PROJECT MANAGEMENT BASICS

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Program Management Is . . . .

In the context of the construction industry, program management is the application of Construction Management to large, complex or multiple capital improvement projects.
Project Management Is . . . .

The use of integrated systems, resources and procedures by the Project Team to successfully accomplish the planning design and construction of the intended project to the satisfaction of the owner.
Similarities between Project and Program Management

• Both manage resources and relationships to achieve an owner’s desired outcome
• Both include budgeting, estimating, scheduling and quality checks
• Both may use in house staff or contracted professionals
Differences between Project and Program Management

• Programs are most often comprised of multiple projects
• Programs demand heightened traditional skills as well as a greater variety of services
Project Management Functions

• Project Planning and Management
• Cost Management
• Schedule Management
• Scope Management
• Quality Management
• Safety/Risk Program Management
• Contract Administration
• Leadership
Project Management Focus

- Control time, scope, cost and quality
- Apply integrated systems and procedures to achieve the owner’s goals
- Encourage professionalism, teamwork and “ownership”
- Provide leadership to all project stakeholders
- Manage and resolve key problems that affect scope of work
Project Management Goals

• Cost Control
  – Complete within the owner's budget

• Time Control
  – Finish within the owner's required timeframe

• Quality Control
  – Meeting final product expectations, objectives, standards and intended purpose

• Scope
  – Complete in accordance with design, legal, contractual parameters
Interrelations of Time, Cost, Quality and Scope

- Cost: How Much?
- Time: How Long?
- Quality: How Well?
- Scope: The central concept

Diagram showing the interdependencies among Time, Cost, Quality, and Scope.
Interrelations of Time, Cost, Quality and Scope
Effects of Change in Scope

Scope Increase = Cost, Time and Quality Increase

Scope Decrease = Cost, Time and Quality Decrease
Other Project Management Goals

• Safety
• Environmental
• Social
Key Skills and Functions of the Successful Project Manager (1 of 2)

• Ensures that there are clearly stated, comprehensive agreements between parties
• Ensures that there are clearly drawn, accurate and complete contract documents
• Provides fair, fast, inclusive and timely decision-making
• Promotes and seeks agreement for pre-planned resolution procedures
Key Skills and Functions of the Successful Project Manager (2 of 2)

• Provides personally effective people skills
  – Disagreeing without being disagreeable
  – Arguing issues, not egos
  – Resorting to “higher authority” quickly

• Providing proactive leadership to the project

Communicate!
Management of the Project Team

- Projects need multi-disciplinary teams of specialists
- Multi-disciplinary teams of specialists need attentive leadership
- Professionals will (generally) follow the rules
- Partnering, leading to a collaborative culture, is the ultimate goal of the project
Owner's Requirements

• Understand the levels of authority and responsibilities between the owner and the PM
• Explain to the owner what information you can provide
• Promote a philosophy and practice of no surprises
• Be familiar with the owner’s needs in detail
• Be responsive and proactive to the owners requirements
Selection of Designers and Contractors

• Clarify the role the owner wants the PM to perform
• In many cases the PM may not control the owner’s decisions in selection
• Promote a Pre-Qualification phase
• All designers and contractors are not equally competent
  – Expertise and reputation should match the project requirements
• Check references
Issues with the Selection of Designers and Contractors

• If the “wrong” designer, contractor or subcontractor has been selected, act quickly to advise the owner of the possible impact, and identify practical options

• Assist the owner on communications and relationships to the construction industry
Coordinate and Collaborate the Integrated Construction Process

• The PM and their team with approval from the owner should provide the coordination and collaboration role on the integrated construction process

• Interface with other stakeholders:
  – Local governments
  – Utilities
  – Citizens
  – Planners, designers, contractors and end users
KEY PROJECT MANAGEMENT TOOLS
Development and Coordination of Contract Documents and Plans

• Language in all contracts, specifications and drawings must be accurate, consistent and understandable (KISS)
• Language in bid submittal documents must be carefully coordinated with all contract documents
• Properly coordinate for all scope packaging and project operating plans and procedures
• Cross reference between all documents
The Project Management Plan

- Defines/documents project requirements
- Establishes scope, budget, schedule and quality
- Identifies team members, their roles and responsibilities
- Identifies organizational structure
- Addresses significant site and environmental issues
- Establishes communications protocol
- Identifies contracting strategy
- Basis for evaluating team’s performance
# Project Procedures Manual

<table>
<thead>
<tr>
<th>TYPICAL CONTENTS</th>
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<tbody>
<tr>
<td>Cost control procedures</td>
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<tr>
<td>Schedule control procedures</td>
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<tr>
<td>Communications procedures</td>
</tr>
<tr>
<td>MIS procedures</td>
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<tr>
<td>QA program procedures</td>
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<tr>
<td>Safety program procedures</td>
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<tr>
<td>Contractor coordination procedures</td>
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<tr>
<td>Documentation procedures</td>
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<tr>
<td>Meeting protocol</td>
</tr>
<tr>
<td>Roles and responsibilities</td>
</tr>
<tr>
<td>Team organization</td>
</tr>
<tr>
<td>Levels of authority</td>
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<tr>
<td>Procedures for all contract administration documents</td>
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</tbody>
</table>
# Quality Management Plan

## Typical Contents

<table>
<thead>
<tr>
<th>Project organization</th>
<th>Quality goals and objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>General methodology for QA</td>
<td>QA/QC responsibility</td>
</tr>
<tr>
<td>Decision flow charts</td>
<td>Quality assurance plan</td>
</tr>
<tr>
<td>Quality control plan</td>
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</tbody>
</table>

Everyone’s Job is Quality
Construction Procurement Plan

• Identifies alternative contracting strategies
• Evaluates strategies and identifies pros/cons with respect to owner's requirements and constraints
• Recommends specific strategies with supporting rationale
• Establishes necessary actions prior to procurement
Project Safety Plan

• Responsibilities for project safety must be identified in accordance with the contract documents, laws and stakeholders insurance policies and requirements

• The PM and owner plus the contractor should develop appropriate plans and policies for the compliance, monitoring, and performance of employee health and safety as well as construction activities so there is agreement and clarity on who is responsible for what

• The project safety plan and policies should be made available to all project participants
Contracts and Agreements Provided by the Owner

- Form of contract
- Special provisions
- Standard provisions
- Drawings
- Payment schedule
Standard Forms

• CMAA, AIA, AGC, others
• Modified standard forms
• Owner-prescribed forms
• Send your contract to review by:
  – Legal counsel
  – Insurance provider
The Law(s)

- We are a society based on the concept of law
- Statutes, both Federal and State
- Case law...it grows every day and helps define required “standards of care”
- Helps shape risk management plans
Standards of Care

• It’s what is expected of you
• You need to learn them, understand them, and stay current on them
• Your boss might…the judge and jury will…judge your actions with respect to Standards of Care!
• The “right” standard of care will be judged in accordance with:
  – Terms of the PM agreement
  – Current statutes and case law
  – What other prudent PMs would do (or have done) in similar circumstances
# Key Reference Documents Needed by the Project Manager

<table>
<thead>
<tr>
<th>TYPICAL REFERENCE DOCUMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable codes and standards (e.g., local building code)</td>
</tr>
<tr>
<td>CMAA Standards of Practice</td>
</tr>
<tr>
<td>OSHA 1926 latest edition</td>
</tr>
<tr>
<td>EEO agreements</td>
</tr>
<tr>
<td>Company standards</td>
</tr>
<tr>
<td>owner’s standards</td>
</tr>
<tr>
<td>Local emergency contact and communication information</td>
</tr>
</tbody>
</table>
Management Information System (MIS) Benefits

- Efficient computer based communication tool used by all stakeholders
- Provides control of levels of authority
- Status and forecast compared to PMP (Project Management Plan)
- Basis for managing, identifying, and evaluating problem areas and variances
- Address information needs, data sources and control elements for time, cost, and quality control
- Accommodate continuing input of data
<table>
<thead>
<tr>
<th>TYPICAL ITEMS TRACKED IN MANAGEMENT INFORMATION SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General correspondence</td>
</tr>
<tr>
<td>Periodic reports of activity performance</td>
</tr>
<tr>
<td>Drawing schedules</td>
</tr>
<tr>
<td>Submittals</td>
</tr>
<tr>
<td>Transmittals</td>
</tr>
<tr>
<td>Change requests and authorizations</td>
</tr>
<tr>
<td>Daily reports / weather conditions</td>
</tr>
<tr>
<td>Cost records</td>
</tr>
</tbody>
</table>
# Pre-Design Phase

<table>
<thead>
<tr>
<th>PROJECT MANAGER ACTIVITIES IN PRE-DESIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand the concepts of the project development</td>
</tr>
<tr>
<td>Start Project Management Plan</td>
</tr>
<tr>
<td>Initiate Designer(s) selection</td>
</tr>
<tr>
<td>Identify Management Information System</td>
</tr>
<tr>
<td>Constructability reviews</td>
</tr>
</tbody>
</table>
Design Goals

• Complete a set of documents defining a project that can be built in the current marketplace within the owners established budget, scope quality, and schedule requirements

• Basic sections required of a complete set of contract documents:
  – Technical specifications
  – Project drawings
  – Agreements
  – Bid/proposal forms
# Design Phase

<table>
<thead>
<tr>
<th>PROJECT MANAGER ACTIVITIES IN THE DESIGN PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document review (phased)</td>
</tr>
<tr>
<td>Meetings</td>
</tr>
<tr>
<td>Document distribution</td>
</tr>
<tr>
<td>Cost control: independent phased cost estimates</td>
</tr>
<tr>
<td>Scope verification and sign-offs</td>
</tr>
<tr>
<td>Time control: milestone development</td>
</tr>
<tr>
<td>Project funding</td>
</tr>
<tr>
<td>Consultant coordination</td>
</tr>
<tr>
<td>Public relations</td>
</tr>
<tr>
<td>Permit approval oversight</td>
</tr>
<tr>
<td>Front-end documents: contract, general and supplementary conditions</td>
</tr>
</tbody>
</table>
# Procurement Phase

<table>
<thead>
<tr>
<th>PROJECT MANAGER ACTIVITIES BEFORE BIDDING/SELECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Relations</td>
</tr>
<tr>
<td>Develop requirements for selection of pre-qualified bidders</td>
</tr>
<tr>
<td>Understanding basic content required of contract general conditions</td>
</tr>
<tr>
<td>Developing bidding or proposal procedures</td>
</tr>
</tbody>
</table>

- **Public Relations**
  - Assessing bidding climates
- **Develop requirements for selection of pre-qualified bidders**
  - Assessing and evaluating bidder or proposer qualifications
- **Understanding basic content required of contract general conditions**
  - Addressing risk management issues
- **Developing bidding or proposal procedures**
1. Solicitation and prequalification
2. Evaluation guidelines for selection
3. Notices / advertisements
4. Bidders / Interest campaign
5. Delivery of bid documents
6. Information to bidders (Q & A)
7. Issuance of addenda
8. Draft scopes of work in accordance with local traditions
9. Bid opening and evaluation
10. Monitor compliance with and execution of contracts
11. Arrange owner-purchased equipment
12. Provisions for acquiring permits, insurance and labor affidavits
13. Bonds and insurance information is submitted and approved
14. Pre-construction (post award) meeting may be required
## Construction Phase

<table>
<thead>
<tr>
<th>PROJECT MANAGER ACTIVITIES DURING CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time management</td>
</tr>
<tr>
<td>Claims management</td>
</tr>
<tr>
<td>Management reporting</td>
</tr>
<tr>
<td>Managing on-site facilities</td>
</tr>
<tr>
<td>Cost-loaded CPM</td>
</tr>
<tr>
<td>Budget and cost reporting</td>
</tr>
<tr>
<td>Record drawings</td>
</tr>
<tr>
<td>Coordination</td>
</tr>
<tr>
<td>Public relations</td>
</tr>
</tbody>
</table>
Dispute Resolution and Mitigation

• Resolve at Lowest Level Possible
• Fair and Equitable
• Don’t Let them “Fester”
• Dispute Resolution Methods
  – Partnering
  – Dispute Resolution Board
  – Mediation
  – Arbitration
Near the End of Construction

<table>
<thead>
<tr>
<th>KEY TERMS FOR THE PROJECT MANAGER TO UNDERSTAND NEAR THE END OF THE PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary inspection prior to occupancy</td>
</tr>
<tr>
<td>Substantial completion</td>
</tr>
<tr>
<td>Start-up</td>
</tr>
<tr>
<td>Final inspection</td>
</tr>
<tr>
<td>Organization of OandM manuals, warranties, training</td>
</tr>
</tbody>
</table>
Post-Construction

• Project Manager Activities include
  – Preparing and transmitting documents connected with the final payment
  – Assembling the as-built drawings and documents
  – Contractor follow-up
  – Owner move-in or start-up
  – Contractor call-back on warrantee work
  – Contractor closeout
Four Main Delivery Methods

• Design-Bid-Build (Traditional Method)
• Multiple Prime
• CM at Risk
• Design-Build
Design-Bid-Build

- Owner
  - Designer
  - General Contractor
    - Consultant
    - Subcontractors
    - Suppliers
Design-Bid-Build Advantages and Disadvantages Activity

Advantages

- Widely applicable
- Understandable
- Owner retains control
- Owner “knows” the cost prior to start
- Relatively slow

Disadvantages

- Owner is liable for the design
- Constructability issues
- Adversarial relationships fostered
Multiple Prime

Owner

- Designer
  - Consultant

- Prime
  - Subs

- Prime
  - Subs

- Prime
  - Subs

Suppliers
# Multiple Prime

## Advantages
- Increased owner control
- Work easily fast-tracked
- Save general contractor markups
- Some states require it
- Owner has risk of controlling time and coordination

## Disadvantages
- Multiple accountability for performance
- Unknown “final” cost at construction start
- Same owner risks as traditional approach
CM at Risk

Owner

Designer

CMAR

Consultant

Subs

Subs

Subs

Suppliers
CM at Risk

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Well-suited for fast-tracking</td>
<td>– Change of CM’s accountability after</td>
</tr>
<tr>
<td>– Contractor (and subcontractor) input on design alternatives</td>
<td>– GMP (guaranteed maximum price) is signed</td>
</tr>
<tr>
<td>– Better cost info</td>
<td>– Tempted to sign GMP “too soon”</td>
</tr>
<tr>
<td>– Permits “picking” of the builder</td>
<td>– Variations in procurement methods</td>
</tr>
</tbody>
</table>
Design-Build

Owner

Design Builder

Design Consultants
Subcontractors
Suppliers
Design-Build

Advantages
- Accountability for project delivery
- Reduced disputes
- Can cut time and cost
- Builder can have input in design / constructability
- Budget established early on

Disadvantages
- Early definition of the program required
- Owner’s loss of control during design
- Potential for quality to be compromised
What Next?

• Professional CM Course
• CMAA National Conference
  – San Francisco October 19 – 21
  – PCM Course October 17 – 19

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