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MODULE 4

Design Review and Commissioning Plan

KRISHNAJI PAWAR - CEO & FOUNDER

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

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DESIGN-PHASE COMMISSIONING PROCESS OVERVIEW

Qualified CxAs focus on functionality and commissionability questions rather than comments, allowing them to analyze operating conditions and provide sensible answers. They reference the owner's project requirements, promoting discipline in the commissioning process. The commissioning authority ensures quality, while designers control it.

Learning Objectives

- Introduction
- Commissioning Plan
- Design Review and Process
- Design Review Steps

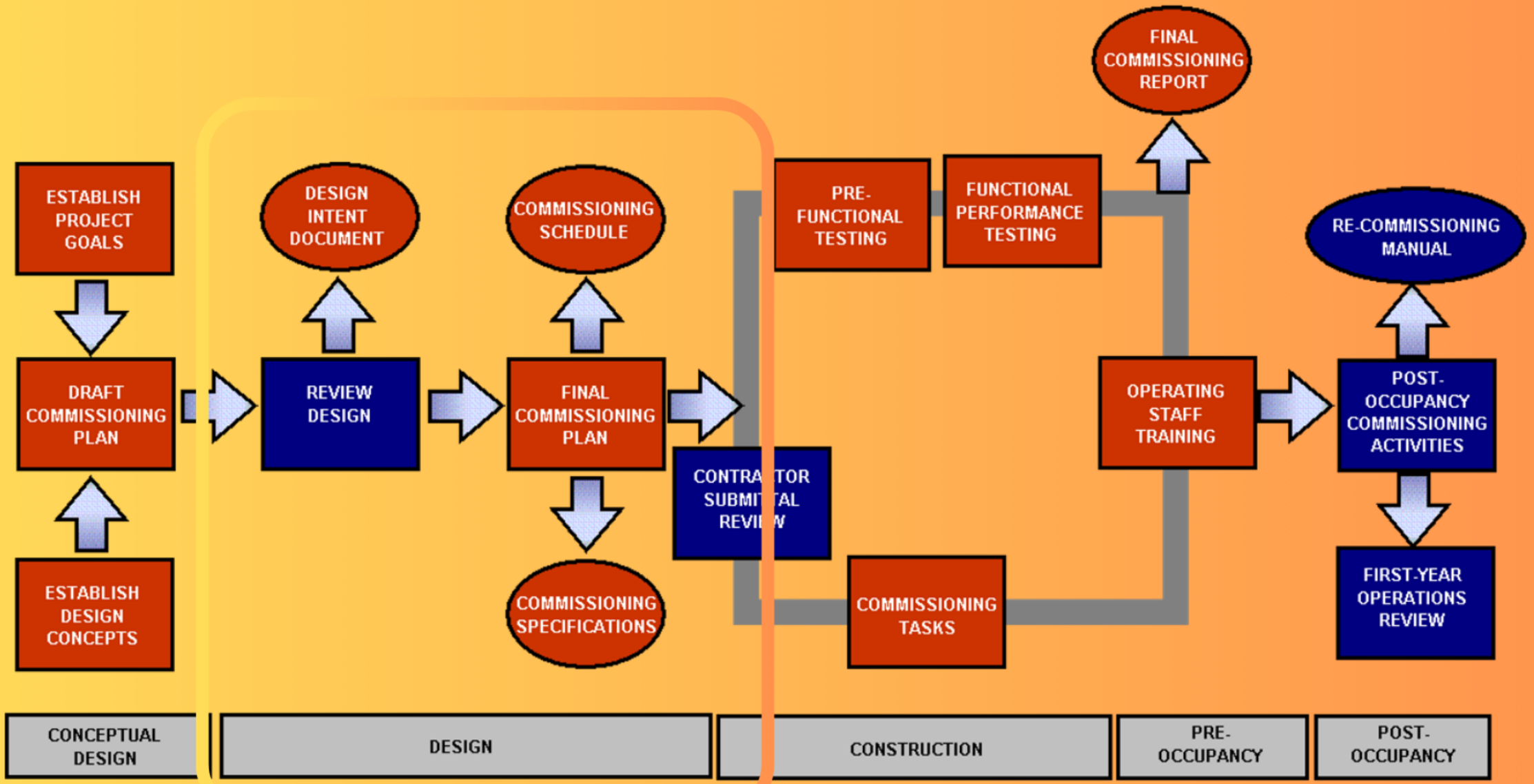
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INTRODUCTION

- Following predesign is the schematic design phase.
- The CxA can assist the design phase if the owner's commissioning authority participated fully in predesign and is fully aware of the owner's project requirements.
- Before discussing design details, it is crucial to comprehend the relationship between the commissioning authority and the design professional.
- The CxA's responsibility is to support the design professional in developing the best system design for the project and guarantee that the DP's preferred design concepts satisfy all performance criteria in the project requirements set forth by the owner.
- During design, bear in mind the following two main principles of the owner's building commissioning quality assurance process: The commissioning body controls the standard.

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COMMISSIONING AND THE BUILDING DEVELOPMENT PROCESS



COMMISSIONING PLAN





- During predesign, an embryonic commissioning plan was created to establish the format and discipline needed to maintain and update it.
- The CxA oversees the commissioning plan, but the DP updates it to match design concepts and details during design.
- The commissioning plan serves three purposes: it records process benchmarks and provides a road map and timetable for project participants to follow.
- Thus, the CxA must work closely with design professionals to assist and educate them in everything that needs to be conveyed to the contractor via drawings and specifications—all work and planning needed to make the quality assurance program a success that will benefit all project participants.

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DESIGN REVIEW



- Some of the most important work of the CxA occurs during or is the result of the various design review periods, which typically occur at the conclusion of the schematic design phase, the design development phase, and the construction document phase.
- Depending on the size and complexity of the project, it may be necessary to conduct additional design reviews at the sixty and/or ninety percent completion stages of the construction document phase.
- According to the nature of the project, the CxA should propose the optimal schedule for design reviews.
- To ensure that design reviews are properly scheduled and include sufficient review materials, the design professional agreement must contain specific requirements.

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DESIGN REVIEW +



- Design review is a crucial process in commissioning that ensures the project's quality is consistently verified at each stage.
- The CxA must establish a review process to assess the quality control duties of the DP's work.
- This includes regular reviews of plan, specification, calculation, and other aspects of the project.
- For plan review, a grid pattern across all drawings is effective.
- The CxA will review 20% of the drawings each time but 60% in total.
- Similar methods can be used for other document review requirements, highlighting the DP's quality control.
- After each design review, the DP's performance requirements are reinforced.
- The review process is the same for every design phase, but the details vary.

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DESIGN REVIEW PROCESS +



- Design development reviews are more specific and ensure all design concepts meet owner project requirements.
- Construction documents are carefully reviewed to avoid costly mistakes.
- Owners must ensure two crucial points are understood and enforced: all system concept decisions must be made during design development, and construction documents cannot delay critical decisions.
- Second, the owner must not allow the project to go out for bids with incomplete or otherwise unsatisfactory construction documents (with the promise that the necessary corrections will be made during construction).
- Incomplete construction documents will haunt the owner throughout the duration of construction and inevitably necessitate a large number of expensive change orders.
- Even if the schedule must be pushed back a month to accommodate the completion of the construction documents, the owner will likely benefit significantly.

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DESIGN REVIEW STEPS

- There are essentially six design review steps: general drawing review, basis of design review, discipline-specific drawing review, discipline coordination drawing review, specifications review, and calculations review.
- At the end of each review step, the reviewer must document concerns that the design professional must address and resolve in order for the project to succeed.



- **General Design Review**
- **Basis of the design review.**
- **Discipline-Specific Design Review**
- **Discipline Coordination Drawing Review**
- **Specification Review**
- **Calculations Review**

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CONTACT US

+91 6363032722

info@beyondsmartcities.in

learn.beyondsmartcities.in

#55,HMR Layout ,Bengaluru ,India



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