

# **FOREMAN'S DEVELOPMENT SERIES**

## **CHANGE MANAGEMENT**

### **Construction Changes and How to Deal With Them**

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# Objectives



## **To study the Construction Change Management Process:**

- How and why Changes occur
- The Change documents involved
- The hidden costs and impacts of a Change Order

**To empower the Foreman's role in this process by making them more knowledgeable.**

# *Change Orders - Oh Boy!*



# Changes



## **Changes are a natural part of construction.**

- Changes may have both cost and schedule impacts.
  - Dealing with changes promptly will have the least amount of impact on the budget and schedule.
  - Delaying resolution will increase costs, jobsite friction, and delay the completion of the project.
- Early Changes – Discovered during pre-planning
- Late Changes – Costs involved are significantly higher

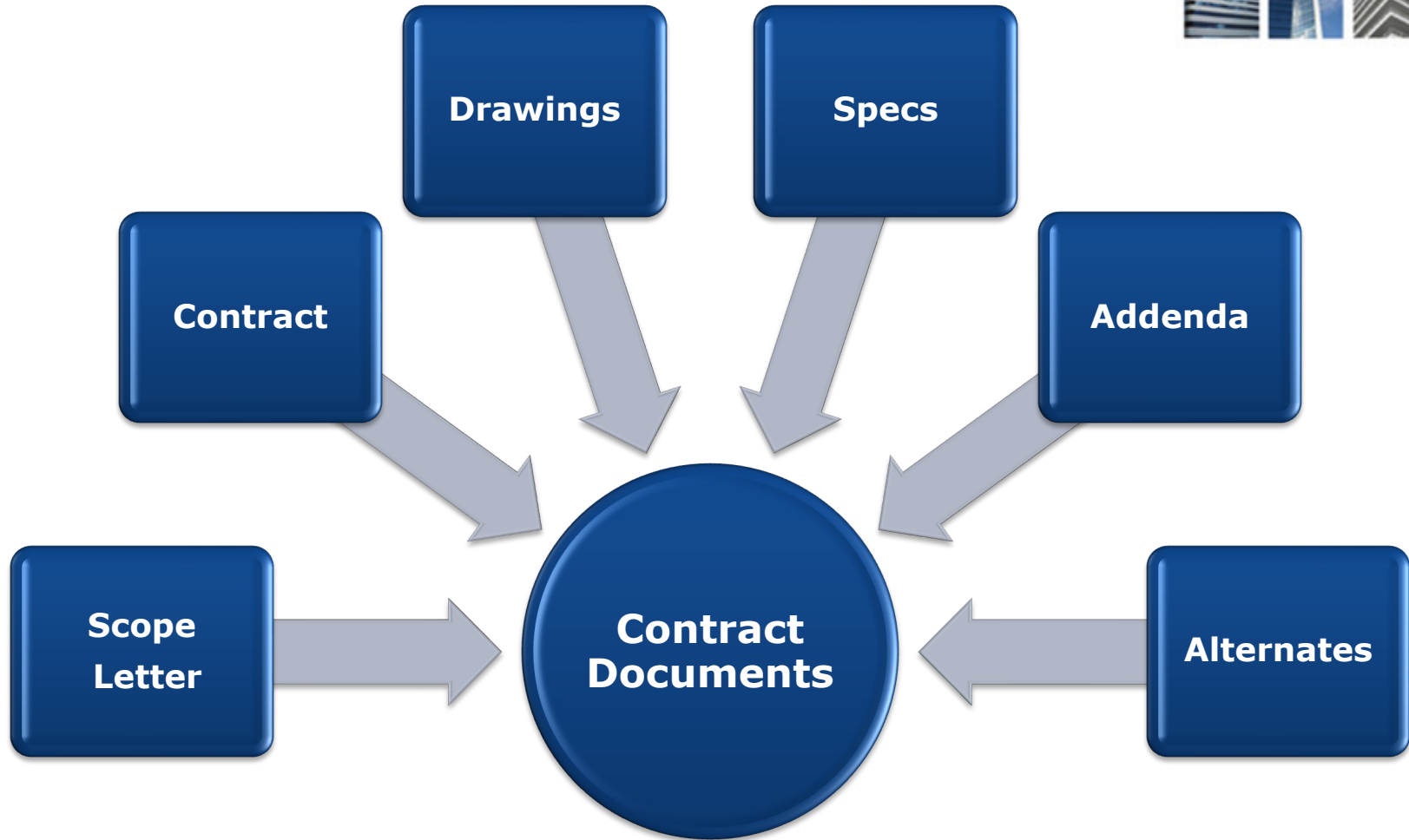
# Construction Changes Clause



**Most construction documents state:**

“... the Owner has the right to issue changes without invalidating the Contract.”

# Contract Documents





# Recognizing a Change I



- This could be the difference between a profitable job and one that loses money.
- As part of the Project Team, the Foreman needs to know the Plans, Specs, and Contractual Obligations.
- You need to be able to recognize a Change in these documents and be able to deal with it.

# Why a Change?



**Class Shout Out:**

**What are some of the jobsite problems or situations that you think might require a Change Order?**



# Recognizing a Change II



- **Hidden Conditions**
- **Means & Methods**
- **Stop Work Order**

# Your Legal Obligations



## **1) Timely notification or “Notice” Clause.**

## **2) Per the “Changes” Clause:**

- you are legally required to perform the work as changed.
  - But don’t start the work until it has been approved!

# Types of Changes



## Constructive

- Clarify
- Correct documents

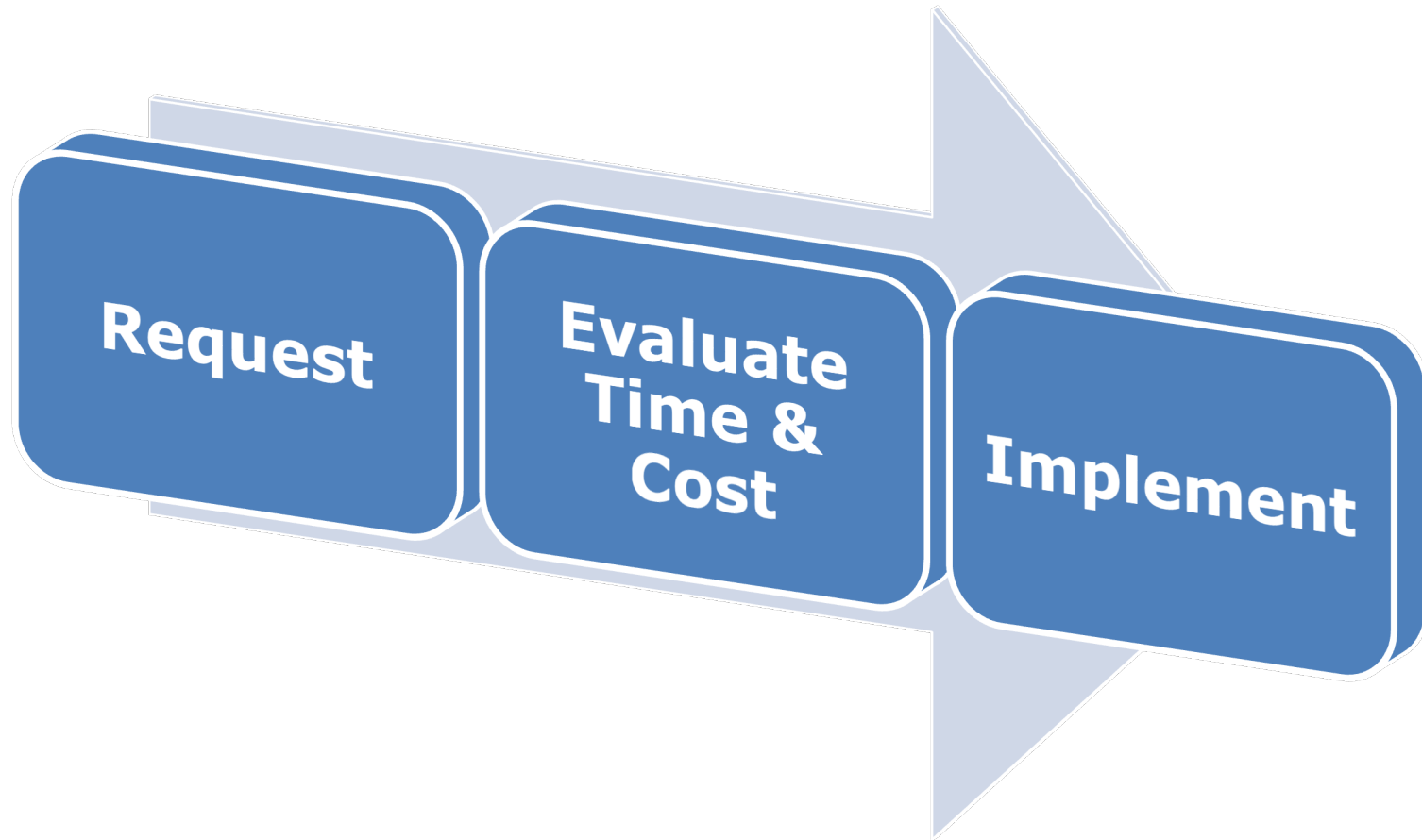
## Directed

- Directed by Owner
- Request for pricing or direction to proceed

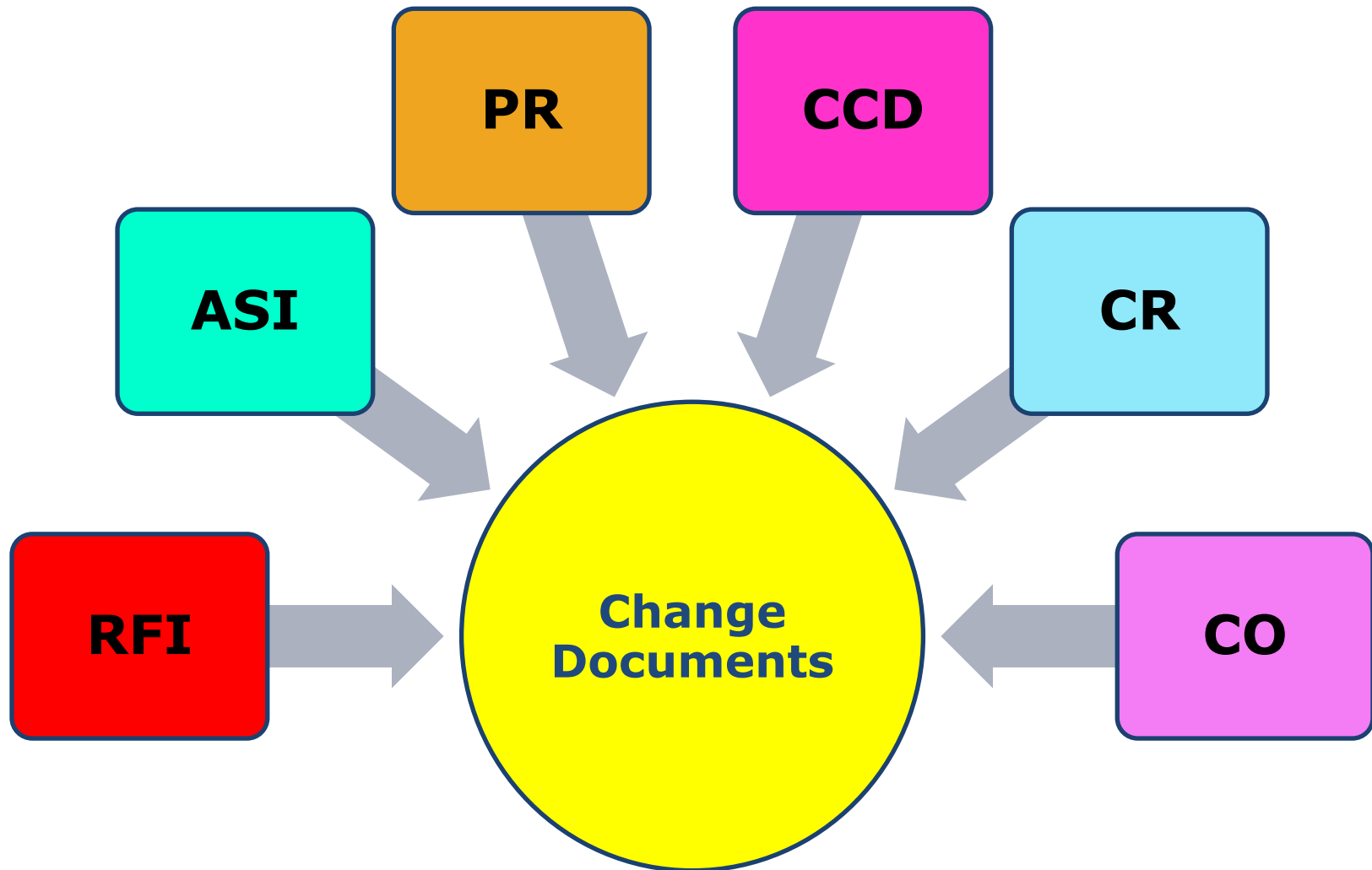
## Cardinal

- Extraordinary increases or decreases in scope or character of work

# Change Management Process



# Contract Change Documents



# RFI



## **Request for Information:**

The RFI procedure is used:

- To confirm the interpretation of a detail, specification or note on the construction drawings (a “minor” change – no costs).
- Or to secure a documented directive or clarification from the Architect that is needed to continue work (with costs).

# ASI



## **An Architectural Supplement Instruction:**

- This document is used by the Architect to provide additional instructions and interpretations or to order minor changes in the work.
  - Provides clarifications/detailed drawings that help to better explain the intent of the construction drawings.
- Issued by the Architect to the General Contractor.
- Not usually a change to the scope of work.



# PR or WCPR



## **A Proposal Request Or Work Changes Proposal Request:**

- A request to the Contractor for information and pricing related to a proposed change in the Construction Contract.
- It is not a Change Order or a direction to proceed with the work.



## **Construction Change Directive:**

- The mechanism by which the Owner exercises a unilateral right to order changes in the work without invalidating the contract.

# CR or RCO



## **Change Request or Request for Change Order:**

- A formal request for a change in scope of work or time that involves money.
  - Will include the price and have documentation attached.
  - Usually based on a previous RFI, CCD, or WCPR.
- From the Subcontractor to the GC or from the GC to the Architect.



## **Change Order:**

It is a written agreement, signed by all parties, that lists the terms of the change:

- A specified change in the Work.
- The amount of the change, if any, to the Contract Sum.
- The amount of the change, if any, to the Contract Time.

# Change Management Scenarios



## **GROUP ACTIVITY #2**

### **Assign each group a Scenario**

1. What are the issues here?
2. Should this be a Change Order?
3. Come up with a plan to resolve the scenario.

# Conflicts and Omissions



## **Heirarchy of Information:**

- 1) The Contract between the Owner and GC.
- 2) Bid Addendums
- 3) Specifications
  - a. A detailed Spec supersedes a general Spec.
- 4) Specs supersede the Drawings

## **On the Drawings:**

- 1) Structural Drawings supersede the Architectural Drawings.
- 2) Large Scale Drawings supersede smaller scaled plans or sections.
- 3) Written directions or notes on the drawings take precedence over the graphic illustrations.
- 4) Written dimensions rule over dimensions scaled off the prints.

# How to write an RFI



- Limit each RFI to a single issue.
- Include the person and company making the request along with the date.
- Make sure the question is clear and concise.
- Provide all of the appropriate references: blueprint sheet and specification section, etc.
- If possible, provide a proposed solution and potential magnitude / costs.



# How to write an RFI



## **Individual Activity #3:**

- Use the same Handout #3 – Change Order Scenario that you were given.
- Write an RFI based on that scenario using the blank RFI form

# An RFI Example



The mechanical equipment schedule on Sheet M-7 shows the Process Chilled Water Pumps as 50HP/480v with a full load amperage of 65 amps. The electrical one-line diagrams and MCC circuiting match this pump size.

The approved mechanical pump submittals however, show these pumps as 75HP and 95 amps. Our breakers, circuiting, and motor starters have already been purchased and are now not the right size.

What is required here?

# How Will Your Company Handle Changes?



1. What should we do when we find **mistakes** in the prints?
2. **Document Control?**
3. How will the Field be kept informed of all changes?
4. When changes come up **how are the drawings going to be revised?**
5. When it comes time to price a Change Order, will you be involved in **the discussion of the scope of work and labor impacts?**
6. Who authorizes **when to proceed with changes?**
7. Communication – **Who communicates with Who?**
8. **Field Authorizations?**

# Start-Up Meeting



***Proactive Change Management  
begins with handling changes  
before there are any!***

- Review everyone's Roles and Responsibilities in this process.

# Documentation / Tracking



## **The Project Manager is responsible for:**

- Processing all RFIs.
- Keeping current on all Change Order pricing.
- Monitoring unanswered RFIs and unapproved changes.
- Reviewing the status of all Change Management issues with the Field Team members.

# Tracking Changes in the Field



Come up with a **SYSTEM** and stick to it!

Here are some examples:

RFI #	Description	MWI #	Date Written	Date of Response	Impact?	Cost / Credit	As Built?	Date Priced	Proceed ?	DCVR #
1	Steel	~	~	~	~	~	~	~	~	~
2	Parking Garage North Entrance	~	10/30/2004	10/27/2004	~	~	~	~	~	~
3	Ambulance Drive Dimensions	~	10/25/2004	11/11/2004	~	~	~	~	~	~
4	Temporary Construction Sinage	~	10/25/2004	11/11/2004	~	~	~	~	~	~
5	Storm Drainage Phasing	~	10/28/2004	12/1/2004	~	~	~	~	~	~
6	Condensate Return Pump Electrical	13	10/28/2004	12/17/2004	Yes	Yes		01/17/05	~	CR #9
6a	Revised Answer			3/10/2005	Yes	Yes		03/11/05		CR#9a???
7	Chilled Water Lines - Lomas	~	11/4/2004	11/12/2004	~	~	~	~	~	~
8	Shoring & Caisson Clarification at CCW	~	11/4/2004	11/12/2004	~	~	~	~	~	~
9	Jaynes Field trailer temp. power	~	11/4/2004	11/11/2004	Yes	No	~	~	~	~
10	When can Chiller Plant Demo take place? When will Telecomm have power and generator running?	Jaynes	10/29/2004		Yes	~	~	~	~	~
11	What happens if the Changes are too complicated to just draw on the prints?	~	11/1/2005	8/12/2005	Yes	Yes		01/13/06		CR#3
12	Parking Garage electrical Carifications	2	11/1/2004	11/18/2004	Yes	No	Yes	~	~	~

• Keep an up-to-date copy of all RFIs and Change Orders on the jobsite.

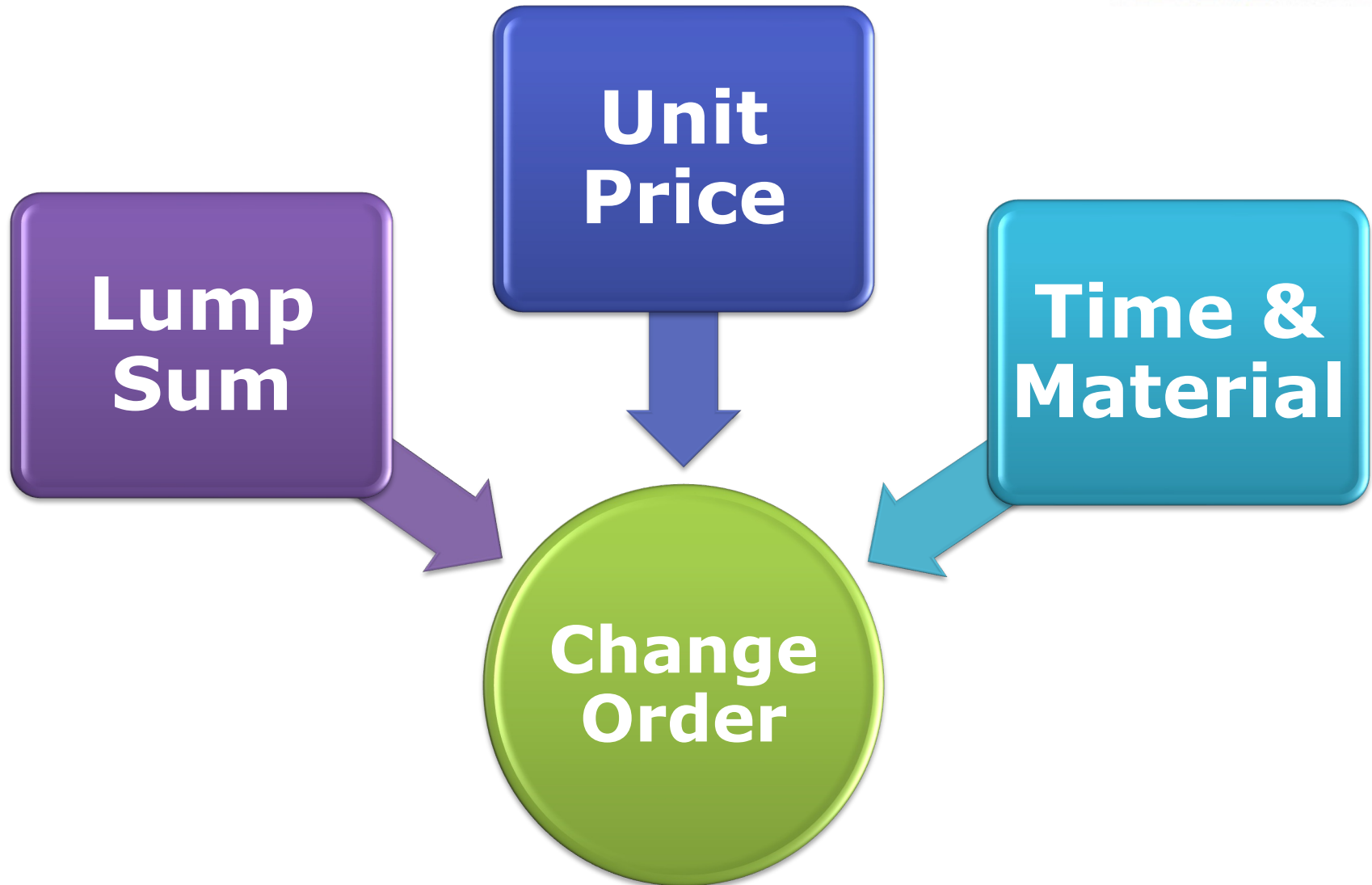
• Do you keep an As-Built on all RFIs or just the ones that impact you?

• Don't lose track and forget to do the work!

• As changes are approved, mark up the field drawings to show the changes.

• What happens if the Changes are too complicated to just draw on the prints?

# Pricing For Change Orders





# Reimbursable Costs



Change Order to the Fire alarm contractor	<b>\$10,000</b>	
Fire Alarm Contractor mark up	12%	\$1,200
total FA contractor	\$11,200	
Electrical Contractor mark up of Sub's price	6%	\$672
	\$11,872	
Electrical C. O. to run Fire alarm conduit	<b>\$5,000</b>	
Elec. Contractor mark up of his FA conduit	12%	\$600
	\$5,600	
Total Electrical contractor	\$17,472	
General Contractor Mark Up	6%	\$1,048
\$15,000 worth of work =	<b>\$18,520</b>	23%

# Pricing a Change Order



- Labor
  - Use Change Order Labor Rates.
    - RS Means or NECA / normal, difficult, or very difficult.
    - Not the Labor Rates used at Bid time.
- Materials
  - Material pricing based on the higher “TRA-SER” columns.
    - Not the prices we got on Bid day or on a “Bulk Buy”.
  - Include both your Mark-Up and the handling of these materials.

# Consequential Impacts of a Change Order?



1) Acceleration / Fatigue

8) Dilution of Supervision

**Besides the actual costs of the labor and the materials to do the work;**

- What other hidden impacts do Change Orders have on us?
- In what ways do they affect our ability to complete the project?

7) Crew Size / Efficiency

# Consequential Impacts of a Change Order



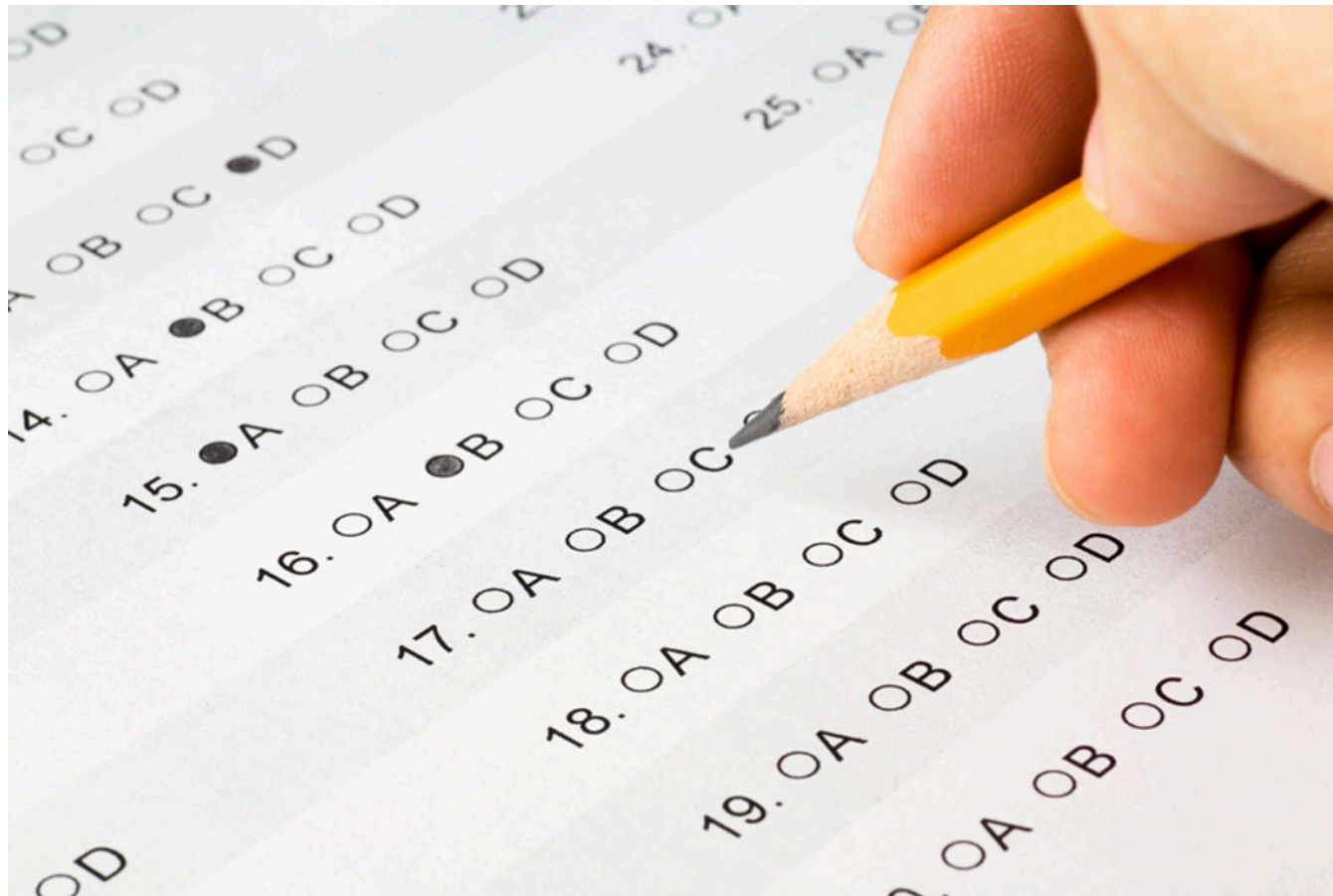
**ELECTRI International** is a research and education foundation funded by NECA.

- In 2019, ELECTRI International initiated a Project Management Training series.
- They have put together 5 short videos all concerning Change orders.

# Quiz



Take the Change Management Quiz

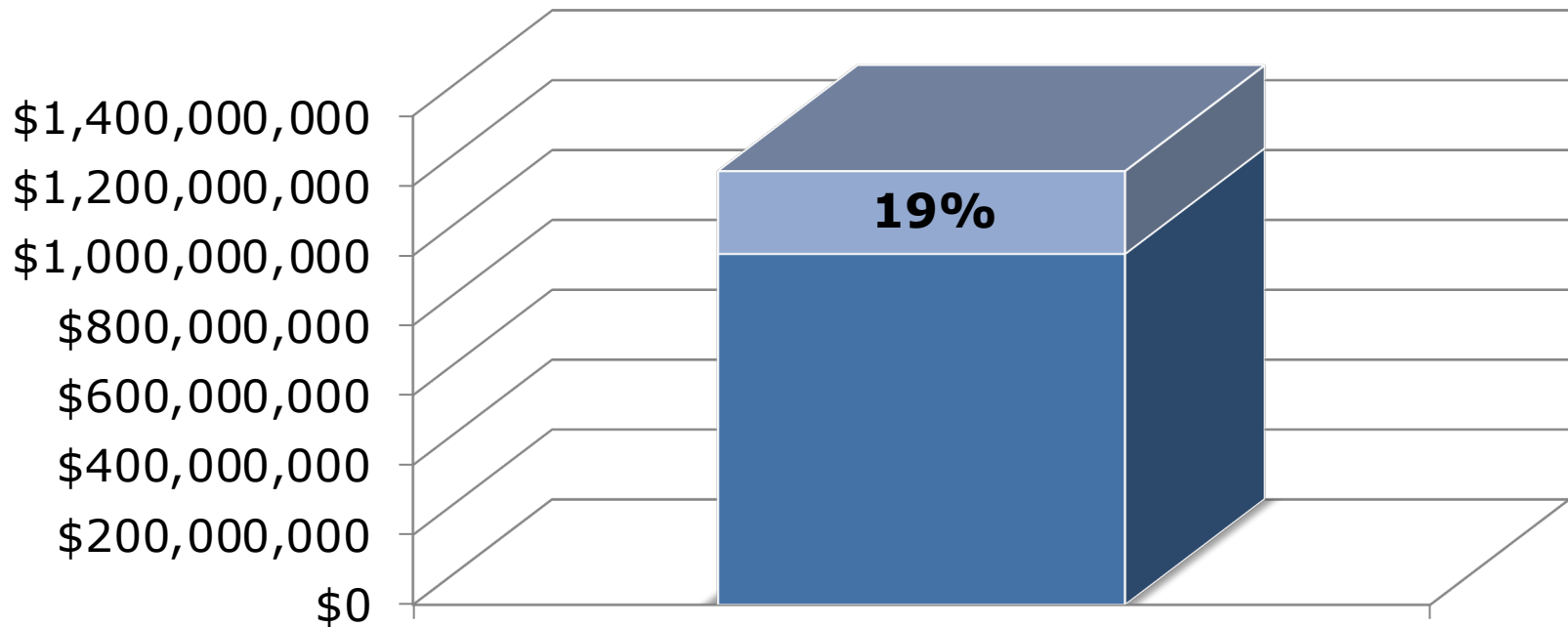


# Change Order Statistics



**Change Orders make up what percentage of the average job?**

■ **Org. Contract Value**



**Change Orders made up 19% of their total work \$\$**



*The perception .....*



# Summary



## **Be Proactive in Managing Changes:**

- Know how your company handles Changes.
  - Be aware of your roles and responsibilities.
- Know your Contract Scope.
  - Learn to recognize and evaluate changes when they occur.
- Implement Changes in the field per your established system.
  - Keep good Change documentation in the Field.
  - Keep track of these changes!