

News Release

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Contact: Anne Taylor Carros
Lord, Aeck & Sargent
404-253-6710
acarros@lasarchitect.com
or
Ann Kohut
Kohut Communications Consulting
770-913-9747
annielk@bellsouth.net

Diversity and Number of Labs in University of Alabama's Newest Science and Engineering Building Present Challenge to Laboratory Architect

Building Focuses on Multidisciplinary Research and Helps in Recruiting Efforts

TUSCALOOSA, Ala. Nov. 7, 2012 – As laboratory architect for the University of Alabama's (UA) newest building on a growing Science and Engineering Complex, architecture firm [Lord, Aeck & Sargent](#) (LAS) was faced with a challenge: program and design 85 highly diverse laboratory spaces in a structure that had to fit within the footprint and site prescribed by a master plan.

The building, known as the [South Engineering Research Center](#), or SERC, was completed in January. Envisioned by the UA College of Engineering (COE) as a facility that would emphasize multidisciplinary research and education over the five separate departments whose faculty it would house, the SERC has already fulfilled that goal and also has helped in the COE's effort to recruit science and engineering faculty along with graduate and undergraduate students. The four-story (including the mechanical penthouse), 197,000-gross-square-foot SERC was designed by the team of Davis Architects as architect-of-record and LAS as laboratory architect.

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Although the SERC houses some of the COE's department faculty from aerospace engineering and mechanics; chemical and biological engineering; civil, construction and environmental engineering; electrical and computer engineering; and mechanical engineering, associate dean for research John Wiest emphasized, "We didn't want areas devoted to single disciplines; we wanted a building that focused on multidisciplinary research and education, and this approach is working amazingly well.

"Rather than having individual labs for individual faculty members, we have teams of faculty and students from multiple disciplines working together. So for example, mechanical engineers sit next to and work with civil engineers. We get a lot of synergy that way," Wiest said.

Programming no easy task

The programming and design challenge for LAS, according to laboratory planner Patrick McIntyre, was in the complexity, adjacency and diversity of the 85 testing and research spaces, all of which had to co-exist with traditional research, classroom, office and meeting spaces.

"We addressed the issue by creating zones," McIntyre said. "For example, one of the major functions taking place in the building is vehicle, engine and combustion research and testing. Because of hazardous chemical issues and extreme noise associated with the work, we isolated all of these functions into what we refer to as the 'combustion wing.' "

LAS located another area – the high-bay zone – in the SERC's central core, which joins the structure's combustion and other wing. This zone consists of three 30-foot-tall high-bay laboratories: the 3,175-square-foot large-scale structures lab; the 3,400-square-foot electromechanical systems lab; and the 2,450-square-foot materials testing lab.

"Because one of our important design concepts was to put 'science on display,' we wrapped several undergraduate research and teaching labs around the high-bay labs and

equipped them with large glass windows to allow the students to view engineering on display and learn from the research going on in the high bays,” McIntyre said.

“The large-scale structures lab is one of the things I like best about the SERC, but it created some novel design challenges,” said UA’s Wiest, who served as the interface between the design team and the building users.

Wiest’s reference, according to McIntyre, was to the design of a separate support structure, or “strong floor” for the lab, which has heavy equipment mounted to it and has to withstand strong vibrations and attached loads.

“A strong floor has to be stiff, perfectly level and smooth and provide a strong, stable platform for its heavy equipment load and for performing research such as seismic testing and structural wall assembly,” McIntyre said. “So the strong floor is elevated on massive concrete wall systems to support the floor.”

Wiest also commented on the engine combustion lab. “We wanted something like Ford Motor’s research lab, but it was difficult to describe to the designers, so the LAS design team flew up to Detroit to look at the lab. While ours isn’t as large as Ford’s, it’s remarkably similar and another of the areas I like best in the building.”

“A transformational change”

The SERC, whose total project cost of approximately \$70 million was funded by a combination of UA funds and federal grants, “is part of a substantial upgrade of our facilities,” Wiest said.

“We had been working in 50- to 100-year-old buildings and labs of the same vintage, so this has been a transformational change for the whole College of Engineering.”

Furthermore, Wiest said that the SERC and the entire Complex have been “a tremendous boon” to faculty and student recruitment efforts. “Since work got underway about

seven years ago on the first building in this project, we've hired 51 new faculty in the College. And nearly a third of the 33 faculty members housed in the SERC are new hires."

The next building

LAS is also the laboratory architect for the last of four new buildings in the Science and Engineering Complex. When completed in August 2013, the "North Engineering Research Center," or NERC, will be a 185,000-gross-square-foot building supporting research in composite and nanocomposite materials; tribology, surfaces, coatings and corrosion; materials processing, manufacturing and joining; electronic, magnetic and photonic sensors; and structural characterization.

Project Team

The SERC project team included:

- UA Facilities (Tuscaloosa, Ala.) – owner's representative
- Davis Architects (Birmingham, Ala. office) – architect-of-record
- Lord, Aeck & Sargent (Atlanta office) – laboratory architect
- Whitaker & Rawson (Birmingham, Ala.) – MP/FP engineer
- Jackson, Renfro & Associates (Birmingham, Ala.) – electrical engineer
- LBYD (Birmingham, Ala. office) – structural engineer
- McGiffert and Associates (Tuscaloosa, Ala.) – civil engineer and landscape architect
- Gary C. Wyatt (Birmingham, Ala.) – general contractor

About Lord, Aeck & Sargent

LAS is an award-winning architectural firm serving clients in academic, historic preservation, scientific, arts and cultural, and multi-family housing and mixed-use markets. The firm's core values are responsive design, technological expertise and exceptional service. The firm is listed as 28th in *Architect, the Magazine of the American Institute of Architects'* annual "Architect 50" ranking of U.S. architecture firms. The ranking is based on business, sustainability and design excellence/pro bono. In 2007, Lord, Aeck & Sargent was one of the first architecture firms to adopt [The 2030 Challenge](#), an initiative whose ultimate goal is the design of carbon-neutral buildings, or buildings that use no fossil-fuel greenhouse gas-emitting energy to operate, by the year 2030. Lord, Aeck & Sargent has offices in Ann Arbor, Michigan; Atlanta, Georgia; Austin, Texas; and Chapel Hill, North Carolina. For more information, visit the firm at www.lordaecksargent.com.