

Science meets faith in Azusa Pacific science project

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Thursday, October 22, 2009



The variety of building facade materials and elevations at the Segerstrom Science Center presents a lively, dynamic impression from multiple angles. Photo: Art Gray.

The notion of gods has existed ever since humankind asked questions for which answers remained unclear. It was not until the 17th century in Western Europe that divine truth had a formidable counterpoint in natural knowledge and that the physical sciences would take shape over Aristotelian thinking. The Age of Reason, as defined by Galileo, Copernicus and Kepler, focused its understanding of nature in the application of mathematics and in precise methods of measurement. But by demonstrating, for example, that the earth was not the center of creation, Copernicus followed Galileo in being condemned by the Church.

The relationship between science and religion may remain uneasy on the subject of life's origins, but in general it is a compatible existence. Believing coexistence is possible, many Christian-based schools of higher education offer degreed programs in biology, chemistry, physics and math. A case in point is Azusa Pacific Univ. (APU), Azusa, Calif., where the 70,000-ft² Segerstrom Science Center was just completed. At \$42 million, the project represents the largest capital investment in the history of this institution.

Located 26 miles northeast of downtown Los Angeles and founded in 1899 as the state's first Bible college, APU determined that the building where science had been taught for three decades was failing to meet the current standards of excellence. To retain and recruit faculty, increase the number of student majors and encourage research, a replacement facility was necessary.

The new building was programmed to house the departments of biology and chemistry, and mathematics and physics, plus research and teaching components for the School of Nursing and department of physical therapy. The facility includes 23 teaching labs; nine research modules at 10 ft, 6-in. x 28 ft; the equivalent of 14 lab support modules; a glasswash area; stockrooms; and a 1,500-ft² vivarium for small animals.

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In addition to the requisite spaces for teaching and research, the building has three faculty office sections (including private lounges); a 200-ft² rooftop greenhouse; a 40-ft-long courtyard freshwater pond; two student conference rooms; and three rooftop patios ranging in size from 400 to 2,600 ft². What all of these areas have in common is the capability to attract people so that communications will be enhanced and the building will be considered a home.

Laying the groundwork

The University hired the Los Angeles architectural firm AC Martin to create a modern research and teaching environment, along with consultant members Jacobs Consultancy-GPR, Solana Beach, Calif., for lab design; Glumac, Los Angeles, for MEPT engineering; Brandow & Johnston, Los Angeles, for civil and structural engineering; and Bennitt Design Group, Torrance, Calif., for landscape architecture.

Typical of most campus construction jobs, the project began with a programming phase that included the participation of faculty and administration. The full-time equivalent (FTE) established for the new building was 36, and the transient count for students/visitors was calculated at 734. (As a reference, the student population for APU at the time was 8,100 with a ratio of 55:45 between undergraduates and graduates.)

For a building net-to-gross factor, 62.5 was targeted. As efficiencies developed in the floor plans through subsequent phases, program square footage increased without exceeding the APU budget.

As a private university, APU made the choice to negotiate a guaranteed maximum price (GMP) construction contract with CW Driver, a Pasadena company that the school had previously worked with. An additional contract was signed with CWD for all pre-subcontractor bid estimating. (The contract for lab furnishings, floor-mounted equipment and hoods was awarded to Dow Diversified and Kewaunee Scientific.)

At a relatively steep projected unit price of \$600/ft², it was important to APU that the new building should serve as a branding opportunity to bring attention and credibility to an expanding academic center. The prominent brownfield site that was chosen overlooks the intersection of two major thoroughfares, one being the historic Route 66. This location gave APU a new campus front door.



A central triangular courtyard, reminiscent of a monastic cloister, provides a place for relaxation, socializing and collaboration. Photo: Art Gray.

A new campus landmark

Based on local zoning setbacks and height restrictions as well as programmatic priorities, the facility elevation varies among one, two and three stories. Rather than a conventional atrium, the triangular building surrounds an open courtyard reminiscent of a monastic cloister, which serves as place for seclusion and contemplation.

Except for a single-story public assembly lecture hall that has concrete block load-bearing walls, the new center uses a steel moment frame structural system. It is Type II rated construction, fully sprinklered.

The exterior skin is composed of a “rain-screen” cement board varying in tones and manufactured by Swiss Pearl, and a full-height translucent channel glass made in Germany by Bendheim. To break with the banality of the roadside architecture leading up to science center site, each façade integrates these two materials to form a rich, asymmetrical and modern experience that can be poetically viewed as a “space-time continuum.”

Using the channel glass as an exterior wall membrane offered both opportunities and challenges for the design team and the client. Technically, the glass adds natural illumination to the laboratories and classrooms. Implicitly, the diffused light that is seen inside by day and the outward glow present at night evokes a spiritual connection. Where text was desired, such as at a building entrance, a sandblasted/frit technique was applied to the glass surface, creating a hand-skilled articulation suggestive of Gothic tracery.

The channel glass could not support wall cabinets and an independent tube steel structure needed to be installed. The backs of the perimeter casework had to be finished uniformly and a sheet metal expansion joint was necessary between the glass wall and the backplash. In addition, drywall soffits were required for suspended acoustical ceilings.



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Sustainable stewardship

Increasingly, evangelical Christians view environmental stewardship as an obligation of “creation care.” With some encouragement from the design team, APU added the cost of participating in LEED, with enhanced commissioning, to its line-item project budget. The facility is on track for LEED Gold certification. (For details about sustainability features, see the expanded edition at www.labdesignnews.com/september2009.)

Charles Darwin, who studied for the clergy in England before making excursions to South America, wrote “The Origin of Species” 150 years ago. This seminal work led to the theory of evolutionary biology and what has become a standard for education. When there is a duality in teaching, such as in a “Christ First” school, architecture can help service the need to present facts, perceptions and beliefs in a manner that is mutually beneficial—for architecture has a long history in accommodating both the secular and the sacred.

Upon the naming of the building, Provost Michael Whyte commented, “Jesus commands us to love the Lord our God with all our heart, with all our soul, and with all our mind. This ... facility will aid us in our primary educational goal to provide transformational scholarship to literally thousands of future doctors, nurses, teachers and scientists. Our university is as concerned about delivering quality biology and chemistry courses as we are at delivering quality Bible courses. We do so knowing that excellence honors God.”

The field of science relies on honest inquiry. Where irreducible complexity exists, there is an incentive to continue seeking answers. The Segerstrom Science Center represents APU's firm commitment to this quest.

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