AVVIR®

5 Best Practices for Laser Scanning

Higher quality scans equate to higher quality analysis to benefit all stakeholders during construction.

Solution Brief

Laser scanning technology has gained huge momentum in the construction industry as a way of documenting the reality of the job site. When captured correctly, laser scanning can prove beneficial to all stakeholders throughout construction.

In the last few years, Avvir clients have performed hundreds of thousands of hours of laser scanning data collection. Through our interactions with clients and our own in-house expertise, we have gathered some of the best practices to ensure that your time investment in scanning leads to the best quality outcome in analysis.

"I can take photos or LiDAR scans, and I can go straight to progressing my schedule — I can go straight to the quantity of work installed — and that's a huge change."

Eric Law
Senior Director of Technology and Innovation,

SWINERTON
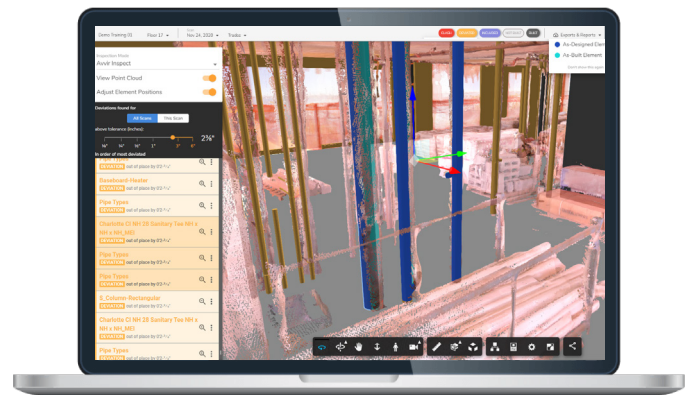
Here are 5 best practices for using laser scanning effectively.

1. Use the Right Hardware:

Before deployment, it is essential to understand the end-users needs for the data that is being captured. Different types of laser scanning hardware are best suited for different types of project deliverables and specifications. For example; if the deliverable is intended to be used for deviation analysis, highly accurate as-builting or floor flatness, then the project should leverage a high fidelity terrestrial laser scanner. If your scan data is intended only for progress monitoring, visual aid and general as-builting, then a handheld laser scanner with a lower level of resolution should be able to achieve the required results in a fraction of the time.

2. Understand the Project Environment:

To ensure best results, always familiarize yourself with the project environment before starting to scan. Planning ahead always pays off when in the field. Performing a 'job walk' prior to starting your scan will help you plan ahead for exactly how you will capture the space, and how you will navigate through the building. Familiarizing yourself with the project environment will also allow you to plan your scan path and strategy. While using mobile scanners, we need to create loops in our path, whereas for terrestrial scanners, we need to place the scanner at locations that capture common points, which helps in the stitching and registration process. This 'job walk' will allow you to plan exactly how you will implement your scanning strategy within the project space.

3. Plan for Registration:

Go into a project with a complete understanding of your registration strategy. If you are scanning with a mobile scanner, plan to perform a detailed job walk before you begin, and ensure you are getting rough coverage along the scan path to have confidence in the system's SLAM registration. If you are scanning with a terrestrial laser scanner and are tying into targets in the field, ensure you have an understanding of where the targets are located, what their coordinates are, and have a fall-back plan in place for if the targets cannot be found or reached. A preparatory job walk is critical for scanning with target registration, we also suggest bringing a few checkerboard targets along with you in case you need additional control points to anchor your registration.

4. Understand your Deliverables:

The datafrom laser scanning will be of little use if it's not meeting the needs of your end-user. After aligning on hardware and registration methodologies, ensure you are aligned on deliverables. Depending on the end use of the project point cloud, you will need to determine at what resolution you must scan, what coverage you need in the field, what areas must be captured and whether or not you must capture in color. All of these fine details are critical to the end use of the scan and they also heavily impact both scanning and processing times.

Here are 5 best practices for using laser scanning effectively.

5. Backup your data!

Always backup your data. always. Capturing scan data is expensive, especially if travel is involved to reach the project site. Always backup your data at numerous intervals. Backup raw data immediately after scanning, before you leave the project site. Backup project files after they have been imported into your registration software. Backup your working files, and export deliverables into multiple universal file formats. Lastly, archive your project with all of these backups. A detailed and organized project archive can save massive headaches should you need to access this information in the future, or potentially need to generate new exports and deliverables from the existing dataset.

BIM-focused reality analysis for the built world.

Avvir's BIM-focused reality analysis platform gives construction teams control with automated schedule tracking, cost and earned value analysis, installation issue detection, and an updated BIM with as-built conditions. Avvir delivers the only hardware agnostic platform that not only provides critical insights but closes the loop by integrating with your BIM, allowing customers to focus on solving issues, not finding them.

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