

Quantapoint Helps Historic Amusement Park Modify Popular Coaster with No Downtime

Laser Scanning Proves Invaluable for Roller Coaster Track Replacement

Situation

Founded in 1898, Kennywood Park, in Pittsburgh Pennsylvania, is the area's premier amusement park and was designated as a national historic landmark in 1987. Kennywood was modifying the "Phantom's Revenge" roller coaster – a park favorite, with high speeds, dizzying drops and sharp turns.

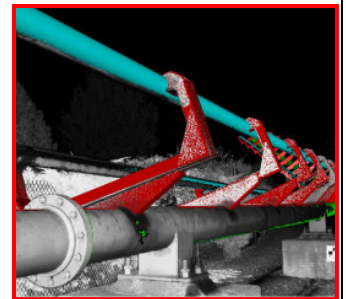


Challenge

The modifications to "Phantom's Revenge" required replacement of 760 feet of track. The existing "as built" documentation was insufficient for removal and installation of the tracks and manually documenting the track would have been time-consuming, dangerous and likely incomplete due to elevations of up to 160 feet on very hilly terrain. Complicating matters further, all documentation efforts had to be completed during off-business hours and the replacement track had to be fabricated offsite to minimize impact on normal park operations. Overall, measurements had to be precise and extremely detailed to minimize clashes and errors.

Solution

Quantapoint "digitized" the Phantom's Revenge roller coaster using two laser scanners during off-business hours. The resulting "Digitized Coaster" consisted of both photo-realistic and panoramic Laser Images™ and detailed and high-definition Laser Models. Quantapoint's unique Laser Models were much easier to work during design and engineering than older "point cloud" technology, whose sparse data would make it difficult to visualize the coaster and may not include any of the fine details of the track itself.



Quantapoint also created a 3D CAD model that included spot elevation markers for each connection between the vertical structural supports and the steel track. Quantapoint's QuantaCAD software enabled the 3D CAD model to be verified using the Digitized Coaster to verify fine details such as flanges, track braces and rails.

Results

Using the Digitized Coaster, Kennywood was able to complete data gathering with minimal field time and site work, which reduced the project schedule and enabled operations to go uninterrupted. Further, the fine detail of the Laser Models and 3D CAD model not only assisted with new track fabrication, but also enabled engineers to create a plan for the efficient installation of the new track. Overall, this could be said to be a win of "exhilarating" proportions.