# The Essence of Project Management

Bob Kinstrey Director, Pulp and Paper Consultancy Jacobs

## **Discussion Points**

Overview Scope Design Criteria Schedule Budget Resources Communications Design for Safety Documentation Tools

## **Capital Effectiveness**













*Note:* Increasing Size of the Arch Shows Increased Effort and Cost; but the FIRST TWO Stages have the Most Influence on the Outcome!



- Must be written
- Must be agreed to by Management
- Need to Identify:
  - Expectations
  - Goals:
    - ✓ Financial
    - Production
    - ✓ Quality
- Understand work process
   Beware of "Scope Crepe" "Stay on Coarse"

# JSTEPS<sup>SM</sup> Summary Map

#### What Is Our Project Execution Process?



We call this phase gated project execution process the "Jacobs System to Ensure Project Success<sup>SM</sup>."



# **Design Criteria**

### Need to establish at the beginning

- Can't get meaningful quotations without a firm basis
- Can't get team buy-in on objectives unless they understanding and review written design criteria document
- Need to understand significant of key elements

#### Typical Parameters

- Production rate
- Quality requirements
- Grade structure
- Financial goals
- Technology utilization

# Schedule

### Need to establish the overall schedule

- Study schedule
- Project milestones
- Downtime expectations
- Need to involve key players
  - Operations and Management
  - Engineering
  - Equipment supplier (s)
  - Contractor (s)

Need to understand critical equipment deliveries

Tools (Excel, MS Project, Primavera)

# Budget

### Several different budgets

- Study
- Engineering
- Project

#### Need to manage

- Dollars (by area, discipline, etc)
- Quantities (pipe, wire, equipment, steel, concrete, etc)
- Establish "Change Order System"
  - Basis
  - Approval



Establish the Project Organization – Internal Team ✓Who ✓ Availability – External ✓Corporate Third Party Previous Studies

# **Project Organizations**



## Project / Process Engineer Has Many Faces

- Technical Lead
- Project Controls (Costs) Lead
- Area Lead on project
- Interface between Engineering and Subcontracts
- Interface between Engineering and Vendors
- Interface between Engineering and Construction
- Discipline Lead and Project Engineer
- Project Manager and Project Engineer
- Home Office PE to Field Engineer
- Coordinator of Multi-office Executed projects

### **Project / Process Engineer Traits**

- Good Communication Skills
- Experienced in Project Execution
- Can Do Positive Attitude
- Good Listening Skills
- Decision Maker
- Team Player
- Manages Time Well
- Well Organized
- Possesses Leadership Skills
- Flexibility

## Communications

### Critical

- Lack of communications is a Key Reason projects run into problems
- Need to establish Matrix early in project
  - Who gets documents
  - Who can approve changes scope and budget
  - Who approve and signs off on design
- Must be Open

# **Design for Safety**

#### Many Different Mandates

- OSHA (29 CFR guarding and PSM)
- EPA (40 CFR RMP)
- Home Land Security (6 CFR)
- Local, State, Corporate, etc
- Codes
  - ASME, IEE, etc
  - Hurricanes, seismic, building
  - American Disability Act
- Maintenance
- Risk Analysis and Management

### Management of Change for Design



# **Design Safety Documents**



## Documentation

Report - Criteria and basis - Alternatives Estimate - Basis for design Quotations Drawings Meeting Notes, including phone calls

## Tools

Programming Interactive Planning (IAP) Project Definition Rating Index (PDRI) Modeling Estimating Value Engineering Constructability

### **Information Sources:**

Construction Industry Institute (CII) The University of Texas at Austin Austin, TX (512) 471 4319

The Business Roundtable An Association of Chief Executive Officers Washington, DC



# Analytical tool used to define the entire scope of work for the project.



# **Interactive Planning**

- Project expectations are identified
- Schedule restraints are identified
- Facilitates understanding
- Identifies work packages
- Schedule milestones are identified
- Obtains ownership and commitment
- Identifies barriers and concerns from all participants
- Presents a view of total project completion
- Wraps up with team buy-in
- Participants, Owner (A), E & C, Vendors





# <u>Project Definition</u> <u>Rating Index (PDRI)</u>

- Created by CII to measure degree of scope development on industrial projects
- Identifies and precisely defines each critical element in scope
- Predicts factors that impact project's risk
- Allows team to quantify, rate and assess level of scope development
- Checklist Used by Project Team to Determine Steps
- Internal Benchmarking Tool
- Objective Negotiating Tool Between Owner / Contractor
- A Best Practices Tool

# Project Definition Rating Index It is a Process!



# Project Scope Development Assessment

 Qualify the Quality of Scope Definition - PDRI\*
 Relates to Probability of Achieving Project Objectives

PDRI Score	<200	>200	Δ
Cost	- 6%	16%	<b>22%</b>
Schedule	- 2%	12%	14%
Change Order Cost	3%	8%	<b>5%</b>

\*Results of CII Study

# Modeling

High Level

 Used to assess changes in one part of the mill on the mill as a whole

 Mass and Energy

 WinGems, CadSim, Pinch

# Estimating

- Establish the Class
  - Class 5 Order of Magnitude
  - Class 4 Preliminary
  - Class 3 Early Budget
  - Class 2 Budget Control
  - Class 1 Definitive/Construction
- Database

# Value Engineering

Fosters an environment of project cost reduction Initiated at the outset of the project Greatest impact is during scope definition Continuing impact during detailed design and constructability reviews



Barometer measures cost reduction throughout the life of a project

## **Constructability Features**

- Formal approach
- Interactive planning
- Prioritize engineering efforts
- Offsite preasembly and modular opportunities
- Equipment releases by engineering
- Address maintainability and operability issues
- "Best Practices and Lessons Learned" built in
- Continuous refinement and implementation

# Many Bad Projects Have One Thing In Common



Failure to communicate is a sure path to disaster
 Communicate early, frequently and routinely
 Discuss issues, don't let them linger

# Thank You



### bob.kinstrey@jacobs.com