

Metro Tunnel, Subway tunnel inspection

Urban rail transit system in the USA. It consists of six lines, including two subway lines and four light rail lines, connecting 93 stations."

Facts & Figures:

Location: USA
Year of construction: 1990
Dimensions: 50 km

Challenges:

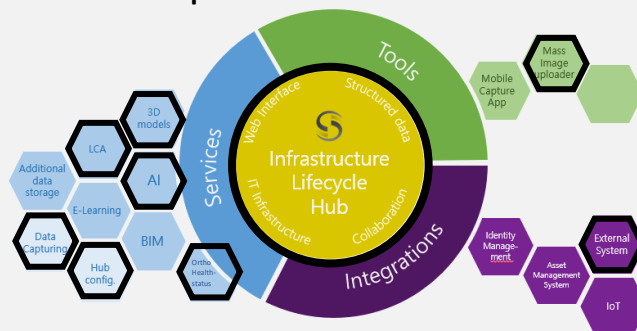
The partner was looking for ways to perform inspections of a Metro subway tunnel network digitally and more efficiently, from data collection to reporting. The goal was to reduce the high inspection costs due to night shifts and the corresponding long downtimes of the tunnels.

Benefits:

A whole range of benefits have been achieved:

- The closing time of the tunnels was reduced immensely. While data acquisition alone previously took 16 night shifts, this time was reduced to 3 hours with STRUCINSPECT's digital inspection process, which corresponds to a reduction of 79%.
- Structured data was provided in a manner tailored to the client's needs.
- The complete documentation of all defective and non-defective areas, as well as the AI-supported damage detection, has resulted in a much higher level of transparency and accuracy.
- The health status could be calculated precisely for small sections. As a result, maintenance measures can now be planned accurately for the actual damaged sections. This leads to a reduction of the tunnel length to be rehabilitated by 30% in the coming year.

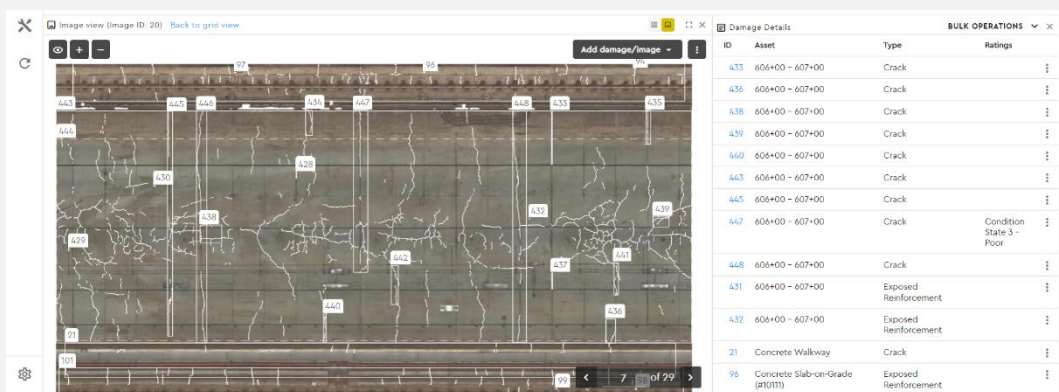
STRUCINSPECT provided:



- ✓ Data capturing support
- ✓ AI-assisted damage detection
- ✓ 3D-modeling using photogrammetry
- ✓ 3D damage mapping
- ✓ Export of inspection results into BIM Format IFC04
- ✓ Training of external partner
- ✓ Orthophotos
- ✓ Customization of the Infrastructure Lifecycle Hub
- ✓ Optimized Health Status Analyses
- ✓ Export of multilayer report PDFs

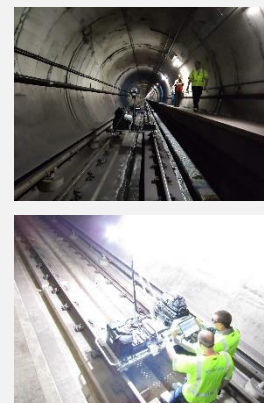


Subway station



ID	Asset	Type	Ratings
433	606+00 - 607+00	Crack	
436	606+00 - 607+00	Crack	
438	606+00 - 607+00	Crack	
439	606+00 - 607+00	Crack	
440	606+00 - 607+00	Crack	
443	606+00 - 607+00	Crack	
445	606+00 - 607+00	Crack	
447	606+00 - 607+00	Crack	Condition State 3 - Poor
448	606+00 - 607+00	Crack	
431	606+00 - 607+00	Exposed Reinforcement	
432	606+00 - 607+00	Exposed Reinforcement	
21	Concrete Walkway	Crack	
96	Concrete Slab-on-Grade (R1011)	Exposed Reinforcement	

AI based damage detection using orthophotos in the STRUCINSPECT Infrastructure Lifecycle Hub



Data capturing