

# Pushing the Limits of Productivity on New UHS Temecula Hospital Project

Completed early within one of the most aggressive budgets ever set for a hospital in the region and at 40 percent lower per bed than average, the project is a study in value

The integrated project delivery (IPD) team for the new Temecula Valley Hospital has raised the bar when it comes to delivering bottom-line value to an owner on a major healthcare facility project.

Completed ahead of schedule in July 2013 for Universal Health Services (UHS), at an estimated 40 percent lower “per bed” cost than the average new Southern California hospital facility, the project was a study in productivity, efficiency, innovation and teamwork. An eight-member IPD team, led by joint venture contractor DPR/Turner Construction, shared both risk and reward for the facility’s successful delivery.

The integrated team completed the project within one of the most aggressive budgets ever set for a hospital facility in Southern California.

## Shared Risk and Reward

The ground-up, 35-acre greenfield UHS Temecula Valley Hospital campus project encompassed a 177,508-sq.-ft., five-story hospital tower. The 140-bed hospital features all-private rooms, a 20-bed intensive care unit and six high-tech surgical suites.

As an IPD-structured project, the individual firms that were signatory to the integrated form of agreement (IFOA) contract shared both project risk and reward through a common profit pool. Along with DPR and Turner, the other IPD members included HMC Architects; DPR Framing and Drywall—which held the \$10 million drywall and framing contract; Bergelectric; Southland; Southwest Fire; and owner Universal Health Services.



Overall, the project's \$151 million total project cost budget represented a \$1.07 million per bed cost, compared to the state average of \$1.8 million per bed, according to the California Hospital Association. Achieving such an unprecedented budget required a unified team that was continually focused on eliminating waste, improving productivity, and pushing innovation and change.

"The project was very dynamic," said Michael Fontana of Fontana Associates, the company acting as the owner's representative. "We kept changing the way we looked at things, the way we processed information and the way the work flowed. There were all kinds of solutions we discovered to make productivity go up."

## Collaborative Environment Sets the Stage

From the outset, the IPD team knew that establishing a highly collaborative environment was essential. One of the most critical success factors was the team's onsite co-location in a "Big Room" environment. This promoted constant communication, enabled on-the-spot decision making and most importantly, fostered trust. That atmosphere carried throughout the 18-month preconstruction process and two-year construction process that completed when the Office of Statewide Health and Planning (OSHPD) issued a certificate of occupancy in July 2013.

"When you've got all the key players sitting and working in one room together, day after day, communication is just really good and problem solving is almost immediate," said Fontana. "That means the work in the field flows better as well."

Each new subcontractor or consultant that joined the team went through an onboarding process in which they learned about team goals, objectives and philosophy. They were also exposed to several exercises with building information modeling (BIM) that demonstrated what the IPD team viewed as efficient versus inefficient methods and strategies.

The project team's inclusive approach put a major emphasis on supporting and elevating the level of input from the field staff and crews.

"Rather than being a 'siloe-up,' top-down project where the office is pushing the schedule they set, we actually set milestones and let the field superintendents and foreman develop the tasks within those milestones," Fontana said. "They felt like they had a whole lot more control over how they organized their work."

Team strategies ranged from using pull planning and the Last Planner® System to "Ohno circles" (named for lean management pioneer Taiichi Ohno). Ohno circles require a team member to stand in one place and carefully, independently observe work processes in the field to identify potential improvements. Two simple productivity solutions that arose from the Ohno circles included adding tool carts on which workers could keep tools nearby and staging materials much closer to the actual work areas. Both solutions helped eliminate unproductive downtime.

"We were always looking at what we could do differently, as a team," said DPR Project Executive Ed Straub. "And we were always working collaboratively because, quite frankly, we were all [contractually] at risk and all had skin in the same game."

## Self-Perform Work Integral to Success

Along with strong teamwork and collaboration, another major success factor was the high level of DPR's self-perform work (SPW) on this project. In addition to its role as joint venture general contractor along with Turner Construction, DPR self-performed the \$10 million framing and drywall contract as an IPD team member, and also self-performed the concrete work under an approximately \$3 million contract to the joint venture.

Early involvement with both those contracts during the design process was critical.

Steve Helland headed the preconstruction effort for drywall and framing for DPR SPW. "By having drywall on board in the very beginning we were able to write the spec book, put in the UL [Underwriters Laboratories] details we wanted and how we wanted to frame the walls and the whole sequence, schedule-wise," he said.

"Getting all that figured out early, we were able to pre-approve details with OSHPD and get everything signed off quickly," Helland continued. "Basically when we started, there was no stopping. It was the most efficient inspection process I've seen on an OSHPD job, ever."

Straub added, "We bypassed a lot of the RFIs, clarifications and a drawn-out process of approvals throughout the course of construction as a result."

DPR's self-performed concrete work also proved to be a major benefit to this project. The general concrete superintendent provided input to the structural engineer from the earliest stages, including devising a methodology that improved the efficiency

and speed of installing large anchor bolts. DPR included those detailed anchor bolt templates in the drawings, which facilitated seamless field approval by OSHPD.

Having in-house crews on board self-performing both drywall and concrete not only helped accelerate the schedule, but also ensured a high level of quality, according to Helland. “It enabled us to set the pace for the schedule from the beginning. Plus, we just like framing on their slabs, because [DPR’s concrete] work is outstanding,” he said.

## Constantly Improving Productivity, Efficiency

The entire team’s “open book” approach was another major benefit to the UHS Temecula Valley Hospital project. Being able to see what productivity levels individual contractors were achieving on their workflows at any given time, and at what cost, allowed the team to collectively brainstorm ways to improve productivity and save cost.

“We could tell day-to-day whether [a trade] was hitting their targets or not,” said Fontana. “As workflow, supervision, and continuous monitoring of productivity went up, costs went down.”

DPR’s Jason Herrera managed SPW Drywall and Framing for the duration of construction. Just a few of the other productivity and cost-related solutions that the team came up with and the DPR SPW groups implemented included:

- DPR Drywall and Framing took on the engineering of the stud framing with partner Ficcadenti Waggoner and Castle Structural Engineers, and also performed detailed BIM modeling of the interior framing. Spool sheets pulled from the model provided a high degree of accuracy in material procurement. This gave DPR SPW the most efficient design possible as well as the ability to stay within budget.
- Extensive cost analysis led to the decision to install plumbing before framing contrary to the traditional method. This sped the overall process and although the cost increased for drywall and framing, the team saved an estimated \$200,000 in plumbing costs (savings that again went to the entire team’s profit pool).
- By reviewing video studies of their work and making suggestions for improvement, field crews were able to increase labor productivity in drywall and framing operations by an estimated 37 percent. To improve taping productivity, DPR used the lean process of “swarming,” where workers collectively brainstorm productivity issues and solutions. Suggestions included using smaller batching of workers in defined areas. The result: taping productivity times improved by an estimated 20 percent.

Through all these measures and more, the integrated UHS Temecula Valley Hospital team delivered an unprecedented level of value for the owner.



## Scheduling Efficiency Leads to Massive Savings

The team used multi-tier scheduling—which involved a master schedule detailing major milestones along with production planning for short-interval daily planning.

“We finished ahead of schedule in a healthcare environment,” said Fontana. “And everybody made money on the job.” The project completed approximately a month-and-a-half early despite an 82-day environmental-related delay. Team members all received full funding of their shared profit and were expected to receive an additional bonus profit from the owner as well.

**CUSTOMER:** Universal Health Services, Inc. (UHS) is one of the largest and most respected hospital management companies in the nation. Founded in 1978, UHS has steadily grown from a startup company into a Fortune 500 corporation.

**IPD MEMBERS:** DPR Construction and Turner Construction joint venture; HMC Architects; DPR Framing and Drywall; Bergelectric; Southland; Southwest Fire; and owner Universal Health Services.

### PROJECT HIGHLIGHTS:

- The ground-up, 35-acre greenfield campus project encompassed a 177,508-sq.-ft., five-story hospital tower. The 140-bed hospital features all-private rooms, a 20-bed intensive care unit and six high-tech surgical suites.
- The project’s bed cost was \$1.07 million per bed, compared to the state average of \$1.8 million per bed.
- The project completed approximately a month-and-a-half early despite an 82-day environmental-related delay.

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