

Reality Capture Software

Avvir's reality capture software offers a new level of analysis for the built world.



CASE STUDY

Columbia Saves 3 Days a Week in Jobsite Inspection, Analysis and Reporting.

Jennifer Wooles, Director of Virtual Planning & Construction at Columbia, discusses Avvir Reality Capture and Analysis technology and how it keeps their projects on track and improves OAC Communication.

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Table Of Contents

About Columbia	3
Industry Shifting & Technology Adoption	3
Project Challenges	4
Avvir Features & Benefits	6
Return on Investment	7
Project Lessons Learned	8

Columbia is a leader in model driven construction.

About Columbia

Columbia is a family-owned construction management company founded in 1925 with a family-first culture, which has been crucial for the company's growth for almost 100 years.

Jennifer Wooles, the Director of Virtual Planning & Construction at Columbia, sits down with team Avvir to discuss technology adoption.

Jennifer's daily responsibilities include utilizing scanning technologies to coordinate against existing project site conditions to facilitate collaboration with trade partners and track site progress. In addition, all of Columbia's subcontractors produce 3D models to make sure installations are fully coordinated, these models can also be utilized for installation tracking.

COLUMBIA

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Industry Shifting & Technology Adoption

Being a ten-year veteran, Wooles has seen technology and the reliance on the BIM model change in the last decade. There are still people that need convincing and need to witness the value first-hand.

However, the broader use of BIM and BIM supporting digital technology is making profound changes. "At Columbia, we're pushing the boundaries with new technology like Avvir. That mind shift has changed significantly since I first entered the industry."

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- Jennifer Wooles, Director of Virtual Planning & Construction at Columbia

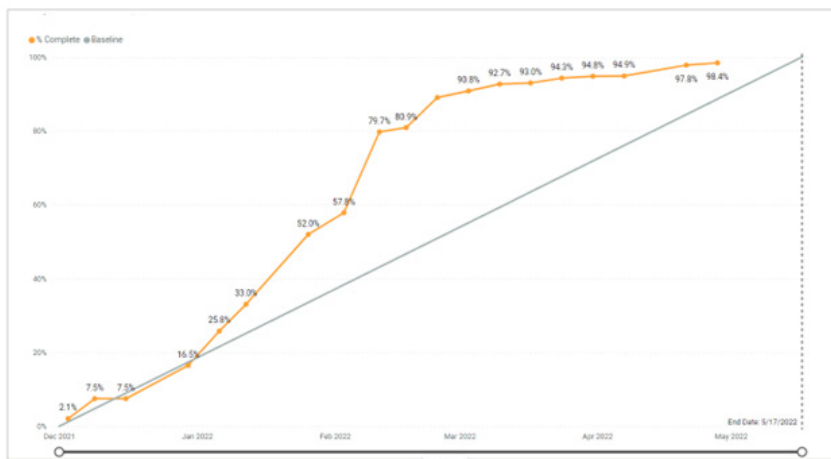
Project Overview

Project Challenges

Columbia works with very sophisticated, model-driven, and detail-oriented subcontractors, but before using Avvir, Columbia had no way to maintain accountability for their productivity during installation. Due to the complex nature of typical projects at Columbia, even manual production tracking is not very feasible.

“Reference the BIM model” is a typical response to questions about design and coordination. Still, as the general contractor, Columbia needed more reassurance and confidence on what and where items were specified in the model. And, until everyone understands and can fully access models on a superuser level, those kinds of statements are not enough.

“Having so much of our project budget and dependability and reliance on one of our partners forced Columbia to change how we could track their progress.” We needed to change our sophistication to track installation progress properly, answer our owner’s questions, and feel comfortable with what we’re reporting. And that’s what Avvir allowed us to do.”



Avvir Progress Tracking helped Columbia track installation progress and Owner’s questions. The gap between percentage of completion and baseline shows where the project is behind, or ahead of schedule.

Overcoming Skepticism

Pushing the boundaries has produced excellent teamwork at Columbia because they see the value of scanning and the importance of making a plan ahead of time. For example, one of their superintendents was used to working on the Navisworks model, but he quickly picked up Avvir.

“It’s not necessarily only the BIM users who find Avvir useful. The platform helps Superintendents spend less time walking the job site because they have this information literally at their fingertips. Over the past year, I’ve been much more involved in the field and pushing our use of the technology much more.”

Process Piping Overall Status (Installed / Total)		Total Progress - Detailed Breakdown					
40713 LF / 44208 LF		Category	Room 1	Room 2	Room 3	Room 4	Total
Process Suite 1 + Dryer	11209 LF / 14476 LF	Piping (LF)	77%	99%	98%	96%	92%
		Piping Insulation (LF)			77%	21%	64%
		Elbows (EA)	65%	100%	99%	91%	87%
Process Suite 2	13154 LF / 13232 LF	Elbows Insulation (EA)			68%	13%	81%
		Tees (EA)	73%	100%	98%	98%	90%
Process Suite 3	15120 LF / 15415 LF	Tees Insulation (EA)			83%	12%	67%
		Valves (EA)	57%	99%	97%	93%	84%
		Pumps (EA)	100%	100%	100%	100%	100%
Mechanical Room	3538 LF / 3699 LF	Welds (EA)	57%	99%	95%	100%	80%
		Hangers and Supports (EA)	68%	100%	100%	96%	89%
		Total	77%	99%	95%	85%	90%

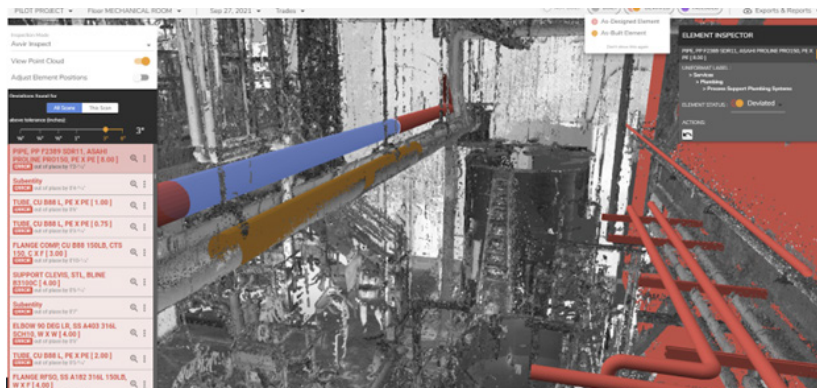
The Avvir Progress Summary puts information at the Superintendent’s fingertips saving valuable time spent walking the job site.

OAC Reports - “Wowing” Owners

As Columbia introduced new reports that pulled data from the Avvir portal, Owners were initially skeptical. “When they saw the “percent complete” of work, they were like, “No, this can’t be right.” Using the Avvir Portal, I quickly pulled up the model with all the data tabulated in these percentages. **The model, integration, and Avvir portal helped me convince them and show them that every component is involved in those tallies.”**

As Columbia progressed on the project, it helped the Owner’s team gain mutual trust because the progress reporting was accurate down to every rack detail and funnel connection made on-site. In addition, the Avvir portal convinced the Owner’s team that the numbers reflected the “installed world” to keep the project on track.

“Collaborating with the Owner and our stakeholder team, including the superintendents, to help draw more value from the Avvir platform has been crucial to our success.”



Comparing “As-Designed” against “As-Built” improved reporting accuracy and gave the Owner’s team increased confidence.

Avvir Features & Benefits

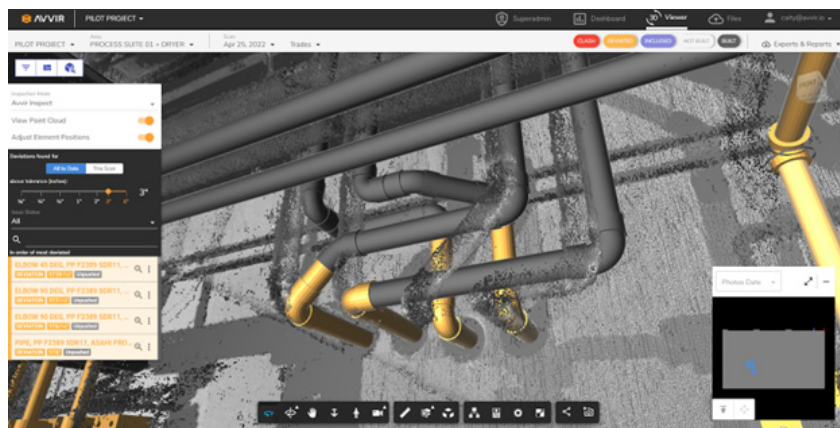
Columbia considered a few other solutions but felt the top feature Avvir offered was tracking all components individually. “Seeing charts of piping, insulation of elbows, tees and welds, were very specific and most appealing to us.” In addition, Avvir reports were able to break down install data into such detailed levels that Columbia could objectively quantify what was installed on-site – eliminating blanket responses like “racks are about 30% installed.”

“To get the level of detail that Avvir provided us, we would need to have one resource dedicated almost full-time to tracking individual components and provide these types of reports because of the substantial amount of piping.”

Validating the BIM Model - “Whenever I talk to anyone, they’re always impressed with how easy it is to read the reports and derive critical insights. Also, the model in images validates the numbers so much easier. I am also very impressed with how easy the Avvir portal is to use with precise information.”

Reports for multiple stakeholders - Project managers and superintendents review the reports weekly with our Owner. In addition, the Avvir reports are central during OAC meetings to evaluate the details to track installation progress (piping and elbows) to ensure they are on schedule.

Once the Superintendents see the reports and how much value was presented, they immediately see the benefits.



Reports for multiple stakeholders like Project Managers, Superintendents, and the Owner's Team helped drive OAC meetings.

Return on Investment

- + **Time Savings:** Avvir is saving Columbia 3 days a week in site walk-thru inspections and analyzing the data and creating reports. Rather than dedicate three days a week to track installation progress and analyze deviations, field staff members can dedicate their time elsewhere. “It took me approximately a ½ day to scan the space, process the scans, align them, and send them over to Avvir.”
- + **Identifying Deviations:** Avvir helped Columbia identify many deviations that required immediate action by the site team. One, in particular, was a significant hanger switched from wall-mounted to ceiling-mounted because particular walls couldn't support the weight. However, these changes were never updated in the model but detected by Avvir assisting Columbia with the following:
 - **Short-term benefit** of making the piping changes for the new hangers to keep the project on track.
 - **Long-term gain** to create a more stringent **Standard Operating Procedure** for consistently updating the model if hanger types are ever changed.
- + **Increased Visibility and Confidence:** “We didn't have a good way of understanding installed and not-installed details in the model. Avvir helps us get there. We previously used another software solution to add installation values, but it was more manual. You would have to click each component and input that it was installed, which was our only way to validate through the model what was installed and what wasn't.”
- + **Producing Final As-Built Models:** Directing subcontractors to update work from the reality-captured deviations gave Columbia much more confidence in delivering the project to the owner. “You can never trust the PDF sketch-ups people receive from the field for updating the model versus the actual as-built conditions. Being able to share this info with the subcontractors, our confidence in producing the final as-built model reached a new level.
- + **Next Level BIM:** Wooles said, “there is much more reliance on the BIM model today using Avvir. Previously, we used manual processes that impacted productivity. On the Avvir portal, we can easily filter what was installed and what was not. In addition, Avvir has been a great technology partner that modifies the platform to meet client goals and achieve a greater return on investment throughout the process.”

Project Lessons Learned

- + Implemented new SOP for consistently updating the model related to changes, and field modifications of hangers and supports.
- + Off-site manufactured equipment (pipes, tanks, etc.) - Require scanning and quality control as equipment arrives on-site instead of waiting a month or two when the assembly occurs.
- + Advanced planning and mitigation process for sequencing of construction and delayed material deliveries.

Recommending Avvir to another contractor.

"Yes. Columbia has utilized Avvir on two different projects so far with great fanfare about its value to projects.

"One guy called the reports snazzy," making me laugh to hear this from a seasoned construction worker. Avvir's service is great, easy to work with, very communicative and continually provides more value to the platform as requested," said Mrs. Wooles.

ABOUT COLUMBIA

Founded in 1925, Columbia is a third-generation construction management company with a proud history of building a multitude of project types and long-lasting client relationships. We empower our teams to take ownership of the job, to solve problems the moment they occur and even before they occur, and to remain accountable at every turn. Our team-oriented approach to planning and addressing any challenge results in proactive solutions, exceptional outcomes and trusted partnerships. In fact, over 80% of our business is derived from repeat clients.

With an annual average volume of \$400 million, Columbia ranks at the top of Massachusetts' largest construction management firms. Our portfolio of projects spans the academic, corporate, healthcare, hospitality, life sciences, and energy sectors. Our experience has given us the know-how to meet the unique needs inherent in these different sectors.



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