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**Construction Management Opt.**

**Building Statistics (Part 2)**

**1/17/12**

**Construction:**

Phasing on the Masonic Village project is a very intricate process. The job consists of five phases and has several major milestones that need to be well-tracked, including health board inspections and owner move-in dates of various areas. Phase 1 is merely preliminary site work, foundations, and the relocation of existing parking lots. Phase 2 is where most of the major new construction occurs. It involves the majority of development for both the east and west wings. It is important for the additions to remain on schedule, considering dates have already been set to relocate residents from their current rooms. CMU load bearing walls provide structural support for the building. A 50 ton truck crane then follows behind by moving east and west along the site's access road and sets the precast concrete planks for the floors above. Once the floors are set, scaffolding is shuffled around and the CMU walls continue upward.

After both wings have been capped off, phase 3 reconnects the additions to the existing building at a second point along the existing south wall and phase 4 initiates heavy renovations. Upon being reconnected to the original structure, renovation work takes place within the existing building. Patient rooms are demolished and relocated away from the building's core. Work proceeds forward with the 40,000 SF of renovation space that makes up the rest of phases 4 and 5. Phase five involves wrapping up the remodel of public gathering spaces at the front of the nursing building with light renovation. These areas consist of nurse stations and other specialized healthcare rooms.

**Structural System:**

Masonry load bearing walls are what makes up the building's core structural system. Nearly all of the project's exterior walls, as well as many interior walls, are built with standard 8"x16" CMU blocks. These blocks are used for bearing walls and comply with ASTM C 90 standards, which rate them at an average compressive strength of 2,000 psi. Two main classifications of mortar are used for bonding. Masonry set bellowed grade or containing reinforcing is to be of Type S; whereas applications of interior load-bearing or non-load bearing partition walls is to be set with Type N mortar. Nearly all exterior wall surfaces are also finished with a brick veneer. Ties and anchors are made from hot-dipped galvanized carbon steel with a class B-2 corrosion protective coating.

Precast concrete floor planks are also very abundant on site. Planks are produced at a fabrication plant off site and trucked in for erection. Designers have implemented both hollow

core and solid core concrete planks within the building's structural framework. A 50 ton truck crane is used to make all the necessary lifts on the project. Individual units span across the addition to each load bearing CMU wall. 2' long #4 anchor bolts are grouted into the CMU core at 24" on center to properly secure the units. Once in position, anchor bolts are then grouted to the precast planks as well. In some locations, steel wide flange beams are used for structural support of the planks over wide openings. These connections are made through the use of two weld plates that were installed in the planks during fabrication.

### **Mechanical System:**

On the northwest corner of the site, an Evapco cooling tower is placed on a concrete pad. It is a closed circuit cooler and has a maximum capacity of 90,900 CFM. Intended to supply both the additions and the existing building, dimensions of the tower are roughly 12' wide x 12' deep x 21' high. Once fluid leaves the tower it is transported underground into the mechanical room, which is located on the first floor. The mechanical room also contains 3 natural gas Fulton boilers, each of which are about 3,500 lbs. One of the boilers is dedicated to domestic hot water. It is rated at 84% efficient and has an output of 1,680 MBH. The other two boilers are WSHP (water source heat pumps). These boilers achieve an efficiency of 98% and each have an output of 1,960 MBH. Two 675 lb. Bell & Gossett water condenser pumps are responsible for dispersing fluid from the mechanical room at a rate of 826 GPM. In the attics of the two additions, two 2,500 CFM heat recovery units are used for the newly added zones.

The existing structure is also going to be tied into the mechanical system of the additions. Two rooftop units currently exist atop the flat roof of the present building. These units are to be demolished and replaced by new equipment. One apparatus is designated as a 2,500 CFM ventilation unit, whereas the other is going to be a 4,000 CFM WSHP. Also being added to the existing building are 4 make-up air units for the kitchen areas. Two units will be dedicated to each area and supply the zone with an additional 1,560 CFM.

### **Electrical System:**

The electrical room is located on the first floor of the new addition directly next to the mechanical room. A 15kV feed is delivered underground from the utility and enters the electrical room on the west side. As the power enters the room it runs through a 480-208/120V Square D transformer rated at 75 kW. From here it is delivered to a 2000A QED main distribution switchboard connected to a main breaker that has been rated for the load. The MDP then sends power to numerous subpanels, including both 480/277V and 208/120V throughout the rest of the building. An 800kw 480/277V, 3 phase, 4 wire generator also exists next to the building's cooling tower. The generator's feed is also delivered underground to the

west side of the electrical room. When it arrives in the room it enters a 2000A generator distribution panel that is responsible for providing power to its proper locations.

### **Lighting:**

Interior lighting is primarily made up of T8, T5, and T5HO lamps with electronic programmed-start ballasts. However, there are also areas consisting of recessed and incandescent lighting. Fixtures of these types are to be compliant with UL 1598 standards. Under normal conditions, each florescent lamp operates at a minimum of 42 kHz. Both the ballast factor and power factor for each component is 0.95, with a lamp current crest factor of 1.7 or less. Fluorescent fixture-mounted emergency battery packs are accountable for 1 out of every 20 units in the event of a power outage. Emergency lighting is required to operate at 1100 lumens per lamp. Other T8 and T5 fixtures may also be found to have rapid start ballasts. T8 lamps of this type have an output of 2800 initial lumens, CRI of 75, 3000 K color temperature, 20,000 hours of lamp life, and draw 32 W of power. Although T5's are similar in some respect, they are much more efficient. They operate at 28W and have an output of 2900 initial lumens. The only other difference between the two lamps is that T5's have a CRI of 85. All fixtures that are not equipped with glass globes are specified to have some sort of plastic diffusers or lenses.

### **Fire Protection:**

The fire suppression system of the additions are wet pipe sprinkler systems. The pipes contain pressurized water at all times. Water within the system is to be kept at a minimum of 175 psi. Sprinkler heads are made up of flat chrome plated steel which are either ceiling mounted or sidewall mounted. Each sprinkler head is manufactured by Tyco Fire & Building Products LP. Individual heads are designed to activate when excessive heat is absorbed. Along with fire suppression there are also audio and visual warnings. An electrically operated bell alarm and flash warning is used to alert occupants. The alarm is a product of Fire-Lite Alarms, Inc.

### **Transportation:**

There are three single cylinder hydraulic elevators, two of which are passenger elevators and one that is designated for freight. During construction one new passenger elevator will be installed and the remaining two will be refurbished. The passenger elevators are a product of Otis Elevator Co. whereas the freight elevator is manufactured by KONE Inc. Individual passenger elevators have a capacity of 4500 lbs. Each unit will be 68" wide by 93" in depth and move at a rate of 100 fpm. Enameled steel doors and chrome plated handrails make up their finishes. There will also be bariatric lifts installed for handicapped or elderly people. Each lift is specified to be ceiling mounted and have an 800 lb. capacity.