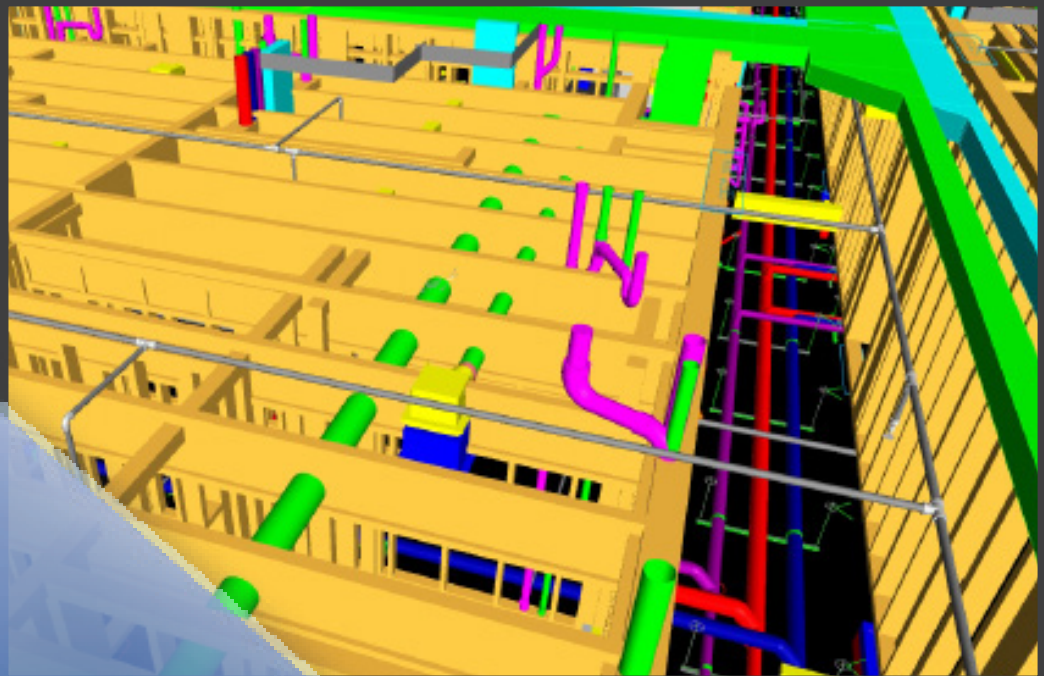
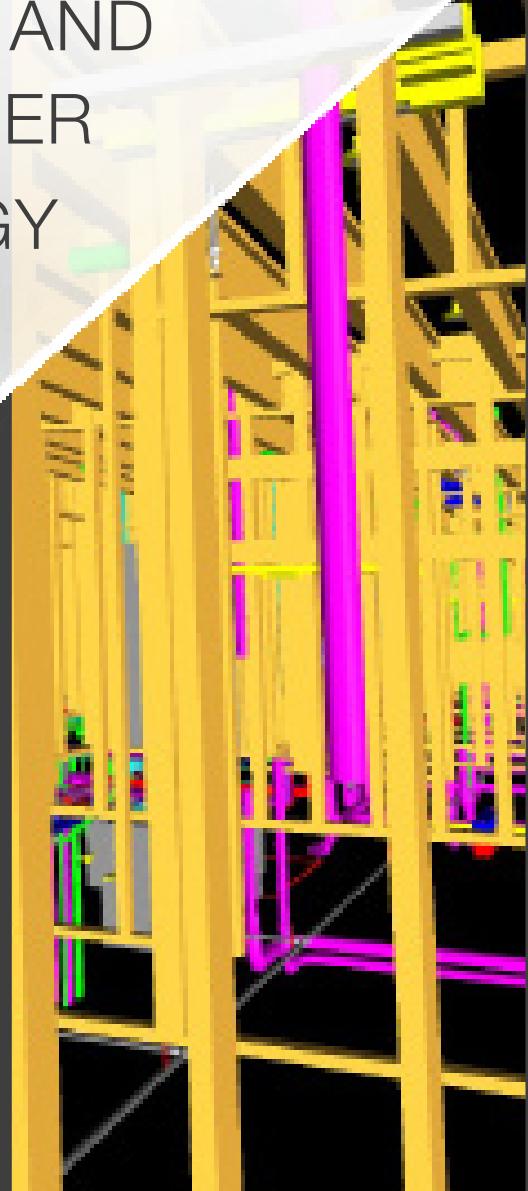
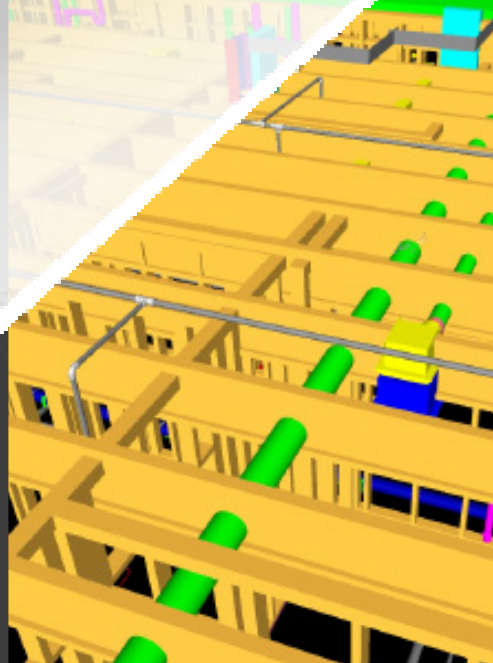


SPEED FRAMING: FRAMER AND COMPONENT MANUFACTURER TEAM UP WITH TECHNOLOGY

A case study by MiTek



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TIMBER TECHNOLOGIES AND PRECISION TRUSS SET NEW STANDARDS IN PRECISION AND SPEED



Executive Summary:

- Timber Technologies, a framing contractor and wall panel designer, will fabricate and frame 1,000,000 square feet in 2014, with just one designer and 15 framers.
- Precision Truss & Lumber, with a team of 80, sells around \$9 million in trusses annually. They build trusses in two shifts with 50 full-time workers.
- Timber Technologies and Precision Truss & Lumber both run SAPPHIRE Structure. Precision also runs MiTek MBA™ and MiTek MVP™.
- With SAPPHIRE, the two shops determine highly accurate wall materials, heights and exact framing locations – so they can also see exactly where floor and roof trusses intersect in a digital pre-built environment.
- SAPPHIRE's 3D is a must-have for both companies, providing insight that would be impossible to obtain in 2D plans or a PDF.
- SAPPHIRE allows Timber Technologies to cut onsite framing time in half, in part because both companies collaborate on the same SAPPHIRE model, in real time.

Precision and Speed are Essential

When a wall panel designer/framing contractor and a component manufacturer have to work on the same building, they avoid crossed wires and costly errors by collaborating on a single SAPPHIRE™ model. Floor trusses and roof trusses are digitally overlaid on the wall model. Clashes, misalignments, and errors are all worked out in the digital design, before fabrication even begins. The result? Error-free, code-compliant optimized wood frames, put up in just over half the time as a similar structure that is stick framed onsite.

"We've been watching a 250,000 to 300,000 square foot stick-frame job in nearby Portland, and in the time it's taken that crew to frame it, we've done six wall panel buildings, including a 150,000 and a 120,000 square foot project. And they're even not done with their stick framing yet!"



"It's not like Timber Technologies and Precision Truss are working on two parallel designs ... It's the same SAPPHIRE model," Tom Martin said. "It's all been digitally pre-built and fabricated in collaboration. Errors and structural conflicts have been worked out."

"We can typically do triple the amount of square footage of a stick framing crew, in one half the on-site time."



“With SAPPHIRE, I can get Timber Technologies’ SAPPHIRE wall model and overlay our trusses, to determine highly accurate wall heights and see exactly where our trusses go in a digital pre-built environment,” said Tom Martin. “When I am ready, I can just drop my trusses on their design.”

of space, and in 2013 it jumped to 750,000 just in wall panels alone. And they have a 1,000,000 square feet goal for 2014. That’s with one designer and 15 framers.

“At the plant, we aim to generate 600 to 800 lineal feet of wall every day,” Pappadis explained. “We ship jobs as far as it makes sense, mostly to the Eugene and Portland areas, but we’ve gone as far as Tacoma, Seattle, and Eastern Washington.”

The interesting thing about Timber Technologies is that they specialize in the wall framing. So, where do the floor trusses and roof trusses come from?

That’s the role played by Precision Truss & Lumber (Clackamas, OR), where Tom Martin is the sales manager and heavily involved in the truss design.

Tom’s team of inside and outside sales keeps their team of 80 people very busy. This year they’ll sell around \$9 million in trusses, and another \$15 million in lumber. They are just about to go back to two shifts on the truss fabrication, with a staff of 50 full-time workers.

To manage that volume, Precision Truss & Lumber runs five crane trucks and seven lumber trucks, which haul materials to the same Northwest regions where Timber Technologies ships and installs its walls.

That’s the world according to Ken Pappadis, a wall panel designer with Timber Technologies, a framing contractor that specializes in design and construction of complex wood frame structures, especially multi-story, multi-family structures.

If Timber Technologies sounds like a busy operation, you haven’t heard the half of it.

“We have 26,000 square feet of covered space for our wall panel fabrication operations, and another five acres uncovered,” said Pappadis, who’s been in framing since the late 1980s. “We run a crane truck, a semi, and two other smaller trucks, which haul the work coming out

of our plant, where we have 20 guys on the fabrication team. As successful as our wall panel business is, it’s now 40% of our overall deal flow. Another 60% of our work is our stick framing business.”

In 2012, Timber Technologies – a family-owned business in Sandy, OR – fabricated and framed 500,000 square feet



The framing team at Timber Technologies can click on the wall and extract any information about it. Wall height, length, bearing points, header locations, header thicknesses, plate material, you name it. It’s all in the

Collaboration is Key

“With SAPPHIRE, I can get Ken’s SAPPHIRE wall model and overlay our trusses to determine highly accurate wall heights and see exactly where our trusses go in a digital pre-built environment,” Martin explains. “When I am ready, I can just drop my trusses on his design.”

If one company does the walls (Timber Technologies) and another company does the floor and roof trusses (Precision Truss & Lumber), what ties them together? How can they possibly collaborate effectively?

The answer: Both companies run MiTek’s advanced wall and truss design technology, called SAPPHIRE™ Structure.

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Both Ken Pappadis and Tom Martin can obtain the building designs that they work on from a number of sources. Typically they use a PDF of the building design from the architect or engineer, and sometimes the CAD drawings themselves, which SAPPHIRE can convert into its format.

“Even though Tom’s designing floors and roofs, and I’m designing walls, we work from the same building model, so the precision is outstanding,” Pappadis explains. “To collaborate on trouble spots, mostly we just email each other back and forth, because it’s so efficient. I can quickly ‘cloud’ an area [identify a problem with a color highlighting tool] if I see something on the plans that may have a major issue in the building.”

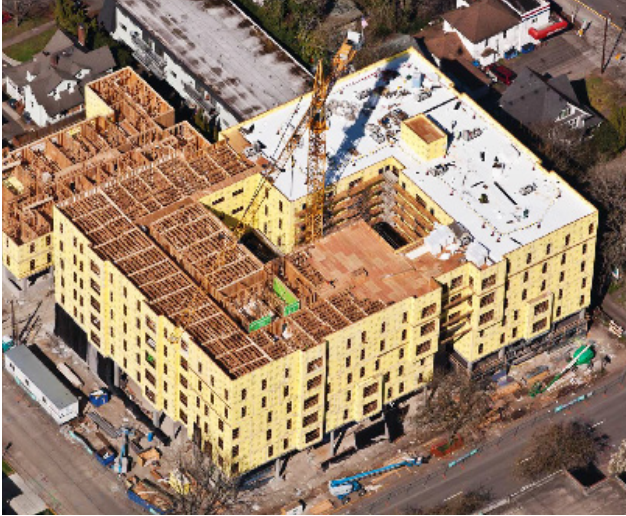
“The key is to know where the actual framing of a wall stops,” said Martin.

“That’s right, because we ship a lot of our walls with the gyp on it, and where that finished surface stops or needs to be let through is key,” Pappadis said. “Keep in mind that there can be 100 or 150 requests for information (RFIs) on any job just to figure out the architect’s intention. That doesn’t include the Multiple Plan Revisions we have to make adjustments for. With SAPPHIRE, after I am clear what the architect wants, I can dimension my walls with exact precision, the way the framers need to see them. Stud-to-stud connections, not finish-to-finish connections, like the architect likes to present things.”

“We can obtain that level of detail in SAPPHIRE,” Martin said, “because either Ken or I can click on the wall and extract any information about it. Wall height, length, bearing points, header locations, header thicknesses, plate material, you name it. We don’t have to go searching for it. It’s all in the SAPPHIRE 3D BIM model!”



In 2013, Precision Truss & Lumber will sell around \$9 million in trusses, and another \$15 million in lumber. They are just about to go back to two shifts on the truss fabrication, with a staff of 50 full-time workers. They run five crane trucks and seven lumber trucks to haul the volume.



"We've been watching a 250,000 to 300,000 square foot stick-frame job in nearby Portland," said Ken Pappadis, "In the time it's taken that crew to frame it, we've done six wall panel buildings, including a 150,000 and a 120,000 square foot project. And they're even not done with their stick framing yet!"

"Then, in the final plans, whether we print them or send them out over SAPPHIRE Viewer to the field, I can also color code annotations, so the subs can see just the instructions meant for them. And plus, SAPPHIRE lets us both work in 3D," Pappadis said.

"That's right, and 3D is a must-have for us," Martin said. "Working in 3D gives you insight and views that would be impossible to obtain in 2D plans or a PDF. For instance, in our market, the architects like to run the windows up as high as possible on the exterior wall. But is there room for the header? In 3D, I can 'look' up and 'see' my headers above, see it in its true dimensions, and see where my trusses fit."

"Also, with SAPPHIRE, we can send our CAD files, and the architects or designers who are using Revit can use our plans to eliminate interferences, gaps, or dimension errors in their model," Pappadis explained.

Pre-Cut Rough Openings

"There are some wall framers out there who make more money with their Sawzall than with their nailguns," Ken Pappadis explains. "That's because they are cutting away at the rough openings after the walls go up," Pappadis said. "With SAPPHIRE, I can put all the rough opening in, for any sub, before the walls are built. If in fact, it used to be that most wall panels had to be modified in some way in the field, whether the ROs were precut or not. That's why framers stayed away from them in the past, because they had to cut the panels up so much on site. I was even anti-panel at one time! But that's no longer true about panel design. The accuracy has jumped leaps and bounds with software like SAPPHIRE Structure.

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We did a medical building recently. It had 14 foot walls and 9 foot ceilings, and there was a ton of stuff running above the ceiling. Specialty HVAC ducts and electrical lines. Sprinkler systems. You name it. Well, the super was in a meeting with the subs, and one of them was complaining (*cont'd next page*)

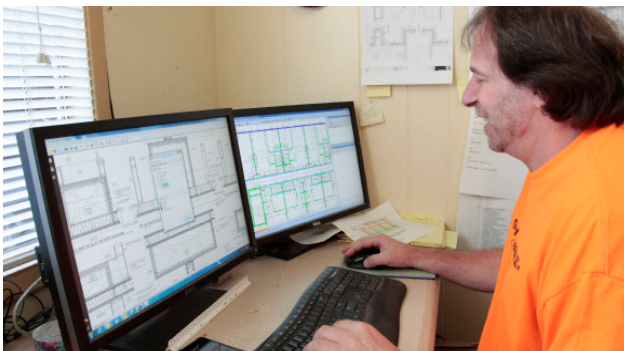
How Fast They Build ... Got a Stop Watch?



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in half,” Pappadis said. “That’s not overall framing time cut it half – because we have design and fab time at our shop – but it’s close.”

“Keep in mind that we have designed the wall panels, the floor trusses, and the roof trusses as an integrated, optimized structure,” Martin added. “It’s not like Ken and I are working on two parallel designs that we are trying to figure out onsite. It’s the same SAPPHIRE model. It’s all been digitally pre-built and fabricated in collaboration. Errors and structural conflicts have been worked out.”



In 2012, Timber Technologies fabricated and framed 500,000 square feet of space, and in 2013 it jumped to 750,000 just in wall panels alone. The goal for 2014: 1,000,000 square feet ... all with just one designer.

Pre-Cut Rough Openings (cont’d)

that he had to Sawzall out so many ROs. The foreman asked if he’s given his rough opening schedule to us ahead of time. Unfortunately, he hadn’t, so his ROs weren’t pre-cut. The other subs had, and they just ran their lines and ducts, saving time and money. That’s the kind of precision we can achieve in our SAPPHIRE designs. And it’s not just the ROs that we can design into the wall. You want a 14 ½ inch bay behind a shower? Done. Make sure there is nothing centered behind the sink? Easy. We just have to include it in the BIM model ahead of time. But bring us in early. That’s the key.”

“With wall panel design and truss design both being handled in SAPPHIRE, we can cut onsite framing time

How fast do the projects go together?

“For jobs in Portland and Eugene, the panel and truss approach is the only way to build, because those are city environments, and there is no place onsite to store lumber,” Pappadis said. “Because of our capability, we can pick up work that would have been out of reach otherwise. Plus, once we get a job, we are in and out of there fast, and the subs can get out of there faster too. They love us wall panel framers. We warn the subs how fast we are going to go, and they don’t believe us ... until we’re three or four floors ahead of them! We can typically do triple the amount of square footage of a stick framing crew, in one half the on site time.”

About Timber Technologies

At Timber Technologies LLC it is our goal to provide the highest quality, most cost effective, production framing possible. Whether your firm is looking for site built, wall panel, labor only, or full turn key framing systems, Timber Technologies LLC is your one stop shop. From top to bottom we employ only the most experienced, conscientious, safety oriented personnel to ensure your project will be built in a timely manner to the highest standards in the construction market today.

About Precision Truss & Lumber

Precision Truss & Lumber, Inc. is a full service lumberyard and roof truss manufacturing facility that can supply your building materials for any project; from the ground to the roof. Our easy access location is a real time saver for busy builders to get more done in less time, by combining our truss plant and lumberyard in one convenient location. Precision Truss & Lumber is locally owned and operated and has been serving leading homebuilders and commercial contractors since 1971.

Explore BuildabilityNow.com to learn more.