VIDA FITNESS CENTER

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BUILDING STATISTICS PART II

STRUCTURAL SYSTEM:

The existing building structure consists of concrete columns, beams, and two-way slabs. This structure received some upgrades due to the additional dead load of a pool on the roof of the building. Several of the existing concrete columns were stripped down to their outer surface of spiral ties and rewrapped with carbon fiber or concrete after additional reinforcing had been added. The diameters of the enlarged columns ranges from 20-24 inches. The average span for these columns is approximately 24 feet. In addition to these upgrades, all of the existing footings were enlarged to increase their load bearing capacity to the new weight.

The three floor new addition was constructed of new, 24 inch round concrete columns and beams with post-tensioned slabs. The average span for the new columns on the addition is approximately 27 feet. This system rests on a foundation of grade beams, pile caps, and finally, micro piles.

MECHANICAL SYSTEM:

The primary mechanical system is a mixed water and glycol Variable Air Volume (VAV) system. Ventilation air comes from the heat recovery makeup air unit located in the fourth floor mechanical room. Air is preconditioned within this unit with the enthalpy wheel before being distributed to and conditioned in one of the 18 Air Handling Units (AHUs) in the four pipe system located throughout the building. These small AHU's are essentially fan coil units. A 310 GPM chiller is located in the fourth floor mechanical room and affords the AC system with chilled water. An 850 MBH gas-fired hot water boiler supplies the hot water for the system. Because the structure is exposed and there is no plenum space to utilize for return air, the system utilizes both supply and return ducts.

LIGHTING & ELECTRICAL SYSTEMS:

The electrical system ties into the grid from the existing connection, a 208/120, 3-phase, 4 wire, 1600 amp feed supplied by Pepco. Because a back-up generator was not included for this particular project, emergency fire alarms were specified to have battery back-ups. The majority of the lighting in the fitness center consists of HID downlights, with specialty LED lighting in certain areas for accenting. These lighting options were chosen by the Owner and interior designer mainly because of color rendering and final architectural appearance.

FIRE PROTECTION SYSTEM:

Both the new addition and the existing building received a new wet pipe sprinkler system due to its reliability and simplicity. All interior and exterior walls are fire-rated between 1-3 hours, according to code and specification. In addition to this, all of the exposed steel beams were applied with spray on fire-proofing.

FAÇADE SYSTEM:

Typical for buildings built in this area in the late 1800s, the existing building at 1612 U Street had exterior load bearing masonry walls (approximately 1.5 feet thick), though most of the load is still carried by the structural concrete columns. The building was also considered to be historic, meaning the appearance of the façade had strict guidelines. The masonry walls on the new addition are comprised of standard brick veneer with an air cavity, rigid polystyrene insulation, and an air/vapor barrier. These are attached to 8" x 8" x 16" CMU blocks that tie into the precast floor slabs. These 8" CMU walls are reinforced every 24" o.c. and fully grouted. The brick veneer is tied into the masonry with steel lintels at all interfaces.

Because the existing building's exterior walls were constructed of load bearing masonry, the only curtain wall on the project was located on the North and South façades of the new addition. These elevations are almost entirely glass storefront with aluminum framing, with HSS to support the curtain wall itself. A glass folding Nana wall is located on the front of the new addition on the ground floor level, and will eventually be able to be opened for the new restaurant.

CONSTRUCTION:

Figure 1: Tower Crane Located in Center of New Addition, Picture Courtesy of Luis Ortiz

Two cranes were used at differing times on the project to fly steel to the respective floors. The first was a 17.5-ton tower crane and the second was a 35-ton city truck crane. An innovation to combat the challenges associated with a zero lot line was to locate the first tower crane used in the beginning of the project directly in the new addition's construction area. The addition was constructed around the tower crane, which allowed the crane to remain on-site overnight, rather than parking another type of crane in the front of the building between the hours of 7AM-7PM. A picture of the crane located in the center of the new building addition can be seen in Figure 1.