Managing Project Risk
The Builder/Contractor Hierarchy

CSTM 102
Spring 2013
✓ Managing Resources

- Owner’s Team
  - Project Representatives
  - Users
  - A/E
  - Contractors

- Contractor
  - Construction Labor
  - Material/Permanent Equipment
  - Construction Equipment
  - Subcontracts
Assessing Project Risk
General Risks (In text)

- Financial
- Time
- Design
- Quality
- Construction
  - Weather
  - Site Conditions
  - Productivity
  - Safety
Assigning Project Risk

• Pushing project risk down the project participant list will eventually lead back to the owner/developer.

• Addressing project risk early can reduce that risk to the owner/developer.

• By early involvement of all project participants a system to manage risk and change is implemented.

• Ethical considerations regarding relationships to owners.
Owner-Designer-Contractor

RISK

Owner- Financial
Designer- Design Liability
Contractor- Financial

Are there ethical considerations?
Our Goals for Today

• Understanding the unique risk characteristics in construction
• Understand the importance of managing resources
• Defining and assigning work scope
• By looking at the Owner-Designer-Constructor relationship means different things to each player
The Rule Book

THE GAME PLAN
• Risk Management
• Scope of Work
• The Delivery System
• Rules- The Contract
• The Plan for Time and Money

THE PROJECT TEAM
• A Project and a Client
• A Designer
• Constructors

THE DOCUMENTS
• Plans & Specifications
• Information
• Documentation
• Interpretation

PROJECT EXECUTION
• Safe Work Environment
• Risk Control
• Materials & Methods
• Quality Construction
• Time and Money
The Game Plan

- Risk Management
- Scope of Work
- Rules - The Contract
- The Plan for Time and Money
Construction Projects

A very unique industry from how it works from concept to completion.

Unique Risks
Unique Legal Precedence
Unique Liability Issues
Unique Processes
Ethical Considerations
Scope of Work
Scope of Services

What are you providing for your portion of the work you are performing? Typically that scope is specific. The participant is providing this with these inclusions and exclusions.
The Field Work Force

- Self Perform
- Subcontract
- Work Specialties
- Trades
- Liability
Specialty Trades * Work Scopes

Work Scope → General Contractor → Trade Contractor
The Trades

• Carpenters (Concrete/Wood)
• Sheet Rock (Gyp board)
• Ironworkers
  (Structural Steel/Reinforcing Steel)
• Brick Masons
• Cement Mason
• Pipe-fitter/welders
• Plumber
• Sheet Metal Worker
  – HVAC
• Laborer

• Glaziers (Glass)
• Roofers
• Electricians
• Plasterers
• Equipment Operators
• Pile-drivers
Union Shop vs. Merit Shop

- Employees must belong to a union for that trade.
- All hiring is done from a hiring hall.
- All union employees are “equal” in regards to pay.
- Work rules are established for each trade.
- Apprentice Training Programs
- Collective bargaining-negotiating a labor contract.

- Employees are not required to belong to a union.
- Employees are recruited from the community.
- Employees advance on merit.
- Pay and benefits can be less.
When and where?
Union or non-union

- Prevailing wages. Project labor agreements.
- Federal/State Contracts.
- The private sector.
- Locale and experience.
Issues

• Unions in theory good for the worker
• Territorial Disputes
• Political
• Mistrust between management and worker
• Lack of training at merit shop
• Poorer retirement and benefits to worker

Union or Non-Union
• A general foreman is assigned when there are more than usually 3-5 foremen.
• Foremen are used when self-performing work. No more than 10 craft workers report to a foreman.
• A lead-person works under a foreman that will be responsible for 2 to 5 workers.
Roles and Responsibilities of the Contractor and their Team

The players for a project may include:

- The Prime Contractor
- Subcontractors
- Vendors/Suppliers
- Sub-consultants or Specialty Coordinators

What is their role in the project?
Resources

- Labor
- Material/Permanent Equipment
- Subcontractors
- Construction Equipment
- Small Tools/Consumables
Builder/ Contractor Hierarchy

Prime Contractor
  General Contractor
    Self Performed Work
    Suppliers/Vendors
      Subcontractors
        2nd Tier Subcontractor
          Suppliers/Vendors
        Suppliers/Vendors
      Suppliers/Vendors
    Suppliers/Vendors
    General Foremen/Foremen Crews
      Self Performed Work
Risk

Self Perform
• Furnish Labor
  – Hiring/Firing
  – Pay & Benefits
    • Weekly
  – Safety/Health
    • Personnel Issues
    • Injury
    • Workman’s Compensation
  – Productivity
  – Availability
• Install Materials
  – Meet Specifications (right kind)
  – Quantity
  – Quality

Subcontract
• Furnish Labor & Materials
  – Identify proper work scope
    • Inclusions & Exclusions
  – Contract Management
  – Per Plans & Specifications
  – Pay & Benefits
    • Monthly
  – Safety/Health
    • Protect Workers
  – Bonding & Insurance
    • Liability Insurance
    • Appropriate Bonds
  – Monitor Quality
Providing Labor On a Project

• First priority for payment.
• Payment of payroll taxes.
• Workman’s Compensation requirements
• Employee Privacy Act
• Rights, morale and motivation.
• Risk associated
  – Safety
  – Legal
  – Productivity/Control
Self Perform or Subcontract

- A subcontract is a contract with a contractor to supply labor and material to perform a portion of the project work.
- Self performing work is where the General Contractor utilizes its own craft workers and buys and installs the material.
- Managing the portion of work is different in each case.
- This includes all project participants not just construction. Some of the terminology might change.
The differences

• A subcontractor submits a proposal to provide a specific scope of work for some $ value. The General Contractor is not responsible for overruns unless it is outside the scope of work. They manage the subcontractors through coordinating, scheduling, providing information and managing their contract.

• Self-performed work is based on the General Contractor being responsible for providing their own labor and material. They are responsible for labor productivity, shortages and overruns. They usually take on more risk by self-performing the work.

• Specialty contractors or trades people.
Issues to Look at for Deciding on Subcontract or Self Perform

- Risk/Reward
- Costs
- Craft Work Force
- Licensing
- Supervision
- Knowledge/capabilities
In Theory

- Make more money self performing
  - Also lose more money
- Still responsible for subcontract work scope
- Idea of saving mark-up
- Have resources and capability to do that type of work scope
- More control of work force self performing
  - GC’s that self perform concrete maybe heavy civil. Why? Those work scopes control the job.
Suppliers/Vendors

• Providing material or equipment to the jobsite.
• A contract is used through a Purchase Order and “Terms and Conditions”
• No on-site labor is provided by the vendor to install the material or equipment.
• Companies will try to write Purchase Orders for on-site labor. There is risk associated with that policy.
• Term used is Third Party.
Common Builder Hierarchy

- General Contractor
  - Subcontractor
    - Supervision
      - Craft Workers
    - Subcontractors
      - Supervision
      - Craft Workers
    - Supplier/Vendor
      - Supervision
      - Craft Workers
      - Vendor/Suppliers
  - Self-Perform
  - Supplier/Vendors
Commercial Sector Subcontracting

• Most General Contractors will subcontract up to 75% or more of their work scope.
• This means that contract administration is a big part of the project.
What is a project?  
Who is responsible?

Example: Demolition Project

- Code of Safe Practices
- Sequence Plan
- Dust control Plan
- Work Hour Schedule
- Noise Level Monitoring
- Load Determination
- Structural Analysis
- Disposal of Waste

- Industry Trade
- General Contractor
- Contractor/Subcontractor
- General Contractor
- Owner/Architect/General/Sub
- Engineer
- Engineer
- General Contractor/Subcontractor
Topics/Terminology

- Private vs. Public Funding and Sectors
- Project Participants
- Direct Project Objectives
- Project Life Cycle
- Pre-Construction Services
  - Project Concept
  - Schematic Design
  - Project Delivery
  - Design Development
  - Construction Documents
- Cost Influence Curve
- Designers Role
- Understanding the Rule Book and Risk
- Scope of Services/Work Scope- What you are responsible for.
- “Time and Money”-On Time/On Budget-Key success indicators
- Managing resources-Labor, Material/Equipment, Construction Equipment, Subcontracts
- Builder Hierarchy -Risk/Reward- Self Perform or Subcontract
- Labor or Subcontract and risk associated with it
- The “Trades”
- Union vs. Merit Shop
- Crew Make-up