Response to City of Milwaukee's

RFP for Parking LPR Equipment

(Official Notice 48)

By

Tannery Creek Systems Inc.

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Explanation of Response Format

For ease of review, Tannery Creek Systems reproduces sections of the RFP contents and responses are stated for each section and subsection of the RFP. The responses are:

- Understood by Tannery and no other response required
- Conforms and may list enhanced operation
- Mostly conforms but with listed limitations, differences
- Does not conform to the requirement but will in a future version
- Does not conform and future conformance is not anticipated.

Tannery's responses are in this format and coloured blue.

Tannery: response text

1. Executive Summary (Cover Letter)

Tannery Creek Systems is pleased to present our proposal to Milwaukee for a mobile digital chalking and License Plate Recognition system (LPR) to be deployed to enforce parking for time based, pay by plate, permits, scofflaw searches and other potential uses.

Tannery Creek's autoChalk products debuted in 2007 following three years of development to create a rugged and reliable digital chalking system. Designed from the ground up to perform parking enforcement, autoChalk has a host of features that facilitate enforcement:

- Pay by Plate integrated with Digital Payment Technologies' Luke Pay Station including mobile LPR system, handheld and fixed camera solutions (with optional RFID)
- Digital chalking (time duration), scofflaw and permit checking
- Rugged and reliable design operates 7 days a week in all weather
- Ease of use makes training of new hires much quicker
- Wide angle profile pictures of vehicles facilitate parking office appeals and court cases resulting in quicker conclusions
- Simple to move from main vehicle to backup vehicle, simple to repair
- High quality Panasonic Toughbook (laptop) is easy to see and read in daylight
- Richly featured back office to
  - review or print tickets
  - stores millions of tickets
  - import and export data
  - print reports
- remote diagnostics and training

Tannery's autoChalk® drive-by digital chalking is available in mobile (vehicle mounted), handheld and in fixed camera configurations. Tannery's vehicle mounted autoChalk is capable of processing 2 vehicles per second at 30 mph. Additionally autoChalk® employs a laser to detect vehicles and offers innovative size, shape and color[1] methodology to digitally identify vehicles whether or not they have legible license plates. This method is invaluable when plates are covered in snow, dirty or have a plastic cover and are hard to read.

The laser equipped autoChalk detects and measures vehicles to within one inch and rarely misses a vehicle, typically detecting better than 99.5% of vehicles encountered. Since all vehicles are captured (especially vehicle owners with deliberately tampered plates, something that NIR LPR systems regularly miss), autoChalk gives the City

1 autoChalk's size, shape & color methodology is patented by Tannery Creek Systems Inc in the USA. The name autoChalk is a registered trademark to Tannery Creek in the USA.

unparalleled ability to sense and check vehicles by optimally combining automatic and manual checking.

Given autoChalk's accurate vehicle measurement, Milwaukee may wish to introduce a green parking initiative and offer discounts for small vehicles. The benefits of rewarding small vehicles include more vehicles in the same space, more people downtown, better use of capital investment[2], and public recognition of Milwaukee's green initiatives.

Tannery Creek has been involved in Pay by License Plate (PBL) since 2007. Our largest customer (Calgary) processes 12000 vehicles per day in their PBL system and have recently installed Tannery's fixed camera system to enhanced their Park Plus system.

The fixed camera LPR system features:

- fixed megapixel SONY cameras
- 10000 lumen long life LED lighting
- Laser and ultrasonic contactless vehicle sensing (laser also detects speed and reverse motion)
- RFID transponders for contract parkers and superb authentication
- Tight integration into the ParkPlus system

Finally, autoChalk[3] has received or shared in prestigious awards. The value of autoChalk was recognized in 2008 with an award from the Virginia Municipal League with their "Achievement of the Year 2008" to the City of Fredericksburg. Its value was significant in contributing to CPA's 2009 Institute of Transportation Engineers (ITE) award for the year's most innovative parking solution, and the International Parking Institute's 2010 Award of Excellence.

1.1 Company Profile

Tannery Creek Systems Inc. was incorporated in 2003 and has been focused on developing and producing high quality easy to use equipment for automating the difficult job of parking enforcement.

Tannery spent three years developing our patented technology that can recognize vehicles not just by their license plate, but also using size, shape and color. This enhanced capability makes LPR thwarting techniques less effective and is particularly useful in northern states and provinces where snow coverage of the license plate is a problem.

2 Particularly for parkades or garages

3 autoChalk is a registered trademark in USA & Canada.

Tannery's autoChalk fielded in trials in Calgary in 2006. Since then autoChalk® has been deployed to numerous clients where it is used day in and day out for enforcing parking. Here's a sample of clients:

- Six systems are deployed in Calgary and used for the ParkPlus system (Pay by License Plate – PBL, pay by cell phone, by kiosk or web) and autoChalk LPR is used to verify the plate. This system has been in constant use since 2007 and currently processes 12000 vehicles (and plates) per day. Calgary is also using autoChalk Parkade, a fixed camera and LPR system for their parkades.
- Madison Wisconsin has two autoChalk's for digital chalking and scofflaw
- Saskatoon has three autoChalk's for scofflaw and digital chalking
- Santa Rosa has one autoChalk system deployed on a Ford Escape Hybrid used for chalking
- City of Fredericksburg's autoChalk is mounted on a Toyota Highlander Hybrid and was a winner of the Virginia Municipal League Achievement Award
- City of Flint Michigan uses autoChalk for digital chalking and Pay by Plate

Tannery is excited by the prospect of working with the City of Milwaukee in support of advanced technology such as PBL, and hopes you find our proposal compelling.

Key people:

Bill Franklin, P.Eng. President

Phone: 905 738 1406, Mobile: 416 579 3565

Email: bfranklin@tannerycreeksystems.com

Jeff Bethune, Vice President Product Development

Phone: 905 738 1406, Mobile: 416 986 8657

2. Corporate Capabilities (2-3 pages)

a. Profile of lead firm's organization & relevant capabilities, including:

1) Name, FEI#, legal form, incorporation state & history
Tannery Creek Systems Inc.
Business number: 87054 8005
Incorporated in 2003 Ontario Canada.

2) Corporate size & market concentration in parking technology industry
Tannery is a small and independent niche company with strong software and electrical engineering capability. Tannery's quest to sell tough and reliable systems means we source and test system components to ensure they have thee toughness suitable for autoChalk.

Tannery also contracts mechanical, electrical and mechanical fabrication and has a roster of dependable subcontractors that build products to our specifications.

3) Fiscal condition & stability (attach most recent audited financial or credit report)
Tannery does not normally release our financial reports. However credit references can be provided e.g. the Business Development Bank of Canada (BDC) or the Royal Bank of Canada (RBC) that can attest to our credit worthiness and reliability.

4) Insurance & bonding (e.g., carrier, coverage types, liability limits & policy dates).
Tannery is insured by Jones and Deslauriers as follows:

- Commercial Liability $2,000,000
- Errors and Omissions $1,000,000
- Automotive $2,000,000

5) Relevant organizational experience (attach list of parking LPR System clients)
Tannery: See executive summary.

6) Performance on recent, similar projects (attach 5 client references with contacts)
Tannery: see attached references.

7) Disclosure of any contracts terminated in last 5 years or any pending litigation
Tannery: None

b. Profile of lead firm's proposed subcontractors (if any)

Tannery has engaged Duncan Solutions to facilitate local support. As we understand it Duncan already has a close relationship with the city. Moreover Duncan has offered to work with Tannery in software interfacing and integrating, a valuable proposal since integrating different company's software requires cooperation from all parties involved.

Contact info is:

Brian Dunn
Senior Vice President - Operations
Duncan Solutions, Inc.
Phone: 414.847.3774
Fax: 414.847.6774
E-mail: bdunn@duncansolutions.com
Visit us at: www.duncansolutions.com

1) Name, legal form, incorporation state, size & FEI number

Duncan Solutions, Inc

2) Proposed role & responsibilities

First level and local support

3) Relevant organizational experience & capabilities

As we understand it Duncan provides backend and handheld functionality.

4) Prior performance for recent, similar work (attach 2 client references with contacts)

(1) Milwaukee
(2) TBD – Duncan is a large and successful company.

c. Compliance with or commitment to applicable City laws & policies, including:

1) Small, woman-owned or minority-owned business participation
2) Local Business Enterprise (LBE) participation

Tannery Creek Systems is a smaller niche based Canadian company, independently owned, and highly focussed on our clients.

3. Project Team (2 – 3 pages)

a. Project team local office, organizational structure & reporting relationships

Tannery views this project as essentially similar to our autoChalk deployments in other cities though much larger than the average to be sure. Our closest in size is Calgary

that has six autoChalk units plus an equivalent standby unit and a fixed cameras solution that we are expanding to all of their parkades. Combined our Calgary deployment is roughly the size of Milwaukee's.

As with Milwaukee, Calgary required extensive integration with backend software and systems. We highly recommend Milwaukee discuss with Calgary their experiences to get a feel of our work and to see how the "rubber hits the road."

Tannery devotes considerable time and effort into planning building and testing our equipment and software *before* we arrive at your city and facilities. We also work with our client's (and other stakeholders such as other vendors) to ensure that they have the requisite structure in place so that when we arrive the installation moves more quickly and predictably.

For example, Tannery will build software to interface to Duncan and city systems. We will work with Duncan and the city to create remotely testable interfaces, i.e. from our offices we can design build and integrate our software with say Duncan's solving most if not all issues far before we arrive at the city. The advantages of this approach are:L

- Software interfaces are defined early
- Integration and testing reveal issues that are more easily and quickly fixed
- Other dependencies are not held up since integration points are resolved earlier
- Tannery identifies issues that will affect the critical path (i.e. delay the final end date) and focusses effort to mitigate project slippages
- Late project surprises are reduced or eliminated
- Budget overrun risk is reduced

For this project Tannery sees these relationships:

- Milwaukee – client
- Tannery Creek
  - prime contractor
  - second level support
- Duncan Systems – local first level support

Note that in our experience our clients may use local VARs (value added resellers) for first level of support but often call us instead since we are the subject matter experts with autoChalk. Tannery facilitates rapid problem resolution so we are open to calls. Over time however calls that are more finger problems or minor hardware failure (for example cable fault) are better served locally.

b. Capabilities of proposed project manager & other key personnel
    1) Relevant occupational experience summaries for key personnel (attach resumes)
    2) Project availability schedules for all key personnel
    3) Recent project manager performance (attach 3 client references with contact data)

Given the size of this project these key people will be involved:

- Bill Franklin P.Eng., President, lead project manager.
    - Bill has run software and hardware development projects with some projects exceeding 60 people (software and hardware engineers). Bill Has some 30 years experience in project and systems development and deployment.
- Jeff Bethune, BASc. (Computer Engineering). VP Engineering
    - Jeff manages all of Tannery's software development and has over 10 years of experience in cutting edge software design. Jeff has been the prime designed behind autoChalk products.
- Raphael Leung, B.Eng. (computer Engineering)
    - Raph has been a key developer for autoChalk and autoChalk LPR products. Raph has been with Tannery for 9 years.

In addition, Tannery will hire an additional technical member to provide onsite build management, configuration and testing.

In terms of staff availability, Tannery can adjust relative priorities of projects to shift Milwaukee to the top.

Project references are included in the references.

4. Product Plan (4-5 pages)

a. Overview of LPR system & offerings
b. System component descriptions
    1) Camera
    (e.g., dimensions, weight, optics, focal lengths, illumination, IR wave lengths, color/monochrome, video, mounting, communications, operating temperature)
    2) Mobile LPR processor

    3) Back office hardware/software (e.g., CPU, memory, OS, browser)
    4) Other (e.g., licensing restrictions if any)
c. Explanation of how LPR system will fulfill or exceed City's key operational needs
    1) Parking enforcement (e.g., time restriction violations)
    2) Parking scofflaw & suspect vehicle identification
    3) On-street parking permitting & permit enforcement
d. Any exceptions to requirements outlined in RFP

Tannery's autoChalk® drive-by digital chalking is capable of processing 2 vehicles per second at 30 mph and 1500 to 3000 parallel parked vehicles per shift in typical city situations. autoChalk® uses our innovative size, shape and color[4] methodology to digitally chalk vehicles whether or not they have legible license plates. This method is invaluable in the winter months when plates are dirty and are to read.

Since 2007, autoChalk has offered Pay By License plate (PBL), a payment system that is an excellent method for parkers to pay for parking offering convenience and opportunity for the city to:

- Pay at any Luke pay station
- Receive an SMS text message to extend a parking session
- Use pay by cell phone
- Provides scalable architecture for daily, monthly and yearly parking
- Offer initial free parking (e.g. 2 hour free parking)
- Offer green parking initiatives

Tannery's knowledge and autoChalk's Mobile PBL technology offers these features:

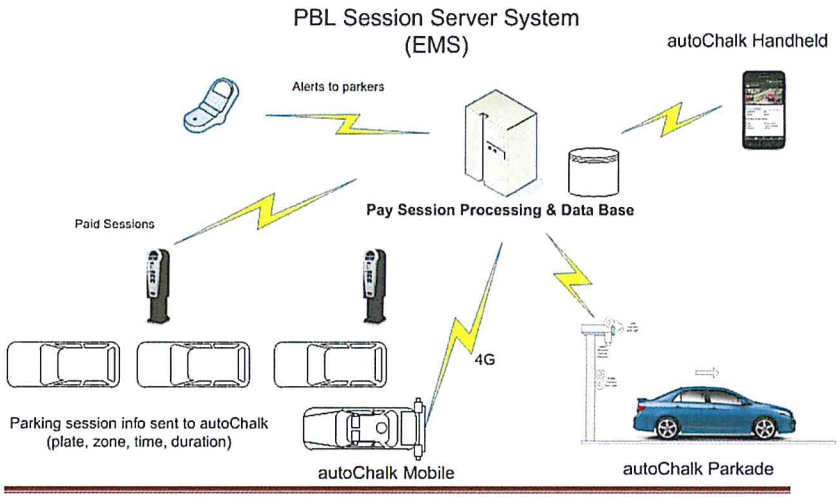
- LPR for parallel, angled and pull in parking
- Laser detection of **all** vehicles (better than 99.5% parallel parked vehicles)
- Twice a minute EMS (Enterprise Management System) check for paid sessions
- Manual query of EMS for paid session
- Alerts on non-responding pay stations
- GPS mapping of pay-stations to accommodate non-responding pay stations
- In vehicle ticketing
- Handheld PBL device offering plate history lookup and full PBL support
- Fixed camera systems for PBL and innovative enforcement support
- Five years of real world experience in PBL systems
- Real time PBL and Post processing PBL
    - Real time PBL requires the pay stations to send their sessions immediately

4 autoChalk's size, shape & color methodology is patented by Tannery Creek Systems Inc in the USA.

        - The enforcement tool must also download updates frequently, at least once per minute (autoChalk updates twice per minute)
    - Batch processing or non-real time PBL processes the plates at the end of the day
        - Tolerates off line pay stations
        - Initial grace periods are easier to handle
        - Requires mail out tickets
- Parking zone definitions that can encompass different policies such as:
    - Paid parking
    - Permit parking
    - 2 hour free parking
    - autoChalk Mobile automatically adjusts its policies to accommodate
    - Typical time to define all of zones in a city is about a day (Tannery's time)

Here's an overview of the PBL system and how autoChalk supports it:

OVERVIEW OF PAY BY PLATE
&
AUTOCHALK ENFORCEMENT FAMILY



1.2 AUTOCHALK MOBILE COMPONENTS

autoChalk is comprised of the following components:

- Digital cameras for
    - Profile shots of parallel parked vehicles
    - License plate shots
- A laser detects and measures every vehicle (with or without a license plate)
- LED lighting as appropriate
- A very accurate GPS enhanced with sophisticated dead reckoning to mitigate impact from heavy tree foliage and urban canyon
- A superb Toughbook CF31 (laptop) with cradle and post
    - The Toughbook is the brains of the autoChalk system performing vehicle recognition (using size shape and color) and LPR including permits, scofflaw, etc
- autoChalk Hub that consolidates photo images and serial communication from the cameras, lasers and GPS into just two wires that feed into the Toughbook
- Uninterruptable Power Supply (UPS) that conditions the power from the vehicle and provides backup power when the vehicle is started. Clean power is critical to the cameras and the other electronic gear
- Aluminum and stainless steel frame

Here's an example of autoChalk (in Calgary Parking Authority's ParkPlus colors):

Here's a view from the driver's seat (City of Fredericksburg's vehicle):

1.3 AUTOCHALK OFFICE FEATURES

In addition, autoChalk has a richly featured back office application. Called autoChalk Office, it offers:

- Database (embedded oracle) storing all citations sent back to it from autoChalk
- Each citation has before-and-after color photographs of profile and license plate with zoom
- Rather than place citations on the vehicle, mail citations from office is available and offers:
  - Up to 5 times the productivity of manual systems
  - Reduce parker/PEO confrontations
  - Escalating warnings and fines
  - Flexible citation management offers more nuanced ticketing for example identifying scofflaws yet going easy on out-of-town visitors
- Scofflaw database (edit, delete, import, export)
- Permit database (edit, delete, import, export)
- Policy (time duration for zones, add/delete new PEOs, infraction definitions)
- Integrates with other citation management systems (e.g. T2)
- Parking zone application defines parking zones such as geographic location, name, type (e.g. permit, time duration, etc.)

1.4 RELATIONSHIP OF AUTOCHALK MOBILE AND AUTOCHALK OFFICE

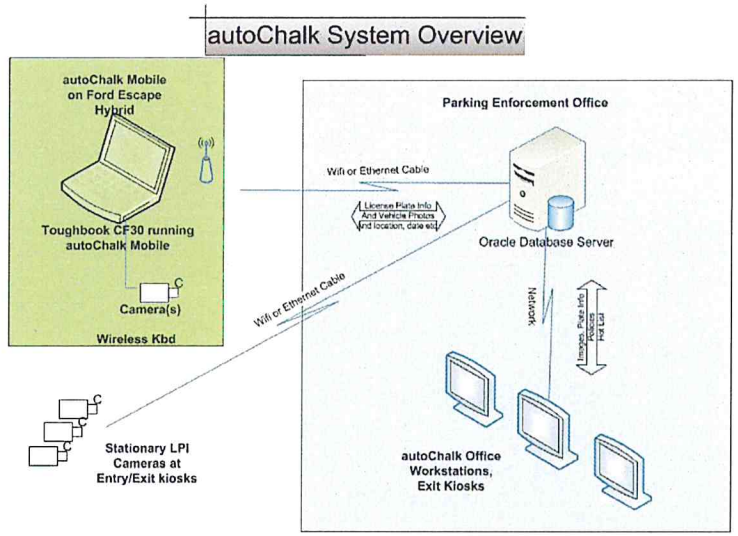
autoChalk Mobile is the field operative and autoChalk Office captures infractions and provides functionality for the office personnel to review infractions and address appeals or court evidence.

Before setting out for their scans PEO's will typically sync with autoChalk Office to:

- Get the latest policies
- Get parking zone definitions (autoChalk adjusts automatically to defined parking zone time durations)
- Get the latest scofflaw and permit lists
- And if not already send the list of citations captured since the last sync

autoChalk operates autonomously in the field and does not need communicate to autoChalk Office unless required.

The following shows the architecture design of autoChalk Mobile and Office:



Assumptions:
1) autoChalk will create a database instance in oracle server (if available). If this isn't possible, then a separate machine (server class work station) is required. Tannery will then install Oracle on that machine using Tannery's Oracle license.

1.5 Enhancements that Set autoChalk Mobile Apart

Tannery's autoChalk has a number of features that set it apart and make it particularly well suited for performing time enforcement (digital chalking).

1.5.1 Laser detection of Vehicles

autoChalk uses a laser to detect vehicles and measure their length. Generally other systems use infrared (IR) systems. IR systems struggle with winter conditions since they rely on the license plate reflecting back the infrared light emitted from the camera. The presence of reflected light alerts the camera as to the presence of a vehicle. With salt spray flying off the road onto license plates and camera lenses, the IR light is greatly attenuated by the salt and dirt on the license plate and camera lens. This can result in far less than 100% of encountered vehicles.

Tannery's autoChalk uses a laser to detect and measure vehicles (to within one inch). This method of determining the presence of vehicles very rarely misses a vehicle, typically achieving better than 99.5% of parallel parked vehicles encountered. This is true no matter the weather or condition of the license plate. Pull-in parking lots can be less since sharp corners can challenge the reach of the laser, but even in these conditions, autoChalk will detect typically 95% of vehicles.

This means autoChalk excels at digital chalking tends to be immune to license plate antics. It also means autoChalk can facilitate green parking. For example, one our client's offers a 25% discount for vehicles under about 14 feet. This feature can change the behaviour or your parkers, and the smaller vehicles yields a higher parking density.

1.5.2 Green Parking Initiatives

Offering your parkers green parking has considerable benefits such as:

- Increased parking density
- More revenue
- Higher return on capital investment
- Perception and reality merge with small vehicle initiaves
- Hybrids can also be accommodated

Consider the economics of attracting smaller vehicles versus large. For this example, let's take an example comparing a van versus say a Ford Focus.

Length of Ford Focus = 175 inches (14.6 ft)

Length of Honda Odyssey = 203 inches (16.9 ft)

Assuming individual parking stalls are not marked and block face marking is used instead then using these assumptions:

- People typically leave space between consecutive vehicles at 2 to 3 feet; let's choose 2.5 for an average
- Then the length of the vehicle plus average buffer space is
  - Focus = 14.6 + 2.5 = 17.1 ft
  - Odyssey = 16.9 + 2.5 = 19.4 ft
- How many vehicles per mile at 5280 feet per mile (assuming no breaks)?
  - Focus = 5280/17.1 = 308 vehicles
  - Odyssey = 5280/19.4 = 272
- Hence 13% more Focuses can be parked in the same space
- This implies 13% more revenue
- Even offering a 10% discount for smaller vehicles would still put the City ahead

In summary, autoChalk offers the City new tools to implement parking strategies not previously possible.

1.5.3 Enhanced GPS with Dead reckoning

AutoChalk's GPS system is extraordinarily accurate, even in tough GPS conditions, and has these components that create a superb location pin pointing device:

- Survey and maritime quality GPS to ascertain longitude and latitude. Typical accuracy is to within 1 meter (3 feet) 95% of the time in good conditions (typically defined as open field)
- This GPS is enhanced with a solid state gyroscope that maintains accurate direction even when all satellites are blocked
- Tannery also equips your vehicle with one these two alternatives:
  - A speed sensing device measures vehicle transmission output OR
  - A radar device accurate to +/– 0.3 mph
- The speed and direction is used to accurately calculate the location of the PEO vehicle which in turn pinpoints the location of digital chalked vehicles
- autoChalk GPS is accurate even under very dense foliage and large buildings

The benefits to parking enforcement are:

- accurate location of marked vehicles is essential to compare previous location to current
- autoChalk records the longitude and latitude and this data is important in court
- the block face value is calculated based on the GPS address (e.g. 512 Highview Ave corresponds to 500 block)
- autoChalk automatically adjusts to zone durations as this example shows:

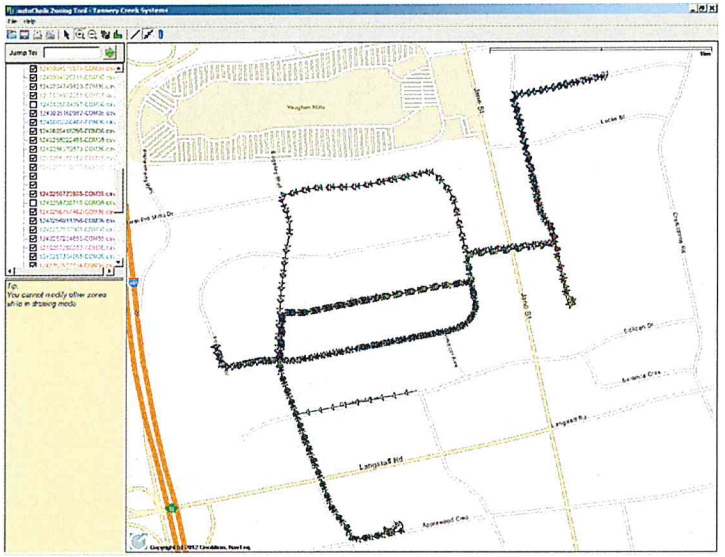
- zone A is 10 minutes (it's a drop off zone, and just 100 feet long)
- zone B is 60 minutes (is 3 block faces long on one side of the street)
- zone D is default of 2 hours
- as the PEO vehicle moves from default of 2 hours through the small A zone it will adjust its duration to check for 10 minute durations (plus grace period)
- as it moves to zone B, duration checking is lengthened to 60 minutes
- in this example, it is clear that the GPS must be very accurate to accommodate time zone durations

1.5.4 GPS Tracks for Route Analysis

Generally we have found our clients wish to understand the behavior of their PEO (Parking Enforcement Officer). We are approached to:

- Analyze routes where equipment was active
- Show the number of times the area was scanned
- Show significant breaks in scanning (for example the PEO may go for lunch or perhaps misbehavior is of concern)

An example of routes taken and our mapping capability is shown below. This diagram shows some of the routes have been travelled several times over:



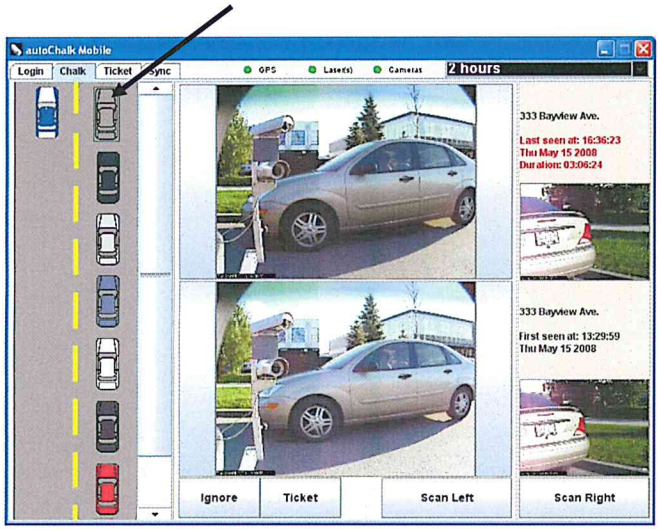
1.5.5 autoChalk Profile Camera Images

Our clients have been emphatic: give us more background information surrounding the infracting vehicle yet capture specific details on the wheels such as valve stems. This applies to digital chalking and for other applications such as Pay by Plate. autoChalk's excellent color images show not just the license plate and wheel but the whole vehicle profile and significant background content (e.g. building front) providing superb situational evidence and improving your PEO's confidence in court and resolving appeals fairly and quickly. Here's some examples:

1.5.6 autoChalk Mobile's Digital Chalking in Action

This infracting vehicle blinks. Notice color matches vehicle. Earlier photo is at bottom.

Indicates address.

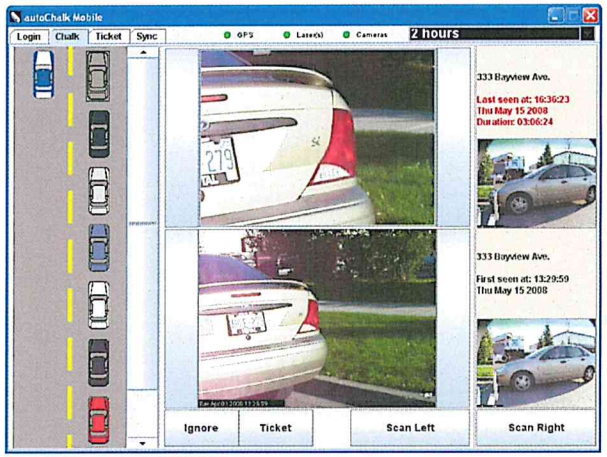


Note in this photo that:

- The vehicle is profiled against the background
- Location is readily identified facilitating appeals and court evidentiary data
- Optimal positioning of the profile camera yields excellent perspective and zoom capacity for examining valve stems, weight and print on tire
- License plate shot also has considerable background information
- Despite sun behind vehicle notice how the exposure is still excellent (i.e. not dark, a common problem when the sun is behind the subject)
- Touching the screen enlarges the photo centered around the point of contact

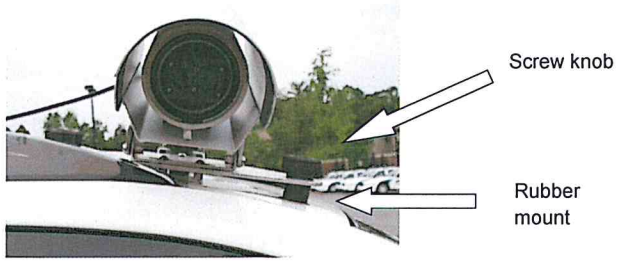
Next, check out the license plate with autoChalk Mobile License Plate Capture View

Notice this is a Ford Focus SE



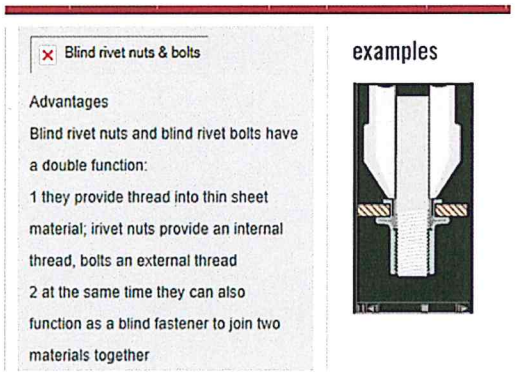
1.5.7 Portable and Robust Attachment of Gear to Vehicle

Tannery's autoChalk uses rivet nuts and hand nuts (knobs) to screw down the equipment (see laser in photo). The reason for this is simple: crash worthiness. A vehicle is subjected to major accelerative forces in a crash, typically up to 20G's in city like speeds.



The cameras or lasers (pictured) weigh about 7 lb. In a 20 mph crash, they are subjected to 20G forces, and momentarily reach an effective weight of 140 pounds! Magnetic mounts are subject to the camera flying off and injuring someone. The diagram shows how they clinch the metal. The hand knob is a ¼-

20 threaded bolt with a knob handle close to 2" in diameter. It takes less than 2 minutes to remove the equipment and stow in the vehicle.



The second reason for the mechanical connection is the cameras and lasers are always re-installed in the same orientation yielding superb photos invaluable for court evidence.

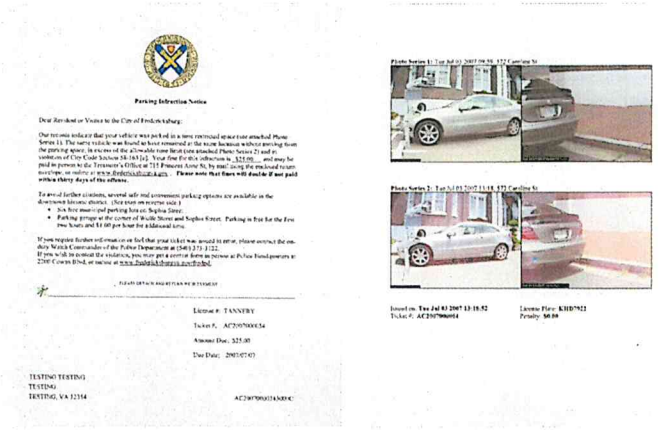
Finally, autoChalk cameras go into the trailer hitch at the back. This makes for superb photos, yet it's very easy to move from vehicle to another.

1.5.8 Mail-Out Tickets

Some of our clients have found mail out tickets a very effective method to:

- Improve productivity
- Provide better citation issuance
- Provide clearer information on why the citation and how not to get them in the future
- Avoid citing valuable tourists
- Incorporate an escalating fine mechanism
- Facilitates a more sophisticated parking management and enforcement system

Here's an example of what a mail out ticket looks like (from City of Fredericksburg):



5. Service Plan (3-4 pages)

a. Overview of project phases, milestones & schedule
b. Description of acquisition & delivery phase
c. Description of implementation phase (e.g., including timing & description of installation, testing & training components)
d. Description of maintenance phase (including timing & description of warranty inclusions & exclusions, maintenance program, items not covered by maintenance program, spare parts inventory & shipping approach, product upgrade process & software modification process)

Tannery proposes this project rollout if selected as the winning bidder:

- Review and clarification of Tannery's submission
- Pricing and project logistics agreed upon
- Prime Project Aspects:
  - Detailed functional specification containing:
    - Major components, system interfaces and prime responsibility or ownership
    - Proposed variations on current functionality
    - User interface specifications
    - Data interface specifications
    - Real time and process specifications
    - Staffing, materials, logistics schedule
    - Project budget, change requests and cost changes
    - Risk mitigation
  - Funding
    - This is a significant project size and requires substantial upfront spending to secure materials for construction of autoChalk units
    - Tannery has preliminary funding approval from BDC (Business Development Bank of Canada) to fund the material acquisition for building the autoChalk units based on a purchase order from Milwaukee
- Project checkpoint: all party agreement on functional specification, funding, risk assessment, schedule
- Project build:
  - Software
    - Design and development of Milwaukee specific modules
    - Design and development of software interfaces
    - Specifying of remote test points for Tannery/Duncan to exercise software functionality

    - Integration and test of software
    - Field testing at Tannery's location
    - Project checkpoint: assessment of software progress
  - Hardware
    - Acquisition of components to build autoChalk units
    - Lead times for some components are considerable (8 weeks)
    - Tannery is highlighting risks with the proposed schedule
  - General comments on project schedule:
    - Consider the current project schedule (from the RFP):
      - Discussions with winning vendor June 3, 2013
      - Award of contract June 12 (week 0)
      - First LPR system July 15 (week 4)
      - Fully system deployed August 5 (week 7)
      - Fully deployed (all 30 mobile and back office systems) August 20 (week 9)
    - Generally lead times for components can be up to 8 weeks
    - Tannery does not stock these quantities of components as the cost of inventory is prohibitive and frankly large quantity contracts such as this one are rare. For example Calgary (our largest client) with a population of 1.2 Million people has six autoChalk units. Of course the policies and solutions that Calgary is solving are different and this example is used to illustrate the scale of Milwaukee's endeavour. Consequently Tannery expects it will be a significant challenge to deliver all 30 units for August 20th.
    - Software integration can be problematic. It very much depends on the scope of the changes and flexibility of the interfacing software. Tannery has performed numerous projects requiring interfacing significant software interaction. However since the real work on the detailed functional specification will not begin until June 12, significant challenges may need to be overcome to achieve a demonstrable system by July 15 and a fully working system by August 5. To be clear, Tannery is not saying this is impossible or even improbable, but we are highlighting it is a significant risk since three parties are involved: City of Milwaukee, Duncan and Tannery and citizens of Milwaukee (the permit parkers)
    - Consequently, Tannery proposes this project rollout to reduce risk:
      - Assuming that Milwaukee already has an excellent method for permit issuance and enforcement (a very reasonable assumption from Tannery's view) then initiate the deployment with a pilot

- Milwaukee may wish to have a concurrent system initially and since the permits will be rolled out through the year, then some concurrent operation will be necessitated anyway
- It is not clear from the RFP if specific zones can be converted to plate AND displayed permits but if at all possible this would be ideal:
    - Specific parking zones are designated licence plate AND hanging/window mounted permit
    - In these zones the license plate is registered (if it isn't already) with the issuing permit
    - Enforcement begins in these areas using the license plate as the prime permit designation
    - Backup enforcement (vehicle with non-registered plate) is checked by examining the window or hanging permit
    - Up to, say, five units are deployed initially using well qualified staff
- Milwaukee would achieve these benefits with a pilot:
    - Deploying limited numbers of units simplifies troubleshooting and upgrading of software or hardware
    - Performance metrics may yield results that can save Milwaukee money such as:
        - Actual measurement and optimization of vehicle scans and routes may reduce required numbers of LPR units, for example Milwaukee may require only 25 units
        - Process changes can have a significant impact, for example mail out tickets is significantly more productive (and safer) than stopping and putting tickets on the vehicle
    - If for whatever reason the system is glitching, existing enforcement paradigms can continue
    - Parkers often take considerable time to adapt to a new system
    - Piloting exposes and facilitates simpler solutions around new technology deployment, scaling and assumptions, user adoption (and resistance), reduces media flare ups and provides smaller logistical challenges for remedial action

In summary Tannery has the knowledge and capacity to perform what Milwaukee requires, but in our opinion, Milwaukee needs to build contingency into the plan as Tannery has suggested.

1.6 Warranty Information

Tannery offers a full warranty for the first year of operation and an optional in-perpetuity in second and subsequent years

Tannery provides significant value through prompt phone support, remote diagnostics and rapid repairs of reported defects or other needs to ensure autoChalk remains operational. In addition Tannery will perform a site visit approximately once towards the end of the 12 months to inspect the equipment and repair or replace components as required.

Both the first year warranty and in-perpetuity warranty cover software, hardware and mechanical components and:

- Equipment is maintained as if it does not have a limited working life
- Hence equipment is maintained to reasonably current configuration and capability
- All components are replaced when worn or defective and not serviceable including (but not limited to)
    - Cameras
    - Lasers
    - GPS and dead reckoning system
    - autoChalk hub
    - Wiring
    - Uninterruptable Power Supply (UPS)
    - Frame and mechanical components
    - Software improvements and repaired defects for
        - autoChalk Mobile
        - autoChalk Office
        - autoChalk LPR
- New software features specific to the city's autoChalk purchase

1.6.1 Mean Time for Repair

Hardware components are field serviceable and are quite simple to remove and

install. On notification from the client, Tannery will remotely diagnose problems and if the hardware is defective ship a new device within 2 business days using UPS 3 day delivery. (We have found UPS rarely delivers faster than this due to customs). Often Tannery can reconfigure the hardware or software to offer partial functionality and to reduce downtime until replacement components or software remedies are available. Note that some devices may be trickier to replace such as the laptop and may require more time. In any case Tannery endeavours to respond quickly and efficiently to a stoppage.

Software and System defects are treated as follows:

- Defects that cause cessation of operation will be worked on a top priority basis meaning staff will work full time on the issue until it is resolved. Defects of this sort are considered "stop ship". Repaired software (and sometimes associated hardware) is installed at the client's earliest convenience.
- If the repairs are significant enough to require one of Tannery Creek's specialists, then one of our staff will fly down at the earliest reasonable date. Time will be considered of the essence.
- Defects that are annoying or "nice to have" will be fixed and released on regular software maintenance upgrade schedules (typically a couple of times a year).

Note that Milwaukee needs to have a skilled person on hand to work with Tannery. Typically the lead PEO trained by Tannery is an excellent candidate and occasionally the City's vehicle service department.

1.6.2 What this Warranty Does Not Cover

This warranty does not cover the following unless specifically authorized in writing by Tannery Creek:

- Items deliberately damaged
- Accidental damage whether due to misuse, accident, environment, vandalism, etc.
- Software viruses and other applications introduced to the laptop
- Performance compromised by other applications added to the laptop
- 3rd party components added to autoChalk (additions or replacements)
- Alteration of autoChalk in any fashion

Note that warranty, defect classification and what is not covered is general to all autoChalk products.

6. Costs (2-3 pages)

a. Proposed cost elements, i.e.:
   1) Acquisition costs
   2) Implementation costs
   3) Service costs
b. Proposed costing alternatives (e.g. system update pricing scheme)
c. Disclosure of key payment terms & pricing assumptions underlying proposed costs
d. Any exceptions to contract principles outlined in RFP

Tannery: Two options are shown here:

- Quantity of 20 units assuming autoChalk is more productive than expected
- Quantity of 30 units
- In each case a 40% deposit is highly desirable
- Non Recurring Engineering is quite speculative but has been budgeted at $50,000 (50 person days). It could be more or less.
- Duncan support costs outside of warranty are $30 per hour.

Item	Sub-item				Price ($CAN)
1		**autoChalk, Drive-by Automated Digital Chalking for single Sided scanning Includes the following items:**	20	$39,500	$ 790,000
	A	Panasonic Toughbook-CF31 rugged laptop/tablet	1	included	
	B	Computer cradle and mount, power supply	1	included	
	C	Hemisphere survey quality precision GPS and antenna	1	included	
	D	Wiring, data routing, GPS and measurement cabinet	1	included	
	E	High performance Sony industrial digital cameras with tough weather resistant cases	4	included	
	F	MDL precision laser measurement devices with tough weather resistant case	2	included	
	G	Mounts and frame for camera and laser components	Set	included	
	H	Wiring and cables kit and spares	1	included	
	I	DC-DC UPS	1	included	
	J	autoChalk Mobile **Chalking software**	1	included	
	K	autoChalk LPR software for **Scofflaw**	1	included	
	L	Instruction and maintenance manual	1	included	
	M	Training (days) and on site help in operation	3	included	
	N	LogMeIn remote management software to facilitate remote and rapid diagnostics	2	$60	no charge
	O	Full warranty for 1 year from date of installation. Includes all hardware and software.	1	included	
		Total costs for autoChalk Software and Hardware excluding taxes			$ 790,000
	P	autoChalk Mobile installation (per vehicle)	20	$1,000	$ 20,000
		(approximately 1.25 days per autoChalk installation)			
	Q	autoChalk Office application for storage and display of infracting vehicles, reports, policy etc	1	$20,000	$ 20,000
	Q.1	autoChalk Office installation (per installation)	1	$2,500	$ 2,500
	R	Oracle database software - (if required)	1	$1,200	$ 1,200
	R.1	additional Oracle seat licenses	30	$200	$ 6,000
	S	Non recurring Engineering is estimated to be 50 person days. **THIS IS AN ESTIMATE.**	**50**	**$1,000**	$ 50,000
	S	Shipping, setup and tear down costs	20	$750	$ 15,000
	T	Travel: 5 days stay. Per diem cost for food, lodging and airfare for 4 people (30 autoChalks at 1.25 days each plus autoChalk Office at 5 days is 43 days)	30	$500	$ 15,000
		Total Price Including Shipping, Installation, Training, Travel			**$ 919,700**
		OPTIONS			
1		In vehicle ticket printer and software	1	$4,000	$ 4,000
2		Mail out ticketing option	1	$10,000	$ 10,000
3		Integration software and customization available for $125/hour.			
4		"in-perpetuity" maintenance @ 20% per year. This is a yearly fee or can be paid on contract signing. In perpetuity maintenance starts second year (first year is included in base payment for autoChalk system). Fully covers all software and hardware with no end of life for the products as long as yearly fees are paid. Includes at least one visit per year, and service calls more frequently if product is not performing properly and is not serviceable from remote location. Includes all defects and wear caused by normal operation. Does not include accident, deliberate damage and misuse or failure of customer repaired components.		20%	
	Notes:	1) Damage to equipment (software or hardware) will be repaired and billed to Customer.			
		2) Material or design defects fixed at no charge.			
		3) Terms are net 30 days.			
		4) Lead time for delivery ranges from 6 to 10 weeks depending on our vendors lead time			
		5) Server(s) for autoChalk Office and Oracle are provided by client.			
		6) Backup data storage location for Oracle provided by client.			
		(Note Tannery will set up Oracle backup script and maintain Oracle)			
		7) A reasonably technical person provided by client for Tannery to train for elementary service.			
		8) PEO to have basic computer literacy.			
		Tannery works closely with our customers to ensure our equipment and solution fulfils your expectations. This is our culture and commitment to you before and after your purchase.			

Item	Sub-item				Price ($CAN)
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	S	Non recurring Engineering is estimated to be 50 person days. **THIS IS AN ESTIMATE.**	**50**	**$1,000**	$ 50,000
	S	Shipping, setup and tear down costs	30	$750	$ 22,500
	T	Travel: 5 days stay. Per diem cost for food, lodging and airfare for 4 people (30 autoChalks at 1.25 days each plus autoChalk Office at 5 days is 43 days)	43	$500	$ 21,500
		Total Price Including Shipping, Installation, Training, Travel			**$1,338,700**
		OPTIONS			
1		In vehicle ticket printer and software	1	$4,000	$ 4,000
2		Mail out ticketing option	1	$10,000	$ 10,000
3		Integration software and customization available for $125/hour.			
4		"in-perpetuity" maintenance @ 20% per year. This is a yearly fee or can be paid on contract signing. In perpetuity maintenance starts second year (first year is included in base payment for autoChalk system). Fully covers all software and hardware with no end of life for the products as long as yearly fees are paid. Includes at least one visit per year, and service calls more frequently if product is not performing properly and is not serviceable from remote location. Includes all defects and wear caused by normal operation. Does not include accident, deliberate damage and misuse or failure of customer repaired components.		20%	
	Notes:	1) Damage to equipment (software or hardware) will be repaired and billed to Customer.			
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		5) Server(s) for autoChalk Office and Oracle are provided by client.			
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		7) A reasonably technical person provided by client for Tannery to train for elementary service.			
		8) PEO to have basic computer literacy.			
		Tannery works closely with our customers to ensure our equipment and solution fulfils your expectations. This is our culture and commitment to you before and after your purchase.			

1A – Operational (License Plate Scanning & Recognition)

1. Scanning
   a. Convenient method for PEOs to scan & digitize photos of LPS & parked vehicles
      Tannery: Conforms

   b. Sophisticated software & technology for finding LPs & enhancing LP images
      Tannery: Conforms

   c. Real-time capture of alphanumeric, date/time, site, image & other required LP/vehicle data
      Tannery: Conforms

   d. Ability to capture parked vehicle LPs from all jurisdictions & other vehicle data (e.g., color image, GPS coordinates & scan date/time stamps) at all times whether PEO vehicle stopped or moving & regardless of parked vehicle position (e.g., parallel or angle-parked)
      Tannery: Conforms. autoChalk captures precise GPS coordinates even in challenging GPS conditions (urban multipath and heavy tree foliage) and photos have little jitter. Photos are taken as autoChalk scans the parked vehicles; it is not clear what stationary LPR vehicles are actually doing.

   e. Full accommodation of state/nation LP design variances (e.g., fonts, colors, position & gaps)
      Tannery: Conforms with some adjustment. Typically some fine tuing of font is performed to improve accuracy in locale.

   f. LP data capture rates of at least 98% (of scanned vehicles) even in adverse conditions
      Tannery: Conforms. autoChalk uses a laser that triggers on almost 100% of parallel parked vehicles (typically better than 99.5%)

2. Reading and Recognition
   a. Real-time on-site processing of captured LP data (with remote processing option)
      Tannery: Conforms. Tannery can provide remote processing if required.
   b. Robust algorithms to ensure high resolution & accurate reads (e.g., LP localization, orientation & sizing, image normalization, character segmentation, OCR, syntax analysis & geo-analysis)
      Tannery: Conforms.
   c. Robust image manipulation & OCR techniques to ensure high resolution & accurate reads
      Tannery: Conforms.
   d. Outstanding LP resolution features (e.g., high resolution image sensor & fast image processing)

Tannery: Conforms. autoChalk optics can be adjusted to obtain even better photographs which are the bedrock of good LPR/OCR.

   e. Superb recognition at varying speeds, angles (e.g., up to 60°) & distance (e.g., 4" - 6')
      Tannery: Conforms with conditions. autoChalk is not designed to pick up plates from 6". Indeed Tannery does not recommend PEO's drive 6" away from subject vehicles. autoChalk recognizes vehicles from about 4 feet to 12 feet away.

   f. Detection of LPs from multiple formats & jurisdictions (e.g., all reflective & non-reflective LPs)
      Tannery: Conforms with some limitations. Evening and night capture of plates with mixed reflective and non reflective characteristics require substantial differences in camera gain. Although this is not a problem during the day since autoChalk uses natural light to capture plate images, night time may present issues. Tannery currently has this challenge in our job jar. If this is a critical issue Tannery will elevate the priority of addressing and solving mixed reflective and non-reflective plates.

   g. Superb LP resolution & recognition accuracy rates of at least 90% in any conditions (e.g., glare, ambient light, inclement weather)
      Tannery: Conforms with some limitations. Internally we have debated the accuracy rates for plate recognition and Tannery could publish numbers such as 98% accurate, but this would be based on ideal conditions to wit:
      - Clean license plates in excellent condition
      - Ideal lighting (diffused)
      - No vanity frame
      - Crisp font
      - Located perpendicular at about 8 to 30 feet away
      - No trailer hitches, covers etc

      But the real world doesn't offer pristine license plates. Consequently here are some statistics that we have measured (averages):
      - autoChalk parkade camera system detecting vehicles and determining membership in the 1200 vehicle parkade (i.e. permitted vehicle) is approximately 94% of ALL vehicles seen including vehicles with impossible to read (by eye) plates
      - pull-in parking with mobile systems 85 to 90%
      - parallel parking 75 to 85%
      - parallel parking with salt and dirty plates (winter conditions) 60 to 75%
      - Heavy snow coating plates and parkers cheating (i.e. packing snow on their plates) LPR close to 0%. However autoChalk for time limited parking is around 90% since it does not need a license plate rather it uses size shape and color to recognize the vehicle.

h. Real-time processing of parking data from citation processing system
Tannery: Conforms. Tannery grabs data for example from Digital Payment Systems EMS three times a minute.

i. Real-time transfer of accurate LP data to citation processing system
Tannery: Conforms with changes. Normally autoChalk performs the grunt work in grabbing plates and comparing to permit lists. However if a PEO determines the vehicle is to be cited, the vehicle information could be sent immediately.

j. Real-time ability to match LP numbers of parked vehicles against pre-loaded database
Tannery: Conforms.

k. Compliance with National ACPO ANPR Standards (NAAS) for data capture & accuracy
Tannery: Conforms.

1B – Operational (Parking Enforcement)

1. time violations
   a. Ability to distinguish different parking zones & time periods (e.g., 30, 90 & 120 minutes)
   Tannery: Conforms. Moreover autoChalk can automatically adjust to different parking zones and associated times, permits lists etc. A mapping tool is part of autoChalk Office suite.

   b. Full support of citations for all time zone restrictions (e.g., 15 minutes, 1 hour or 2 hours)
   Tannery: Conforms.

   c. Full support of automatic chalking mode (e.g., images for marking time & vehicle movement)
   Tannery: Conforms.

   d. Ability to note precise location of time limit violation via flexible method (e.g., GPS or zone)
   Tannery: Conforms. Note that autoChalk GPS coordinates are very precise even in challenging GPS conditions.

   e. Display of violation evidence (e.g., map, vehicle position, wheels, read times & elapsed times)
   Tannery: Conforms.

2. Other parking violations
   a. Full support of citations for other parking violations (including pay-by-space violations)
   Tannery: Conforms. This is an optional component and in any case as Tannery understands it Duncan provides the handheld equipment to support citation issuance. Note Tannery has been involved with another large city to provide drive by pay by space enforcement and could provide the same for Milwaukee. However given Milwaukee's interest in LPR it probably makes more sense to use PBL (Pay by License Plate).

   b. Full integration with citation processing system
   Tannery: Conforms with modifications. Tannery will modify autoChalk software to work with Duncan systems. Duncan has assured Tannery that they will fully cooperate with Tannery.

   c. Full field capabilities for PEOs to query citation processing system & verify violations
   Tannery: Does not currently conform, but Tannery could offer this functionality. This in an area that requires crisp specification.

   d. Ability to enforce all metered spaces (single-space or multi-space parking meters)
   Tannery: Conforms depending on what Milwaukee wants to do. For example PBL is already available with autoChalk as it is integrated with Digital Payment Lukes and scheduled for CALE. Pay by Space is also a possibility.

3. Scofflaw identification
   a. Automatic import/storage of all parking scofflaw data from citation processing system
   Tannery: Conforms. Tannery imports from a variety of sources such as CLEW, XML and CSV data sources.

   b. Real-time access to & real-time wireless retrieval of all parking scofflaw data (e.g., LP data)
   Tannery: Conforms with modifications. autoChalk already downloads plate lists and this can be changed to update from other sources (e.g. Duncan).

   c. Automatic identification of scofflaws by matching LP numbers against scofflaw database
   Tannery: Conforms.

   d. Full field capabilities for PEOs to query citation processing system & verify scofflaw match
   Tannery: same as previous section (2.c)

4. Optional Needs
    a. Automatic population of correct TID data fields for any violation (LPR transfers data to TIDs)
    Tannery: Can optionally provide this functionality.

    b. Ability to support subsequent citation issuance by mail in lieu of affixing citation to vehicle (LPR system transfers violation-related LP images & data to citation processing system)
    Tannery: Conforms. Tannery highly recommends mail out tickets for these reasons:
        - Productivity is much higher (scanning vehicles is as much as 10x times higher than someone walking the beat and overall about 5 x more productive)
        - The tickets (shown earlier in this document) give ample space to describe the citation and provide advice on how not to get a citation in the future
        - The photos and information tend to lower the numbers and cost of appeals. Here are some examples from Calgary:
            - 120,000 citations issued
            - 4% appealed to parking office
            - 0.3% appealed to court
        - It is much easier that walking or getting out to issue tickets especially in rain, snow and extreme cold
        - It is safer both from being accosted and from an accident (i.e. stationary vehicle, driver getting in and out and collisions with careless civilian drivers)

    c. Ability to equip other City vehicles to support parking enforcement (e.g., sanitation trucks)
    Tannery: autoChalk can be mounted on most vehicles.

1C Operational (Parking Permitting)

1. Sales
    a. Full integration with parking permit sales process at all City-approved centers, including MPD kiosks, violation bureaus, Tow Lot & automated payment centers
    b. Automatic import/storage of all parking permit data sold manually & electronically

Tannery: Conforms if data is consolidated by city or Duncan then Tannery can add a simple data access. In general, Tannery expects data to be centralized and warehoused on a server and autoChalk will be able to query the database;

2. Zone Management
    a. Automatic recognition of all permit zones (e.g., commuter-impacted & RPP permit zones)
    b. Ongoing maintenance of all required permit zone data (e.g., street & address data)
    c. Real-time access to permit zone database & updates (e.g., for inquiries)

    Tannery: Conforms. autoChalk has sophisticated zone mapping, management and autoChalk Mobile automatically adjusts to the zones. However interfaces to other products especially in real time require:
        - Definition of the interface
        - Real time characteristics of data (e.g. is reading say once a minute considered real time?)
        - Considerations of communication error
        - Software development and testing.

3. Account Management
    a. Automatic recognition of all permit account data (e.g., name, number, address, vehicle & LP)
    b. Seamless interface with permit account database & citation processing system
    d. Real-time access to permit account database & updates (e.g., for LP/permit inquiries)

    Tannery: Conforms with software interface changes. As discussed in the previous section, the software interface needs precise definition.

4. Enforcement
    a. Convenient scanning of LP data for matching against Permit Database (*Invalid Permit List*)
    b. Automatic detection of permit violators by matching against Permit Database (*Invalid Permit List*)
    c. Real-time alerts for PEOs of LPR-captured LPs without valid parking permit
    d. Ability to simultaneously enforce permits, permit zones & permit regulations (including odd/even & day-of-week parking) & other regulations (e.g., time restrictions)

    Tannery: Conforms but again requires software definition and code changes to fit.

5. Optional Needs
    a. Seamless integration with MPD database
       Tannery: Conforms with adaptations as described earlier.
    b. Ability to read, recognize & enforce disabled parking permits
       Tannery: Conforms. Plate based Disabled Person permits are straightforward but the functionality and software definition needs specification.

1D – Operational (Suspect Vehicle Identification)

1. Data Management
    a. Real-time access to MPD stolen vehicle database (*Suspect Vehicle List*) wireless or via file exchange
       Tannery: Conforms given software interface changes.

    b. Storage (with real-time access) of all City-furnished suspect vehicle data (*Suspect Vehicle List*)
       Tannery: Conforms given software interface changes.

    c. Accurate maintenance of suspect vehicle data for at least 365 days
       Tannery: assuming citable vehicles are transferred to autoChalk Office (a normal thing to do) then the vehicles are stored as long as the city wants.

    d. Access to other relevant data for supporting criminal justice investigations (e.g., witness identification, pattern recognition or suspect individual tracking)
       Tannery can add these features given a detailed software specification. It may be quicker if Duncan already has an application that can run on a laptop. The PEO can easily switch applications to view needed data.

2. Scanning
    a. Ability to scan LPs of suspect vehicles while simultaneously identifying parking violations
       Tannery: Conforms for example PBL concurrent with digital chalking.

    b. Automatic, real-time detection of suspect vehicles by type via LP/database match
       Tannery: Conforms.

    c. Automatic, real-time alerts for detected suspect vehicles (with digital documentation)
       Tannery: Conforms.

3. Optional Needs
    a. Mechanism for accessing NCIC database downloads & other relevant databases
    b. Real-time access to daily updated NCIC criminal data from all cities
    c. Full compatibility & seamless interface between MPD & DPW systems (as requested by MPD)
    d. Integration of identifying driver data (e.g., photo) for supporting MPD law enforcement strategies

Tannery: All of these features can be optionally added to autoChalk providing the software interfaces are functional are interoperate.

1E – Operational (Other System Requirements)

1. Hardware and Equipment
    a. Compact design (e.g., compact weatherproof housing for camera, illuminator & processor)
       Tannery: Conforms. Camera cases are IP67.

    b. Rugged, infrared mobile cameras mountable on vehicles with requisite camera shutter speed & lens configurations to enable plate reads from multiple distances & angles
       Tannery: Conforms.

    c. Small, durable processors housed easily in vehicles & seamlessly linking OCR technology
       Tannery: Conforms.

    d. High-capacity battery & flexible power options (e.g., solar & DC in-vehicle adaptor)
       Tannery: Conforms. autoChalk is equipped with an Uninterruptable Power Supply (UPS) which filters out noise and provides a clean power supply to the LPR system. In general Tannery recommends these things for the host vehicle to ensure trouble-free operation:
        - Upgraded alternator (e.g. typically offered in the tow package)
        - Optima battery (takes deep cycle discharges)
        - Trickle charger that is plugged in every night

    e. Full redundancy (e.g., power, fiber connectivity & disk arrays)

Tannery: does not offer full redundancy. In fact the idea of full redundancy needs to be more closely examined:

- For the mobile vehicle:
  - A consider able number of vehicle will be on the road and can be redeployed providing in a sense redundant capacity
  - Actually providing RAIDs, dual processing machines, dual camera etc on the mobile scanning vehicle would be expensive and problematic, for example the power consumption would increase considerably, space is a concern among other issues
  - Using high quality and rugged equipment goes a long way in providing for reliable operation (e.g. Panasonic Toughbook or autoChalk uses Sony cameras which have 6.5 year MTBF)
- For autoChalk Office:
  - High quality components
  - Distribution of application on say two desktops
  - Oracle is installed on a mirrored system
  - Disk system is RAID based and backed up daily

f. High manufacturing standards (e.g., compliance with ISO 9001:2000 standards)
Tannery: Conforms. autoChalk is primiarily made up of components with ISO 9001 ratings.

2. Software and interfaces
   a. Requisite integration of LPR system with TIDs to ensure efficient field use of LPR technology & automatic population of appropriate citation fields in TIDs)
   Tannery: Conforms. From a previous section this was considered optional. In any case autoChalk could have this optionally added.

   b. Full, real-time data access & integration with citation processing system & parking databases
   Tannery: as described prevously.

   c. Open architecture & feasible communications for facilitating integration with other applications
   Tannery: Conforms. AutoChalk software architecture is based on java, a modern and flexible language that makes it easy to integrate with other software and on other products (e.g. Android)

   d. Compatibility with Windows operating system & Internet Explorer 7.0 or later browser
   Tannery: Conforms.

   e. Automatic data conversion to key Windows-based programs (e.g., Word & Excel)

Tannery: Conforms... in general. For example data can be transferred in comma separated values (CSV) between excel and autoChalk.

   f. Accreditation of software for Web-based services
   Tannery: Can optionally approached the accreditation process. Tannery has been involved with other accreditation bodies including:
   - United States Patent Office for patent and copyright
   - Canadian Patent Office for copyright
   - Federal Food and Drug Agency (FDA)
   - Software application signatures using public key signing from a Certificate Authority (CA)

   g. Full integration capabilities with relevant smart/cell phone apps
   Tannery: Conforms. autoChalk Handheld is an example of a handheld device running on Google Android and Samsung 3 smartphone.

   h. Requisite flexibility & scalability to meet long-term needs (including field upgradeability)
   Tannery: Conforms though Tannery will need to work closely with the city and Duncan to ensure data interfaces have the scalability required. Note previous comments on scalability and pilots.

   i. Adequate security controls for protecting LPR data from unauthorized access (e.g., firewall, password controls, PCI/HIPAA compliance & data communications encryption)
   Tannery: Conforms in part and Tannery can further protection as is desired.

3. Data Management
   a. Automatic uploads of synchronized time zone, parking violation, scofflaw, parking permit & suspect vehicle data from citation processing system to LPR units
   b. Prompt storage of captured images & data
   c. Sufficient storage capacity for parking enforcement, permitting & suspect vehicle program needs
   d. Flexibility to transfer images & other data to remote PC for subsequent processing & retrieval
   e. Good database formatting flexibility (e.g., customize screens & alarms based on system hits)
   f. Continuous back-ups to archived data to ensure no loss of vital data
   g. Database management by qualified entity (e.g., ISO 9001:2008 & Microsoft Gold certification)

Tannery: Conforms for the most part. These items have been addressed in previous sections.

4. Data analysis and reporting
   a. Comprehensive daily, weekly, month & yearly permit program reports
      Tannery: Conforms in as much as the permits are managed by autoChalk. However it seems likely that reports around permits should arise from the permitting programs. Tannery can create a report that indicates the number of citations that are permit related.

   b. Comprehensive daily, weekly, month & yearly parking enforcement reports on full spectrum of enforcement data (e.g., violations by type, street & PEO)
      Tannery: Conforms.

   c. Generation of all other management reports in format required by City, including *ad hoc* & customizable reports requested by City (e.g., LPs captured/ read, photos & system usage)
      Tannery: Conforms. Tannery can create custom reports as the city needs.

   d. Mapping feature for displaying geo-coded enforcement, permitting & suspect vehicle patterns & tracking discrete LP locations, multiple vehicle activity & violations by area using LPR data (attach geo-coded digital file to citation, permit or suspect vehicle)
      Tannery: Conforms. This feature has been previously described.

   e. Real-time display of every LPR-issued citation issued from TIDs & all other collected data (e.g., scofflaws, suspect vehicles, violations, wheel images for time zones & route & system usage data)
      Tannery: Conforms so long as the operator has autoChalk running and the vehicle has been scanned.

   f. Provision of all management reports in frequency & manner required by City
      Tannery: Conforms.

   g. Automatic alerts to back office when LPR system inactive or off
      Tannery: It is not apparent to Tannery why this would be needed unless the city believes the PEO is not performing their job. In that case examining their GPS trail would be very useful.

5. Optional Needs

   a. Ability to import all City-required national & regional databases (public safety interface)
      Tannery: Can be added as required.

   b. Ability to cross-reference driver ID data with LP database
      Tannery: Can be added as required.

   c. Ability to handle multiple video inputs from color cameras
      Tannery: Conforms.

   d. Ability to manually correct previously incorrectly-read LP data
      Tannery: Conforms.

   e. Flexibility to transfer data in real time via SIM card or batch process upload/download
      Tannery: Conforms.

   f. Ability to attach photo of captured LP image to citation issued to violator
      Tannery: Conforms.

   g. Ability to add notes to images captured by system
      Tannery: Conforms.

   h. Ability to record, track & display actual PEO routes during assigned shifts
      Tannery: Conforms.

2 – Implementation Requirements

1. Installation
   a. Flexible installation options especially for vehicle-mounted components
      Tannery: Conforms.

   b. Proper positioning of vehicle cameras (e.g., optimum proximity of camera for good LPR reads)
      Tannery: Conforms. As described earlier autoChalk set up is structured and camera placement is always done correctly.

   c. Simple, easy system/equipment installation & deployment
      Tannery: Conforms. It takes less that 2 minutes to tear down and less than 5 minutes to setup.

2. Testing

a. Rigorous testing protocol to ensure full system operability by first day of permit sales
Tannery: this topic depends on the preparation before deploying as described in detail previously in document.

b. Simple, easy & quick operability (e.g., easy-to-use software interfaces)
Tannery: Conforms; autoChalk reflects Tannery's passion for ease of use.

3. Training
   a. At least three one-hour on-site classroom training sessions (one for each shift)
   Tannery: Conforms.

   b. One online training manual/guide for all employees
   Tannery: Conforms.

   c. At least ten (10) hard copies of training manual/guide for leads & other designated employees
   Tannery: Conforms. Will be provided.

3 – Service Requirements

1. Service
   a. At least 99.9% uptime for all system components
   Tannery: Conforms but with some limitations. The performance of the system needs division into three areas:
   - autoChalk Mobile
   - autoChalk Office
   - Other systems (e.g. Duncan, Milwaukee, etc)

To achieve 99.9% up time consider these parameters (examples only):
- Equipment is used 10 hours a day, 250 days a year
- Total hours of operation are 2500
- Total time down is 2.5 hours

Changing components such as a laser (assuming it is sitting on a shelf) requires at most 20 minutes however:
- A spare laser needs to be on the shelf
- The fault needs to be obvious
- The driver's commute could be 30 minutes

More problematic is a computer failure. In this case the computer needs replacing and reconfiguring. This fault will easily take more than 2.5 hours. In our experience we have found the Panasonic Toughbooks very reliable and in general autoChalk equipment has little down time and definitely better than 99.5%

The second general observation is as the equipment gets older parts will begin to fail more often, hence hitting the 99.9% may be possible in the first year but by the 4th year it will almost certainly not be possible unless the city performs aggressive swap out of components. For example the Toughbook gets replaced after three years. Cameras the same. Lasers seem to be good for about 5 years. And so on.

The fourth observation is phone support is critical. Tannery often finds we can get PEO's back on track almost immediately because they have forgotten something or some other problem has crept into the system.

In summary to achieve high levels of operability for autoChalk Mobile requires:
- Up to date spare parts
- Phone support
- Aggressive product replacement program

Similarly autoChalk Office residing on the best quality hardware will reduce chances of down time.

   b. Full warranty coverage for first 12 months of operation
   Tannery: Conforms.

   c. Remote technical assistance access with 24/7 customer service line
   Tannery: Conforms. As mentioned previously Duncan and Tannery will provide first level support, Tannery providing second level support.

2. Maintenance
   a. Local service capabilities for ensuring timely repairs or replacement
   d. 24x7 customer service/technical support telephone line for customer inquiries & troubleshooting
   Tannery: Conforms. As mentioned previously Duncan and Tannery will provide first level support, Tannery providing second level support.

3. Updates

a. Commitment to providing all system updates to City in a timely fashion
   Tannery: Conforms. Tannery provides regular support and push of software updates.
b. Contractual mechanism for modifying system to meet City's dynamic needs
   Tannery: okay.

References for Tannery Creek's autoChalk

(Updated to July 23, 2012)

Contact: **Bill Franklin, President, Tannery Creek Systems Inc.**
bfranklin@tannerycreeksystems.com (905) 738 1406

City of Calgary (population 1,100,000), Alberta, Canada
Miles Dyck, Manager Parking Enforcement, (403) 537-7120
Joan Hay, Senior Enforcement Officer, (403) 537-7117

Piloted in spring 2006 and in continuous operation since June 2007.

The Calgary Parking Authority implemented (in 2007) very innovative programs for cell phone parking and green initiatives collectively under the ParkPlus name (www.ParkPlus.com). Tannery's autoChalk is used to enforce timed and cell phone parking (i.e. ParkPlus). Calgary uses mail out tickets and has five autoChalk units. Tannery provided the mobile and office parking systems.

Each autoChalk machine handles 1500 to 2500 vehicles per day or in aggregate about 12000 plates per day. The autoChalk system is mounted on the Saturn Vue Hybrid, Ford Escape Hybrid, and standard Ford Escapes. Weather conditions are harsh ranging from -40F to +90F (-40C to +40C)

City of Fredericksburg, Virginia (resident population 25,000)
Bev Cameron, City Manager, (540) 372-1238
Chief Dave Nye, Police Department, (540) 654-5702

Piloted in February 2007, in operation since July 2007.

Fredericksburg is a historic city near Washington DC. A magnet for tourists (1.5 million annually), Fredericksburg is very close to pivotal civil war battlefields, features beautiful period homes and was one time residence to famous American founders such as George Washington and Thomas Jefferson.

Following a consultant's parking study recommending adding two additional officers with handhelds to better enforce timed parking, Fredericksburg decided to get autoChalk instead. Parking compliance has soared, with 20% decrease in overtime parking, less cheating, and the entire city scanned instead of just downtown. To walk and chalk the entire city just once takes a little under 5 hours while autoChalk scans in only 30 to 40 minutes. Tickets are mailed, and first tickets are warnings. Fredericksburg is very careful not to alienate tourists, so addresses are carefully noted.

Fredericksburg's autoChalk is mounted on a Toyota Highlander Hybrid.

City of Madison, Wisconsin (Population 300,000)
Stefanie Niesen, Parking Enforcement Manager
Phone: (608) 266-4623
Email : sniesen@cityofmadison.com
Jason Temby. Lead Parking Enforcement,
Email: JTemby@cityofmadison.com

Two systems installed September 2009. Vehicles are Ford Escape, and a Jeep. System has been continually productive since installation.

City of Santa Rosa, California (Population 167,000)
Cheryl Woodward, Deputy Director - Parking Department of Transit and Parking
Phone: (707) 543-3332
Janet Reisner, Supervising Parking Enforcement Officer
Phone: (707) 543-3048 Mobile: (707) 477-4541
Email: jreisner@srcity.org

Santa Rosa is a vibrant city north of San Francisco and autoChalk is used primarily to enforce time based parking. One system was installed February 2011 and is mounted on a Ford Escape Hybrid, and has been in continual operation.

City of Santa Barbara, California (Population 100,000)
David Straede, Systems Analyst, Information Technology, (805) 897-3736
David is technical lead for autoChalk in Santa Barbara.
Christine (Chris) Nail, Manager of Information Technology, (805) 897-3737

Operational since February 2009.

Santa Barbara is a very attractive historic town and autoChalk is used to enforce time based parking and perform LPR to search for stolen or bootable cars. autoChalk is mounted on a specialized parking enforcement vehicle called the Go-4.

Proposer's Qualifications: Management Team and Key Personnel

Tannery is a narrowly focused niche company that does parking enforcement and nothing else. Our staff are highly trained and talented engineers and you deal with us directly. If something is not working we will work on it until it is fixed. If we can't fix it remotely we will fly down to your location and fix it.

Here is our management that will interface directly with you to ensure your complete satisfaction:

Bill Franklin, P.Eng., President

Bill has over 25 years of development and executive experience in developing and managing technology products, services and solutions for the data communications industry, information security and parking industry. Clients include XM Satellite Radio, Honeywell, Cisco, Novell, Bell Telephone, and many cities (see our references). Bill is a professional engineer (electrical).

Jeff Bethune, BASc, VP Engineering

Jeff manages our software development and has 10 years of experience in high tech development. Jeff has worked for RIM (Blackberry), Novell and for the last 10 years at Tannery Creek. Jeff is a grad from the University of Waterloo Engineering, one of the premier engineering schools in North America.

Exhibit C – City of Milwaukee Procurement Forms
Non-Collusion Affidavit
[These forms must be submitted with your proposal]

State of ONTARIO)
CITY OF) ss.
County of VAUGHAN)

_____, being first duly sworn, deposes and says that:

(1) He/she is OFFICER of
_____,
(owner, partner, officer, representative or agent) (name of organization)

the proposer that has submitted the attached proposal;

(2) He/she is fully informed as to the preparation and contents of the attached proposal and of all pertinent circumstances respecting such proposal;

(3) Such proposal is genuine and is not a collusive or sham proposal;

(4) Neither the said proposer, nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly with any other proposer, firm, or person to submit a collusive or sham proposal in connection with the Contract for which the attached proposal has been submitted or to refrain from proposing in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other proposer, firm, or person to fix the price or prices in the attached proposal or of any other proposer, or to fix any overhead, profit, or cost element of the proposal price or the proposal price of any other proposer, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against the Commissioner of Public Works or any person interested in the proposed Contract; and

(5) The price or prices quoted in the attached proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the proposer or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

_____ [Signature of Affiant]	*(Check One)*: _____ Affiant if the proposer is an individual; __/__ Partner if the proposer is a partnership; _____ Officer if the proposer is a corporation.

NOTARIZATION: Subscribed and sworn to before me this
29th day of APRIL, 2013.

_____
[Notary Signature]

My commission expires _____, 20 _____.

Exhibit C – City-Required Submittal Forms
Local Business Enterprise (LBE) Compliance Affidavit
[These forms must be submitted with your proposal]

Company Name: TANNERY CREEK SYSTEMS INC

Address: 160 APPLEWOOD CRESCENT

City/State/Zip: VAUGHAN ONTARIO L4K 4H2

This affidavit of compliance will be the proposer's sworn statement that its business meets the following criteria:
1. The business owns or leases property within the geographical boundaries of the City of Milwaukee (the City). Post office boxes shall not suffice to establish status as a Local Business Enterprise (LBE).
2. A residential address may suffice to establish compliance as a LBE, but only if the business does not own or lease other real property, either within or outside the City's geographical boundaries.
3. Leased property shall not suffice to establish compliance as a LBE unless at least half of the acreage of all the real property owned or leased by the business is located within the City's geographical boundaries.
4. The business has owned or leased real property within the City's geographical boundaries and the business has been doing business in the City for at least one (1) year.
5. The business is not delinquent in the payment of any local taxes, charges or fees, or the business has entered into an agreement to pay any delinquency and is abiding by the terms of the agreement.
6. The business will perform at least 10% of the monetary value of the work required under the contract.
Site visits: The proposer agrees to allow the City to verify LBE status by allowing City staff to visit the operations of the business that is seeking LBE status at any time without notice.

Initial here ____ if any of the above criteria are <u>not</u> satisfied (and return form without signature below).
[initial]

If the above criteria are satisfied, provide data below for property owned or leased in the City of Milwaukee.

Property Name	Own	Lease	Property Street Address	Zip Code

I hereby declare compliance with the City of Milwaukee Code of Ordinances Chapter 365.

Authorized signature: _____ Date: _____

Printed name: _____

NOTARIZATION: Subscribed and sworn to before me this

_____ day of _____, 20_____.

_____
[Notary Signature]

My commission expires _____, 20 _____.