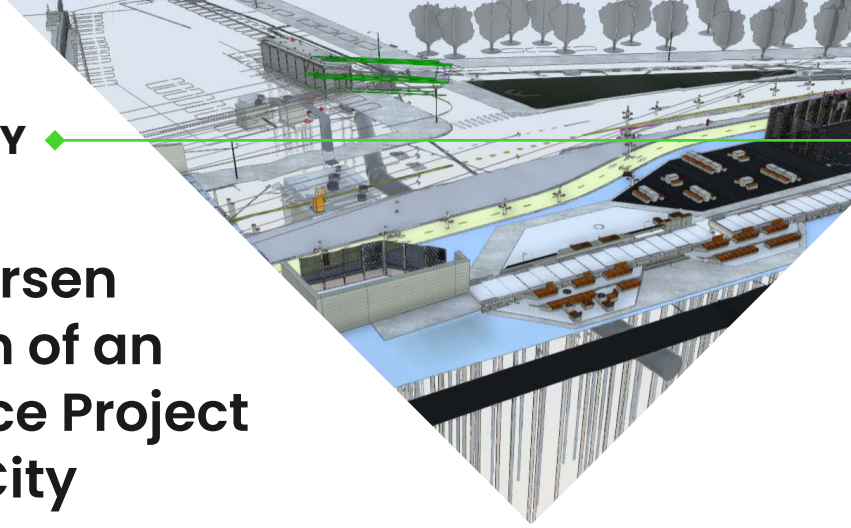
Bentley
Advancing Infrastructure

CASE STUDY



Jacobs-Greenman-Pedersen JV Manages Construction of an Innovative Flood Resilience Project in the Heart of New York City

SYNCHRO's Construction Planning Helps Teams Avoid Clashes with Complex Infrastructure and Ongoing Development in the Area

PREPARING FOR FUTURE EMERGENCIES

Though climate change affects us all, coastal areas are particularly vulnerable to sea level rises and increasingly severe storms. Meteorologists predict that New York City, home to millions living on and near shorelines, is due for a 100-year storm surge in the 2050s. Though that event is likely decades away, government officials are already preparing for the worst. To prepare, New York City Department of Design and Construction (NYCDDC) has begun a significant flood protection initiative in the Two Bridges neighborhood. The project, now known as Brooklyn Bridge-Montgomery Coastal Resilience, is set for completion by 2026.

The goal of the development, which extends from the iconic Brooklyn Bridge to Montgomery Street, is to reduce flooding risk and protect thousands of residents. However, the developers did not want to ruin water views or make accessing the shoreline more difficult. The department's solution is a series of permanent deployable barriers that are completely hidden when not in use. "The strategic placement of flood walls and posts prioritizes the avoidance of conflicts with subsurface infrastructure while maximizing the integration of public space amenities, such as open-air seating, fitness equipment, and athletic courts," said Ameya Talekar, senior scheduler with Greenman-Pedersen Inc. With the design complete, consulting firm Jacobs and Greenman-Pedersen Inc. partnered to form a joint venture to provide project management and construction management services.

CONTINUAL COMPLEXITY AND CHANGES

During the initial development of the project, the contract did not specify needing to use 3D modeling and simulated construction scheduling. However, they soon realized the critical need for a more advanced visualization and planning tool. "This decision proved pivotal, given the project's complexity in the most intricate areas of New York City, where numerous buried services, potential clashes with existing infrastructure, rail tunnels, abandoned chambers, sewer outfalls, and more are anticipated," explained Talekar.

To make matters more complex, the Brooklyn Bridge-Montgomery Coastal Resilience project isn't the only development in the area. Public and private organizations continually initiate new development and repairs to existing assets. To avoid conflicts with other construction projects, the contractor John P. Picone (JPP) had to continually change the sequence of work. The NYCDDC knew they needed a better way to plan the complex project. However, Jacobs-Greenman Pedersen Inc. JV discovered that simply switching to digital construction sequencing would not completely solve the problem. In their first attempt, the team discovered that one application would not easily connect with their construction scheduling software. NYCDDC and the PMCM team of Jacobs-Greenman-Pedersen Inc. JV needed a more dynamic and flexible solution that could easily integrate with other project data and would align with their project requirements.

SIMULATING AND DIGITALLY REHEARSING CONSTRUCTION PLANS

As Greenman-Pedersen had used Bentley applications in the past, they knew they could trust SYNCHRO along with construction software. "Bentley's technology offered flexibility and ease of use, aligning seamlessly with our project requirements," continued Talekar. Specifically, they chose SYNCHRO 4D to undertake field

PROJECT SUMMARY

ORGANIZATION
Jacobs-Greenman-Pedersen Inc. JV

SOLUTION
Construction

LOCATION
New York, New York, United States

PROJECT OBJECTIVES
- To install a combination of flood walls and deployable flip-up barriers to protect against a 100-year storm surge while also maintaining access and visibility to the waterfront.
- To determine how to execute a large-scale project without clashing with other development in the area.

PROJECT PLAYBOOK
SYNCHRO™

FAST FACTS
- New York City Department of Design and Construction is preparing in advance for a 100-year storm surge expected in the 2050s.
- To retain the area's recreational appeal, flood protection consists of a series of permanent deployable barriers that are completely hidden when not in use.
- Jacobs-Greenman-Pedersen Inc. JV needed to create intuitive 4D construction planning videos to avoid clashes with emergency repair projects, identify risk, and plan project sequences.

ROI
- Clear visualization has lowered the time needed for identifying and resolving clashes from 24-32 hours to 8-12 hours, per preliminary data.
- 4D construction sequencing has made understanding construction methodologies 50% more efficient.
- Construction planning reduced cost report preparation time by 25%, per the records and reports.

"SYNCHRO 4D has been a game-changer on the Two Bridge Costal Resiliency Project, offering unparalleled insights into construction sequences. Its advanced simulation capabilities empowered us to visualize potential challenges, optimize timelines, and make informed decisions, ultimately enhancing the efficiency and success of this critical initiative."

– Ameya Talekar, Senior Scheduler, Greenman-Pedersen Inc.

resident engineering inspection, critical path method scheduling, estimations, value engineering, and claims and risk management.

The team created construction sequencing simulation videos that helped them better understand the complex sequence of work, spotlight potential clashes both within the project and with other developments in the area, and aid in decision-making. In total, they converted approximately 2,000 construction activities into a single digital representation that could be easily adjusted whenever the team became aware of new development and maintenance in the project area.

BETTER UNDERSTANDING LEADS TO PROJECT HOURS SAVED

By using SYNCHRO 4D, Jacobs-Greenman-Pedersen Inc. JV significantly improved the understanding of the project and its complex lifecycle, even with multiple changes in construction sequencing throughout development. "The implementation of SYNCHRO 4D contributed to streamlining various project management and construction management processes, resulting in enhanced efficiency," said Talekar. He estimated that 4D construction sequencing has made understanding construction methodologies 50% more efficient, and risk identification became 50% easier. Their use of SYNCHRO 4D is ensuring the most efficient sequence of construction activities, facilitating proactive problem-solving, reducing delays, and keeping the project is on track.

Real-time visualization of potential clashes and adjustments in the schedule enables proactive problem-solving, reducing delays and ensuring that the jobsite remained risk free. Their work with SYNCHRO has lowered the time needed for identifying and resolving clashes from 24 to 32 hours to eight to 12 hours per preliminary data. Resolving issues with existing infrastructure, buried services, and other complex elements prior to construction is minimizing on-site disruptions, improving safety, and reducing the likelihood of costly rework or delays. "The flexibility and adaptability of Bentley applications has been allowing us to effectively manage the project's intricacies and is expected to continue to contribute to its successful execution," said Talekar.

Greenman-Pedersen needed to create intuitive 4D construction planning videos to avoid clashes with complex infrastructure and other development and maintenance projects.

Clear visualization has lowered the time needed for identifying and resolving clashes from 24-32 hours to 8-12 hours, per preliminary data.

Bentley
Advancing Infrastructure

FIND OUT MORE AT BENTLEY.COM

1.800.BENTLEY (1.800.236.8539) | Outside the US +1.610.458.5000 | **GLOBAL OFFICE LISTINGS** bentley.com/contact