

Executive Summary

After American University's 2011 Campus Plan was approved by the District of Columbia Zoning Commission on March 8, 2012, Grunley Construction Company was awarded the construction contract on April 23, 2012 for American University's newest dormitory, North Hall. North Hall is an eight-story, tracked for LEED Gold upon completion, dormitory building located on American University's Main Campus in downtown Washington, D.C. The 122,200 square foot building will house 358 undergraduate students in 94 suite-style dorm rooms consisting of six-bed, four-bed, and RA units (1 bed). Grunley bid North Hall with a Guaranteed Maximum Price (GMP) of just under \$29 Million. North Hall is scheduled to house students for the start of the Fall 2013 semester.

Analysis 1: Modularization of Bathrooms

North Hall has both an extremely tight and congested site and well as a very tight schedule. Modularization will move some of the work to an offsite facility and will allow the bathroom units to be constructed before they would be needed onsite and with a less expensive labor force. Modularization allows for 13.2 weeks in schedule savings as well as a cost savings of \$92,315.52.

Analysis 2: GPS Tracking of Precast Panels

The installation of the precast panels is confined to a small window in the schedule and the site entrance for deliveries is extremely congested. With a GPS tag tracking system, the precast panel can be tracked from the time they leave the factory until they are installed. The tracking will not stop at installation; the same GPS tags will be used to track the testing required for the facade panels. The cost of the tracking system will be roughly \$112,785. The schedule did not see any savings.

Analysis 3: Solar Panel Upgrade, Electrical Breadth

North Hall will have two arrays of solar panels when construction is complete. The current design only has the capability to heat domestic hot water. By upgrading the solar panels to a hybrid/cogeneration solar panel system, the capability to generate electricity will be added. Upgrading the solar panel system, Analysis 3, is recommended to be implemented on North Hall. The solar panel system will be upgraded from the current solar hot water panel system to a hybrid (cogeneration) system that will have both solar hot water and electrical generation. With the upgrade of the panel system, approximately \$18,600 a year could be saved in utility costs.

Analysis 4: Traditional Reinforced Cast in Place Floor Slabs, Structural Breadth

Currently, floors 3 through 7 are post-tensioned floor slabs. This post-tensioning adds extra cost that can be value-engineered to a traditional reinforced cast-in-place concrete slab. Removing the post-tensioned cable will cause the slabs to be thickened from 7 inches to 10 inches. The reinforcing will also need to be increased. These required increases in the material need cause the cost to increase by \$33,729.40 per slab and \$168,647 for all five slabs. The schedule was not shortened by eliminating the post-tensioning due to the increase in the amount of reinforcement that needs to be placed.