

GORDIE HOWE INTERNATIONAL BRIDGE

THE ESSENTIAL ROLE OF LAND SURVEYORS

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SURVEYORS
ON SITE INC.



| GHIB Early Works – September 2015



GHIB Early Works

Before



After



Early Works - Phase 1

UTILITIES
10+ km



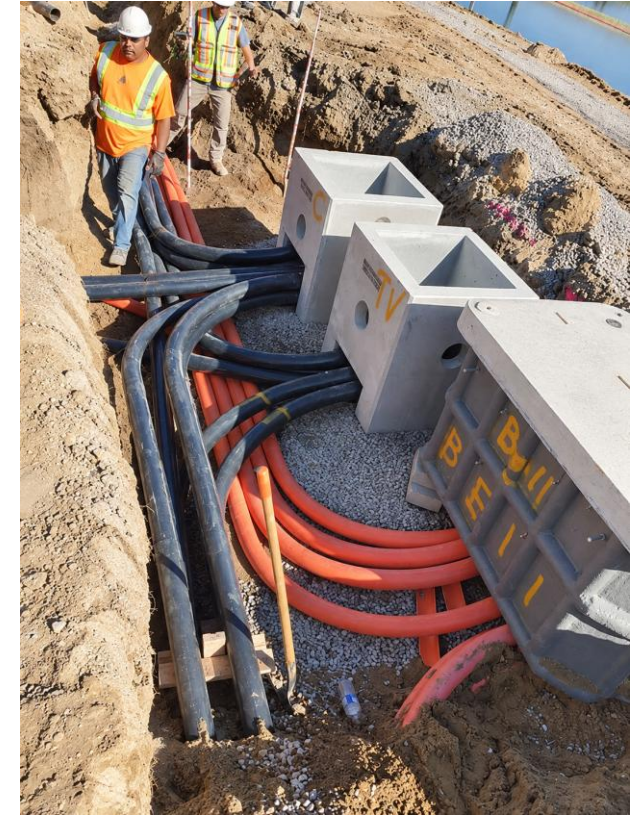
Gas pipelines relocated

ACCESS ROAD
5.5 km



Perimeter access road.

INFRASTRUCTURE
All new



Water • Sewer • Fibre Optic Transmission
Lines • Hydro Duct Banks

Early Works - Phase 2

ADDITIONAL CONTRACT

\$86M



Additional contracts worth \$86 million.

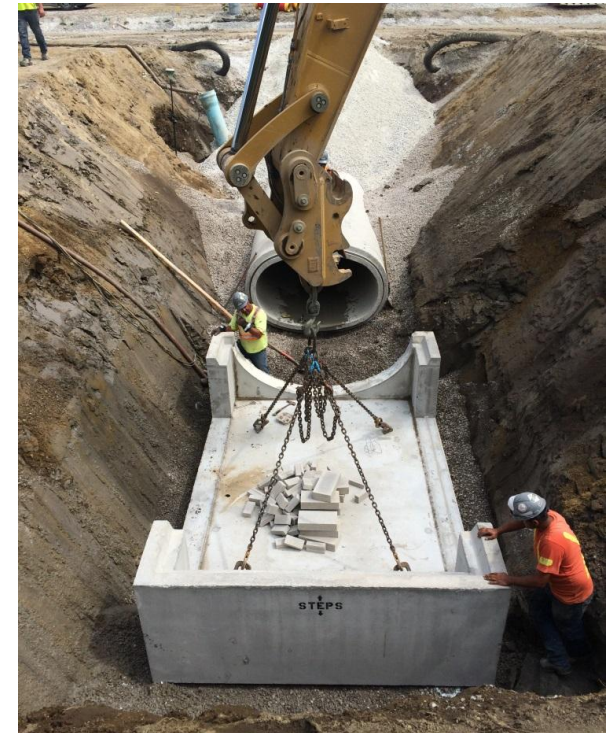
UTILITY RELOCATION

7.5KM



Old high-transmission voltage cable moved underground

STORMWATER & SANITARY
NEW PUMPING STATION



Additional stormwater and sanitary lines relocated

Ghib Project Challenges

- Size and Scale of the Site

- Site Conditions

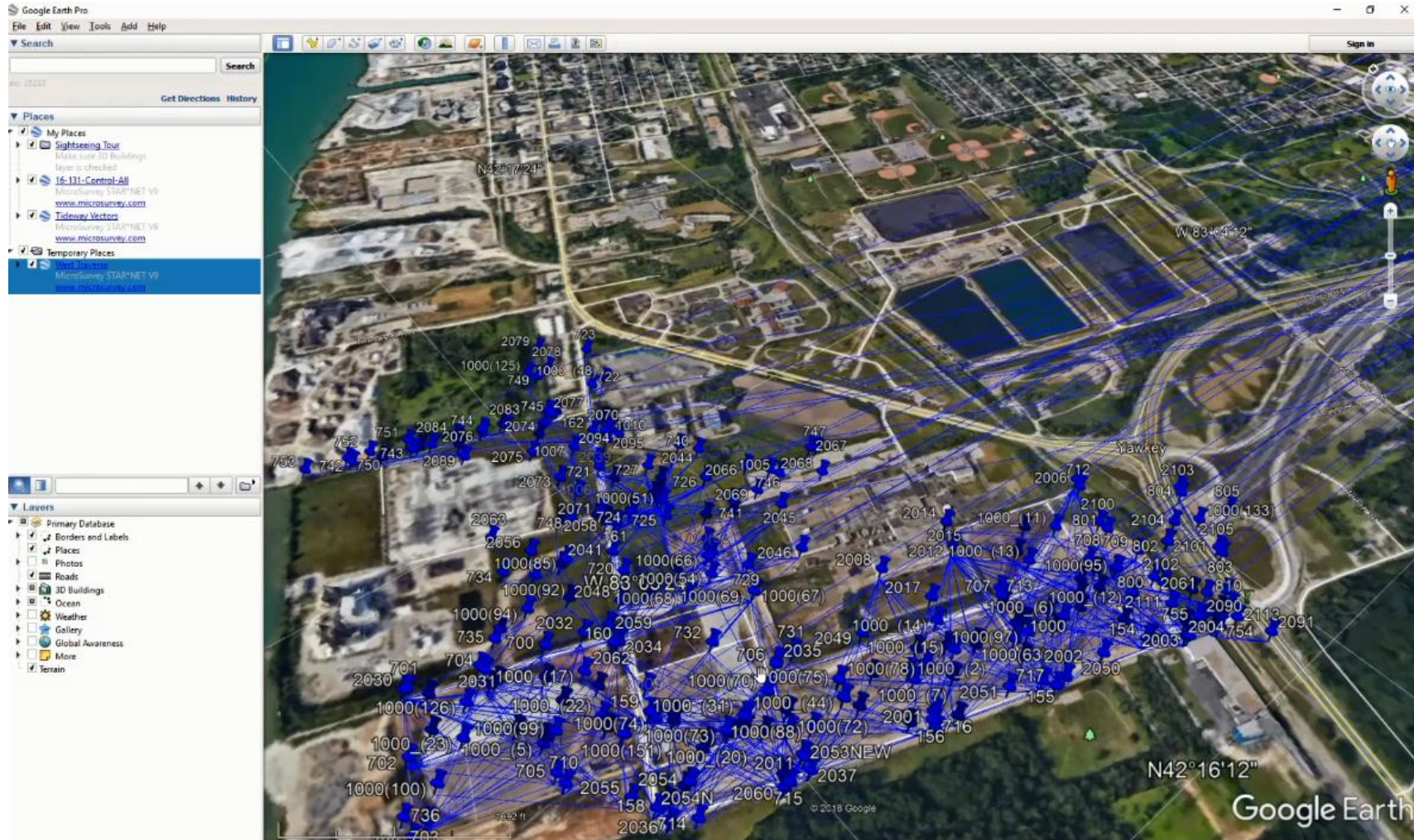
- Varying Construction Activities

- Site congestion

- Convincing Project Engineers of the importance of proper site control



WDBA Early Works Site Control Map



Project Scale

**6.4B**

PROJECT CONTRACT VALUE (CAD)

**2.5 km**

BRIDGE LENGTH

**853 m**

MAIN SPAN

**6 traffic lanes****Shared pedestrian &
cycling path****CANADIAN PORT OF ENTRY**53 hectares
(approximately 131 acres)**U.S. PORT OF ENTRY**68 hectares
(approximately 168 acres)**MICHIGAN INTERCHANGE**Direct connection
to Interstate 75 (I-75).

| Project Control Network

From initial site surveys through construction, the control network provided a consistent spatial reference for the project.

01

SITE DEFINITION

- Topographical surveys
- Land features, elevations and boundaries
- Sensitive areas
- Property limits

02

CONTROL ESTABLISHMENT

- 130-acre Canadian port of entry
- Control survey as the foundation
- Support for subsequent construction

03

CONTROL MAINTENANCE

- Replace / relocate disturbed points
- Adapt to changing site conditions
- Maintain usable control throughout construction



Surveying Technology



Leica robotic total stations

Precision positioning and layout.

Network RTK GPS

Real-time GNSS positioning.

Leica Digital Leveling

Accurate elevation control.

MicroSurvey STAR*NET

Processing and adjustment of observations.



≈150 control points

maintained across the 250-acre site on a typical day.

Real-time control during construction

Horizontal & vertical specifications

Real-time feedback helped confirm that structures were positioned to design requirements.

Material tolerances

Concrete and steel were monitored to verify compliance with design requirements.

Bridge alignment

The cross-border span required precise alignment between Canada and the U.S., including consideration of Earth's curvature and local regulations.



A Robust Control Network

1,300+

GNSS and terrestrial
observations

1,497

Point-to-point distances

4,700

Independent measurements

STAR*NET Processing and Adjustment

- ❑ The software supported quality assessment, instrument-setting adjustments and refinement of coordinates for contractors on site.
- ❑ Specific controls were established for bridge layout and precise alignment.

Surveying continues beyond construction

AS-BUILT SURVEYS

Verify the completed structure against design specifications.

LONG-TERM MONITORING

Detect settlement or structural shifts over time.

PROJECT LEGACY

Maintain a reliable spatial reference framework for ongoing maintenance and infrastructure needs.

Precision is not a single deliverable — it is a continuous project discipline.



The Essential Role of Land Surveyors in the Gordie Howe International Bridge Project

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Thank you.

