EXECUTIVE SUMMARY

GENERAL DESCRIPTION

1000 Continental Square is a high-end office building, featuring large, open floor plans with uninterrupted forty-foot bays along each side of the building. It is located along the prominent intersection of Pennsylvania Routes 202, 76 and 422; and is in close proximity to a Pennsylvania Turnpike interchange and the King of Prussia Mall. The building has a partially sub-grade ground floor mainly for mechanical systems and storage with five floors of leasable space above that. Total square footage is approximately 192,000 square feet. The structural frame is steel with composite concrete slabs, and lateral loads are resisted by two moment frames along the long axis of the building and two eccentrically braced frames along the short axis.

PROPOSAL

In order to cater to the intended occupants the building was designed with relatively large 30’ x 40’ typical bays and a 100 psf live load on all floors so the space was a versatile as possible. The problem with this was many of the beams had to be over designed to control defections which resulted in some inefficiency in the design. My proposal is that if the building is converted to a concrete structural system some if this inefficiency can be removed. Additionally, the floor will be designed as a pan-joist slab and beam system which should reduce the total floor system depth significantly, as well as potentially act as the lateral system in the long axis of the building.

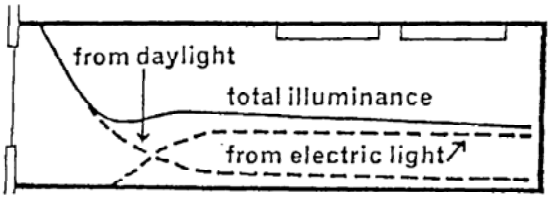
SOLUTION

This proposal requires the building’s structural system to be completely redesigned as concrete. The first step will be the design of the pan joist floor system which I will design via the CRSI Handbook. Then the columns will need to be redesigned in concrete and the foundations modified for the added weight of the new system. The final step will be the design of the lateral systems which will be shear walls to replace the existing steel braced frames.

BREADTH TOPICS

In addition to the structural redesign, investigations into the lighting system and architectural floor layout will be performed. The goal of the lighting system modification will be to include daylight calculations into the overall design in hopes of decreasing the energy used to light the office space. The architectural breadth will design a floor plan for an AE office. The design will incorporate features to make the space more enjoyable and productive.

BREADTH ONE - EFFECTS OF DAYLIGHT



My first breadth study will look at how energy costs can be saved by using daylight. The north side of the building is a continuous glass curtain wall. This should allow a great deal of ambient daylight into the work space which should save on power costs. Additionally, there is also a large curtain wall at the front entrance on the south side of the build, this curtain wall could possibly be used to help light the elevator and lobby space since the harsher direct sunlight is not as good for lighting work spaces. Hand calculations will be conducted to figure out solar angles, solar gain, and daylight levels. All of this will then be used to decide if it would be feasible to introduce a lighting system with zones which are adaptable to various levels of daylight, and perhaps integrate photosensor light controls.

VI. BREADTH TWO – ARCHITECTURAL STUDY

The architectural breadth will concentrate on the layout of a mid-sized AE firm in half of one of the typical floors. The design will include features to make the space a more enjoyable and motivating pace to work. The design will incorporate features of the overall building design into the floor plan like curving lines and extensive glazing. Additionally the new design will feature an improve cubicle layout which inspires productivity through ergonomics. The Final design will meet area requirements determined from other AE offices, and will incorporate ideas from professionals currently in the field. The result should be an exciting and adaptive work space.