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Job Cost Management

March 5, 2024

AMERICAN
SUBCONTRACTORS
ASSOCIATION

Objectives

1. The Why
2. Budget vs. Schedule of Values
3. Labor Performance Transparency
4. Accurate Forecasting
5. Internal Process Management

Contractors Do Three Things….

Acquire Projects (Get Work)

- Marketing, Business Development, Estimating, Sales

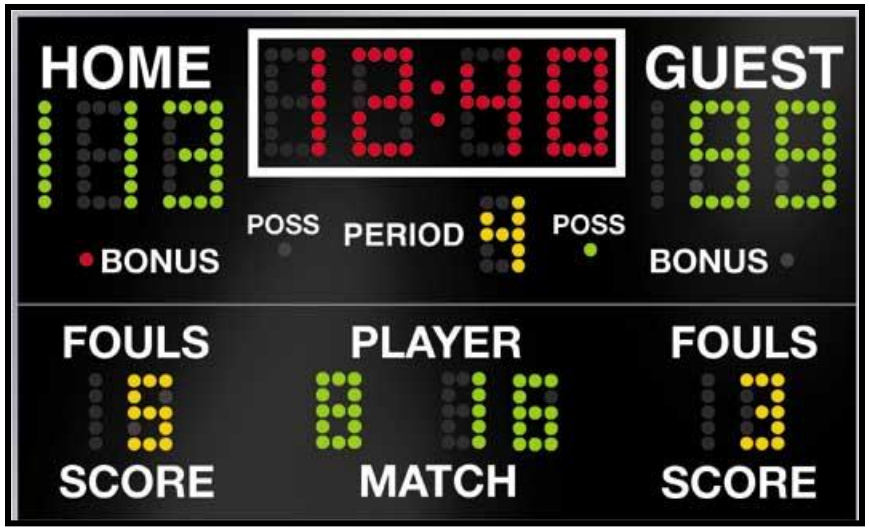
Execute Work (Do Work)

- Operations (Field and Project Management)

Measure Work (Keep Score)

- Accounting, Finance departments

The Why - Job Cost Feedback



- Everyone has the need to “light up the scoreboard”
- If your players don’t know the score of the game, how can they be expected to win?
- You can’t manage what you don’t measure
- Good feedback improves the quality of information being put into the system

HOPE IS NOT A STRATEGY!

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Budgets and Schedule of Values

Budgets – Inclusiveness Produces Understanding

Who is involved in the budgeting process?

Why?

Budgets – How Many Cost Codes to Use?

- Standard list of cost codes with descriptions and unit of measure
- Standard work breakdown structure by markets served

Budgets – Example

1. Deep underground
2. Slab rough
3. Wall rough
4. Ceiling rough
5. Gear
6. Wire
7. Fixtures
8. Trim and Finish

Only add complexity if multple phases and areas of work are involved. Example: Building A, Floor 1. Aim for an 80% applicability.

Budget vs. Schedule of Values

Job Name:	Example Project				Job #:	123456					
Phase Description	**Extra**	**Roll Up**	**Labor Hrs**	**Labor $$**	**Material $$**	**Quotes $$**	**DJE $$**	**Total w/ MU**	**Adjustment**	**SOV Amounts**	**Loading**
Prefabrication			220	$ 7,700				$ 9,317	$ 78,018	$ 87,335	4.5%
Engineering				$ -			$ 53,450	$ 64,675	$ 15,000	$ 79,675	0.9%
Detailing			344	$ 12,040				$ 14,568	$ 20,000	$ 34,568	1.2%
Site Underground			320	$ 11,200	$ 12,205		$ 31,329	$ 67,373	$ 40,000	$ 107,373	2.3%
Site Lighting			122	$ 4,270	$ 109,129	$ 22,500		$ 176,781		$ 176,781	
Rough			1190	$ 41,650	$ 495,566	$ 87,000		$ 809,932	$ 20,000	$ 829,932	1.2%
Trim			470	$ 16,450	$ 195,728	$ 8,500	$ 5,200	$ 292,464	$ (120,000)	$ 172,464	-6.9%
Fire Alarm				$ -				$ -		$ -	
Electrical		x	187	$ 6,545	$ 35,000			$ 53,552	$ (15,000)	$ 38,552	-0.9%
xyz - 97	*97*	*x*		$ -			$ 41,045	$ 49,664	$ (8,619)	***$ 41,045***	-0.5%
Intercom/ CCTV/ Ethernet				$ -				$ -		$ -	
Electrical		x	389	$ 13,615	$ 12,550			$ 32,837		$ 32,837	
Telecom - 99	*99*	*x*		$ -			$ 120,437	$ 145,729	$ (25,292)	***$ 120,437***	-1.5%
xyz - 97	*97*	*x*		$ -			$ 5,271	$ 6,378	$ (1,107)	***$ 5,271***	-0.1%
Temporary Power			122	$ 4,270			$ 4,500	$ 10,612	$ (3,000)	$ 7,612	-0.2%
				$ -				$ -		$ -	
				$ -				$ -		$ -	
Totals:			**3364**	**$ 117,740**	**$ 860,178**	**$ 118,000**	**$ 261,232**	**$ 1,733,880**	**$ -**	**$ 1,733,882**	10.1%
Labor Rate:			$ 35.00								
Markup Rate:			21%				**Contract Amount (=Electrical+RMI+Telecom)**			**$ 1,733,882**	

SOV Defined Standards

- Standard preconstruction items
  - Preconstruction Planning
  - Contract review/revise/execution
  - Budgeting/SOV Preparation
  - Layout
  - Detailing
  - Engineering
  - Material Procurement
  - Subcontractor Procurement
  - Submittal preparation
  - Fabrication
  - Kitting

WHY CHOOSE THESE TYPES OF ITEMS?

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Labor Productivity

Critical Data for Job Cost Management

Why Accurate Field Reporting is Important

Job 1:	Estimated Hours	Actual Hours	Reported Hours
– Activity A	100	90	100
– Activity B	100	110	100
	200	200	200

Job 2:	Estimated Hours	Actual Hours	Reported Hours
– Activity A	100	90	100
– Activity B	1000	1100	1090
	1100	1190	1190

Reporting Both Quantities and Associated Hours

Estimated Labor Hours	Actual Labor Hours	Variance	Projected Labor Hours
10,000	5,000	5,000	?

How is this job performing? What is the projected labor?

Reporting Both Quantities and Associated Hours

Estimated Labor Hours	Actual Labor Hours	Variance	Projected Labor Hours
10,000	5,000	5,000	?

How is this job performing? What is the projected labor?

Estimated Units	Act. Installed Units	Est. Labor Hours	Act. Labor Hours	Projected Labor Hours
100	25	10,000	5,000	?

How is this job performing? What is the projected labor?

Earned Value Workshop - Scenario

- You are the project manager and you are scheduled to meet with your boss to report on the status of your project
- Specifically, he wants a summary of labor productivity to date as well as projected labor hours and labor costs at completion
- You have thoroughly walked the project with the superintendent and are satisfied that the quantities (or percent complete) reported from the field are accurate

Earned Value Workshop – Assignment

- Review the summarized information from the project budget (Exhibit One)
- Review the summarized information from timecards and quantity reports (Exhibit Two)
- Complete the earned value summary report (Exhibit Three)
- Calculate the total labor cost at completion assuming a labor cost of $50/hour (Exhibit Four)

Earned Hours – Formulas To Know

Math ≠ Hope

$$\text{Percent Complete} = \frac{\text{Actual Units}}{\text{Budget Units}}$$

$$\text{Earned Hours} = \frac{\text{Actual Units}}{\text{Budget Units}} \times \text{Total Estimated Hours}$$

$$\text{Productivity Index} = \frac{\text{Earned Hours}}{\text{Actual Hours}}$$

$$\text{Projected Hours} = \frac{\text{Actual Hours}}{\text{Actual Units}} \times \text{Total Budgeted Units}$$

Exhibit One: Summarized Information From the Project Budget

	Budgeted Man-Hours	Total Quantity	Unit of Measure
Activity A	8,000	100,000	SF
Activity B	6,000	50,000	LF
Activity C	4,000	1,000	EA
Activity D	1,000	1	LS
Activity E	1,000	1	LS
Total	20,000		

Exhibit Two: Summarized Information From Timecards and Quantity Reports

	Hours Reported JTD	Units or Percent Installed JTD	Unit of Measure
Activity A	4,000	40,000	SF
Activity B	2,500	25,000	LF
Activity C	2,400	600	EA
Activity D	300	30.00%	LS
Activity E	300	10.00%	LS
Total	9,500		

Earned Value Summary Report – Start with Known Values

A	B	C	D	E	F	G	H	I	J	K	L
							F/B	(F/B) X D		I/J	(J/F)*B
	BUDGETED				ACTUAL					PRODUCTIVITY	PROJECTED
Activity	Units	UOM	Hours		Units	UOM	Units Inst. or % Comp.	Earned Hrs.	Act. Hours	Earned/Actual	Hours
A	100000	SF	8000		40000	SF			4000		
B	50000	LF	6000		25000	LF			2500		
C	1000	EA	4000		600	EA			2400		
D	1	LS	1000		30.00%	LS			300		
E	1	LS	1000		10.00%	LS			300		
TOTAL			20000						9500		

Putting It All Together – Adding Conditional Formatting

A	B	C	D	E	F	G	H	I	J	K	L
							F/B	(F/B) X D		I/J	(J/F)*B
	BUDGETED				ACTUAL					PRODUCTIVITY	PROJECTED
Activity	Units	UOM	Hours		Units	UOM	Units Inst. or % Comp.	Earned Hrs.	Act. Hours	Earned/Actual	Hours
A	100000	SF	8000		40000	SF	40.00%	3200	4000	0.80	10000
B	50000	LF	6000		25000	LF	50.00%	3000	2500	1.20	5000
C	1000	EA	4000		600	EA	60.00%	2400	2400	1.00	4000
D	1	LS	1000		30.00%	LS	30.00%	300	300	1.00	1000
E	1	LS	1000		10.00%	LS	10.00%	100	300	0.33	3000
TOTAL			20000					9000	9500	0.95	23000

Exhibit Four: Labor Cost Summary

Labor cost to date =

9,500 Hours X $50 = $475,000

Projected labor cost-to-complete remaining work =

13,500 Hours X $50 = $675,000

Projected labor cost at completion =

23,000 Hours X $50 = $1,150,000

Exhibit Four: Labor Cost Summary

Original Labor Budget =

20,000 Hours X $50 = $1,000,000

Projected labor cost at completion =

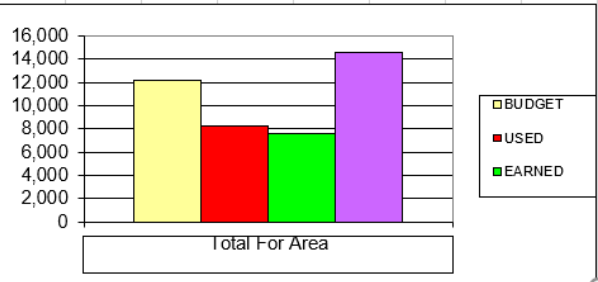
23,000 Hours X $50 = $1,150,000

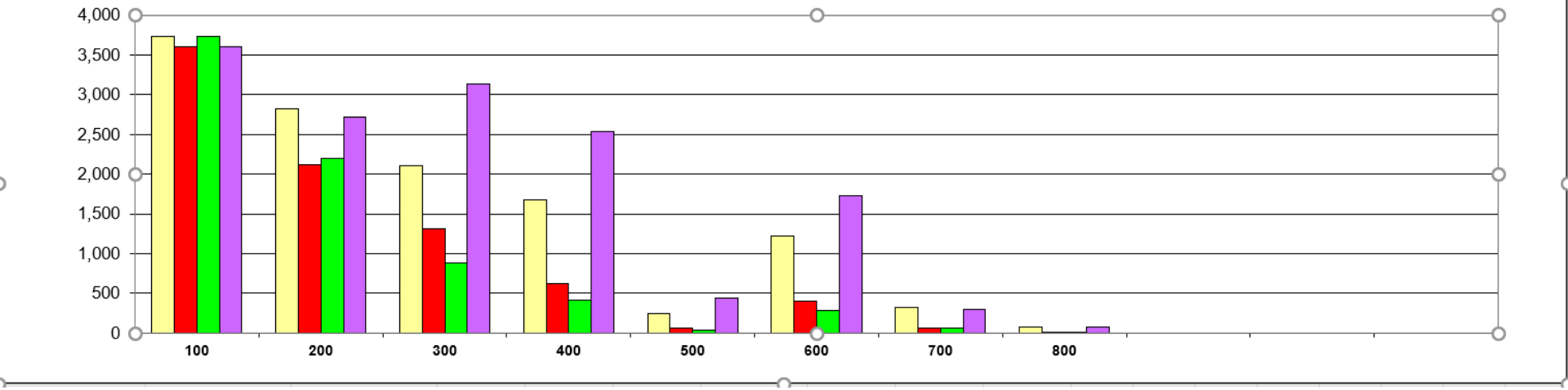
Labor Cost Overrun = $150,000 or 15%

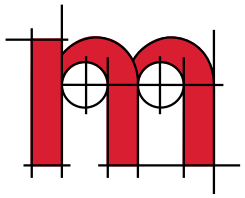
User-Friendly Report Formats

Labor Feedback Report

Phase	Bldg A		Area	Floor 1					Week Ending:	12/9/2005
			HOURS				QUANTITY			
COST CODE	DESCRIPTION	UOM	BUDGET	USED	EARNED	AT COMPLETE	BUDGET	INSTALLED	% COMP	
100	Deep UG	LF	3,741	3,610	3,741	3,610	24,000	24,000	100%	
200	Slab on Grade	LF	2,828	2,120	2,200	2,725	18,250	14,200	78%	
300	Wall Rough	LF	2,110	1,320	887	3,139	19,500	8,200	42%	
400	Ceiling Rough	LF	1,680	620	411	2,536	4,500	1,100	24%	
500	Fixtures	EA	250	70	40	438	250	40	16%	
600	Wire	LF	1,220	400	282	1,733	26,000	6,000	23%	
700	Gear	LS	320	60	64	300	100	20	20%	
800	Trim and Finish	LS	80	8	8	80	100	10	10%	
Total For Area			12,228	8,208	7,632	14,561				







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Projections (Forecasting)

Cost and Profit Projection Workshop

ESTIMATE FOR INDIVIDUAL PROJECT

	Amount	% of Sales
CONTRACT AMOUNT	$2,000,000	100.00%
DIRECT COSTS		
Labor	800,000	40.00
Materials	800,000	40.00
Subcontractors	50,000	2.50
Equipment	70,000	3.50
Total Direct Costs	$1,720,000	86.00
GROSS PROFIT	$280,000	14.00

Cost and Profit Projection Workshop

At the end of the third month ...

- Your job cost report indicates that you have spent:
  - **$475,000 on labor (9,500 hours X $50/hour)**
  - **$492,000 on materials**
  - **$ 25,000 on subcontractors**
  - **$ 40,000 on equipment**
  - **$1,032,000 total (60% of total estimated costs)**

Cost and Profit Projection Workshop

- You have billed the customer $1,000,000
- After verifying installed quantities and percent complete on the various work activities and preparing your earned value summary, you estimate the cost to complete the remaining work to be as follows:
  - **$675,000 on labor (13,500 hours X $50/hour)**
  - **$114,344 on materials**
  - **$ 25,000 on subcontractors**
  - **$ 30,000 on equipment**
  - **$844,344 total**

Cost and Profit Projection Workshop

- What percent complete are you to date?

  Percent Complete: _____

- How much revenue and profit have you earned to date?

  Earned Revenue-to-Date: _____

  Earned Profit-to-Date: _____

Assumptions:
No change orders have occurred on this project
This is a lump sum project

- Is this project over-billed or under-billed? If so, by how much?

  Over-billed/Under-billed:_____

Cost and Profit Projection Workshop

- How much profit do you project that this project will make once completed?

  Project Profit at Completion: _____

Assumptions:

No change orders will occur on the remaining work

This is a lump sum project

- How much profit gain or erosion does this represent when compared to the original estimate?

  Margin Gain/Erosion: _____

Percent Complete

$$\% \text{ Complete} = \frac{\text{Cost to Date}}{\text{Cost to Date} + \text{Cost to Complete}}$$

Percent Complete

$$\% \text{ Complete} = \frac{\$1{,}032{,}000}{\$1{,}032{,}000 + \$844{,}344}$$

% Complete = 55 % Complete

Earned Revenue

Earned Revenue = % Complete x Contract Revenue

Earned Revenue

Earned Revenue = .55 x $2,000,000

Earned Revenue = $1,100,000

Earned Profit

Earned Profit = % Complete x Revised Profit

SKIP THIS FOR NOW…..

Under or Overbilled

Billed	$1,000,000
Cost to Date	$1,032,000
Earned Revenue	$1,100,000

Minimum Billing = Earned Revenue + 20% of Cost
=$1,100,000 + $206,400
=$1,306,400

Over or (Under) Billed = ($306,400)

Project Profit at Completion

Profit at Completion =

Contract Revenue – (Cost to Date + Cost to Complete)

= $2,000,000 – ($1,032,000 + $844,344)
= $2,000,000 – $1,876,344
= $123,656

Margin Gain or Erosion

Original Estimated Profit = $280,000

Revised Profit at Completion = $123,656

Margin Gain or (Erosion) = Revised Profit – Original Profit

Margin Gain or (Erosion) = ($156,344)

Earned Profit

Earned Profit = % Complete x Revised Profit

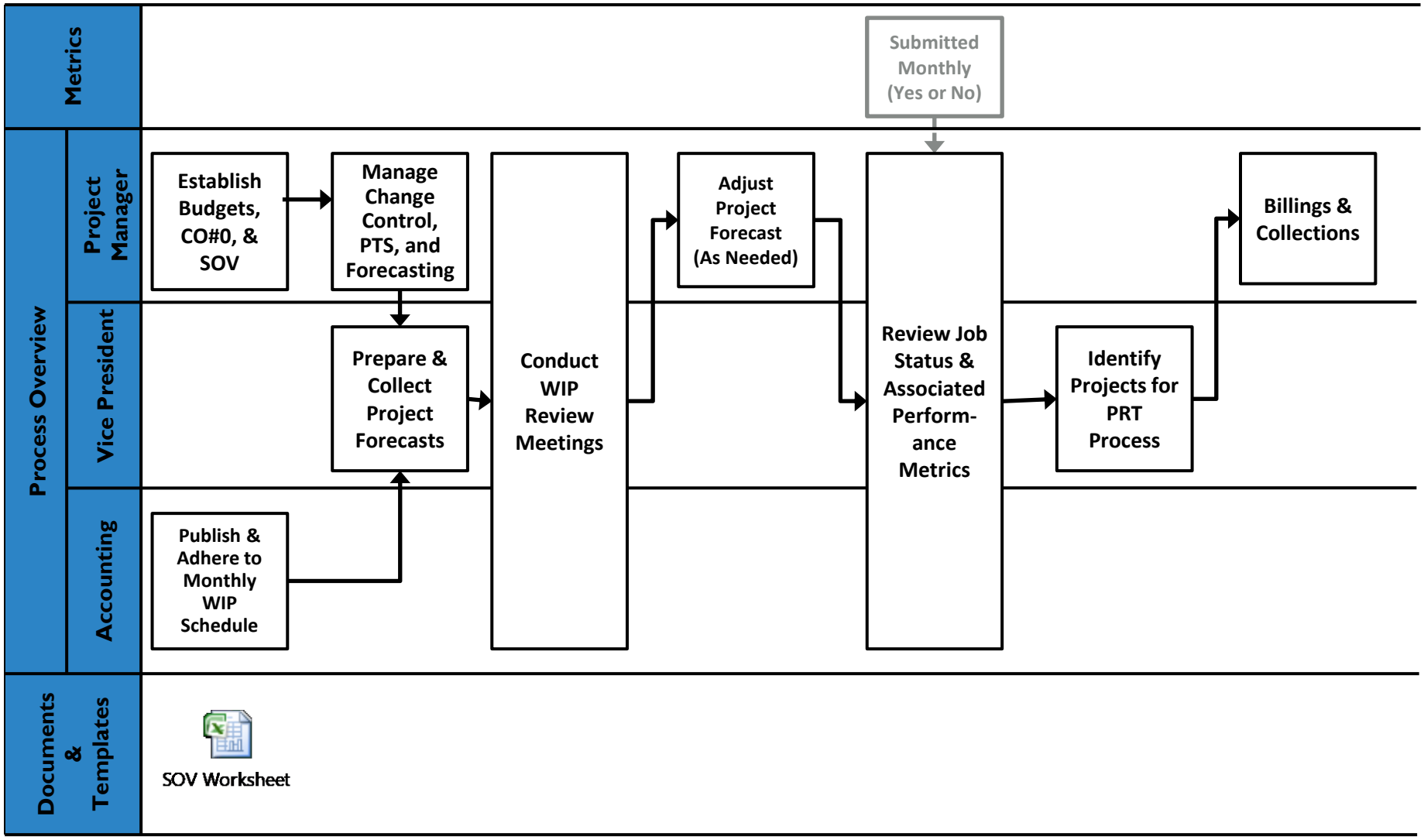
Earned Profit = .55 x $123,656

= $68,010

Earned Profit

If done poorly, a 5% error in percent complete on a $2,000,000 project equals a $100,000 error on the bottom line

Corporate WIP Process - Overview

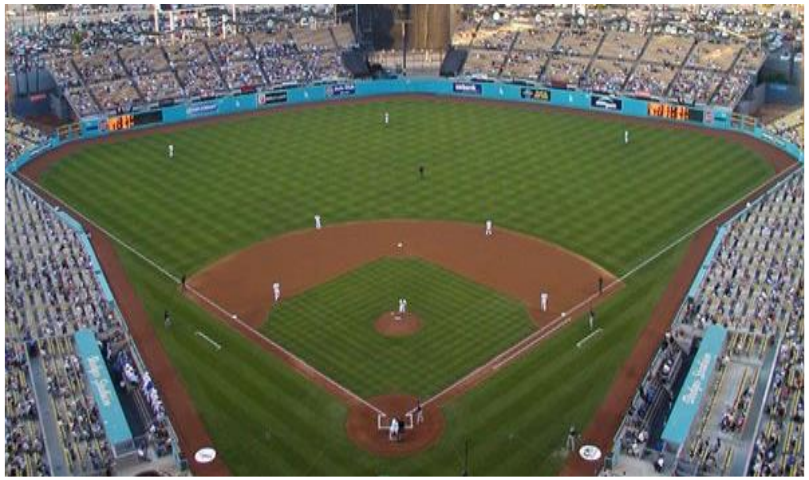


If you wait until the end of the game

to look at the score,

you probably won't have

a winning record!



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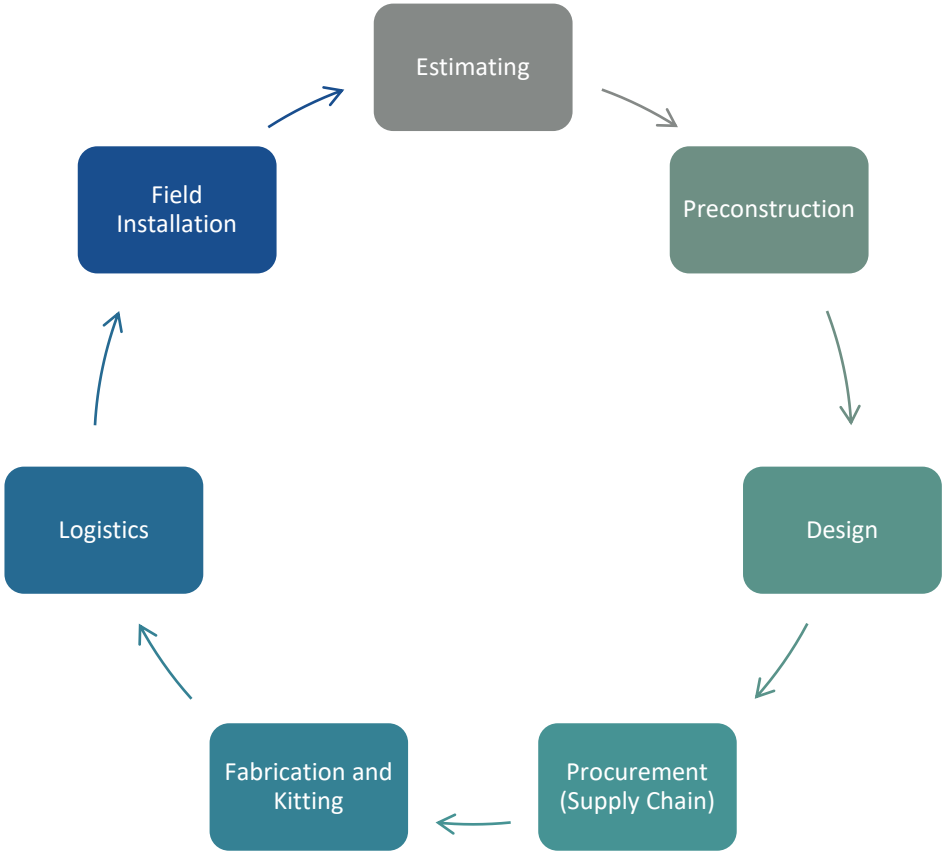
Internal Process Definition

Future State to Add to the Bottom Line

Lack of Synergy Causes Profit Loss

Standards of work to prevent REWORK



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