



## Case Study: Modernizing VIA Rail's Toronto Maintenance Centre

BuildingPoint Canada partnered with Buttcon to modernize Via Rail's Toronto Maintenance Centre.

Leveraging Trimble's advanced technologies, the project aimed to improve efficiency, accuracy, and project management to accommodate new train sets in the Québec City-Windsor corridor.

We showcase the successful integration of innovative solutions to overcome challenges in a high-stakes infrastructure project.

- ✓ 32 New train sets
- ✓ Québec City-Windsor Corridor
- ✓ Wheel Lathe Facility
- ✓ Partial Demolition
- ✓ New Facility Construction
- ✓ Track Replacement



# Project Introduction

## Background

BuildingPoint Canada worked with Buttcon, a Canadian general contractor, on the VIA Rail Toronto Maintenance Centre (TMC) modernization project.

Buttcon was tasked with upgrading VIA Rail's TMC to support 32 new train sets along the Québec City-Windsor corridor.

The project involved partial demolition of an existing building, construction of new maintenance facilities, installation of new tracks, and establishment of a Wheel Lathe Facility.

This work was designed to accommodate VIA Rail's new fleet and ensure smooth operations throughout the corridor.



## Challenges

Buttcon faced challenges related to quality control and quality assurance, and discrepancies in construction documentation, especially during production of models.

The issues posed risks of delays, rework, and safety concerns that could have disrupted the project.

Maintaining alignment between digital models and site conditions was critical, given the complexity of the facility upgrades and track replacements.

## Solution

After evaluating several solutions, Buttcon partnered with BuildingPoint Canada to leverage advanced technologies from Trimble.





**Trimble 3D Laser Scanners** were used for their high accuracy and ease of operation.

**Trimble Ri**, a robotic total station, enabled efficient field layout and precise data collection.

**Trimble Connect AR**, an augmented reality solution, allowed project leaders to visualize and interact with digital models in a real-world context, for proactive decision-making.



# Project Highlights

	<b>Accuracy</b> 	<b>Efficiency</b> 	<b>Productivity</b> 
Trimble Ri Site Layout	Enhanced via auto-focus red laser and improved EDM angle.	Faster operation due to level compensator and self-calibration. Smart tracking reduced false tracking of unwanted objects.	User-friendly standard ensured greater productivity across all project stages.
Trimble 3D Laser Scanners	Exceptional accuracy achieved.  <math>3'' = 0.3 \text{ mm}</math> @ 20 m	1 min 34 sec without images. 2 min 34 sec with images. Up to 500 kHz and less time wasted thanks to integrated calibration system that works in 25 seconds with no user interaction or targets.	Higher productivity with fast, high-quality scanning combined with Trimble FieldLink construction software.
Trimble Connect AR	Visualization via accurately positioned models in a real-world context, with transparency, cross-section and fishbowl tools.	By establishing an accurately positioned network of QR markers, busy construction professionals could quickly and easily position their models on the job sites.	Better productivity by encouraging real-time collaboration and transparency to avoid errors and delays. Minimal training required.



The project demonstrated the transformative impact of BuildingPoint Canada's expertise and Trimble's innovative solutions. By combining precision tools, proactive project management, and strategic collaboration, Buttcon modernized a key infrastructure asset while minimizing risks and maximizing efficiency.



“ The integration of Trimble technologies was crucial in overcoming the complexities of the Toronto Maintenance Centre modernization project. With the Trimble X7 and Trimble Ri, we ensured precise alignment between digital models and real site conditions, minimizing errors and delays. The Trimble Connect AR application further empowered us to interact with the models in a real-world context, ensuring that design intent was faithfully executed on-site. This approach revolutionized our workflow, improving efficiency and collaboration among all stakeholders, underscoring the critical role of BIM in achieving project success.

– Fabio Azzoni, BIM Manager

# Implementation Process

The project required Buttcon to navigate complex site conditions, which was made possible through the strategic integration of cutting-edge Trimble technologies.

## Laser Scanning with Trimble 3D Laser Scanners

Implementation began with laser scanning using Trimble Laser Scanners. This enabled the collection of precise, geolocated data, essential for validating as-built conditions. The resulting models were compared to digital plans to identify and rectify discrepancies before they impacted project timelines. Trimble Laser Scanners improved accuracy in the placement of structural elements like anchor bolts and slabs.

## Maximise Layout with Trimble Ri

Trimble Ri was deployed to automate the layout process. This removed the need for manual measurements, saving time and reducing the likelihood of human error.

## Augmented Reality with Trimble Connect AR

The Trimble Connect AR application played a key role in enhancing project management. By overlaying digital models onto real-world environments, engineers and project managers could visually compare plans with actual site conditions, enabling them to catch inconsistencies early and adjust workflows as needed.






Integration of these technologies boosted precision and accuracy, and improved efficiency. Buttcon could generate high-quality real-time reports to verify that key parameters were consistent with design specifications. The result was a reduction in rework, improved alignment between digital and physical assets, and greater collaboration between stakeholders.

### Why Buttcon chose BuildingPoint

-  Expertise and Support
-  Cost-Effectiveness
-  Quality and Reliability

### The solution allowed Buttcon to

-  Prevent Errors
-  Ensure Precision
-  Enhance Quality



*"I have been using Trimble products for many years, and those who have used Trimble in the past know the seriousness of BuildingPoint Canada." – Fabio Azzoni, BIM Manager*