

JN Bentley Saves Time and Money Using HP SitePrint for Complex Floor Level Process

Highlights

From 5 to 1.5 days
for layout and floor level analysis

1 Layout Worker
Frees up team members to handle other tasks while robots are used to print floor deviations on site

Project Background

Name
Bromsgrove Sewage Treatment Works.

Main Focus
Conducting floor-level analysis before concrete panel installation to expand capacity and improve water treatment.

Project Size
400 points and 100 concrete panels.

JN Bently Ltd., a UK-based civil engineering and construction company, provides end-to-end services, from concept and design through construction and commissioning in civil, mechanical, and electrical engineering. The company operates as part of the Mott MacDonald Group, delivering projects in energy, highways, industrial facilities, and environmental engineering. They are well-known for their work in the water treatment sector, handling extensive precast and reinforced concrete work.

Creating a level surface for concrete panels required the team to conduct extensive manual labor on-site and time-consuming analysis at the office before starting work on the project. Manually achieving the necessary consistency to place a perfectly level floor added substantial time requirements for each project. When seeking a solution to streamline the floor level process in water treatment projects, JN Bentley turned to HP SitePrint.

The Challenge



JN Bentley site engineer, Sean Clancy, was tasked with managing an upgrade at Bromsgrove Sewage Treatment Works. The project features extensive precast structures that necessitate detailed setting out to accurately mark corner levels and ground markings. For this job, the team would need to set out 400 points to install 100 concrete panels, requiring at least a week of Clancy's time to set out and analyze the floor for placing the shims needed for installation. Since the marking and floor level process for this job represented such a time-consuming task for engineers, saving time was a top priority.

The traditional process for placing concrete panels and precast concrete structures requires a team of engineers to set out points with a total station to locate and mark the installation points of concrete panels. The team manually marked points on the ground, then surveyed the floor to obtain levels from the marked points. After marking and surveying the floor, engineers had to return to the office to export the data to identify the highest level. The new data would then allow the team to return to the site where additional markings were added for shimming measurements to ensure the concrete panels would be level when placed.

The detailed work of marking lines and points and checking measurements is time-consuming and labor-intensive. Furthermore, manually achieving the consistency required for the highly precise measurements required to ensure the floor is perfectly level is difficult. JN Bentley needed a solution that would streamline the floor level process to reduce the man-hours required and ensure precise accuracy.







The Solution

When seeking a solution that would improve layout efficiency and streamline the floor level process, the JN Bentley team found HP SitePrint to be the obvious solution. The robot's ability to handle the marking process would free up engineers' time for focus on other aspects of the project.

Site engineer Sean Clancy was impressed with the results.

> **"It's allowed us to basically do the work that needs to be done just by using the robot, then it gives us time to go and do other stuff on site that we're needed for."**

However, the ability to visualize floor elevation data directly on the control panel during layout would prove to be the biggest time-saver for the team by eliminating the need to return to the office to process data.

> **"If I can go out and start printing, and it's measuring the floor, and then I can do the floor deviations out on site, I've got no reason to go back in the office if it's doing it all out there for me"**
>
> Sean Clancy

HP SitePrint's ability to print floor level data directly on the slab while the robot performs the setting out entirely eliminates the need for in-office data analysis and processing, cutting out a time-consuming step in the process. As a result, the team can begin the installation of the concrete panels much sooner.



The Results with HP SitePrint

JN Bentley's traditional floor level process required multiple steps on-site and in the office, with significant manual labor requirements from the team. The Bromsgrove project required the team to mark off 400 points to install 100 panels, a layout that would have taken at least one week of the site engineer's time.

By using HP SitePrint, the team completed the setting out and floor level process in only a day and a half.



"The printer just makes it a lot faster for us," Clancy explained. "It's a lot more accurate as well than an engineer manually doing it," he added. "It's a much better process than doing layout manually with an engineer and a total station. For the job we've done, it would take an engineer about a week to do it accurately and to the same quality standard. The robot completed it in just a day and a half."

- JN Bentley reduced their workflow process from 5 days to just 1.5 days by using HP SitePrint for layout and floor-level analysis.
- With HP SitePrint, JN Bentley captured floor level data during the layout printing process, enabling them to process floor elevation data, mark deviations, and install shims to level panels in a single on-site step—eliminating the need for post-processing at the office.
- The streamlined workflow enabled by HP SitePrint allowed JN Bentley to accelerate their project timeline by starting the installation of precast structures earlier than originally scheduled.

Long-Term Impact

The Bromsgrove Sewage Treatment Works project is an excellent example of how JN Bentley can save time when using the HP SitePrint robot on future floor level projects in the water sector. It highlights how the team can eliminate bottlenecks in the layout process and continually reduce labor costs in the future.

HP SitePrint's convenient display of data on the control panel and ability to print floor-level data directly on the slab is a game-changer for JN Bentley. It allows them to streamline the layout and leveling process substantially, while freeing up team members to complete other jobs, making the overall workflow more efficient. Using the robot moving forward will allow the team to improve cost margins, meet tight deadlines, and take on more work.

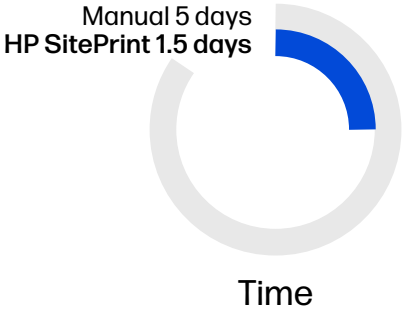
Comparative Analysis

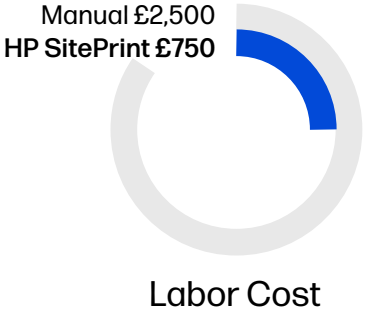
JN Bentley is widely known for their precise work in the water treatment sector. With HP SitePrint, they can further enhance efficiency and precision by streamlining setting out and floor level analysis before concrete panels are installed. The Bromsgrove project clearly highlights the advantages of using HP SitePrint for the layout and floor level process.





	Traditional	HP SitePrint
Panels Installed	100	
Points marked	400	
Layout Crew Size	1	1
Site Engineer Daily Cost	£ 500	
Time to set out and survey points	5 days	1.5 days
Labor Cost	£2,500	£750
SitePrint Rental	-	£500
SitePrint Usage	-	£880
Total Cost	**£2,500**	**£2,130**





Precision Robotics Saves Teams Time and Money by Streamlining Precise Floor Level Processes

JN Bentley turned to HP SitePrint in an effort to reduce the time requirements and manual labor involved in creating precise layouts for installing concrete panels and reinforced concrete structures. The robot exceeded their expectations, delivering a precise layout and eliminating the need to complete data analysis and identify leveling requirements. JN Bentley's experience with HP SitePrint allowed them to complete the job nearly 7 times faster than traditional methods and meet their goals for streamlining operations in the future. Looking for a solution to slow, labor-intensive layout and floor leveling processes? Contact HP to learn how the HP SitePrint can improve your construction workflows.

Contact us

Want to learn more about how HP SitePrint can help your company achieve faster layout processes? Contact us to learn more.

Learn more at www.hp.com/siteprint

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