

Barton Malow

Customer Success Story

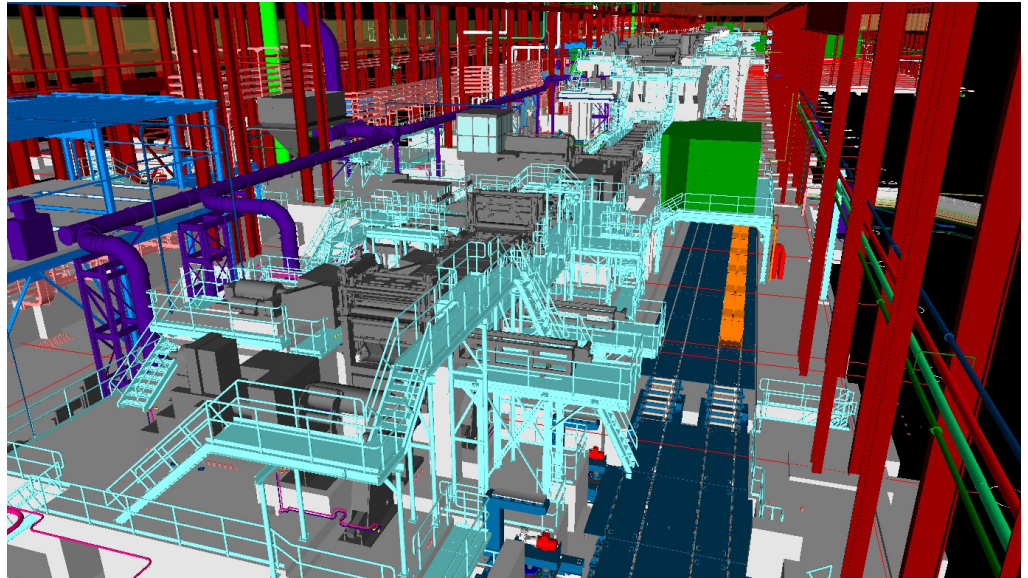
Autodesk® Navisworks® Manage
Autodesk® Revit® Structure

The ability to bring together multiple file types within Autodesk Navisworks software was a huge advantage on this job.

—Chris Horney
Project Engineer
Barton Malow

A handover as solid as steel.

Barton Malow uses BIM for preconstruction, construction, and handover of steel production lines at the Severstal Dearborn Plant.



Project Summary

Founded in 1924, Barton Malow delivers a broad range of construction services, including general contracting and construction management. From planning to closeout, Barton Malow can help advance even the largest and most complex projects more efficiently. Two steel production lines currently under construction for the steelmaker Severstal North America Dearborn (Severstal Dearborn) illustrate Barton Malow's proactive approach to project delivery. To help manage the projects, Barton Malow uses Building Information Modeling (BIM) software from Autodesk, including Autodesk® Navisworks® Manage, Autodesk® Revit® Structure, Autodesk® Revit® Architecture, and Autodesk® Revit® MEP software. Playing a key role from preconstruction to handover to the client, BIM is an integrated process that has helped Barton Malow to:

- Visualize, explore, and understand project characteristics before construction
- Resolve interferences in advance and prevent additional construction costs
- Save time by completing some tasks as much as 88 percent faster
- Provide a model-based handover deliverable to the owner that will help minimize startup time and ongoing operational costs

The Challenge

The Severstal Dearborn construction projects consist of a new pickling line and tandem cold mill in an existing steel manufacturing facility. In addition, a new hot dip coating line provides automakers with high-quality automotive steel. When complete, the combined construction cost of the production lines will exceed US\$200 million.

Construction on the lines began in 2008, with Barton Malow building only the hot dip coating line. The projects were approximately 20 percent complete when, facing economic challenges common to the steel industry, the client put them on hold. When construction was restarted in 2010, Severstal Dearborn chose Barton Malow to manage all construction for both lines and to self-perform all civil work, equipment setting, and boilermaker work.

According to Joe Benvenuto, project manager with Barton Malow, "Restarting the projects led to many challenges. We saw the BIM process as a means to help identify or eliminate potential problems before they became cost or schedule risk items."

The Solution

Before deploying crews to restart construction on the lines, Barton Malow revisited the preconstruction aspects of the projects using a BIM-based process. For the concrete portions, Barton Malow created a detailed structural model in Autodesk Revit Structure software. Within the model, Barton Malow identified the prebuilt portions

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BIM accelerates construction planning processes by as much as 88 percent.

of the lines and the 35,000 yards of new structural concrete the construction team would install.

“People think of BIM primarily as a design tool,” says Benvenuto. “But BIM gives us the power to explore how we want to build in advance, as well as streamlining our field processes. On the Severstal Dearborn project, Autodesk Revit Structure helped us set up layout controls, design-build 5,000 yards of concrete duct bank, and clarify some incredibly complicated foundations. The construction team saved time and reduced the risk of rework.”

Eliminating Clashes

The use of BIM on the projects extended well beyond the concrete work Barton Malow self-performs. The Barton Malow team and their subcontractors modeled the 6,000 drawings that made up the rest of the construction documentation. Each contractor utilized its own software, with not all of the contractors utilizing Autodesk products. Autodesk Navisworks software allowed Barton Malow to aggregate the various model files into a single, integrated project model. Referring to the model as a guide, Barton Malow explored and visualized its construction plans in collaboration with the engineers and subcontractors.

“With the Navisworks model, everyone can more easily visualize the project as a whole,” explains Chris Horney, project engineer for Barton Malow. “That catalyzes collaboration across the project team. Navisworks helps us share ideas about how to optimize construction sequencing, and makes it easier to capture those ideas.”

The Autodesk Navisworks model also proved invaluable for helping resolve coordination issues across disciplines. Within Navisworks software, the team performed clash detection tests. A significant number of conflicts were identified. By working with the project engineers, the team resolved clashes.

“Due to the complexity of the production lines, there were a number of clashes between elements such as equipment, encased conduit, piping, existing concrete, and structural steel,” explains Horney. “The ability to bring together multiple file types within Autodesk Navisworks software was a huge advantage on this job.”

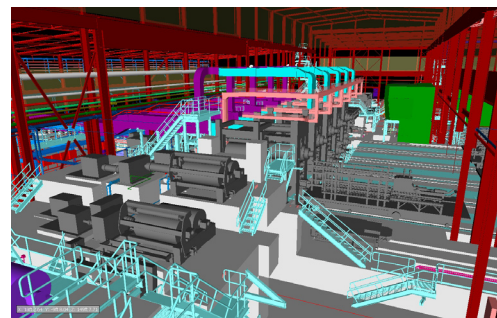
BIM for Commissioning and Handover

Using software from Vela Systems, an Autodesk Preferred Industry Partner, Barton Malow is leveraging BIM in the field for construction, commissioning, and ultimately, handover. Vela Systems® field management software allows workers on the job site to update construction information on field-tough tablet PCs and iPad® mobile digital devices. Automated integration between Vela Systems software and Autodesk Navisworks software helps keep the single project model updated. Critical information is then available in Navisworks as a BIM-based handover deliverable to the owner. This creates value in ongoing operations as owners can save time by finding key documents for training staff and important data, such as warranty start dates for equipment.

According to Horney, using BIM in the field should prove especially valuable during equipment commissioning, “Synchronizing the commissioning process with Vela and Navisworks can allow us to link accurate install dates, maintenance manuals, and operational information to the project model. We’re saving time as we capture critical data on materials, systems, and equipment.”

BIM for Operations

Throughout the project, Severstal Dearborn has reviewed the construction model with extended project stakeholders using Autodesk® Navisworks® Freedom software, a free* visualization tool. It has helped them keep up with progress and provide feedback.



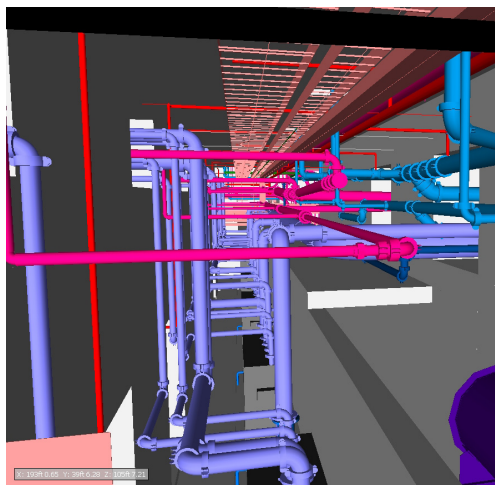
Most importantly, the construction model can continue to deliver advantages to the company long after construction is complete. Bill McNab, project manager with Severstal Dearborn explains, “The BIM model and Autodesk Navisworks will give us a way to visualize components and equipment in detail as we maintain the production lines. There’s no question that BIM has helped us to save money on construction costs, and we expect it will help with training operators and maintenance personnel in our facility in the future.”

The Result

As the steel production lines advance toward completion, Barton Malow and Severstal Dearborn see the benefits of BIM touching virtually every aspect of the projects, from preconstruction to handover. Benvenuto notes, “BIM improves and accelerates even the most routine tasks. For instance, we’re able to prepare layouts for concrete pours 88 percent faster. From the big stuff to day-to-day construction, BIM software from Autodesk helps keep complex projects on track.”

Learn More

Enhance your construction process with BIM. Visit www.autodesk.com/construction to learn more.



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