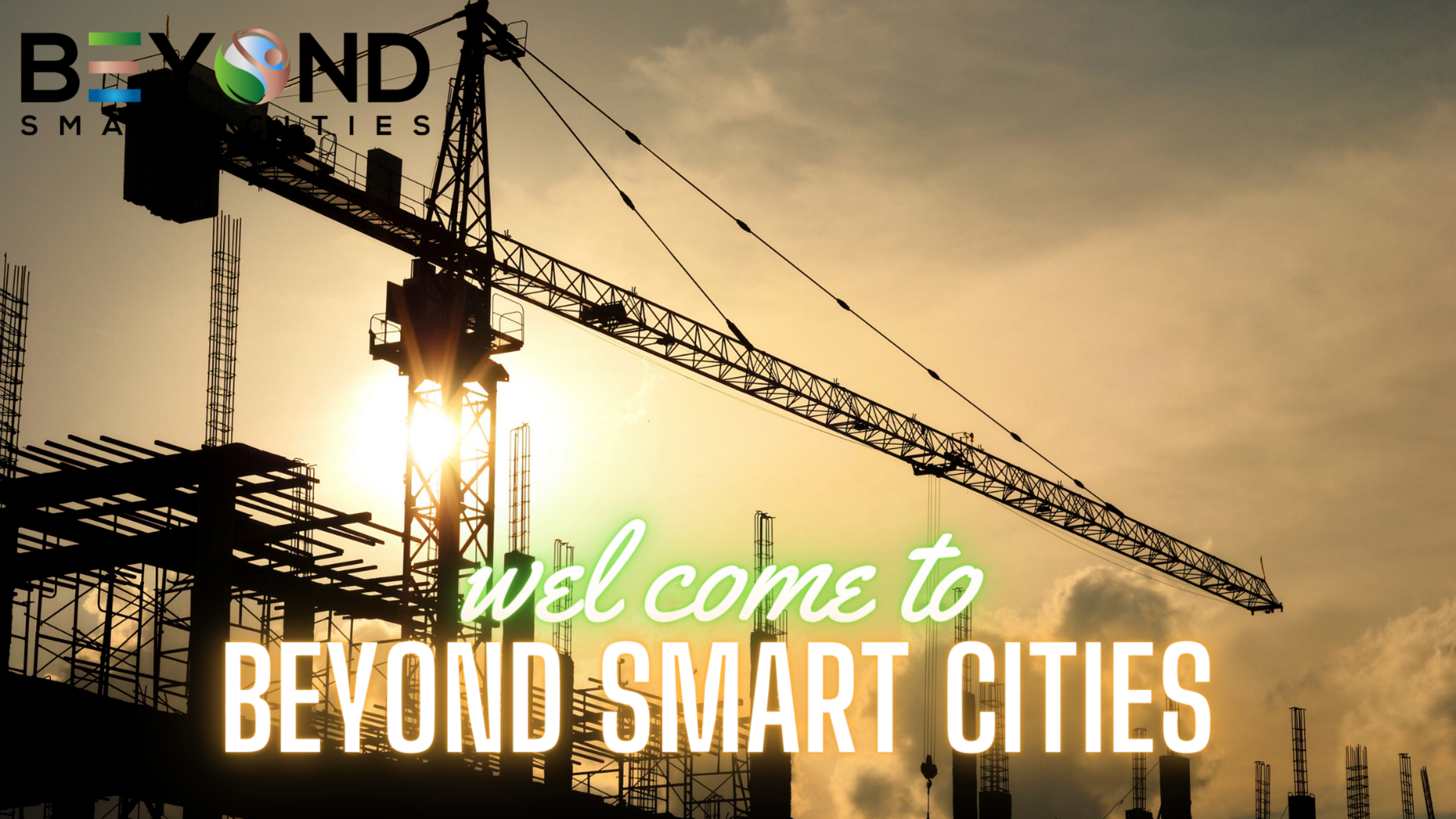

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CERTIFIED COMMISSIONING MANAGER

CCM TRAINING PROGRAM

ONLINE PROFESSIONAL COURSES LED BY THE WORLD'S TOP SPECIALISTS

ONLINE TRAINING BY KRISHNAJI PAWAR

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MODULE

09 - A

Construction Phase – CxA Process

KRISHNAJI PAWAR - CEO & FOUNDER

LEED AP(BD+C),GSAS CGP,GCP,ISO 14001

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CERTIFIED COMMISSIONING MANAGER - CCM TRAINING OVERVIEW

The commissioning team has completed significant work in the predesign and design phases of a major construction project. The success of the construction phase is heavily reliant on adherence to the commissioning process's disciplines, with standard activities continuing with greater emphasis on details.

Learning Objectives

- Introduction and Construction Phase Overview
- Construction Phase CxA Objectives
- Construction Phase CxA Team
- Pre-construction Commissioning Conference
- Conference & Kickoff Meeting
- Site Observation
- Commissioning Progress Meetings
- Testing Contractor
- Commissioning Schedule
- Update CxA Plan , Schedule & Review Submittals
- Commissioning Test Procedures
- Construction Phase CxA Activities
- Resolution Tracking Forms (RTF's)

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INTRODUCTION

- During the construction phase, the preceding work will be realized for its value.
- As with the preceding phases, the success of the construction phase is highly dependent on adherence to the commissioning process's disciplines.
- During the construction period, there are a number of activities that are fairly standard, and they will continue as usual, albeit with a greater emphasis on many of the details.
- in addition to compliance with the process reconstruction commissioning conference.
- The construction phase is the third of the four phases of the building systems commissioning process identified by us.
- The Commissioning Plan (Cx Plan), which was updated by the Commissioning Provider (CxP) during the Design Phase, is implemented during the Construction Phase.
- Consistent interaction between the CxP and the construction team and frequent communication between the CxP and the design team are critical to a successful construction phase.

Learning Objectives

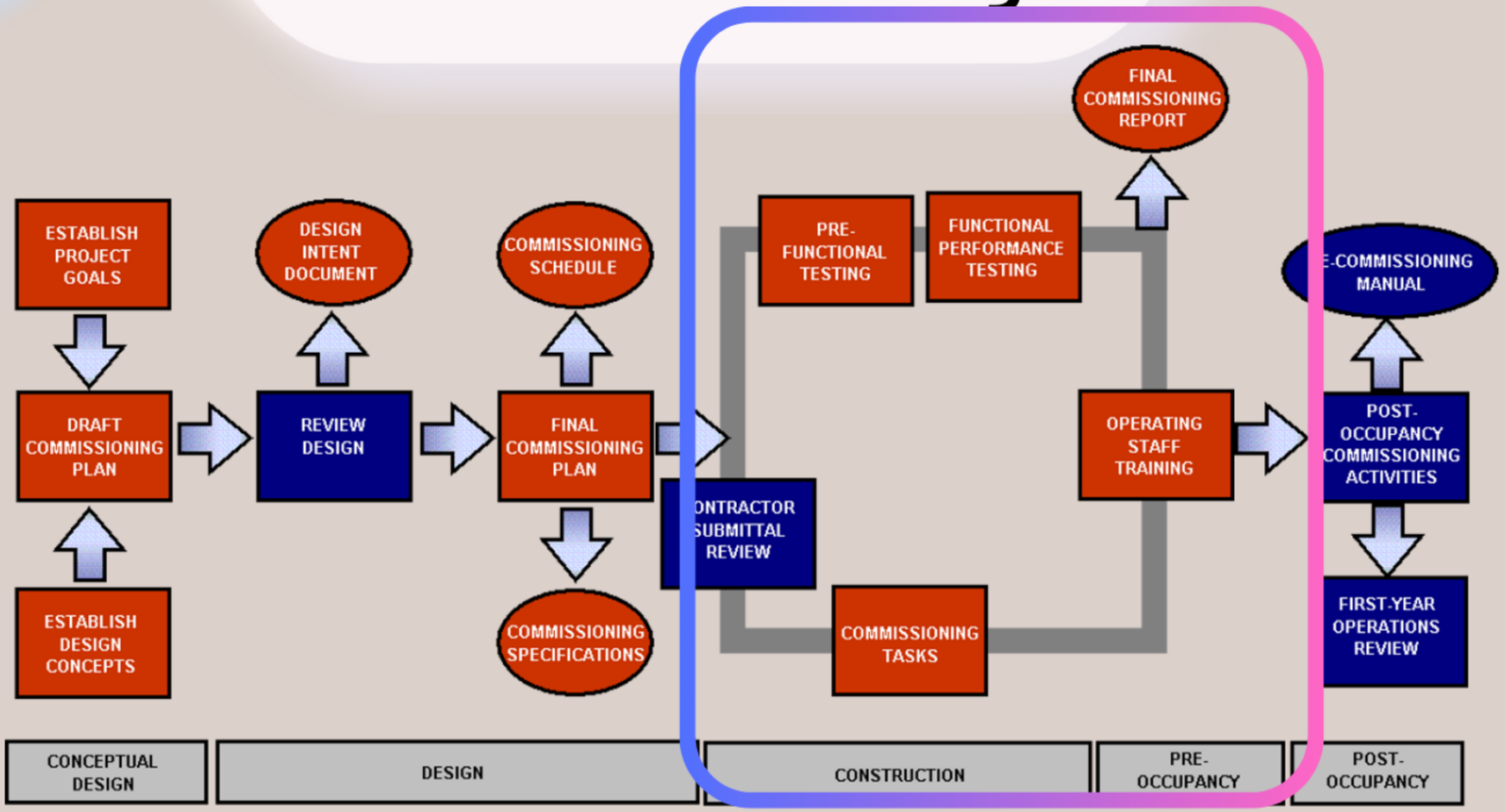
- System Verification Checklists (SVC's)
- TAB HVAC Systems:
- Building Automation System (BAS):
- Lighting Controls:
- Emergency Power Systems:
- Developing Functional Performance Tests (FPT's)
- Training
- Performing Tests
- ntegrated Systems Testing
- Operational Sustainability Reporting
- Commissioning Test Procedures

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INTRODUCTION

- The CxP leads the larger Commissioning Team (Cx Team) to complete commissioning activities correctly and efficiently as scheduled, and the smaller Commissioning Provider Group (CxP Group) to assist and prepare commissioning deliverables.
- During construction, the CxP updates the commissioning plan, assists with revising the owner's project requirements (OPR) or current facility requirements (CFR), reviews construction submittals for compliance, distributes checklists for contractors to complete, observes building equipment and system installations, and develops and manages various tests.
- After equipment and system start-up, including installation and acceptance tests and testing, adjusting, and balancing (TAB), the CxP coordinates and schedules FPT and IST with the Cx Team.
- The Issues and Resolution Log and Systems Manual, started during design, are maintained by the CxP during construction.
- Verifying building system compliance with the OPR or CFR is a top CxP priority during construction.
- The CxP and CxP Group draft many deliverables during this phase.
- Daily reports, occasional commissioning progress reports, and the preliminary commissioning report that forms the basis for the final commissioning report are CxP deliverables.

Phases of Commissioning





CONSTRUCTION PHASE CXA OBJECTIVES



- The Commissioning Plan (Cx Plan), OPR, and Board of Directors (BOD) are updated.
- Members of the commissioning team are aware of their roles and responsibilities for the
- The construction and commissioning phases.
- Equipment, systems, and assemblies are installed, maintained, and operating in accordance with OPR requirements.
- Operations and maintenance (O&M) personnel are furnished with complete and accurate operating documentation for the system.
- The O&M personnel and occupants are appropriately trained, as required. The compilation of training materials and documentation will facilitate repeat training and the training of new employees in the future.

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COMMISSIONING TEAM

- Owner’s representative
- Commissioning Provider (CxP) and sub-consultants Design Team
- Construction Management Representative Contractors
- Building occupants or user group representatives
- Personnel responsible for the building’s O&M



PRE-CONSTRUCTION COMMISSIONING CONFERENCE

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- It is customary to hold a preconstruction conference within the first few weeks after the construction contract has been awarded to the successful bidder or negotiated with the construction firm of choice.
- The purpose of the preconstruction conference is "administrative mobilization."
- Not at this time shall we discuss the commissioning program.
- Because building commissioning is a new and poorly understood program, it is appropriate to schedule a completely separate preconstruction commissioning conference several weeks (but no more than six weeks) after the reconstruction conference.
- The construction specifications must include the requirements for the reconstruction commissioning conference and a list of all required participants (by trade and position).
- During the construction document design phase, the commissioning authority and the design professional will have thoroughly discussed the reconstruction commissioning conference, determined the agenda, and decided which participants are required to make the conference a success.
- The agenda should reflect the fact that the conference will be a crash course on the process and disciplines of building commissioning, followed by project-specific details.



PRE-CONSTRUCTION COMMISSIONING CONFERENCE +

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- A half-day building commissioning training should be provided by the CxA.
- The second half of the day should focus on the project's specifications to familiarize contractors' staff with how the specifications are structured and where they must look to fully understand the program's requirements for their craft (and their firm).
- Contractors often struggle to read specifications.
- This lack of specification discipline should not determine commissioning.
- Reconstruction commissioning conferences should include: Identify everyone's role, explain how commissioning tests and test demonstrations must be integrated into the normal construction schedule, and state that contractors must perform each commissioning test before requesting and performing test demonstrations to avoid delays and additional costs.
- Provide instructions on how to conduct systems commissioning tests and document results using the specifications' test procedures, forms, and checklists.
- Communications must be discussed.
- Owner, design professional, and commissioning authority should have established communications protocols earlier in the project.
- Share these with contractors and agree on refinements now to avoid confusion.
- A well-organized and well-attended reconstruction commissioning conference will benefit all parties throughout the commissioning process.

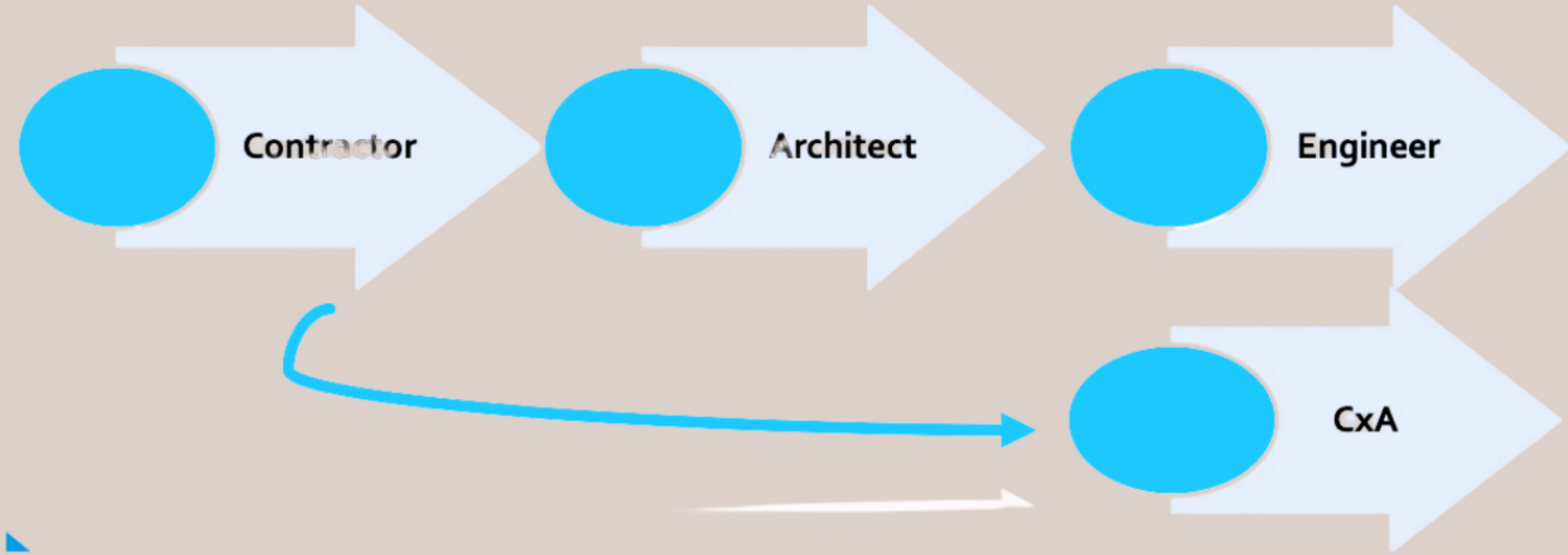


KICKOFF MEETING

- Agenda
- Entire Cx Team Attends
- Review Process
- Set expectations
- Discuss the schedule
- Review start-up testing
- Discuss functional testing



REVIEW SUBMITTALS





- The review is concurrent with the EOR review.
- CxA Doesn’t “Approve” Submittals
- The review evaluates the product's OPR, specifications, size, clearances, accessibility, maintainability, component integration, warranty information, and bill of materials for closeout.

UPDATE CX PLAN

- Include Revised Schedule
- SVCs Based on Current Information
- Draft FPTs for Review
- Discuss O&M Documentation
- Provide Construction Observation Procedures



CX MEETINGS

- Agenda
- Review of Issues/Resolution Tracking Form
- Status Reports
- Questions
- Be prepared to review previously covered material.



SITE OBSERVATION

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- Field Quality Control
- Pipe & Duct Pressure Testing
- Electrical Field Testing • Miscellaneous Contractor Testing
- Test Report Submission
- CxA Reviews & Comments on Test Reports



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