

SHAPING FUTURES

CALIFORNIA BAPTIST UNIVERSITY COLLEGE OF ENGINEERING BUILDING



About California Baptist University

Founded in 1950, CBU educates over 10,000 students annually at its 160-acre main campus located in Riverside's historic Magnolia Avenue District. CBU's premise is that each person has been created for a purpose. CBU helps students understand and engage this purpose by providing a Christ-centered educational experience that ensures students are academically prepared, biblically rooted, globally minded and equipped to serve.

The College of Engineering Building

The Dennis and Carol Troesh Engineering Building at California Baptist University (CBU) is a game changer for educating students in all facets of engineering sciences! Tilden-Coil Constructors completed this new three-story, 100,670 square foot structure in June 2018. Forty-five classroom/teaching areas, sixty-two faculty/administration offices and thirty labs surround a voluminous engineering hall with multipurpose space for emerging research, projects, exhibits, presentations and student collaboration. The building includes an accessible rooftop area and solar-thermal lab with sun tracking panels dedicated for student learning.

Tilden-Coil and the project architect, Gensler, shared a highly collaborative partnership to meet CBU's objectives for the building. Early in preconstruction, the team worked diligently to achieve the best value and meet CBU's budget. In fact, the team achieved a final project cost below budget.

The building is steel framed with design-build metal stud framing, plaster finish and glass curtain wall and is LEED Gold certified. Keep Riverside Clean & Beautiful recognized the building with a first-place award in the 2019 Beautification Award for New Construction and Landscaping. Unique features include a Geopiers® foundation system, a ConXtech space frame structural steel system, two independent 24" concrete reaction slabs on grade for the bridge shaking table, scan electron microscope slab and mechanical chilled beam induction cooling system.



“Thank you for being so proactive in helping us come to solutions. Coming to the design team/owner not just with the problem but with thoughts on how to best proceed, often supplemented with drawings & diagrams, has been incredibly helpful and allows us to move forward quickly and effectively.” - Heidi Hampton, AIA, Gensler

College of Engineering Building Quick Facts

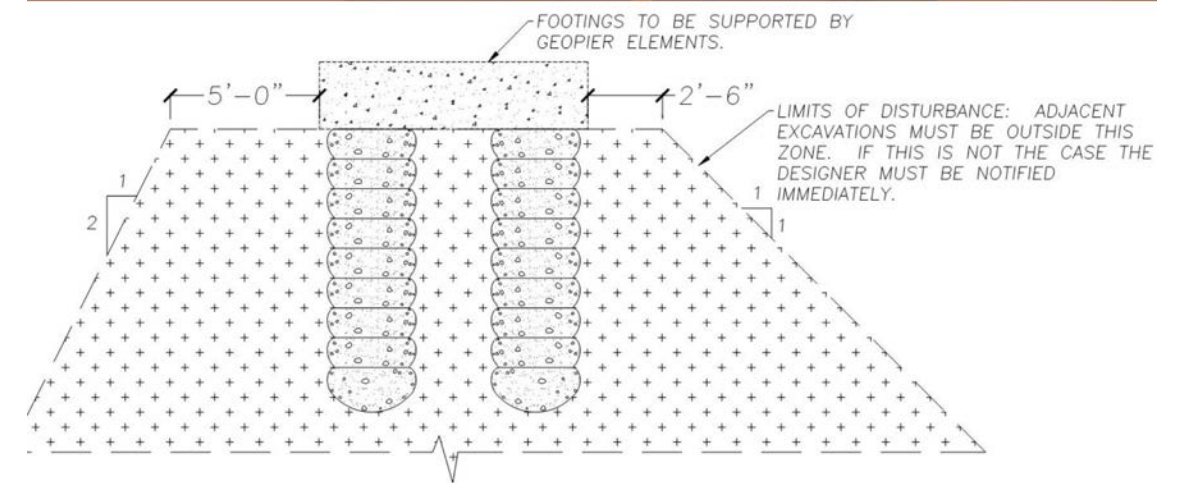
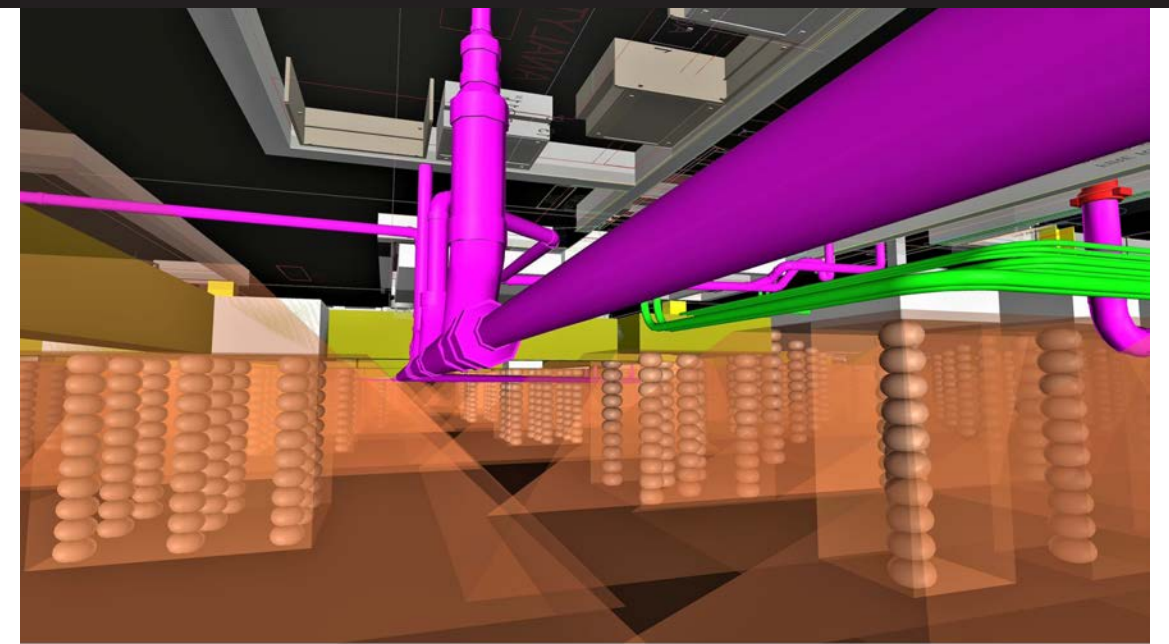
Architect: Gensler
Delivery: Negotiated GC
Size: 100,000 sf
Completion: June 2018
Instructional Space: (45) general classrooms; (62) faculty/administration offices; (30) labs



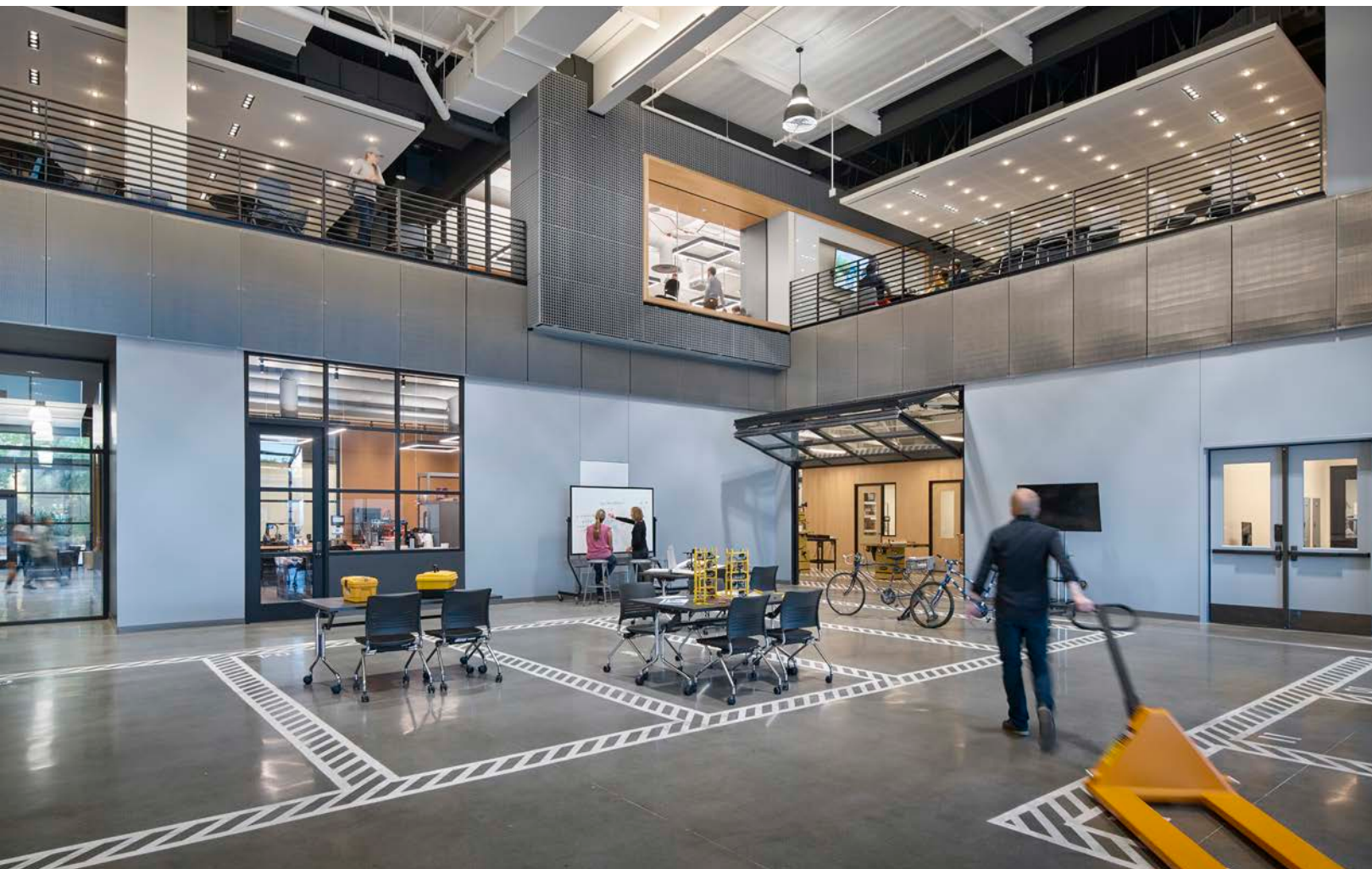


To expedite the construction schedule, Tilden-Coil engaged the steel subcontractor early in preconstruction so that steel could be ordered from the mill and fabricated in advance. This early start avoided significant steel escalation cost and shop labor acceleration/overtime to meet the schedule.

The building was designed with a pre-engineered structural steel moment frame with ConXTech connections. Utilizing this system saved three months on the schedule's critical path (two months in design and fabrication and one month in installation.) 843 tons of structural steel were erected in only 15 days! The proprietary locking connections required less field labor and virtually no field welding given the prefabrication process included robotic welding and assembly line set-up. Other benefits to this system are improved seismic performance, a safer work environment and fewer field inspections as weld inspections are completed in the factory.



Underground Waste Coordinated to Avoid Geopiers® & Zone of Influence



Building Information Modeling

In addition to standard mechanical split units supplied by a central plant, a mechanical Chilled Beam Induction cooling system was incorporated to showcase this new technology in various labs and as a teaching tool for mechanical engineering students. Tilden-Coil utilized BIM to coordinate the mechanical systems and to sequence and layout the Geopiers® foundation system relative to the underground site utilities. The Geopiers® engineered design required a “Limits of Disturbance” or “Zone of Influence” that increased with depth. Utilities cannot be installed in these areas as that would change the loading characteristics of the foundations. Using 3D modeling, the exact locations for placing the utilities around these “Zones of Influence” were pinpointed for precise execution, saving field installation time and avoiding potential clashes.

BIM Services Included:

- 3D Constructability Review
- 3D Laser Scanning
- 3D Logistic Planning
- Clash Detection
- Shop Drawings & Fabrication Models
- Total Station Layout
- Underground Utility Models

“On behalf of the faculty, staff, students and alumni of the Gordon and Jill Bourns College of Engineering we are very thankful for the hard work and effort put in by the Tilden-Coil team that has resulted in an outstanding building for students to be called, equipped and sent out from our campus as graduates of character and excellence. Thanks so much for making this part of the college’s vision a reality.”

- Anthony Donaldson, Founding Dean, Gordon and Jill Bourns College of Engineering



The Tilden-Coil team serves beyond just building by maximizing learning opportunities for students. This was accomplished by leading class site tours during key construction activities and presenting an introductory BIM workshop for freshman students to share practical knowledge of BIM technology. The Tilden-Coil BIM Team invited Dr. Donaldson, Dean of the School of Engineering, to tour their facility and provided design input for CBU’s new BIM Lab. Based on this input, CBU incorporated student workstations with dual monitors allowing instructors to control monitors to demonstrate a new concept and then return control to the students for them to practice the new techniques.

Tilden-Coil team members serve as judges for Senior Project Reviews and on CBU’s Industrial Advisory Council providing feedback on Senior Capstone Projects. Tilden-Coil is involved in an industry partner group that supports CBU student hiring and has hired many CBU students over the years as interns and project engineers—some serving on the construction team for the College of Engineering building.

Since 2011, CBU and Tilden-Coil have forged a collaborative partnership built on trust and consistently met objectives. During this time, Tilden-Coil has successfully completed nine CBU projects with multiple new projects in the preconstruction phase.

Partners

Great accomplishments require great partnerships! Tilden-Coil recognizes those exceptional subcontractors who played a major role in completing this monumental project:

- ABC School Equipment
- Advanced Industrial Solutions
- Anning-Johnson Company
- Canyon Steel Fabricators, Inc.
- ConXtech, Inc.
- Coutts Heating & Cooling
- Crew, Inc.
- Lyman Door & Hardware
- Division 7 Services, Inc.
- Dow Diversified, Inc.
- Econo Fence, Inc.
- Fabric Wallcraft
- Fischer, Inc.
- Floor Seal Technology
- Floored Tile and Stone
- GBC Concrete & Masonry Construction Inc.
- GDA, Inc.
- Hufcor AirWall
- Inland Empire Architectural Specialties, Inc.
- IES Commercial, Inc.
- J L Blakkolb
- J.G. Tate Fire Protection Systems, Inc.
- Mark IV Communications, Inc.
- Meyers Construction Services
- Moore Flooring, Inc.
- M-Tech Glass, Inc.
- Overhead Door Systems, LLC
- Otis Elevator
- Pacific Carpets
- Pinnacle AVL, Inc.
- Pro-Craft Construction, Inc.
- Rancho Pacific Electric, Inc.
- S&H Cabinets & Manufacturing, Inc.
- Sonshine Landscape Company
- Southcoast Acoustical Interiors, Inc.
- Terra Pave, Inc.
- The Nevell Group, Inc.
- Western Ground Improvement



DENNIS AND CAROL TROESH ENGINEERING BUILDING
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