



TEKLA® Structures



TEKLA STRUCTURES IN PRACTICE:
**EAGLE RIDGE
RESIDENTIAL DEVELOPMENT**
ALBERTA, CANADA





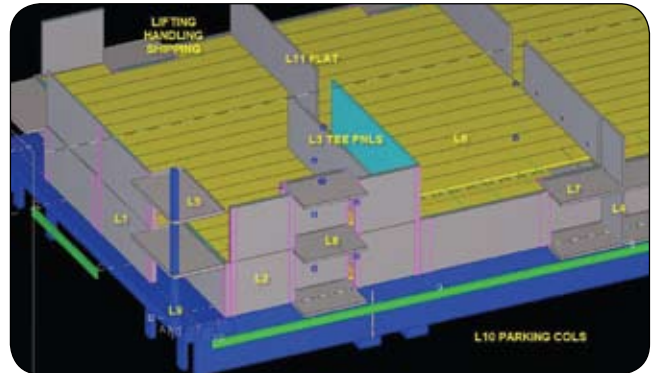
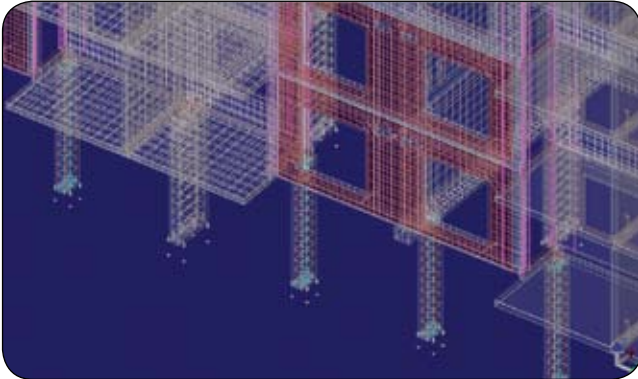
TEKLA Structures

MORE PRODUCTIVITY THROUGH A FULL- WORKFLOW SOLUTION



> Eagle Ridge Residential Development in Alberta, Canada, is a design-to-fabrication precast concrete project carried out completely within Tekla Structures 3D modeling software. Integrated project delivery and operational efficiency provided by the full-workflow solution worked ideally for both the precast concrete detailing and the structural design part of the project. The solution supports value engineering and alternative design development, enabling the modeling of field solutions, such as shoring and temporary bracing. Rapidly producing shop drawings and managing the project timeline were both accomplished using Tekla Structures, which proved to be highly productive.

➤ *"THANKS TO TEKLA STRUCTURES' EXTENSIVE ROLE IN THE PROJECT, THE OVERALL SPEED OF DETAILING PRECAST CONCRETE WAS INCREASED AT LEAST 30% WITH REDUCED MANPOWER."*
– WAYNE KASSIAN, KASSIAN DYCK & ASSOCIATES

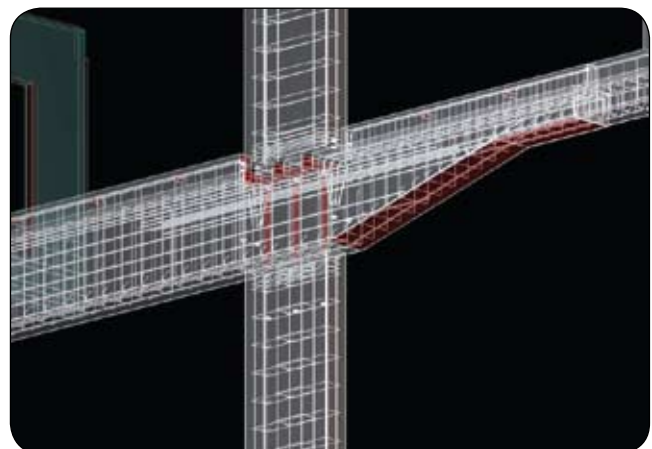
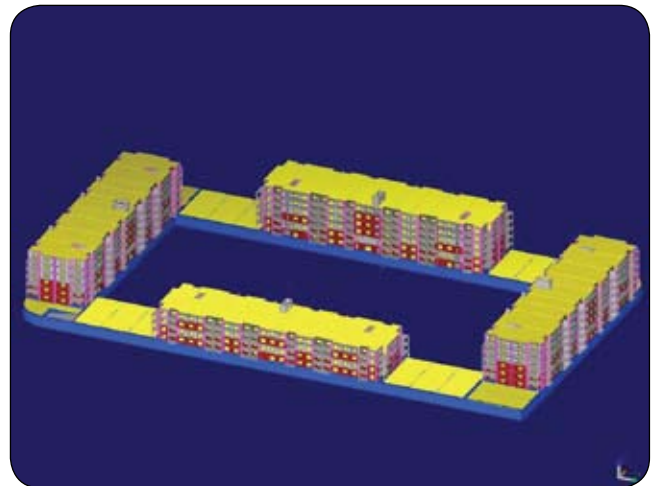


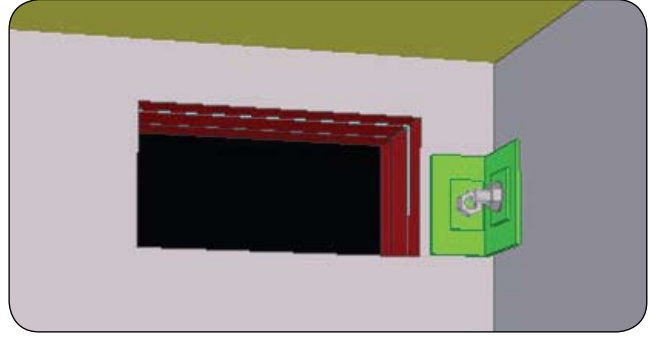
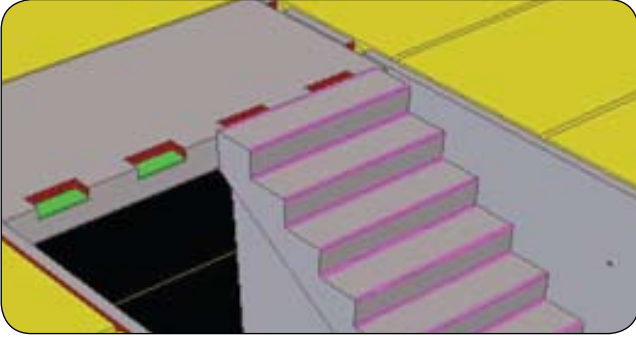
KASSIAN DYCK & ASSOCIATES

➤ Kassian Dyck & Associates, Consulting/Structural Engineers, recently celebrated its 13th year of business in Calgary, Canada. Kassian Dyck & Associates has completed over 900 projects in Canada and the United States, and they have participated in several projects in other parts of the world. The company's portfolio includes assignments ranging from small residential projects to multi-million dollar facilities. They have extensive experience detailing projects with precast concrete.

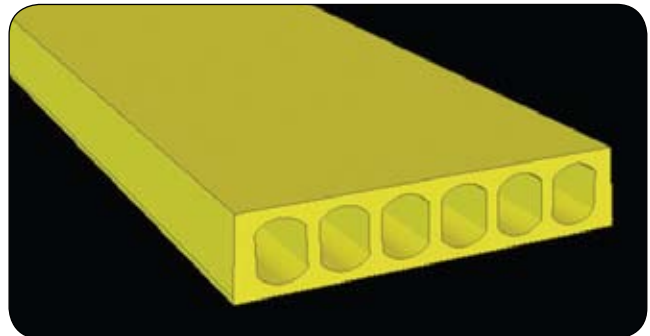
INTEGRATED PROJECT DELIVERY

➤ The Eagle Ridge project covers a 371-acre residential development area in Fort McMurray, Alberta. This entails 3,700 residential units comprised of nearly 2,000 multi-family suites, along with additional single family housing, town homes, semi-detached houses, social housing, and a bridge interchange linking the new development with existing roadways. The first phase consists of seven precast buildings, of which six were 6-story and one was a 4-story building. Kassian Dyck & Associates worked on a fast-track schedule and modeled the entire first phase of the project in Tekla Structures, and upon completion will have modeled 22 buildings in Tekla Structures – a testament to the true power of the solution. In addition to Kassian Dyck & Associates, another supporter and early adopter of the Tekla Structures solution in this project was the precast supplier Lafarge North America/Alberta Precast Division. Prime consultant was Gibbs Gage Architects. The total project cost is one billion dollars.





The general contractor of this project, Centron Residential Corporation, has been a major developer in Alberta for more than 20 years, a construction contractor of land development and residential, commercial, as well as industrial projects. Centron's project manager, **Ken King**, wanted to use a modular system in this project – prefinished as far as possible to reduce and streamline site work. He was certain that this method would be successful if the benefits and limitations of each building system were understood. Centron chose the cost efficient total precast solution in order to increase speed, to reduce site work, and to incorporate building information with other trades. The site was cleared in May 2006 and construction work started in July 2006. The first precast building was erected in April 2007. Erection of the third building began in May 2007.



REVEALING THE TRUE POWER OF MODELING

> According to **Wayne Kassian** of Kassian Dyck & Associates, his team could not have detailed the total precast building to the fast-track schedule without the extensive 3D modeling benefits provided in Tekla Structures. Operational efficiency provided by the full-workflow solution worked ideally for both the precast concrete detailing and the structural design part of the project. Modeling included the hollow core roof and floors, interior load bearing wall panels, columns, beams, balcony slabs, stairs and landings, temporary bracing, exterior insulated wall panels, as well as elevator and stair shafts.

> *"TEKLA STRUCTURES AND 3D MODELING IS CHANGING THE WAY WE DO BUSINESS."*

The Tekla 3D model was used widely in the project, starting from design development with the owner, architect and precaster. The building information visualized in the model assisted with design development, increased the speed of approvals, and allowed the precast team to visualize and assist with the design development of the structure. The model can be utilized in estimating, engineering, production, as well as erection. Examples of how the 3D model was used during design development include creating snapshots for meetings and for discussion of stair geometry and brick pattern with the architect, as well as lift hook and erection issues with the precast supplier. All shop drawings (piece tickets) and erection layouts were created with and maintained in Tekla Structures. Kassian Dyck & Associates also modeled erection bracing and shoring posts, as well as panel strongbacks that are required to stiffen some precast panels specific opening and prevent damage during transportation.

MEETING THE CHALLENGE WITH OPERATIONAL EFFICIENCY

> Tackling a fast-track project, the challenge was set with thousands of bricks in the model, mark number consistency, and implementing an updated software version in the middle of the project. There were also growing pains with new users using 3D modeling for complete precast structures. Says Wayne Kassian, however: "We did it despite the challenges – Tekla reseller provided expert assistance on all issues encountered."



The entire project and all details were modeled in 3D using Tekla Structures, which required a new way of thinking: now erection layouts were created after the structure was modeled, so information for erection was added to the drawings after the modeling process. It was possible to create piece shop drawings (tickets) and edit them in varying degrees: drawings for simple cloned pieces can be completed in 5 to 10 minutes, whereas complex pieces could take up to 1.5 hours. Based on Kassian's experience, this could have taken anywhere from 2 to 8 hours per drawing with 2D CAD drafting. "With modeling total precast buildings, 3D modeling has numerous benefits for detailing precast," he states. "The overall speed of detailing precast was increased at least 30% with reduced manpower." Kassian was also able to reduce cross coordination and checking of drawings. There were no fit, geometry or hardware misplacement errors reported from the construction site.

WAYNE KASSIAN SHARES HIS SUCCESS

> Wayne Kassian is Principal at Kassian Dyck & Associates. The company's success with Tekla Structures demonstrates how companies of all sizes have benefited from using the software. Says Kassian: "We've been using Tekla Structures to create structural contract drawings as a natural advance from 2D drafting into 3D structural modeling. The software can be used for both simple and complex structures and provides excellent visualization to all members of the team during the development of the structure. Using Tekla Structures we can provide our clients with accurate contract drawings that are easily updated if design changes occur. We clearly see the benefits of creating contract drawings using 3D modeling versus 2D CAD drafting."

"Tekla Structures and 3D modeling is changing the way we do business," Kassian concludes. He directs special thanks to **Peter Yurkiw** and **Don Zakariasen** of Lafarge North America, too, for supporting the use of Tekla Structures on the successful Eagle Ridge precast project.



*Wayne Kassian, Principal
Kassian Dyck & Associates*

TEKLA STRUCTURES – AN INTELLIGENT AND INTEROPERABLE MODELING SOLUTION

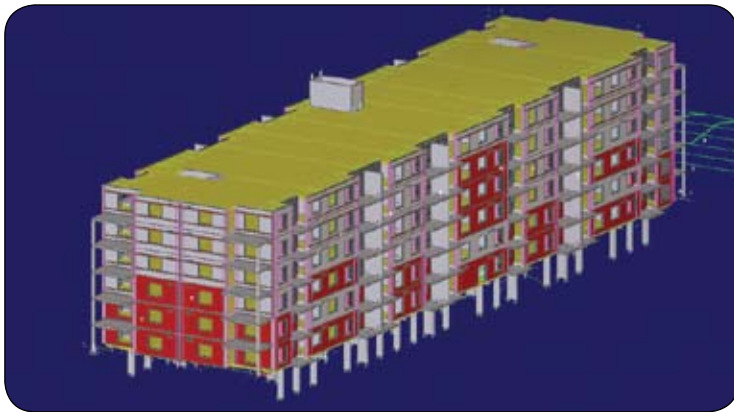
TEKLA CORPORATION

Tekla is a leading international software company whose innovative software solutions make customers' core businesses more effective by way of full implementation throughout the workflow process. Tekla's software products and related services are used mostly in building and construction, but also in energy distribution and by municipalities. Tekla Corporation has area offices and partner organizations worldwide. International operations account for 75% of net sales. Founded in 1966, Tekla is one of the oldest software companies in Finland.

TEKLA STRUCTURES

Tekla Structures software is a BIM (building information modeling) tool that streamlines the delivery process of design, detailing, manufacture, and construction organizations. While integrating openly with architectural models, the strength of this single-model environment lies in the contractor end of the process. Thousands of Tekla

Structures software users in more than 80 countries have successfully delivered BIM-based projects across the world. Tekla Structures' ability to process extensive amounts of data enables the creation of detailed 3D models that apply to every stage of design and construction. From planning and design development thru to fabrication and installation, Tekla models naturally develop in parallel, representing the "as-built" condition of a building. Tekla Structures effectively integrates into any best-of-breed software driven workflow, while maintaining the highest levels of data integrity and accuracy. Such collaborative workflows are the cornerstone to minimizing errors and maximizing efficiency, resulting in high profitability and on-time project completion. Tekla Structures encompasses specialized configurations for structural engineers, steel detailers and fabricators, precast concrete detailers and manufacturers, as well as contractors.



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