

**Customer:**  
Brunel Surveys Ltd

**Project:**  
Monitoring The Mechanics' Institute

**Solution:**  
Trimble S6 DR robotic total station

## Case Study



The poor state of the roof meant that it was impossible to support it from below and therefore the only option was to dismantle it from above using cranes, one with a cage suspended beneath it for workers to carry out the demolition work and another with a skip suspended beneath for the debris.

Before demolition could begin, Swindon Borough Council contacted Brunel Surveys to undertake the monitoring of the roof whilst the work was being carried out. From the outset, we were aware that three of the six roof trusses had already failed it and therefore it would be vital that we could detect even the smallest amount of movement during the works. The obvious solution was for us to fix calibrated targets on the ridge board of the roof and to monitor them around the clock. Initially we planned to have instruments on both sides of the buildings but with restricted space and the proximity of the cranes, we opted instead to fix all six of the targets at the front of the building. During the early stages, each one would be monitored individually with six of our KOREC supplied Trimble Total Stations, ranging from the Trimble 3600 mechanical total station with Direct Reflex (DR) reflectorless measuring through to our top performing Trimble S6 DR robotic total station. To protect the instruments from wind and rain, we constructed a scaffolding and board shelter and they were set up in this screened area. Out of all the instruments, it soon became clear that the S6 was the star performer for this task, absolutely rock

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# Monitoring The Mechanics' Institute

**Monitoring is the fastest growing discipline in the survey market and thanks to both the versatility of high end robotic total stations on the market and new accessible step-by-step on-board software such as the Trimble Access specialized module for Monitoring , learning curves are short and land surveyors can now bid and perform for jobs previously denied to them due to the high level of investment involved.**

A perfect example of this is a recent monitoring project carried out by Brunel Surveys on behalf of Swindon Borough Council. In this instance 'Safety' was very much the key factor behind the decision to monitor work on a dilapidated building in the town centre. Stuart Gilling, Team Leader at Brunel Surveys provides the details.

Based in the centre of Swindon is The Mechanics' Institute, one of the town's most recognizable buildings and an

important part of the area's history. Officially opened in 1855, the building was initially used by railway workers for classes, lectures and reading and was an important part of Swindon's heritage, housing a library, a theatre and a market place. Sadly by 2010, The Mechanics' Institute had reached such a level of dilapidation that fears over the collapse of its roof led Swindon Council to seize control of the privately owned building after being granted the legal right to carry out urgent works.

During the day it was a fairly straight forward process of monitoring the targets in real-time, noting down the results and keeping the structural engineer informed. We backed this up by taking coordinates every a.m. and p.m. to detect any movement overnight.

We knew already knew that half of the trusses had already failed so we really were shooting in the dark. It was definitely a case of watching and waiting with air horns and radios at the ready.

### Three Weeks Later

Despite our trepidation, the roof actually rebounded and became more stable as the process continued so by the final three days we had reduced our instrument usage to just the S6, conventionally monitoring every few minutes and continuing with our a.m. and p.m. readings to cover us overnight. The Trimble S6 really came into its own during the final few days. Manually we could type in an angle

and it was a simple process to use the "Turn to" function in the software and check each of the six targets every 15 minutes with just the S6. We were constantly checking back to a reference shot to ensure there was no angle slip and the S6 was always spot on which meant that we had total confidence in the results we were getting.

Whilst most of my jobs tend to be topo surveys, the monitoring of the Mechanics' Institute really gave me the chance to test our equipments capabilities and functions, as well as getting to ride in a basket dangling from a crane!

With thanks to Stuart Gilling who is an ICES graduate member.

Brunel Surveys Ltd are one of the country's premiere land surveying companies. The company operates nationally and offers a wide range of services for clients who include many major companies and authorities.

[www.brunelsurveys.com](http://www.brunelsurveys.com)



▲ Protected from wind and rain



▲ Six KOREC supplied Trimble Total Stations were used

## Contact us:

Please do get in touch for further information on any of the products or services mentioned in this case study, a demonstration, support or just a chat about your requirements.

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