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Long-term Construction Contracts: The Impact of Tamra '88 on Revenue Recognition

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This article discusses the accounting process for a long-term construction contract, and the effect of recent income tax reform on revenue recognition for income tax liability purposes. The Tax Reform Act of 1986 (TRA '86) introduced several significant changes in tax accounting for long-term construction projects. Further tax legislation reform was promulgated via the Technical and Miscellaneous Revenue Act of 1988 (TAMRA '88). Prior to the promulgation of these income tax reform acts, a contractor could use the percentage-completion method for reporting income to creditors and investors, while using the completed-contract method for income tax recognition purposes. After TRA'86 and ending with TAMRA'88 tax legislation, the contractor is now required by law to utilize a 90/10 split for an income recognition schedule if a contract is longer than two years and the contractor has sales of more than $10,000,000 per year.

Key Words: Construction Contract, Percentage-Completion Method, Completed-Contract Method, Long-Term Construction Accounting

Introduction

As a construction project progresses toward completion, the contractor is periodically compensated for construction expenditures. The income generated by completed work is termed earned value. While earned value for completed work is easily determined, income recognition for work in process is more complex. In order to deal with this complexity, the United States Treasury Department has allowed the contractor to use either the percentage-of-completion method of accounting or an alternative method of financial reporting termed completed contract (Pirrong, 1987). The primary difference between the two methods involves the timing of revenues and expenses for income tax purposes. The Tax Reform Act of 1986, and the Technical and Miscellaneous Revenue Act of 1988 have significantly modified revenue recognition for long-term contracts and, thereby dramatically altered how a contractor currently accounts for contract income and the subsequent tax liability that incurs.

The purpose of this article is to present traditional approaches of accounting for long-term construction contracts, and to illustrate how recent tax legislation has materially affected income tax liability for construction firms.

Generally Accepted Accounting Principles

Financial accounting for a construction firm is the process of identifying, measuring, recording, and communicating economic data to management for decision-making purposes (Hobbs, & Moore, 1984). To accomplish this task, the construction accountant utilizes the following three financial statements: (a) the income statement, (b) the balance sheet, and (c) the statement of cash flow (Reynolds, Hillman, & Kochanek, 1988). The income statement summarizes the results of the income producing operations for a particular accounting period (Thomsett, 1987). The balance sheet recapitulates the financial position of the firm at a particular economic point in time (Halpin, 1985; Adrian, 1988). The statement of cash flow summarizes and predicts the expected cash inflows and outflows for the company during a designated interim accounting period (Gitman, 1989; Ross, Westerfield, & Jordan, 1991).

Financial transactions occur on a daily basis for a construction organization. Examples of such transactions are: (a) material purchases, (b) leases for equipment, and (c) vendor invoices. These types of financial transactions are generally referred to as external accounting transactions. Internal accounting transactions record: (a) payroll for employees, and (b) depreciation expense for capital assets (Hobbs et al, 1984).

The accounting cycle for a construction company is based on the duration period of individual construction contracts (Callan, & Rice, 1993). The reporting methodology that directs the presentation of such financial information is termed generally accepted accounting principles (GAAP). The American Institute of Certified Public Accountants (AICPA) first promulgated these principles in 1964 as a Special Bulletin. GAAP was later adopted as an appendix to the Accounting Principles Board (APB) Opinion No.6. In short, GAAP sets forth the fundamental accounting principles and practices required of an economic entity that publicly publishes financial statements (Kieso, & Weygandt, 1983).

The first element in the GAAP framework is the accounting principle matching. The matching technique associates expenses with revenues. Thus, expense recognition is a function of revenue recognition. The matching technique is fundamental to accrual basis accounting and serves as the primary difference between it and the method termed cash basis accounting (Reynolds et al, 1988; Thomsett, 1987).

The element of consistency provides for comparability of financial information from one period to the next in the sequence of productions and operations cycles. The intent of the consistency principle is to keep the reporting of financial information consistent across accounting periods so that comparable basis financial analyses can be made regarding the economic activity of the construction organization across time.(Kieso et al, 1983; Neveu, 1985).

The principle of materiality relates to the importance of a particular financial transaction. A financial transaction is considered significant if its inclusion or omission would influence or change the decision making of the end user (Welsch et al, 1979). Conservatism is an accounting principle that disallows overstatement of financial information. The principle of conservatism advances the accounting axiom that assets and income of the firm will be reported at the lowest probability of overstatement (Hobbs et al, 1984).

Another element that formulates the framework of GAAP is the principle of periodicity. Because financial statements are prepared at regularly specified time intervals throughout the lifetime of a construction firm, the principle of of periodicity maintains that items of expense and revenue be properly recorded in the accounting period incurred for proper income recognition and subsequent tax determinations (Reynolds et al, 1988).

The last GAAP element is revenue realization. Under the paradigm of accrual basis accounting, revenue is realized only when earned (Hobbs et al, 1984). That is, the point in time when the sale for services or products has been transferred.

Financial Accounting Methods

There are two basic accounting methods available to the construction contractor for expense and revenue recognition purposes (Reynolds et al, 1987; Adrian, 1988). One method is termed the cash basis of accounting. The second accounting method is the accrual basis approach. The fundamental distinction between cash basis accounting and that of accrual basis accounting lies in the recognition, recording, matching, and reporting time of a financial transaction (Kieso et al, 1983).

Under the cash basis, both revenue and expenses are recognized in the accounting period in which cash is received or remitted. Income from operations is thus calculated as the difference between cash collected and cash disbursed for the accounting period. Financial reporting employing this method does not accurately reflect the true financial position of the construction firm (Hobbs et al, 1984; Bazley et al, 1991).

Conversely, the accrual basis of accounting recognizes revenue earned in a period with those expenses incurred in that period. Therefore, under the accrual method it is immaterial when cash is received or remitted. Thus, under GAAP standards, accrual accounting recognizes revenue with financial transactions in the accounting period that affixes a right of title to receive such revenue for labor, services, and materials rendered to date (Bazley et al, 1991).

The important distinction between these two accounting methodologies lies in the ability of management to properly recognize the true financial position and structure of the firm relative to its assets (receivables) and liabilities (payables) composition. The failure of the cash basis approach is in not recognizing cash collectibles and cash disbursements until actually transacted.

Methods of Accounting for the Construction Industry

Accounting for a construction firm is predicated solely on the concept profit center measurement. AICPA Statement of Position (SOP) 81-1 defines a profit center as a single contract for construction. By cost accounting definition, a profit center is any subunit or segment of an organization that is assigned both revenues and expenses for an activity or group of activities that generate profits or losses that can be segregated and separately measured and analyzed by its profit contribution to the organization (Deakin and Maher, 1987). The AICPA promulgation of

the Audit and Accounting Guide "Construction Contractors" identifies four fundamental types of construction contracts for profit center measurement. These contract types are classified according to different pricing arrangements and titled as: (a) fixed-price or lump sum, (b) time-and-material contracts, (c) cost-type (fee, or percentage), and (d) unit price contracts (Callahan et al, 1993). The focus on individual contracts (profit center accounting) is a unique aspect of financial reporting for the construction industry. Thus, the accounting methodologies utilized by a construction organization to recognize income from construction operations differs significantly from that of other methods employed in different business environments (AICPA, Statement of Position 81-1, 1993).

Income recognition in the construction industry is a process that involves measuring financial results for operation across long-term duration periods and accurately assigning these results to relatively short-term accounting periods in compliance with the matching principle under GAAP (Callan, et al, 1994). Thus, the uniqueness of accounting for a construction firm centers on the problem of correctly determining revenue, expenses, and hence, gross profits in the appropriate accounting period. Recognition has to do with income tax liability (Callan, et al, 1994). For smaller construction contractors, this problem of revenue recognition is not significant. In fact, as a result of the Tax Reform Act of 1986, a contractor whose annual gross revenues average less than $10 million per year and with contracts that have duration periods less than two years must use the traditional accrual or cash basis of accounting when recognizing gross profit (Pirrong, 1987). Therefore, accounting for revenue, cost, and gross profit is performed identically to that of any other business organization where revenue and expenses do not exceed one year (Halpin, 1985; Adrian, 1988; AICPA, 1993). The AICPA has not promulgated or defined what exactly constitutes a long-term contract. The general rule applied however to the construction industry is any contract that exceeds one year in duration.Revenue recognition for a long-term construction contract is complicated by progress billings. Typically, a contractor unbalances progress payment billings in relation to actual work performed. Therefore, the actual cost incurred may significantly overstate contract profits in the earlier stages of construction and, thus, understate profits in later phases (Combs & Palmer, 1984; Halpin, 1985). The primary reason a contractor accelerates billings ahead of actual cost is to enhance the working capital position of the firm so that the construction project itself may be financed from its own internally generated cash flow.

The two generally accepted accounting methodologies for long-term construction contract financial reporting are: (a) the Percentage of Completion Method, and (b) the Completed Contract Method (American Institute of Certified Public Accountants, Accounting Research Bulletin No. 45, 1955). A modification of the percentage-of-completion method termed the Units of Delivery Method was pronounced in an AICPA publication titled Audits of Government Contractors (Callan et al, 1994; Combs et al, 1984).

Accounting Research Bulletin (ARB) 45, in conjunction with SOP 81-1, requires a contractor to use either method of long-term contract accounting when the contracted for work exceeds one year (this definition has been redefined by the Tax Reform Act of 1986). ARB 45 also defines the conditions in which either method of contract accounting should be applied in actual practice. Moreover, SOP 81-1 at paragraph 21, maintains that the two methods are not acceptable alternates under the same set of contractual conditions (AICPA, 1993).

AICPA guidelines clearly establish a preference for use of the percentage of completion (POC) method for profit center measurement on the theory that revenues and gross profits are earned as the job progresses through time. Conversely, the completed contract method of accounting recognizes contract gross profit only when the project is contractually completed. Thus, construction cost are accumulated in an inventory account referred to as Construction-in-Process, while progress billings are accumulated in a contra inventory account titled Billings on Construction in Process (Hickok, 1985; Kieso et al, 1983; Combs et al, 1984).

In practice, approximately 90% of the construction companies utilize the POC method (AICPA, 1993). Reason being is that the POC method is used to present financial reporting and the CC method is used for income tax reporting purposes. The advantage of utilizing the two methods for the different financial purposes is the ability to defer the tax liability until the end of the contract while still recognizing the income in financial reports as earned for the present period.

Percentage-of-completion Method

The POC method recognizes revenues, costs, and gross profits as work progresses toward completion on a long-term contract (Millner, 1988; Lucas, 1973). To defer recognition of these items until completion of the entire contract is to misrepresent the efforts (cost) and accomplishments (revenues) from construction operations for the interim accounting periods (Halpin, 1988; Thomsett, 1987). In order to apply the POC method, one must have some basis or standard for measuring the progress toward completion at particular interim dates (Thomsett, 1987). Therefore, the SOP 81-1 recommends the POC method as the preferable accounting methodology for long-term contracts (profit center) when estimates are reasonably dependable. Moreover, SOP 81-1 sets forth certain conditions that should exist in order for a construction company to apply such a method. Such provisions are: (a) the contract includes provisions that clearly specify enforceable rights regarding goods or services to be rendered under the terms and conditions of the agreement, (b) the seller of the goods and services can be reasonably certain that the purchaser will satisfy the contractual obligations under the contract, and (c) the contractor reasonably expects to perform the contractual obligations (AICPA, 1993).

With the POC method, gross profits and revenues are recognized for a given contract on a proportional basis in relation to the progress yielded by construction operations towards completion of same (Bazeley et al, 1991). The advantage of this accounting paradigm is that it reflects actual revenue earned on a particular project on a current basis and, as such, results in an improved cash flow reporting model for the contractor (Halpin, 1988). According to the AICPA (1993), the disadvantage of the methodology is that it relies on cost estimates by management that are subject to a high degree uncertainty. The gross profit margin accrued is allocated to each accounting period based on the portion of the projected estimated cost to be complete, which is the ratio of the current periods actual contract cost to the total estimated cost of the contract. Because of the proportional recognition of gross profit each period, the POC method is essentially an accounting hybrid of the cash Basis and the accrual basis of accounting. As such, it recognizes revenue, expenses, and income throughout the entire building contract period for completed work in place (AICPA, 1993; Adrian, 1988, Welsch et al, 1979). The POC method is dissimilar however to the aforementioned accounting methods because contract income is

realized on the basis of contract value earned rather than cash collected or billed receivables to date. The complication and measurement associated with a long-term construction contract exist because of the unconventional construction in process inventory account. Since inventory valuation directly affects contract income measurement, tax liability, and reporting of the financial position of the construction firm (Pirrong, 1987). The estimated amount of income recognized each period is accrued by debiting Construction-in-Process and simultaneously crediting Income on Construction (profit centers). The latter account is subsequently closed at the end of the accounting period and is reported on the income statement for the period in question (Combs et al, 1984; Kieso et al, 1983; Welsch et al, 1979; Thomsett, 1987). It is the recognition of the appropriate income and inventory accounts and, hence the recording of over billings and under billings that separates the POC method from the accrual method of accounting (Bazley et al, 1991; Halpin, 1985; Adrian, 1988).

There are several techniques utilized by the accounting profession when employing the POC method to establish value earned on a profit center. These techniques are: (a) the cost-to-cost method, (b) the effort-expended method, and (c) the units-of-work performed (Callan, 1994; Combs et al, 1984). The objective under each of these various techniques is to measure the extent of progress in terms of costs, units, or valued added for a given profit center for the range amounts in the appropriate accounting period. These POC techniques utilize the concepts of input and output measures. Such measures are categorized as costs incurred, labor hours worked, tons produced, or miles of pavement installed. Input measures are dimensionally classified as efforts devoted to completion of the contract. Conversely, output dimensions are categorized as results obtained (Kieso et al, 1983; Bazley et al, 1991).

The difficulty in using the POC techniques lies with the ability of management to make reasonably accurate and quantifiable cost estimates of construction progression towards completion of the contract, and from difficulty in projecting the final gross profit with some degree of accuracy for income tax purposes (Hickok, 1982; Wright and Mazurkiewicz, 1988). Owing to current tax legislation (starting with Tax Reform Act of 1986), and because the AICPA (1993) advocates the use of the cost-to-cost (CTC) method most Certified Public Accountants prefer the CTC technique (Pirrong, 1987; Adler, 1989; Accounting Review Board No. # 45). As a result, the POC method under the CTC technique is the most often applied methodology in the accounting profession when attempting to ascertain gross profits from a construction contract (Adler, 1989). Therefore, the following presentation and discussion of the POC method will be predicated on the basis of the CTC technique of accounting for revenues, expenses, and gross profits for a long-term contract.

Under the CTC technique, the POC method is quantitatively measured by comparing costs incurred to date against a most recent estimate of the total costs to complete a contract. The equation to accomplish this calculation is:

$$\frac{(CIEP)}{(RETC)} * (100) = PC$$

where:
CIEP = Costs incurred end of period
RETC = Recent estimate of total costs
PC = Percent Complete

The percentage of costs incurred to date is then multiplied by the total contract revenue to estimate total gross profit on the contract and, thereby derives the revenue and the gross profit amounts to be recognized to date for financial reporting purposes. The amounts of revenue and gross profit recognized each year are computed as follows:

$$\frac{(CIEP)}{(RETC)} * (ETRC) - (TRRPP) = CPR$$

where:
CIEP = Costs incurred end of period
RETC = Recent estimate of total costs
ETRC = Estimated total revenue (or gross profit) from the contract
TRRPP = Total revenue (or gross profit) recognized in prior periods
CPR = Current period revenue (or gross profit)

The following example, Tables 1 through 9, demonstrates the technique of recognizing revenues, costs, and gross profits for interim construction operations under the POC method when utilizing the CTC technique of accounting for a long-term construction contract. Table 1 displays the calculations for the percentage complete amount for each year the contracted for work is being completed for income recognition purposes.

On the basis of the data display above, journal entries would be entered into the appropriate accounts to reflect financial transactions that impact the accounts: a) cost of construction, b) progress billings on the contract, and c) recording of collections. Table 2 provides a summary of these typical journal transactions. In 1993, the cost of completion calculation for the contract is derived by $2,000,000/ $5,000,000, which equals 40 percent complete. This earned value is predicated on $2,000,000 in cost incurred to date on projected (estimated) total cost of $5,000,000. Therefore, revenue for 1993 is based on $5,500,000 contract price to date multiplied by the 40 percent complete, which equates to recognized revenues for the accounting period 1993 in the amount of $2,200,000. Multiplying the 40 percent complete factor by the estimated gross profit projection for the contract period 1993 subsequently derives the annual gross profit before taxes. On the basis of data derived in Table 1, subsequent years percentage completion calculations and associated revenue and gross profit recognition are derived and displayed in Table 3.

The costs incurred to date, when taken as a proportion of the estimated total costs to be incurred to complete the contract, measures the extent of construction progress toward completion of the contract. Table 3 displays the calculation necessary for recognition of estimated revenue and gross profit for each year of the contract.

As construction operations progress towards completion of the project, journal entries are routinely made through out the year to recognize revenue and the applicable proratable amount of generated gross profit in each year in order to record final completion of the contract in the last year. The total amount of gross profit recorded in the last year is the amount the contractor would report for income tax purposes. Displayed in Table 4, is the revenue generated from the long-term contract, which is credited in the amounts calculated in Table 3, while gross profit is computed as above and then debited to Construction-in-Process account.

Table 1

Percentage of Completion: Cost-to-Cost Method

Facts:
Aggie Construction Company has a contract to build an office building with a starting date of April, 1993, and a completion date of October 1995. Contract price is $5,500,000. Contract total cost is $5,000,000.

	1993 $(000's)	**1994 $(000's)**	**1995 $(000's)**
Cost to date	2,000	3,916	5,050
Estimated cost to compete	4,000	1,134	---
Progress billing during year	1,400	2,900	1,200
Cash collected during year	1,250	2,250	2,000

	1993 $(000's)	**1994 $(000's)**	**1995 $(000's)**
Contract Price	5,500	5,500	5,500
Less estimated cost:			
Cost to date	2,000	3,916	5,050
Estimated costs to complete	4,000	2,134	----
Estimated total costs	5,000	5,050	5,050
Estimated total gross profit	500	450	450
Percent Complete:	2,000	3,916	5,050
	5,000	5,050	5,050
	40%	77.5%	100%

Table 2

Journal Entries

	1993 $(000's)	**1994 $(000's)**	**1995 $(000's)**
Recording Construction Cost			
Construction in Progress	2,000	1,916	1,134
Materials, cash, payables etc.	2,000	1,916	1,134
Recording Progress Billings			
Accounts Receivable	1,400	2,900	1,200
Construction Billings in Progress	1,400	2,900	1,200
Recording Collections			
Cash	1,250	2,250	2,000
Accounts Receivable	1,250	2,250	2,000

The difference between the amounts recognized each year for revenue and gross profit is debited to a nominal account, Construction Expenses (cost of goods sold), which is then reported to the income statement for the accounting period and offset against profits in same period for income tax purposes.

As construction progresses towards completion of the contract, cost are accumulated in the Construction-in-Process account in order to maintain a record of total costs for construction operations to date. In accounting theory, under the POC method, a series of sales transactions

Table 3

Revenue Recognition

	1993 $(000's)	1994 $(000's)	1995 $(000's)
Recognized Revenue:			
1993 $5,500,000 * 40%	$ 2,200		
1994 $5,500,000 * 77.5%		$ 4,262	
(Less 1993 Revenue)		2,200	
Revenue in 1994		$ 2,062	
1995 $5,500,000 * 100%			$ 5,500
(Less 1993, 1994 Revenue)			4,262
Revenue in 1995			$ 1,238
Recognized Gross Profit			
1993 $500,000 * 40%	$ 200		
1994 $450,000 * 77.5%		$ 349	
(Less 1994 Gross Profit)		200	
Gross Profit 1994		$149	
1995 $450,000 * 100%			$ 450
(Less 1993,1994 Gross Profit)			349
Gross Profit 1995			$101

takes place each progress payment and therefore the Construction-in-Process account is not affected by the entry to recognize construction expense or profit. Because the account, Construction-in-Process, functions as an inventory cost account, the contract cost cannot therefore be removed until the construction is completed and transferred to the owner at the date of final completion. Table 5 displays a summary of the construction-in-Process account over the three-year construction duration period of the project.

When examining financial statements for a contractor under the POC method of accounting, one will find that both accounts receivable and the inventory accounts continue to be carried on the books at the same time. Therefore, by subtracting the balance in the billings account from Construction-in-Process, double counting of the balance in the inventory account is avoided.

Table 4

Revenue and Gross Profit Entries

	1993 $ (000's)	1994 $ (000's)	1995 $ (000's)
Recognizing revenue and Gross Profit			
Construction in Process (Gross Profit)	$ 200	$ 149	$ 101
Construction Expense	2,000	1,916	1,134
Long-term Contract Revenue	2,200	2,065	1,285
Recording Final Approval of Contract			
Billing on Construction in Process		$ 5,500	
Construction in Process			5,500

Table 5

Construction in Progress Account

CONSTRUCTION IN PROGRESS		
1993	Construction Costs	$ 2,000,000
1993	Recognized Gross Profits	200,000
1994	Construction Costs	1,916,000
1994	Recognized Gross Profits	148,750
1995	Construction Costs	1,134,000
1995	Recognized Gross Profits	101,250
TOTAL		$ 5,5000,000
12/31/95 Close Completed Contract		$ 5,5000,000
Total		$ 5,5000,000

Table 6

Unbilled Portion of Contract

Unbilled Balance on Contract Price 12/31/93		
Contract Revenue Recognized to Date:		
$ 5,500,000 *	$ 2,000,000	= $ 2,200,000
	$ 5,000,000	
Billing Date	1,4000,000	
Unbilled Contract Amount	$ 800,000	

The mathematical difference between the Construction-in-Process account and the billings on Construction-in-Process account is reported on the balance sheet as a current asset when the account has a debit balance. Conversely, the account is reflected on the balance sheet as a current liability if there exist a credit balance. When the costs incurred to date plus gross profit recognized to date (the balance in Construction-in-Process) exceed the billings on contract, the excess is reported as a current asset titled: Costs and Recognized Profit in Excess of Billings. Thus, the unbilled portion of a contract can be calculated at any time by subtracting the billings to date account balance from the revenue recognized to date account balance. Table 6 provides this calculation for the contract year 1993.

An antithetical financial condition occurs when billings exceed cost incurred and gross profit to date. This condition is displayed in Figure 1. This excess in billings is reported as a current liability titled: Billing in Excess of Costs and Recognized Profit. Table 7 displays financial results across a three-year period for a long-term contract.

In summary, when using the POC method of accounting, revenues, expenses, and gross profits are recognized in each accounting period throughout the duration of the contract. Because of the proportional basis of recognizing income, the earned value of each period is treated as a continual sales transaction similar to that under the accrual methodology of recognizing income. Therefore, actual income from the contract is not recognized until final completion of the contract is achieved. The estimated amount of income is predicated on the estimated percentage of cost incurred each period to that of the projected estimate to complete, with the percentage complete being applied against contract price to recognize revenues for the accounting period in question.

Table 7

Financial Statement

Aggie Construction Company
Financial Statement Presentation - Percentage-of-Completion Method

	1993 $(000's)	1994 $(000's)	1995 $(000's)
Income Statement			
Long-term Contract Revenue	$ 2,200	2,062	1,238
Costs of Construction	2,000	1,916	1,134
Gross Profit	200	149	101
Balance Sheet (12/31)			
Current Assets:			
Accounts Receivable	150	1,450	
Inventories			
Construction in Progress	2,200		
Less: Billings	1,400		
Costs and recognized profit in excess of billings	200		
Current liabilities:			
Billings ($4,300,000) in excess of costs and recognized profit ($4,264,750)		35	

Completed-contract Method

Under the Completed-Contract (CC) method, total revenue, and gross profit are recognized only at the point of sale, that is, when the construction contract is substantially complete (Combs et al, 1984). ARB #45 states that this method is preferable to POC method only if a lack of dependable estimates or the existence of inherent hazards causes forecasts to be doubtful. The definition of inherent hazards is set forth in AICPA (SOP) 81-1 (1983), as any condition that make otherwise reasonably dependable contract estimates doubtful. For interim accounting periods during contract performance, contract cost and amounts billed are debited and are reflected in the contractor's balance sheet as accounts receivable under the category construction contract billings. Because the CC method only accounts for cost of contract to date, the income statement does not reflect earned revenue, or estimated profit on the contract during each accounting period like the POC method (Halpin, 1985; Welsch, 1979; Callahan et al, 1993). Thus, as construction work a progress, the contractor accumulates contract cost but does not recognize contract revenue until the date of substantial completion. Therefore, the underlying concept of the CC method is that the recognition of income and hence tax liability on earned income is deferred until the project is 100 percent complete. As a result, unlike the POC method, the determination of project income is not predicated on reasonably certainable estimate of contract cost. Since contract income is deferred until the end of the project, tax liability on the income is likewise not incurred until the contract is finally completed by the contractor (Combs et al, 1984; Callan et al, 1993; Adrian, 1988).

Table 8 demonstrates the CC method and how contract cost, revenues, and gross profit are not recognized until the project is finally completed in the last accounting period. Table 9 displays the recording difference between the POC and the CC methods. The purposes of the table is to

present income data and demonstrate how income tax liability is incurred year-to-year under the POC paradigm and how income tax liability is deferred until the end of the contract period under the CC method.

Table 8

Financial Statement

Aggie Construction Company
Financial Statement Presentation - Completed Contract Method

	1993 $(000's)	1994 $(000's)	1995 $(000's)
Income Statement			
Long-term Contract Revenue	----	----	$ 5,500
Costs of Construction	----	----	5,050
Gross Profit	----	----	$ 450
Balance Sheet (12/31)			
Current Assets:			
Accounts Receivable	$ 150	$ 800	
Inventories			
Construction in Progress	1,000		
Less: Billings	900		
Unbilled Contract Costs	$ 100		
Current liabilities:			
Billings ($4,300,000) in excess of costs and recognized profit ($4,264,750)		$ 384	

Table 9

Comparison of Financial Position

	PERCENTAGE-OF COMPLETION	COMPLETED CONTRACT
1993	$ 125,000	$ - 0 -
1994	199,000	- 0 -
1995	126,000	450,000

Legislative Change in Accounting Methods

The Tax Reform Act (TRA) of 1986 promulgated several significant changes in long-term construction contract accounting (Pirrong, 1987). The TRA '86 restrained the use of the CC method for tax accounting purposes. Moreover, the TRA '86 created Internal Revenue Code (IRC) section 460, which allows the contractor to choose only two methods of accounting for a long-term contract (Adler, 1989). Section 460 of IRC, under TRA '86, allows only the POC method or a hybrid derivative of that method entitled the percentage of completion - capitalized cost method (POC-CC). In addition to setting forth the use of only these two accounting methods, the TRA '86 specified that only the CTC method be used to calculate the POC for income tax liability for the construction firm (Wright, and Mazurkiewicz, 1987; Pirrong, 1987). Additionally, TRA '86 requires income tax liability to be reported utilizing a POC method schedule of 40 percent of the recognized contract revenues, while the remaining 60 percent

balance of contract revenues may be reported using the normal method of recognizing revenue and gross profit for income tax purposes (generally the completed contract method - Tax Pointer, 1987; Hawkins, 1989).

The Revenue Act (RA) of 1987 promulgated additional percentage limitations on long-term contract accounting. Pronouncements of the RA '87 amended the TRA '86 60/40 percent split in revenue recognition to that of a 70/30 split schedule (Adler, 1989; Hawkins, 1989). Otherwise, RA '87 maintained the same accounting restraints laid down in the TRA '86. The Technical and Miscellaneous Revenue Act of 1988 (TAMRA) further modified the POC-CC method of '86 and '87. TAMRA '88 requires a contractor with sales greater than $10 million and contracts that last longer than two years to use a 90/10 percent split schedule for tax accounting purposes. Thus, 90 percent of the contract price must now be accounted for under the POC, or the POC-CC method, while the remaining 10 percent may be recorded under the CC method (Adler, 1989). Table 10, demonstrates the impact of TAMRA '88 has on revenue recognition for a long-term contract, and the accelerated tax consequence that results.

The ramifications of the TAMRA ‘88 accounting rules have essentially eliminated the CC method of tax accounting. Thus, the deferral of income recognition and, therefore, the recognition of the tax liability will be limited to 10 percent of the revenue generated by the contract. The tax schedule under TAMRA '88 displays how the POC 40 percent of revenues in 1993 must now be recorded and recognized at 90 percent of its earned value. The 90 percent of earned value is subsequently taxed at the 34 percent rate. The remaining 10 percent of the earned value is deferred until 1995, where at that time the income is recognized and taxed at the 34 percent rate. This similar tax liability is incurred and deferred similarly for the 1994 accounting period. Finally, the 10 percent income deferred in 1993, and 1994 is summated with the earned value recognized in 1995 and taxed at the appropriate rate in the period the contract is finally 100 percent complete.

TAMRA '88 will significantly impact on the construction industry in several areas of financial management. Most importantly will be the increased emphasis on cash flow management requirements. Owing to earlier recognition periods for gross profits and the inability to defer 90percent of the tax liability for a profit center, the contractor will have to provide for increased cash outflows to cover future income tax liability payments incurred in earlier periods of the contract while work is still in process. A second consideration is the management methodology associated with front-end loading. Management, when employing this technique, will certainly have to consider proper matching of revenues and expenses in each tax accounting period.

Table 10

Tax Calculation Using TAMRA '88

Facts:
Aggie Construction has a three-year contract to build an office building, with a starting date of April, 1993, and a completion date of October, 1995. Contract price is $5,500,000. Total contract cost is $5,000,000. Each year a percentage of general and administrative expenses are allocated to the contract.

Percentage of Completion Schedule			
	1993 $(000's)	**1994 $(000's)**	**1995 $(000's)**
Contract Cost to Date	$ 2,200	$ 3,916	$ 5,050
Allocated G&A Expense	60	75	85
Estimated Total Contract Cost	4,000	4,050	4,050
Percentage Complete	$ 2,000	$ 3,916	$ 5,050
	5,000	5,050	5,050
	40%	77.5%	100%
Gross Profit	$ 200	$ 149	$ 101
Tax Schedule Based on Completed Contract Method			
Contract Revenues	$ - - - -	$ - - - -	$ 5,500
Contract Cost to Date	- - - -	- - - -	5,050
Gross Profits	- - - -	- - - -	450
Less G&A Expenses	- - - -	- - - -	220
Taxable Income	- - - -	- - - -	$ 230
Tax Liability ($230,000 * 34%)			$ 78
Tax Schedule Based on TAMRA '88			
	1993 $(000's)	**1994 $(000's)**	**1995 $(000's)**
Contract Cost to Date	$ 2,200	$ 3,916	$ 5,050
Allocated G&A Expense	60	75	85
Estimated Total Contract Cost	4,000	4,050	4,050
Percentage Complete	40%	77.5%	100%
Gross Profit	200	149	101
Less G&A Expense	60	75	85
Taxable Income	140	74	38
Tax Liability	(a) 43	(b) 23	(c) 13
(a) $ 140,000 * 90% * 34%			
(b) $ 73,750 * 90% * 34%			
(c) $ 37,650 * 34%			
Where: (a)		= ($ 14,000 - $ 126,000):	$ 14,000
(b)		= ($ 73,750 - $ 66,375):	$ 7,743
(c)		= ($ 101,250 - $ 85,000):	$ 16,250

Conclusion

The Tax Reform Act of 1986 and the Technical and Miscellaneous Revenue Act of 1988 have significantly altered the time frame for when a contractor must recognize income for a long-term

contract. In essence, the Internal Revenue no longer recognizes the completed contract method for income tax liability purposes. Therefore, the contractor must use the percentage-of-completion method for both financial presentation and tax reporting purposes. The ability of the contractor to defer recognition of income tax liability is restrained to 10 percent of the project contract amount that is not calculated under the percentage-of-completion method. Therefore, under the new tax law, a contractor will experience a greater tax burden in earlier accounting periods than otherwise would be the case vis-à-vis Tax Reform Act of 1986 income tax reporting methods for a long-term construction contract.

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