

OFF-SITE CONSTRUCTION:

Faster, Safer, Greener

Balfour Beatty takes a systematic approach to incorporating and optimizing off-site construction methods as we build our clients' dreams. Because of our passionate commitment to providing the most innovative and efficient project delivery, Balfour Beatty teams have experienced the benefits of shifting select workflows off-site, including accelerated project delivery, increased safety and quality, and the improved ability to drive out material waste and cost.

What is Off-site Construction?

Off-site construction is a method in which the planning, design, fabrication, and assembly of elements for a building project are conducted in a controlled environment and then transported to the project site for final assembly. There are many terms that fall within the off-site construction concept, including modular construction and prefabrication. While the concept isn't new, Balfour Beatty teams and our clients thoroughly evaluate opportunities to apply off-site and other Lean construction methodologies in order to maximize efficiency and optimize value.

Incorporating Off-site

Balfour Beatty has developed a formalized systems approach for off-site construction across the United States. This approach dissects a building into systems similar to uniform divisions, such as superstructure, enclosure/façade, and mechanical systems. Once dissected, the team identifies, designs, and assigns a target value for off-site elements related to each system. Off-site construction methods can be incorporated at various stages of the project. However, maximum value will be realized if incorporated early. Balfour Beatty provides clients:

- Guidance and review of program and design
- Cost and schedule comparison for off-site elements
- Identify, prequalify and scope off-site suppliers
- Work with existing subcontractor base to incorporate off-site elements
- Revise existing scopes to account for off-site elements
- Logistic planning for off-site element transport and installation

Facility types in which off-site provides the best value in project delivery:

- Healthcare
- Multi-story residential
- Secure facilities
- Data centers
- University housing
- Hotels

Parkland Hospital

Dallas, Texas

One of the largest new hospitals in the world, Parkland is a 1.9 million-square-foot, 862-bed, LEED® Gold project. Off-site elements include: 1) 750 bathroom pod subassemblies - equal to 90% of in-room bathrooms, 2) 850 headwall units – equivalent to 95%, 3) exterior curtain wall subassembly, 4) prefabricated overhead MEP distribution racks - equivalent to three miles in length, and 5) electrical subassemblies. With an average of 1,000 workers at the jobsite, shifting activities off-site reduced risk and mitigated coordination challenges. A typical six week rack installation was reduced to six days.

Perot Museum of Nature + Science

Dallas, Texas

The \$95 million, 180,000-square-foot museum houses exhibits, state-of-the-art technology, multimedia presentations, and hands-on activities. Referred to as “the greatest exhibit that no one will ever see,” the building’s vertical mechanical-plumbing distribution shaft reaches 170-feet tall and was entirely prefabricated, tested, and inspected off-site. After the core structural concrete was topped out, the assembly was transported to the project site and flown into place via crane - reducing the installation time from 70 days to one. Because the decision was made to utilize off-site fabrication early in the project, unique maintenance access points were seamlessly incorporated into the design.



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Innovation Village

Boca Raton, Fla.

Innovation Village Apartments at Florida Atlantic University is a \$66 million project that consists of 375 apartment-style residential units in two mid-rise buildings. The project team incorporated off-site volumetric assemblies for 700 bathroom pods. Using a high-efficiency, 12-week production cycle, the team shaved six weeks off the schedule. On-site construction waste was also reduced by 15%.



Edith Green Wendell Wyatt

Portland, Ore.

The Edith Green Wendell Wyatt Federal Building Modernization is a \$137 million project that transformed a 1970s high-rise office building into a high-performance green building. The team incorporated prefabricated plumbing walls that were assembled off-site. The units were flown into each floor for connection and final finishes. By shifting this work off-site, related site congestion was reduced by 38% and quality of the assembly was consistent throughout the building.