roads.



Project Description:

StreetScan employed vehicle-mounted sensing technology to assess road conditions in normal traffic flow. The system utilizes 3D imaging technology combined with optical cameras to measure the severity and extent of road defects including cracking, bumps, surface distortions, surface texture and potholes. A combination of features extracted from the 3D imaging sensors are used to identify distresses in the roadway which impact the PCI rating, generating a data-driven PCI conditions inventory for assessed road segments.

Project Outcome:

StreetScan delivered the road condition and maintenance and repair suggestion information to the City via a secure GIS web portal, Streetlogix. Barrie can use Streetlogix to visualize and export the information, as well as to adjust parameters and modify or generate new repair work plans. Streetlogix also allows visualization of PCI values, imagery for each road and detected features (e.g. potholes), statistics, and more. Staff can access Streetlogix quickly from anywhere with any computer, provided there is an internet connection. No downloads or installation needed.

Additionally, the GPR pavement thickness assessment and enhanced visualization HD video documentation were also made available in Streetlogix.

Project Contacts	
City of Barrie	Municipal Contact: Michael Brown, Infrastructure Program Engineer 705-739-4220 ext. 4300 michael.brown@barrie.ca
StreetScan Project Team	Project Manager: Dan Kirkby, Director of Operations (519) 871-1386 daniel.kirkby@streetscan.com Account Manager: Michelle Hjort GIS Director & Data Scientist: Sal Shahini Lead Field Technician: Chris McGill
info@streetscan.com | www.streetscan.com	

Town of Niagara-on-the-Lake, ON

Project Objective:

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

Project Description:

349 road lane kilometres were assessed using StreetScan's specialized ScanVan vehicle. 3D cameras captured the severity and extent of road surface distresses and determine the pavement condition index (PCI) of each segment. Front-facing video was taken of all surveyed roads. Municipal staff provided repair and maintenance costs which are programmed into their customized web-based portal in Streetlogix.

Project Outcome:

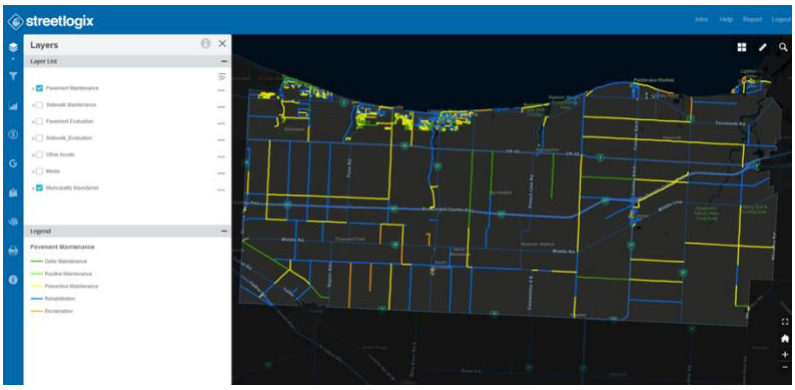
The project was completed on April 2nd, 2019. Survey results were placed in Streetlogix, whose algorithm utilizes PCI, road usage data and a cost benefit analysis to determine road maintenance and repair costs and prioritization per segment. Budgeting and planning tools allow for editable short and long term planning as well as level of service analysis with Target PCI. Front-facing video mages for every scanned road, along with downward, back-facing still images every two metres, allow staff to review their entire road network from any web-connected device. Staff feedback was that the van-based assessment saved a lot of staff time and the ease of software analysis is a great improvement over the former excel-based analysis.

Project Contacts	
Town of Niagara-on-the-Lake	Municipal Contact: Mike Komljenovic, Engineering Supervisor (905) 468-3061 Mike.Komljenovic@notl.com
StreetScan Project Team	Project Manager: Dan Kirkby, Director of Operations (519) 871-1386 daniel.kirkby@streetscan.com Account Manager: Michelle Hjort GIS Director & Data Scientist: Sal Shahini Lead Field Technician: Chris McGill
info@streetscan.com | www.streetscan.com	

Town of Lakeshore, ON

Project Objective:

StreetScan was contracted by the Town of Lakeshore to perform a road and sidewalk assessment survey that would objectively collect pavement and sidewalk condition data and provide custom repair and maintenance recommendations.



Project Description:

Data collection included 880 road lane kilometers and 113 sidewalk kilometers.

StreetScan utilized specialized ScanVan vehicles to assess the condition of roadways and, using a pavement condition index scale which runs from 0-100, developed a Municipal-wide inventory of road condition.

For sidewalk assessments, StreetScan deployed mobile carts with high definition video capture capability. 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:

The project was completed on January 31st, 2019.

Results from the survey were placed in Streetlogix, providing an enriched view of the Town'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. In addition to repair suggestions and cost estimates, StreetScan prioritized repairs and developed work plans for the Town. Staff can use the software to visualize and export the information, as well as to adjust parameters and modify or generate new repair work plans.

Project Contacts	
Town of Lakeshore	Municipal Contact: Nelson Cavacas, Director of Engineering and Infrstructure Services (519) 728-2700 ext. 287 ncavacas@lakeshore.ca
StreetScan Project Team	Project Manager: Dan Kirkby, Director of Operations (519) 871-1386 daniel.kirkby@streetscan.com Account Manager: Michelle Hjort GIS Director & Data Scientist: Sal Shahini Lead Field Technician: Chris McGill
info@streetscan.com | www.streetscan.com	

Sample of other clients:

Town of Niagara-on-the-Lake, ON

Town of Lakeshore, ON

City of Pembroke, ON

Municipality of Port Hope, ON

City of Kenora, ON

Municipality of Stirling-Rawdon, ON

City of Temiskaming Shores, ON

Municipality of West Grey, ON

City of Thorold, ON

Town of Amherst, MA

City of Portland, ME

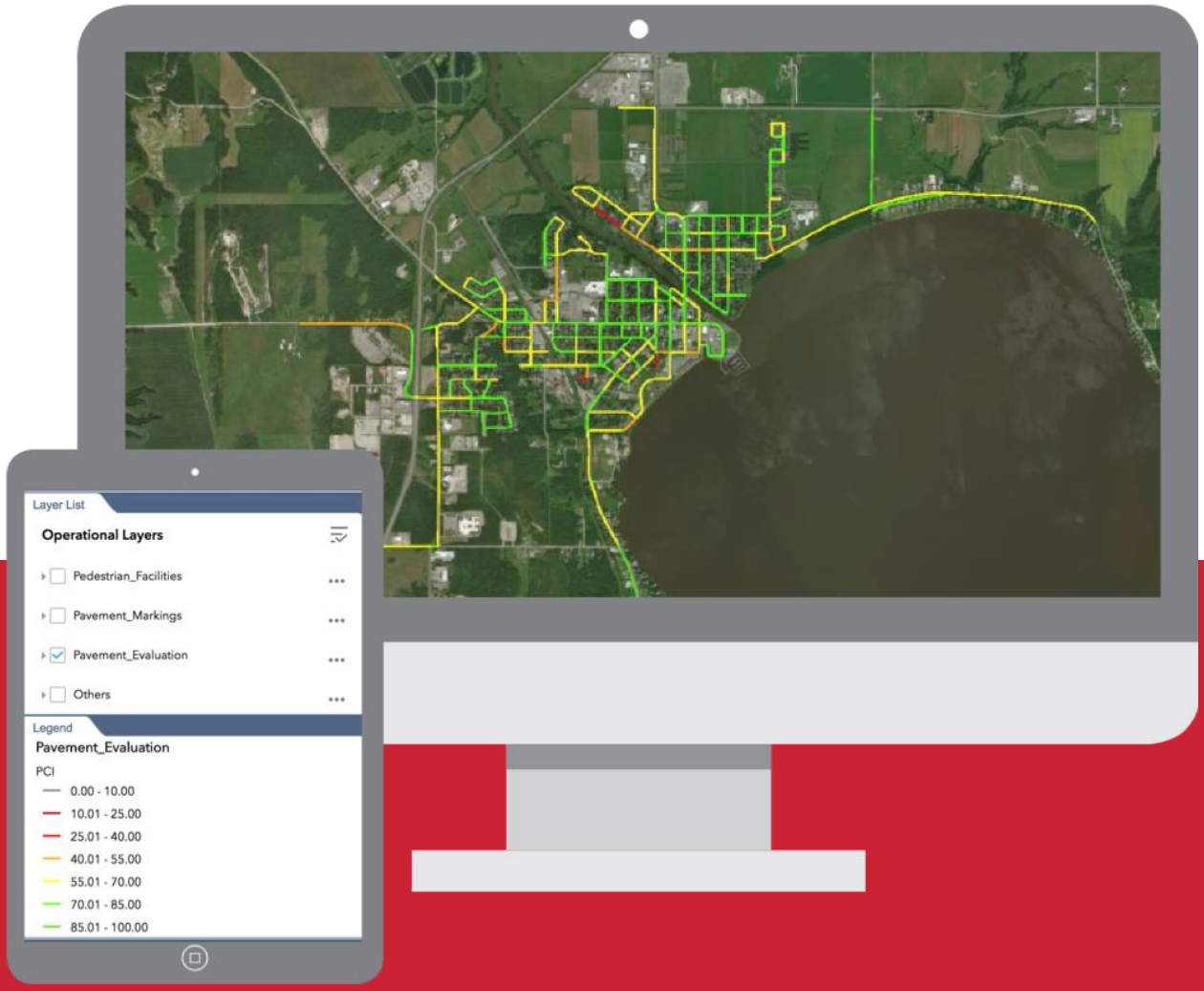
Town of Somers, CT

Washington State Parks

Town of Hampstead, QC

City of Providence, RI

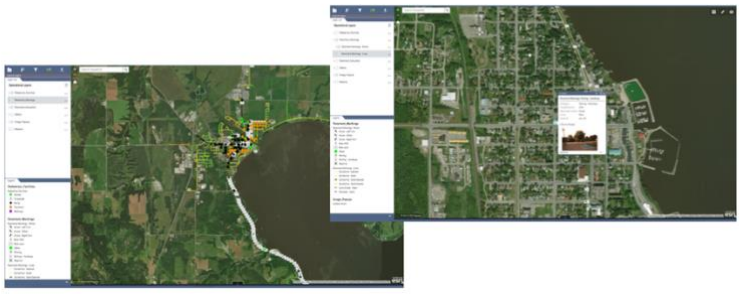
CASE STUDY



Temiskaming Shores, Ontario, Maximizes Road Repair Budget with GIS

The City of Temiskaming Shores is a picturesque community in Northern Ontario, Canada, offering ideal boating, hiking, skiing, snowmobiling and golfing and an exceptional place to both live and work. The recently amalgamated municipality with a population of 11,000 needed a cost-effective method to assess and repair its 114 km road infrastructure for citizens and visitors.

The Challenge



Whenever a Municipality goes through the process of amalgamating, (in this case, three former towns amalgamated) the final entity absorbs varying asset management practices and platforms challenging the decision-making process for all departments involved. The City needed a fast, 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. In addition to managing road maintenance, the City needed up-to-date records of its pavement markings and pedestrian facilities database.

The Partner

StreetScan, through an innovative Roads Assessment Service Program developed by Local Authority Services, (LAS) provides a fast and affordable pavement, sidewalk & right-of-way asset management service that can be deployed citywide on a frequent basis. StreetScan uses vehicle-mounted sensing technology to assess road & sidewalk conditions in normal traffic flow and displays gathered information in a geographic information system (GIS) application StreetLogix: a web app with up-to-date data and a range of tools for decision-making.

The Solution

StreetScan's mobile-sensing vehicle, ScanVan, is the physical heart of the asset management system, assessing pavements, traffic signs, pavement markings and more on every road it traverses. The ScanVan travelled Temiskaming Shores roads in normal traffic flow to gather data on the condition of the entire street network utilizing 3D imaging technology to measure road defects. Multiple optical camera systems provide imagery of the road surface and ROW to extract the additional asset features the City required to complete their asset management needs. Once scanned, a variety of technologies from StreetScan & Esri, such as ArcPy scripts, ArcGIS Desktop, and ArcGIS enterprise were leveraged to generate Streetlogix, a GIS web app with powerful visualization and budget-planning tools. This app provides road condition ratings on a scale of 0 to 100, with 0 being the worst and 100 being ideal, and prioritizes the areas to repair and remediate.

> "Using StreetScan has saved us significant work assessing our transportation infrastructures. Our confidence in StreetScan's results has led us to make our largest financial investment in road improvements in years."
>
> Doug Walsh
> DPW, City of Temiskaming Shores

The Results

Using Streetlogix, the City can now see an enriched view of its street network with color-coded pavement conditions and other assets, along with images for every road along with tools for data-driven budget and maintenance planning. StreetScan reported that Temiskaming Shores' overall pavement condition index (PCI) was rated in 'good' condition at an average PCI of 70, with 91.2% of roads above critical PCI of 55. Only 8.8% of roads were rated as 'very poor' or 'poor'. All of this was made possible via a unique funding program called the Municipal Asset Management Program (MAMP) by the Federation of Canadian Municipalities (FCM). LAS & StreetScan assisted the City in obtaining funding for roughly 80% of the project cost allowing the City to further strengthen its Asset Management database.