



## Field Labor Productivity: Your Keys to an Early Warning System

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TRADE SHOW EDUCATION

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### Management Consulting

- Strategic Planning
- Operational Excellence
- Technology Integration
- Training & Development

### Lean Transformations

- Supply Chain Management
- Design Standards
- Enterprise Scheduling
- Process Standardization

### Peer Groups

- Electrical
- Mechanical
- Fire Protection
- General Contractor
- Heavy Civil
- Utility

### Corporate Finance Advisory

- Mergers & Acquisitions Advisory
- Equity & Debt Financing
- Ownership Transition
- Management Succession
- Captive Insurance



## The Why Before the How

Section 1 – Introduction, Challenges, Opportunities

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## Breaking Down the Barriers

- Pushback on labor productivity tracking



## Us Versus Them - Cause and Effect

### LACK OF:

- Trust
- Discipline
- Defined processes
- Role definition
- Involvement
- Incentives
- Training

### CAUSES:

- Confusion
- Impatience
- Anger
- Disengagement
- Lack of accountability
- False starts
- Lack of motivation



## In Reality

- Accurate project forecasting
- Early warning of labor areas of concern
- Compilation of accurate estimating production bid units
- Engagement of the team in the end result



## Challenges

- Estimates
- Budgets
- Time Reporting
- Quantity Reporting
- Forecasting



## How to Evaluate Performance

- Field Leaders are evaluated by:
  - Productivity
- Project Managers are evaluated by:
  - Margin Gain or Fade



Can either of these parties be successful without the other?



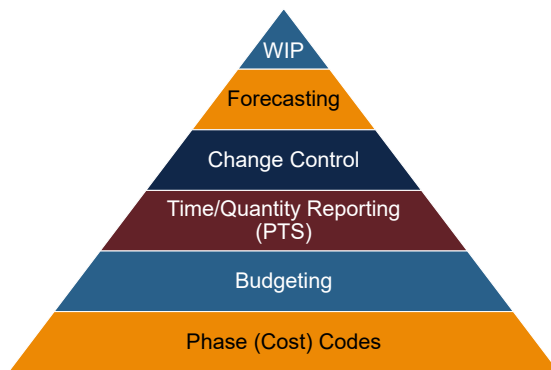
## Financial Controls

Section II – Building Blocks of Performance  
Transparency

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## Building Blocks of Financial Controls



## Cost Types and Cost Codes

**Cost types enable tracking of total installed cost by function or department**

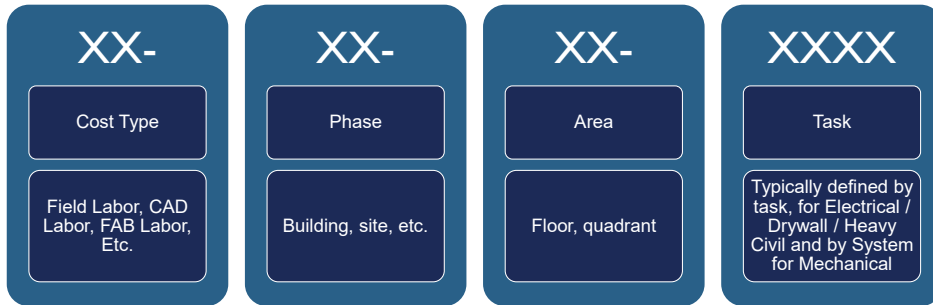
- Field Labor
- CAD / Detailing Labor
- Prefabrication Labor
- Labor Burden
- Materials
- Equipment
- Subcontractors
- Other

**Cost codes enable “trackability” of project**

- Phases
- Areas
- Tasks



## Phase (Cost) Code Structure



## Labor Budget Structural Limitations

- No single labor budget item shall exceed 5% of the total labor hours on the project
- Example – If conduit makes up 30% of labor hours on the job, split the job into six areas with the same cost codes in each areas



## Keep It Simple – Set Up For Success

- 000 Job Startup
- 100 Deep Underground
- 200 Slab
- 300 Wall Rough
- 400 Ceiling Rough
- 500 Wire
- 600 Lighting
- 700 Gear
- 800 Trim & Finish



## Only Add Complexity if Needed

- 300 Wall Rough
  - 301 Wall Rough in Conduit
  - 302 Wall Rough in MC
  - 303 Wall Rough in Flex



## Why is Earned Value Important?

Estimated Labor Hours	Actual Labor Hours	Variance in Hours	Projected Labor Hours
1,000	500	500	?

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



## Reporting Both Quantities and Associated Hours

Estimated Labor Hours	Actual Labor Hours	Variance in Hours	Projected Labor Hours
1,000	500	500	?

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	1000	500	?

Any difference?



## Reporting Both Quantities and Associated Hours

Estimated Labor Hours	Actual Labor Hours	Variance in Hours	Projected Labor Hours
1,000	500	500	?

Estimated Units	Act. Installed Units	Est. Labor Hours	Act. Labor Hours	Projected Labor Hours
100	25	1000	500	2000

How does accurate reporting play into this?



## Earned Value – The Industry Standard

- Practical way to provide feedback
- Single productivity metric for:
  - One Activity
  - Group of Activities
  - Job
  - Group of Jobs
  - Division
  - Total Company
- Adds objectivity to your cost to complete projections



## Using Earned Value

### From the Budget:

- Estimated units or quantities for key items in the budget
- Estimated man-hours for each item in the budget

### From the Field:

- Installed units or quantities for key items in the budget
- Percent complete for all other items in the budget
- Actual man-hours for each item in the budget

ACCURACY IS KEY!!!



## Earned Hours – Formulas To Know

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

Math ≠ Hope

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

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

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



## 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)





### 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
<b>Total</b>	<b>20,000</b>		



### 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
<b>Total</b>	<b>9,500</b>		



### Exhibit Three: Earned Value Summary Report

A	B	C	D	E	F	G	H	I	J	K	(I/F)*B
BUDGETED				ACTUAL				PRODUCTIVITY		PROJECTED	
Activity	Units	UOM	Hours	Units	UOM	% Comp.	Earned Hrs.	Act. Hours	Earned/Actual	Hours	
A											
B											
C											
D											
E											
<b>TOTAL</b>											

### Earned Value Summary Report – Start with Known Values

A	B	C	D	E	F	G	H	I	J	K	L
BUDGETED				ACTUAL				PRODUCTIVITY		PROJECTED	
Activity	Units	UOM	Hours	Units	UOM	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			
<b>TOTAL</b>			20000					9500			

## Earned Value Summary Report-Calculate % Complete

A	B	C	D	E	F	G	H	I	J	K	L
BUDGETED				ACTUAL				PRODUCTIVITY	PROJECTED		
Activity	Units	UOM	Hours	Units	UOM	% Comp.	Hrs.	Act. Hours	Earned/Actual	Hours	
A	100000	SF	8000	40000	SF	40.00%		4000			
B	50000	LF	6000	25000	LF	50.00%		2500			
C	1000	EA	4000	600	EA	60.00%		2400			
D	1	LS	1000	30.00%	LS	30.00%		300			
E	1	LS	1000	10.00%	LS	10.00%		300			
<b>TOTAL</b>			20000					9500			

## Earned Value Summary Report-Calculating Earned Hours

A	B	C	D	E	F	G	H	I	J	K	L
BUDGETED				ACTUAL				PRODUCTIVITY	PROJECTED		
Activity	Units	UOM	Hours	Units	UOM	or % Comp.	Earned Hrs.	Act. Hours	Earned/Actual	Hours	
A	100000	SF	8000	40000	SF	40.00%	3200	4000			
B	50000	LF	6000	25000	LF	50.00%	3000	2500			
C	1000	EA	4000	600	EA	60.00%	2400	2400			
D	1	LS	1000	30.00%	LS	30.00%	300	300			
E	1	LS	1000	10.00%	LS	10.00%	100	300			
<b>TOTAL</b>			20000				9000	9500			

## Earned Value Summary Report-Calculating Productivity

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

## Earned Value Summary Report-Calculating Projected Hours

A	B	C	D	E	F	G	H	I	J	K	L
BUDGETED				ACTUAL				PRODUCTIVITY	PROJECTED		
Activity	Units	UOM	Hours	Units	UOM	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	
<b>TOTAL</b>			20000				9000	9500	0.95	23000	



### 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	(I/F)*B		
BUDGETED				ACTUAL				PRODUCTIVITY	PROJECTED		
Activity	Units	UOM	Hours	Units Inst.		Earned	Act.	Earned/Actual	Hours		
				Units	UOM	or % Comp.	Hrs.	Hrs			
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	
<b>TOTAL</b>			20000				9000	9500	0.95	23000	

### Exhibit Three: Earned Value Summary Report – Accurate Example

A	B	C	D	E	F	G	H	I	J	K	L
				F/B		(F/B) X D		I/J	(I/F)*B		
BUDGETED				ACTUAL				PRODUCTIVITY	PROJECTED		
Activity	Units	UOM	Hours	Units Inst.		Earned	Act.	Earned/Actual	Hours		
				Units	UOM	or % Comp.	Hrs.	Hrs			
A	100000	SF	8000	40000	SF	40.00%	3200	4000	0.8	10000	
B	50000	LF	6000	25000	LF	50.00%	3000	2500	1.2	5000	
<b>TOTAL</b>			14000				6200	6500	0.95	15000	



### Exhibit Three: Earned Value Summary Report – Optimistic Quantities Example

A	B	C	D	E	F	G	H	I	J	K	L
				F/B		(F/B) X D		I/J	(I/F)*B		
BUDGETED				ACTUAL				PRODUCTIVITY	PROJECTED		
Activity	Units	UOM	Hours	Units Inst.		Earned	Act.	Earned/Actual	Hours		
				Units	UOM	or % Comp.	Hrs.	Hrs			
A	100000	SF	8000	50000	SF	50.00%	4000	4000	1.00	8000	
B	50000	LF	6000	30000	LF	60.00%	3600	2500	1.44	4167	
<b>TOTAL</b>			14000				7600	6500	1.17	12167	



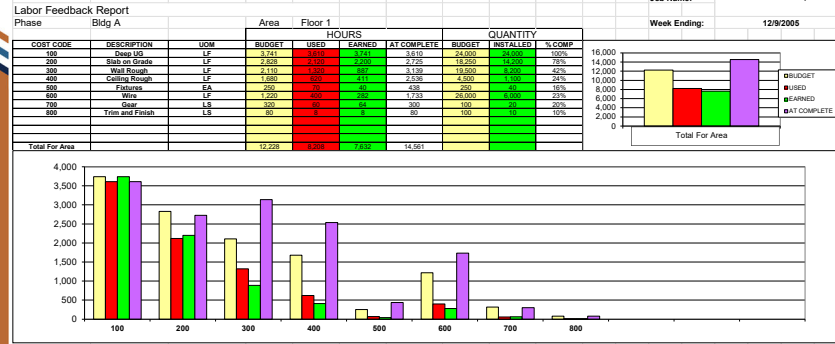
### Exhibit Three: Earned Value Summary Report – Pessimistic Quantities Example

A	B	C	D	E	F	G	H	I	J	K	L
				F/B		(F/B) X D		I/J	(I/F)*B		
BUDGETED				ACTUAL				PRODUCTIVITY	PROJECTED		
Activity	Units	UOM	Hours	Units Inst.		Earned	Act.	Earned/Actual	Hours		
				Units	UOM	or % Comp.	Hrs.	Hrs			
A	100000	SF	8000	35000	SF	35.00%	2800	4000	0.70	11429	
B	50000	LF	6000	20000	LF	40.00%	2400	2500	0.96	6250	
<b>TOTAL</b>			14000				5200	6500	0.80	17679	





## Example: Creating Impactful Tools



## Technology



Section III – Speeding Communication, Teamwork, and Data Sharing

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## Budgets

Everyone on the team must understand the description, quantities, hours, and unit of measure of each budget item

Phase	Ct	Phase description	Unit cost	Original qty	Original hrs	Original cost	Um
00-01-449	L	1 PRE FAB WALL D & T					EA
00-02-230	L	12 WALL ROUGH IN		3,148.00	296.00	10,360.00	LF
00-02-239	L	2 PRE FAB WALL ROUGH IN					EA
00-02-241	L	2 OH COND 1 & SM			11,534.00	32,970.00	LF
00-02-249	L	2 PRE FAB OH ROUGH IN					EA
00-02-313	L	2 EQUIP FLEX CONNECT		35.00	52.00	1,820.00	EA
00-02-350	L	2 BRNCH WIRE #8 & SM		28,858.00	209.00	7,315.00	LF
00-02-359	L	2 PRE FAB BRNCH WIRE					EA
00-02-410	L	2 LIGHTING		327.00	356.00	12,460.00	EA
00-02-419	L	2 PRE FAB LIGHTING					EA
00-02-440	L	2 WALL DEVICES & TRIM		226.00	87.00	3,045.00	EA



## Short Interval Plans

3 week look aheads are done to communicate the plan including materials, equipment, tools, other needs that are not yet on site for the work, as well as production targets

Short Interval Plan - Entry

Show Activity for: [Area] [Phase Code] [Show All] Daily Shift Length: [Mon] [Tue] [Wed] [Thu] [Fri] [Sat] [Sun] [Plan is Final?]

Phase Code	Description	Area	Source	Status	Esp	Qty	UM	Daily Man Hours							Target	
								Mon	Tue	Wed	Thu	Fri	Sat	Sun	Qty	UM
00-00-703	DIRECT JOB SUPERVISION	00				1.00	HR	8	8	8	8	8	0	0	40.00	HR
00-00-711	SAFETY TRAINING	00				1.00	HR	1	1	1	1	1	0	0	5.00	HR
00-01-230	1 WALL ROUGH IN	01	V	R	Y	11.26	LF	16	16	16	16	16	0	0	901.08	LF
00-01-241	1 OH COND 1 & SM	01	V	D	Y	16.49	LF	15	15	15	15	15	0	0	1,236.72	LF
00-01-350	1 BRNCH WIRE #8 & SM	01	V	D	Y	182.70	LF	8	8	8	8	8	0	0	7,308.18	LF
00-01-416	1 FLANGED LINEAR LIGHTING	01	V	B	Y	3.81	EA	8	8	8	8	8	0	0	152.28	EA
00-UG-211	UG UG COND 1 & SM	UG	V	R	N	12.49	LF	16	16	16	16	16	0	0	999.51	LF
00-UG-212	UG COND 1 1/4 & LG	UG	V	R	N	6.23	LF	16	16	16	16	16	0	0	498.20	LF
00-02-440	2 WALL DEVICES & TRIM	02				2.45	EA	0	0	0	0	0	0	0	0.00	EA





## Time Reporting

- Time reporting is done daily and finalized weekly
- Use of technology allows for exception reporting and verification of entry

Employee Time - All Employees		Trade / Skill	Mon 03/11	Tue 03/12	Wed 03/13	Thu 03/14	Fri 03/15	Sat 03/16	Sun 03/17	Final?
Phase Code	Area		Reg	OT	Reg	OT	Reg	OT	Reg	OT
			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAFETY TRAINING	00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1 LIGHTING	01		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1 FLANGED LINEAR LIGHTING	01		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<<= Add New ==>										
			8.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00
SAFETY TRAINING	00		0.25	0.00	0.00	0.00	0.00	0.00	0.00	
1 OH COND 1 & SM	01		7.75	0.00	0.00	0.00	0.00	0.00	0.00	
<<= Add New ==>										



## Production Reports For Field Use

- Reports by area allow both the field leader and project team to see if labor production goals will be met, or will fall short, early enough to mitigate if necessary

Area	Phase Code	Description	% Comp	Budget Hours	JTD Used	JTD Earned	@ Comp Hours	Budget Quantity	JTD Quantity
D1	00-D1-230	D1 WALL ROUGH IN	100.00%	10.00	30.50	10.00	30.50	30.00 LF	30.00
D1	00-D1-240	D1 OVERHEAD ROUGH IN	100.00%	43.00	41.25	43.00	41.25	259.00 LF	259.00
D1	00-D1-300	D1 EQUIPMENT LABOR	100.00%	99.00	49.75	99.00	49.75	9.00 EA	9.00
D1	00-D1-350	D1 BRNCH WIRE #8 & SM	100.00%	7.00	7.00	7.00	7.00	1,265.00 LF	1,265.00
D1	00-D1-410	D1 LIGHTING	100.00%	371.00	486.00	371.00	486.00	555.00 EA	555.00
<b>Total for the Area:</b>				530.00	614.50	530.00	614.50		



## Quantity Reporting

- Quantity reporting is done daily or weekly depending on trade
- This allows an analysis of planned quantity to install versus actual quantity installed

Activities Planned for week STARTING: 03/04/2019			Budget		Previous JTD			Week Target		Week Actual		JTD
Phase Code	Description	Area	Quantity	UM	Quantity	UM	% Comp	per Plan	per Time	Quantity	UM	% Comp
00-00-703	DIRECT JOB SUPERVISION	00	2,426.00	HR	1,592.25	HR	65.63%	40.00	38.75	40.00	HR	67.28%
00-00-711	SAFETY TRAINING	00	1.00	HR	0.00	HR	0.00%	5.00	12.75	0.00	HR	0.00%
00-01-230	1 WALL ROUGH IN	01	7,907.00	LF	5,373.51	LF	67.96%	0.00	174.58	952.09	LF	80.00%
00-01-241	1 OH COND 1 & SM	01	32,056.00	LF	28,850.40	LF	90.00%	1,896.31	4,295.57	641.12	LF	92.00%
00-01-350	1 BRNCH WIRE #8 & SM	01	97,747.00	LF	86,619.84	LF	88.62%	14,616.37	1,415.96	1,352.46	LF	90.00%
00-01-410	1 LIGHTING	01	277.00	EA	107.30	EA	38.74%	0.00	17.47	12.00	EA	43.07%
00-01-416	1 FLANGED LINEAR LIGHTING	01	4,184.00	EA	1,236.00	EA	29.54%	152.29	97.08	100.00	EA	31.93%
00-02-241	2 OH COND 1 & SM	02	11,824.00	LF	11,387.98	LF	96.31%	195.43	0.00	0.00	LF	96.31%
00-02-410	2 LIGHTING	02	327.00	EA	259.52	EA	79.36%	8.09	31.38	0.00	EA	79.36%



## It Takes Two – Office and Field

1. Teamwork between the field and the office is critical
2. Information must be accurate both for budget and reporting
3. Impacts are measurable and quantifiable



## Required Field Documentation

1. Short Interval Plan
2. Time Reporting
3. Quantity Reporting
4. Daily Project Report



Be Prepared!



## Step 1 – Short Interval Plan

- The short interval plan should show work according to the GC or owner's schedule.

Activities planned for week STARTING: 02/11/2019		Materials			Tools		Production Rate		Daily Man Hours							Target	
Phase Code	Description	Area	Source	Status	Eqp	Qty	UM	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Qty	UM	
00-00-703	DIRECT JOB SUPERVISION	00	NA		Y	1.00	HR	3	3	3	3	3	0	0	15.00	HR	
00-00-709	CLEAN UP	00	S	D	Y	1.00	HR	2	2	2	2	2	0	0	10.00	HR	
00-00-711	SAFETY TRAINING	00	S	D	Y	1.00	HR	2	2	2	2	2	0	0	10.00	HR	
00-NC-360	NC FEED WIRE #6 & LG	NC	V	R	Y	22.56	LF	22	22	22	22	22	0	0	2,481.25	LF	
00-P1-350	P1 BRNCH WIRE #6 & SM	P1	V	R	Y	178.01	LF	22	22	22	22	22	0	0	19,580.90	LF	
00-P1-410	P1 LIGHTING	P1	V	R	Y	0.53	EA	21	21	21	21	21	0	0	55.34	EA	



## Step 2 – Time Reporting

- Time reporting should be accurate.

Employee Time - All Employees on Job		Trade /		Mon 02/11		Tue 02/12		Wed 02/13		Thu 02/14		Fri 02/15		Sat 02/16		Sun 02/17		Final?	
Phase Code	Area	Skill	Reg	OT	Reg	OT	Reg	OT	Reg	OT	Reg	OT	Reg	OT	Reg	OT			
			8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	40.00	✓
CLEAN UP	00		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
SAFETY TRAINING	00		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
P1 BRNCH WIRE #6 & SM	P1		7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50		
			8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	40.00	✓
CLEAN UP	00		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
SAFETY TRAINING	00		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
P1 BRNCH WIRE #6 & SM	P1		7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50		
			8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	40.00	✓
DIRECT JOB SUPERVISION	00		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00		
CLEAN UP	00		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		



## Step 3 – Quantity Reporting

- Quantity reporting should be accurate
- Analysis of planned activities versus unplanned must be completed

Activities Planned for week STARTING: 02/11/2019		Budget		Previous JTD		Week Target		Week Actual		JTD		
Phase Code	Description	Area	Quantity	UM	Quantity	UM	% Comp	per Plan	per Time	Quantity	UM	% Comp
00-00-703	DIRECT JOB SUPERVISION	00	2,080.00	HR	1,112.80	HR	53.50%	15.00	14.00	20.80	HR	54.50%
00-00-709	CLEAN UP	00	470.00	HR	267.90	HR	57.00%	10.00	9.25	11.75	HR	59.50%
00-00-711	SAFETY TRAINING	00	374.00	HR	374.00	HR	100.00%	10.00	9.25	0.00	HR	100.00%
00-D1-410	D1 LIGHTING	D1	555.00	EA	555.00	EA	100.00%	0.00	41.14	0.00	EA	100.00%
00-NC-360	NC FEED WIRE #6 & LG	NC	7,737.00	LF	0.00	LF	0.00%	2,481.25	0.00	0.00	LF	0.00%
00-P1-350	P1 BRNCH WIRE #6 & SM	P1	65,151.00	LF	45,279.95	LF	69.50%	18,890.88	23,319.07	16,613.50	LF	95.00%
00-P1-360	P1 FEED WIRE #6 & LG	P1	4,308.00	LF	0.00	LF	0.00%	1,776.90	660.34	689.44	LF	16.00%
00-P1-410	P1 LIGHTING	P1	146.00	EA	94.90	EA	65.00%	42.16	47.44	29.20	EA	85.00%
00-P1-440	P1 WALL DEVICES AND TRIM	P1	351.00	EA	0.00	EA	0.00%	78.28	0.00	0.00	EA	0.00%





## Step 4 – Daily Project Report

- Firsthand account of what happens on the jobsite

Weather: Between 60 and 74

Contractors:

Contractor	Crew Size	Comments
	7	running conduit to be in ceilings and rooms , pulling branch wires .

Equipment Used:

Source	Type	Hours Used	Date Rented	Comments
N/A		0.00		

Materials Received:

Quantity	Description	Source	Problems
2	Panel Interiors, covers , and fuses .	CRAWFORD and wholesale electric	

Safety Issues:

Description	Responsibility
slips , trips, cuts , and falls .	wear ppe's , and clean up areas .

Work Accomplished:  
pulled branch wires, and ran conduits for testing in rooms and lighting.

Delays:  
need antenna , furnished by others , and need all fur downs to be completed. Also need slack to complete storm lines at racks to be able to run conduit under ground in slab .

Additional Comments:



## Productivity Report by Payroll Week

- Proving the impact

Week of	Area	Phase Code	Description	---- Budget ----		--- Hours ---		--- Quantity ---		
				Labor	Quantity UM	Actual	Earned	Week	To Date	% Comp
02/11/2019	00	00-00-703	DIRECT JOB SUPERVISION	2,080.00	2,080 HR	14.00	20.80	20.80	1,133.60	54.50%
		00-00-709	CLEAN UP	470.00	470 HR	9.25	11.75	11.75	279.65	59.50%
		00-00-711	SAFETY TRAINING	374.00	374 HR	9.25	0.00	0.00	374.00	100.00%
	D1	00-D1-410	D1 LIGHTING	371.00	555 EA	27.50	0.00	0.00	555.00	100.00%
	NC	00-NC-360	NC FEED WIRE #6 & LG	343.00	7,737 LF	0.00	0.00	0.00	0.00	0.00%
	P1	00-P1-350	P1 BRNCH WIRE #8 & SM	366.00	65,151 LF	131.00	93.38	16,613.50	61,893.45	95.00%
		00-P1-360	P1 FEED WIRE #6 & LG	97.00	4,309 LF	15.00	15.52	689.44	689.44	16.00%
		00-P1-410	P1 LIGHTING	277.00	146 EA	90.00	55.40	29.20	124.10	85.00%
		00-P1-440	P1 WALL DEVICES AND TRIM	269.00	351 EA	0.00	0.00	0.00	0.00	0.00%
						296.00	196.80			

Spent 296 hours. Should have spent 196.8 hours. Impact is 99.2 hours



## Productivity Report – Progress by Area and Phase Code

01	0E-01-241	OH COND 1 & SM	889.00	16,325 LF	08/10/2016	0.00	0.00	0.00	0.00	0.00%
					08/17/2016	0.00	0.00	0.00	0.00	0.00%
					08/24/2016	0.00	0.00	0.00	0.00	0.00%
					08/31/2016	0.00	0.00	0.00	0.00	0.00%
					10/10/2016	0.00	0.00	0.00	0.00	0.00%
					11/14/2016	0.00	0.00	0.00	0.00	0.00%
					11/28/2016	34.00	70.79	1,300.00	1,300.00	7.96%
					12/05/2016	63.00	46.29	850.00	2,150.00	13.17%
					12/12/2016	113.00	125.25	2,300.00	4,450.00	27.26%
					12/19/2016	198.50	147.05	2,700.00	7,150.00	43.80%
					12/26/2016	96.00	103.47	1,900.00	9,050.00	55.44%
					01/02/2017	105.00	65.35	1,200.00	10,250.00	62.79%
					01/09/2017	132.00	64.12	1,177.50	11,427.50	70.00%
					01/16/2017	50.50	39.21	720.00	12,147.50	74.41%
					01/23/2017	192.00	136.14	2,500.00	14,647.50	89.72%
					01/30/2017	117.50	76.24	1,400.00	16,047.50	98.30%
					02/06/2017	37.50	9.80	180.00	16,227.50	99.40%
					02/13/2017	28.00	0.00	0.00	16,227.50	99.40%
					02/20/2017	22.50	0.00	0.00	16,227.50	99.40%
Labor Hours @ Completion:			1,196.64			1,189.50	883.69	16,227.50		99.40%

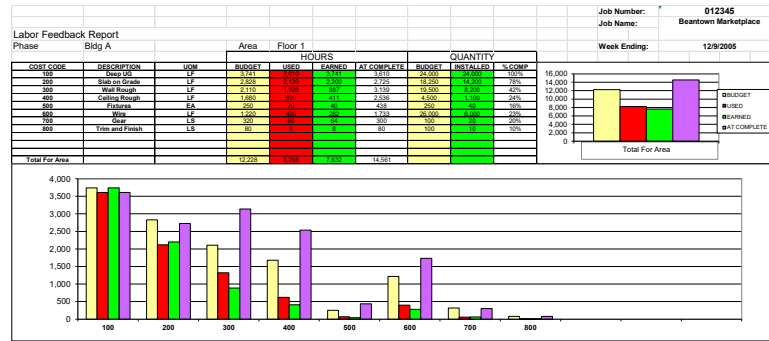


## Proving The Case Using Field Data - Impacts

1. Short Interval Plan
  - Documents what we are supposed to be working on according to the GC or owner schedule
2. Time Reporting
  - Record of what we spent our time doing
3. Quantity Reporting
  - Record of what we were able to get installed
4. Daily Project Report
  - Record of site conditions, delays, and other relevant facts
5. Production Reports
  - Proving the impact on labor of what we spent versus what we should have spent



## Example: Creating Impactful Tools



## Exception Reporting - Example

1. Show me any cost code on this project that is less than 40% complete and that forecasts an overrun by more than 15% of hours



# Labor Productivity

Summary

TRADE SHOW EDUCATION

## Team Workflow Defined

- 1 • Accurate budgets understood and agreed upon by the entire project team.
- 2 • Time reporting done daily, and accurately.
- 3 • Quantity reporting done daily or weekly, depending on trade. Done accurately. Use of this information to intervene on codes that are not performing well.
- 4 • Use of timely notification, production tracking, production data to proactively manage labor productivity and change orders more successfully.

## Teamwork and Technology

Moving forward, we must:

- Eliminate the us versus them mentality to pave the way toward true and trusted teamwork.
- Implement technology tools to allow the field to manage its production more effectively.
- Use technology to speed communication between the office and the field in order to eliminate preventable delays and manage change order risk.
- All four important pieces of information to show an impact come from the field. Use technology to simplify the capture and speed the mining of data.



**Thank You!**

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## Complete the Online Evaluation

