

## Project

### **Volvo Thor Project (Industrial - Car Assembly Plant)** Ridgeville, South Carolina

Yates Construction (Yates) is providing design-build services on the new fast-track 2,300,000 SF automotive manufacturing facility for Volvo Car Corporation. The facility will include a 500,000 SF Body Shop, 825,000 SF Assembly Shop, 43,000 SF Utility Plant, 60,000 SF Office and various ancillary buildings on the site as 1,600 acres. The construction of the project is valued around \$400 million USD and will produce the world's only line of the next-generation S-60 sedan cars. The first line of production start to be delivered in late 2018.



## Contractor

Ranked among the top construction services providers in the country by *Engineering News Record*, Yates Construction is family owned and provides a wide range of construction and building services. Founded in 1964 by William G. Yates Jr., we have steadily grown to become one of the top construction providers in the nation. We are financially sound with a significant bonding capacity as well as vast personnel and equipment resources.

Our portfolio includes projects from various sectors including automotive, arts and culture, civil, commercial, education, entertainment and gaming, federal, healthcare, hospitality, manufacturing, municipal, retail, and technology. We work hard to understand our client's business needs and continually look for opportunities to provide additional value to our clients and their projects.

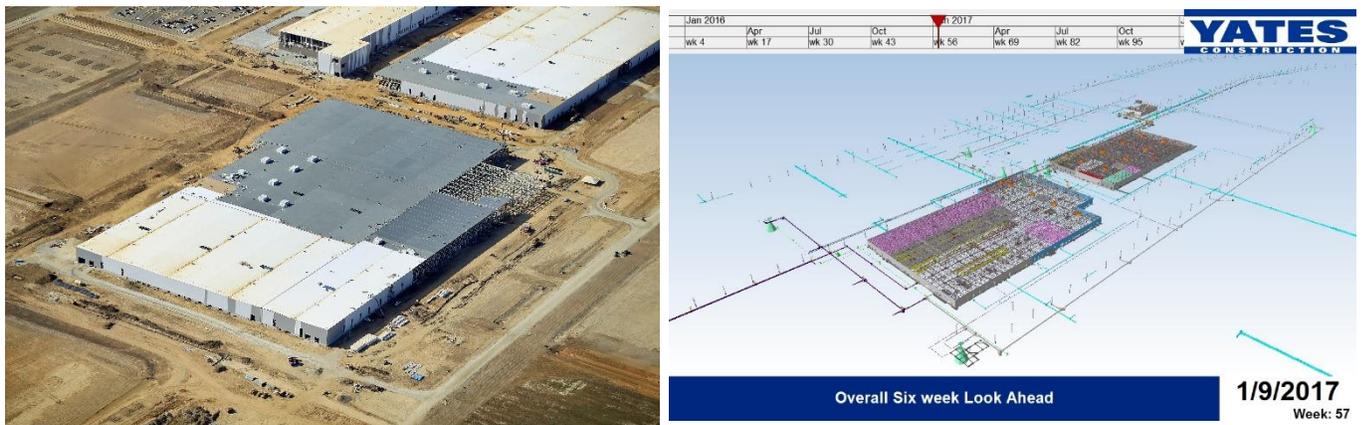
Our client relationships are the foundation of our success, and our primary goal is to help each of our clients achieve their vision. We do this by carefully managing the details and complexities of each project and communicating constantly with all team members. Our mission is to provide value to our clients and our foundation is our core values – safety, integrity, passion, and commitment – which permeate throughout our business practices, people, and projects.

## How Synchro was used?

Since the initial design phase (March 2016) of the project, Yates Construction used Synchro Pro to:

- validate and optimize construction sequences;
- track, update, and report the schedule;
- create logistic plans; and
- coordinate the installation of different systems and trades.

The project encompasses 90 federated models and 8,166 schedule activities. On a weekly basis, updates to the model and activities are synced and reviewed by a team of approximately 35 people. “The visual element of the 4D schedule has allowed for increased collaboration, understanding, and feedback from subcontractors. We have also found the tool to be crucial in communicating complex or critical construction sequences,” says Alex Teague, Yates Construction’s Project Executive on-site at Volvo’s Project Thor.



## Outcomes

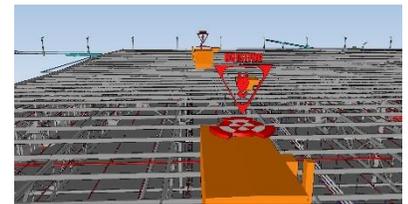
“Volvo is very satisfied how Yates has been managed the project from the design to construction on our very important first factory in USA. How Yates used the tools with Synchro Pro together with BIM federated model has been very successful for the overall execution of the project” says Åke Larsson, Director - Regional FM & Building Construction for VOLVO CAR GROUP.

Synchro Pro provided the project team with the ability to share, understand, and visualize the entire project allowing conflicts to be recognized and resources to be adjusted early in the planning stages. “We have always had logistics plans, but now, with the added visibility that comes from utilizing Synchro Pro, we are able to more efficiently implement the plan,” says Benjamin Crosby, BIM/VDC

Director for Yates Construction. Essentially, this tool has created a means to make sequencing improvements while reducing site and field conflicts. By implementing this tool on the project, the team has been able to remove approximately eight weeks from the original project schedule.

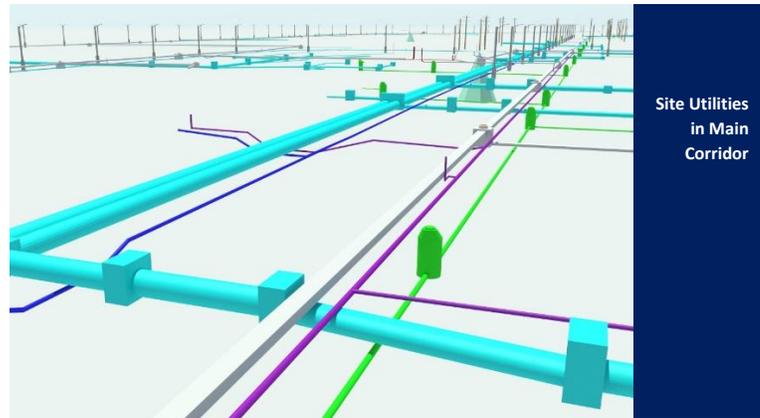
Below are a few examples of how Synchro Pro has benefited Volvo's Project Thor.

- Safety is Yates first core value and Synchro Pro was used to promote this culture by implementing safety into the construction plan. The safety plan was incorporated into the 4D schedule by identifying dangerous activity areas, designating safe traffic routes around hazardous areas, and labeling areas where hazards were cleared for work to proceed.



- Initially some site and utility subcontractors did not want to participate in the BIM process, which would have resulted in gaps in the project scope. By persistently demonstrating the benefits of Synchro Pro and other BIM technologies, our team convinced a critical path site and utility subcontractor to fully engage in the BIM process. Had we not have been an advocate of implementing BIM/VDC on this project, there would have been a number of clashes in the site and utility build plan, which would have been unknown variables as work began in the field. Additionally, Volvo noticed the benefits of full collaboration and incorporated its model into ours to ensure accurate layout and installation of process equipment.
- Volvo challenged our team to optimize the concrete sequences for the main buildings. Taking into account the concrete curing process, milestone turnover dates, and Volvo's needs, our team utilized the 4D schedule to identify solutions for achieving turnover of specific areas by the requested dates.
- The original schedule proposed erecting the structural steel before installation of the pits. While coordinating the construction sequence, the project team noticed the proximity of the pits to the steel and decided the sequence needed to be revised. Had this not been discovered early in the planning process, additional resources (manpower, material, and time) would have been expended adding structural supports in the pits and potentially impacting the schedule.

- Prior to the installation of the site utilities, Synchro Pro played a major role in subcontractor coordination, which lead to lower risk scenarios and a more optimized schedule. With limited space in multiple areas around the site, the team utilized the 4D schedule to develop a utility installation sequence showing specific elevations to avoid clashes or damages to other installed systems.



- During a weekly review of the 4D schedule, the project team coordinated the on-going work and travel paths including the size and location of areas that would be made available for safe, accessible laydown. This helped crews streamline material deliveries and improve activity-planning efforts within the overall schedule.
- Our team utilized Synchro Pro to produce video segments of the overall schedule. These schedule segments typically range from two- to six-week look-aheads and allow the project team to ensure the proper material, equipment, and manpower is readily available during that timeframe. The look-ahead schedules are stored on a collaborative platform making the files easily assessable to all team members.