SOUTH HALLS RENOVATION: EWING-CROSS

EXECUTIVE SUMMARY

The South Halls Renovation and New Construction project is a $94M construction project, which is located in University Park of the Pennsylvania State University. There are four identical dormitory buildings that are currently being consecutively renovated, with Ewing – Cross serving as the building primarily analyzed for previous technical reports and for this final report. This senior thesis report encompasses the findings of the four analyses that were performed for the South Halls Renovation. Through project team interviews, course knowledge, jobsite visits, and online research, the four analyses for this report were developed.

Analysis 1: Modularization of Bathroom Units

The first analysis focused on the construction of the bathroom pods due to the issues with the quality of the finish work, which caused delays in the turnover of these areas. Ewing – Cross has two stacks of bathroom cores, encompassing 40 individual bathrooms. In an effort to improve the quality of the bathrooms while also reducing the construction schedule, the bathrooms were modularized to be built offsite as individual bathroom pods. Modularizing the bathrooms resulted in $120,000 in savings, in addition to the bathroom construction being completed four weeks earlier than previously scheduled. Note that this analysis included an architectural breadth that looked at designing the bathrooms for modularization.

Analysis 2: SIPS Implementation for Student Rooms

The second analysis looked at implementing SIPS for the construction of student rooms. The punchlist for student rooms and turnover to the owner was critical at Ewing-Cross because the owner was receiving the building just as students were ready to return for the spring semester. The repetitive nature of the student room construction lent itself well to SIPS; there was a focus on creating equal sized zones, with all construction activities having an equal duration of 5 days. While implementing SIPS did not reduce the overall project schedule, the reorganization of activities and optimizing of crew sizes resulted in a schedule savings of 10 days, allowing the owner to begin their FF&E sooner.

Analysis 3: Prefabrication of Limestone Façade

Analysis 3 focused on the construction of the building enclosure; specifically, the limestone façade. The stone panel veneer was compared to a traditional 3 5/8” limestone panel façade to determine if any costs savings were achievable through changing materials. The increased structural requirements of the thicker limestone actually added about $1,000 per bumpout to the cost of the building, so this was ruled out as an alternative. Then, the limestone veneer wall system was analyzed to determine if prefabrication was feasible. Prefabricating the walls into modules allowed for a potential cost savings of $175,000, while reducing the enclosure schedule by 36 days. Note that this analysis also included a structural breadth.

Analysis 4: Resequencing of Renovation Phases

The final analysis dealt with resequencing the renovations in an attempt to deliver the project one semester earlier; this would allow the owner to start generating revenue earlier, upon completely opening the South Halls dormitories for the fall 2014 semester. By increasing the project management staff, it would be feasible to renovate two buildings at the same time to shorten the overall project schedule by 5 months. This would add approximately $31,000 in General Conditions costs, but would also allow the owner to generate $1.3M in revenue.