The Mechanics of Revenue Recognition for Construction & Service Operations

In December 2008, the joint Financial Accounting Standards Board (FASB)/International Accounting Standards Board (IASB) published a Discussion Paper, *Preliminary Views on Revenue Recognition in Contracts with Customers*, that had the potential to significantly impact revenue recognition for the construction industry.

On May 28, 2014, FASB released Accounting Standards Update (ASU) 2014-09, *Revenue from Contracts with Customers (Topic 606)*. After reviewing this document, we believe that the new changes will not alter the basic philosophy of revenue recognition for construction, but rather will help clarify issues that have been problematic in the past, such as job partitioning and performance obligations related to revenue recognition.

This article will discuss the mechanics of the revenue recognition calculation process for both construction and service operations.

**The Distinction Between Billings & Revenue**

In most businesses, billings and revenue are synonymous and therefore revenue is easily determined. For construction and other professional service industries that work on long-term projects, revenue may not equal billings, requiring other methods to determine revenue and introducing the concept of overbillings and underbillings.

As such, the mechanics of recognizing revenue in the construction industry can cause considerable discussion and debate.

Revenue in the abstract is the amount that can be recognized in proportion to the amount of work performed, consistent with the contract’s terms and conditions. While other variables used to calculate a job’s gross margin are easily determined (e.g., the contract amount and the incurred costs to date), the calculation of revenue is not as straightforward and can depend on many factors. This is compounded by the fact that there are many types of contracts that can govern the work performed and how revenue is earned.

Assuming that progress billings (Billings) and the cost of construction are entered directly to a company’s general ledger (G/L) income and expense accounts rather than balance sheet accounts first (more on that later), the G/L summary accounts shown in Exhibit 1 are normally involved in determining a contractor’s gross margin and net profit.

Where revenue is calculated as described in the remainder of this article, overbillings and underbillings (on a job by job basis) are defined as:

- **Underbillings** = Revenue - Billings
- **Overbillings** = Billings - Revenue

![Exhibit 1: G/L Summary Accounts](image)
With this accounting structure, the only month-end G/L journal entry required to produce financial statements is the reversing journal entry shown in Exhibit 2.

As mentioned, there is some sentiment for entering all costs and billings to balance sheet G/L accounts prior to moving them to the profit/loss G/L accounts, rather than entering them directly into profit/loss G/L accounts. The first methodology has two advantages:

1) It can provide a higher level of auditability when reconciling G/L balance sheet accounts (which are not zeroed out at the end of each year as P&L accounts are) to job status accounts over multiple year periods.

2) It forces the contractor to explicitly analyze overbillings and underbillings on a monthly basis, or no billings or costs will appear on the P&L statement.

According to U.S. GAAP, where all sources of final entry or subsidiary ledgers (i.e., job cost reports) should tie into the G/L, this method may be the most appropriate. However, it doesn't yield much additional information given the amount of work involved.

Although these financial definitions do not explicitly pertain to the mechanics of revenue recognition within the context of this article, they illustrate how revenue interfaces with other financial information and a company’s highest level of reporting.

### Revenue Calculations for Construction Operations

Of the many types of construction contracts, the most common fall into the categories included in Exhibit 3.

Cost Plus and Cost Plus Fixed Fee type contracts are typically short-term contracts usually with an indefinite duration and for which the scope cannot be easily defined. These contract types, as well as Cost Plus with a Guaranteed Maximum Price (CP/GMP) type contracts (that are normally long-term with a defined scope), are contracts where billing and revenue are the same as long as billing is done on a monthly basis; if not, underbillings come into play.

As such, revenue for these contracts is equal to billings and requires no further discussion here. (See Cost Multiplier Revenue Recognition Method for Cost Plus work as previously mentioned.) In many instances when CP/GMP contracts are in place, if the GMP is not reached upon the contract’s completion, then the contractor shares the remaining difference with its customer per the contract terms.

### The PCM for Lump Sum or Unit Price

The following discussion pertains to the majority of construction contracts that are either Lump Sum or Unit Price, for which the Percentage of Completion Method (PCM) of revenue recognition is prescribed.

Lump Sum and Unit Price construction contracts are defined as long-term contracts (IRC §460(f)(1)) if they are not completed within the taxable year in which they begin. The two accepted revenue recognition methods for long-term contracts are the Completed Contract Method (CCM) and the PCM, in accordance with Accounting Standards Codification (ASC) Topic 605 (formerly Statement of Position (SOP) 81-1, Accounting for Performance of Construction-Type and Certain Production-Type Contracts).

The CCM, which recognizes revenue and costs only when a contract is completed or substantially completed, can be used only under very specific circumstances (i.e., for average business revenue less than $10 million for the past three years).
years, and job duration less than two years). As such, the calculations for CCM work are straightforward and do not require further discussion.

For long-term construction contracts employing the PCM, the method of calculating recognized revenue using the Gross-Profit Approach (Alternative B) is as follows:

Recognized Revenue (RR) = Incurred Costs (IC) + (Percent Complete x Estimated Margin at Completion (EMAC))

EMAC is defined as the Contract Amount (CA) - Estimated Cost at Completion (ECAC), and Percent Complete (i.e., progress towards completion) is the variable that requires the most judgment. Allowable methods for determining Percent Complete include:

- Cost to cost (most popular)
- Efforts expended
- Output method (e.g., units of work performed)
- Selected cost to cost (e.g., only labor costs)

Only when the Cost to Cost method (using all cost categories) is used can the calculation for recognized revenue be simplified to the Revenue-Cost Approach (Alternative A) as proved below:

RR = IC + Percent Complete x EMAC
    (Gross Margin Approach, Alternative B)
RR = IC + [IC/ECAC] x [CA - ECAC]
RR = IC + IC x CA/ECAC - IC x ECAC/ECAC
RR = IC/ECAC x [CA]
RR = Percent Complete x CA
(Revenue-Cost Approach, Alternative A)

**Change Orders**

As a job progresses, it is likely that change orders from the customer will arise. So, how do change orders affect revenue? Customer-driven change orders comprise four types:

1) **Proposed Change Orders** are those which are proposed by the contractor.

2) **Pending/Notice to Proceed Change Orders (Pending Change Orders)** are verbally accepted by the customer, but not officially approved in writing.

3) **Forced Work/Customer Directed Work** is work that the customer forces the contractor to perform and believes is included in the contract, but that the contractor believes is outside the contract’s scope. This will eventually be turned into an Approved Change Order or work the contractor will need to provide without additional compensation, or something in between.

4) **Approved Change Orders** are those which are officially approved by the customer in writing.

Proposed Change Orders do not affect the contract amount, budgeted costs, or the ECAC and therefore do not affect revenue in any way.

Approved Change Orders affect the contract amount, budgeted costs, and the ECAC and therefore affect revenue as previously described. Pending Change Orders occupy a middle space between Proposed Change Orders and Approved Change Orders.

As such, accounting for them depends on the contractor’s practices, including the immediacy of the work being performed and prior experiences with the specific customer.

These practices include:

- Updating the contract amount (with full value of the change order) and revised budget.
- Updating the contract amount (with partial value, such as the cost amount of the change order) and the revised budget.
• Updating only the revised budget, until the change order becomes approved.
• Updating neither the contract amount nor the revised budget until the change order is approved.

If work is to be performed and billed for before the change order is approved, then the Schedule of Values used for billing purposes should contain the full amount including the gross margin – even if the contract amount is not updated with the full Pending Change Order amount.

Differences Between Unit Price & Lump Sum Contracts

While Unit Price contracts are normally associated with Heavy/Highway work (such as bridges, dams, highways, and pipelines) and Lump Sum contracts are normally associated with commercial and industrial applications (such as buildings, petrochemical plants, and pharmaceutical facilities), the actual work performed can be identical for both applications.

From a change order perspective, the main difference is that for Unit Price work, if the installed quantity for a bid item differs from the quantity bid, then an automatic change order is created for the amount calculated as the quantity difference multiplied by the bid item unit price; in a Lump Sum environment, change orders are priced individually based on the change order’s scope of work.

The other and related differences between the two contract types are how they are billed and how change orders impact the contract amount. For illustrative purposes, Exhibit 4 shows a typical Schedule of Values containing bid items/billing items for a single job, as billed under a Unit Price contract as compared to a Lump Sum contract.

The fundamental difference between the two contract types is that under a Unit Price contract, the billable amount for each bid item is based on a fixed unit price for the quantity installed (can be more or less than the bid quantity), and under a Lump Sum contract the billable amount for each billing item is fixed (independent of any quantities installed). This has the following implications.

Front-End Loading

For both Unit Price and Lump Sum contracts, contractors have a tendency to “front-end load” (i.e., place higher relative values on the initial work to be performed) the Schedule of Values so early job billings exceed early job costs and gross margin to provide the greatest early positive cash flow (liquidity). This practice compensates the contractor for unexpected start-up costs and for the retention held by the customer.

(Read about this common practice in “Taking Risks with Numbers: How Far Will You Go?” by Susan L. McGreevy and Kathryn I. Landrum on page 20.)

Bid Unbalancing

Bid unbalancing can be used to maximize contracts profitably and is enabled by the Unit Price billing methodology. A contractor adjusts bid unit prices according to the perception that the customer’s estimated bid quantities are in significant variance with what the contractor anticipates as the actual pay quantities installed. (The contractor’s perception may be correct or incorrect.) By unbalancing bid unit prices to take advantage of the perceived discrepancies, a contractor, if correct, can maximize job profitability by appropriately adjusting the gross margin on bid items where such a difference is perceived.

For example, on a bid item where a contractor perceives that there will be a significant quantity overrun, it makes sense to adjust the markup on that particular bid item upwards, and correspondingly reduce the markup of other bid items that will either be close to or less than the customer’s estimated bid quantities. If the contractor’s calculations are correct, then this can significantly improve the contract’s profit while keeping the total contract bid price unchanged.
very risky; if the contractor’s calculations are not correct in relation to the ultimate quantities installed or if the bid item with the “large markup” is removed from the contract (at the customer’s option), then the contractor can experience large losses.

Despite the risks involved, the practice of unbalancing (within limits) is common and often accounts for the difference between successful and unsuccessful contracts. The success of bid unbalancing depends on the expertise of the person/ estimator taking off the job’s quantities, and his or her ability to understand the entire scope of the job.

(“Taking Risks with Numbers: How Far Will You Go?” on page 20 also covers this common practice.)

**Accounting for Anticipated Losses on Jobs**

Notwithstanding the previous comments, GAAP/ARB 45 requires that the full amount of an anticipated job loss be recognized in the period in which the loss becomes evident. This arises when the EMAC (CA - ECAC) becomes negative. Contractors are required to make provision for such anticipated losses without regard for the job’s state of completion at the time of recognition.

Since the provision for the anticipated loss on a job is an additional cost, it should appear on the P&L Statement as a cost, rather than a reduction in revenue.

When determining if a job is in a loss position, consider how the pending contract change order amounts are being handled, as previously discussed.

**Revenue Calculations for Service Operations**

For purposes of this article, service operations provide ad hoc service and planned/preventive maintenance work (preventive maintenance) by businesses such as HVAC contractors. While construction and service operations can be synergistic and compatible, they have completely opposite metrics as indicated in Exhibit 5.

Even though these disparities exist, and managing and performing these two operations requires different skills, the revenue recognition mechanics for service operations are similar to those of construction in some ways. There are generally three types of Service Work performed:

1) Work on equipment that is covered by a service agreement (hereafter referred to as service agreement).

2) Work on equipment that is covered by a service agreement for some types of work (e.g., inspection) but not covered for other types of work (e.g., repair) under the terms of the service agreement.

3) Work on equipment that is not covered by a service agreement.

**Service Work Not Covered by a Service Agreement**

Except for a single difference, the second and third non-agreement covered service work types are billed on Time & Materials (T&M) work orders/service orders (service orders), and revenue is recognized in the same way as the three Cost Plus construction contracts displayed in Exhibit 3. In the case where service orders have a quoted price, their revenue recognition can be treated the same as the Lump Sum construction contracts displayed in Exhibit 3, provided a cost budget is available.

The difference referred to is due to the need for a quick billing turnaround associated with nonagreement nonquoted price covered service work billings. The portion of such billings for nonlabor and noninventory costs is based on outstanding purchase orders rather than incurred costs (i.e., posted invoices).

This requirement means that when recognizing revenue, the portion of the billing that is based on purchase order outstanding commitments needs to be deferred, or the costs associated with the outstanding commitments need to be accrued. Exhibit 6 shows the reversing journal entry for the latter case (which is most commonly used) and the deferral (revenue can be accrued instead) of costs for service orders that are in process but have not been billed.
Service Work Covered by a Service Agreement

Revenue recognition calculations for service work covered under a service agreement depend on the type of work to be performed and the contract’s terms and conditions. The predominate number of agreements are Preventive Maintenance agreements requiring scheduled work at different intervals, covering specified equipment, and explicit services as described in the agreement terms.

Such agreements established for a definite period of time (typically a year) and subject to the customer’s concurrence are automatically renewed (evergreen) once the agreement’s end date has been reached. These agreements have scheduled billings and scheduled revenue recognition dates and amounts. In addition, Lump Sum agreements may be used for small one-time agreements similar to Cost Plus construction jobs, and Time of Service agreements that are similar to the Scheduled agreements, except the billing and revenue recognized only after the scheduled work has been completed. Exhibit 7 summarizes commonly used agreement billing types and associated revenue recognition methods.

Agreements with a Scheduled billing type typically have a schedule for billings and a schedule for revenue recognition. Exhibit 8 shows an example of these schedules for an annual service agreement that is billed at the start of the agreement with revenue to be recognized on a monthly basis for the duration of the agreement.

Agreements with a Time of Service billing type are billed when the scheduled preventive maintenance is completed, at which time the revenue is recognized.

When revenue is recognized for agreements with Scheduled or Time of Service billing type agreements, outstanding commitments need to be taken into consideration as part of the revenue recognition process (as was the case for the second and third non-agreement covered Service Work types, and unlike revenue for construction work where the ECAC includes all outstanding commitments).

A Construction Job, a Service Agreement, or a Service Order?

The question often arises “Where do you draw the line between a job and a service call?” (This very query was asked in an April 4, 2014 posting to CFMA’s Connection Café.) The answer depends on:

- how your company is organized,
- the size and duration of the work,
- which part of the business is less busy at the time,
- the capability of the software being used, and
- the customer’s requirements.

However, if it starts as a service order and turns into a job, then the transition can usually be easily made for the ongoing work.

A Few Words Regarding Overbillings & Underbillings

As mentioned throughout this article, the computation of overbillings and underbillings is part of the revenue recognition process for both construction and service work. In
addition to being an important part of that process, analyzing the reason for overbillings and underbillings is an important part of managing construction and service work.

While overbillings are normally a good sign that work is being performed, the customer is happy, and cash flow will be positive, underbillings should be a major warning for the following reasons:

1) A poorly developed “back-end loaded” Schedule of Values on Lump Sum work. An exception to this is on Unit Price work where the risky practice of unbalancing the bid item schedule has been used to improve profitability.

2) Billing tardiness due to lack of time or forgetfulness.

3) Billing tardiness because the customer is not receptive to another bill, due to unresolved work-related issues or schedule slippage, or poor quality of work performed to date.

4) The incorrect updating of forecast/ECAC with amounts being too low, resulting in the EMAC being too high and in an “apparent” underbilling; if the ECAC amount was proper, then the work might be overbilled. In this instance, the “apparent” underbilling is a symptom of a potentially much larger problem – a falling gross margin.

While all of these reasons may indicate problems, they get progressively worse as you go down the list and should be acted upon accordingly. Underbillings can be sign of serious problems and frequently occur when other financial metrics are favorable.

When work on a project is completed and the project is finally billed, the overbillings and underbillings become zero by definition.

Exhibit 10 shows company-wide overbillings and underbillings percentages of revenue for three construction classifications for all participants in CFMA’s 2013 Construction Industry Annual Financial Survey.

Conclusion
The revenue recognition mechanics for construction and the related service industry have stayed the same for a long period of time. Except for how the contract amounts are allocated to separate performance obligations, ASU 2014-09 has not significantly changed the mechanics for the many types of construction/service work encountered in today’s construction environment.

RICHARD L. WERNER, PE, is Chairman of Construction Industry Solutions USA (COINS USA) in Latham, NY. COINS USA develops, sells, implements, and supports enterprise software for the construction and service industries.

Dick earned a BS in Civil Engineering from Bucknell University, an MS in Civil Engineering from Cornell University, and an MBA from Northeastern University. He has taught at Cornell University, the Pratt Institute, and Union College. A frequent speaker and writer on construction industry issues, Dick is a longtime CFMA member and contributor to CFMA Building Profits.

Phone: 518-242-7200
E-Mail: richard.werner@coins-global.com
Website: www.coins-global.com

BRIAN DRUMM is Delivery and Product Director for Construction Industry Solutions Corp (COINS) in Latham, NY, that develops, sells, implements, and supports enterprise software for the construction and service industries.

Brian is responsible for planning projects and managing the COINS services required to meet project goals as well as overseeing product development and direction.

With more than 17 years of experience implementing construction software systems and a BS in Applied Economics and Business Management from Cornell University, Brian is highly qualified in job status and project management applications and proper general structuring.

Phone: 518-242-7200
E-Mail: brian.drumm@coins-global.com
Website: www.coins-global.com

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<th>Contractor Classification</th>
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<th>Overbillings</th>
<th>Underbillings</th>
<th>Percent Overbilled</th>
<th>Percent Underbilled</th>
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<td>Industrial &amp; Nonresidential Construction</td>
<td>187,699,070</td>
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<td>Heavy &amp; Highway Construction</td>
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<td>Mechanical Construction/Service (NAICS 238200)</td>
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