



DESIGN-BUILD CASE STUDY

**SETTING NEW
STANDARDS
FOR PARKING
STRUCTURE
DELIVERY.**

CSU SACRAMENTO PARKING STRUCTURE 5

Sacramento, CA



SUMMARY

Located by the main entrance to Sacramento State, Parking Structure 5 (PS5) is designed to blend and complement the dense tree canopy of the nearby arboretum. Using Progressive-Design-Build, coupled with the efficiency of prefabrication PS5 was delivered ahead of schedule and on budget. The 1,750 stall, six-level parking structure serves a campus in need of parking and provides a structure exceeding the quality and efficiency of any previous parking facilities.

THE PROBLEM

Sacramento State's campus was in dire need of a parking solution. Located by the main entrance to Sacramento State, the existing surface lot no longer adequately served visitors, students and staff.

In addition, given its key location, a new parking structure would need to serve as a gateway to the campus and would also host a separate space for a Welcome Center and an outdoor public plaza.

CLIENT EXPECTATIONS

BUILD IT QUICK

Taking advantage of a precast system the parking structure was manufactured off-site and built on-site, in just over 10 months. This meant nearly all structural components and facade elements were fabricated off-site and trucked to the job site to be erected. Nearly 90% of fabrication was complete when the project gained approvals and permit to construct. Additionally, transportation of the prefabricated components was completed during off-hours, ultimately reducing construction traffic and congestion on a campus with other construction projects in progress.



Utilizing form liners, the facade of the structure was designed to mimic tree bark to blend with neighboring arboretum.



Use of the Precast Hybrid Moment Frame gave the structure an open plan for safety: rated gold by the USRC.



Upgraded wayfinding system due to the project coming in under budget.

MAKE IT LOOK GOOD

The three main owner design objectives for PS5 included:

- **Fit into the existing campus design aesthetic.**
- **Compliment the tree canopy and blend with the University Arboretum across the street .**
- **Be an iconic destination; reinforcing a bright, open and safe environment for visitors, students and staff.**

Clark Pacific worked closely with the client and the design team to determine the best functional location and layout for the structure. To complement the dense tree canopy of the adjacent Arboretum, the custom precast concrete form liner resembles a tree bark pattern with an overlay of metal fin "leaves".

STAY IN BUDGET

The campus had a set budget for this project and had to meet deadlines for funding sources. The client utilized the Progressive Design-Build method, off-site manufacturing and early design-detailing integration which provided for a much shorter construction schedule and a more controlled budget. Continuous team communications prevented unforeseen issues and budget upsets throughout the entire project.

THE RESULT

The use of the off-site manufacturing methods along with Progressive Design-Build approach contributed to the PS5 project becoming more innovative and efficient while minimizing overall campus disruption.

OFF-SITE CONSTRUCTION, KEY TO SUCCESS

For a campus already impacted by construction with five other large projects, the construction of PS5 progressed quickly and easily with very few challenges. The up-front design effort necessitated by the Progressive Design-Build delivery method and the prefabricated building systems approach, led to a smooth project and a beautiful addition to the campus.

ACHIEVING HIGHEST LEVEL OF SUSTAINABILITY

The integrated parking technology, structure design, material innovations, placemaking signage with public art, and preservation programs implemented at PS5 helped it achieve a Parksmart Gold certification by the Green Building Certification Institute, making it the highest-performing, most-sustainable parking structure on campus and west of the Mississippi.



PREFABRICATION FOR THE WIN

A hallmark of prefabrication is that it inherently breaks down silos across design-build disciplines and brings team members together early on to focus on the design and constructability. Prefabrication steered conversations with MEP and other subcontractors that enabled a fully integrated team, resulting in a more efficient design layout with innovations that could not be realized by using traditional construction methods.

The efficiency and versatility of precast concrete was leveraged through the use of repeatable custom form-liners and creative positioning of the patterns which created a facade that seems random.

Off-site manufacturing removed over 5,700 worker days from the campus jobsite to the manufacturing facility, reducing commuter impacts by over 10,000 car trips and ultimately creating a safer project site and campus during construction.

The structure also features a state-of-the-art seismic resistance system known as the Precast Hybrid Moment Frame (PHMF), designed to help it recover immediately after a large earthquake. The USRC awarded PS5 a gold rating.





AWARDS

- 2020 Parksmart Gold, Green Business Certification, Inc.
- 2020 Gold Rating, US Resiliency Council
- 2019 Award of Excellence New Sustainable Parking and Transportation Facilities, International Parking & Mobility Institute
- 2019 Outstanding Environmental Leadership, Sacramento Environmental Commission Awards
- 2019 Sustainable Design, Precast Concrete Institute Design Award
- 2018 Structural Award, American Concrete Institute NC/WN Chapter
- 2018 Best Practice in Construction Delivery, California State University Facilities Management Awards
- 2018 Overall Best Practice, California State University Facilities Management Awards
- 2018 Innovative Sustainability Project of the Year, National Parking Institute.

THE TEAM

General Contractor: Clark Pacific

Architect: Dreyfuss + Blackford

Precast Manufacturer: Clark Pacific

SEOR: Buehler & Buehler Structural Engineers

ADDITIONAL BENEFITS

As a result of the project coming in under budget, Clark Pacific was able to include a variety of additional benefits for the client - many during construction - including:

- Revision of EV charging station vendors and related impacts
- Addition of a dry well
- Addition of a parking wayfinding system
- Parking management system upgraded to an ECO FlexTech Falcon Vision solution
- Integration with the pre-existing campus transportation mobile app
- Infrastructure for future solar expansion
- Integration with pre-existing campus pedestrian and bicycle routes
- Continual evaluation of campus circulation, allowing flexibility to alter adjacent campus roadways impacted by construction during the project, as well as temporary and permanent roadway signage and markings.

To learn how our experts can help you navigate the future of construction, contact us.



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