



AUTODESK **CONSTRUCTION CLOUD™**



CHANDOS

Collaborative Project Delivery Lowers Risk and Fuels Gains for Chandos

When you manage hundreds of millions of dollars worth of innovative and ground-breaking projects across the globe, you naturally shoulder substantial risks. Collaborative project delivery and data standardization can help mitigate risks and drive greater success, even across an enormous portfolio - the way it does for Chandos Construction.



Customer Snapshot

FIRM SIZE: <500
FIRM TYPE: GENERAL CONTRACTOR
REVENUE: 201 MILLION
FOCUS AREA: COMMERCIAL
HQ: MISSISSAUGA, ON

PHASE:



PRODUCTS:



VALUE DRIVERS:



Quality



Winning
Business

Innovative and Collaborative Project Delivery Paves the Way for Big Gains

Chandos Construction is a Canadian general contractor, with seven offices across the region and managing hundreds of millions of dollars worth of projects. Specializing in complex projects from nuclear research facilities to geo-thermal energy systems, Chandos delivers value to its clients through collaborative project delivery models, lean methodologies, and building information modeling.

The 100% employee-owned firm continuously innovates by championing collaborative construction and implementing technology to create better project outcomes through data standardization, construction management, bid management, and cloud-based quantification.

Data Standardization Enables Lean Delivery

Traditionally focused on project delivery methods including, design-build and construction management, Chandos knew there was a better, leaner way forward to create outcome certainty and deliver exceptional value to their clients.

“Our leadership team partnered with leading contractors in the United States to learn their approach to lean construction and integrated project delivery (IPD),” says Vincent Plourd, VDC Manager at Chandos Construction.

As an early pioneer of IPD in Canada, the firm is a founding member of the Integrated Project Delivery Alliance (IPDA). The IPDA’s mission is to create better



industry outcomes in construction through the benefits of collaborative project delivery across all project stakeholders.

“IPD changes relationships for the better by creating more collaboration and communication between stakeholders,” says Plourd. “This creates alignment from the project’s onset, reducing risk, and maximizing value by identifying potential problems earlier in the construction process.”

Chandos’ approach to collaborative construction and IPD, along with the use of Assemble, BuildingConnected, and BIM 360 within Autodesk Construction Cloud™, propels them forward, completing projects under budget and ahead of schedule. In evaluating and implementing technology into their workflow, Chandos selected Autodesk Construction Cloud as the platform that:

- Increases collaboration, drives efficiency and reduces risk
- Streamlines workflows and mitigates miscommunication with a single source of truth
- Creates more transparency around design and constructability reviews
- Synthesizes data to increase safety and quality on the jobsite

Bid Management is Better with Cloud-based Construction Data

With a new project-delivery model, Chandos can diversify into highly regulated markets. But with IPD involving highly integrated teams, it brings another problem: spreading subcontractors too thin. To track the involvement of their subcontractors on projects and elicit more bids, Chandos uses BuildingConnected.

“With BuildingConnected, we’re able to gain visibility into which subcontractors are working on what project, how they’re performing, and where we’re getting bids from,” says Plourd. “This helps decrease project risk as we can see how many projects subcontractors are working on without breaking them in the sense that they don’t have the capacity to perform the work.”

By consolidating their subcontractors into one bid management system, it’s easier for estimators to track, manage, and communicate around bids. This process allows Chandos to win more work and execute with more certainty on projects.

Data Standardization Enables Leveraging Construction Data Across Multiple Tools for Improved Collaboration

With an outcome-focused approach to construction project delivery with IPD, Chandos assesses which tools to use based on the needs of each project. The BIM team evaluates the project in conjunction with their estimating, field, and project management teams to understand the project scope and requirements. From there, the team selects which tools within their portfolio to add to their workflow and when.

Teams leverage Assemble for estimation, quantification, and conditioning of the BIM model, adding information against the model in real-time.

“With 3D modeling views in Assemble, we can condition model data, and analyze how we are trending toward budget as we progress in design,” says Hunter Etherington, BIM Coordinator at Chandos Construction. “This has translated to a more accurate project scope and increased collaboration across project stakeholders.”

Before implementing Assemble, Chandos had multiple models coming from different sources at different times, which led to difficulties in maintaining model information. With Assemble, model information is synced in one location. Chandos can see how they are iterating against the budget for target value delivery in real-time. This methodology creates more transparency between account teams and develops a deeper level of trust with the owner.

With Assemble and BIM 360 together, project stakeholders can easily access one source of truth for model data, which eliminates the risk of working off an outdated model.

“By connecting the entire ecosystem and democratizing access to BIM data, the BIM VDC team stopped being the bottleneck, and we were able to get the data into the hands of the people that need it to build,” says Plourd.

“Owners have access to the 3D model and all project information in real-time,” says Alex Bahan, Senior VDC Specialist / Manager at Chandos Construction. “It’s easier to visualize how the project progresses without having to ask the project team for information, which has improved our relationship as we can communicate the design intent and constructability to the owner.”



Construction Management is Easy with Constructability Reviews Enabled by Virtual Reality

To reduce risk and enhance collaboration amongst project stakeholders, Chandos relies on virtual reality (VR) for both internal and external design coordination and model review for target value delivery. With one click, teams can access 3D model data to review models with a VR headset, eliminating the need for screen share or physical mockups, driving efficiencies and reducing risk across projects.

“We encourage the use of VR on all our projects,” says Plourd. “It’s one of those things where people don’t want to put their headset on, but once we get them in the headset, they don’t stop. They want to mark up everything.”

For example, on a casino and racetrack project, the team combined drone mapping with laser scanning to create a virtual representation of the track. In the simulation, the owner walked room by room and noticed a blind spot on the track from the judge’s box. This blind spot was a massive problem as a judge needs to see every aspect of the track the entire race to identify foul play or disqualify a horse and rider.

Without having to leave the virtual environment, the design error was automatically captured and synced to BIM 360 for assignment and tracking with the design team. By identifying the flaw during design review, the team was able to redesign the booth well before anything went out to tender. By using VR for the walk-through aspect of construction management, Chandos saved \$200,000 in steel alone, not including the cost to take out the drywall, remove the floors, and concrete.

VR removes ambiguities around design issues and helps teams get to the root of the problem faster, eliminating miscommunication and improving construction management. By putting on a headset and meeting in a virtual environment, project teams can figure things out more quickly, instead of having multiple meetings or conversations about one issue. Apart from design clarity, VR also provides the owner with the spatial awareness of a project.

“If you’re not familiar with viewing 3D or 2D models, it may be difficult to visualize,” says Bahan. “Having that spatial concept of the design is another dimension that VR adds.”

Construction Data Standardization Increases Safety and Quality

To increase safety and quality onsite, Chandos took a holistic approach to managing, tracking, and analyzing project data.

In their old workflow, the team relied on paper-based reporting, which led to data loss and inefficiencies. With the lack of a centralized construction data platform, it was challenging to maintain detailed issue tracking across projects. Using BIM 360 as a common construction data environment for reporting safety incidents, site issues, and non-conformance reports, project stakeholders have visibility into project status since data is tracked in real-time.

With the ease and simplicity of reporting in BIM 360, teams can use their smartphone or tablet to take pictures, tag, report, and publish an issue. Using this easier way to track and input issues, nothing gets overlooked, and teams are reporting more issues

observed onsite. The new way of working has also reduced reporting time by 30%.

“We worked closely with our superintendent and safety team to generate checklists and track site and safety issues on a standardized template in BIM 360,” says Bahan.

With a standardized checklist in place, Chandos can understand the root cause of an issue with greater certainty. By having further insight into their data in BIM 360, Chandos can see what the most repetitive root causes are to create a plan to modify behavior to increase profitability and reduce risk. With the artificial intelligence and machine learning algorithm built-in BIM 360, Chandos can start a risk analysis of projects through data and apply learnings and findings to future projects.

Collaborative Project Delivery Drives Continual Innovation and Success

With a culture of continuous improvement, Chandos explores new ways of implementing technology into its workflow to provide excellent value for clients and high-quality projects. “We don’t implement one platform and consider it done,” says Plourd. “We constantly explore the potential of new technologies and how they will integrate into our workflow to give us a competitive edge.”

This innovation-first approach helps Chandos win more business and gain more trust with clients. By championing collaborative construction, leading to certainty in safety, quality, cost, and schedule, Chandos ensures a successful future.

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-Vincent Plourd
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