PRECISION AND PREDICTABILITY:

IMPROVE YOUR BOTTOM LINE WITH BIM

AUTODESK.

Construction is a high-risk industry.

Complex, manual, 2D processes are prone to errors, omissions, and oversights during planning and preconstruction that result in budget and schedule overruns.

By moving to BIM-based workflows, construction professionals can connect design to preconstruction for more precise and predictable outcomes. Using tools in the Autodesk Architecture, Engineering and Construction (AEC) Collection, you can mitigate risks early, avoid costly rework, and drive innovation.

Read on to find out how.

Improving project outcomes

As a contractor, you have three main opportunities to deliver better building projects and improve your bottom line:

01 Enhance project quality and reduce rework

02 Deliver on time, on budget by avoiding costly delays

03 Win more work and build a project pipeline through competitive differentiation

With BIM workflows and the Autodesk AEC Collection you can address these opportunities and more.

Rework costs the global construction industry

$280

billion per year

Source: FMI

Why BIM processes?

With BIM, every detail of a building is modeled. You can use these models to create visualizations that help stakeholders better understand what buildings will look like before they've even been built: making it much easier to detect and address costly issues ahead of construction. BIM also streamlines planning, scheduling and cost estimating, improving project outcomes and eliminating last-minute, unwanted surprises for you and your client.

At a glimpse

- Increased coordination and stakeholder collaboration
- Better project understanding and communication with 3D visualizations
- More complete and constructible documentation
- Ability to resolve potential clashes between trades, such as structural and MEP

Why the Autodesk AEC Collection?

The Autodesk AEC Collection is a suite of industry-leading BIM and CAD software that supports team integration from design to construction. For example, you can use it to:

- Efficiently and accurately capture construction intent in 3D using **Revit** BIM software
- Review integrated 3D models during preconstruction to better control project outcomes with **Navisworks**
- Continue to work in 2D as you transition to BIM workflows using **AutoCAD**
- Pair the tools provided in the **AEC Collection** with **Autodesk Construction Cloud** products to seamlessly connect your data through all phases of construction

At a glimpse

- Improves visibility into constructability and model coordination
- Reduces cost and schedule risks
- Provides the tools for a non-disruptive transition to BIM

To summarize, by combining BIM workflows together with AEC Collection, you can:

01 | Improve project quality

02 | Deliver on time, on budget

03 | Win more work

Let’s now look at each of these in a bit more detail.

01

Improve project quality

BIM workflows and Autodesk tools enable you to solve problems digitally, reducing costly rework in the field. With integrated, multidisciplinary clash detection you can improve the overall quality of your projects. Construction modeling lets you add details to design intent models and prepare them for construction.

"With everyone collaborating on the same intelligent Revit model, we've been able to improve building quality even as we solicit input from every stakeholder. We gained visibility into every aspect of the design—something that wasn't possible with previous solutions."

Ahmed Al Khatib,
Structural Engineer,
Basler & Hofmann AG

02

Deliver on time, on budget

Using data-rich BIM models together with tools in the AEC Collection, you can improve scheduling accuracy, planning and logistics. For example, advanced simulations help you visualize different phases of the project, whether that's modeling traffic flow or tracking heavy equipment. Using Navisworks you can:

- View and analyze coordinated models
- Assign and resolve conflicts with BIM 360 integrations
- Link schedule and cost simulations
- And reduce delays before you break ground

"We're gaining a competitive edge from doing things better, faster, and at a lower cost. A house that once took 120 days to build now can be built in 60. This is with normal materials and a typical team."

Peter Hutten,
General Manager,
Van Wijnen

03

Win work

Using Navisworks Quantification you can quickly extract qualities in either 2D or 3D to inform accurate and timely estimates. Better bid proposals mean happier clients, who are likely to come back time and time again.

Improve your win rate and enhance your estimating workflows by pairing BIM data with preconstruction tools provided in the Autodesk Construction Cloud. Bring coordinated models into Assemble to improve efficiencies during project planning and execution.

Juneau's focus on detailed planning in the preconstruction phase leads to:

85%

repeat business

Read the full case study ›

Now let’s look at BIM and the AEC Collection in action to see how they can help you improve three everyday early design and preconstruction processes:

- Construction modeling
- Model coordination and clash detection
- Material quantification

Construction modeling

Moving from 2D to BIM gives you greater visibility and more information up front, allowing you to plan your projects more proactively—before errors and omissions hit the field.

Image courtesy of KlingStubbins

Benefit:

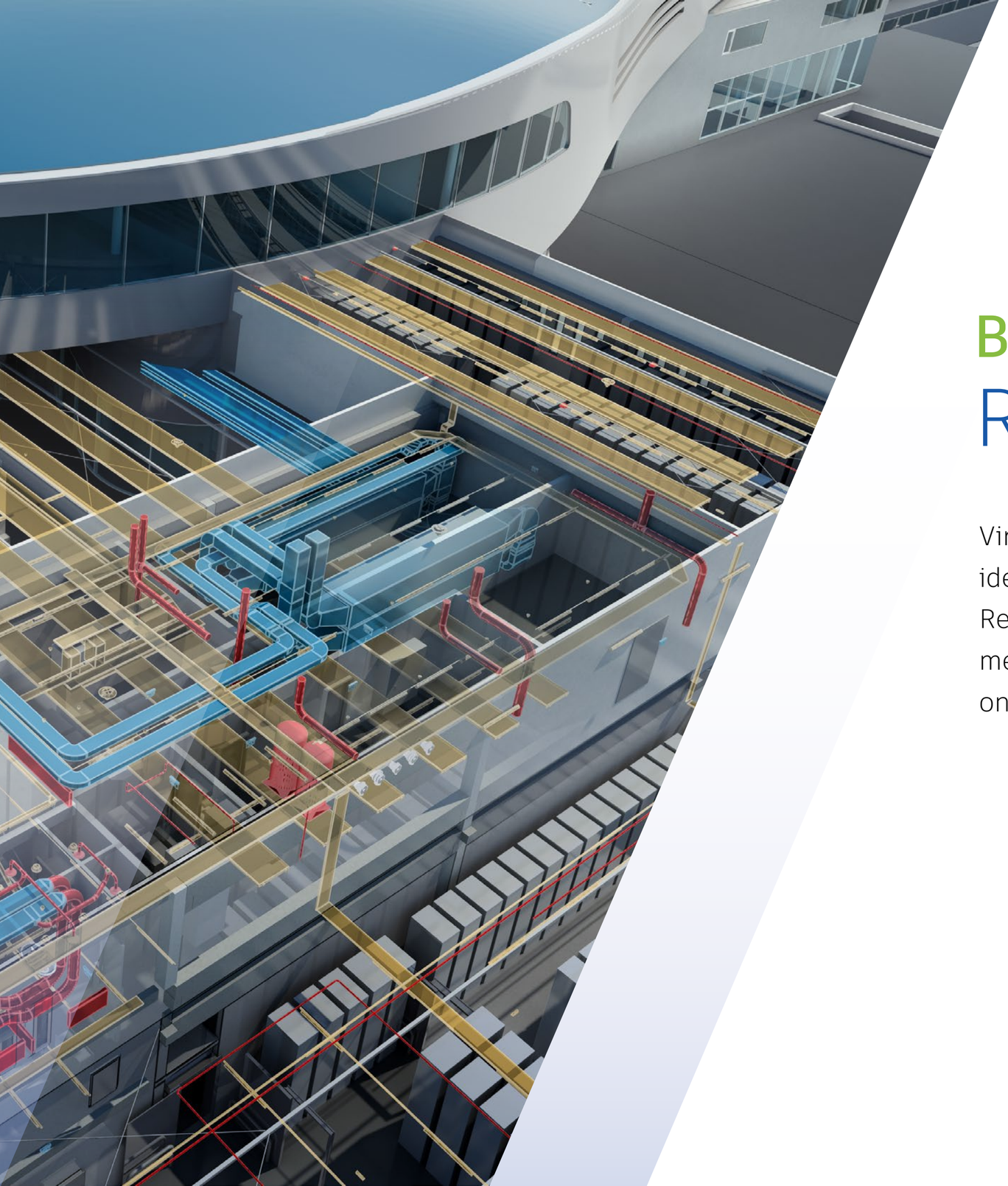
Fewer errors and omissions

Instead of having to recreate entire sheets every time you need to make a change, adjustments are automatically populated throughout the Revit model of a building—gone are the days of having to go back and update every single sheet. This saves you valuable time and results in fewer chances for errors and omissions.

Benefit:

Optimize scheduling

BIM enables you to optimize construction sequences and scheduling with fewer delays. You're able to dramatically reduce rework since you can identify logistical problems before work begins or materials are onsite.



Benefit:

Resolve issues early

Virtual 3D models let you ‘walk’ the site and quickly identify issues that are difficult to see in 2D drawings. Resolving problems early in the preconstruction phase means you come up against fewer expensive problems onsite and project delays are kept to a minimum.

Benefit:

Greater transparency

With BIM workflows, everyone works from the same intelligent model. You experience fewer change orders since the whole project team sees each others' changes and updates. This means fewer errors and omissions that need to be addressed later in the field.

Additionally, using the cloud-based issue management tools in BIM 360, you can enhance stakeholder accountability and transparency in real time.

Fortis:
BIM reduces costly rework

The what:
Reduce human errors that can creep into designs when deadlines are tight

The how:
Walk clients through 3D virtual models to identify any issues before construction begins

The why:
Avoids costly rebuilds, saves hundreds of thousands of dollars

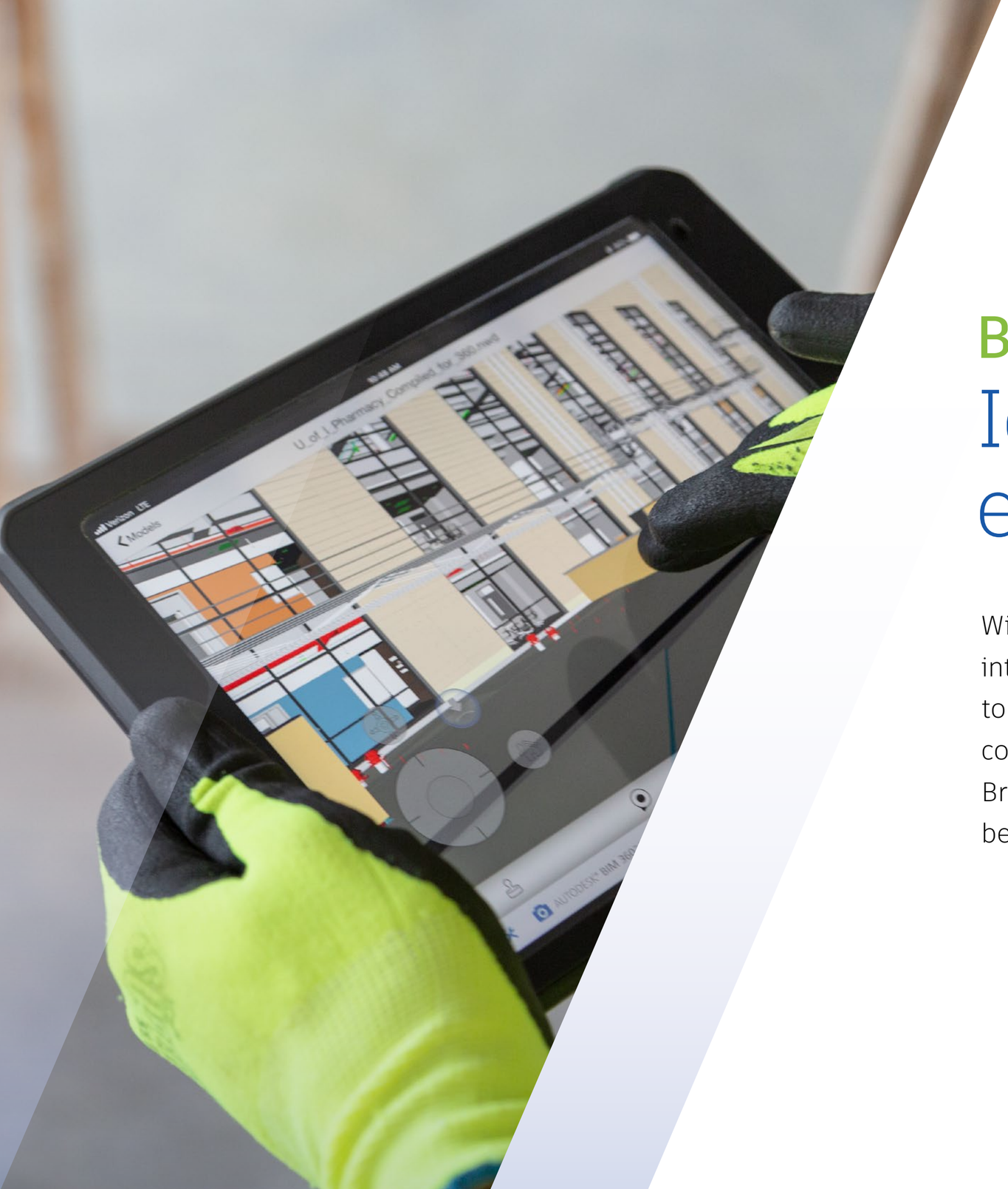
Read the full case study >

"On a recent project, a design element posing a significant conflict got all the way to the clash detection phase before it was discovered. Identifying the error before construction ultimately saved more than $200,000 in potential rework."

Monica Emmons,
BIM Manager,
Fortis

Model coordination and clash detection

Moving from 2D to 3D modeling makes it much easier to see how things are (or aren't) fitting together.



Benefit:

Identify clashes early on

With BIM workflows, you can aggregate models into a single 3D view. This makes it much easier to identify errors and clashes early on, avoiding costly rework and minimizing project delays. Bring your project models into BIM 360 to further benefit from automated clash detection.

Mortenson:
3D models streamline delivery

The what:
Improve project planning and communication for a research building at the University of Colorado

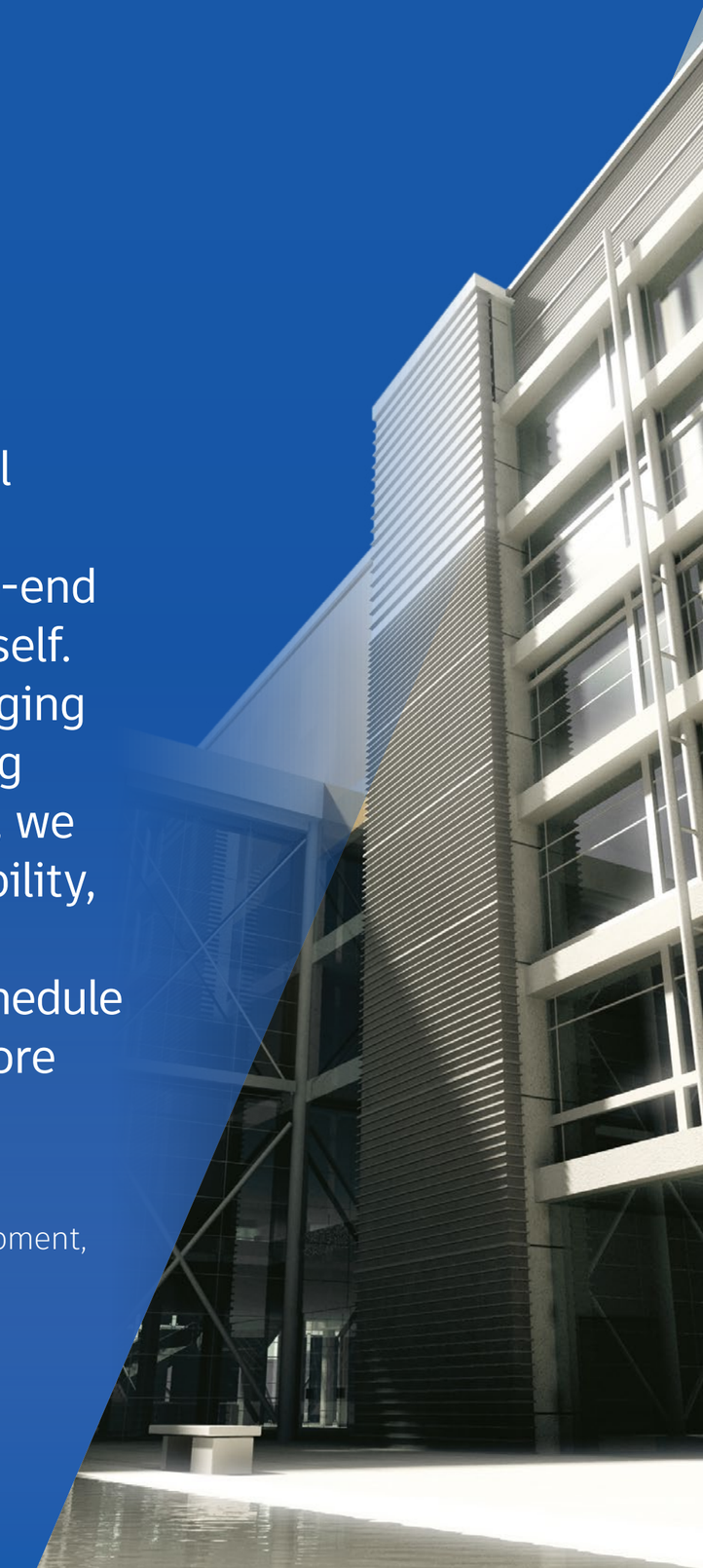
The how:
Aggregate 3D virtual models to better detect conflicts, create 4D schedules that link the building model to timelines, and more easily coordinate subcontractors

The why:
Reduces the number of RFIs by 780, saving $585,000 on RFI administration, and shaves six months off the project timeline

Read the full case study >

"With BIM, we can model not only the design of a building, but the end-to-end construction process itself. So whether we're managing a project or constructing the structure ourselves, we can analyze constructability, coordinate the process, address clashes, and schedule every step virtually before construction begins."

Derek Cunz,
LEED AP Director of Project Development, Mortenson Construction



Material quantification

Using integrated BIM tools, you can automatically capture material quantities from 2D sheets or 3D models.

Benefit:

Predictable project delivery

Rather than carrying out manual calculations on paper sheets, you can virtually mark up geometry and perform accurate calculations, saving time and avoiding costly mistakes.

Benefit:

Less waste

Meet your project's sustainability goals by reducing material waste with digital quantity takeoff and simulation tools.

Lexco:
Gets everyone on board with BIM

The what:

Improve consistency and coordination for construction of second largest hospital in Central and Latin America

The how:

Use BIM models to gather and track information about project materials, enabling it to preempt changes from stakeholders, reduce change orders, and save time on procurement

The why:

Know early on exactly what materials and equipment is needed so orders can be placed sooner, reducing the time it takes to get them to the jobsite by 28%

Read the full case study >

“Long-lead items like air conditioning usually take six to eight months. Now we can receive the material two or three months earlier.”

Jorge López,
founder and president,
Lexco

Conclusion

Taking a building project from vision to reality takes more than just hard work. Most of all, it takes smart and careful planning.

With BIM workflows and the Autodesk AEC Collection, you can take some of the guesswork out of preconstruction. By empowering yourself to make better decisions early on, you'll find yourself delivering more successful projects time and time again, delighting clients and improving your bottom line.

Discover now >

AUTODESK® **ARCHITECTURE, ENGINEERING & CONSTRUCTION COLLECTION**

AUTODESK®

Make anything™