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# OUTLINE

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- Alternative Bases for Partial Payments
- Reasons for Measuring Progress
- The Challenge of Objectivity
- Specific Measurement Techniques
- Selecting Progress Payment Schemes and Weighted Values
- Recommended Procedure for Progress Measurement and Payment
- Retention
- Alternatives to Retention

# PROGRESS BILLINGS AND PAYMENTS

- **Introduction**

Periodic progress payments are a way of life in the construction industry. Unless the duration of a particular contract is shorter than 30 days, intermediate determinations of progress will be necessary. The cost of financing labor, materials, and equipment during the construction period is generally too severe to expect a contractor to bear it alone.



## **PROGRESS BILLINGS AND PAYMENTS**

- **Contractor concerns in this area are easily seen they wish payment of the most money in the shortest possible time. There are also significant concerns and risks for owners. Because payment represents the single most powerful compliance lever, owners should ensure that progress payments are determined objectively and are designed to promote timely performance.**



## **PROGRESS BILLINGS AND PAYMENTS**

- **Early payment and overpayment for contract work as it proceeds are two risks that should be avoided by the owner. Cash-flow considerations and the high cost of financing dictate that owners should pay only for what has actually been accomplished and not before it has been accomplished.**



## **PROGRESS BILLINGS AND PAYMENTS**

- **On the other hand, owners who unreasonably delay or withhold earned payments run the risk.**
- **All have a negative impact on the project.**

## ALTERNATIVE BASES FOR PARTIAL PAYMENTS

- There are three general bases upon which partial payments may be made:
  1. Cost
  2. Time
  3. Actual Performance, or Progress.

## ALTERNATIVE BASES FOR PARTIAL PAYMENTS

- Of the three methods, partial payments based merely on the passage of time are the least desirable. They offer absolutely no positive incentive for contractor performance.
- Some times time-based payments are proposed where the monthly payment amounts are representative of the “planned” equal but fluctuate depending upon the amount of work or cost expected as the work progresses.



## ALTERNATIVE BASES FOR PARTIAL PAYMENTS

- **Cost-based payments bear a closer relationship to actual progress if one considers that the expenditure of costs is proportional to the amount of work being performed. But even this relationship is indirect and often out of proportion. The incentive is for the contractor to ship the item to the project site quickly, yet little cost incentive remains to have it installed. The incentive is for the contractor to ship the item to the project site quickly.**



## ALTERNATIVE BASES FOR PARTIAL PAYMENTS

- From the owner's point of view, the majority of progress is achieved upon installation. In addition, contractors interested in increasing their early payments may order or buy as much material and equipment as possible, regardless of when its installation is needed.



## ALTERNATIVE BASES FOR PARTIAL PAYMENTS

- It is difficult, however, to avoid cost-based progress payments when working under cost-reimbursable contract pricing.
- Performance-based payment terms are also valuable because they may place significant importance on certain elements of work that, although critical to the owner, have little cost or value in and of themselves. Testing is a good example. Through the contractor's budget for testing may be small, the owner may weight this activity heavily in its progress payment scheme, prompting the contractor to complete testing as soon as possible in order to begin using the finished project or component.



## ALTERNATIVE BASES FOR PARTIAL PAYMENTS

- **Because they represent the most powerful compliance control, progress-based payments (or progress payments) will be emphasized in this chapter.**



## **DIFFERENT REASONS FOR MEASURING PROGRESS**

- **Most owners have two distinct reasons for measuring progress: (1) to determine where the project has been, where it is, and where it is going in terms of cost and schedule; and (2) to facilitate payments to performing contractor in a manner that promotes timely performance of contractual obligations.**



## THE CHALLENGE OF OBJECTIVITY

- **One of the most time-consuming, confusing, and often inaccurate ways to measure progress for a construction contract is to make a subjective determination based on the experience of the measurer or the visible achievement at the job site.**



## THE CHALLENGE OF OBJECTIVITY

- To avoid subjective determinations, objectivity must be planned during the contract formation stage and implemented during the performance period. This requires clear and concise measurement terms in the RFP and contract documents. Contractual scope of work should be broken down into smaller, more discretely priced segments, each readily determined and separately priced. When this “line item” list is inserted into the RFP, contractor’s can plan their cost performance and bid competitively for each payment item.



## THE CHALLENGE OF OBJECTIVITY

- **An alternative is to subdivide the work for pricing purposes after the contract has been awarded. This calls for the mutual preparation and acceptance of a “schedule of values” that totals the contract price.**

## THE CHALLENGE OF OBJECTIVITY

- **Two types of terms regarding progress payments are needed in contract documents. The payment items and their prices should be established; this is generally done in the proposal section of the RFP and subsequently in the agreement section of the contract documents. In addition, specific measurement and payment “terms” are necessary. These describe each payment item and the methods by which it will be measured and paid**



## THE CHALLENGE OF OBJECTIVITY

- Of all suggestions made regarding progress payment, none is more significant than this: Progress measurement and payment terms and practices should reflect the way in which the actual contract work will be performed. Those responsible for choosing separately priced elements of work, defining milestones for payment, and weighting the value of each should be familiar with the expected method of fabrication, shipment, installation, or erection involved.



## THE CHALLENGE OF OBJECTIVITY

- **For some contractor activity, particularly that involving services, it is difficult to determine products or to compare output to resources or costs expended. For these particular elements of work, some subjective measurements may have to be made.**



## THE CHALLENGE OF OBJECTIVITY

- For these items, cost-based or time-based payments are unavoidable.



## **SPECIFIC MEASUREMENT TECHNIQUES**

- **The most commonly used measurement techniques are:**
  - 1. Intermediate Milestones**
  - 2. Equivalent Units**
  - 3. The 50 - 50 Technique**
  - 4. The 0 - 100 Technique**
  - 5. Subjective Techniques**

## SPECIFIC MEASUREMENT TECHNIQUES

- Intermediate Milestones

This is probably the most often used measurement technique, particularly for fixed-price contracts. Each specific portion of the work is broken down into its components so that the completion of a component can be readily identified. Each component ("work item" or "line item") is given a value, and that amount is paid when the item has been accomplished.



## **SPECIFIC MEASUREMENT TECHNIQUES**

- **When using the intermediate milestone approach, ensure that the milestones are easily identifiable and that their accomplishment can be achieved in a relatively short period of time.**
- **Milestones should be selected to allow payment for progress to approximate closely, or follow, the actual accomplishment of progress,**

## SPECIFIC MEASUREMENT TECHNIQUES

- **Equivalent Units**

It uses performance or product units that are indistinguishable from one another. Each is given the same value, and each should therefore require the same resources for achievement. It is easy to see why this technique is common for unit-price contracts. At the end of each payment period, a determination of the number of units performed is made. The payment price is calculated by multiplying the “unit payment amount” by the quantity of unit.



## **SPECIFIC MEASUREMENT TECHNIQUES**

- **This technique may also be applied to lump-sum pricing schemes. Lump-sum line items in the contract may be divided into equivalent units, with partial payments of the total lump-sum amount made in proportion to the number of units completed.**



## **SPECIFIC MEASUREMENT TECHNIQUES**

- **Significant problems develop when this technique is applied to units of work that are not exactly equivalent.**
- **Persons responsible for designing the payment scheme should be knowledgeable in the products, methods to be used, and general construction sequence in order for payment provisions to match actual construction conditions. A final caution applies to equivalent unit techniques. Should the achievement of the first products (payment units) be accomplished only after a great deal of preparatory effort and expense, a milestone technique should be considered.**

## The 50 - 50 Technique

- The 50 - 50 Technique

This technique allocates half of the payment amount to commencement of the item in question and the remaining amount to its completion. No intermediate measurements are made that is, when the item is 90% complete, only the 50% allocated to its commencement is paid.



## The 50 - 50 Technique

- **This technique has limited application to major construction efforts. It is used for small items and items for which intermediate progress determinations are difficult or impossible to make.**

## The 50 - 50 Technique

- For some payment items, the technique will overestimate actual progress as soon as the work on the item is started, it is not necessarily half finished. For other items, the technique will underestimate actual progress, as with the case where 90% is finished but only half credit is given.



## The 50 - 50 Technique

- When the 50 - 50 technique is used, care should be taken to ensure that the contractor is not encouraged to start work on all items in order to capture the initial 50% of their value with little incentive to complete the first item. In addition, items in question should be ones that can be accomplished in short periods of time. Otherwise, this technique may give unacceptable results.



## The 50 - 50 Technique

- **In general, then, the 50-50 technique is a form of milestone technique, with the start and finish of each item representing milestones of equal weight (50% of the payment amount).**

# The 0 - 100 Technique

- This is a further adaptation of the milestone technique in which there is only one milestone for each payment item completion. No payment is made until the item in question has been completed, and full payment is made at that time.
- This method should have limited application and be restricted to minor elements of work that are completed soon after they are begun.



## The 0 - 100 Technique

- The 0 - 100 technique alternately may be called the “all or nothing at all” method.

## SUBJECTIVE TECHNIQUES

- As mentioned earlier, subjective determinations of accomplishment should be avoided, but sometimes this is not possible. Let's say that the owner has contracted for project scheduling services. This is often called a level-of-efforts contract because a certain level of effort on the part of the contractor will be expended, it is not generally proportional to the "products" that result, if in fact any identifiable products exist. If the scheduling contract in question is firm fixed price (say, \$50,000), partial payments are generally based on elapsed time or cost in this case, perhaps through prearranged monthly installments, or in some proportion to the number of hours expended during the month for scheduling.



## **SUBJECTIVE TECHNIQUES**

- **At times, one sees the use of quasi-objective techniques in conjunction with a subjective basis.**



## VARIATIONS AND COMBINATIONS

- There are thousands of variations and combinations of the five techniques described. For example, milestone techniques may allow the determination of intermediate progress between milestones in a subjective or equivalent units manner. And there is nothing magic about the 0-100 or 50-50 allocation. These may instead be chosen as 10-90, 25-75, or even 12-23-42-23. When this is done, however, the percentage attributed to each event (or milestone) becomes essentially the same as the weighted value applied to intermediate milestones.



## VARIATIONS AND COMBINATIONS

- **As owner and contractors become more familiar with each technique, they soon realize that they are all simply variations on milestone methods. And they are all designed to achieve the same objectives: to identify measurable accomplishments and assign each one a relative payment value, one that's fair, easily measured, and agreed upon in advance.**



## **SELECTING PROGRESS PAYMENT SCHEMES AND WEIGHTED VALUES**

- **Many owners define the methodology to be used and allow contractors to bid the weighted values themselves. Then an examination of the reasonableness of bid amounts is made part of the evaluation process, with any discrepancies isolated for prewar negotiation; again, the owner will typically wish to back-end load, and the contractor to front-end load values.**



## **SELECTING PROGRESS PAYMENT SCHEMES AND WEIGHTED VALUES**

- **Other owners allow bidders to propose payment schemes and/or relative amounts to each intermediate milestone or unit of measure.**
- **Of these two approaches, the first makes more sense. The owner should consciously determine the payment scheme and weighted values; it can do this without knowing bid prices by placing a percentage of the total bid amount in the RFP for each line item.**



## **SELECTING PROGRESS PAYMENT SCHEMES AND WEIGHTED VALUES**

- **To determine the payment approach:**
- **The owner reviews the scope of work**
- **Identifies its control objects (such as what activity does the owner want to promote)**
- **And communicates the details to bidders.**



## **RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT**

- **A typical procedure for periodic (monthly) progress determinations and subsequent payments on a large project is depicted in Figure 1.**
- **The entire payment determination and paperwork flow is shown in Figure 2.**



## **RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT**

- **A basic goal of any payment procedure is that resolutions of progress and commensurate amounts due the contractor should be made prior to receipt of contractor billings, or invoices.**



## **RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT**

- **Time of invoice receipt should not be the time for both parties to begin deciding how much is earned and owed. A monthly “progress estimating” methodology is recommended, with the results documented on owner-provided progress estimating forms like those shown as Exhibits 1 and 2.**



## **RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT**

- **These are the tools by which the owner and contractor agree and document their agreement. Once an invoice is received and the billing amount agrees with the amount previously determined through the progress estimating exercise, the invoice should be honored.**



## **RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT**

- **The format and payment items contained in the estimate forms should be determined at the beginning of the contract administration period and should comply with any contractual payment terms and conditions.**



## **RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT**

- **The contract administrator furnished the contractor with “master” payment estimate forms, and the contractor uses these to determine progress each month.**
- **It submits completed forms to the owner (contract administrator), and agreement is evidenced by the appropriate signatures.**



## **RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT**

- **A copy of the signed progress estimate form(s) is sent to the owner's accounts payable group.**
- **The contractor then submits a monthly invoice along with the signed estimate form.**
- **The accounts payable group receives the invoice, verifies it for accuracy, and compares it with the separately received progress estimate forms (sent by the contract administrator).**
- **If no discrepancies are noted, payment is made.**



## **RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT**

- **A major premise in this process is that the accounting group is not responsible for verifying performance prior to payment, or for ensuring contractual compliance. This is the duty of the owner's construction staff contract administrator, architect, and so on.**



## **RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT**

- **If more than one individual “signs off” on progress estimate forms, there is some risk that each one will rely on the other to check certain elements.**
- **Each person reviewing estimate forms or invoices should be aware of his or her specific responsibility in the process. As shown in Exhibit 1, each person who signs the forms should be indicating that a certain and specific review has occurred.**



## RECOMMENDED PROCEDURE FOR PROGRESS MEASUREMENT AND PAYMENT

- **To avoid disputes, have the contractor sign the form as well.**

# EXHIBIT 1. Summary of Contract Progress Payment Estimate

## SUMMARY OF CONTRACT PROGRESS PAYMENT ESTIMATE

Contract No. \_\_\_\_\_

Period Covered:  
from \_\_\_\_\_ to \_\_\_\_\_

Sheet \_\_\_\_\_ of \_\_\_\_\_  
(detailed sheets attached)

Contractor. \_\_\_\_\_

**Owner's Review and Acceptance**

**Summary of Progress**

1. Compliance with Commercial Terms of Contract

\_\_\_\_\_  
Contract Administrator

Cumulative total as of last period \$ \_\_\_\_\_

Earned this period \$ \_\_\_\_\_

Total earned to date \$ \_\_\_\_\_

Less retention \$ ( \_\_\_\_\_ )

Balance \$ \_\_\_\_\_

Less previous payments \$ ( \_\_\_\_\_ )

Less Back charges \$ ( \_\_\_\_\_ )

Less other charges \$ ( \_\_\_\_\_ )

Amount to be invoiced \$ \_\_\_\_\_

2. Compliance with Technical Requirements

\_\_\_\_\_  
Supervising Engineer

3. Costs verified, checked, and balanced; escalation (if any) amounts correct

\_\_\_\_\_  
Construction Accountant

4. Approval to honor invoice if in accordance with this summary and attached detail sheets

\_\_\_\_\_  
Construction Manager

**Contractor Attestation**

I hereby certify that this Contract Progress Payment Estimate represents the work performed for the period shown above.

\_\_\_\_\_  
contractor's signature

\_\_\_\_\_  
date

## EXHIBIT 2. Summary of Contract Progress Payment Estimate

### DETAILED CONTRACT PROGRESS PAYMENT ESTIMATE

Contract No. \_\_\_\_\_

Period Covered:

Sheet \_\_\_\_\_ of \_\_\_\_\_

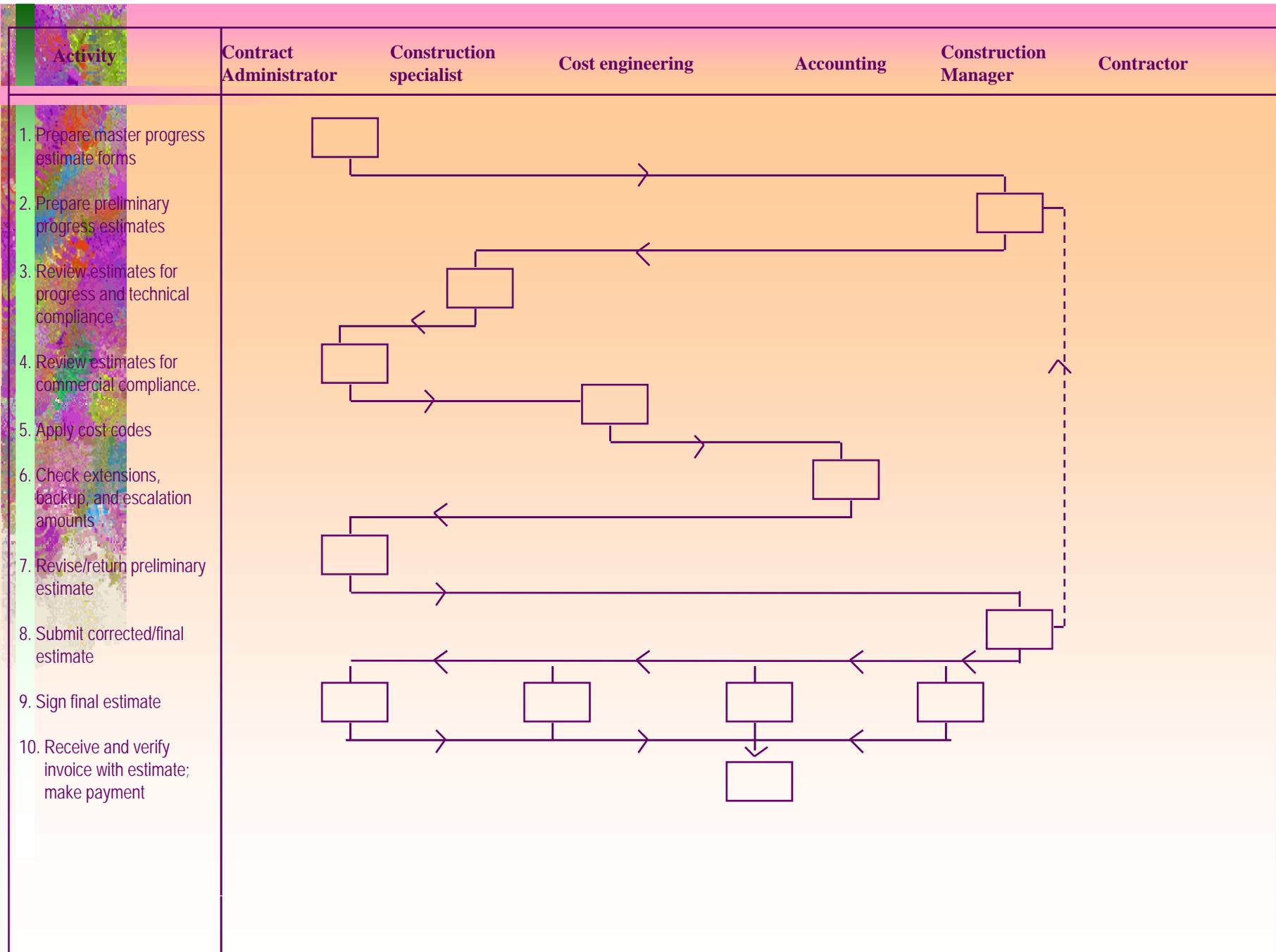
Contractor. \_\_\_\_\_

from \_\_\_\_\_ to \_\_\_\_\_

Prepared by: \_\_\_\_\_

Checked by: \_\_\_\_\_

Payment Item	Description	Unit of Measure	Price	Earned as of Last Period		Earned This Period		Earned to Date	
				Quantity	Amount	Quantity	Amount	Quantity	Amount
<b>PAGE TOTALS:</b>									



**Figure 1. Contract progress payment process.**

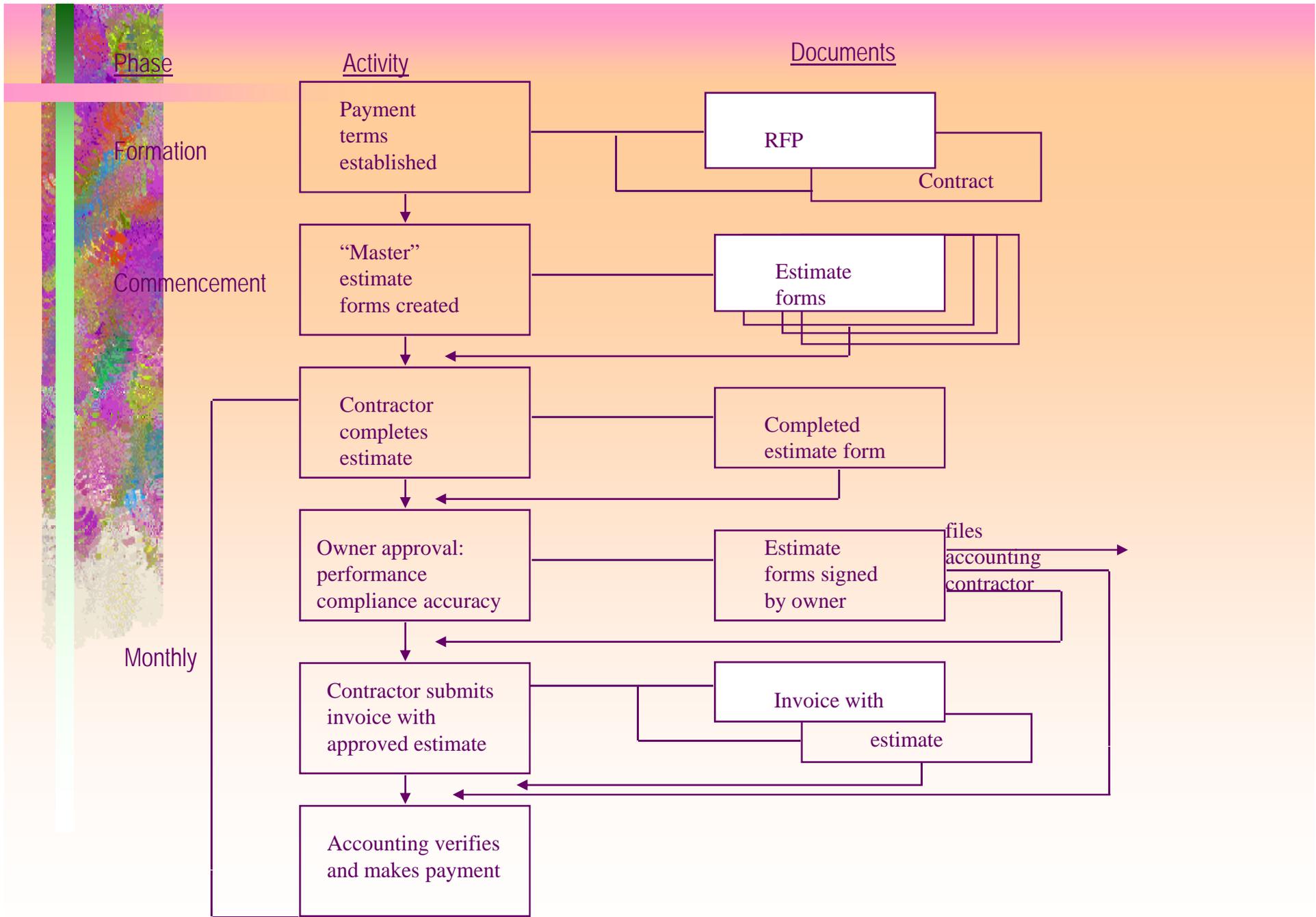


FIGURE 2, Typical paper work flow: progress payments and billing.



## FINAL PAYMENT

- **The suggested procedure for monthly progress payments should also be followed when the final contract payment is made, with a few additional precautions.**



## RETENTION

- A time-honored tradition in the construction industry calls for withholding of earned payment amounts until a letter time, when they are released to the contractor.
- Retention is most commonly 10% of amounts due, with release made upon successful completion of the work.

- 
- **The Reasons for Retention:**
    1. **To motivate the Contractor to Complete the Work.**
    2. **To Cover the Risk of Latent Errors or Omissions.**
    3. **To Encourage Contractor to Return to the Work After a Planned Demobilization.**

- 
- **To release of retention should upon:**
    - 1. Partial Completion Specified Portions of the Work.**
    - 2. Passage of a Specified Period of Time.**
    - 3. Achievement of Certain Performance.**



## **ALTERNATIVES TO RETENTION**

- 1. Irrevocable Letters of Credit.**
- 2. Escrow Accounts.**
- 3. Back-End Loading of Performance Milestones.**
- 4. Incremental Withholding With or Without Staggered Release.**
- 5. Other Controls That Achieve the Same Purpose.**