BEYOND SMART CITIES

CERTIFIED COMMISSIONING AUTHORITY
CXA EXAM PREP

KRISHNAJI PAWAR, LEED AP BD+C,GSAS CGP,ISO 14001:2015,GCP
COMMISSIONING SPECIALIST CURRICULUM





PRE-DESIGN PHASE COMMISSIONING

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LEARNING OBJECTIVES



- Predesign Commissioning,Objectives and Activities
- Develop the Pre-Design Phase Commissioning Plan
- Owner's Project Requirements Document
- Professional Service Agreements vs. Public Works Contracts
- Commissioning Providers Services
- Request for Qualifications Advertisement
- Owner's Project Requirements Documentation/ CxA Authority / Design Professional Agreement



COMMISSIONING PROCESS

Commissioning is the process of planning, documenting, scheduling, testing, adjusting, verifying, and training, to provide a facility that operates as a fully functional system as per the Owner's Project Requirements.

The goal of the Commissioning Process is to enhance the quality of the delivered project by focusing the design and construction team on the Owner's goals for a functional and energy efficient building.

A quality-focused process for enhancing the delivery of a project and includes verifying and documenting that the facility and its systems and assemblies are planned, designed, installed, tested, operated and maintained to meet the Owner's Project Requirements.

PRE-DESIGN PHASE COMMISSIONING

Commissioning ideally begins in the pre- design phase. The Pre-Design Phase lays the groundwork for the project, defines the plan for commissioning, and begins the essential team building process.

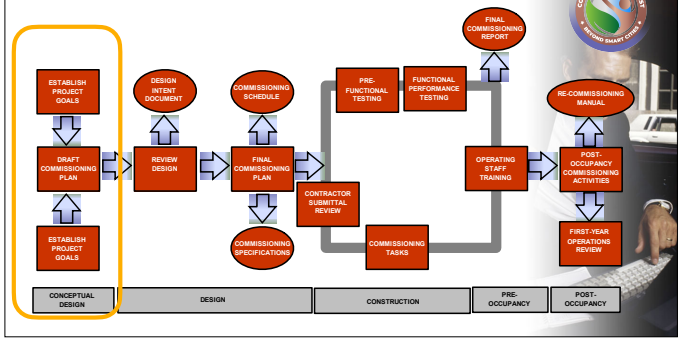
During this phase the design and commissioning teams are assembled and the Owner's Project Requirements (OPR) and the building program are developed. All decisions made in ensuing phases should be made with reference to the OPR.

It is important to start the commissioning process in the pre-design phase.

This early involvement by the CxP is critical for the timely and useful development of the Owner's Project Requirements (OPR), the subsequent design team Basis of Design (BOD), the Commissioning Plan, and the beginning of the Operations & Maintenance (O&M) Systems Manual.

If these tasks are left until later in the process and "reverse engineered" to match the design, their usefulness as catalysts for dialog, cost and risk management, and quality tracking tools is lost.

TYPICAL COMMISSIONING PROCESS



PRE-DESIGN PHASE CXA OBJECTIVES



- Identify the Commissioning Team
- Develop the OPR
- Define the initial commissioning scope and budget
- Develop the initial commissioning plan
- Verify that the building program is consistent with the OPR.
- Integrate commissioning into the overall project delivery process and begin building the CxA Team

PRE-DESIGN PHASE CXA ACTIVITIES

- ☑ Owner designates a party to act as their project representative for commissioning related activities.
- ☑ Owner selects /designates a Commissioning Provider for the project.
- ☑ Develop the OPR for the Project
- ☑ Define the commissioning scope, schedule and budget.
- ☑ Incorporate commissioning into the project budget & schedule.
- ☑ Develop the Commissioning Plan. Each project is commissioned in accordance with a written commissioning plan that is updated as the project progresses.
- ☑ Develop the Issues Log format and protocols.
- ☑ Review the Building Program.
- ☑ Prepare the Pre-Design Phase Commissioning Report.

PRE-DESIGN PHASE CXA PLAN

The Commissioning Plan is an ever-changing document that begins its life during the pre- design phase of the project and identifies all of the steps needed to achieve the project goals, and the order in which these steps need to be completed.

- ☑ If not already complete, collect the information needed for the design narrative and basis of design, and assemble these documents
- ☑ Name the Commissioning Plan Team members and specify their roles and duties
- ☑ State the testing methods for measuring performance, including the sampling plan
- ☑ List the systems and equipment to be commissioned and what the criterion for approval will be.
- ☑ Review the Preliminary Commissioning Plan with the owner, or owner's representative, and the design team

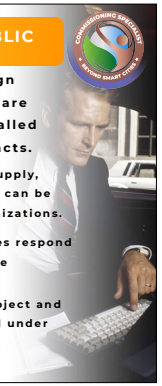
OWNER'S PROJECT REQUIREMENTS DOCUMENT



The Owner's Project Requirements document would contain, among other things, the following elements:

- ☑ General requirements for the functioning of the building, including its essential use, expectations for possible future expansion or renovations, and maintenance and operational needs
- ☑ Space planning,Timeline for expected occupancy
- ☑ Targets for sustainability, reliability, and durability Aesthetic goals
- ☑ Materials and workmanship standards and quality
- ☑ Documentation needs
- ☑ Training requirements and expectations
- ☑ Required codes and standards

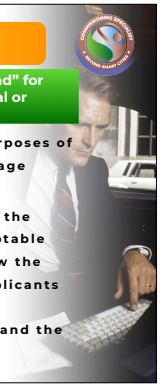
PROFESSIONAL SERVICE AGREEMENTS VS. PUBLIC WORKS CONTRACTS



In the building industry, which traditionally includes design and construction and more recently Commissioning, there are two types of contracts. These two types of contracts are called Professional services Agreements and Public Works Contracts.

- ☑ Public Works Contracts are for construction work or for material supply, service, or installation. In Public Works Contracts the scope of work can be fully documented and appropriately bid on by various firms or organizations.
- ☑ In Professional Service Agreements, individuals, firms, or companies respond to a Request for Qualifications (RFQ) advertisement or notice and the appropriate party is selected after negotiation.
- ☑ Since Commissioning Authority services change throughout the project and are rendered by professionals, Commissioning Authority services fall under Professional Services Agreements.

COMMISSIONING PROVIDERS SERVICES



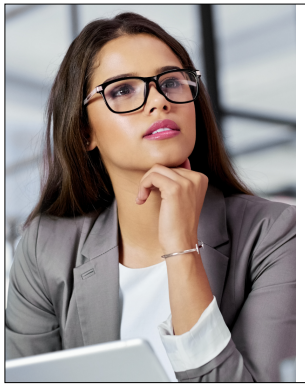
The Request for Qualifications advertisement is basically a "want ad" for professional Commissioning services placed in appropriate regional or industry periodicals or other written or electronic publication.

- ☑ The Request for Qualifications (RFQ) meets the dual purposes of asking qualified persons or firms to respond and discourage unqualified persons or firms from responding.
- ☑ The RFQ should contain a thorough project description, the required minimum experience and qualifications of acceptable applicants, a list of submittal requirements, notice of how the successful applicant will be chosen, a statement that applicants will be required to provide full copies of Commissioning documentation they have developed for similar projects, and the contact information for where responses should be sent.

OWNER'S PROJECT REQUIREMENTS DOCUMENTATION

The OPR is usually written for the owner by the Commissioning Authority and contains design goals, building functional expectations, performance criteria for building components and systems, expected timeline, budgetary needs, etc. Most importantly, the OPR, when developed correctly, sets the Quality standard for the building/ Commissioning Project.

- ☑ The Commissioning Professional may use several methods to gather information in order to begin the process of developing the Owner's Project Requirements document, and in many cases, may use more than one approach or even a combination of all three. The three ways of gathering information are by interview, survey, or workshop.
- ☑ Once this first draft of the OPR has been written, copies should be given to the people who provided the initial information to ensure that all topics have been adequately covered.



CXA AGREEMENT

Commissioning Authority agreement are such things as statements regarding conflicts-of-interest, the planned standard of care (basically stating that the Commissioning Authority will be trustworthy and do their best work), statements concerning availability, ownership, and retention of records and other documents, nondiscrimination policies, insurance and liability statements, termination agreements, breach of contract agreements, hazard communication plans, including asbestos, and any other requirements for the specific project or location.

CXA AGREEMENT+

Although the Design Professional's agreement may be written from a template of the owner or Design firm, when the CxA Program is a part of the scope for the Design Professional's work, there are two main things that need to be included in the Design Professional's agreement.

The first is design review submittal process and requirements for the CxA Process.

The second is a statement concerning the identification of the requirements for the Design Professional in terms of the Commissioning Program. This may include responsibilities for the development of construction document related to CxA and the need for the Design Professional to be a member of the Commissioning Team and actively participate in the project during the Construction Phase.

The Design Professional's agreement should include an extensive section on Design Review Submittal Requirements. This section should include an itemized list of requirements for each part of the design for each Design sub-phase of the Project.


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