Research Facility Core and Shell (RFCS)

San Anto, California

PROJECT INFORMATION

Building Use: Research Facility with Office Space

Size: 127,373 SF

Cost: $20,000,000

Owner: Alexandria

Architect: Dowler-Gruman Architects

General Contractor: DPR Construction

Project Delivery Method: Design-Bid-Build

Contract Type: GMP

Design and Construction Features

Architecture and Construction

RFCS is a four story building with a subterranean parking garage that is being built to serve the growing research and office space needs of an already functioning campus. The Core and Shell includes a four story steel frame with various exterior facades including both curtain wall and punch window systems.

Structural System

The main superstructure at RFCS consists of structural steel. It rests on 42 spread footings sized mainly at 11'x11' supporting the structure with a CMU wall running the perimeter of the basement bearing the load from the soil. The design is straight forward following a redundant bay scheme. Composite metal deck rests on the steel beams topped with 3 ½" normal-weight concrete. A relatively new form of lateral bracing was used on this building. It is called a "side-plate" system and involves using steel side plates to horizontally brace and connect the perimeter columns to one another.

Mechanical System

The portion of RFCS that is being studied incorporates only the "core" of the mechanical system which entails large rooftop units with large ducts that travel down the main vertical chase of the building. The core portion of the HVAC system is comprised of 4 rooftop air handling units utilizing central chilled water via a main plant on the Faction campus and will service hot water via two 4-ton rooftop boilers.

Electrical System

Five hundred feet of newly installed high voltage lines on the exterior of the building footprint connect three transformers (3000KVA, (2) 1500KVA) to the existing Faction campus power. The power travels from the transformers to a 4000 A switchgear and a 2500 A switchgear that serve the power needs of the building. The electrical scope for the core and shell portion of the building was kept to the main power components.

Timothy Maffett | Construction Management

http://www.engr.psu.edu/ae/thesis/portfolios/2013/tfm5025/index.html