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BASE Uses Innovative Structural Systems to Build Greener Buildings

Honolulu, HI – Baldridge & Associates Structural Engineering, Inc. (BASE) is using innovative structural systems to build greener buildings. The newly completed $60 million University of Hawaii at Manoa Frear Hall dormitory is the first University of Hawaii facility to receive Silver Leadership in Energy and Environmental Design (LEED) certification with the U.S. Green Building Council. And Hale Pawa'a, a Healthcare Realty Trust medical office building located in Honolulu, is currently being built using unique framing which reduces material usage as well.


University of Hawaii Frear Hall

The 12-story Frear Hall tower houses 811 students in one- and two-bedroom dormitory rooms overlooking Manoa Valley and Diamond Head. To build a sustainable structure, BASE used a more innovative and efficient post-tensioned system in lieu of traditional conventionally reinforced concrete, the standard for University of Hawaii facilities. The use of a post-tensioned system resulted in overall material savings while achieving serviceability criteria such as reduced sound transmission between floors required by the university.

This approach allowed BASE to achieve prestigious "Innovation in Design" points. The intent of this rating is "to provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED-NC Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED-NC Green Building System." In order to achieve Silver LEED certification, Frear Hall had to achieve between 33 and 38 points out of a total possible 69 points. Frear Hall is the first and largest of only two newly constructed buildings to received Silver LEED certification in the state of Hawaii.

Just down the road, Hale Pawa'a will house nine floors of medical office space when finished in 2010. The steel framing for the project incorporates CMC's Smartbeams™, which is a process of laser cutting standard steel shapes and welding them back together in more efficient configurations. Smartbeams™

Hale Pawa'a Smartbeams™

are recognizable for their distinctive constellated or round holes. These beams allow longer spans while using up to 30% less steel than typical steel shapes, satisfying a primary objective of the green building process. Performance is also enhanced by this process as the Smartbeams™ are both stiffer and stronger than comparable steel members. The additional benefit of the Smartbeams™ is in the castellated shape that includes multiple openings through the modified steel beams. These openings ultimately provide the client with the flexibility required in medical office buildings to reroute or add mechanical systems with changing tenant requirements.

BASE has also used this technology to achieve stiffer long-spans for parking decks above the Best Buy Honolulu and Safeway Kapahulu retail stores.

"Many of our clients have recognized BASE's attention to value-based design, the process of achieving efficient, cost-effective structural systems while maintaining or enhancing performance requirements," notes Steven Baldridge, President of BASE. "The added benefit is that this approach also helps to achieve one of the core tenets of sustainable design – the efficient use of materials and resources."

For more information on the U.S. Green Building Council and LEED certification, please visit http://www.usgbc.org/.

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Established in 1995, Baldridge & Associates Structural Engineering, Inc. is a full-service structural engineering and forensic consulting firm that evaluates each project from the client's point of view. Emphasis is placed on schedule, economy and detail as reflected by the unique needs of the client and their project. This commitment has led to the successful completion of projects of in Hawaii, Guam, India, Korea, and on the mainland.