

Some say it can't be done. We think differently.

BIM CONSULTING SERVICES

THE FUTURE OF CONSTRUCTION



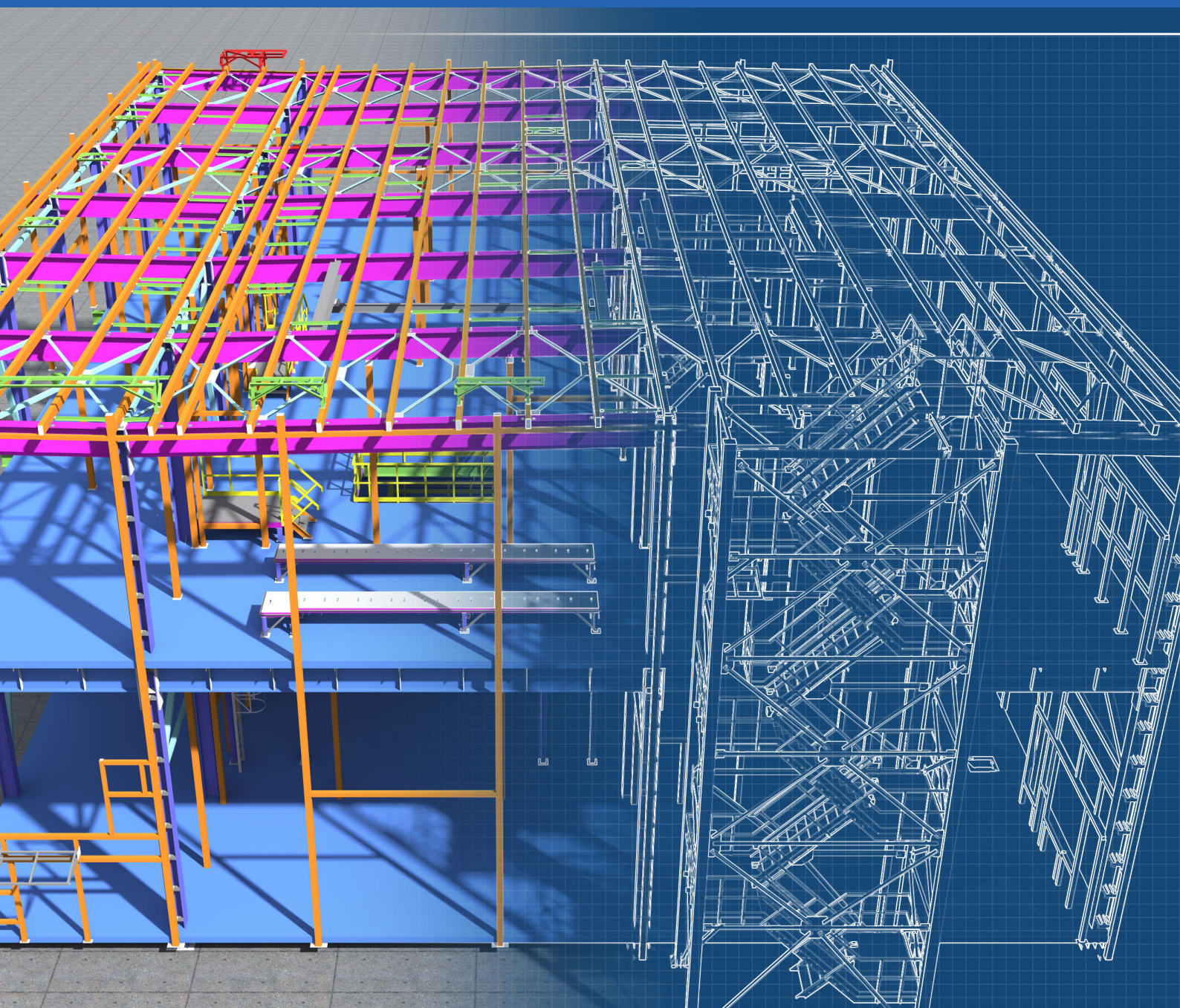
OPEN BIM™



If you want to see the Future of Construction
Watch Dowco

dowco.com

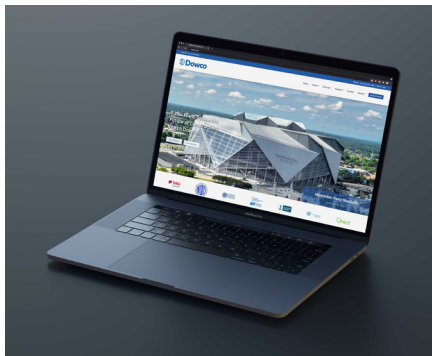
BUILDING INFORMATION MODELING





“Some Say It Can’t Be Done - We Think Different”

Since 1970, Dowco has grown from a three-person operation to become one of the largest fully-automated 3D Modeling, Detailing and Virtual Construction Service providers in the world. Established in British Columbia, Canada, the company today employs more than 240 staff across 4 offices and 4 countries.



Mission

**OPTIMAL
CONSTRUCTABILITY
FOR ANY DESIGN**

Our Promise

Dowco’s 50+ years of history, heritage, and ongoing success can be explained simply: At Dowco we believe in our service and products. We work hard to get to know our customers, to develop a connection and to understand them and their needs.

Above all else, Dowco is dedicated to bringing integrity and trust back to the design and construction industry. We strive to make every part of your experience working with us as simple and professional as possible.

We are committed to clear and unambiguous consistent language at every point of customer contact.

We demonstrate our commitment daily by providing a superior quality service that our customers and partners can expect and depend on.

If you want to see the future of construction, watch dowco.



“Sustainable construction practices are good for the company, but more importantly, they are good for people, the planet and frankly, it’s just the right thing to do.”

Services we provide:

Preconstruction Modeling (LOD 300 - LOD-400)

- Structural Model Creation
- Fabrication Model Creation
- Structural Steel Detailing
- Cast in Place Modeling and Detailing
- Rebar Modeling and Detailing
- Mass Timber Modeling and Detailing

Model-Based Estimating

- Early creation of 3D Structural Model
- Faster and more accurate estimating
- Accurate and early advance material ordering
- Early project communication and collaboration
- Provide owners project visualization and enable informed decision making on value engineering initiatives

Bridge Modeling and Detailing

- Dedicated, highly-experienced bridge team
- Foot bridges, highway and railway structures
- No bridge too simple or too complex
- Deliverables: 3D models; shop drawings; erection drawings; placement drawings; blocking diagrams; bills of material; FabTrol .kss and .xsr files; CNC files; CSV files; plate development details, including allowances for cutting/burning; and center of gravity information.

Building Information Modeling (BIM)

- * 3D Structural stick modeling
- * Multi-material modeling (concrete, glazing, curtain wall)
- * Digital 'walk throughs' to resolve clashes or conflicts
- * Model Based Estimating and bid submission support services
- * BIM Coordination and Management
- * Model Hosting



For Any Design - there are no limitations, no ideas or dreams that can't be brought to life.

Dowco is one of very few that can make complex structures become reality.



BIM Early Involvement

Dowco have been members of Integrated Project Delivery (IPD) teams at the early stages of many design build BIM projects.

With specialized construction knowledge, effective collaboration methods and applications we have achieved and delivered added value, through true integration between design and construction.

Employing advanced 3D modeling

technology, our Project Managers, Engineers, and Drafting teams can offer design/engineering, component integration, and 4D/5D modeling/Construction services, all of which are essential for an efficient building model.

An additional advantage to working with Dowco is leveraging an “as-built” model. At the end of the project construction phase customers are left with a complete as-built virtual

model. This model can be utilized for up-grades, maintenance and facility management, as well as a design reference for future projects.

There are effective benefits that can be gained by all parties with a collaborative friendly virtual model. This is made possible with the early involvement of Dowco and their BIM technologists and technologies.

3D Virtual Model using Tekla Structures	4D Modeling and Tekla Structures	5D Modeling and Tekla Structures
<p>Managed by our project managers, engineers, steel detailing technicians and project coordinators</p> <p>3D model available to all enabling visualization of what will actually be built on site</p> <p>Conflict detection, hard and soft clash (access, safety issues)</p> <p>Integrating all construction components into one model</p> <p>Quantity takeoff</p> <p>Elimination of field interferences</p> <p>Less rework</p> <p>Fewer request for information</p> <p>Fewer change orders</p> <p>Less cost growth</p>	<p>Establishes a 4D time dimension to the model environment</p> <p>Managed through our project management, engineering and construction department</p> <p>Visualizations communicate the construction process</p> <p>Construction and planning sequence analysis</p> <p>Site logistics</p> <p>Schedule analysis</p> <p>Integration with cost and schedule control</p> <p>Shorter construction period</p> <p>Improved communication</p> <p>Improved coordination (trades, designers, site logistics)</p> <p>Greater offsite prefabrication opportunities</p> <p>Verification, guidance, and tracking of construction activities</p>	<p>5D environment brings cost into the virtual model</p> <p>Managed through our project management, engineering, estimating, procurement and construction departments</p> <p>Accurate cost estimating</p> <p>Cost evaluation</p> <p>Design and construction status (track and validate the progress of components)</p> <p>Value engineering</p>

TEAM
 Together
 Everyone
 Achieves
 More

Examples of Past Projects:

Vancouver Convention Centre Expansion Project

As one of Dowco's early BIM projects, the Vancouver Convention Centre is now one of Canada's largest convention centres. Working on the west building, Dowco developed several processes to improve workflow between the trades such as interchanging models between the Structural Engineer and Dowco's detailing department including a virtual shop drawing checking process involving the Contractor, Engineer, Architect and Fabricator. Dowco used BIM to track RFIs while providing visual representations to the owner. Working with 3D models allowed the connection designer to also visualize joints for connection design and allowed project team participants to quickly resolve any design problems before they appeared on site. Model zones were exported to assist the Contractor for specific erection sequences. The west building was certified LEED Platinum by the Canada Green Building Council in 2010.



Chicago Millennium Park



The Chicago Millennium Park has been hailed the city's most important project since the World's Columbian exposition of 1893. Officially opened in 2004, this Frank Gehry project has many unique features. Dowco participate in this project by establishing a method of importing and exporting 3D models between the Structural Engineer and Dowco Detailers. Due to the complex structure, Dowco established a method of importing laser survey points into the 3D model to accommodate needed modifications with the framing of the building and the structure of the exterior cladding. Custom software macros were developed and structural connections adapted to meet as-built requirements of the park's structures.

Walt Disney Concert Hall

Considered as one of the world's most sophisticated concert halls in the world, the Walt Disney Concert Hall in Los Angeles, California provides for both an aural and visual experience. Another one of Frank Gehry's complicated designs, Dowco worked with the Architect on this highly complex geometric building in the late 90s. Interoperability between construction tools was still in its early stages and importing the Architect's Catia model into Tekla Structures proved to be challenging but demonstrated Dowco's capability as an early adaptor of BIM solutions. The contractor, Mortenson Construction, describes how they were forced to use 3D/4D technology in this difficult project by receiving 3D models as contract documents. Their early experience evolved to be fruitful as they then embraced 3D/4D/BIM technology in their succeeding Denver Art Museum Expansion project.



Denver Art Museum



A signature landmark for the city is Denver's Frederic C. Hamilton Building, or otherwise called the Denver Art Museum expansion. Consisting of 2,700 tons of steel in an awesome angle, this project was proud to be one of Dowco's pioneer projects using advanced BIM solutions to accurately detail this incredibly complex structure. Aside from keeping all the other team members (M.A. Mortenson Construction, ARUP, L.P.R. and Steel Fabricator) in the loop using BIM, a building schedule (4D model) was drawn up beforehand and integrated into the 3D model to illustrate each step of construction. The degree of the collaboration using BIM made this project successful and resulted in completion 3 months ahead of schedule. Reference models of Cranes were also inserted into the 3D model to visualize staging plans done at the erector's office before going into the field. **This project was recognized by the American Institute of Architects as a successful Building Information Modeling project.**

Panama Museum of Biodiversity

Another Frank Gehry design, the Museum of Biodiversity, also called the Bridge of Life Museum, was erected in Panama City. Situated at the Pacific entrance to Panama Canal, visitors can marvel at this construction wonder. Working with BIM solutions, Dowco was tasked to detail its complicated roof framework as well as the supports for the 15 buildings. Dowco's preconstruction model and 'partially complete' general arrangement and fabrication drawings were created for the contractor who provided this information to potential bidders. Obtaining the true size, location and geometry of main members in the structure was done by importing the Architect's 3D model into Tekla structures, resulting in huge cost and time savings to the owner.





BIM Experts



Ewen Dobbie

Ewen Dobbie graduated from the University of British Columbia in 1990, beginning his career with Dowco soon after. He has been responsible for managing Dowco's technology divisions, software sales divisions, and Dowco's 3D modeling, Detailing, BIM and Pre-Construction Services operations.

Given Dowco's pioneering role as the first North American user and reseller of Tekla Structures software, he has played a key role in the development of North America's 3D structural modeling and emerging BIM and Digital Construction Services markets.

He draws heavily on this diverse background and hands-on experience in positioning the Dowco Group as the leading global provider of comprehensive preconstruction services for clients in design, fabrication, erection, construction management, and related fields.



Brian Pyper

Brian Pyper began his career in the structural steel industry in 1987 as an ironworker in Scotland. In 1994, Brian immigrated to Canada and completed 18 months of college to receive his diploma in structural steel detailing.

Committed to the steel detailing industry, Brian is continuously increasing his knowledge in drafting, engineering and business. He earned his MBA and is a registered Project Management Professional.



Sanjay Prasad

Sanjay joined Dowco as a Structural Detailer in 1987 and took on a number of roles in the organization, leading to his current position as Vice President, Special Projects. In his 30+ years with Dowco, he has been a Steel Detailer, Checker, Project Manager, Software Sales Representative, Software Developer, R&D Manager, Technical Support and Trainer.

In 1995, Sanjay became heavily involved with the customization of steel connection macros for Tekla Structures (formerly Xsteel) for the North American steel construction market and became one of the few elite Tekla users and specialized macro developers worldwide. In recent years, he has also been responsible for the development and implementation of Dowco's "BIM and VDC" processes for use in its detailing operations.

Dowco is proud to be a partner for the following BIM Solutions:



Tekla Structures is a Building Information Modeling (BIM) software that enables the creation and management of accurately detailed, highly constructible 3D structural models regardless of material or structural complexity. Tekla models can be used to cover the entire building process from conceptual design to fabrication, erection and construction management.



We do more with Qnect's fast and intelligent solutions, we can complete more projects in less time. We can connect a 3D model in minutes and provide optimization data for your customers, all within AISC code. The time and material savings are then passed on to fabricators and erectors. It's a great win for our customers and our customer's customers.

Dowco is also proficient in the use of Autodesk Navisworks & Revit



Panzura is a hardware solution that allows you to host construction models in the cloud. Panzura allows multiple office locations to share BIM models in real time and enable instant collaboration and simultaneous sharing of project data.



Bluebeam PDF Revu makes our life easier with simple PDF creation, markup, editing and access features. When using Bluebeam you will soon come to realize the ease of use and functionality provided with our software. Bluebeam PDF Revu integrates with MS Office programs for one button file creation and includes the Bluebeam PDF printer to create a PDF from just about anything.



Some say it can't be done. We think differently.

BIM CONSULTING SERVICES

THE FUTURE OF CONSTRUCTION



OPEN BIM™



If you want to see the Future of Construction
Watch Dowco

dowco.com