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Structural Option
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10/15/2007

Building Statistics Part 2

Architecture:

North Mountain IMS Office Building is a 123,400 square feet precast concrete office building located in Phoenix, Arizona. It features a state-of-the-art outpatient diagnostic imaging center and ambulatory surgery center on the ground floor. The remaining floors encompass over 92,000 square feet of open, rentable office space. The total building height is 60 feet, with a mechanical parapet wall that reaches 70 feet above ground level. Exterior finishes include three different precast concrete treatments, ¼" bronze tinted low-emittance glazing, and aluminum window frames.

Structure:

North Mountain's structural system consists exclusively of precast concrete products. The floor framing consists of 24" deep, 10' wide double tees with a minimum of 3-1/4" concrete topping. The tees are normal-weight concrete and have a 28-day compressive strength of 6,000 psi. The minimum prestress release strength is 4,200 psi. The prestressing strand is 7 wire, ½" diameter 270 ksi low relaxation strand. Each strand is pulled to 72.5% capacity, which results in a 30 kip force. The strand is held down at a single point in the middle of the tee. Typical spans are 44', 48', and 54'.

The 24" deep double tees bear on 24" deep by 32" wide inverted tee girders. 28-day strength is 7,500 psi and minimum release strength is 3,750 psi. Typical inverted tee girders use 22 ½" diameter stand for tensile reinforcement. Span length for a typical 30' bay is 28' due to the columns on each end. Dapped ends on the double tees allow the top of the tee to line flush with the top of the girder. The topping is then poured over the tee and the girder at the same time, interlocking them.

Interior spans of inverted tee girders bear on 24" x 24" columns. Column concrete strength is 6,000 psi. These columns are 56' tall and arrive on site in one piece. Interior columns rest on 6'-0" diameter caissons drilled to a depth of 30'-0".

The exterior precast concrete wall panels are the main lateral load resisting system. These shear walls vary from 9" to 1'-3" inches think. Also, interior shear walls are located in the center of the building around the elevator shaft and a stair tower. The exterior walls are supported with 18" wide by 40" deep grade beams which bear directly on drilled caissons.

Mechanical:

Heating and cooling is provided by a water loop heat pump and water-cooled condenser. This system features a 1024 gallon per minute open cross flow cooling tower mounted on the roof and a 200 kW boiler. Each floor features its own hydronic heat pump with 1,400 cfm capacity. All units for heating and cooling were sized on ambient temperatures of 115 degrees for summer and 40 degrees for winter. The calculated cooling load is 341 tons, and the calculated heating load is 188 kW

Electrical:

Electric service enters the north end of the building into two main panels. One panel services the surgical center on the ground floor and the other services the remaining three floors. Power is then redistributed to an electrical room on each floor. Both 120/208V and 277/408V service is supplied to the building. Total electrical demand for the imaging and surgical center is 1000 kVA, while the rentable space is 1754 kVA. Life safety and equipment protection is supplied by a 200 kW diesel generator.

Lighting:

Lighting for the lobbies and corridors is supplied by 277V fluorescent and compact fluorescent fixtures. The rentable office space will be built to suit future tenants. Lighting load calculations are based on 3.5 watts per square foot.

Construction:

This $10 million design-build project started construction in June of 2007 and is expected to be completed February 2008.

Fire Protection:

The building is fully sprinkled; therefore no part of the structural system needs to meet requirements for fire rating. However, all shaft enclosures must meet a two hour rating. The fire alarm system utilizes both smoke and heat detectors.

Telecommunications:

Telecommunication systems will be installed at the request of future tenants.

Transportation:

North Mountain features two elevators in the center of the building. One staircase is located beside the elevators, while another staircase is located at each end of the building.