

500 Delaware Ave.

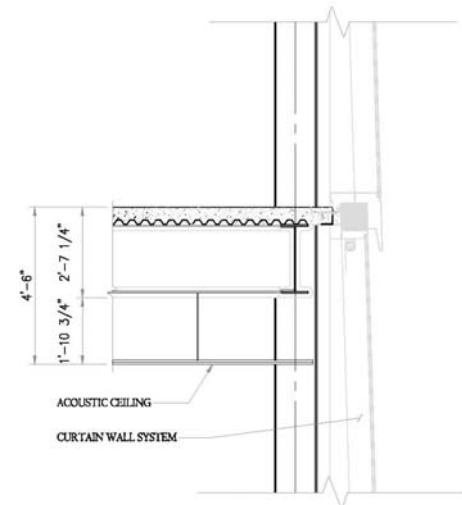
9.0 CONCLUSIONS

This report contains a thorough investigation of the existing composite steel structure and an analysis and design of the new post-tensioned concrete structural framing system. After this investigation, the systems were compared based on cost, schedule, and impact on foundations. The post-tensioned design is a good alternative based on cost and schedule, but its impact on foundations is unfavorable. If a caisson foundation system was implemented, it would drastically increase the cost of foundations by \$3.5 million.

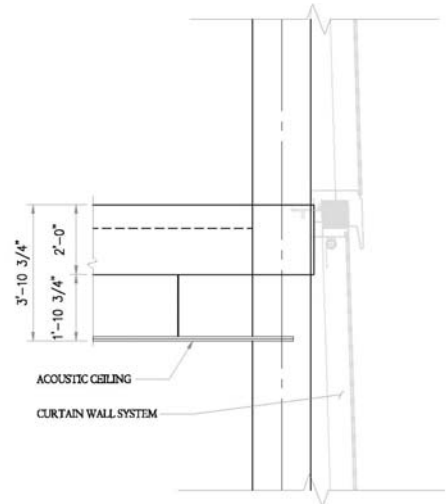
Although these comparisons show that the post-tensioned system is a good alternative, comparison based strictly on these factors is not enough. Architectural requirements and local market conditions tend to drive design more than the engineer. Taking these factors into consideration, the original composite steel framing is the favorable system. Wilmington, and most of Delaware, has remained dominated by steel design. Though composite steel has proved favorable for Gateway Plaza's requirements, the original objective of decreasing floor depth was achieved with the new design. Each floor had a savings of 7.25". This is an overall savings of 116", or 9.66', but not enough to add another floor level.

Breadth studies also allowed a good deal of understanding to be gained into how the structural system affects the other systems in the building as well as the impact it has on construction.

Despite the final recommendation that the original system is the best design for Gateway Plaza, a great deal of knowledge was gained through extensive research and the original objective of decreasing floor depths was achieved.



COMPOSITE STEEL SECTION



POST-TENSIONED CONCRETE SECTION

Figure 41-Floor section comparison.