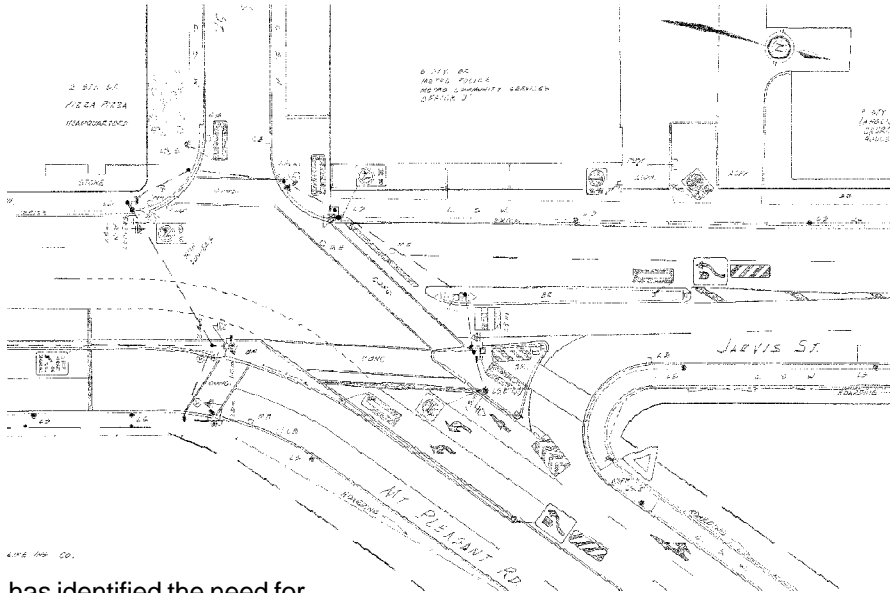


Traffic Control Signal Drawing Updates

LEA were retained by the City of Toronto for the task of creating and updating signalized intersection drawings within the city. This ongoing work includes updating of intersection drawings to an “as-built” condition according to city established MicroStation standards.

There are over 1900 signalized intersections in the City of Toronto. The Traffic Management Centre, Transportation Services Division, Works and Emergency Services Department of the City of Toronto is responsible for archiving and updating the corresponding drawings for each of these intersections. These drawings may be used by City staff for traffic operations and studies.

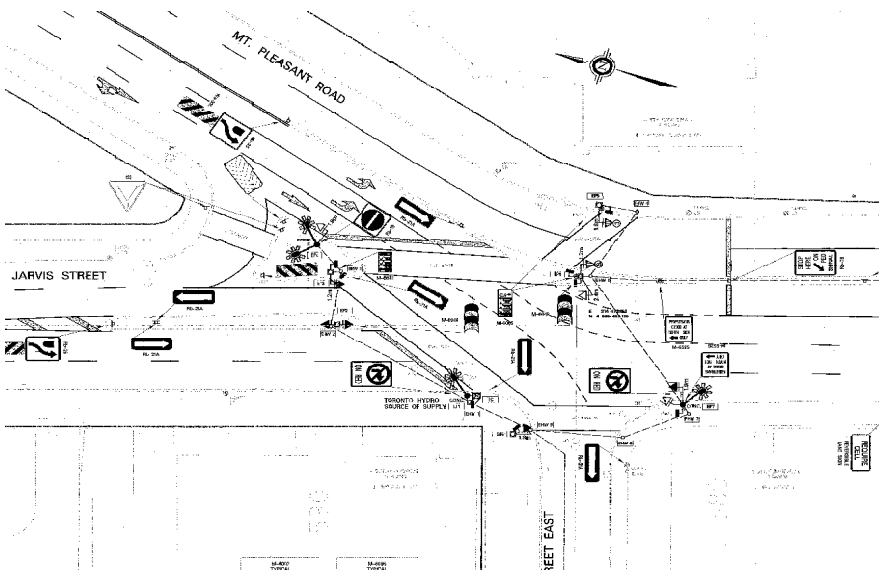
Many of the intersection drawings exist as scanned line drafted images that have been imported into a MicroStation surround template. As such, it is very difficult to read and update these drawings since the picture images cannot be easily altered. Many drawings are over 15 years old, and do not accurately depict existing conditions as required by City staff. Based on this, the City of Toronto



has identified the need for intersection drawings to be updated under a specific programmed effort to facilitate a uniform and easy-to-maintain traffic control signal inventory.

The task starts with a site verification of intersection geometry, pavement markings, visible utility entrance points, pedestrian buttons, poles, detector placement, signal types, configuration and locations. Once this information is compiled, layout drawings that accurately reflect the actual site condition are prepared in MicroStation format.

Shown above is an existing intersection drawing from the City of Toronto scanned into the computer. Shown below is the same intersection after a site survey, corresponding updates to 'as-built' condition, and drafting in MicroStation to City of Toronto Standards.



PROJECT SUMMARY

Client:
City of Toronto

Location:
City of Toronto, Canada

Services Provided:
Traffic Control Signal Drawing Updates

The Ministry of Transportation Ontario (MTO) has shifted the responsibility of maintaining current as-built signal drawings to municipalities, cities and towns. These traffic signal drawings must conform to the legal requirements of the Highway Traffic Act, Section 144(31).

Since MTO no longer reviews all signal drawings province-wide for legal conformity to HTA 144(31), the legal liability of these locations is the sole responsibility of the owning jurisdiction, with the exception of traffic signals at ramp terminals which are still owned by MTO. Increasingly, municipalities realise the importance of exercising due diligence in order to have up-to-date drawings from both an operational and a legal liability perspective (each signal drawing is an HTA 144(31) legal document that may be subpoenaed by the courts).

There are secondary benefits to establishing as-built intersection drawings in digital form. For example, as more municipalities contemplate or establish digitised GIS data inventories to include systems such as sewers, waters, hydro, and gas, traffic signal drawings will be more compatible to integrate into GIS data banks.

During review and measure up of each intersection, legal liability issues such as non-compliance to HTA 144(31) are prioritized when encountered and brought to a client's immediate attention. Damaged equipment, vandalism and operational deficiencies observed during the course of site visits are also noted and promptly reported. In addition to data for the basic drawing updates, items that can also be reported include motorist and pedestrian safety, operational efficiency, condition of equipment, and conformity of equipment .

At each signalized intersection location, in addition to *appropriate measurements*, LEA accurately checks and updates:

- *Equipment locations such as poles, mast arms, signal head locations, controller position, manholes, ducts, handwells, detectors, audible signals, opticom, etc.;*
- *Electrical supply (e.g. underground vs. overhead or both);*
- *Geometrics and pavement markings;*
- *Signing - regulatory signing required for signal operation such as turn restrictions, do not enter, one way arrow;*
- *Operational changes based on all of the above.*

Based on *field measurement and review*, LEA provides to the client:

- *Transition drawing (Red Line Mark Up);*
- *“After” drawing (final product);*
- *Electronic drawing files plus hard copy drawing in MicroStation or AutoCAD format indexed to client's standards;*
- *Digital photo library (date stamped), keyed to each location, with easy to use index for historical and future reference (typically 8 photos per intersection);*
- *Ongoing client support and drawing improvement suggestions throughout the project.*