



LEED CERTIFIED

CATHOLIC UNIVERSITY OF AMERICA OPUS HALL

- Project Type:** Dormitory
- Location:** Washington, D.C.
- Owner:** Catholic University of America
- Architect:** Opus Architects & Engineers, Minnetonka, Minn.
- Architect:** Little Diversified Architectural Consulting Co., Arlington, Va.
- Structural Engineer:** Opus A&E, Minnetonka, Minn.
- Contractor:** Opus East, LLC, Rockville, Md.
- Precaster:** Gate Precast Company, Oxford, N.C.



OVERVIEW

The new seven-story, 127,000-square-foot dormitory on the Catholic University of America (CUA) campus, called Opus Hall, is adjacent to the older Millennium North and Millennium South resident halls. The new structure, designed in “collegiate Gothic” style with an insulated brick-inlay architectural precast exterior, blends well with adjacent dormitories and mirrors the traditional style of CUA’s oldest building, Gibbons Hall, which dates to 1912.

Housing nearly 400 students, the building’s first floor contains a lobby, lounge space, fireplace, and central laundry. Upper floors each house 12 five-person suites. Suites contain a common living area, three single rooms, one double room and lavatory, and include data, cable TV and phone jacks. Each floor also features a common living/dining area with full kitchen. Wireless data access is available throughout the building.

Developed by a design/build team that leveraged industry professionals with the university’s internal talent, the contextual design includes a glass entry tower, two wings with residential quarters and a landscaped plaza. Articulation is provided by bay sections that alternately are set forward or back.

The building’s exterior envelope consists of insulated, brick-inlay architectural precast wall panels enhanced with form liners, acid etching and pigmented concrete to replicate traditional hand-set brick. Slight variations in the individual bricks complete the effect.

A challenge for the design team was the need for on-time construction to meet the university development plans and housing requirements. Precast concrete construction facilitated this goal. According to Gate Precast Company, the thin-brick precast wall panels enclosed the structure much faster than hand-laid block and brick and cost less compared to conventional light gauge framing, sheathing and masonry or un-insulated precast with furred, insulated walls. Installation of the precast walls was completed in just 35 days. The last panels, which contained over 2,200 bricks, were erected in less than 20 minutes.

“The contractor suggested precast panels with thin brick because they were concerned about brick [masonry] construction during winter,” says Beth Buffington, AIA, LEED AP, Community Studio Principal for Little Diversified Architectural Consulting. “At first we weren’t interested because the building is right next to traditional brick buildings on the campus and we were afraid it wouldn’t look comparable. Working with Gate Precast we were able to use all of the thin brick shapes available to create panels that you would never guess were not traditional brick. You have to search to find panel joints.

“We didn’t want the building to look commercial,” adds Buffington. “But what we really got were these wonderful panels that are well insulated, that are easy for the contractor to install, and that reduced the amount of site disturbance. The building is well insulated both thermally and in terms of noise. The building is right across the street from the Metro tracks and you can’t hear the trains.”

35 DAYS

Installation time for all precast concrete exterior wall panels

4+ HOUR

Fire endurance rating for the precast sandwich wall system

14.25 R-VALUE

Thermal resistance of the 9-in., brick-inlay architectural precast

PRECAST CONCRETE & LEED



Thin brick, precast sandwich panels provide “collegiate Gothic” style to Catholic University of America’s Opus Hall.

Photo: Opus Corporation



First floor common area includes student lounge, fireplace, study area and a central laundry.

Photo: Opus Corporation



Each dorm floor provides a student common area complete with kitchen, living/dining area.

Photo: Opus Corporation

PRECAST CONCRETE’S CONTRIBUTION TO SUSTAINABLE CONSTRUCTION PRACTICES

At Opus Hall, precast concrete construction was credited with obtaining sustainability points for use of regional materials, capitalizing on recycled content materials, reducing site disturbance and construction waste, and facilitating reductions in energy usage.

Precast concrete walls provide a durable finish that ages gracefully and reduces long-term operating costs. The smooth-troweled finish on the interior face of the wall panels meant less interior drywall work which sped up the interior finishes, reduced the number of trades required, and improved construction environmental quality by reducing airborne particulates.

Sustainable Sites:

The 5000 psi precast concrete walls were manufactured off site in an enclosed plant while site work and foundations proceeded, allowing precisely-timed delivery and erection of the panels with virtually no weather delays and greatly reduced site disturbance.

The light colored exterior wall panels help reduced the heat island effect.

Energy & Atmosphere:

The precast concrete sandwich panels include 3” of exterior veneer concrete and thin brick, structural concrete, 2” of continuous insulation, and 5” of exposed, steel-troweled interior precast walls—providing outstanding energy efficiency and an R rating of 14.25. With an exposed interior finish, the wall panels also maximize the thermal mass effects of concrete. Preinsulated panels have edge-to-edge insulation and the layers of concrete are tied together with non-conductive connectors, eliminating thermal bridges.

Effectiveness of the wall system was validated by a thermal imaging comparison of the completed project and nearby, masonry campus buildings.

Carl Petchik, executive director of facilities operations for the university, estimates that it will cost CUA less to run the new building than it does to run both Millennium North and Millennium South resident halls.

The project also features energy efficient appliances and a high performance HVAC system.

Materials & Resources:

Thanks largely to the use of precast concrete, Opus Hall was designed to obtain LEED credits for utilizing regionally extracted and regionally manufactured materials and for reducing construction waste.

The precast concrete sandwich wall panels are both structural and architectural, providing a number of sustainable and cost-effective advantages. The panels act as the structural element and reduce the redundancy of interior shear wall systems. They provide both thermal and moisture protection with integral insulation and vapor retarder with a Perm Rating of 0.03, and no cavity for moisture to collect. The panels have a 4+ hour fire endurance rating and a 54 sound transmission coefficient. Use of thin brick reduces the embodied energy it takes to manufacturer and transport brick to the project site. Inlaid thin brick will not effloresce and does not require periodic tuck pointing or sealing.

Indoor Environmental Quality:

The 12’4” tall by 30’ long precast concrete wall panels feature large punched window units with 3’ returns. The large windows, plus expansive stairwells with window seats, allow for increased daylighting.

Innovation & Design Process

Load-bearing structural/architectural walls and thin brick ensure that less concrete is used and less energy and raw materials are consumed in manufacturing, hauling and erection. 



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