

Establishing a Team Environment in New Building Commissioning

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Synopsis

Commissioning authorities know the great value that commissioning can provide to the entire project team. We provide the owner and designers with the comfort of knowing that an objective peer review has been completed and that commissioning requirements have been integrated into the construction documents before construction contracts are awarded. We help the contractors plan for smooth start-up, testing and turnover, and reduce the number of warranty period call-backs. Finally, the building is placed into operation as intended and, with well-trained facilities staff, provides benefits to the owner in energy and operational efficiency. So why do we still feel so unwelcome on some projects?

This paper will review the different perspectives of the team members, identify typical communication breakdowns, and suggest ways in which commissioning authorities can approach a project to encourage a productive team environment. The content and sources of this paper will be primarily first-hand experience of the author in the design, construction and commissioning field. The paper will make the argument that technical knowledge isn't enough to be a good Commissioning Authority and that an understanding of the team roles and each individual's skills and value are equally important for a successful project.

About the Authors

Timothy Chin, CEM, LEED AP manages Enovity's Southern California office and has more than 20 years of broad-based experience that includes commissioning and retro-commissioning; control system design and installation; and energy optimization involving controls technology; business development and project management. He manages multiple commissioning and retro-commissioning projects, performs energy program development and leads energy audits, advises on LEED certifications, and provides new construction design assistance for the public and private sectors. As a provider under a number of utility incentive programs, Mr. Chin provides technical services under the Southern California Edison Savings by Design Program, Sustainable Communities Program, Retro-commissioning Program, and San Diego Gas & Electric's Retro-commissioning Program.

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Professional. He currently serves as the Communications Committee Chair for USGBC Orange County Chapter and resides on the Board of Directors. He received a Master in Business Administration degree in 1995 from Pepperdine University and a Bachelor of Science degree in Industrial Technology, in 1987, from California Polytechnic State University in San Luis Obispo.

1. Introduction

There is a wide range of perspectives about the commissioning authority (CxA) and what value he or she brings to projects. Ask different members from a variety of project teams about their opinion of commissioning, and there is sure to be a wide range of answers; but also ask the same group about their experience working with other trades or projects and there is sure to be a wide range of positive and negative experiences as well. There are good contractors and construction teams, and there are others that are not so good. Contractors will also state that there are good commissioning authorities and not so good commissioning authorities. Just as contractors need to perform well, commissioning authorities also need to perform well and follow a commissioning process with integrity.

Typically it is the construction team (and not the design team) that may view commissioning in a negative fashion. Commissioning is a quality assurance process that verifies the contractor's work, ensuring that the building systems are installed and functioning as defined by the design documents and according to the owner's project requirements. The commissioning authority represents the owner's interests. If the commissioning authority represents the owner's interests, then why is it that for some projects, the commissioning authority is perceived as a nuisance?

The commissioning authority needs to be perceived and accepted as a member of the project team, working together towards a common goal for building a project that meets the owner's intent. Respect of the project team is not provided with the contract agreement; it must be earned. Many things need to be done to earn respect of the project team and establish an environment where team members cooperate throughout the project.

To establish a team environment in new building commissioning, this paper explores the following areas:

- The disconnection between the contractors and commissioning authority
- The internal processes of the commissioning authority
- Understanding people and their individual interests
- Setting the foundation for communication within the commissioning process
- Working with difficult project teams
- Key success factors for connecting with the project team

2. The Disconnect

Communication breakdowns in the commissioning process can occur for many reasons. What is the disconnect between what the contractors do and how systems are commissioned? The following are some examples of areas that may affect the working relationship of contractors and commissioning authorities:

The Contractor's Perspective

- Previous experiences with commissioning were poor.
- Commissioning scope of work is difficult to define and difficult to estimate.
- Commissioning is an expensive process to incorporate into a project
- Commissioning is unnecessary and intrusive to the core work that needs to be done
- Commissioning requirements are requesting too much paperwork

The Commissioning Authority's Perspective

- Contractor's typically do not provide a complete scope of work
- Commissioning will expose the lack of a quality installation process and be a threat to the contractor
- The contractor is non-responsive in many phases of the commissioning process

2.1 Seek to Understand

The commissioning kick-off meeting is one of the most important meetings held to establish rapport with members of the project team, and to establish an understanding of the commissioning requirements. One of the challenges is getting all the individuals who have a variety of levels of understanding and experience with commissioning to align their goals and synchronize their expectations for commissioning for the specific project.

One method for synchronizing the team is to provide each member an opportunity to be heard. This can be accomplished with the team kick-off meeting, where each person is provided an opportunity to share their perspective and experience with commissioning, and share what they believe their role to be for the specific project. With each team member sharing their perspective, the team gains insight into the issues that need to be managed, and the commissioning authority is able to address each of the issues. Many times there are misunderstandings but by clarifying what is expected, the team becomes more synchronized. By allowing each team member to express their issues, the commissioning authority gains understanding for each team member and begins to build a working relationship. The team meeting also allows the team members to provide their input into the commissioning process rather than having the process dictated to them. It is important to allow the team to have input so that they feel a part of the process and, as a result, are more willing to work together.

2.2 What People Say and What People Do

Many commissioning meetings seem to go well. Everyone agrees and coordinates schedules and rapport may seem very positive. However, actions speak louder than words, and what people say is not always a commitment to what they do. Integration of commissioning activities into the construction schedule, managing the issues list and tracking meeting minute action items are tools that can help manage the action and inaction of the construction team.

When a contractor misses commitments early in construction, it indicates the lack of attention to the commissioning process, which may be an indicator of greater coordination problems in the more critical stages of construction. It is extremely important to establish the contractor's attention and to develop a responsive rapport early so that the critical stages of commissioning run smoothly. When the commissioning plan is presented to the construction team, it is important to communicate the commissioning schedule and integrate the commissioning activities into the schedule. The timeline for the submission of documentation and the performance of commissioning activities needs to be reflected in the construction schedule so that the construction team knows when to allocate resources to the commissioning effort.

The issues list is a great tool for capturing all the issues and providing action items that need to be addressed by the project team. By capturing all the issues in one document, the project team is able to see all aspects of the commissioning process and identify what needs to be addressed. By including outstanding documentation in the issues list, contractors know what they need to be working on to keep up with the process.

Meeting minutes act as a snapshot in time of the items discussed. Documenting the meeting helps the team and the owner to understand how well the commissioning process is progressing. If team members are not addressing their issues in a timely manner, it needs to be discussed and noted in the meeting minutes. Then corrective action can be taken to determine how to resolve the issues and continue moving forward to minimize impact on the construction schedule.

3. Look in the Mirror

It is easy to point blame at others, and a challenge to look in the mirror at oneself. Before judging others, it is important for the commissioning authority to look internally and evaluate their own standards and commissioning processes. In order to communicate what is expected of contractors, the commissioning authority must know what is expected of them and perform accordingly.

Does the commissioning authority have standard processes, document templates, methods of operating and conducting the commissioning process? Does the commissioning authority have competency in the systems to be commissioned? Does the commissioning authority understand the construction process and sequence of events? Does the commissioning authority understand complex and simple mechanical designs and complex sequences of operation for commissioning building automation systems? Does the commissioning authority understand building control

system programming to verify parameter settings and programming configurations to confirm complex sequences? Whether a project's systems to be commissioned are complex or simple, the commissioning authority needs to have established standards and processes to successfully communicate a plan and support that plan.

Below are some character traits of a commissioning authority that establishes a good team environment:

- People Skills
- Listening Skills
- Leadership
- Organization
- Cooperation
- Team-Oriented Focus
- Communication (Written & Verbal)
- Reasonableness
- Technical Competency

4. Understanding People

The project team is comprised of a collection of individuals from different businesses representing their area of expertise as it contributes to a building project. As design and construction team members are contracted to a project, each member (architect, consultant, contractor, etc.) has an individual business objective to make a reasonable profit for the work they provide. For each team member, each individual has a self interest (personal gain), a business interest (their company's gain), and the project's interest (success for a well constructed building). For team members to come together with a common objective, it is helpful to understand the interests of the individual. By understanding each team member's interests, the commissioning authority will have a better understanding for determining how to work with the team.

4.1 The Individual

Identifying how to connect with each team member is important for developing good rapport and understanding. Taking time to know people goes a long way in developing good relationships. Along with this is the importance of understanding an individual's personal interests. Companies are comprised of people with individual career interests who perform their work representing those companies. Their level of experience, competency, and satisfaction working for their company influences how they perform within the project team. Having an understanding of the level of personal motivation of an individual will help the commissioning authority predict performance and determine how to work with it.

4.2 The Individual in the Company

Individuals represent companies and act on the company's behalf. It is their responsibility to work within their established scope of work and within their estimated budget for the project. As a project is designed and constructed, changes occur for a variety of reasons, potentially impacting the financial interests of the company. As changes occur, companies affected by the

impact of the changes try to preserve their financial position. While not all changes have a financial impact, the impacts that do have one can create a stress on relationships within the team depending on how the changes are managed and communicated.

While it is not the commissioning authority's responsibility to get involved with change orders, understanding the changes they cause is important to managing the impact on commissioning. If the commissioning specifications were clearly written, then there should be no issues associated with what is expected for the commissioning activities. The commissioning authority is responsible for understanding the changes on the project as they relate to commissioning, so that expectations can be modified and aligned with the project changes.

Every individual needs to perform well in the work they do and represent their company well. It is helpful for the commissioning authority to understand the project issues that threaten the individual's performance (such as changes in scope of work), and acknowledge those issues while continually re-communicating the commissioning expectations.

4.3 The Individual in Project Team

Having an understanding of an individual's self interests and business interests helps identify the individual's overall level of interest in the project and potential level of success for constructing a well built building. Whether an individual is easy or difficult to work with, the commissioning authority can determine how to best work with that member of the team to achieve successful results. Not only are the commissioning specifications critical for establishing expectations, but they are critical for reinforcing expectations. As long as the commissioning authority stays within the boundaries of the intent of the specifications, then the contractor should have no issues working with the commissioning authority to complete the commissioning activities. Clear communications of the next commissioning activities will help the team know what needs to be done and when.

5. Establishing the Foundation

5.1 Communicating Commissioning Requirements – Design Phase

Quality commissioning specifications are critical to a successful project. It is important to layout the commissioning process and identify what is expected of the construction team throughout that process. The most difficult item for contractors is defining where they need to be involved and how much time is required of them beyond their normal construction activities. How many commissioning meetings need to be attended? Will extra time be required for start-up? How many hours are required for functional performance testing? What systems are to be commissioned?

The foundation for establishing expectations on a project relies on the quality of the commissioning specifications. The success of the commissioning process relies on adherence

and reinforcement of the specifications. Well-written specifications provide the commissioning authority leverage to reinforce the commissioning activities, and deliver a high performing building.

Another issue to consider is the quality of the sequences of operation for the systems to be commissioned. Because the functional performance tests are derived from the sequences of operation, it is important to define them well. Depending on the project, the commissioning authority may or may not have the opportunity to help review and provide input for improving those sequences. In these cases, sequences of operation must be clear and well-defined in order to avoid confusion.

5.2 Communicating the Commissioning Plan

Seek to Understand in Section 2 of this paper discussed the value of the kick-off meeting with the project team. Communicating the commissioning plan during this meeting is extremely important for reinforcing the specifications and the detailed plans and processes for the project. The specifications provide leverage for defining the scope of work associated with commissioning, and the commissioning plan provides the details for how the process will be conducted and achieved.

5.3 Establishing Expectations & Feedback – Construction Phase

The commissioning authority needs to provide continual feedback of the status of the commissioning process throughout the project. It is important to provide a clear overview of what stage the project is in within the project cycle, and what activities and documentation are needed next. Providing the written overview keeps the team synchronized, and maintaining an issues list identifies the current issues that need to be addressed.

The commissioning authority also needs to maintain direct communications with various members of the commissioning team directly to continually provide clarifications and continually develop rapport with the contractors. Many times commissioning activities do not get addressed because the issues are not clear to the contractor; a short conversation with the contractor can clear a lot of confusion very quickly and keep the process moving.

6. Difficult Project Teams

6.1 What is Reasonable?

Many projects have issues lists that seem to never end. Where does the commissioning authority draw a line and consider the project complete with outstanding issues continuing? Towards the end of a project, issues that may be considered warranty issues arise. There is a point in the commissioning process when all systems have been verified for installation and functional performance. If the contractor's work meets the intent of the plans and specifications, and the

functionality of the systems has been verified, then the commissioning authority should consider completion of the commissioning process with a list of the remaining issues to be managed by the owner's building operators. The commissioning authority must determine what is reasonable in terms of system acceptance.

6.2 Unwelcome to the End

For some projects, regardless of the amount of written and verbal communications either in project meetings or one on one, a contractor may continue to resist the commissioning process start to finish. The result is a long list of issues that remain unresolved. The construction team is moving forward with calling the project complete and they are pulling off the project. In addition, the commissioning authority has expended the entire commissioning budget. What next?

Unfortunately, the project remains incomplete if it is not fully commissioned with all commissioned systems functioning properly (per plans and specifications). If it is a LEED project, then it cannot be certified to meet the Fundamental Building Commissioning prerequisite. Hopefully, well before this point, the owner has been involved and has been kept aware of the lack of progress of the contractor addressing the outstanding issues. At this point, it is the owner's decision on how to resolve the situation. It is also up to the owner to decide if additional commissioning services are needed.

To fulfill the obligation of the commissioning authority, the final commissioning report is published with a long list of exceptions from the unresolved items. While the building has been gone through the commissioning process, if all the functional performance tests did not pass it is not considered commissioned.

If the commissioning specifications were written correctly, and the plans and specifications for the entire project are good quality, this situation should not happen. If the contractor is truly doing a poor job, then the commissioning authority can only maintain a focus on the communicated commissioning process, document along the way, and derive conclusions about the status of commissioning to finalize the commissioning process, whether it is good or bad. As long as the owner is included in the status all along the way, and the commissioning authority has maintained integrity in the process, the commissioning authority should feel assured that the commissioning work was done well in spite of a poor building performance outcome.

6.3 The Connection

Making the connection with the project team early in the project is the key success factor for a project. The commissioning authority needs to be perceived and accepted as part of the project team, working together towards a common goal for building a project that meets the owner's intent. The commissioning authority needs to play an integrated role in both the design and construction process to establish and communicate commissioning expectations. Regardless of whether a project team is easy or difficult to work with, the commissioning authority will find success in a project by following through with their commissioning process. By maintaining the

commissioning process and documenting appropriately along the way, the commissioning authority will find success in spite of a poor performing project. While the result may be a project that does not fulfill a commissioned status, the commissioning authority can be assured that their responsibilities have been achieved and justified the significance of commissioning a building.

7. Conclusion

The following is a list of key success factors in key areas for establishing a team environment for building commissioning:

- Commissioning Specifications: Clearly establish expectations and try to firmly establish system sequence of operations in the design phase.
- Commissioning Plan: Write the draft plan as early as possible so that expectations can be communicated early in the construction phase.
- Commissioning Kick-off Meeting: Hold the kick-off meeting as early as possible and begin to develop positive communication and positive relationships with the construction team. Establishing roles and responsibilities early will align expectations from the start of the project. Position commissioning as a quality assurance process that confirms what the contractors are already contracted to perform and not a separate process that requires more manpower and effort.
- Progress Reports: Keep the project team up to date on the progress of commissioning documentation and agreed upon schedule of commissioning activities with a written status report reflecting all elements of the commissioning process.
- Owner: While the owner may not need to know all the details, contact the owner directly if there is concern regarding the lack of response or performance of the construction team or specific contractors that inhibit the progress of commissioning. The owner should always be copied on correspondence
- Commissioning Agent: Typically the construction manager or general contractor should maintain continual communications with the commissioning agent formally and informally to keep the commissioning process moving forward. Spend time up front establishing good rapport and understanding of the commissioning expectations.
- Contractors: Form good rapport with the contractors, be reasonable, and measure the contractor's work to the design documents.
- Design Documents: Commission to the design documents and owner's project requirements and refrain from imposing personal preferences on a project.