

“Owner’s Project Requirements”

Presented by:
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○ Learning Objectives

- Discuss how the OPR forms the basis from which all design, construction, acceptance, and operational decisions are made.
- Discuss how the Commissioning Process depends on a clear, concise and comprehensive OPR.
- Discuss how the OPR benefits the project.

What is the Owner's Project Requirements?

The Owner's Project Requirements (OPR) is a written document that details the functional requirements of a project and the expectations of how it will be used and operated.

These requirements and expectations include:

- Project Goals
- Measurable Performance Criteria
- Cost Considerations
- Benchmarks
- Success Criteria
- Supporting Information

Previous terms...

- The terms “Project Intent” and “Design Intent” are being phased out and replaced by “OPR.”
- In the past, this document has been developed by the Architect/Engineer through interviews and surveys with the Owner and future building occupants.

How does the OPR enhance the design and construction?

- The OPR is the opportunity for the Owner to set a quality assurance standard expectation for the project.
- The OPR will serve as the basis for evaluating whether the Design and Construction has been completed to the Owner's satisfaction.

And...

- The Commissioning Authority can offer assistance by helping to develop a thorough OPR.

The OPR is not a static document

- The OPR can further develop as the design begins to evolve. The Architect and Engineer should be included to share their views in the development and refinement of the OPR.

There are three principal ways to develop the requirements of the OPR.

- Survey
- Interview
- Workshop

Survey...

- Impersonal
- May not elicit a range of thought

...it may be a good way to introduce the development of the OPR.

Interview...

- Limited by the thoughts of only a few participants

...Again, it may be an opportunity to introduce some who are not otherwise normally involved to assist in the development of the OPR.

Workshop...

- Offers a dynamic situation
- A number of participants can be assembled to address a wide range of considerations
- The interaction of diverse individuals can offer valuable ideas that would not otherwise surface

The workshop should be offered in at least two installments...

- The first to stimulate thoughts around the needs and ideas of the group.
- The second will give participants another opportunity to convey additional thoughts.

Before scheduling the second session...

- Distributing a draft copy of the OPR between sessions will increase the productivity.

Who should attend?

- Owner
- Key individuals that will occupy the building
- Architect/Engineer
- Physical plant & maintenance staff
- Commissioning Authority

What should be included in the OPR?

- Project Description
- Objectives
- Functional Uses
- Quality of Materials
- Occupancy Requirements
- Indoor Environmental Quality Requirements
- Performance Criteria
- Construction Considerations
- Budget Considerations and Limitations

Project Description

- Provide a general description of the project.
 - Example...”University Hall was originally constructed in 1957. Since that time, the primary purpose of the building has remained the same, but the building and its systems no longer meet the needs of the users. This project is a comprehensive modernization...it shall provide a safe and effective working environment for the staff. The new building shall match well with the existing campus and maintain the historical appearance of the original building.”

Objectives

- There are several key objectives to be achieved....
 - Code Compliance
 - Appropriate Heating, cooling and ventilation
 - Efficient and adequate work space
 - Image enhancements
 - Flexibility
 - Sustainability
 - Energy efficiency

Functional Uses

- The functional uses shall be as follows:
 - Conference Rooms
 - Offices
 - Storage
 - Reception/waiting
 - Employee areas
 - Copier/equipment space
 - Mechanical, custodial and electrical/communication space

General quality of materials and construction

- Materials should be selected based on...
 - Longevity
 - Sustainability
 - Maintainability
 - High quality and durability
 - What not to provide (Based on experience)

Occupancy Requirements

- How is the building occupied...
 - Schedule of occupancy (Ex.: Mon-Fri 6am-6pm)
 - Occupancy by staff, by visitors, by support staff
 - Special event occupancies
 - After hours occupancies
 - Future expansion or change in use

IEQ Requirements

- Indoor Environmental Quality (IEQ) is important to the health, wellbeing and productivity of the building occupants.
 - Temperature and humidity requirements
 - Building Envelope
 - Lighting – Natural and artificial
 - Indoor air quality
 - Noise level
 - Air movement

Performance Criteria

- The performance for which the systems will be measured...
 - Meeting professional and industry standards (ASHRAE 15, 55, 62, 90.1, Energy Star, LEED, local and state codes)
 - Cost of operation: (Overall building heating, cooling and electrical operation)
 - Life cycle cost (model building performance as a basis of choosing systems)
 - Longevity (Major equipment life to be at least 30 years. Calibration of devices no less than 2 year intervals...)
 - Temperature (Offices shall be maintained at 72°F plus or minus 4°F)

Performance Criteria cont.

- Building Envelope (Blower door testing shall determine the building envelope performance)
- Air Distribution (Uniform air distribution with no noticeable drafts)
- Air quality measurements (IEQ testing may be performed to determine minimum VOC and CO₂ levels prior to occupancy)
- Noise level (The background noise level shall be limited to 20 NC in offices, 30 NC in common areas)
- Punch Lists (The punch list shall be complete at substantial completion)
- Contractor callbacks (There shall be no contractor callbacks due to inadequate training, poor quality workmanship or uncomfortable conditions)

Performance Criteria cont.

- Training (All training shall be video recorded and be adequately presented in order for staff members to train other staff)
- Commissioning Process (The Owner will be using the commissioning process to assure proper building operation, efficiency and staff training. A post evaluation of the facility operations will be conducted to assess the result.)
- Room Numbers (room numbers on the design documents shall match the actual building room numbering)
- Control System (Control systems shall function properly, room thermostats will be intuitive, and staff shall be able to operate the building efficiently.)

Performance Criteria cont.

- Air handling units (All AHU's shall have factory recommended clearances maintained, anti-freeze coil protection and be located in spaces with adequate room for removal and replacement of major equipment.)
- Budget and schedule (The project shall be completed on time and on budget with no change orders.)
- Maintenance (The systems shall be easily maintainable and have identifiable access to all components.)
- Project Record Drawings (Project record drawings shall constitute an accurate representation of the installed work. The Owner and CxA will periodically check to see that drawings are kept up to date during the construction.)
- Project Manuals (Provide in printed and electronic format)

Construction Considerations

- Describe conditions of working at the facility...
 - Owner occupancy during construction
 - Maintaining utilities and coordinating utility outages with the Owner and utility company
 - Access to the site and parking for staff and construction personnel
 - Protection of the construction site

Budget Considerations and Limitations

- Budget constraints exist on all projects. Some areas to consider...
 - How will energy improvements weigh against the overall cost?
 - Will alternates be a way of dealing with budgets that may be tight?
 - How will improvements or potential problems be brought to the attention of the owner during construction?
 - Will the project be bid to General Contractors or will Construction Management be considered?

Commissioning Process

- How does the CxA use the OPR in the commissioning process?

Commissioning Process

- Pre-design Phase
 - Select a Commissioning Authority
 - Document/Review the OPR
 - Prepare a Cx scope and budget
 - Prepare a Design Phase Cx plan

Commissioning Process

- Design Phase
 - Review the Basis of Design
 - Refine the Cx scope of work
 - Perform a design review
 - Prepare a Construction Phase Cx Plan
 - Prepare the Commissioning Specification

Commissioning Process

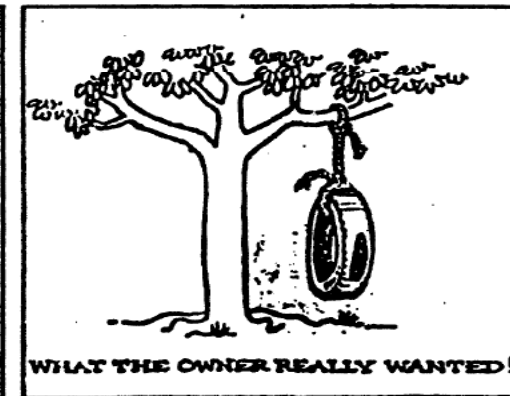
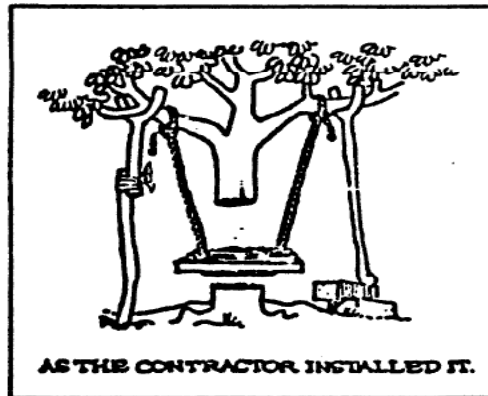
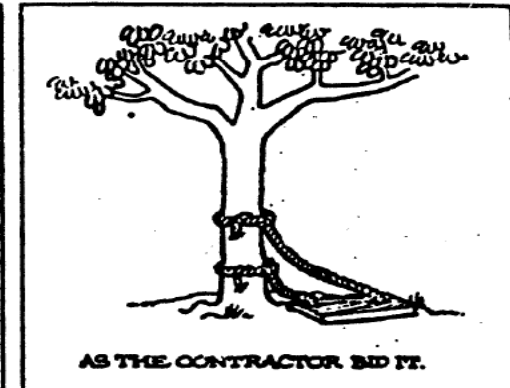
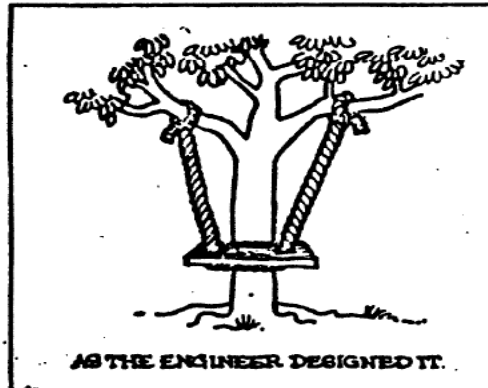
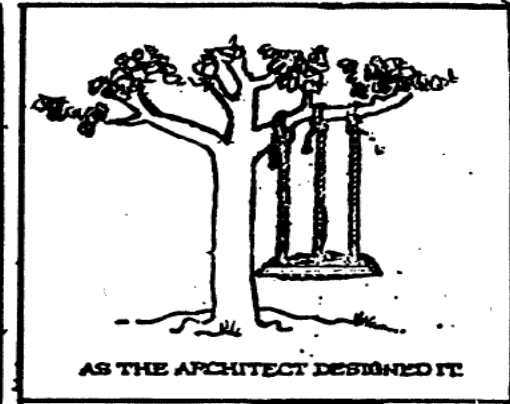
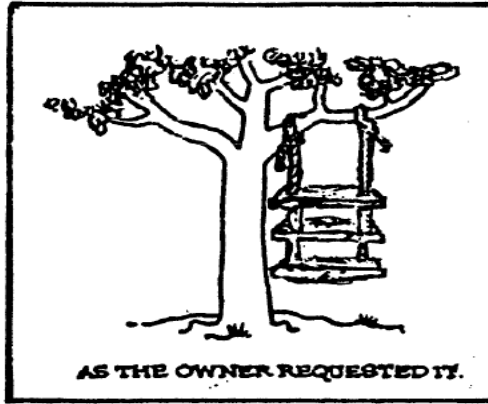
- Construction Phase
 - Attend the pre-construction conference
 - Update the Cx Plan and Schedule
 - Review Submittals
 - Review systems testing and startup
 - Oversee training of O&M personnel
 - Conduct Functional Performance Testing
 - Prepare final report and systems manuals

Commissioning Process

- Post-occupancy Phase
 - Perform a Post-occupancy Review
 - Perform any off-season testing
 - Document any warranty issues
 - Review/coordinate any ongoing Commissioning

Questions

all in a days work



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