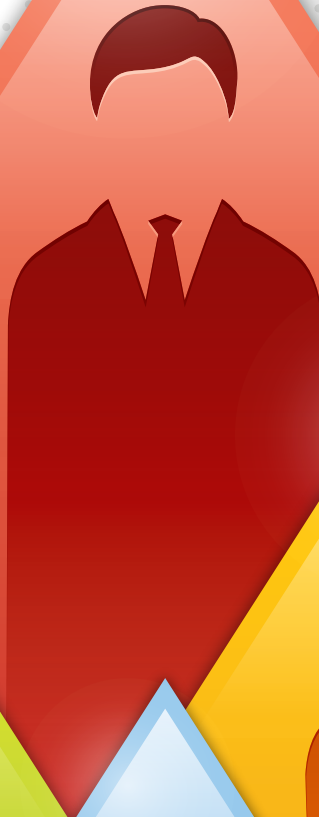


# CFMA Building Profits

THE MAGAZINE FOR CONSTRUCTION FINANCIAL PROFESSIONALS



**POWER**  
up your  
**HR**

BY ROBERT E. SUTOR

# WIP Data: Your Company's Hidden Treasure Chest

Each month in construction offices across the country, the work-in-progress (WIP) scenario runs its course. PMs perform their projections of revenue and costs at contract completion. CFOs, controllers, and executives perform their reviews, culminating in WIP schedules for the financial statements and bonding companies. And for most companies, that is where the process ends. The related WIP data finds its final resting place in an Excel file or database, where it remains unused and untapped.

What is often not recognized is that this untapped historical WIP data has enormous potential. Very few companies use their historical WIP to obtain the wealth of critical management information it contains. With the exception of the financial statements, this WIP data is, byte for byte, some of the most valuable management information available.

## Using WIP Data Effectively

How effectively does your company use its historical WIP data? Can your team produce reports that can meaningfully address some of the following management questions?

- Historically, how much profit fade occurs at the later stages of completion? Which PMs are responsible?
- How much project gross profit is contributed by the estimating department vs. project management efforts over various time periods?
- Of the gross profit changes attributable to the PMs, how much is due to change order management vs. changes in estimated project profitability? How has that changed over time?
- Which are the most profitable types of facilities, owners, work, and customers, and over what period of time?
- Which PMs, estimators, and project executives are most profitable? Which project types are most profitable for them, and over what period of time?
- How does the earned revenue or gross profit recorded during any period break down by division, PM, work type, customer, etc.?
- How does the backlog break down by division, PM, and work type, and how has that changed over a selected period of time?

Many of these questions are important, but difficult to measure. Your company may already have some of this information, but may lack the time or ability to generate it readily for any given month, quarter, or year for more meaningful analysis. Being able to not only generate the static results, but also create a full-period analysis showing how these factors have changed over time is helpful in determining how these factors are playing out in your company.

Most CFMs have a sense of how these factors affect their company's financial well-being. However, these intuitive perceptions often become locked in concrete unless validated with current data and can lead to unpleasant surprises. As the business adage goes, "If you can't measure it, you can't manage it."

WIP data contains the profitability, earnings, billing status, and unearned revenue (backlog) for every month and every job. The potential value of WIP data greatly increases when the data from each monthly WIP schedule is placed into a combined single data source where attribute data (e.g., division, PM, estimator, facility type, owner type, work type, etc.) can be associated with each job. This data can then be leveraged using the data modeling capabilities of Excel PowerPivots or other reporting tools to create powerful management reports and information to aid WIP analysis.

Once deployed, the historical WIP data source can be used to generate a wide range of useful management reports and can even help improve the WIP process. These reports can be generated at various levels, from the dashboard level to more detailed job-level reports. This data not only allows static reports to show a snapshot in time, but also full-period reports to show how this information has changed over time.

## Improved Management Reporting

To illustrate the value of advanced WIP analysis, it is helpful to review some reports that can be generated using historical WIP data. Exhibit 1 depicts backlog at the end of a monthly WIP period. This report is typical of traditional WIP reporting, in that it is static in nature – it only provides a snapshot in time. Further, this report can generally only be produced one WIP period at a time.

### Exhibit 1: Ending Backlog by Facility Type

Although Exhibit 1 below is useful, the analysis should not stop there. Now, let's compare Exhibit 1 with the full-period report that is shown in Exhibit 2 on the following page.

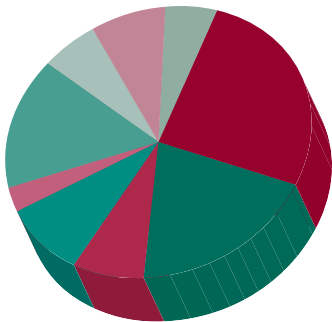
### Exhibit 2: Backlog by Facility Type (Full-Period Analysis)

Exhibit 2 shows backlog activity for the time period selected in the pivot table slicer filters. Unlike Exhibit 1, this analysis not only shows the breakdown of backlog by facility type at the end of the WIP period, but also shows the backlog at the beginning of the selected period and how the total backlog revenue has changed during the period.

Exhibit 2 also addresses:

- How much job volume the estimating department contributed to the backlog during the period with newly awarded contracts.

### Exhibit 1: Ending Backlog by Facility Type



Facility Type	Ending Backlog
Bridges & Roads	15,755,309
Commercial Office	11,277,080
High-Rise	52,815,794
Hospitals	38,875,286
Hydroelectric	15,327,512
Industrial Lab	19,069,085
Light Rail/Transit	5,979,311
Nuclear	30,956,830
Schools	11,684,643
<b>Grand Total</b>	<b>201,740,850</b>

- How much job volume the PMs contributed to the backlog through change order management and revisions to the original bid contract value.
- The amount of earned revenue burned off during the report period that was attributable to each facility type (i.e., the amount of earned revenue recorded during any period that was contributed by each type of facility).

Exhibit 3: Backlog Profitability by PM (a few pages ahead) and Exhibit 4: Job Profitability History by Month (a few pages ahead) both show an analysis similar to Exhibit 2; however, they focus on the job profitability in the backlog work rather than job revenue. These reports show the factors changing the amount of job profitability in the backlog work over a period of time. Since the WIP data provides a monthly history, these report types can be selected for any combination of contiguous WIP periods.

### Exhibit 3: Backlog Profitability by PM (Full-Period Analysis)

Exhibit 3 helps answer the question of how much of the job gross profit during a given time period was contributed by the estimating department vs. the PMs. This report starts with the gross profit in the backlog at the beginning of the selected period and indicates how much of the increase in job profit backlog was contributed by the estimating department through successful bids compared to the changes in profitability as a result of change order activity and changes in the PMs' job profitability estimates.

Additionally, the markup rates are displayed for both the new contract value contributed by the estimators (Estimating Markup Rate) and profitability changes for which PMs are responsible (Project Management Markup Rate).

Although not shown in Exhibit 3, the PMs' profitability can also be separated into approved change order activities and changes resulting from WIP adjustments to profit estimates, depending on the information available in your enterprise database.

### Exhibit 4: Job Profitability History by Month (Full-Period Analysis)

Exhibit 4 demonstrates how the gross profit reported in the monthly WIP schedules for a specific job changes over time. In this case, the report shows two jobs in the Los Angeles division (or, the report could be generated for all jobs for a specific PM, as another example). Note that Job 1663 was handed over to the PMs with a 1.31 markup and was most currently reported at a .96 markup, which indicates the job is losing money, returning only 96 cents for every dollar of job cost spent.



## Exhibit 2: Backlog by Facility Type (Full-Period Analysis)

Year	Division			Owner Type			Project Exec		
2019	Denver	Los Angeles		Federal DOD	Federal DOT		Bill Overton	Christine Stout	

Facility Type	Beginning Backlog (Revenue)	New Projects (Estimating)	Contract Change (PMs)	Earned Revenue Workoff	Ending Backlog (Revenue)	Ending Backlog (Profit)	Back-log Markup	Gross Profit Earned	Mark-up Rate Earned
Bridges & Roads	7,003,617	13,767,479	874,688	-5,890,475	15,755,309	2,929,477	1.23	812,100	1.18
Commercial Office	8,550,019	6,864,270	460,763	-4,597,972	11,277,080	2,264,342	1.25	1,354,838	1.21
High-Rise	57,608,829	1,158,193	9,104,231	-15,055,459	52,815,794	9,927,948	1.23	3,109,172	1.27
Hospitals	37,606,758	12,093,077	1,644,300	-12,468,849	38,875,286	5,963,431	1.18	1,881,218	1.19
Hydroelectric	10,446,855	7,257,294	458,454	-2,835,091	15,327,512	2,911,582	1.23	780,875	1.20
Industrial Lab	26,786,321	2,906,619	3,326,377	-13,950,232	19,069,085	4,102,567	1.27	3,053,346	1.20
Light Rail/ Transit	8,820,689	1,108,161	1,089,603	-5,039,142	5,979,311	1,287,991	1.27	561,105	1.24
Nuclear	6,124,550	31,695,533	2,567,802	-9,431,055	30,956,830	7,651,327	1.33	1,498,741	1.13
Schools	8,784,792	6,539,319	2,371,251	-6,010,719	11,684,643	2,400,657	1.26	1,079,608	1.18
Grand Total	171,732,430	83,389,945	21,897,469	-75,278,994	201,740,850	39,439,322	1.24		1.21

## Exhibit 3: Backlog Profitability by PM (Full-Period Analysis)

Division	Project Exec		Facility Type		Owner Type	
New York	Bill Overton		Bridges & Roads		City/County	

PM	Beginning Backlog Profit	Gross Profit Bid (Estimating)	Gross Profit Change (PMs)	Gross Profit Worked Off	Ending Backlog Profit	Backlog Markup	Markup Rate Earned
Barry Morgan	693,004	31,907	-138,238	-148,931	437,742	1.35	1.28
Dan Stine	1,354,496	14,075	943,915	-1,512,085	800,401	1.31	1.31
Darrell Davis	0	7,346,703	1,104,730	-2,008,954	6,442,479	1.28	1.34
Don Brake	1,728,989	2,296,703	-981,595	-270,944	2,773,153	1.23	1.11
Jack Wellby	1,073,393	799,819	171,773	-606,436	1,438,549	1.30	1.18
Joseph Garcia	8,867,634	2,036,051	1,432,752	-1,863,646	10,472,791	1.24	1.23
Laura Jannsen	1,836,372	647,112	52,790	-918,517	1,617,757	1.22	1.20
Mike Davis	331,340	717,299	265,841	-395,686	918,794	1.38	1.08
Stuart Garcia	1,102,285	573,401	483,855	-1,001,396	1,158,145	1.33	1.26
Grand Total	16,987,513	14,463,070	3,335,823	-8,726,595	26,059,811	1.26	1.22

Additional columns, such as estimated current contract price at completion or percent complete, could be included for further analysis.

#### Exhibit 5: Backlog by Division by Month (Full-Period Analysis)

As shown in Exhibit 5 a few pages ahead, the reports can be “rolled up” for any of the various reporting attributes. In this case, Exhibit 5 shows backlog activity rolled up monthly for each division. This allows backlog activity to be evaluated on a divisional level to assess the contributions of each division to backlog and revenue generation. The same report can be generated for job profitability as well.

These reports can be helpful in providing a complete history of backlog activities for an entire division or individual project. Profit and earnings trends can be readily identified.

Trends in the total work contributed by estimators, PMs, and burn-off is readily determinable.

#### Additional Reports

As these reports show, there is a great deal of management information available from historical WIP data that can help evaluate backlog activities and levels both from revenue and profitability standpoints. However, there are other areas that can be analyzed, including:

- The historical accuracy of gross profit estimates by PM, division, and other factors.
- Trends in estimating activities for jobs won. This can be determined for market segments, customers, and divisions over time.
- Trends in margins over time by market segment, division, and customer.

### Exhibit 4: Job Profitability History by Month (Full-Period Analysis)

Division		PM		Year		Facility Type		
Denver Los Angeles		Barry Morgan Ben Stensrude		2019		Commercial Office		
Job Number & Description	Year Month	Beginning Backlog (Profit)	Gross Profit Bid (Estimating)	Gross Profit Change (PMs)	Gross Profit Worked Off	Ending Backlog (Profit)	Backlog Markup	Markup Rate Earned
1647-Twitter-Corp Office	2019-01	18,999	0	0	-3,527	15,472	1.33	1.33
	2019-02	15,472	0	0	-1,002	14,470	1.33	1.33
	2019-03	14,470	0	-2,168	-11,821	481	1.28	1.28
	2019-04	481	0	6,671	-6,703	449	1.27	1.27
	2019-05	449	0	0	0	449	1.27	1.27
	2019-06	449	0	0	0	449	1.27	1.27
1647-Twitter-Corp Office Total		18,999	0	4,503	-23,053	449	1.27	1.27
1663-Exxon-Branch Expansion	2019-03		32,487	0	0	32,487	1.31	
	2019-04	32,487	0	-6,875	0	25,612	1.23	
	2019-05	25,612	0	2,072	-20,972	6,712	1.22	1.22
	2019-06	6,712	0	-33,973	26,256	-1,005		0.96
1663-Exxon-Branch Expansion Total			32,487	-38,776	5,284	-1,005		1.07
Grand Total		18,999	32,487	-34,273	-17,769	-556		1.19



## Improving the WIP Process

One of the advantages of using your company's historical WIP information is that it can also help make the entire WIP process more productive.

Those of us who have spent countless hours over the years in monthly WIP meetings know much of that time is spent digging for data and performing reasonableness tests on the information from the PMs. We pore over the WIP Schedule data with such questions as:

- How has project profitability been reported on prior WIP schedules?
- How reliable have the past WIP estimates been for the various PMs?
- What is the job overbilling and underbilling status and how has this changed over a period of time?

Division managers or executives may want some of the same information when evaluating the WIP schedule.

So, how can WIP data be helpful in improving the WIP process itself? There are several reports that can be generated from your company's historical WIP data that can facilitate the efficiency of your WIP review meetings. One such report is the Job WIP Reporting History report as shown in Exhibit 6 on the following page.

### **Exhibit 6: Job WIP Reporting History (by Month)**

Exhibit 6 presents a complete history of prior WIP reporting for a job, which is often helpful to assess the reliability of profitability levels reported in the current WIP schedule. Reports like this can cut down on the amount of wasted time in monthly WIP meetings, which makes the time spent more meaningful and less frustrating.

While this data may already be available, using your company's historical WIP data as a combined data source for reporting provides information in a single report that may have previously been presented in multiple reports.

## Summary

These sample reports can begin at the division level and continue all the way down to the individual job level. At each level, reports can be generated by such attributes as PM, superintendent, project administrator, estimator, project executive, facility type, owner type, work type, project executive, division, estimator, project owner, customer, and so on.

The reports presented are only a sampling of the various types of information that can be generated from your historical WIP data. The depth and quality of information that can be derived from the monthly WIP data may surprise you.

When integrated into the management process, these reports can add valuable perspective to some of the most difficult decisions that contractors face. WIP data can truly be a treasure chest of information. ■

---

ROBERT E. SUTOR, CPA, is Principal of The Sutor Group in Bellevue, WA. He has more than 20 years of experience as a manager, executive, and consultant in the construction industry.

He focuses on strategic planning, dispute resolution, project management, estimating, safety, and quality assurance in both management and systems development roles.

Robert has spent the past 15 years specializing in project management oversight, systems development, and programming; he has a wealth of experience with SQL databases and Excel; and he has authored and presented on various topics in that field. He is also a member of CFMA.

Robert holds a BA in Accounting and Finance, as well as an MBA in Operations Systems from the University of Washington. Robert is a Certified Consultant for the Viewpoint Construction Software enterprise database.

Phone: 425-466-7711

E-Mail: [robert@sutorgroup.com](mailto:robert@sutorgroup.com)

Website: [www.sutorgroup.com](http://www.sutorgroup.com)

## DON'T MISS

**Exhibit 5: Backlog by Division by Month &  
Exhibit 6: Job WIP Reporting History on the following page.**

## Exhibit 5: Backlog by Division by Month (Full-Period Analysis)

Division Name			Year			Facility Type				
Denver Los Angeles New York ↕			2019 ↕			Bridges & Roads Commercial Office High-Rise ↕				
Division	Year Month	Beginning Backlog (Revenue)	New Projects (Estimating)	Contract Change (PMs)	Earned Revenue Workoff	Ending Backlog (Revenue)	Ending Backlog Profit	Backlog Markup	Gross Profit Earned to Date	Markup Rate Earned
Los Angeles	2019-01	51,934,580	1,090,221	1,227,410	-6,964,184	47,288,027	10,722,196	1.29	1,273,189	1.19
	2019-02	47,288,027	848,092	2,032,192	-4,545,493	45,622,818	10,334,543	1.29	844,910	1.19
	2019-03	45,622,818	1,393,473	374,581	-4,639,873	42,750,999	9,449,698	1.28	1,230,616	1.20
	2019-04	42,750,999	4,569,981	424,765	-4,046,711	43,699,034	9,694,035	1.29	840,747	1.21
	2019-05	43,699,034	1,781,116	369,409	-3,647,179	42,202,380	9,418,279	1.29	578,792	1.20
	2019-06	42,202,380	8,848,379	894,663	-4,330,630	47,614,792	10,453,522	1.28	479,445	1.20
Los Angeles Total		51,934,580	18,531,262	5,323,020	-28,174,070	47,614,792	10,453,522	1.28	5,247,699	1.20
New York	2019-01	93,856,916	41,327,059	1,675,546	-4,924,607	131,934,914	25,291,832	1.24	335,744	1.21
	2019-02	131,934,914	635,000	-3,296,526	-5,180,065	124,093,323	23,071,984	1.23	1,157,658	1.22
	2019-03	124,093,323	15,185,697	17,441,288	-6,345,005	150,375,303	30,351,007	1.25	1,235,689	1.22
	2019-04	150,375,303	1,645,766	-2,594,080	-7,176,948	142,250,041	28,760,158	1.25	2,105,575	1.23
	2019-05	142,250,041	5,497,065	3,934,983	-10,078,918	141,603,171	28,795,636	1.26	1,863,611	1.23
	2019-06	141,603,171	568,096	-586,762	-11,681,452	129,903,053	26,059,811	1.25	2,028,318	1.22
New York Total		93,856,916	64,858,683	16,574,449	-45,386,995	129,903,053	26,059,811	1.25	8,726,595	1.22
Grand Total		145,791,496	83,389,945	21,897,469	-73,561,065	177,517,845	36,513,333	1.26	13,974,294	1.21

## Exhibit 6: Job WIP Reporting History (by Month)

Job Number		Year		Division		Project Exec		Facility Type			
1004- 1005- ↕		2019 ↕		Denver Los Angeles ↕		Barry Morgan ↕		Bridges & Roads Commercial Office ↕			
Job Number & Name	Year Month	Contract Price at Completion	Contract Cost at Completion	Gross Profit at Completion	Markup at Completion	Earned to Date	Cost to Date	Gross Profit to Date	Markup Rate Earned	Billed to Date	Under (Over) Billing
1647-Twitter-Corp Office	2018-12	75,999	57,000	18,999	1.33	0	0	0		0	0
1647-Twitter-Corp Office	2019-01	75,999	57,000	18,999	1.33	14,107	10,580	3,527	1.33	0	14,107
1647-Twitter-Corp Office	2019-02	75,999	57,000	18,999	1.33	18,116	13,587	4,529	1.33	0	18,116
1647-Twitter-Corp Office	2019-03	75,999	59,168	16,831	1.28	73,829	57,479	16,350	1.28	0	73,829
1647-Twitter-Corp Office	2019-04	111,985	88,483	23,502	1.27	109,847	86,794	23,053	1.27	75,999	33,848
1647-Twitter-Corp Office	2019-05	111,985	88,483	23,502	1.27	109,847	86,794	23,053	1.27	75,999	33,848
1647-Twitter-Corp Office	2019-06	111,985	88,483	23,502	1.27	109,847	86,794	23,053	1.27	75,999	33,848