

[Email to a Friend](#)

Focus

Track the WIP

by Philip Nimmo, Sam Shabander, Dr. Perry Daneshgari
Published: March 2008

Work-in-progress report helps monitor and manage cash flow

Construction contracting is one of the few professions that requires massive, up-front investment prior to actual cash inflow. The rule of thumb for any project startup is 30 percent of the total value of the contract has to be available before any billings. In fact, most projects do not become cash-flow positive until the last 5 to 10 percent of the job.

The dilemma contractors face in income, cash flow, billings and expenditures requires a constant balancing act. Contractors need a system that allows them to see cash-out, billing and cash-in to manage their daily activities. Unfortunately, neither the accounting nor the estimation data can help create a visible and responsive process to see these. The fact is the sales of a contractor have nothing to do with its billing. This misunderstanding could cost the contractors tens of thousands of dollars in revenues and taxes.

What is WIP?

Most construction accounting programs have a module dealing with work-in-progress (WIP). The typical elements of a simple and basic WIP are as follows:

- Contract values (base amount plus approved changes)
- Contract cost estimates (base amount plus approved changes)
- Original estimated profit margin (with and without approved changes)
- Job cost to date
- Value of completed construction
- Actual billings
- Over/underbilling
- Projected profit margin

The WIP calculation relies on a combination of hard numbers (actual job costs, actual billing amounts and revised contract values) and the project managers' educated guess at values such as the following:

- Construction put in place (value of the scope of work completed)
- Projected cost to complete the remaining work
- Value of pending changes and extra work

When provided with the necessary information and routine updates, most accounting software packages will provide some sort of standard reporting that goes beyond a simple tally of the job costs incurred to date. Often these reports, by various names, will contain calculations of the percent complete (based on the proportion of estimated cost that has been incurred), an estimate of the remaining cost to complete the scope of work, the expected profit margin and whether the project is overbilled or underbilled.

A WIP report should be used by core management and outside parties for the assessment of the current financial health of the contracting business. This report is a critical measure of the management's financial accountability in the contracting business, and as such, the accuracy of the WIP report is a key focus area for contractors of all sizes.

Whether a company is small and privately held or a multibillion-dollar holding company seeking compliance with Sarbanes-Oxley reporting requirements, the WIP report is a principal tool for accurately monitoring a project's financial performance.

How to create your own WIP

Many contractors find the reports in construction accounting software contain information that is either beyond their immediate interest, more than they care to share outside the company, in need of modification and refinement using data that is outside of the accounting system, or simply not formatted the way they want to see it. Often contractors attempt to build a custom WIP report containing the information and the format that provides the most appropriate information for their individual needs.

Whether the WIP is created using a pencil and paper, an Excel spreadsheet, a custom report within the accounting system, or within another third-party mechanism, there will be some basic elements that must be included. These basic or fundamental elements are sales, billings and profits. In order to provide accurate reporting, one must understand the elements of each component.

One of the most common misconceptions in contracting is that sales and billings are the same. A sale occurs when goods and services are exchanged for an agreed price. In contrast, billings are the amount that the contractor has invoiced to the customer for the work completed. Profitability is simply the difference between the contract price and the costs incurred to complete the job.

Given the data described above, the simplest and most basic form of the WIP report can be constructed easily using the following steps.

Step 1—Calculating sales

The calculation of sales involves the basic estimation and contract data. Listed below is the information needed for the WIP schedule and sales calculation:

- Original contract value
- Original estimated costs (labor, material, subcontracts and all other costs including planned allocations to the project)
- Agreed value for each fully executed change order
- Estimated costs for each fully executed change order (labor, material, subcontracts and all other costs including planned allocations to the project)
- Actual job costs incurred and/or allocated to date

The WIP report uses the revised contract value and the value of construction put-in-place to calculate sales to date. By summing the original contract value and the agreed value of each fully executed change order, we will arrive at the revised contract value. However, this is not recognized as sales until the agreed scope has been delivered to the customer.

The final calculations for the WIP report are the original and revised profit expectations. The original profit expectation is calculated by taking the difference between the original contract value and the original estimated project cost and dividing this by the original contract value. The revised profit expectation is calculated similarly using the revised values—the difference between revised contract value and the revised contract cost divided by the revised contract value. These calculations are shown below, and Figure 1 illustrates a common layout for the “Contract Values and Costs” portion of the WIP report.

- Original Estimated Costs + All Estimated Change Order Costs = Revised Contract Costs
- Original Contract Value + Agreed Value of All Fully -Executed Change Orders = Revised Contract Value
- (Original Contract Value – Original Estimated Costs)/Original Contract Value = Original Profit (%)
- (Revised Contract Value – Revised Estimated Costs)/Revised Contract Value = Revised Profit (%)

| Contract Values | | | | |
|-----------------|--------------|-------------------------|------------------------|-----------------------|
| Job Number | Job Name | Original Contract Value | Revised Contract Value | Revised Contract Cost |
| 001 | ABC Contract | \$ 1,750,000 | \$ 2,000,000 | \$ 1,100,000 |
| 002 | DEF Contract | \$ 0 | \$ 0 | \$ 0 |
| Total | | \$ 1,750,000 | \$ 2,000,000 | \$ 1,100,000 |

| Contract Costs | | | | |
|----------------|--------------|------------------------|-----------------------|------------------------|
| Job Number | Job Name | Original Contract Cost | Revised Contract Cost | Revised Contract Value |
| 001 | ABC Contract | \$ 1,100,000 | \$ 1,200,000 | \$ 2,000,000 |
| 002 | DEF Contract | \$ 0 | \$ 0 | \$ 0 |
| Total | | \$ 1,100,000 | \$ 1,200,000 | \$ 2,000,000 |

| Profitability | | | | |
|---------------|--------------|-------------------|-------------------|------------------------|
| Job Number | Job Name | Original Profit | Revised Profit | Revised Contract Value |
| 001 | ABC Contract | \$ 650,000 | \$ 800,000 | \$ 2,000,000 |
| 002 | DEF Contract | \$ 0 | \$ 0 | \$ 0 |
| Total | | \$ 650,000 | \$ 800,000 | \$ 2,000,000 |

To calculate the portion of the contract that has been “sold” (actual sales), as of the report date, a simple two-step formula is used. Step one is to calculate the percent complete (the portion of the total project price that has been delivered to the customer). This is determined by dividing the total job costs incurred to date by the total of all estimated costs (original contract costs plus the sum of all costs for each fully executed change order). Once this value (percent) is determined, step two is to apply it to the total revised contract price. This will result in a value of the construction put-in-place: sales to date. The calculations are shown below, and Figure 2 illustrates a common layout for the “earnings” section of the basic WIP report.

- Actual Job Costs to Date/Total Estimated Costs = Percent Complete
- Revised Contract Value × Percent Complete = Earned Value or Actual Sales to Date

| Earnings Based on Revised Contract Values | | | | | |
|---|--------------|---------------------|-----------------------|------------------------|---------------------|
| Job Number | Job Name | Percentage Complete | Revised Contract Cost | Revised Contract Value | Earned Value |
| 001 | ABC Contract | 60.00% | \$ 1,200,000 | \$ 2,000,000 | \$ 1,200,000 |
| 002 | DEF Contract | 0.00% | \$ 0 | \$ 0 | \$ 0 |
| Total | | 60.00% | \$ 1,200,000 | \$ 2,000,000 | \$ 1,200,000 |

Step 2—Managing cash flow

When it comes to maintaining a healthy business, cash-flow management on construction projects often is more critical than attaining high profit margins. It is common that a job will not achieve positive cash flow until the last 5 to 10 percent of the project. Contractors have come to expect large initial cash investments in their projects to get them started. The failure to monitor and manage cash flow can extend the duration of borrowing to the point that both the project and contractor can be jeopardized.

The WIP report can be used to determine two fundamental and critical measures to help monitor and manage cash flow on the project. First, it identifies the amount billed for the scope of work that has been delivered and, secondly,

the monies collected from the customer. Project billings to date (invoice totals) and cash collected to date (payments received against these invoices) are necessary for the WIP schedule:

The WIP report also identifies a contractor's billing status in terms of over/under billings. Overbilling occurs when billings are more than the sales recognized to date. Underbilling occurs when billings are less than the sales to date. These amounts are separated so the contractor can evaluate his total overbilled and total underbilled status, as opposed to monitoring only his net over/underbilled status. This distinction is critical because the fact that one job is overbilled does not justify having another job underbilled by the same amount.

The cash-flow calculation compares the amount received from the customer to the actual project costs paid to date. When costs to date exceed the amount collected, this is reflected as a negative number (cash short). When received cash exceeds the paid costs, this is a positive number (cash over). These calculations are shown below, and Figure 3 illustrates a common layout for the "billings and cash position" section of the basic WIP report.

- If Earned Value > Project Billings to Date, then: Earned Value (Sales) – Project Billings to Date = Amount Underbilled
- If Project Billings to Date > Earned Value, then: Project Billings to Date – Earned Value (Sales) = Amount Overbilled
- Total Cash Received to Date – Actual Job Costs Incurred to Date = Cash (Short) Over

The screenshot shows a software interface titled "Work In Progress". It features a search bar and two data tables. The first table, "Billings", has columns for Job Number, Job Name, Actual Billings to Date, Under Billings, and Over Billings. The second table, "Cash Position", has columns for Job Number, Job Name, Cash Received to Date, Cash Paid to Date, and Cash (Short) Over.

| Billings | | | | |
|------------|-------------|-------------------------|----------------|---------------|
| Job Number | Job Name | Actual Billings to Date | Under Billings | Over Billings |
| 1001 | ABC Company | \$11,000 | \$0 | \$11,000 |
| 1002 | XYZ Company | \$20,000 | \$1,000 | \$19,000 |

| Cash Position | | | | |
|---------------|-------------|-----------------------|-------------------|-------------------|
| Job Number | Job Name | Cash Received to Date | Cash Paid to Date | Cash (Short) Over |
| 1001 | ABC Company | \$10,000 | \$10,000 | \$0 |
| 1002 | XYZ Company | \$15,000 | \$18,000 | \$3,000 |

Going beyond the basics

There are no established requirements limiting the content of the WIP report. The WIP may be expanded to include other useful management tools that help create a visible snapshot of the project, department and company financial health and associated risk areas.

In future feature articles, we will investigate some additions to the basic WIP. We will expand on the connection between accounting and operations by discussing the financial management information available through a more detailed WIP report designed to help CFOs, accountants and owners accurately project future cash flows and potential write downs (or ups) from data available early in the project life cycle. Further expansion of the WIP can allow for refinement of both profit and cash-flow projections based on actual job productivity experience as well as consideration of estimated, actual and committed costs.

A well-designed and regularly maintained WIP report can be one of the most valuable tools for any contractor, regardless of size or specialty. Even a very basic WIP will allow owners and managers to accurately project profitability and better manage cash, improving relationships with employees, creditors, surety providers and customers. For companies with more complicated risk situations, tighter lending covenants or Sarbanes-Oxley reporting requirements, WIP can be expanded to provide the key ingredient in a management information system

solution for financial assurance at the project level and higher.

DANESHGARI is president of MCA Inc. He is a consultant for various electrical and general contracting companies. **NIMMO** is the director of operations for MCA Inc. **SHABANDER, M.B.A.**, has 25 years of experience as a CFO and accounting adviser for various industries, specializing in labor productivity.