

Executive Summary

The following proposal outlines issues and changes that will be analyzed to add value, decrease schedule and cost to the project. Three technical issues will be analyzed and one industry issue will be researched and applied towards the Marriott Hotel and Convention Center Project. All of the following issues will be addressing construction difficulties that arose in the southern half of the project, in particularly the convention entry level of the project. These technical and industry issues include:

Breadth #1 - Structural Redesign

The structural system of the convention entry level will be redesigned from a 13 inch thick cast in place concrete floor slab and concrete structure to a composite steel joist structural system. A composite steel joist system will be designed to support the required 350psf live load of the exhibit space.

Breadth #2 - Mechanical Redesign

In the Convention Entry Level the smoke evacuation ductwork is very large and cumbersome. With review of Marriott Standards for smoke evacuation requirements the ceiling will be redesigned from a hard ceiling to a balloon type ceiling. The space will be analyzed for the new smoke evacuation requirements and a resulting smoke evacuation system will be designed including the fans and ductwork sizes. The proposed change will also be analyzed for potential savings in material costs, design costs and time, and schedule. Additionally, in switching from a concrete structure to steel structure the required ductwork will be evaluated for the potential in having the entire ductwork run through the joist openings and thus not losing floor to ceiling height.

Depth #1 - Construction Sequencing

An equivalent micro-pile foundation system will be designed to support the required loads that the current caissons support. This system will also be evaluated as an alternative to decrease the schedule for the foundation work. In large part, the convention entry (south end of the site) will be evaluated and re-sequenced to implement the proposed changes of the foundation system, superstructure structural system and mechanical ductwork installation. With the implementation of all proposed changes the south end of the site will be a cleaner more efficient work area that will also reduce the schedule. In utilizing a steel structure it will allow for the super structure to be erected prior to all underground work and unforeseen issues being completed in the museum and convention entry levels.

Marriott Hotel at Penn Square
and Lancaster County Convention Center
Lancaster, PA

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Research - BIM Implementation

The BIM processes that will be researched for this project will include the effectiveness and advantages of implementing a 3D electronic survey of existing conditions into a BIM model/3D model of the structure. The existing buildings made it difficult to design and construct the new Marriott Hotel and Convention Center with traditional surveying techniques. The required learning curve, costs and time will be evaluated against the advantages in having the 3D electronic survey imported into BIM/3D model for design and coordination.