CHAPTER 6 - CAPITAL PROJECT EXECUTION

INTRODUCTION

By now, Chapter 6 should write itself. But, unfortunately, it has not. How would you summarize the key points to Capital Project Execution?

The first idea was to expand upon the five Pillars of Project Execution. The Pillars serve to focus the Project Team on key concepts which are managed throughout project execution.

- Safety
- Schedule
- Cost Control
- Risk Management
- Quality

However, the second idea classifies key execution documents, Exhibits, Figures and Examples into one of four categories, which follows:

- Guiding Documents
- Project Documents
- Supporting Documents
- Reference Documents

Defining the four document classifications as follow:

Guiding Documents are Deliverables being developed that become part of the permanent job files. One of the most important documents will be the Project Execution Plan, see Exhibit 5.3.

Project Documents represent Deliverables generated by the Project Team. The deliverables, such as the set of design drawings, are activities to be completed by the Project Team (e.g., Constructability Program Action Items).

Supporting Documents are just what they are called – a document used by a specific entity (e.g., Engineering and Design Contractor, Construction Contractor, etc.) coordinating work performed on one particular Client's project. The first supporting document shown is the Coordination Procedure employed by Engineering and Design Contractor. The example Table of Content (Example 6.5) outlines the content of the document and has included a list of typical Attachments.

Reference Documents are just what they are called – a document that seeks to amplify or clarify a Guiding Document or Project Document.

Guiding Documents

1. Project Scope of Work – early (Exhibit 5.3)
2. Risk Management – early (Example 6.2)
3. Execution Plans – early
    a. Project Execution Plan
        i. Quality Execution Plan (Chapter 12)
        ii. Safety Execution Plan (Chapter 2)
        iii. Procurement Execution Plan (Chapter 10)
        iv. Construction Execution Plan (Chapter 11)
4. Total Installed Cost (TIC) Estimate – timing depends on project needs (Exhibit 4.4)
5. Team Roles & Responsibilities – later (Exhibit 4.1)

Project Documents

1. Project Initiation Check List – early (Exhibit 5.1)
2. Equipment List - early
3. Line List- later
4. Constructability Program Action Items – (Exhibits 11.1/11.2)
5. Project Mechanical Completion – later (Example 6.4)

Supporting Documents

1. Coordination Procedure – Engineering and Design Company document – early (Example 6.5)
2. OWNER Project Standards and Specifications – early (Refinery documents)
3. Capital Project 'Lessons Learned' – early (Example 6.7)
4. Client Key Performance Indicators (KPI) examples for all Contractors – later (Chapter 8)
5. Client Safety Audit guideline – later (Exhibit 2.2)
6. Client New Employee Mentoring guideline – later (Exhibit 14.1/14.2)

Reference Documents

1. List of Short & Long Subcontract Packages (Example 6.8)
2. AACE Accuracy of Cost Estimates (Example 6.9)

WHAT DEFINES A CAPITAL PROJECT

The Project has a goal which supports a need identified by the Client. It is finding the 'right solution' that meets the real business need. The Project has a start date (funding approval) and a completion date (usually specified in the contract documents). The Project requires clearly defined deliverables due from the Project Team. The Project

Team can be comprised of internal resources, or they can contract outside resources to fill open team positions. However, the Project Manager should be the Client's representative that 'manages' the diverse Project Team. Ultimately, the Project Team is driven by the Master Project Schedule dates while concurrently managing the overall project costs.

The cost to make a design change increases the further the design progresses. Moving an interior door after sheetrock has been installed costs significantly more than a design change to the draft floor plan. Therefore, ensure that the key design drawings are thoroughly vetted before releasing work into detailed design.

PROJECT EXECUTION PLAN

The Project Manager takes the lead in developing the Project Execution Plan. However, it takes input from various groups to complete this document and finalize the Scope of Work and complete the required attachments. The Five Pillars of Project Execution will assist the Project Team on near term work activities. Refer to the Project Initiation Checklist for further details (Chapter 5).

MASTER PROJECT SCHEDULE

During the first 90 days is when the Master Project Schedule is being prepared. Chapter 7 outlines the Interactive Planning Session, which requires the involvement of the entire Project Team. The milestones used during this planning session become the backbone of the Master Project Schedule.

The Project Managers' message to his Project Team will include the project execution strategy requesting 'buy-in' from the team as to the overall project duration.

The following activities, as shown on the Project Initiation Checklist, are completed at this time:

- Scheduling will require the development of the Engineering, Procurement, and Construction Work Breakdown Structures (see Chapter 7);
- Risk Ranking effort commences and is formally documented with Action Items assigned to team members;
- Project Kick-off meetings are held; and,
- Establish the Project Team Roles & Responsibilities.

COST REPORT

first step in developing the Project Cost Report is to translate the AFE budget into the specific code of accounts under the main headings of Engineering, Procurement and

Construction (see Exhibit 8.1). Concurrently, the Change Order process must be prepared, reviewed, approved and issued to all parties for use.

The following activities are completed at this time:

- Develop the Cost Report working with the Finance group;
- Breakdown the approved Budget into the specific code of accounts for Engineering services, Procurement costs, and field Construction;
- Understand the reporting needs for management and Stakeholders; and,
- Formalize the Change Management process for the project and release it to all parties.

SAFETY PLAN

Chapter 2 outlines the key activities associated with developing the Project Safety Plan. The chapter explains that safety is personal – everyone has to embrace the Safety Plan, with no exceptions. The primary driver behind this Plan is for everyone to go home after work just like they showed up for work that morning. Various programs were outlined for the Project Team to consider implementing.

The following activities are completed at this time:

- Develop and release the Safety Plan to all parties;
- Perform the Gap Analysis;
- Activate the Incident Review Committee;
- Outline the Near Miss Reporting requirements;
- Outline and implement the Project Safety Audit Program;
- Release for use the Observation Cards;
- Prepare and train all employees on the use of the Stop Work Authorization Cards; and,
- Consider implementation of a New Worker Mentorship Program.

QUALITY PLAN

The Project Team should have the guidelines for developing the Project Quality Plan. It is essential that work performed by the Project Team adhere to the specifications for the design and installation of new components. The Project Quality Plan objectives assure that the assets critical to project safety are procured through a capital project do not compromise the integrity and safety of the facility. At the heart of the Quality Plan is the requirement to prevent an asset installation, which could lead a potential loss.

The following activities are completed at this time:

- Preparation of the Fabrication Quality Assurance plan; and,
- Completion of the Field Construction Quality Assurance plan.

RISK MANAGEMENT

This is the final Pillar of Project Execution. Risk management was not a formal process back in the day – we addressed items as they arose. However, this process has been formalized as many factors can influence the project schedule, costs, etc. An example of a key project risk was the retirement of several OWNER employees during the 3-year project schedule. It seems somewhat silly, but losing a manager during any project can have huge implications on both schedule and costs.