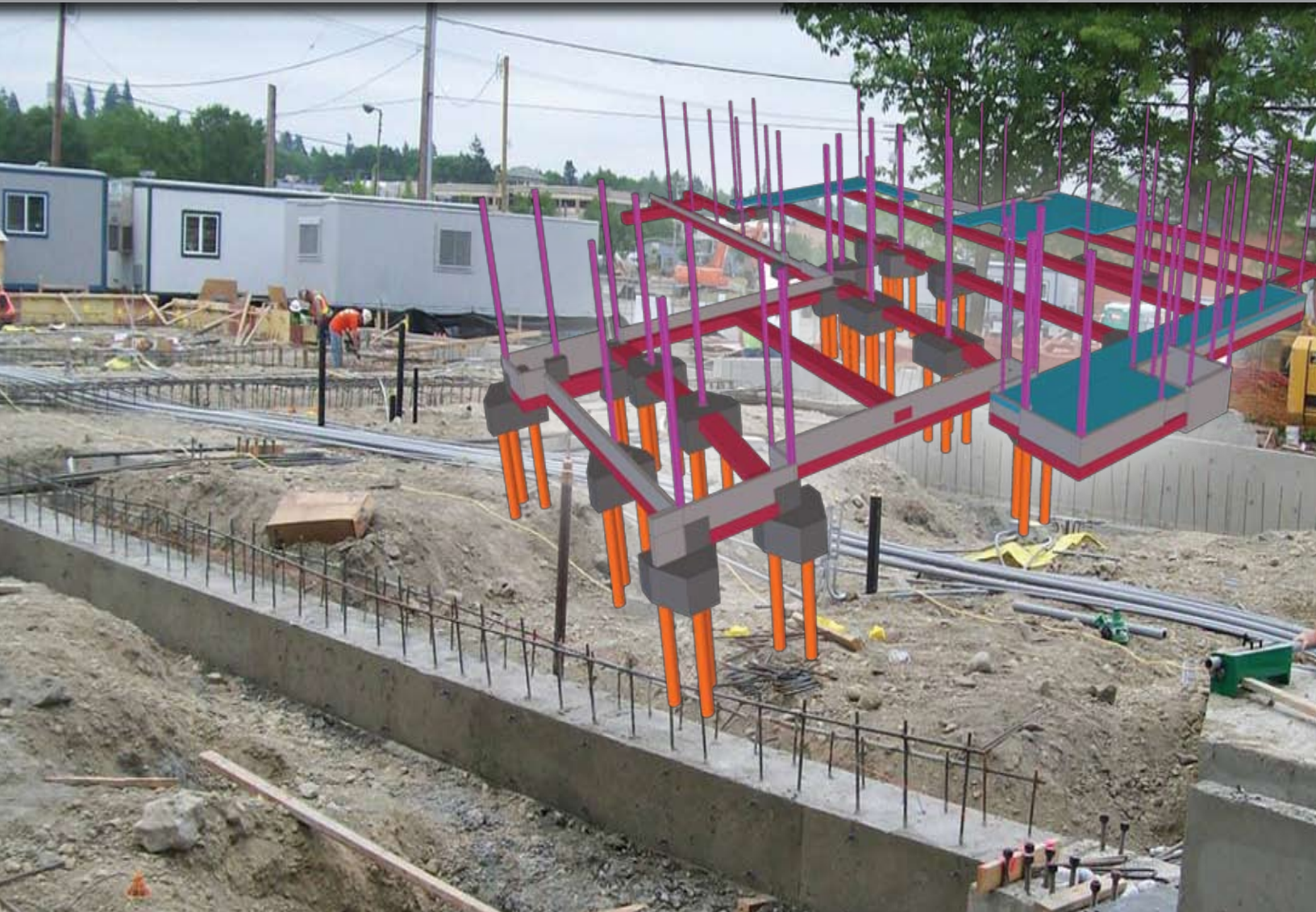




**TEKLA**® Structures



TEKLA STRUCTURES IN PRACTICE:  
A.R. STEGMEIER ENTERPRISES, INC.



**TEKLA** Structures

# CONCRETE CONTRACTOR BUILDS COLLABORATIVE FOUNDATIONS WITH BIM

> Since concrete often acts as the 'glue' that holds together critical structural elements, it should come as no surprise that concrete contractors are in a unique position to provide similar collaborative value.

At least, that's the opinion of Aaron Stegmeier, President of A.R. Stegmeier Enterprises, Inc. (ARS), a commercial structural concrete contractor based in Lakewood, WA, known for its work on a variety of structures from cancer treatment vaults to military complexes.

Stegmeier says, "Since most structures bring together a combination of steel reinforcements and concrete as well as the necessary tie-downs, bolts, and washers, I regularly interact with other trades on every project. Building information modeling (BIM) seems like the perfect opportunity to improve the speed and quality of my services while helping the entire project team deliver a better product."

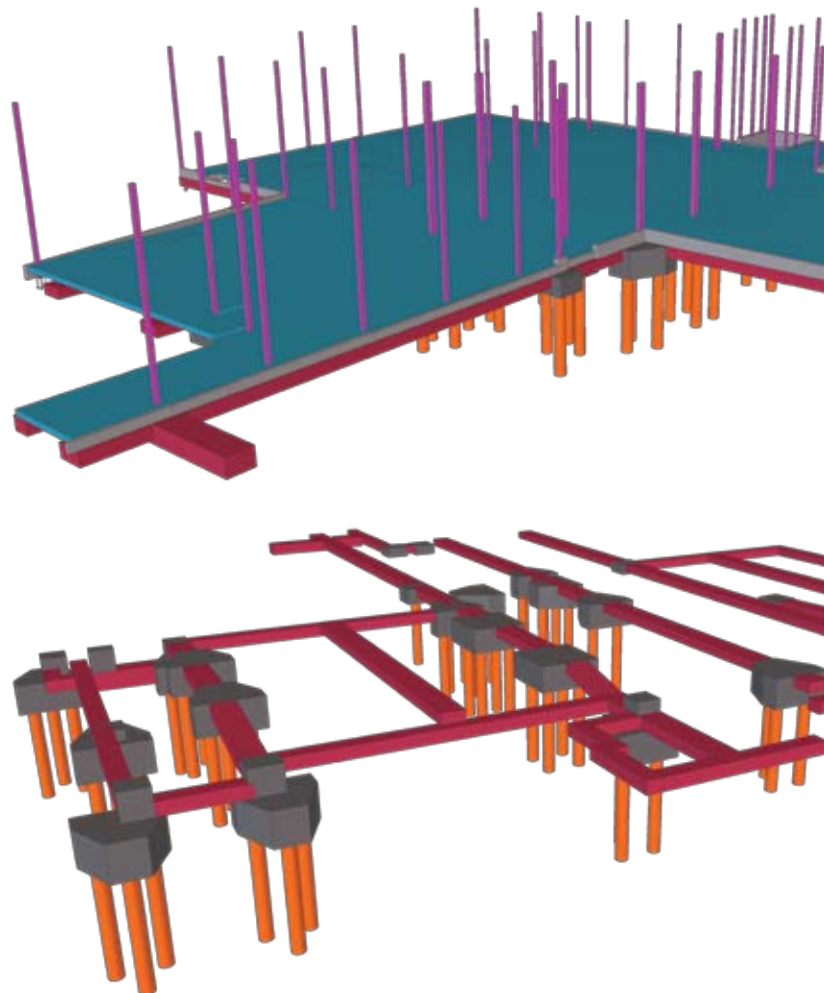
He first saw a demonstration of Tekla Structures BIM software in early 2009 at the World of Concrete show. Soon after, he purchased his first license and installed it on his office system. Little did he realize how quickly the inherent modeling capabilities would help get a high profile project off the ground.

## A LOTT OF NEED

> In early 2009, ARS was contracted to support construction of the innovative LOTT Water Education and Technology Center (WET Center) located at the Budd Inlet Treatment Plant site in downtown Olympia, Washington. When complete in summer 2010, the new 32,000-square-foot, four-story WET Center will include an educational center for ages 10 and older, a water quality laboratory, and administrative offices. The \$18 million project, which includes a cogeneration system to capture waste heat, is targeting LEED platinum certification.

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*- Aaron Stegmeier, President, A.R. Stegmeier Enterprises, Inc. (ARS)*

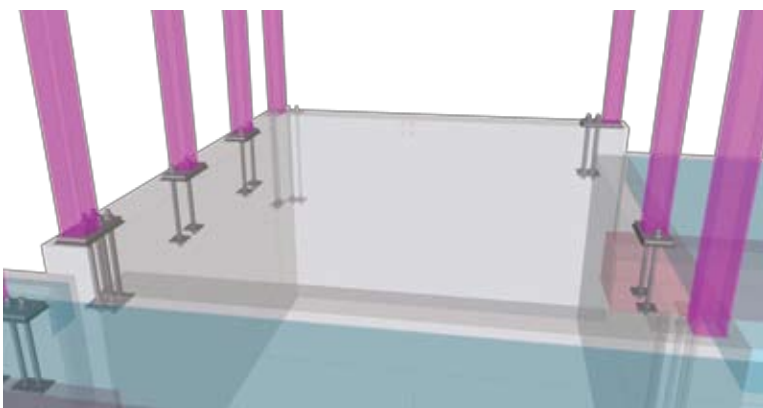
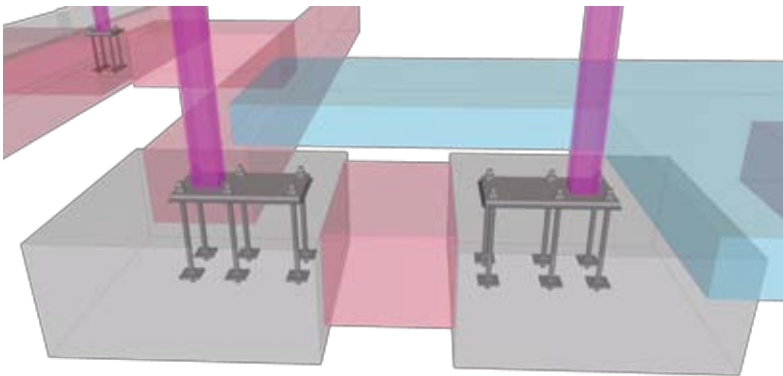


Stegmeier says, "From the ground up, this is a pioneering project that required significant coordination and collaboration among all parties in the early stages to meet budget and schedule milestones while achieving environmental sustainability credits for LEED certification."

Conflicts that emerged early in the preconstruction phase of the 15,000-square-foot auger pile foundation threatened to slow project progress and erode the close working relationship amongst the project team.

"We started to receive multiple RFIs from the engineer-of-record that did not match up with the design documents," recalls Stegmeier. "We knew there were clashes, such as protruding hold-down bolts, but weren't able to demonstrate those problems using conventional 2D drawings and written descriptions."

Instead, Stegmeier loaded his new version of Tekla Structures to his computer, modeled the WET Center foundation architectural and structural information including walls and hold-down bolts. With laptop in hand, he showed the project engineer the impending clashes.



> *"Beyond clash detection, Tekla helps me optimize every job- I go into a bid lean, which in today's economic environment is critical to survival. I draw up all my jobs in Tekla, pull takeoffs from the model and head out to the field."*  
- Aaron Stegmeier, President, A.R. Stegmeier Enterprises, Inc. (ARS)

Stegmeier adds, "It is always easier to visualize a concept in 3D rather than trying to extrapolate from a 2D image. Using the Tekla model, we were able to illustrate the RFI and change order requests within the actual 3D model. The engineer was really impressed—and the project team was able to work together to find resolution well before we began work at the site."

## FIELD CONNECTIONS

> ARS has since used BIM on many more projects with ever-increasing benefit, including the ability to bid jobs with zero fat.

"Beyond clash detection, Tekla helps me optimize every job—I go into a bid lean, which in today's economic environment is critical to survival," says Stegmeier. "I draw up all my jobs in Tekla, pull takeoffs from the model and head out to the field."

Once the concrete pour design is complete, ARS crews save the data as a .DXF file, download it to a robotic total station and head out to the field. With this methodology, ARS has eliminated the need for onsite tape measurements and on-site concrete pour problems related to design. Stegmeier adds, "After multiple pours, we have learned to trust the quantities in Tekla over our own takeoffs."

Beyond the benefits of time and cost savings, as well accuracy and quality, ARS believes that BIM is changing its relationship with the owners, architect, engineers and the rest of the project team.

Stegmeier concludes, "As a result of BIM, I am seeing a different level of teamwork. The owner, architect and engineer treat our firm more like partners and have more confidence in our scope of work. We find it much easier to resolve conflicts before we get in the field and deliver quality products with tremendous efficiency—something owners and general contractors certainly appreciate."

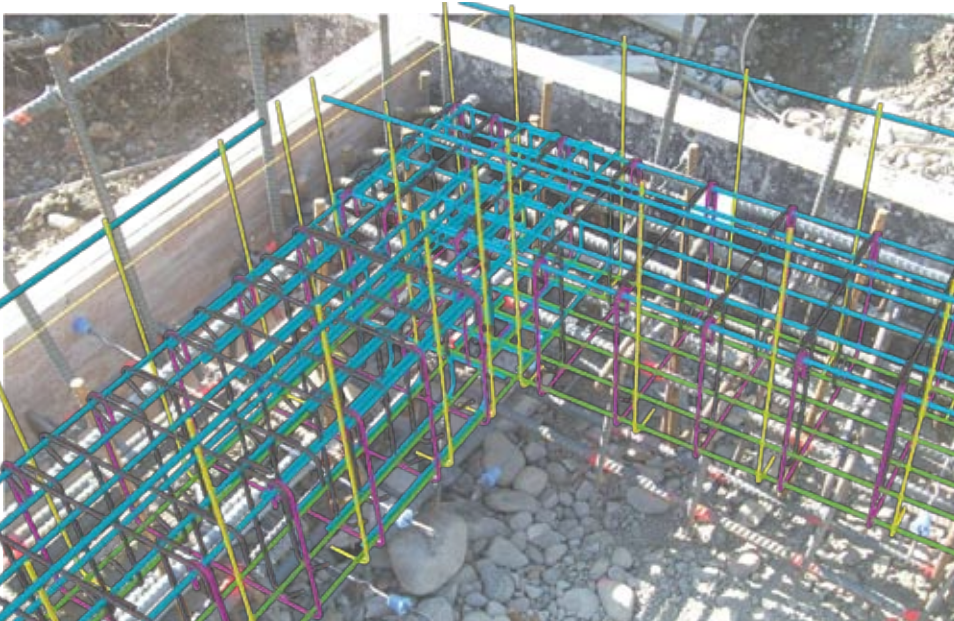
# TEKLA STRUCTURES – INTELLIGENT 3D MODELING

## ABOUT TEKLA

> Tekla's model-based software products make customers' core processes more effective in building and construction and infrastructure management. Tekla Corporation has area offices and partner organizations worldwide. International operations account for more than 80% of net sales. Founded in 1966, Tekla is one of the longest operating software companies in Finland.

> Tekla's technology creates new opportunities for the disciplines in the construction industry: Tekla Structures is the most advanced BIM (Building Information Modeling) software on the market that provides an accurate, dynamic, and data-rich 3D environment for structural engineers, steel detailers and fabricators, concrete detailers and manufacturers, and construction companies to share.

The highly detailed as-built structural models created in Tekla Structures enable effective visualization and management of any project from sales and bidding to follow-up. Openly integrating model and non-model-based data into the model allows collaborative workflows to streamline the design, fabrication, and construction stages for the highest level of constructability and integration in project delivery. Centralizing project management into the model not only increases productivity in each stage, but also enhances the value of structural modeling throughout the value chain of building.



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