Institutional Design:
Uncovering and Managing Enabling Projects

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Abstract:
Enabling projects—ancillary work that must be completed so that the primary work scope of a funded project can be executed—often seem to come from out of nowhere and can have a significant impact on the cost, schedule, and overall performance of institutional construction projects. Identifying these “side” tasks accurately and early in the design process and integrating them into the main project’s design, budget and schedule, are steps critical to success of the main project. It pays to use a team experienced in complex institutional projects who can uncover these “hidden” cost items early and find creative ways to include them in the project.

What are enabling projects and why do they lead to “scope creep”?

An institutional project typically is budgeted, funded and approved to meet the objectives of a particular program. As the project moves into design and construction, “enabling” work that was not the focus of the original planning and funding, but is required to implement the funded project, tends to surface. It may be that extra work will be needed to protect ongoing operations or abutters, to make “backfill” space changes, and even to relocate programs into swing space. If the main project is a renovation, it may become apparent that building and infrastructure upgrades, life safety code compliance, and/or temporary construction are required. When this “enabling” work gets addressed late in the design process or even after bidding, it becomes additional scope that upsets the budget and schedule and compromises the project’s outcome.

Why do these projects get missed?

Enabling projects often seem to fall between the work directly assignable to a capital project—the job the user group wants done—and the institution’s “deferred maintenance” budget for upkeep and renewal of its buildings and infrastructure. The needs assessment that is used to establish a project’s funding often focuses on program needs and work within a project limit line, and does not involve a broader assessment that would capture the side projects. At the same time enabling projects are not typically covered by institutional capital renewal budgets, which are not set up to anticipate upgrades driven by space or functional changes. Thus, the enabling work that surfaces is unwelcome news that no one wants to hear.
Checklist: Potential problem areas that lead to additional scope

Imai Keller Moore has developed, over the course of many renovation and backfill projects, a method for ferreting out enabling projects early. We investigate the following areas closely:

- Demand loads and functional requirements that tax the base building, infrastructure, or other occupants
- Existing site and building capacity limitations and deferred maintenance issues
- Building code, zoning, environmental, safety and other industry standards and regulatory requirements
- Institutional policies—including “handshake” agreements—in areas such as risk management and sustainability
- Construction mitigation projects, including relocations and swing space, and phased construction
- Coordination with concurrent and pending projects and campus plans

Solutions: Addressing the whole project

Imai Keller Moore recommends five steps that institutions and their design teams can take to discover the full scope of work that a project requires and be sure it gets addressed early in the design solution and budget.

1. Use the feasibility study phase as a “discovery phase” to assess enabling work and include it in planning for the main project.

   Because project budgets and schedules are often established before design starts, they may not accurately address enabling issues specific to the project site. We recommend a pre-design facility assessment, conducted by a team experienced in complex institutional facilities construction, as part of the initial project feasibility and budgeting study. Assessing enabling work early means there is time to look at alternatives, identify and manage costs, and find ways to scale back scope additions that might otherwise delay or overburden the project.

2. “Front load” projects during Schematic Design:

   We present the project’s design alternatives in greater detail than is customary in Schematic Design, and discuss enabling projects, and strategies for addressing them, as part of the evaluation of design alternatives. IKM has found a “front-loaded” Schematic Design process to be very successful in giving clients the opportunity to make more informed design choices, and to address enabling work proactively before the final design and budget are set.

3. Work with an experienced cost estimator, who can budget enabling projects with minimal scope definition.

   In general, assigning enabling work to a focused “A team” of experienced design and construction professionals who know what to look for, means this side work will get the necessary attention.

4. Use a facility master plan approach to coordinate the enabling work with current and future primary projects.

   An experienced design and construction team can assist the institution’s project managers in thinking strategically about how to accomplish enabling work cost effectively and keep this cost appropriate to the size of the funded project. This may mean finding alternative ways of performing or funding the enabling work, negotiating a phased approach to correcting problems or implementing required upgrades.

5. Make, and adhere to, a master schedule that ties side projects to the primary project at critical milestones.

   While enabling projects may have their own implementation issues and may even be “spun off” to their own design and construction team, it’s important to keep them closely coordinated with the main project.
Case study: Anticipating enabling projects at the project planning and budgeting stage

An example of how a careful assessment of enabling work can improve space-planning decisions is a study by Imai Keller Moore that compared two options for locating a new Geophysics laboratory. In the first location, on the top floor of an existing building A, available space for the project was scattered in several locations, requiring renovations to reorganize the present occupants and free up contiguous space for the new lab. The second location option, on the first floor of an existing building B, had enough contiguous space for the lab, but would require running several new shafts for vertical ducts and piping through occupied labs on the second floor, to reach a new penthouse on the roof. In both cases, enabling work would add approximately $700,000, or about 20%, to the lab's construction cost and cause both disruption and a small loss of space for other occupants.

Imai Keller's Moore's comparison of the two options showed that reorganizing the occupants in building A would place a heavier burden on existing operations than running new shafts to the roof in building B. The architects outlined the costs and space changes required in both options so the client institution could decide how to proceed, knowing the challenges in each choice.

Case study: Using a master plan approach to manage enabling project scope

Before starting schematic design for a Materials Science laboratory renovation in an occupied lab building, Imai Keller Moore anticipated the mechanical and electrical loads that the investigator required and assessed the lab's impact on the building's infrastructure. It was determined that new electrical service to the lab would be needed and a non-code compliant panel would need to be accessed. At first glance this was a simple upgrade to the electrical closet to conform to electrical code clearance requirements; but a more in depth investigation revealed a systemic problem with all the panels stacked on this riser on floors above and below this closet. In addition, through discussions with the institution's electrical engineers and the City's inspectors, IKM learned that the institution had made a longstanding handshake promise to upgrade these panels. The project was now threatened by a significant, unfunded, additional cost that was disproportional to the modest renovation at hand.

Because this enabling project was uncovered early in the Schematic Design phase, IKM and the client had time to develop a phased approach to the electrical upgrade, parsing the costs more proportionally to the renovation at hand, and to negotiate an agreement with the City based on phasing the upgrade as part of
future renovations. As a result of this planning, the funded Material Science project was able to move forward within a reasonable budget. Moreover, the master plan documented the scope of work for more comprehensive upgrades of the panels on other floors, so the client could plan for this cost in future renovations. Eventually all five electrical closets on the riser were upgraded in tandem with multiple renovation projects, using the costs identified and budgeted in the initial master plan. The success of this master planned approach succeeded because it offered a strategy for scaling improvements to the size of the project being considered and a documented process for negotiation with City inspectors.

Conclusion: Facing the full scope

Project managers face many challenges in assessing enabling projects and obtaining institutional approvals and budget for them, early enough in the process when space and budget allocations are being set. Imai Keller Moore provides an experienced design team skilled in analyzing enabling projects, communicating them clearly, and solving them creatively as part of the main planning and design effort. We believe that addressing enabling work well is an important part of our planning and design services to our institutional clients.