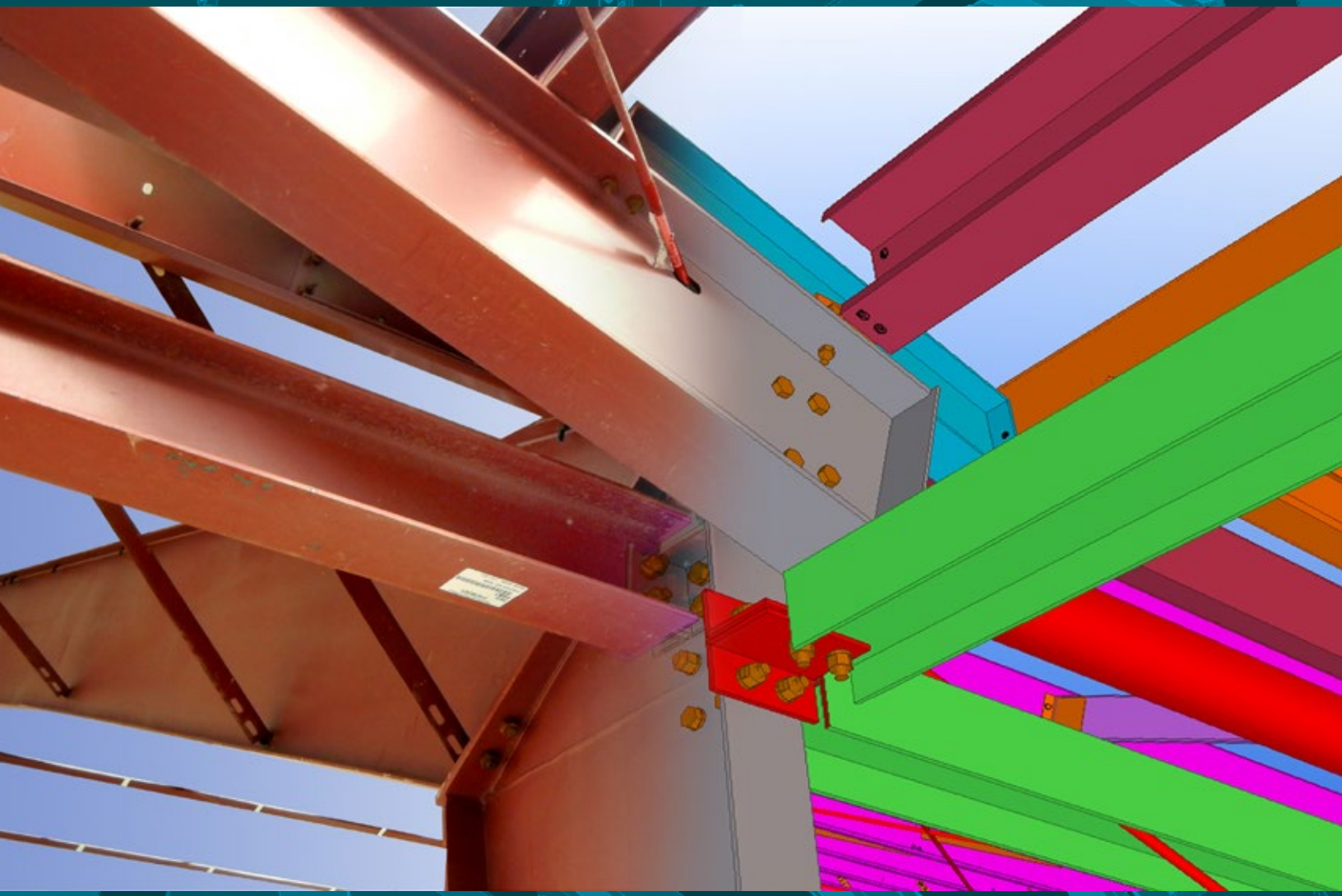
AMERICAN BUILDINGS
A NUCOR COMPANY

WINGSPAN

BY AMERICAN BUILDINGS COMPANY



BIM

SPECIAL EDITION

PRESIDENT'S MESSAGE

MODELS FOR THE FUTURE

Technology is the fastest growing industry around the world and it has no signs of slowing down anytime soon. **American Buildings Company** is leading the construction industry with cutting-edge technology enabling us to develop a true 3D detailing system using **Building Information Modeling (BIM).**

Just as digital cameras turned the photographic industry upside down, we believe **BIM is just such a game-changer.** It has the potential of revolutionizing every phase of the construction process.

The origination of BIM to ABC came directly from detailers looking for ways to improve viewing of structural members and parts. In typical American Buildings Company fashion, the detailers were encouraged to explore the advantages of BIM. After a careful search Tekla Structures BIM software was chosen. The high degree of detail available with this software was critical for our design, detailing and manufacturing requirements.

Even in one of the worst construction markets in history, ABC made a significant investment in Tekla software and training. And more importantly, our detailers remain at the core of BIM development for ABC. This grassroots approach, driven by the users, is and will continue to be the key to BIM's success within ABC.

The best news is that this initiative isn't something we're working toward in the future; it's here today, and we virtually detail all ABC buildings in Tekla.

BIM detailing has already improved our quality because we can detect part clashes before the building even goes to manufacturing. It also allows for improved project coordination with all parties, can be used in the layout process of a building and is a significant resource for the erectors.

We like to think of our version of the software as BIM in high definition.

Ron Kuenkler
President
American Buildings Company

TABLE OF CONTENTS

CORE VALUES

1. Treat people with respect.
2. Take care of our customers.
3. Build and value relationships, both personal and professional.
4. Make continual improvement a way of life.
5. Continually strive for profitable growth.
6. Always employ teamwork and a win-win attitude.
7. The Repeat Sales Team - an essential key to our future success.
8. Strive to be the best you can in all that you do.
9. In all things, have a long-term focus.
10. Have fun in the process.

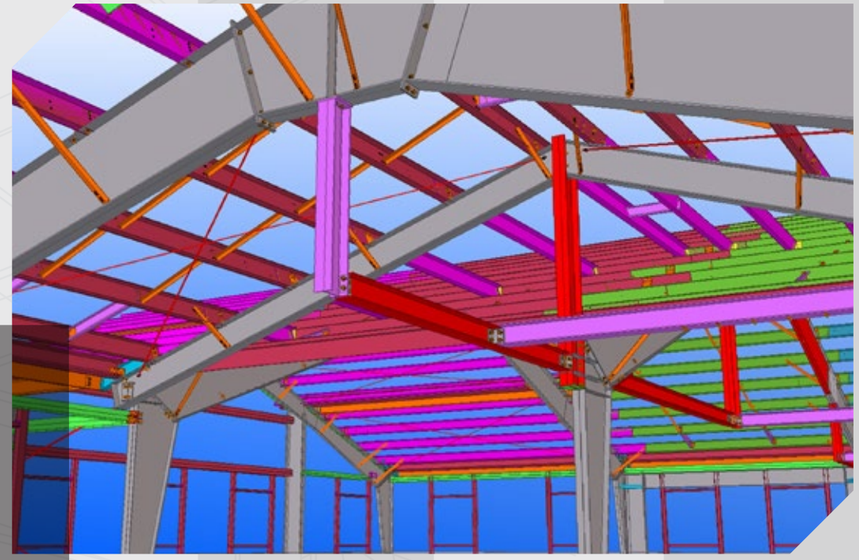
BIM

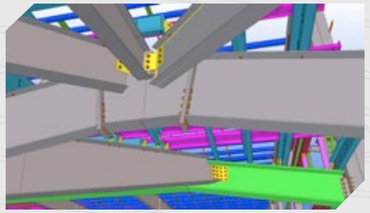
What is **BIM**? Building Information Modeling is the process of generating and managing building data and its various components throughout the building's life cycle. Using three dimensional, real-time, dynamic building modeling software to increase productivity in building design and construction, the process produces the Building Information Model.

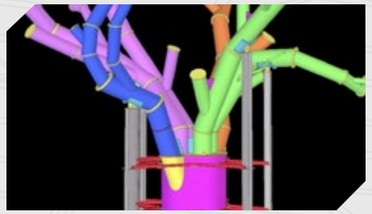
BIM BENEFITS

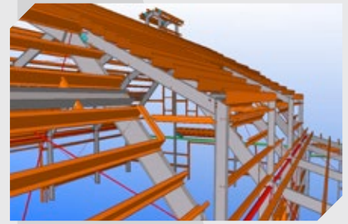
BIM is the choice of leading builders, architects, fabricators, erectors, engineers, designers, manufacturers and owners because it:

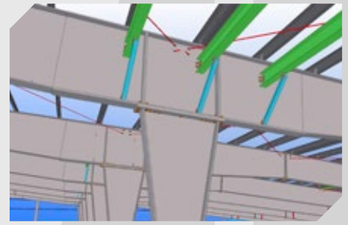
- Allows for easier coordination of various software and project personnel through Integrated Project Delivery (IPD) systems
- Serves as a significant resource for erectors
- Produces a working model usable for fabrication
- Leads to increased productivity
- Enables improved communication across project team members, which can significantly reduce change order costs
- Enhances quality control, including clash detection
- Provides comprehensive life-cycle management

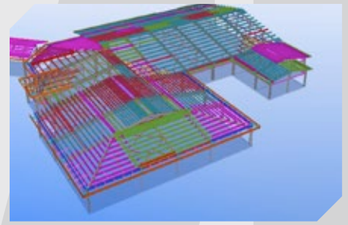


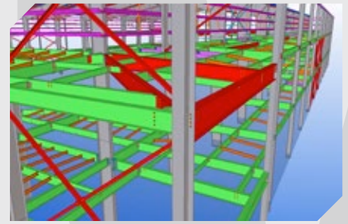










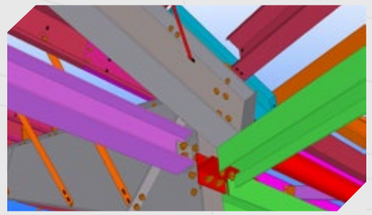


HD BIM

ABC HAS WORKED TO CREATE HD BIM THAT SHOWS DETAILS AND CONNECTIONS, INCLUDING BOLTING AND ANCHORING, UNLIKE OTHER BIM SYSTEMS.

Utilizing BIM with an **Integrated Project Delivery** system, or **IPD**, leverages the power of modeling to facilitate collaborative decision-making. **IPD** allows the project principals to produce a design that is optimized for quality, aesthetics, constructability, affordability, timeliness and seamless flow into life-cycle management.

Design issues can be addressed and modified early in the process, saving time and money. Visual representations of potential issues enable you to identify clashes and conflicts between architectural, structural, and MEP systems. This means you can resolve potential problems before a building is actually built.



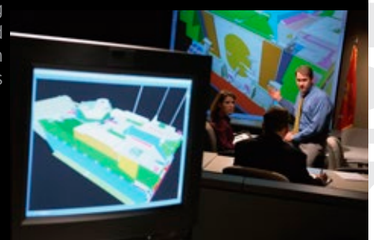
BIM IS A GAME CHANGER IN THE CONSTRUCTION INDUSTRY

BIM BECOMES VDC

It is easy to believe that BIM is just another technological development in the project delivery process. Why invest when there will soon be a better and more efficient process? BIM is the most important event that has ever happened to the architectural, construction, building, and product manufacturing professions. It is transforming markets and revolutionizing expectations.

BIM fits a well-known pattern familiar to business scholars, a pattern known as disruptive innovation, which was made famous by Harvard Business School professor Clayton Christensen in his best-selling book "The Innovator's Dilemma." In innovation theory, disruptive technology is one that goes onto disrupt an existing value network, displacing an earlier technology. An idea that Christensen called the "technology mudslide hypothesis" is the simplistic idea that an established firm fails because it doesn't "keep up technologically" with other firms.

John Tobin, director of architecture at EYP, gives a disruptive innovation example in terms of the construction and building industry: 2D CAD simply computerized the production of drawings. Before CAD, designers produced drawings; after CAD, we still produced drawings, just differently and with more flexibility. CAD was a "sustaining technology," something that simply improves an existing market proposition.



Disruptive technologies examples in the manufacturing and construction industries

> "Many leading design firms have come to realize that BIM's disruption means developing new ways to work with savvy contractors and owners," said Tobin. "It is transforming markets, and revolutionizing expectations."
>
> John Tobin, Director of Architecture at EYP

BIM also started out as a sustaining technology, in the notion that 3D models would be an efficient way to produce 2D documents. BIM quickly evolved to a point where the model created brand-new value networks: clash detection, quantity takeoffs, field BIM, direct fabrication, energy analysis, and so ultimately, BIM models as a store of myriad facility information.

Contractors see BIM for Virtual Design and Construction (VDC) tasks, and private and governmental owners are making BIM a requirement due to this being the biggest industry in the world and that BIM is not only saving time and money, but it is also going to lead to more aesthetically designed buildings, substantially more energy-efficient buildings and buildings that are going to perform better for occupants and operators of the buildings.

> "ABC has embraced BIM as a 'disruptive technology'. Integrating BIM has allowed us to rethink everything from how we handle job production to product standards. It has led to a revolutionary change in how we think as a detailer. Drafters have become modelers. The days of manipulating lines on a drawing and counting pieces are replaced with modeling of intelligent objects. Those who have less experience can now handle complex work with increased accuracy. It has been nothing short of a game changer."
>
> Adam Simmons

ABC agrees that BIM is a "disruptive innovation" and has seen the benefits of designing 100% of new buildings with Tekla software. These benefits have been largely undetectable to Builders because typical errors during manufacturing that only become visible during the erection process have been avoided. Avoiding these errors has saved ABC thousands of dollars in change orders; these cost savings will be passed to the Builder network and, in return, their customers.

TEKLA®

A TRIMBLE COMPANY

ABC has already made great strides with BIM by utilizing the powerful Tekla Structures software solution. ABC has ensured the interoperability of 3D with 2D systems to verify that all modeling is cohesive. After reviewing all BIM software options, ABC detailers chose Tekla for its superior design and manufacturing capabilities, including details as small as the exact bolts.

Tekla Structures makes it possible to share model and drawing information with all IFC-compliant architectural modeling programs, creating open collaboration and interoperability and 3D building information models that can be utilized and shared by all building and construction disciplines. This includes platforms like Autodesk® Revit®, which is primarily used for conceptual model design by architects and structural engineers. Tekla removes human calculation error with no manual scaling from blueprints, allowing for increased productivity and accuracy. Tekla Structures provides an accurate, detailed, intelligent and data-rich 3D building information modeling environment.

“Tekla BIMsight is the industry game changer, a free software application for building information model-based project cooperation. With Tekla BIMsight, everyone involved with a project is able to view the BIM, at **no charge.** Enabled for Windows-based tablet devices, Tekla BIMsight is available for downloading at **www.teklabimsight.com**.”

BIM can be free...

Coordinate

Coordinate by combining models from all project team members.

Collaborate

Collaborate by identifying conflicts, managing changes and assigning the results.

Communicate

Communicate easily and accurately with everyone on your project team.

Free Tekla BIMsight software

Download at www.teklabimsight.com

We love models. And we believe that once you download the new Tekla BIMsight, so will you. Combine models, check for clashes and enjoy seamless communication - Tekla BIMsight will change the way you manage your construction projects.

TEKLA®

A TRIMBLE COMPANY

Crate&Barrel
UTILIZES BIM TO HELP DESIGN EXCEPTIONAL SPACES

In less than a decade, Building Information Modeling (BIM) has become a major part of the construction simulation and visualization process, and, since 2007, it has been an integral program tool for U.S. retailer Crate&Barrel.

Crate&Barrel is a chain of more than 100 retail stores specializing in housewares, furniture and home accessories. As early as 2004, Crate&Barrel began to adopt BIM into their projects, and now, between 35 and 40 stores have been designed and built using BIM.

"We believe that through the proper implementation, BIM has reduced the number of change orders we experience building a store," said John Moebes, the company's director of construction. "We have completed projects with less risk to budgets and schedules and we make better decisions as project managers when our teams are working in BIM."

Moebes, a registered architect, has been working on Crate&Barrel building projects since 1998. Previously as an associate principal at an architectural firm in Dallas, he spent most of his career working as a consulting architect for Crate&Barrel. Moebes led the initiative to migrate his previous firm from CAD to BIM between 2004 and 2006.

From an owner's perspective, the core benefit of BIM is better proof of concept. BIM allows you to design and build with an unparalleled degree of confidence in the design. By showing project stakeholders what the building will look like and incorporating their feedback, you can almost eliminate costly changes that occur when the stakeholder insists on modifications in construction due to their misunderstanding of design drawings. Other benefits such as improved coordination between design disciplines and material estimates from the model allow for a smoother building process.

When considering if BIM is a good fit for your company Moebes recommends carefully analyzing your design and construction process to determine where you are spending money and not generating returns.

"I think that today's construction industry is going through the same type of technology-driven metamorphosis that the healthcare industry went through between 1880 and 1900," said Moebes. "BIM is to us what the x-ray machine was to doctors in 1900: game-changing, but it can take some time before changes permeate all sectors and all disciplines in construction."

Given the doubling of computing power every 18 months, Moebes expects the software to dramatically expand its capability to include fabrication, surveying, environmental analysis, and facilities management.




FIELD APPLICATIONS
OF TEKLA BIM

The incorrect placement or embodiment of anchor bolts can lead to costly errors, or even fatal accidents. Tekla Structures presents a complete project including all necessary building information from different construction disciplines from surveying the land to anchor bolt placement and verification.

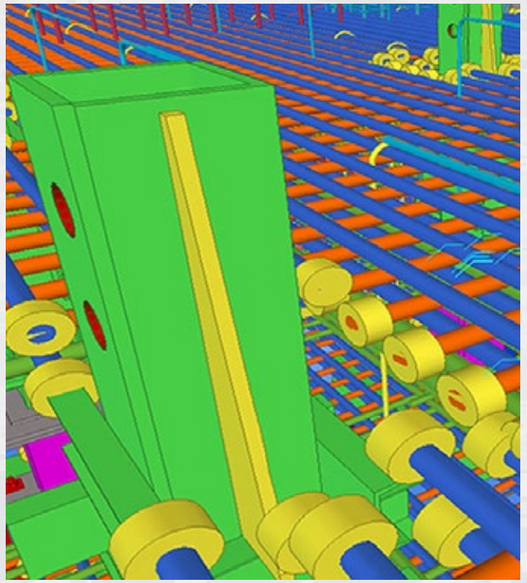
While most metal building manufacturers don't have anything to do with the foundations, anchor bolts are an issue that they deal with on a fairly regular basis. When there is an issue with the anchor bolts matching the holes in the framing, there are two options:

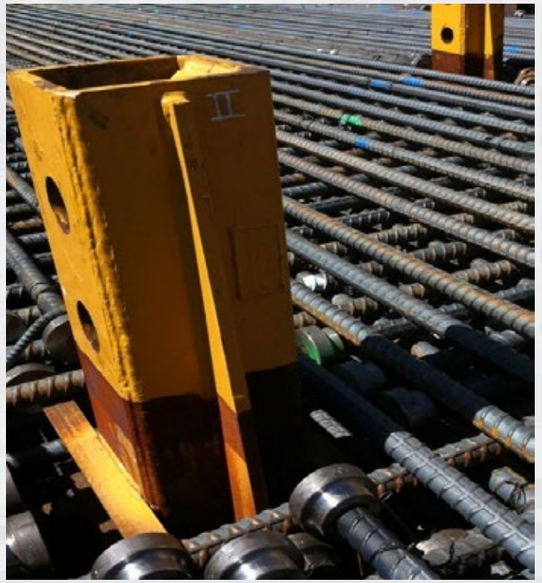
1. The anchor bolts have to be removed from the concrete.
2. The building's framing needs to be changed.

Removing the anchor bolts can delay a project for weeks. Tekla Structures makes it easy and cost effective for ABC to verify the anchor bolts were placed correctly, comparing the actual locations to those in the BIM model. If they see there is a problem, the frames can be adjusted before manufacturing. Because the model can be downloaded to Trimble equipment, anchor bolt issues can be minimized or eliminated, saving everyone time and money.

Once the BIM model in Tekla Structures is completed, the user can export the exact location of the anchor bolts, or field points, to a Trimble tablet, which when interfaced with the Robotic Total Stations (RTS), allows for precise field-layout of the points. This process is full-circle in terms of defining and comparing what's in the model in digital form with what's actually in the building's physical form.

> “When it comes to the erection of metal building systems, one of the most important aspects is the location of the anchor bolts in the foundation.”





Tekla software can be used on both a Trimble and a Motion F5t tablet. The F5t tablet brings mobile computing to a whole new level packing up to six hour battery life, Intel® Core™ i7 vPro™ processor and Motion's View Anywhere® technology for outdoor visibility. The F5t is meticulously designed, thoroughly developed and purposely built for field productivity.

Clockwise from top left:
Tekla rendering, real-world Tekla application, Trimble tablet, Motion computing F5t tablet.

ABOUT Trimble

Trimble is a leading provider of advanced location-based solutions that maximize productivity and enhance profitability. The company integrates its positioning expertise in GPS, laser, optical and inertial technologies with application software, wireless communications, and services to provide complete commercial solutions. ABC Builders can use two Trimble products, the Trimble Tablet PC with **Field Link 2.0** and the **Trimble® RTS Series Robotic Total Stations**.

TRIMBLE FIELD LINKS

Trimble Field Link links design to reality, providing users with access to the latest tools for increasing productivity and accuracy during the construction layout process. With emphasis being placed on Virtual Design and Construction (VDC) and Building Information Modeling (BIM), Trimble Field Link for Structures is the ideal solution for enhancing field operations for BIM workflow.

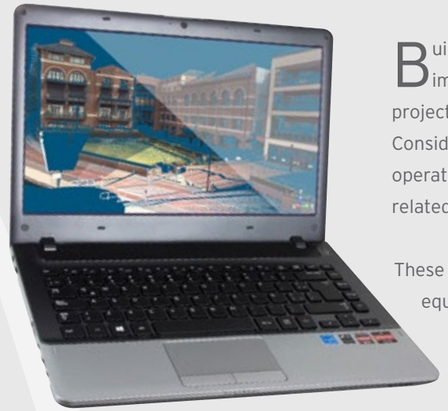
TRIMBLE FIELD TABLET

Trimble Field Tablet incorporates the Trimble VISION technology. The VISION technology gives field crews the opportunity to remotely control as well as see and measure through a live video feed from the new Trimble RTS 773 instrument on their Trimble Tablet within the Trimble Field Link software to easily locate and stake field points and overlay 2D line-work imported from CAD files onto the live imagery from the robotic total station, taking the guesswork out of point layout and as built reporting.

TRIMBLE RTS

Trimble® RTS Series Robotic Total Stations help contractors perform layout tasks significantly more efficiently than with conventional mechanical systems for residential and building construction. Designed specifically for concrete, MEP, and general construction contractors, the Trimble RTS Series Robotic Total Stations offer construction-specific functionality and one-person operation so you can perform all jobsite layout and measurement tasks for maximum flexibility and cost savings. When combined with the Trimble Field Tablet PC, the Trimble RTS Series Robotic Total Stations significantly increase accuracy, reliability, and productivity.

OWNER'S MANUALS OF THE FUTURE — IN USE TODAY

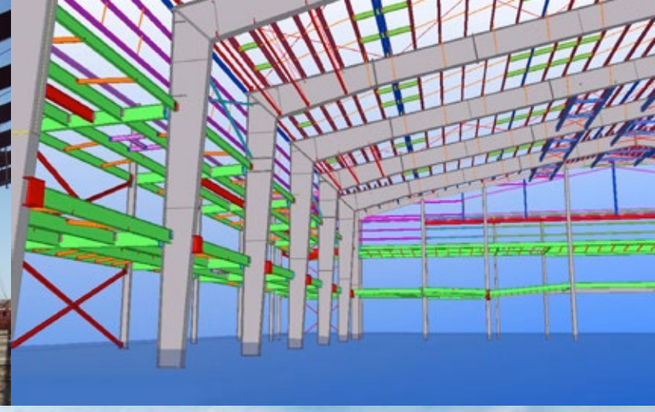


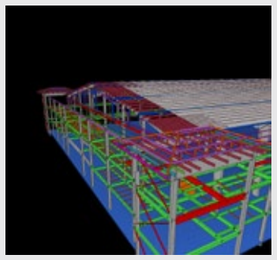
Building owner's manuals of the future will go digital with the BIM as the most important component. The building owner gets a digital copy of the completed project model that can be used for decades of operation and maintenance. Considering that 85% of the cost of a building over 30 years is in maintenance and operation, having a digital copy of the completed project that includes all information related to the building eases the task of ongoing maintenance.

These electronic/digital manuals will have maintenance recommendations, HVAC equipment, lighting, plumbing, security system, and site information. This is why many government agencies require building contractors to use BIM for public construction.

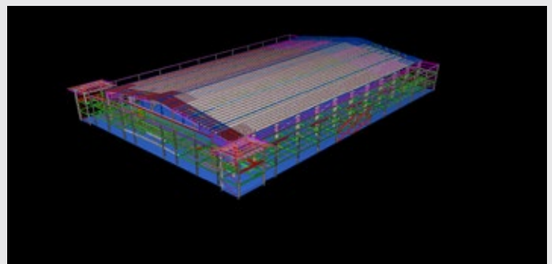
This information can effectively be stored on a computer, tablet or external hard drive, saving untold trees in the process. We recommend backing all BIM information in secure long-term internal and external storage such as the cloud.

ABC BUILDER EXCELS IN COMPLEX CASINO PROJECT



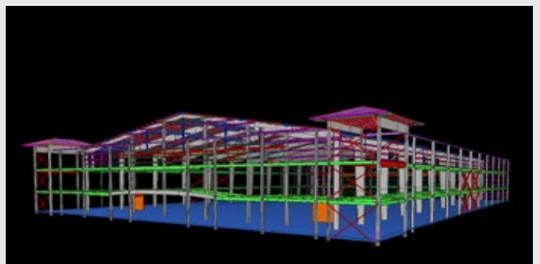


The new **Kansas Star Casino** started as a complex project with specific requirements and restrictions. With the help of an **American Buildings Company (ABC) authorized builder, McPherson Contractors, Inc.**, the project was completed in just four months.



As an ABC Builder, McPherson Contractors has access to some of the most advanced and valuable products, people and solutions in the industry.

Chosen for their reputation of quality, McPherson Contractors erected the 103,000-square-foot building cost-effectively and efficiently. Initially used as the temporary facility for the final Kansas Star Casino, which will be completed next to the current structure in 2013, the multipurpose facility also needed to accommodate for its future purpose as an arena. This meant the design team had to account for a wide range of event needs from scoreboards to horse races.



Because design elements were ongoing, ABC worked in unison with the Peninsula Gaming Design team during many phases of the building life cycle to ensure all requirements were met. With the help of ABC's Building Information Modeling (BIM) software, Tekla Structures, the construction moved swiftly, avoiding costly mistakes often associated with complex designs and multiple change orders.

BIM presents endless opportunities and advantages that are constantly developing. ABC has shifted completely to the new Tekla environment in order to maximize efficiency and reach full potential, allowing for an increase in manufacturing capabilities.

Together, ABC and McPherson completed the project in July of 2011, and the casino opened in December of the same year. When the main casino opens in 2013, the current building will be used for local concerts, equestrian events, and sporting events to draw visitors to the community.

ABC & BIM: CONSIDER THE GAME CHANGED

Virtual Design in High Definition with BIM 3D

Providing powerful value, Building Information Modeling, or BIM, is driving an unparalleled revolution in the construction industry using 3D digital modeling software to more effectively design, detail, manufacture and erect buildings. American Buildings Company is pairing its proven track record of quality and service with the future of BIM 3D modeling to give you an edge over competitors in the market. Like HD, BIM 3D provides a sharper image and more clarity than conventional modeling technology to give you an ultra clear image and an exact replica of your building. That leads to confidence and peace of mind for the life cycle of the project. And that's a game changer.

BIM is the choice of leading Builders, Architects, Fabricators, Erectors, Engineers, Designers, Manufacturers and Owners because it:

- Allows for easier coordination of various software and project personnel through Integrated Project Delivery (IPD) systems
- Serves as a significant resource for erectors
- Produces a working model usable for fabrication
- Leads to increased productivity
- Enables improved communication across project team members, which can significantly reduce change order costs
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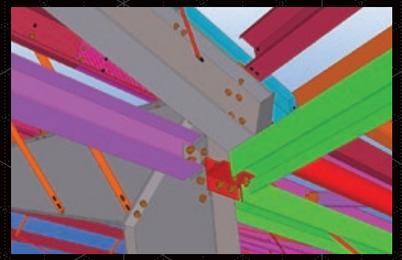
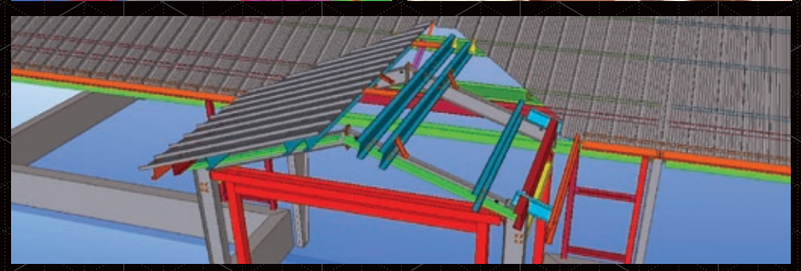
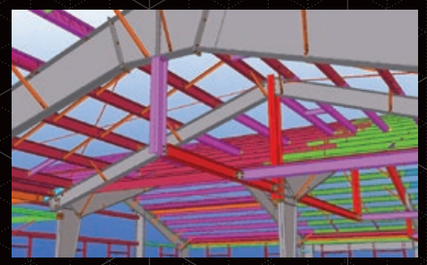
- Provides comprehensive lifecycle management







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AIA COURSE

THE POWER OF BIM

THE AMERICAN INSTITUTE OF ARCHITECTS

This American Institute of Architects (AIA) Health, Safety and Welfare (HSW) program has been designed to provide an architect, design professional, or general contractor basic understanding of the power of BIM from a manufacturer's perspective. ABC believes in continuing professional education and completion of this course will result in one Learning Unit earned.

Unlike past 3D innovations in the building industry, BIM is more than a conceptual modeling tool. BIM is transforming and streamlining the construction process. By taking this course, AIA members and non-AIA members will understand how an Integrated Project Delivery System (IPD) significantly improves communication to streamline a project, reducing change orders, waste and detecting system clashes.

TOPICS COVERED

- Industry Game Changers
- 3D Visualization Examples - High Detail
- Types of Innovation
- Models for the Future Video
- BIM Advantages
- Field Advantages
- Field Applications with BIM
- Revit® Software Interface with Tekla Structures
- BIM Applications in Real Life

Authorized ABC Builders
Contact your District Manager for details on how to organize an AIA Course: The Power of BIM in your community.

ABC AND NUCOR ARE COMMITTED TO THE CONSTRUCTION INDUSTRY

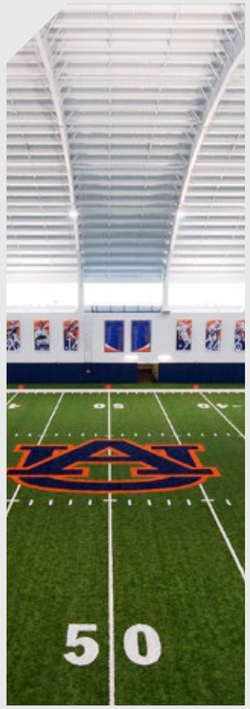
Nucor is committed to advancing technology and productivity in the construction industry through continued investment in BIM technology. In addition to American Buildings Company, other Nucor companies with major BIM initiatives including **Vulcraft Joist**, **Harris Rebar** and **Fisher & Ludlow** are moving ahead with BIM and Tekla.

NUCOR® VULCRAFT/VERCO GROUP

THE IMPACT OF BIM ON THE VULCRAFT GROUP

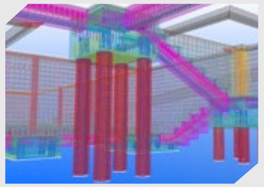
Vulcraft, the leading manufacturer of joists and deck in North America, is pairing their proven track record of quality and service with the future of 3D modeling to give fabricators, erectors, general contractors, engineers and architects an edge over competitors in the market.

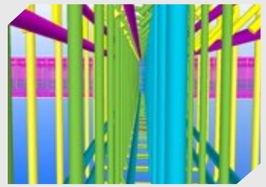
When viewing the Building Information Model provided by Vulcraft, replicas of steel joists represent the "as-built" product that will be delivered to the job site. While viewing designs of the joists in BIM, contractors and other parties have the advantage of reviewing the actual size of the member and panel layouts.

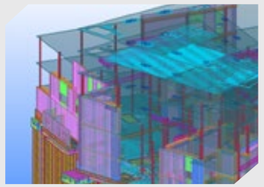


HarrisRebar
A division of Harris Steel Ltd.

THE IMPACT OF BIM ON HARRIS REBAR







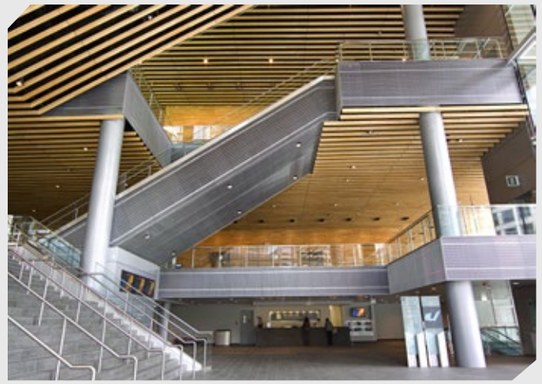
Harris Rebar is North America's leading fabricator, installer and distributor of concrete reinforcing steel and related products.

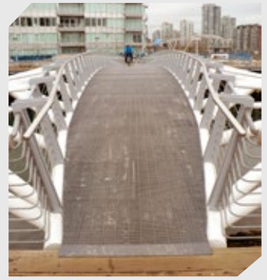
Harris Rebar's team of BIM experts utilize Tekla 3D modeling technology to provide concise and reliable information to work collaboratively, reduce risks, quantify feedback and truly add value to customer projects. BIM increases productivity, provides cost saving information and enables better decision making.

Tekla visualization provides clearer RFIs by showing 3D representations, resulting in a faster decision process. The same visualization helps internally for detailers and externally for contractors and with placing crews.

FISHER & LUDLOW
A NUCOR Company

THE IMPACT OF BIM ON FISHER & LUDLOW





Fisher & Ludlow is a supplier of high-quality gratings for major capital projects around the world. Armed with Tekla 3D software, the company can take requirements from structural drawings to detailed grating drawings and then on to completely fabricated ready-to-install grating.

COLLABORATION

BIM provides true 3D connectivity and integration between Nucor Divisions to facilitate collaboration on projects and processes.

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