



cobb strecker
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Contributing to Our Partners Success

Quality Control at the Project Level

Focusing at the Point of Impact



What is Quality Control

Quality in Construction is Related to:

- ✓ Satisfying the specifications outlined in the contract
- ✓ Completing the project within schedule
- ✓ Fulfilling the owner's requirement within budget
- ✓ Avoiding disputes and claims
- ✓ Ensuring final product/project performs its intended purpose.

Participant's Exercise

Write the QC steps for washing cloths

1. What kind/type of clothes are going to be washed
 - a. Separate into dark colors, medium colors & white colors
 - b. May need to separate into special clothing types
 - i. Wools vs. silk
2. Size of load
 - a. Small, medium, large, etc.
3. What is the correct cycle to select
 - a. Regular, heavy cottons, delicate/hand, etc.
4. What is the correct water temperature
 - a. Cold, warm, hot, etc.
5. What type of detergent is needed
 - a. Regular, dye-free, etc.
6. Is bleach needed
7. Close door and check if secure
8. When wash cycle completed
 - a. Immediately remove
 - i. Which cloths should hang to dry
 - ii. Which cloths go in dryer

Project Complexity

In today's construction landscape – Projects continue to get more complicated & complex

- ➔ **Project Size & Scopes**
- ➔ **Schedule compression**
- ➔ **Design Build**
- ➔ **Private-Public Partnership (PPP)**
- ➔ **Joint Ventures**

The need for a well defined Risk Management process is critical to remain competitive

QC Risk Continuum



Quality Control vs. Safety

***Both Safety & QA/QC involve discipline
& conformance to specifications***

- ➔ **Safety at it's highest level saves lives**
- ➔ **QC at it's highest level saves profitability**



Quality = Project Efficiency

Case Study

Activity: Installing 48" concrete manhole 15' deep

1. Project supervisor using trench boxes – stacked 3 high
2. Crew begins to dig excavation
3. Trench boxes installed & backfilled
4. After short time period - Bottom trench box begins to “bow” inward
5. The site supervisor tries to stop the inward bowing
6. After 5 days – many unsuccessful attempts, trench boxes are excavated and removed
7. During the re-excavation of the trench boxes - the operator is injured:
 - ✓ Falls on uneven ground – out of work 5 weeks
 - ✓ Surgery needed

Financial Impacts

Case Study – cont.

The Financial Impact (priceless):

- 5 days of production (crews, equipment & schedule) = \$44,865
- 4 days to re-excavated & place new trench boxes correctly = \$38,362
- Damaged 3 trench boxes – scrap = \$63,385

✓ Operational Cost: \$146,603

+

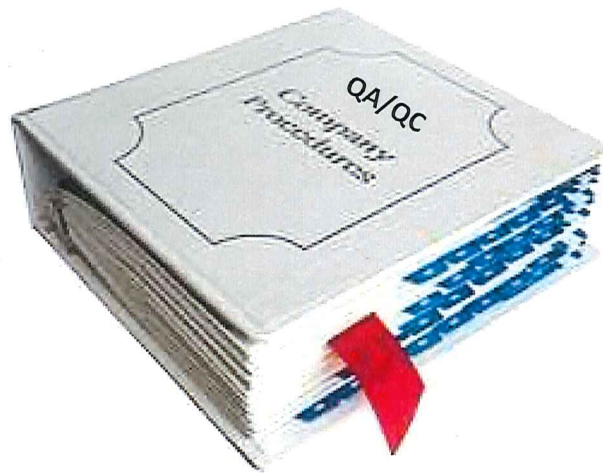
Employee injury = \$68,913

Total cost to bottom line = \$215,516

Total project value - 4,332,685 = 5% of total value

What Contractors Think QC Is

A program or procedures manual



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These collect dust sitting on a shelf

What QC Should Be

Job Quality Analysis:

Task: BRIDGE REHAB STEEL GIRDER BRIDGE		Job Name:			
Principal Contractor:		Job Number:			
Date the JQA was prepared:		Job Location:			
This JQA has been reviewed by:		Number of Pages in this JQA:			
This JQA has been reviewed by:		This JQA has been discussed with:			
Item Number	Quality Hold Point <i>Break the job down into steps.</i>	Potential Problems	Quality Control <i>What can be done to ensure quality workmanship?</i>	Persons Responsible <i>Who will make sure it happens?</i>	Completion <i>Date and signoff.</i>
1	Conduct Daily Quality Control Huddle		Review work tasks and conduct quality planning for daily tasks.	Project Foreman	
2	Certifications	Lack of timely delivery to engineer.	Request list of certs from engineer. Provide all certs prior to item installation into structure. Forward certified welder list to engineer if necessary.	Project Foreman	
3	Erosion Control	Lack of necessary erosion control devices. Erosion control in poor shape. Not bringing this to engineer's attention.	Double check to make sure all erosion control measures are in place per ECIP. Foreman to complete weekly inspections with engineer. Fill out inspection form.	Project Foreman	
4	Structure Excavation	Unclear limits of excavation. Wrong depth of excavation. Improper slopes. Location of waste disposal.	Meet with engineer to discuss limits. Double check structure elevation depths. Know where waste is going. Double check slopes and make sure they are safe. Double check that over-excavation is not necessary.	Project Foreman	
5	Deck Removal	Damage to parts of structure that will remain in place.	Review deck removal plan with superintendent and workers. Pilot-hole deck to check depths to the tops of girders. Take care with deck removal and report any problems to superintendent.	Project Foreman	

QC Task Plan

A set of “checks & balances” for a specific task/process

Think of it as a “Job Safety Analysis”, but for quality control

It is the road map for the field crews to be successful

What are they?

They are critical steps in the work flow that require a higher level of “inspection” or “sing-off” before work can proceed

Example: Installing fire/sprinkler system

Once all heads are installed on a line/loop & before pressure test is completed – develop an inspection criteria to identify all heads are installed correctly

The Daily Production Pre-Plan

Daily Huddle – Crew Production Pre-Plan

Today's Date: _____ Crew size: _____

Production goals for today

1. _____
2. _____
3. _____
4. _____
5. _____

Did you meet your goals from yesterday ? ☐ Yes ☐ No

If no – Explain reasons why: _____

Is activity on schedule as planned? ☐ Yes ☐ No

Identify if work activity will include:

- | | |
|---|---|
| <input type="checkbox"/> Confined Space | <input type="checkbox"/> Excavation greater than 5 ft. in depth |
| <input type="checkbox"/> Working at heights above 6 ft. | <input type="checkbox"/> Crane activity |
| <input type="checkbox"/> Heavy equipment | <input type="checkbox"/> Working within 50 ft. of powerlines |

Tools Needed

Equipment Needed

Materials Needed

Safety Controls

QA/QC Checks/Controls

Is the work activity today – rework/repair/replace? ☐ Yes ☐ No

Measurable Financial Performance

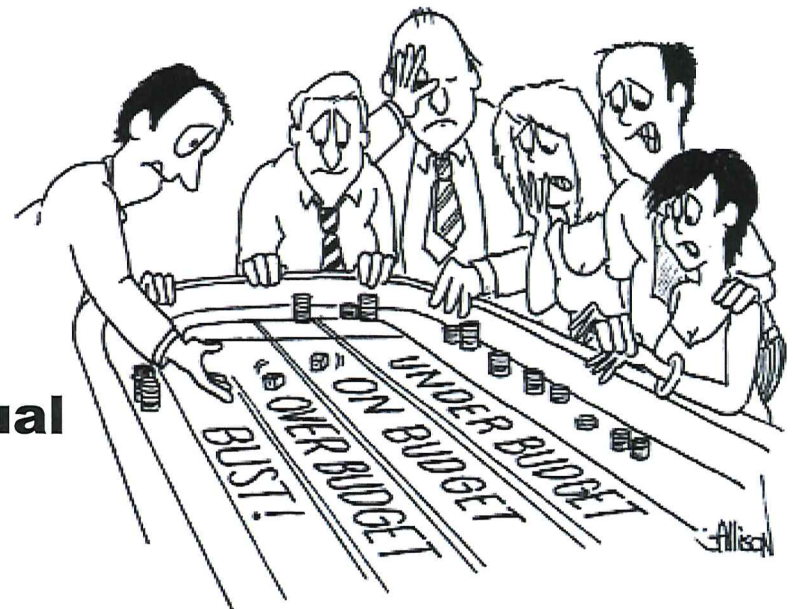
What is Profit Leakage

As a company, have you defined what profit leakage is acceptable on your projects?

Example:

Bid or negotiate a job for \$10,000,000 – including a 10% profit margin (\$1,000,000)

At the end of the project, the actual profit margin was 3% (\$300,000).



→ Did you make money?

→ Is this acceptable profit loss?



Actual vs. Budget

1/18/05
4:20 PM

DEMO Construction Co., Inc.
Job Budget vs. Actual
Cost Category Summary

Page 1

Job: 1 D & R Distribution Center
141 S. Parkway

	-----Budgeted Cost-----			Actual Cost To Date	(Over) Under
	Original	Chg. Orders	Current		
CONCRETE					
3151 Foundation - Excavation					
Labor	1,148.00		1,148.00	1,110.38	37.62
Material	1,237.00		1,237.00	1,236.68	.32
Total	2,385.00		2,385.00	2,347.06	37.94
3152 Foundation - Backfill					
Labor	603.00		603.00	596.65	6.35
Material	569.00		569.00	625.00	(56.00)
Total	1,172.00		1,172.00	1,221.65	(49.65)
3153 Foundation - Concrete					
Labor	600.00		600.00	755.35	(155.35)
Material	5,689.00		5,689.00	5,000.00	689.00
Total	6,289.00		6,289.00	5,755.35	533.65
3154 Foundation - Forms					
Labor		25.00	25.00	25.60	(.60)
Material		30.00	30.00		30.00
Total		55.00	55.00	25.60	29.40
3155 Foundation - Finish					
Labor	420.00		420.00	414.50	5.50
Material	302.00		302.00	320.00	(18.00)
Total	722.00		722.00	734.50	(12.50)

**Understand early on
– Analyze what are
the issues?**

- ➔ **Rework**
- ➔ **Change in Scope**
- ➔ **Change order**
- ➔ **Poor management**



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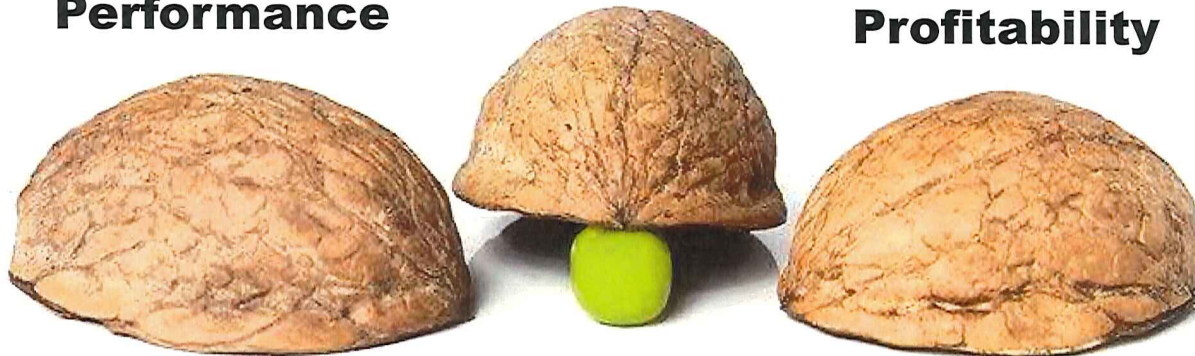
Contributing to Our Partners Success

Don't Use the Shell Game to Manage Quality Control

**Supervisor
Performance**

**Unicorn
Fund**

**Project
Profitability**



The Unicorn Fund

The magical place where money comes from to pay for project losses.

- ➔ **Then we celebrate project success**
- ➔ **We recognize the supervisor for a job well done**



Identifying Quality Issues

- **Budget overruns**
- **Rework**
- **GL Claims**
- **Mysterious change orders**
- **Subcontractor performance**
- **Postmortem project financial analysis & comparison**
- **Wasted resources or other expenditures**
- **Accurate accounting?**
 - ***“Robbing Peter to Pay Paul”***
- ***“Miscellaneous”* line item is out of whack!**

Rework

What is it?

The unnecessary effort to re-do work that was incorrectly done the 1st time

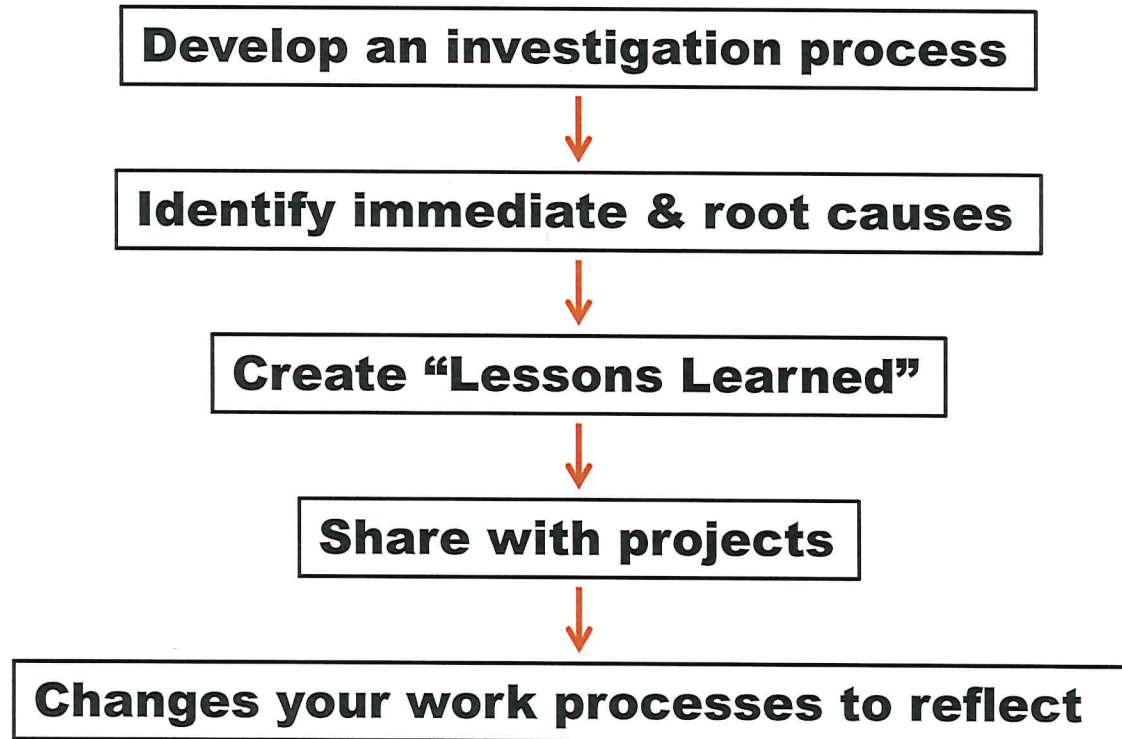
→ **Do something at least one extra time**

CII indicates that the direct cost caused by rework is as much as 5% - 8% of the total construction project cost

→ **The average gross profit on a construction project was between 8% - 13%**

Investigating Rework

Investigation – Think of it in the same way that we look at investigating an employee injury



Tracking Rework

The importance of tracking Rework Cost

Establishing a “cost code” account mechanism to track rework separate from “bid/line item” work?

If not, how can the “true” cost of a individual line item or even the accuracy of the overall project cost

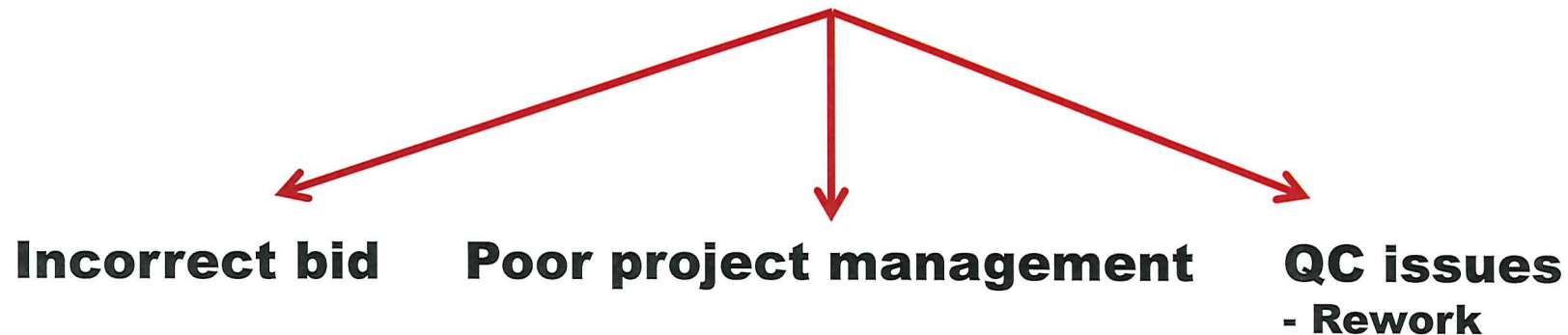
Analyzing Project Performance

Analyze through a Post-Mortem

Let's look at the project profit more closely

The project lost 7% (\$700,000)

Why?



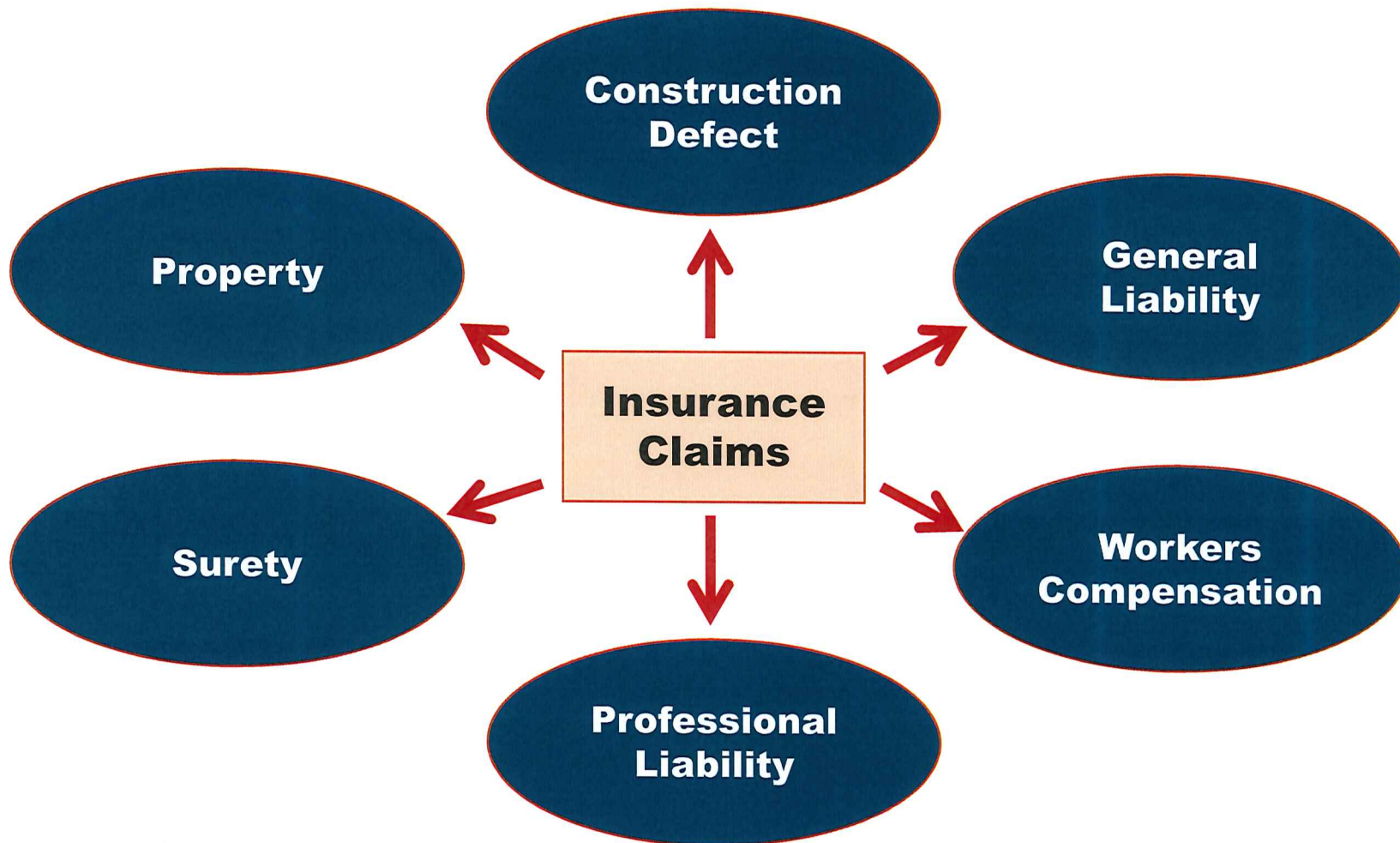
Are you doing post-mortem's on your projects to analyze the deficiencies?

– Maybe more importantly, what makes them successful

Claims

Avoiding Claims – Established QC

Impact on Insurance Coverage



Punch-List

Why Wait to The End?

A punch list is a list of items that define the work that doesn't conform to the contract specifications, after substantial completion of the project.

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Items that are incomplete (missed) or need correction (rework) before acceptance by the owner

Warranty

Warranty Work

What is it?

The Contractor warrants to the Owner that the Work will be of good quality and free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents.

Isn't it rework? – just manifested in a different time frame?

Develop:

An investigation process – capture:

- ➔ **What type of work – what is the issue**
- ➔ **How much time**
- ➔ **Cost to complete**
- ➔ **What project & management team**

Benefits

Benefits from Quality Control

- **Reduced defect & rework costs**
- **Shorter “punch-list” time cycle**
- **Fewer warranty work “call backs”**
- **Enhanced reputation & improved client relations**
- **Greater confidence in true project costs - future bid/negotiations work**
- **Better overall safety**
- **Project Efficiency**

Return on QC Investment

Lack of Institutional Control

Litigation costs up



Delays common



Budget overruns



Decreased profits

Maximize QC

Lowering field costs



Project predictability



Reduction of overall risk



Project efficiency



Faster project completion/delivery



Increased profits



Questions/Comments

