

COMMISSIONING PROVIDERS ROLE WORKING THROUGH A PROGRAM MANAGER

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Synopsis

Many building owners are utilizing large program management firms to manage the entire design and construction process on major capital projects. The program manager (PM) has responsibility for hiring the A/E team, the construction team, and the commissioning (Cx) provider. In this contractual relationship, the Cx provider coordinates their efforts through the PM firm. This paper will discuss the third-party commissioning provider's roles and responsibilities when working for a program manager. The pros and cons of working in this project management arrangement will be presented.

Three case studies will be given where third-party commissioning was provided through a program manager. The paper will elaborate on the specific successes and failures in the commissioning process due to PM coordination and management.

About the Author

For the last fifteen years, Mr. Lundstrom has been the Vice President of Facility Services for E M C Engineers, Inc. (EMC) in Atlanta, Georgia. He is responsible for managing engineering services at EMC in the areas of building commissioning, retro-commissioning, recommissioning, building automation consulting, systems integration, and mechanical-electrical training. He worked in EMC's Denver office in 1980 before coming to Atlanta in 1984 to help establish a new office. Mr. Lundstrom is a registered professional engineer – mechanical in Georgia. He is also a BCA certified commissioning professional (CCP).

Mr. Lundstrom is heavily involved in the Building Commissioning Association (BCA). He was elected to the Board of Directors in 2003, and is serving as vice-president of the Association. He is also the board liaison to the Administration Committee. Mr. Lundstrom is also one of the founding members of the first regional chapter of the BCA.

Program Management Roles

The use of Program Management (PM) firms to build all types of facilities, for all types of owners, has expanded in recent years. PM firms manage major school district capital projects, university construction and operations, prisons, laboratories, corporate campuses, and “Build-to-Suit” facilities.

The fundamental idea of professional Program Management is that of exclusive representation of the Owner by a firm with a team of professionals experienced in the architectural and engineering design process as well as in construction procurement and construction, with expertise in costing, scheduling, and project management. The program management firm removes itself from consideration as the builder, architect or engineer (and sometimes commissioning provider) for the project.

The Program Manager functions as an extension of the Owner’s organization. Program Managers offer clients an array of services that are tailored to specific project needs. The Program Management firm assumes full management responsibility for the project team, and oversees all design, engineering, construction and commissioning activities.

The objectives of Program Management services is to provide the owner with the most appropriate design solution, with regard to economics as well as building aesthetics; and to expedite, through stringent managerial controls, the entire design and construction process.

The basic scope of program management includes:

- Assisting in establishing project goals and objectives
- Developing a complete project implementation plan
- Preparing a goal schedule for all owner and municipal approvals, design releases, selection and contractor commitments and installation
- Reviewing A/E proposals and making positive recommendations
- Reviewing all bids from general and subcontractors and making recommendations.

Program Managers may also:

- Provide a budget estimate
- Determine the quality levels of project systems
- Monitor estimated construction costs during design development
- Provide value engineering on the entire project
- Assist in securing agency approvals
- Prepare a quality assurance program
- Monitor the safety program
- Monitor cost forecast vs. budget
- Select and manage the Cx provider
- Monitor engineering coordination
- Monitor purchasing/shop drawing and change order status

- Monitor construction status
- Format and issue monthly control report
- Provide reports to various governing bodies.

PM firms are normally hired on a “firm fixed price” basis to manage the entire project. Since the PM firms are “for profit” companies, it is to their benefit for the construction project to finish on time or their time investment will increase, reducing their profitability.

Figure 1 shows the typical contractual lines of a design-bid-build project, with no program management. Figure 2 shows the same project, with a program manager. The connecting lines indicating communications and reporting for the project. The Owner has separate contracts with the various parties. Each identified firm has a contract with the owner, with the program manager listed in the parties’ contracts as the owner’s Representative. The owner’s level of involvement and support varies project-to-project when a PM firm is hired to manage the project.

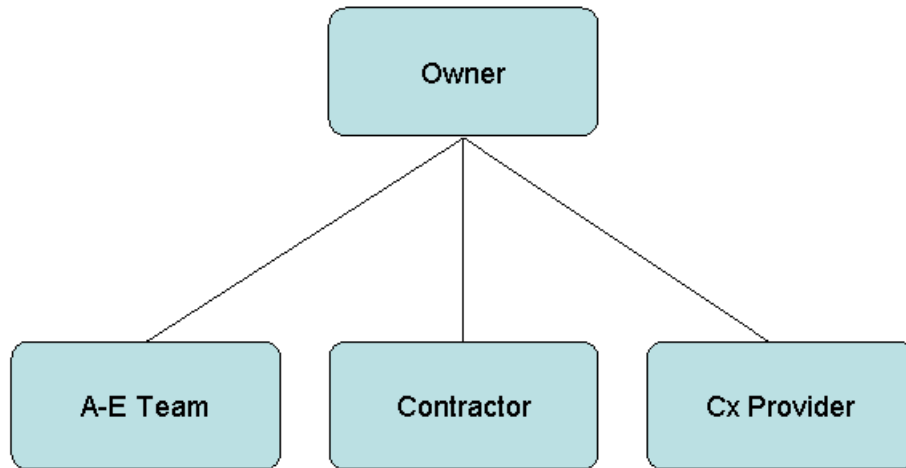


Figure 1 – contractual lines between owner and parties

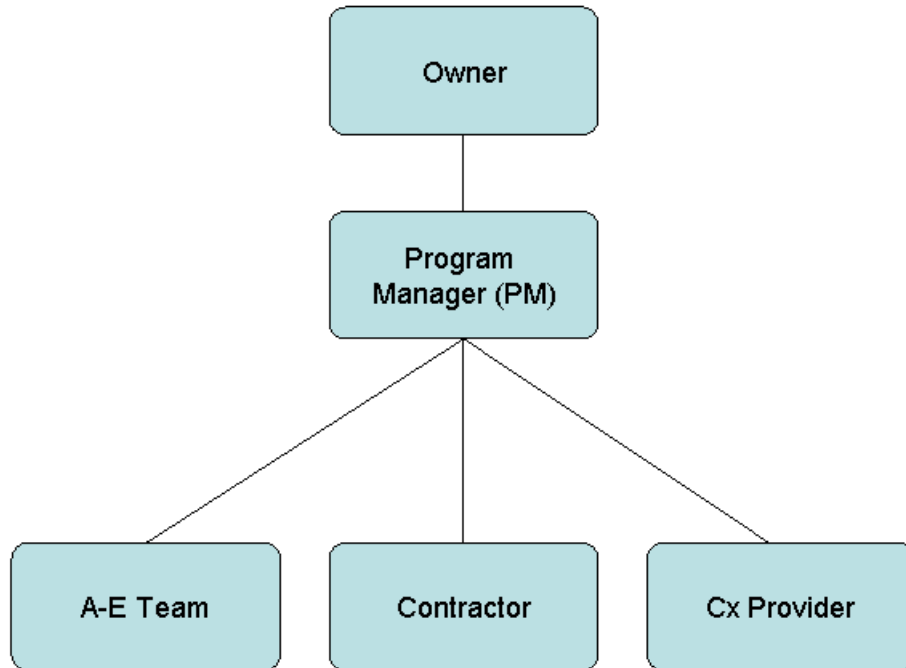


Figure 2 – lines of communications through PM

Commissioning Provider Roles

As with other firms involved in the project, the PM firm will normally prepare the RFQ for selection of the commissioning provider. They will help identify a group of qualified Cx firms for consideration and coordination of the RFQ process. They will then be involved in the final selection process of the Cx firm, negotiate scope and fee with the selected Cx firm, and prepare the contract for the owner and Cx firm to sign. Development of the Cx scope will normally involve some interaction with the owner.

The PM firm assumes full management responsibility for the project team. The Cx firm should have a meeting early in the project with the PM firm and owner to discuss when and if the Cx firm will go direct to the owner to discuss problems that arise. Ultimately, the Cx firm is responsible for verifying to the owner (not the PM firm) the correct operation of the systems and building. The Cx firm should be keeping the owner apprised of the design and construction process, especially if the project is not meeting the owner's project requirements (OPR).

During the design process, the Cx firm coordinates with the PM firm to develop, coordinate, or obtain the owner's project requirements, and develop lines of communication with the architect design team. Any commissioning plans, review comments, commissioning specifications, etc., would be funneled from the Cx provider, through the PM, to the other team members. The PM will coordinate meetings, and distribute meeting minutes and other correspondence. The Cx needs to build strong relationship to make sure they are involved in reviewing designs at significant milestones, and attending review meetings to discuss Cx issues.

During construction, the Cx firm again must continue to maintain strong communication with the PM firm and with the contractors. During Cx construction kick-off meetings with the contractors, the Cx provider, PM firm, contractor, and other team members will coordinate lines of communications. The style of the PM firm and their direct manager will dictate the latitude of direct communications during construction.

On projects with major construction and/or design issues, the Cx provider should support the PM in resolving issues.

In some instances, the PM firm may decide to table a project issue brought up from the Cx firm. The PM firm may make this decision due to pressure for time or budget. The PM firm may take into account how issues may cause their own firms to expend additional time to complete their contracts, thus costing them more money and reducing their profits.

The Cx firm must try to settle issues at the lowest level in the process; but they must also decide when the project has changed and will not meet the owner's project requirement, without communication with, clarification to, or approval of the owner. At this point, the Cx firm must by-pass normal lines of communication with the PM and speak with the owner directly about the issue. The owner then can decide to take appropriate action, if necessary.

At the end of the project, when the contractors are pulling off the job, and contracts are being closed out, it is important that the owner is aware of any ongoing issues from the Cx firm. Construction and design contracts cannot be closed out if ongoing issues are not yet resolved. The Cx firm needs to provide clear documentation to the PM firm, the owners, and any legal or contracting personnel concerning issues that require final resolution.

Cx Case Studies:

The following are three case studies of projects recently completed by E M C Engineers, Inc., (EMC) where EMC was the Cx provider working for a PM firm as a third party commissioning authority.

Case Study One

Building description – \$30 million university recreation center facility

The PM firm was hired by a foundation group, to manage the design and construction of the recreation center. An architect (and sub consulting engineers) was selected based on qualifications. The construction manager at risk ([CM@R](#)) and commissioning authority were hired part way through the design process, using qualification-based selection. The Cx firm provided services from design through warranty period on the building.

The Cx firm had a contract with the owner, but lines of communications were through the PM firm. The PM firm had one senior architect assigned to the project. The owner's facility architect-engineering staff was not involved at all, except at the very end of the project.

The Cx firm reviewed the pre-final construction documents and coordinated comments to the A/E team through the PM. The project had major design revisions and value engineering at the final construction document stage to meet budget. Unfortunately, the PM firm and A/E did not keep the Cx firm in the loop on these changes and the effect they had on operation of the systems. Some of the resulting changes did not meet the OPR.

PM oversaw the contractor and coordinated meetings, progress (or lack thereof), budget, change orders, etc. The A/E team did normal inspections of the construction, answered request for information (RFI's), clarified request for change orders, etc.

The Cx firm communicated issue logs, meeting notes, and RFI's to the PM, who then forwarded them to the A/E team and contractor. During inspections and verification testing, the Cx firm coordinated directly with the contractor and subcontractors. The PM informed the university about project schedule, budget issues, and contractual issues, but the university received no communications from the PM on the Cx issues about the building.

The local university staff got more involved at about 95% completion of the building. The building was behind schedule and the Cx verification was going on during faculty move-in. The PM pulled off the project at the point of beneficial occupancy. It seemed as though they were taking financial loss themselves, and tried to cut their ties to the project as quickly as possible. The owner had to step in at this point to manage the

process and try and close open issues. It was at this time the university learned of the outstanding Cx issues. These items had not come to light because the contractor and A/E had closed out all their punchlist items and really did not want Cx issues to come out; and maybe because the PM did not want to see the project extend any further. Unfortunately, the university did not coordinate dealing with the Cx issues before the contract department and lawyers closed the contracts and settled claims, and everyone got off the site.

Case Study Two

Building description - \$180 million multi-use academic complex with classrooms, conference facilities, hotel, retail, central plant, and parking decks.

The PM firm was hired by a foundation group to manage the design and construction of the complex. An architect (and sub consulting engineers) was selected based on qualifications. The commissioning authority was hired late in the design process, using qualification-based selection. The Cx authority provided services from design through occupancy, but no warranty period Cx services.

The attitude of the senior staff of the PM firm was slightly negative toward Cx - sort of a, "Do we really need this?" The university "owner" insisted on "third-party" Cx because they had encountered poor performance on past new building projects.

The mechanical and electrical design continued to progress as the building was under construction. This was due to the fast track pace of the project. The Cx provider firm reviewed numerous versions of the ongoing design document process. The continuing changing design was a challenge for the Cx when it came to inspections and verification testing.

Unfortunately, the commissioning specifications produced the Cx firm were added to the design package near the end, after the CM@R had already given the owner a guaranteed maximum price (GMP). There were times during construction where the contractor would say, "I didn't really have that much commissioning in my GMP number." At this point, the PM firm would have to strong-arm the contractor into supporting the Cx process.

The Cx firm had a contract direct with the owner, but lines of communications were through the PM firm. The PM firm had multiple senior staff on-site. The owner had a senior "management" engineer designated to the project. This owner manager left the project at about 98% complete.

The PM did a good job at managing the overall building process, and gave the Cx firm enough latitude to have communications with the various contractors and subcontractors. The Cx firm managed through the entire commissioning process with support from the PM firm, contractor, and other team members.

There were some issues that the Cx firm could not get support from the PM firm to resolve. At times, the Cx firm pointed out design issues and the PM tended to side with A/E opinions. At this point, the Cx firm had to go to the owner's senior facility engineering staff to inform them of issues. At the request of the Cx firm, the owner then had to attend construction meetings, and direct the PM and contractors to get issues resolved and corrected.

When the PM was closing out the project with the owner, contractor, and architect, the major Cx issues that were not finished or were still unresolved were put on a "to be completed" list. The PM did well at close-out of the project.

Pros of PM for this project:

- The PM was a one-stop-shop.
- They were the single point of contact and decision maker.
- When the Cx firm brought up most major issue about the project, the main PM manager used a very strong hand in getting the contractors and A/E firm to get the situation corrected.

Cons of PM on this project:

- The same strong personality that was a "pro" was also a "con."
- Not all significant issues brought up by the Cx firm to the PM were dealt with in a timely way.
- The Cx firm "hounded" the PM firm to deal with some issues.
- The PM was mostly focused on the critical path issues and keeping the project on schedule.

Case Study Three

Building description - \$30 million IT classroom and electronics building with central plant

The contractual owner in this project was the State Board of Regents (BOR). The PM firm was hired by the BOR to complete the project. The PM was then involved in the selection of design-build firm and Cx firm. The BOR had a direct contract with the design-build firm. The BOR had the PM firm hire and contract the Cx provider firm directly; but the Cx firm had lines of communications with the PM firm and campus facility engineering staff.

The design-build (D-B) firm completed the design through their own architectural studio and engineering services. There were sub-consultants for interior design and other specialty work. The D-B firm worked as the general contractor, awarding various subcontracts for portions of the construction.

The PM firm was very positive about the Cx process.

The project was affected by weak mechanical-electrical design. Also, it seemed as if the engineer was completely out of the project during construction. The engineers did not seem to come on-site to inspect or direct any of the construction, except to handle “issues” brought by the Cx provider. The Cx firm never saw any “punchlist” from the A/E team on the project.

The Cx firm provided services from design through beneficial occupancy, and during the one-year warranty period.

The BOR had a management person who came by the project to review progress. The PM firm had one senior staff person on the project. The campus facility-engineering group had a senior “management” engineer designated to the project. Their staff engineers were also copied on all issues, and were continually consultant by the PM firm and Cx firm on decision-making. This project had the most local facility participation of the three case study projects. The Cx firm had continuous communication with PM and facility owner contacts.

The PM did a good job at managing the overall building process, and gave the Cx firm latitude to have communications with the various contractors and subcontractors. The Cx firm managed through all the commissioning process well with support from the PM firm, contractor, and other team members.

The PM utilized the Cx engineers a great deal to help resolve issues, especially since this was a design-build project where the D-B firm engineers were slow or hesitant to identify potential problems that may cause changes.

The building suffered from some relatively major mechanical issues. The PM firm tried to get the engineers from the D-B firm to help resolve issues. Unfortunately, they seemed slow to respond as part of the D-B team. The Cx firm suggested to the PM firm to hold up remaining payments on the project until issues were resolved, but political pressure from the BOR on the PM firm caused them to close contracts and pay the D-B contractor.

CONCLUSIONS

The use of PM firms by owners has increased and will likely continue to increase in the future.

PM firms and their management staffs are not deeply knowledgeable in the Cx process. If the PM firm has little knowledge of Cx, they will not know how to coordinate and communicate issues, change orders, etc. with the Cx provider.

The Cx provider, PM firm and owner must develop lines of communications early in the project to make sure issues are quickly resolved.

If the PM is not familiar with Cx, they may leave the Cx firm out of the communication loop during design and construction. The Cx firm may need to be more pro-active at confirming with the PM the current schedule of design and design review meetings.

The PM firm creates another layer of decision making in the project. They provide focus on the critical path for completing the project on time. The decisions made by the PM are normally good for the project and owner but they may, in some cases, not reflect the “owner’s project requirements.” The Cx provider must identify to the PM firm, and other team members, if decisions are made that reflect changes in the OPR, to make sure the owner accepts the change.

Make sure the PM copies the owner on all issues. Contact the owner directly when major issues need clarification or approval – or there has been a change in the owner’s project requirements without some knowledge they have approved the change.

Do not let the owner contracting managers and lawyers close contracts with the team members, until the Cx firm has sent them a letter stating all issues are cleared and/or resolved.