

September 16, 2013

Sunnyvale Plaza

Eastern United States

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Technical Assignment #1

FACULTY CONSULTANT: CRAIG DUBLER



Executive Summary

The Sunnyvale Plaza is a 752,000 square foot high-rise hotel surrounded by a dense city within the Eastern United States. Consisting of several ballrooms and restaurants, the hotel will be able to support guests for the 11 stories of suites. The below-grade floors will include parking garage space and a concourse to the convention center next door. The hotel is also constructed on the same lot as two existing buildings in opposite corners. This creates a challenge of implementing one of the buildings into the new structure and avoiding disruption of the other.

The purpose of Technical Report 1 is to develop a comprehensive report on the existing conditions and project expectations.

The Sunnyvale is a 22 story structure with 11 floors for guest rooms and 7 floors below grade. A small existing building on the corner of the lot is implemented into the construction of the new building. The hotel consists of 1,175 guestrooms, 87 meeting rooms, and 49 suites. The first floors of the hotel also include five restaurants. A 30,000 square foot grand ballroom and two 10,800 square foot junior ballrooms are located just below the first level, followed by a multi-level parking garage for valet parking services. The center of the structure features an open atrium through all 15 above-grade stories and a statue piece. Within the garage, a concourse passageway was added to enter the neighboring parking garage. This concourse created complications with protecting the street and mechanical pipes overhead. The decision to produce a high-class hotel within the city center was made in 2008. After funding disputes and resolution, the design was on course to start construction during the summer of 2011.

The General Contractor, chosen by pre-qualified bid, is Hensel Phelps Construction Company. Hensel Phelps is a Design / Build contractor with a guaranteed maximum price contract. By utilizing this contract, Hensel Phelps risks the possibility of exceeding the budget and suffering loss, or finishing within the budget and acquiring a reward.

The new hotel structure will be connected to a Plumber's Union Building located on the corner of the site. This historical structure will be renovated to house several more hotel suites and a primary stairwell. The Plumber's Union Building adds an appropriate portion of brick to the overall building façade.

The project team utilized a unique top-down construction phasing for the structure. Especially distinctive, was the excavation process. A slurry wall was installed surrounding the entire excavation area, and the slab-on-grade was poured except for some sections. These sections were used to excavate the level below the slab. Once completely excavated, the new slab-on-grade was poured. This process continued for all seven stories below-grade. The project team felt that this phasing procedure was the only possibility for successfully excavating the jobsite. The below-grade structural system consists of steel columns encased with concrete. These were installed using a drilled shaft method and reinforced with rebar. The above grade structure consists of cast-in-place concrete columns and beams. Standard steel composite deck was used for the above-grade floors.

An entranceway was also created in the slurry wall for both the new hotel and the neighboring convention center. This creates a concourse to the truck bays in the convention center. A portion of the active street above the concourse needed to be closed so that it can be supported. Several underground utilities and pipes needed to be moved due to the concourse.

Sunnyvale Plaza utilizes a variable air volume ventilation system to efficiently heat and air condition the entire building. Six cooling towers are located on the roof of the structure and maintain the cooling ventilation system. Several large mechanical units are located in mechanical rooms on the first and third floors as well as throughout the below-grade garage. A fan coil unit is located in every suite to allow for personal control of each room. The hotel also utilizes pressurized stairways and standard sprinklers and fire dampers for fire suppression.

The electricity is provided to the building by PEPCO using four power vaults on the north side. Sunnyvale Plaza utilizes 460/265V, 4,000A Switchboards that connect to a 208/120V step-down transformer to 400A Panelboards located in three different electrical rooms on every floor.

Sunnyvale Plaza utilizes a curtain wall façade for the new structure. The curtain wall is made up of 2,400 wall units which consist of metal and glass panels and 29,000 punched window units for the suites. There is also a steel sunshade in front of a significant portion of the southern façade. The primary roof consists of a glass skylight, about the size of a football field, to allow light into the atrium. A majority of the overall roof consists of this glass covering. Around the skylight are several roof pieces at varying levels. Lower roof pieces located at the top of the existing structure and across the front edge of the building are utilized for rooftop terraces and picnic areas. The roof, in whole, consists of 5,200 square feet of rooftop terrace overlooking the city center.

The project team is pursuing a LEED Silver certification with a total of 36 expected points for the Sunnyvale Plaza. There are also 5 extra points that are a possibility, which would be enough to earn LEED Gold certification. The hotel will be one of the largest hotels in the United States to earn a LEED certification. LEED credits being pursued include Alternative Transportation, Water Efficient Landscaping, Stormwater Design, Heat Island Effect, Construction Waste Management, Low-Emitting Materials, and Innovation in Design.

The owner of Sunnyvale Plaza is a hotel developer with a popular hotel franchise fulfilling the duty of hotel manager. The purpose of the development of the hotel is to create a new facility in conjunction with the expansion of the franchise. It is vital for the hotel to be completed and open for business as expected. Every day that the hotel is not open on time can cause a substantial loss of revenue for the manager and owner.

The project team began construction in July of 2011. The structure, including below grade and above grade, was completed in July of 2013 and the building will be fully enclosed in October of 2013. The roof could not be finished until the large steel statue was airlifted into the atrium. It was vital to coordinate the lead time in completing the statue so that there was no delay in completing the roof. Guestroom finishes are expected to be finished by January of 2014. Substantial completion is expected in March of 2014 with the opening of Sunnyvale Plaza on April 25, 2014.