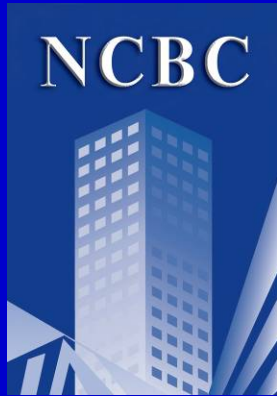


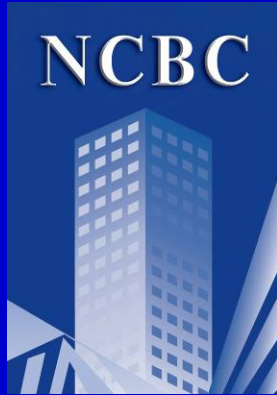
Commissioning Hospital Construction



Presented by
Ken Toombs, PE
Principal

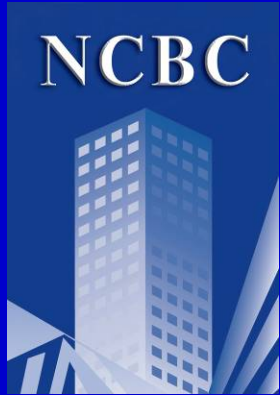
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Commissioning Hospital Construction



- Need and Prevalence
 - Hospital expectations are that systems will work at the end of construction
 - Hospitals need to be commissioned
 - In past has been left to contractor, design team and owner
 - Formal commissioning now being advocated by LEED and GGHC

Commissioning Hospital Construction



- Hospitals Unique Requirements
 - Typical 24/7 operation
 - Systems need to be designed to ensure infection control
 - Air flows and space pressurization requirements are critical
 - Special systems
 - Design and operation needs to help enhance the healing process
 - Emergency power

Commissioning Hospital Construction



- How to select a commissioning provider
 - Decide in programming stages of project what level of commissioning is desired
 - Can use LEED and GGHC guidelines for commissioning approach
 - Recommended that your provider be chosen based on qualifications and experience and then negotiate scope and contract

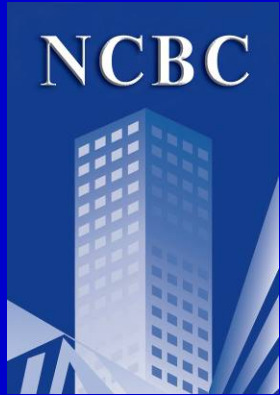
Commissioning Hospital Construction



Commissioning Process Design Phase

- Formal Design Reviews
 - Provide review at 100% SD submittal
 - Provide review at 100% DD submittal
 - Provide review at 60% and 95% CD submittal
- Develop commissioning specifications
- Guidelines to be used in reviews include AIA, ASHRAE, NFPA, CDC, local codes, hospital guidelines

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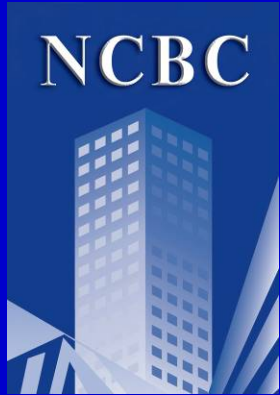
- Critical issues of concern regarding Hospital design
 - Systems maintainability, lifecycle analysis, energy efficiency
 - Accessibility to overheads for maintenance
 - Accessibility to fire and smoke dampers
 - Outside air requirements
 - Operating room design
 - Isolation and protective environment room design

Commissioning Hospital Construction



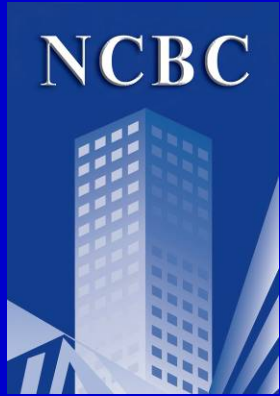
- Critical issues of concern regarding Hospital design (continued)
 - Noise levels
 - Coordination between architectural, structural, mechanical, plumbing and electrical documents
 - Coordination between medical equipment and their building service requirements
 - Special systems

Commissioning Hospital Construction



- Critical issues of concern regarding Hospital design (continued)
 - Infectious control procedures
 - Special electrical isolation panel requirements
 - Emergency power
- Commissioning Design Review are critical

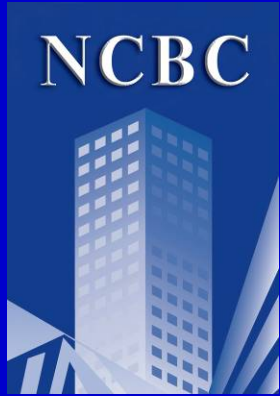
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Commissioning Process Construction Phase

- Initial commissioning meeting to review and discuss commissioning process
- Commissioning plan
- Submittal review
- Contractor Commissioning log books

Commissioning Hospital Construction

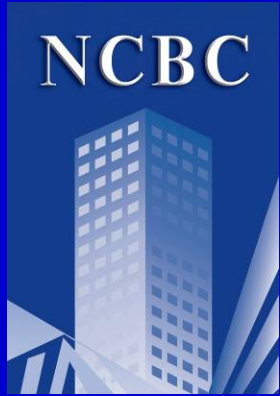


Commissioning Process Construction Phase (continued)

- RFI reviews
- Construction observation
 - Field reports
 - Discrepancy / recommendation logs
 - Tests observation
 - Cleanliness



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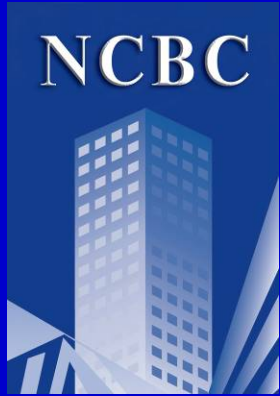


Commissioning Process Construction Phase (continued)

- Infectious control procedures
- Medical gas installation
- Special systems installation
- Test and Balance work



Commissioning Hospital Construction



Commissioning Process Post Construction Phase

- Spot checking of Test and Balance work
- Verify proper pressurization
- Load bank testing of generators
- Functional testing of all HVAC systems

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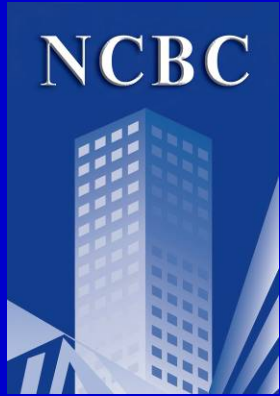


Commissioning Process Post Construction Phase

- 100% testing as instead of sample testing
- Medical gas certification
- Certification of domestic and any RO water systems
- Special system testing and verification



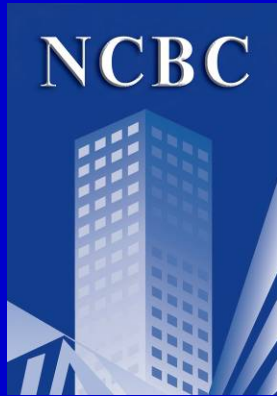
Commissioning Hospital Construction



Commissioning Process Post Construction Phase

- Emergency power testing
- Fire alarm testing
- O & M manual reviews
- Coordination of operation staff training
- Develop maintenance program
- Final report
- Warranty review

Commissioning Hospital Construction



Summary

- Hospitals benefit from commissioning
- Steps in performing commissioning for the most part are the same as any other project
- Systems may be different and more sophisticated
- Involve the commissioning provider as early as possible in the project

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