

Change Orders, Changed Conditions & Cardinal Change

®

MDC *Systems*

Pepe & Hazard

King & Spalding

Two Temple Gardens

Question

Is Change Inevitable?

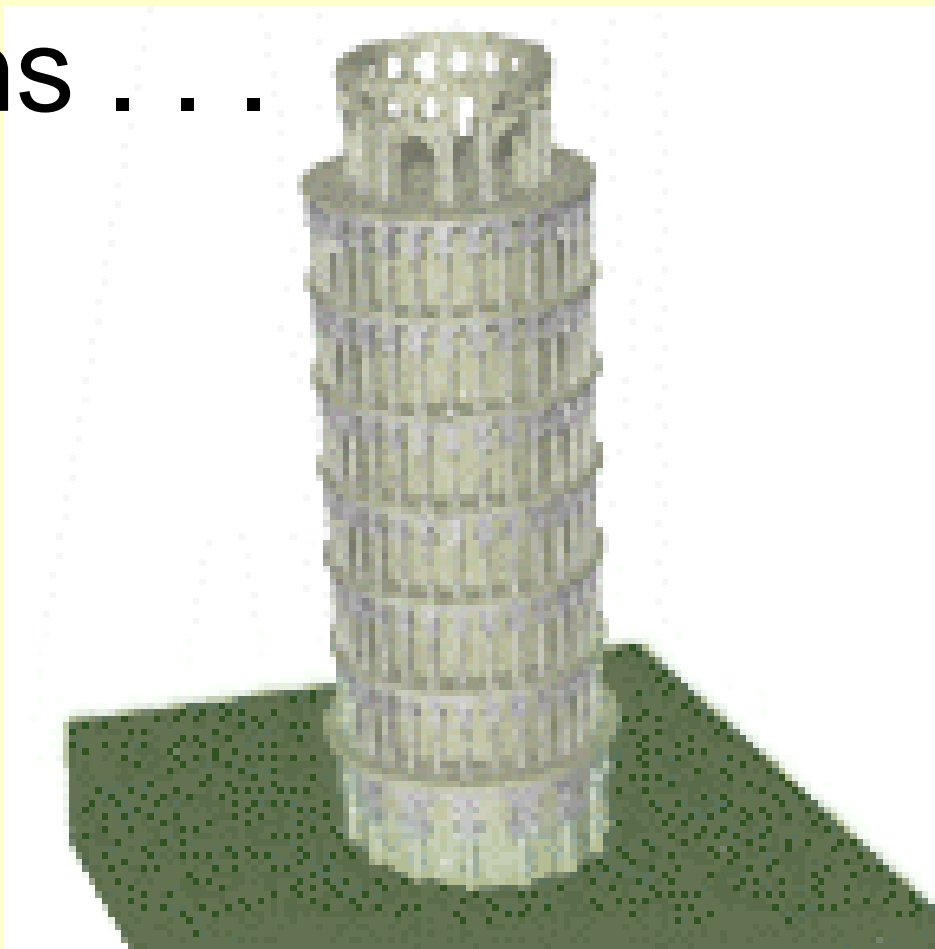
YES, Therefore, the Best We Can Do Is Manage the Change During the Process of Completing the Work in the Most Expeditious and Cost-effective Manner.

In the beginning, design was relatively uncomplicated . . .



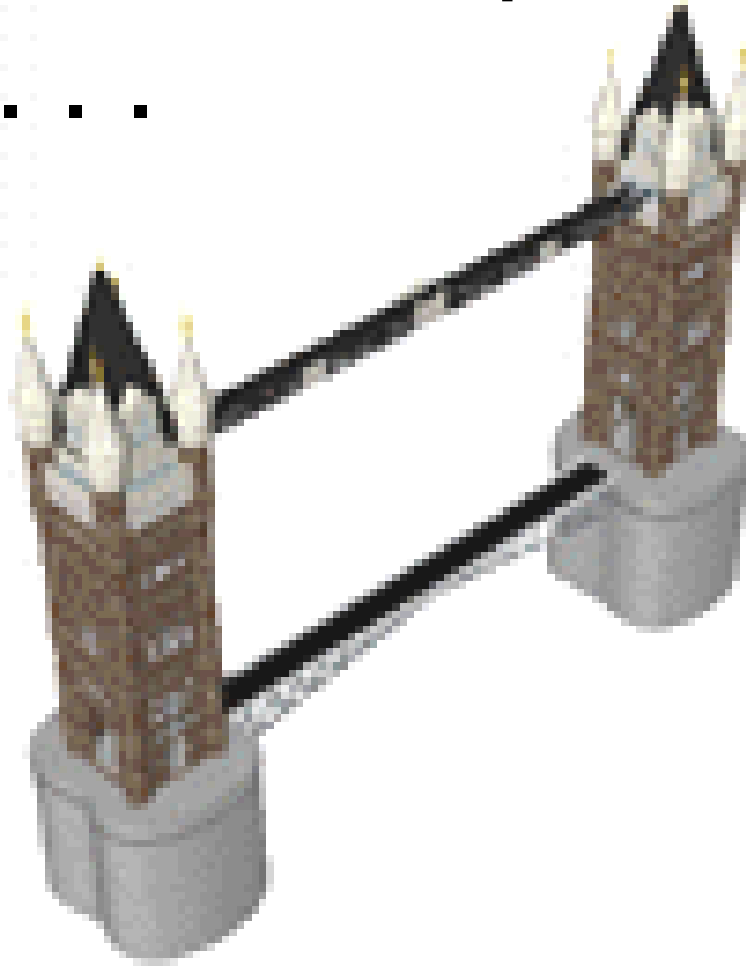
Stonehenge

Later, as design complexity increased, so did construction problems . . .



Leaning Tower of Pisa

Increasing design complexity led to more significant impacts by *changes* . . .



Tower Bridge

Since Tower Bridge

- Plumbing Systems
- Electrical Systems
- Ventilation Systems
- Elevators(vertical Transportation)
- Air Conditioning
- Fire Alarm and Protection Systems
- Building Automation Systems
- Security Systems
- “Smart Buildings”

Today, *changes* often mean the difference between a successful and an unsuccessful project



Modern Building

Managing Change

- Recognize That Change Is Occurring
- Build Recognition Systems Into Project and Construction Management Monitoring Systems
- Minimize Negatives and Maximize Positives of Change on the Overall Project

Managing Change— *The Owner's Perspective*

*The Owner's Dilemma: Maintaining
Flexibility While Controlling
Contract Price Overruns*

Managing Change— *The Owner's Perspective*

Fundamentals Concerning Change

1. “Modification” vs “Change”
2. Consideration Required?
3. Meaning of “Scope,” *I.E.*, Scope of “Work” vs Scope of “Contract”
4. Construction Directives vs Change Orders
5. Constructive Changes
6. Cardinal Change

Managing Change— *The Owner's Perspective*

Effect of Project Delivery System on Controlling Changes

1. Design—bid—build
2. Multi-prime Arrangements With
CM Not at Risk
3. Design—build Variations

Managing Change— *The Owner's Perspective*

Effect of Contract Pricing Method on Controlling Changes

1. Fixed Price vs Cost-plus Variations
2. Deferred Pricing Until Design Is Fixed

Managing Change— *The Owner's Perspective*

Extra-contractual Devices to Control Change

1. Pre-qualification and Contractor Selection
2. Site and Utility Studies
3. Contractor Participation in Design and Budget Development
4. Constructability Review
5. Permit Studies
6. Careful Project Management

Managing Change— *The Owner's Perspective*

Contractual Devices to Control Change

1. Extreme Risk Allocation
2. Enforceable Notice Requirements
3. Designation and Control of Owner's Authorized Reps
4. Prudent Control of Contract "Flex," Contingencies and Float
5. Cost and Pricing Mechanisms
6. Interim Decision Making Processes

Managing Change— *The Owner's Perspective*

Shifting Risks of Change to Third Parties

1. Third-party Beneficiary Clauses
2. New and Improved Insurance Products



Managing Change— *The Contractor's Perspective*

Managing Change— *The Contractor's Perspective*

The Owner's Top Five Failures

- ◆ Wrongly Believes Any Job Can Be Built Without Changes
- ◆ Wrongly Believes the Design Documents Are Complete and Error-free
- ◆ Fails to Provide for the Inevitable Changes (Contingency)
- ◆ Fails to Control User Changes During Construction
- ◆ Fails to Recognize Design Professional's Lack of Objectivity and Neutrality

Managing Change— *The Contractor's Perspective*

Special Problems

- ◆ Changed Conditions
- ◆ Fast-track Construction
- ◆ Constructive Changes
- ◆ Cardinal Change

Managing Change— *The Contractor's Perspective*

The Pricing Problems

- ◆ Inherent Adversity/hostility
- ◆ Direct Labor and Materials
- ◆ Indirect or Impact Costs
- ◆ Solution

Managing Change — *International Construction Contracts*

- Assumptions
- UK – Brief
- USA – Program
- UK – Programme
- USA – Schedule
- UK – Schedule
- USA – Histogram
- UK – Histogram
- USA – Bar Chart
- UK – Procurement
- USA – Finding a Prostitute

Managing Change — *International Construction Contracts*

***REVIEW OF INTERNATIONAL PRACTICE ON
THE ALLOCATION OF RISK OF GROUND
CONDITIONS – Dr Peter Fenn, UMIST***

Types of Clause – who bears the risk?

***“No one can ever know with certainty what will
be found during sub-surface operations”***

Kaiser Industries Corp v United States F.2d at 329, 169 Ct.Cl. at

323

Managing Change — *International Construction Contracts*

Alternative 1 - “O”

**Summary: favours the Contractor,
majority of risk borne by Owner.**

Allocation of risk

- ◆ **Owner accepts risk of differing conditions**
- ◆ **Owner accepts risk of Owner furnished information**

Managing Change — *International Construction Contracts*

- Alternative 2 “O/C”
- Summary: intermediate, risks shared.
- Allocation of risk
 - ◆ Notification of differing conditions required
 - ◆ Owner adjusts payment for differing condition
- Owner’s representative decides on:
 - ◆ whether conditions constitute “differing”
 - ◆ amount of adjustment.

Managing Change — *International Construction Contracts*

- Alternative 3 – “C”
- **Summary: favours the Owner, majority of risk borne by Contractor**
- **Allocation of risk**
 - ◆ Contractor accepts risk of differing conditions
 - ◆ Contractor accepts risk of changed working conditions

Managing Change — *International Construction Contracts*

Results of Survey of Public Contracts in 20 Countries:

**“O” – 5 countries – Australia, Germany, Italy, Japan,
Romania**

**“O/C” – 11 countries – Canada, China, Eire, India,
FIDIC, NZ, Portugal, Sri Lanka, Sweden, UK (ICE),
USA**

**“C” - 3 countries – HK, Malaysia, UK (JCT –
“provisional” in BQ)**

France – O can rescind but must compensate

Managing Change— *Finding Common Ground*

- Quick Action
- Management Assistance
- Prevention at Source
- Recognition Systems
- Adopt Systems Thinking

Managing Change— *Finding Common Ground*

- *Deal Quickly and Effectively With Changed Conditions*
- *The Direct cost of the Change is Small Compared to the Other Related Costs*

If Changes Cannot Be Quickly Resolved and Implemented, Then Take Responsibility Away From the Direct PM Team and Have Higher Level Executives Deal With Them

- The Contractor's responsibility to give timely notice of changes (and changed conditions)
- The Owner's responsibility to respond promptly
- The Design Professional's (perhaps impossible) duty to evaluate change order proposals and change condition claims fairly and objectively
- The use of third parties for "real time" resolution of change order disputes (*i.e.*, dispute resolution boards)
- Creative treatment of indirect/impact costs of changes

Managing Change— *Finding Common Ground*

Prevent Changes where Possible

- Project Assumptions
- Programming
- Project Proposal
- Preliminary Design
- Design Review
- Constructability Reviews
- Resource Constraints
- Scope, Schedule, Budget Implications

Managing Change— *Finding Common Ground*

- Implement Project and Construction Management Controls That Detect Changes Early and Allow Time for Management
- Intervene to Minimize the Time and Cost Impacts of Changes

Managing Change— *Finding Common Ground*

Apply Systems Thinking to Change
Implementation

- Optimize the System, Not the Part
- Align Goals of Participants
- Execute the Most Efficient
Implementation for the Overall
Project

Change Orders, Changed Conditions & Cardinal Changes

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The slides of this presentation will be available at www.mdcsystems.com