



Long-Term Construction Using The Percentage-Of-Completion Method: A Teaching Aid

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Abstract

The percentage-of-completion method of accounting for long-term construction projects represents an important exception to the principle that revenue is not recognized until the associated performance obligation has been fully satisfied. This method remains relevant, despite the recent Accounting Standards Update (ASU) from the Financial Accounting Standards Board (FASB) that rewrites much of the existing guidance on revenue recognition. Our paper reviews the application of the percentage-of-completion method and presents an Excel spreadsheet that can be used by instructors to help teach the topic and by accounting students to help solidify some of the more difficult concepts. The teaching aid presented also allows instructors to advance the discussion beyond where most intermediate accounting textbooks' discussions stop.

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LONG-TERM CONSTRUCTION USING THE PERCENTAGE-OF-COMPLETION METHOD: A TEACHING AID

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INTRODUCTION

The percentage-of-completion method of accounting for long-term construction projects represents an important exception to the principle that revenue is not recognized until the associated performance obligation has been fully satisfied. This method remains relevant, despite the recent Accounting Standards Update (ASU) from the Financial Accounting Standards Board (FASB) that rewrites much of the existing guidance on revenue recognition. Our paper reviews the application of the percentage-of-completion method and presents an Excel spreadsheet that can be used by instructors to help teach the topic and by accounting students to help solidify some of the more difficult concepts. The teaching aid presented also allows instructors to advance the discussion beyond where most intermediate accounting textbooks' discussions stop.

BACKGROUND

ASU No. 2014-09

In 2014, the two major accounting standard-setting bodies, the FASB and the International Accounting Standards Board, issued their jointly prepared and long-awaited standards establishing new, principles-based guidance on revenue recognition (see ASU No. 2014-09 and International Financial Reporting Standard No. 15, both titled *Revenue from Contracts with Customers*). ASU 2014-09 created a new topic in the Accounting Standards Codification (ASC), Topic 606 – Revenue from Contracts with Customers. The new content is effective for public entities with fiscal years beginning after December 15, 2017, and for other entities a year after that. To help students and instructors build familiarity with the new content, when referencing the Codification's revenue guidance in this paper, we cite from Topic 606.

Topic 606 provides guidance on the timing of the recognition of revenue, including complex customer contracts. The new guidance leaves intact the prior accounting for the recognition of revenue for long-term construction contracts. In those circumstances where reasonable estimates can be made, the percentage-of-completion method continues to be the preferred method (see ASC 606-10-25-27, 25-31 and 25-36). Otherwise, the completed-contract method should be used. Our focus in this paper will be the percentage-of-completion method.

Percentage-of-Completion Method

The percentage-of-completion method provides for the recognition of revenue before the contract is completed and the performance obligation has been satisfied. This is obviously much earlier than the typical revenue-generating customer contract. The amount of revenue to be recognized is based upon an estimate of the stage of completion of the contract (see ASC 606-10-25-31 and 25-32). When that revenue determined to be recognized is matched with the construction costs incurred in the current year, the resulting gross profit to be recognized will

ensure a “project-to-date” gross profit figure which equals a percentage of the total projected gross profit on the contract.

So, for example, if we estimate that we are 30 percent complete on a \$1,000,000 project, we should be recognizing a total of \$300,000 of construction revenue to date. In the current year, we must recognize an amount of revenue that will bring our project-to-date revenue to that level, by subtracting revenue that had been recognized in prior years. When we match this year’s construction costs against that construction revenue, we will see a gross profit which, when added to prior years’ gross profit, will produce a project-to-date gross profit of an amount equal to 30 percent (in this case) of the total projected gross profit on the project.

Recognizing revenue prior to the delivery of the finished project is justified by the nature of this transaction. Topic 606 gives three indicators that a performance obligation is satisfied over time. The one likely to be met for most long-term construction projects is that an entity’s performance does not create an asset with an alternative use, combined with the entity having a right to receive payment for the work completed to date (ASC 606-10-25-27(c)). The second aspect refers to a right to receive payment for work completed should the customer or another party terminate the contract (§25-29). If an entity meets the conditions stated in §25-27(c), it must proceed with recognizing revenue over time, as the work progresses (§25-31).

Estimating the Stage of Completion

The stage of completion used in the example above can be estimated in a number of different ways. Topic 606 supplies the guiding concept, which calls for an entity to employ a measure of progress in transferring control of the constructed item to the customer (ASC 606-10-25-31). The topic identifies two types of methods for determining the progress to date, output methods and input methods (§25-33). Output methods look to what an entity has delivered to the customer thus far, relative to the total amount promised (ASC 606-10-55-17). The delivered and total amounts could be measured in terms of value, quality or time. Input methods look to the resources the entity has used thus far, relative to the total expected amount (§55-20). Examples include materials used, labor hours used and construction costs incurred.

The input method based upon construction costs incurred probably is the most widely used approach in practice. This approach, commonly referred to as the cost-to-cost method, draws upon information an entity already tracks in order to use the percentage-of-completion method: the cost incurred to date and the estimated costs to complete the project. The measure of progress under this method is simply the costs incurred to date, as a percentage of the estimated total project costs. Topic 606 permits entities to use this method, as long as the rate of incurrence of costs is indicative of the progress toward completion of the project (§55-21).

We adopt the cost-to-cost method for our Excel spreadsheet. As noted, the method is widely used. Intermediate accounting textbooks tend to emphasize it as well, so students should be familiar with it. In addition, the FASB uses this method in Example 19 – Uninstalled Materials (see §§55-187 to 55-192).

RECOGNITION OF LOSSES ON A CONSTRUCTION PROJECT

There are two circumstances where the percentage-of-completion method will report a negative gross profit for a particular year. One where there is an overall positive gross profit on the project and the more severe case where there is an overall projected negative gross profit on the project.

Overall Profitable Project

The first case is where the prior years' projections had been overly optimistic. The current year's estimate of costs to complete therefore reduces the projected total gross profit on the project, nonetheless maintaining a positive gross profit on the overall project. Applying the method described above will result in the current year's construction costs exceeding the year's construction revenue estimate. This will create a *negative* gross profit, while the accumulated project-to-date gross profit recognized on the books is *positive* (i.e., the prior years' overly optimistic calculations and this year's negative calculation). The accumulated gross profit on the project will still be positive and will equal the total project gross profit times the estimated stage of completion.

For example, assume that at the end of the first year of the project, the cost-to-cost based estimate of the stage of completion suggested that the project was 20 percent complete and the projected total gross profit on the project was estimated to be \$200,000. Applying the percentage-of-completion method would result in the reporting of \$40,000 of gross profit. Now, as of the end of the second year of construction, we determine that we are 45 percent complete, but given our projection of costs required to complete the project, our projected total gross profit has dropped from the prior year's \$200,000 to \$80,000. Therefore, the company will be required to report a project-to-date gross profit of \$36,000 (45 percent of the projected \$80,000 gross profit).

Even though the projections are not as optimistic as of the end of the prior year, the project is still projected to be profitable. To achieve the project-to-date gross profit amount of \$36,000, we will need to report a *negative* gross profit of \$4,000 for the second year. Combining the first year's positive gross profit of \$40,000 with the second year's negative gross profit of \$4,000, the company now shows an accumulated project-to-date gross profit of \$36,000. Simple application of the percentage-of-completion method described above will accomplish the desired results.

In this example, the projected total gross profit on the project declined during the second year from \$200,000 to just \$80,000. No reason was given. There are, in fact, two distinct sources for such a decline: higher than expected costs incurred in the current year, and a projection of higher costs to be incurred in the future. The former increases the current year construction expense, putting downward pressure on the current year's gross profit. The latter decreases the estimated completion percentage under the cost-to-cost method, resulting in a smaller revenue figure, and a smaller gross profit, for the current year. Both of these sources have the potential to create a loss in the current year for an overall profitable project.

Overall Loss on Project

Reporting in year overall loss arises. A similar, but rather more severe, set of circumstances occurs when the estimates made at year-end suggest that there will be an overall loss on the contract. The accounting concept of conservatism generally calls for earlier recording of expected losses than expected gains. Surprising to many, in 2010, the FASB dropped this concept from a revised set of qualitative characteristics that, together, define useful information (see Statement of Financial Accounting Concepts No. 8, *Conceptual Framework for Financial Reporting* (Chapters 1 and 3), ¶BC3.27). Although the Board dropped conservatism as a desired trait, the many treatments based upon it continue to survive in the Codification. The accounting for an overall loss on a long-term construction project is a good example.

Under existing standards, we are required to report not the estimated *percentage* of the total projected negative gross profit on the project, but we must report the *entire loss* in the current period (see ASC 605-35-25-46 Pending Content). That projected negative gross profit would have to incorporate projected costs that have not yet been incurred. Therefore, we are going to have to “borrow” costs from the future and report them as part of our construction expenses in the current year, in an amount sufficient to report the entire projected negative gross profit. The method we have been describing would result in the reporting of a loss which would only amount to a project-to-date loss of a percentage of the projected total loss, not the complete loss.

There is another way to derive the amount of costs that need to be borrowed from future periods. If, for example, we are projecting a total negative gross profit of \$100,000 and we determine that we are 70 percent complete. The normal approach discussed above would result in a project-to-date negative gross profit of \$70,000, as we have not reflected the unfinished 30 percent of our project, or the additional \$30,000. That would be the amount of cost to “borrow” from the future in order to report the entire \$100,000 loss on the project.

Reporting in subsequent years. While the accounting treatment in the first year of a projected overall loss is interesting, it is more interesting and challenging in the subsequent year or years of the project. As an illustration, if there is a projected loss in the second year of the contract, resulting in costs being “borrowed” from future years in order to report the required amount of loss, what happens in the third year?

There are several possibilities. One is that a change in fortune has now removed the cloud of a potential loss and the company is now projecting an overall profit. In that case, all of the “borrowed” costs would be returned by reporting a lower cost of construction in the current year. Another potential scenario is that the company is still projecting a loss, but that loss is not as great as the amount that had been projected as of the end of the second year. In this case, the company would return some of the “borrowed” costs to reduce the overall projected loss to its current estimate. Yet a third scenario is that the company is still projecting a loss, but an even greater loss than that projected at the end of the second year. In this case, the company would have to “borrow” some additional costs from the future.

By working through several of these scenarios, the student can gain a deeper understanding of the intricacies of the percentage-of-completion method. However, most intermediate accounting textbooks present the percentage-of-completion topic in the context of a project which begins and ends within a three-year time frame. Given that, the projected contract loss arises in the second year and is obviously resolved, one way or the other, in the third and last year. While this approach does introduce the topic, it fails to capture some of the more interesting aspects of the accounting issues. A construction company certainly may project an overall loss one year and follow up the next with a more favorable projection. How does that scenario affect the “borrowing” and “repayment” of costs and the financial reporting in those years? Understandably, intermediate accounting textbook authors are constantly dealing with balancing book length with topic coverage, and editing decisions must be made. That said, this paper and the attached Excel spreadsheet provide an instructor and students a means to explore an interesting topic in a bit more depth, perhaps as an assigned project or extra credit opportunity.

EXCEL SPREADSHEET

The attached spreadsheet is designed to accept the variables for a long-term project which will have activity of up to four accounting periods. The variables to be entered on the “Data Input” Worksheet include:

- the year construction begins,
- the contract price,
- the costs incurred in each of the four years of activity,
- the estimate of remaining costs to be incurred at the end of each year,
- the amount of contract billings in each year and
- the cash collections in each of the years.

Once those variables are entered, the spreadsheet will perform all of the underlying computations and prepare the required journal entries for each year of the project and the final entries at the conclusion of the project.

(To access the Excel spreadsheet, save and open this document in a pdf reader such as Adobe Acrobat, and click on the Attachments icon.)

The spreadsheet provides an initial illustration. Values have been entered for the six variables. The initial illustration includes a projected overall loss on the contract in the second year. The overall loss disappears in the third year, but then reappears as a finalized loss at the end of the fourth year. The illustration provided can easily be modified by changing the values for any or all of the six variables.

IMPLEMENTATION

One of the authors used this teaching aid in an intermediate accounting course taught during the Fall 2016 semester. The author made the teaching aid available to students as an extra-credit opportunity worth 15% of the value of an exam. The author set the timeframe as 2015 to 2018 and asked the students to supply values for the other five variables. Students were instructed to compute by hand the yearly revenue, expense and gross profit amounts, and then compare their answers with those produced by the Excel spreadsheet. To receive full credit, they needed to introduce a projected overall loss in at least one of the years. The students performed reasonably well, and none of them noted any problems with using the spreadsheet tool.

CONCLUSION

The attached spreadsheet offers the student an interactive and dynamic exercise to examine how profits and losses are allocated across accounting periods, under different sets of circumstances. They can create any number of different examples and test themselves against the solutions provided by the worksheet.

REFERENCES

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