University of California, Riverside Student Recreation Center

Riverside, California

Daniel MacRitchie | Lighting/Electrical Option

Building Team
Owner: University of California, Riverside
Construction Manager: Yet to be selected
Architect: Cannon Design
Landscape: Carter Romanek Landscape Arch. Inc.
Civil: Breen Engineering
Structural: Saiful Bouquet, Inc.
Mechanical/Plumbing: P2S Engineering
Electrical: Cannon Design
Aquatic Design: Counsilman Hunsaker & Associates, Inc.

Building Statistics
Size: 15,984 SF Renovation, 79,936 SF Addition
Stories: 2 above grade
Cost: $36.9 Million
Delivery: Design-Bid-Build

Architecture: The addition to the building uses a very modern style with glazing and metal panels while also reflecting the architecture of the existing building by using the same brick on the first level. The addition contains offices, classrooms, a gymnasium, a rock wall and multiple fitness areas. Outside the building there is a pool with both swimming lanes and a recreational portion that reflects the shape of the building.

Structural: The building's structural system primarily consists of steel beams for the second and roof level framing and steel columns throughout the building. The framing system uses moment connections around the perimeter of the building to resist lateral forces. The floors are comprised of a slab on grade on the first level and a concrete slab on metal decking on the second level. The foundation consists of a concrete wall below grade around the perimeter of the building and spread footings at the base of each column.

Mechanical: The mechanical system makes use of the two existing air handling units by replacing the supply air fans to increase capacity. Variable frequency drives are also added to the existing air handling units to reduce electricity usage. Three additional air handling units are used to supply air to the addition. The system also makes use of variable frequency drives and variable air volume controllers, some with carbon dioxide sensors for demand controlled ventilation.

Electrical: The electrical system for the building uses the existing 12kV switchboard to serve two additional switchboards, one at 480/277V and one at 208/120V. The 480/277V switchboard serves all of the motors in the building an a majority of the lighting while the 208/120V switchboard serves receptacle and other general loads in the building. Both new switchboards have surge protection devices to protect the electrical system.

Lighting: The lighting systems consists of primarily LED, linear fluorescent and high intensity discharge sources with a few compact fluorescent sources to minimize the power consumption. The building also integrates daylight, daylight sensors, and occupancy sensors into many of the spaces to further reduce the building's dependence on electric lighting.

http://www.engr.psu.edu/ae/thesis/portfolios/2012/drm5177/default.htm

Note: All renderings courtesy of Cannon Design