CASE STUDY

assemble

University of Nevada, Las Vegas (UNLV)

James E. Rogers Center for Administration & Justice (RAJ)

UNLV rendering courtesy of Pugsley Simpson Center Architects (PSG)

PENTA

The PENTA Building Group

ABOUT **PROJECT**

Square Feet:
44,000 Renovation

Budget:
$10 Million

Completion:
Estimated July 2015

Delivery Method:
Design-Assist, Construction Management at-Risk

Architect:
Pugsley Simpson Coulter Architects (PSG)

> "Assemble has helped us cut our estimating time by 50%. Our team uses the time-savings to concentrate on high value activities to deliver cost savings to the owners and improve project results."

Clifton Cole, BIM Manager
The Penta Building Group

CONTRACTOR SUCCESSFULLY RENOVATES AN EDUCATIONAL INSTITUTE USING ASSEMBLE

INTRODUCTION

Founded in 1957, University of Nevada, Las Vegas (UNLV) is a doctoral-degree granting educational institute of 28,000 students and 3,300 faculty and staff. UNLV offers more than 220 undergraduate, masters, and doctoral degree programs. The James E. Rogers Center for Administration & Justice (RAJ) building is a 92,738 square foot, 4 story building originally opened in 1962.

The scope of the renovation for RAJ focused on the first two floors of the building. The project was structured as a CM At-Risk project and required uninterrupted services for the students on the third and fourth floors. One of the challenges for The Penta Building Group (Penta) was managing construction without disrupting ongoing student services and without sacrificing on-time delivery.

The following case study describes how Penta was able to use Assemble to:

1. Address challenges during design and construction management;
2. Create an accurate budget;
3. Quickly evaluate design changes; and
4. Manage construction and gain efficiencies in field management.

THE **PROJECT CHALLENGES**

The RAJ renovation is a multi-story project with a budget of approximately $10 million. One of the initial challenges facing the RAJ renovation was coordinating the work since the top two levels of the building would remain active throughout construction.

To manage this Penta had to gut the bottom two floors while carefully schedule planned service outages to minimize disruption to the active student body on the third and fourth floors. All systems that were interactive with the third floor were being affected during demolition of the second floor. Coordination and open communication with the University was of the utmost importance and required intense collaboration between the Penta, UNLV and the design teams.

For UNLV, CM At-Risk was chosen as a cost effective and time conscious approach for delivering the renovation project on time and in budget. Since this was the school's first experience with CM At-Risk, Penta wanted to ensure this experience was a positive one for the owner and all the stakeholders involved.

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THE **SOLUTION**

To ensure success, Penta took on a significant role in streamlining the processes during the design phase to establish proper coordination and budget control from the very beginning. To facilitate this, Penta chose to use Assemble during design and construction to help manage the building data to make certain the project was kept on track and under budget.

Early in the project, Assemble was used to pull quantity information from the model for use in verifying and authenticating the takeoff quantities being calculated by Penta using their standard workflows. Using Assemble,
Penta was able to automate the process of accessing quantities from the models. In doing so, the Pre-Con team was able to reduce the time spent calculating quantities by more than 50% versus traditional 2D takeoff processes. The extracted quantities were then used to validate quantities in the bids subcontractors were providing to the UNLV team. By extracting quantities directly from the model, the project team experienced tremendous efficiency by reducing the time required for initial and subsequent takeoffs across iterations of the design. This allowed the estimating team to concentrate on high-value activities to better understand scope and constructability during the pre-construction phase and ensured Penta was able to concentrate on, and deliver value to the owner in the form of schedule and budget integrity.

In addition to quantification, Penta used Assemble to identify variances between each iteration of the design models (both visually and quantitatively) and apply that insight to avoid unnecessary costs in the form of unnecessary change orders during construction. Visual change management within Assemble allowed the project team to quickly identify changes and rapidly understand the project impact from the updated models.

Communication and collaboration between stakeholders was further improved by using Assemble. The project team was able to easily export project data related to demolition from Assemble. By making this information readily available for the downstream teams, Penta was able to keep the entire project team in the loop with clear insight into the progress of the project and the work being conducted at any given time. All data extracted using Assemble was shared with the project engineer and site superintendent and was used for internal coordination and communication with project team members.

It was of the utmost important that the renovation did not interrupt the students' day-to-day activities as it was business as usual for students and faculty. Since the building was occupied on the upper two levels during renovation, demolition had to be planned carefully and conducted in stages. Assemble was used to share visual verification of the areas to be demolished with the demo subcontractor. Using Assemble, Penta color-coded which systems were live and interactive with the other floors in the building. Doing so allowed Penta to easily identify live elements of the building to properly manage planned service outages resulting in minimal disruption to the University. With the help of Assemble, Penta was able to deliver unparalleled client satisfaction during the construction phase.

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THE **RESULTS**

Leveraging model data for various activities throughout design and construction resulted in improved efficiency and significant time saving. Productivity improvements were measured based on the takeoff time being cut in half. The estimating department was able to save at least 45 hours of overall project time by not having to redo the 100% CD takeoff. Resources such as saved hours were then free for other high-value work to improve project outcomes.

“We would not have been able to effectively manage this project or complete this job without Assemble” says Clifton Cole, BIM Manager.

In addition to using Assemble for rapidly accessing complete model inventories, visualization, and comprehensive access to intelligent building information, Assemble also facilitated the use of intelligent building data for numerous project workflows and deliverables.

Utilizing project phase and family categories from Revit, search sets were rapidly extracted from Assemble. The search sets were used for BIM coordination allowing the project team to break up the model for construction sequencing. Leveraging the ability to color-code and organize inventories from the model, Penta’s use of Assemble allowed UNLV to experience minimal disruptions during university hours and improved the overall experience of all the stakeholders in UNLV’s first CM At-Risk project.

Visualization of the design’s constructability allowed Penta’s project team to add intelligence and make real-time decisions that directly impacted the project outcome. Simplified building information management allowed the project team to access relevant information and share it with specific stakeholders quickly via cloud-based collaboration or simply sharing access to Excel reporting.

Penta Building Group has made Assemble the preferred software solution for all their model-based projects. Penta prides itself on a personalized approach to general contracting, CM At-Risk, Design-Build and BIM construction coordination. Assemble helps Penta understand the owner’s goals and manage expectations on how best to access and analyze model-based building information to transform AEC processes and improve project predictability and outcomes.