



FRAMINGHAM STATE UNIVERSITY'S WEST HALL: LATERAL THINKING



“When we do our Pull Planning, each sub speaks to the time needed for their work and their man power and we review to make sure everything planned is feasible. It gets them involved and helps everyone to own the dates for their work. Everyone has a voice.”

LEAN APPROACHES IMPLEMENTED

- ▶ Pull Planning
- ▶ Flow Board Tracking
- ▶ Just-In-Time-Deliveries
- ▶ Daily Stand-Up Meetings
- ▶ “Nothing Hits the Ground”

SUPPORTING GROWTH

With a 27% growth in enrollment over the past five years, it is vital that Framingham State University's new 317-bed residential building be ready for students in the fall of 2016. To get there, Consigli's team is using Lean Project Delivery, customized for the fast-track construction of the 97,000-square-foot West Hall. Guiding the project are the team's series of Pull Plans—the literal step-by-step plans of work phases to be built developed collaboratively with the project's trade foremen—and the daily “Flow Board” tracking of work completed against work planned or re-planned.

Today the work is flowing steadily, supported by Daily Stand-Up meetings to review progress and potential roadblocks.

Designed by the Boston-based architecture firm ARC, West Hall is a suite-style residential hall, composed of three interconnected buildings, spanning six stories at one end, and five at the other. Being built of brick on a hillside of FSU's campus, this student housing is bringing a new prominence to this edge of campus.

TEAM RECOMMENDATION: BUILD HORIZONTALLY

On a recent January day, the real bustle of work is inside, as Consigli's team of contractors make their way systematically across each floor, putting in place the layers of construction that make up each of the 100 suites. Across each floor, sandwiches of metal studs, insulation, wall board, taping, wall sanding, painting and room finishes are being built up.

With each trade's work spaced two days apart, as you walk through the third floor you can see where one room is having its wall board installed, while next door the wall board is being taped. You can literally see the flow of the work as you walk the halls.

SPECIFICATIONS

LOCATION:
Framingham, Mass.

SIZE/TYPE:
97,000 sq. ft./New Construction

DELIVERY METHOD:
CM at Risk

DURATION:
17 months

OWNER:
Massachusetts State College
Building Authority

ARCHITECT:
ARC/Architectural Resources
Cambridge, Inc.

PULL PLANNING IN ACTION



This continuous work flow of one piece of work moving smoothly to the next is the heart of Lean Project Delivery. It is the direct result of the FSU team's Lean Pull Planning.

Assistant Superintendent Duncan Schuster noted the powerful team buy-in Pull Planning creates. "When we do our Pull Planning, each sub speaks to the time needed for their work and their man power and we review to make sure everything planned is feasible. It gets them involved and helps everyone to own the dates for their work. Everyone has a voice."



Reflecting the work on site, a wall in the team's site office displays an exterior elevation of the Hall with a pattern of arrows drawn across it, zig-zagging across the building's face from left to right, from the second floor to the sixth. These arrows illustrate the flow of interior construction, showing a trade's work progressing from one end of each floor, to the other, before beginning the work on the floor above.

This horizontal progression was not the team's first assumption of the most efficient way to build the interior, but after the team's half-day Pull Planning session with the trade foremen responsible for all the work to come, the benefits of this approach became clear as they planned the interior construction's milestones.

"It was our drywall contractor who first saw that this might be a good way to go," explained Project Manager Jody Staruk. "And all the other foremen agreed it would be a great approach."

Staruk went on to explain that it's not that building horizontally versus vertically is innovative in and of itself. It's that the team, including all of the trade foremen, together took the time to use Lean's Pull Planning process to analyze the time it would take for each option. As a team they agreed that moving through the floors horizontally had more benefits for both the schedule and the efficient movement of materials on site.

MINI PULL-PLANS, MAXIMUM BENEFITS

At this point the team has collaboratively created Pull Plans for many phases of work. Beginning with a structural Pull Plan, they moved on to the interior Pull Plan for the six floors of suites, as well as creating individual "mini-project" Pull Plans for the building's public areas, which are being built concurrently. Next up will be the Pull Plan for the building's exterior.

Like the interior Pull Plan for the suites' construction, the mini Plans revealed valuable information. Completed for the building's common spaces—the hall's living room, meeting room, public restrooms and the Resident Director's apartment—this collaborative process showed that the public areas include almost exactly the same construction tasks the suites require, so the team can continue applying their streamlined approach.

PULL PLANNING BENEFITS

- ▶ Collaborative scheduling builds team accountability
- ▶ Maximizes input from those responsible for the work
- ▶ Increases detailed understanding of what is required to reach a milestone
- ▶ Identifies smoothest work flow
- ▶ Identifies constraints to tasks
- ▶ Implements best use of subcontractors' time and labor

Staruk elaborated, "We had the foremen in to plan the flow of work for the common areas—and because of their effort, we saw that these common spaces require all of the same construction activities. Going in, this wasn't obvious. We thought there would be much more that was different, room to room. But they were exactly the same, plus or minus details like a porcelain tile floor or a carpet floor. Understanding this so clearly, we can approach these spaces in the same systematic way. And it was the foremen that did this. Our subs are embracing this process, and it is working."



PROOF-IN-ACTION

Initially the Owner's Project Manager (OPM) had some healthy skepticism when he saw the detailed interior Pull Plan with its rainbow of paper stickies in the site office. But on a recent site visit, as the OPM moved along the halls, checking the work-in-progress, it was clear he could see—and appreciate—this thoughtfully planned construction-efficiency-in-action. Schuster summed it up, "He was tickled pink." ■