

## **BREADTH OPTIONS**

### **Bread Study 1: In-Depth Cost and Schedule Analysis**

This breadth study will focus on the scheduling impact and cost-related issues that will be impacted by the proposed structural changes. The notable scheduling changes would involve the additional time that might be needed to excavate for a sub-basement level if it is needed. Also, the differential procurement and erection time will need to be considered for the steel design, instead of post-tensioned concrete.

Cost analyses will be conducted separately for the increased revenue that might be possible if an extra story is gained and the additional cost of labor and materials to implement the proposed building alterations. Additionally, the impacted construction time will be considered before directly comparing revenue to cost. The owner is unable to profit from a building until construction is complete so small revenue gains may not outweigh scheduling delays.

Professionals in the field will be contacted to help provide industry and area specific cost and scheduling information instead of just using RS Means as the only source of information.

### **Breadth Study 2: Mechanical Equipment Movement Analysis**

This breadth study will focus on the movement of the mechanical equipment to the basement or sub-basement. First, the mechanical equipment will need a way to draw outside air to condition the spaces. It needs to be determined that Washington, D.C. will allow sub-grade mechanical equipment. The mechanical ductwork will need to be re-designed due to the move. This will be more of an architectural study as to placement of these ducts since it is assumed that the demand will not increase, unless the extra floor is created (addressed below), and therefore, the ducts do not need to be resized, only re-placed in the building. Waterproofing is another issue due to the high water table next to the river. This will also be considered and detailed for the move.

### **Depth Related Study**

If the extra floor is a viable option, a brief study will be performed to ensure that it is possible for the building to house and supply the additional mechanical and electrical load and equipment. Also, if time permits, a brief study on the effects of the mechanical equipment move on the occupants will be completed including acoustic and vibration effects on the floors above.