

Case Study

Customer:
Brackston Survey

Project:
Surveying the 'Big One' at
Blackpool Pleasure Beach

Solution:
Trimble SX10 Scanning
Total Station



For this job, Jake decided that the best solution would be his KOREC supplied Trimble SX10 Scanning Total Station rather than a separate total station and scanner, avoiding the need to carry additional targets and unnecessary kit. More importantly, the SX10 would allow him to establish control on a complex structure and scan it using the same instrument, turning a tricky registration task into a much more accurate result because the scan could directly reference the control with no additional office work required. The

“It certainly helped knowing that I could leave the SX10 in the rain all day”

**Jake Roper-Fairhurst,
Brackston Survey**

alternative would have been to use two separate instruments, one to establish control and the other to capture the scan data because it would be impractical to use spheres or checkerboards on the structure or carry out a cloud to cloud registration, a

process which would demand more office time, especially with the small scan areas involved.

Surveying the 'Big one'

For a survey company that's just starting out, the Trimble SX10 Scanning Total Station is proving to be a cost-effective and practical choice for a range of jobs including a recent survey of the 'Big One' roller coaster at Blackpool Pleasure Beach.



▲ Jake Roper-Fairhurst placing retro targets

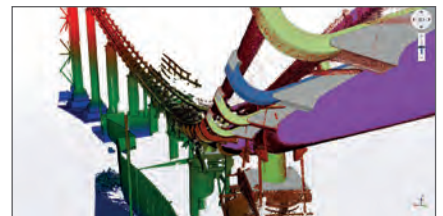
It's been 25 years since the 'Pepsi Max Big One' debuted as the world's tallest roller coaster and today, at 235ft, it remains the tallest in the UK and an imposing part of Blackpool's skyline. The original drawings for the ride therefore date back to the late 80s/early 90s and it is these drawings that have been the starting point for the Tekla model that was used for the ride's most recent work, the replacement of a 44m section of track.

Appointed to fabricate the new track is structure refurbishment specialist, Taziker

Industrial Ltd, who in turn contracted Brackston Survey, a newly established family owned company, to undertake the survey work. Taziker required a highly accurate point cloud scan and survey control for back checks so that they could overlay their model and double check that the tracks had been modelled correctly before they were issued to fabrication

'Belt and Braces' planning and an innovative approach to control

Carrying out the survey for Brackston was Survey Director/Surveyor, Jake Roper-Fairhurst whose wide-ranging responsibilities include pricing, customer liaison and site work. He was therefore fully versed in every aspect of the project and required deliverable. With just one day on site and a single area to scan from, his aim was to provide Taziker with a fail-safe data set, eliminating the need for any return visits to site, whilst providing his client with excellent value for money.



▲ Deliverable included a referenced pointcloud

Project synopsis

Project: Scanning Blackpool's 'Big One' roller coaster for a 44m track replacement project.

System: Trimble SX10 and Trimble Business Center.

Challenges: Ensuring that all safety requirements were covered whilst providing a full and timely data set

Highlights: The scan directly referencing control for improved accuracy and reduced office time. Fool proof, easy to use system under pressure.



▲ Deliverable included a referenced pointcloud



▲ The SX10 scan directly referenced control for greater accuracy

Jake also arranged for the Taziker draughtman and Engineering Services Director, Jarrod Hulme, to be present on site to identify exactly what was needed. Captured data could be reviewed in the field on the TSC7 logger and if required, certain areas refocused on cutting down the need for a return visit.

On the day of the survey, using the SX10, Jake installed 3 PK nails and several retro targets to act as the control network. Additionally, he put retro points on the roller coaster itself in the centre of the 'arm' capping plates to add a secondary check with the scan and section cuts. He also surveyed point data on selected bolts on the flange connectors to allow Jarrod and the team to have reference points within the scan for them to orientate their model for the comparison.

“It’s amazing how uncomplicated Trimble has made an incredibly sophisticated bit of kit – when you’re under pressure the SX10 is simple to use. There’s a saying ‘jack of all trades but master of none’ but the SX10 is master of all trades”

Jake Roper-Fairhurst,
Brackston Survey

Scanning in the rain

Despite it raining for the entire day, Jake was able to continue surveying throughout with the SX10 more than sufficiently robust to withstand the heavy showers. Working adjacent to the track, he carried out 4 setups in total using the 'select polygon' functionality for each scan to capture only what was required, especially useful with each scan taking around an hour because Taziker required a high-density point cloud. To complete the 'belt and braces' approach, every setup was accompanied with a primary camera panorama, which although it wasn't requested, provided Jake with the reassurance that the additional data was there if required.

Back in the office, Trimble Business Center was used to clean the scan up and take sections through the 'arm sections' to produce the 3D drawing showing the track and boom geometry. The final deliverable was conventional point data, a referenced point cloud and a 3D drawing showing the geometry relationship between the two tracks and the bottom boom. Using Tekla Structures, Jarrod Hulme and the Taziker Team were able to adjust the fabrication geometry using the point cloud to ensure that the newly fabricated pieces were identical to those they were going to replace.

The Taziker drawing office was also able to identify historic repairs and smooth and average out the curves. Jake reports that the Trimble SX10/TBC workflow, made the data delivery swift and precise and the client found the survey invaluable.

All information and photos kindly supplied by Jake Roper-Fairhurst, Survey Director/Surveyor, Brackston Survey.

About Brackston Survey

Based in Nottingham, Brackston Survey is a newly established family owned company with Director/Surveyor Jake Roper-Fairhurst looking after a varied range of tasks including establishing the survey fleet with a focus on technology to improve the flow of information to the client in a format that suits them.

The company aims to provide high quality measured surveys to the Public and Commercial sectors. We specialise in Topographical Surveys, Measured Building Surveys, 3D Laser Scanning and Asbuilt Surveys.

www.brackstonsurvey.com



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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