

Achieving Excellence in Project Execution – Due Diligence

By Deepa Dhar

We are all too familiar with the multiple tasks a facilities manager has to undertake. Whether it is daily operations or capital projects or something in-between, in times like this, one is often tasked with multiple roles and challenges. It is not very unlikely that a facilities staff member is tasked with his first capital project – however small – without much guidance on how to be successful.

The design of a space has a tremendous impact on the people and their performance. Successful implementation of projects is a crucial part of the success of any organization. Projects related to technical spaces for the hi-tech, biotech, medical and manufacturing industries, are especially more demanding and critical for optimal functionality and use.

In this article, we focus on the essential steps to a smooth and efficient design process that will avoid costly design iterations and schedule delays. We strongly believe that careful and comprehensive planning will lead to a facility that will be cost-optimal for any usage requirement. A common mistake in smaller projects is to underestimate the complexity and skip certain steps in the design process in an effort to expedite the project. Not only does this result in costly redesign, but often in even more costly surprises during construction and an unhappy user group, who's needs are not met. Smaller projects, usually in existing functioning buildings, require the same if not more research and understanding early on.

While every project is unique, the process is the same. Due diligence early

on, clear communication between all team players and timely decisions will alleviate many issues and pave the way for success.

Design is a multi-disciplinary process, involving several 'experts' in their respective fields. This could include architects, structural engineers, mechanical, electrical and plumbing engineers, security professionals, environmental health & safety personnel. Projects in the biotech and medical industries could include an additional set of professionals for hazardous material classification & handling, quality control and validation. Facilities Managers play a pivotal role between the client team, design team & construction team, bringing them all together to deliver a successful project.

The first step in the design process is to identify and document the User requirements. Get enough detail of space requirements, personnel count, environmental conditions and utility requirements. Compare this to the existing infrastructure to establish if the requirements will require infrastructure upgrades. Establish a high level scope document, review with the user group/s and establish a high level budget. Make sure to include ample contingency – up to 25% - at this early stage. Only then go to upper management for preliminary funding approval. There have been too many projects initiated with a pre-established budget, without a good understanding of the project ramifications, making it really hard and sometimes impossible to be successful.

Don't set yourself up for failure by committing to deliver a project on a pre-established budget without a firm understanding of the scope & schedule!

Thorough up front planning and identification of all issues will eliminate costly re-design efforts during the design process and even more costly surprises during construction. During early-planning or programming phase, estimating the right amount of space required for the new facility can be tricky. Having a professional architect and engineer on your team early in the process will help you to develop space requirements, infrastructure requirements & help you define the right size & type of facility for your company.

A scientific laboratory needs a safe and well-controlled environment that ensures reliable, consistent results. This is true regardless of whether the laboratory is designed for biochemistry, electronics or physical sciences or whether the intended function is analytical, experimental, academic or entrepreneurial in nature. Lab projects require a very well detailed program and basis of design document identifying User requirements pertaining to space requirements, work flow, equipment needs, environmental conditions and design for building systems – electrical, hvac, plumbing, security etc needed to satisfy the project requirements. A review & sign off by the user group will confirm agreement to the design parameters. Enlist a general contractor to provide a realistic current cost estimate based on the program requirements to establish a project budget.

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Key factors to keep in mind:

- Involve lab users/representatives early in the process and allow clear direct communication between the design team & users.
- Involve an architect and each engineering discipline early in the process.
- Understand and challenge existing practices. Explore more practical solutions, don't blindly repeat existing conditions.
- Plan for growth and flexibility. Design for the discipline, not for the individual.
- Field-verify existing conditions.
- Communicate to User groups the importance of decisions early on, importance of 'sign off' on design drawings and the exponential cost of any changes as the project progresses.

- Introduce the project to the local jurisdiction early on. The architect will discuss and resolve any code issues early on to streamline the review process.
- Establish a reasonable schedule – identify long lead items early on.

Early establishment of a detailed program will facilitate a smooth progress for the rest of the design process. With a clear understanding of the project needs, the design team can now proceed with schematic design to address the project requirements. Regular review meetings and feedback from the User group will guide the design to the final proposed solution.

Following approval of the design, the design team will progress to

detailed design or design development, delineating more specifics of the project. User interface will be more intense but specific to certain issues. Approval of these final details, will release the design team to complete construction documentation and submit to the local jurisdiction for plan approval.

Early involvement of the general contractor will enable establishment of a realistic construction schedule, order of long lead items and phasing scenarios for expedited delivery.

Recognition of the value of establishing a clear definition of the project early on and getting expert help as needed, will allow a smooth design and efficient construction process, eliminate any surprises and prove to be a successful tool for a happy client!