CHAPTER

13 Cash flow

Introduction

There are a variety of tools that are used in construction. Architects use computers today, not drafting boards, and produce drawings with software such as computer-aided design (CAD) and building information modeling. Surveyors used to use a level or transit but today they most likely use a laser or total-station. Carpenters use hammers and plumbers use pipe wrenches in the field. Project managers (PMs) and project engineers (PEs) use a variety of construction management document tools as discussed throughout this book, most of them prepared and transmitted on the computer as well. Accountants use various financial statements as tools including balance sheets, income statements, and cost ledgers. They no longer rely on large tablets of grid paper but produce most of their accounting documents also on the computer.

Even though many construction management tools have changed, there is one tool that project owners have used with general contractors (GCs) and GCs likewise with subcontractors for hundreds of years, and will continue to do so into the future, and that is *cash*. Project owners also have the next potential contract as a tool to use with GCs, and GCs do the same with subcontractors, but without cash, contractors will realize financial difficulties and potentially suffer bankruptcy. Cash for this discussion is not necessarily actual dollar bills and coins but a positive flow of money through the bank. In fact, very few contractors will deal in hard currency and those that do may be trying to avoid various taxes. Even contractors who report profits, have a good reputation for quality work performed safely, and bring their projects in on time may still have financial difficulties if they are not being paid on time and do not have a positive cash flow. The lack of a good positive flow of cash has an even greater effect on subcontractors and suppliers, especially those which are subcontractors to subcontractors and are far removed from the client and the bank. The lack of cash flow is likely the single most common reason for contractor failures.

The focus throughout this book has been on the accounting and financial efforts of the jobsite team. But cash flow is an important focus of the contractor's chief financial officer (CFO) and chief

executive officer (CEO), along with other stakeholders including boards of directors and equity partners. Each jobsite is an individual revenue base; that is one of the differences between construction and other industries as has been discussed prior. The home office relies on its construction projects to bring in cash in the form of monthly payments from their clients, and add together all of the project revenues and expenditures to analyze corporate cash flow positions. Many CFOs will use a positive cash flow generated by the construction teams to produce other income in the form of short-term investments such as stocks and bonds, equipment company operations, and real estate investments. The home office cash flow position is beyond the responsibility of an individual project manager and jobsite accountant, but each of their jobsite cash flow efforts contribute to the corporate bottom line.

This chapter will discuss in detail the process of preparing cash flow curves, which requires first the creation of a cost loaded schedule. The concept of cash flow has several elements; most of them included in the broad concept of cash outflow and cash inflow. All of the different jobsite expenditures including labor, material, equipment, subcontractors, and indirect costs have a negative impact on cash flow and require tracking. The only significant positive flow of cash for general contractors is revenue received from the client. Contractors always want to operate in the black so that their inflow of cash is greater than their outflow. There are various methods a contractor can use to improve its cash position and those are discussed here as well. Some of them are ethical and some of them are not.

Cash flow curve process

A cash flow curve is a projection of the total value of the work to be completed each month during the construction of the project. It is created by cost loading the schedule and plotting the total monthly costs. Often, it is one of the first things the owner will ask of the project manager and may be required by the construction contract. One reason this is required is to provide information to the bank for anticipated monthly payments. Some PMs resist on the basis that the curve will be wrong and that they may be penalized for it. The most important thing a PM does is to get paid from the owner for the work that has been completed on the project. This will be discussed in more detail in Chapter 14, 'Payment requests'. If a cash flow curve is a requirement to facilitate payment, it should be developed.

Cost loaded schedule

The cash flow curve is easy to prepare and begins with the development of a cost loaded schedule. Development of the cost loaded schedule by the estimator or cost engineer starts with a summary schedule and a summary estimate. Detailed versions of these may be helpful to prepare the cost loaded schedule but schedules and estimates that are overly detailed with hundreds or thousands of line items might be cumbersome. Schedules and summary estimates with less than 25 activities are probably too few and 40–50 activities would be ideal. Anything with over 100 would still be usable, but potentially unnecessary. The list and description of the activities on both the summary schedule and the summary estimate should more or less be similar. The best method to explain development of a cost loaded schedule is with a set of step-by-step instructions as follows:

1. Start with an Excel spreadsheet. List direct work activities down the left side of the sheet. Add the cost of those activities in the next column. Add a subtotal row below the direct work activities and add the costs vertically down. Verify that this subtotal cost matches the subtotal cost from the summary estimate. Some of this may be cut and pasted from the summary schedule or pay request schedule of values (SOV).
2. Across the top of the Excel spreadsheet list the months from the construction schedule or weeks for a short duration project.
3. Take the estimated costs for each direct work activity and spread them according to when the activities will be complete. Following are four examples of how direct costs might be spread:
   a. If the foundations are worth $90,000 and will be spent in May, then put $90,000 in May adjacent to the foundation line.
   b. Structural steel installation, estimated at $270,000, occurs in months six and seven and can be split evenly at $135,000 for each month.
   c. Assume the exterior skin is worth $720,000 and will start in the middle of December and work continues through January and February and overlaps into March. It is suggested that the costs be pro-rated as:

      16.67% – 33.3% – 33.3% – 16.67%

      This approximately equates to $120,000 for December, $240,000 in January and December each, and the last $120,000 in March. Exact estimates and dates are not necessary as this is not an exact science. It may be easier and just as accurate at the end of the day to round all these percentages and dollars to the next whole digit. Do not use cents in any of these calculations.
   d. Ten percent of the $1.2 million plumbing subcontract is attributed to month two for under-slab rough-in, 50% occurs over a three-month span when wall and ceiling rough-in are scheduled, and the balance during the last couple of months of the project for trim and testing. This proportions out as:

      $120,000 – $200,000 – $200,000 – $200,000 – $240,000 – $240,000

      If there is a slight adjustment to be made for any of the work line items, do so in the last month.
4. Total the spread of direct work items down for each month.
5. Add a row at the bottom of the sheet below the direct work subtotal row for jobsite general conditions. The general conditions may be spread or proportioned in one of three different fashions:
   a. Evenly spread the general conditions the same amount for each month.
   b. Proportionately spread the general conditions such that if the general conditions amount to 6.8% of the total direct work estimate, attribute 6.8% of the subtotal direct work tally for general conditions across the page.

      Options ‘a’ and ‘b’ are both easy to compute and easy for a client to understand and accept, but neither will be completely accurate.
   c. Calculate approximately how much of the jobsite general conditions will be spent for each month. Most projects realize more general conditions at the front end and the back end

of the project, due to activities such as mobilization, buyout, and close-out, and a more even spread during the middle of the project. This is subjective and difficult to forecast accurately as well.

6. There cannot be too many sets of subtotals to keep the costs straight. Add a column on the far right-hand side of the schedule and add each of the direct work activities across the sheet. This set of totals should equal the original estimates from the far left-hand side of the sheet which were brought forward from the summary estimate. If there is a mistake, correct this now. If slight adjustments are necessary, make them either in the first or the last month that an activity occurs.
7. Add another subtotal row below the spread of general conditions and add the total direct costs to general conditions.
8. Add another row (or more) for markups. All the markups can be grouped together such as labor burden, fee, insurance, contingency, taxes, and others. Calculate the percentage all these markups are of the subtotal for direct and indirect costs. Use this percentage to pro-rate the markups across the sheet to the right. Labor burden may be split out separately on projects which have a large amount of direct labor which often occurs early in the project. Most clients will accept a pro-rata share of markups be invoiced the same way this schedule is being prepared.
9. Add a total row below the markups and add the subtotal direct and indirect costs to the markups. This total in the column on the far left-hand side of the sheet and that on the far right-hand side of the sheet should equal the contract total. If they aren't exactly, go back and correct the error.

The cost data that is now summed at the bottom of the schedule for each month should reflect the anticipated monthly project expenses. Most of the scheduling software programs can prepare an 'exact' schedule of values with input of the detailed estimate, but again the line items must be exactly coordinated. The computer will not do the logical thinking associated with spreading the estimated costs, but rather just perform the math. The likelihood of the general contractor being billed by each material supplier and subcontractor according to any anticipated schedule is somewhat remote. The contractor would not normally provide the client or the bank all the detail on this cost loaded schedule; rather they would list just the monthly total figures from the bottom row. These monthly totals may be adjusted for retention and sales tax as will be discussed in the next chapter on pay requests. Table 13.1 shows Evergreen Construction Company's cost loaded schedule for the Olympic Hotel and Resort case study. Due to space limitations this is a condensed quarterly version of the 16-month analysis which is included with the eResource.

Cash flow curve

Now a cash flow curve can be simply plotted. Again, this can be as simple as a keystroke or two with scheduling software. The cash flow curve is displayed in either bell shape or 'S' shape. The bell-shaped curve represents a plot of the estimated value of work to be completed each month. The S-shaped curve represents a plot of the cumulative value of work completed each month. The best solution is to plot both curves on the same sheet but provide different vertical scales; otherwise the monthly curve is quite flat and does not accurately communicate the change in forecasted cash

needs. Some project managers will adjust the monthly figures to reflect a standard or 'perfect' bell-shaped curve. Within reason, this is acceptable for presentation purposes but not a requirement. Many cash flow curves actually depict more of a double-hump camel than a bell. This is caused when there are significant project costs early on in the project, such as pre-payment for long-lead equipment and site and structural work, and significant costs late in the project, such as expensive finishes and mechanical and electrical trim. The example case study is a remote hotel project and significant expenses were realized early in the project for concrete in the building and garage and structural framing and a peak late in the project during interior finishes. The actual cash flow can later be tracked against this schedule. Figure 13.1 shows the contractor's work-in-place cash flow curve derived from the Table 13.1 cost loaded schedule.

One interesting twist to the cash flow analysis is that there are several different means of plotting and measurement:

- Committed costs: The purchase orders (POs) have been issued and the subcontracts have been awarded. Therefore, the general contractor and project owner have committed to spend the money, but it has not yet been paid. This curve is shifted far left of the one drawn in Figure 13.1.
- On-site materials: The reinforcement steel was delivered to the site, but the contractor has not received an invoice for it, and therefore, not made payment.
- Costs in place: The light fixtures that were delivered last month are installed this month. Costs for materials are not usually accounted for until the materials are installed on the project, especially if installed by a subcontractor.
- Costs billed to the GC: This reflects invoices received from suppliers and subcontractors. It usually lags and is plotted to the right of costs scheduled to be in place.
- Monthly pay request to the owner: This follows receipt of invoices from suppliers and subcontractors. The payment request can be up to 30 days after some of the labor was paid and materials were received.

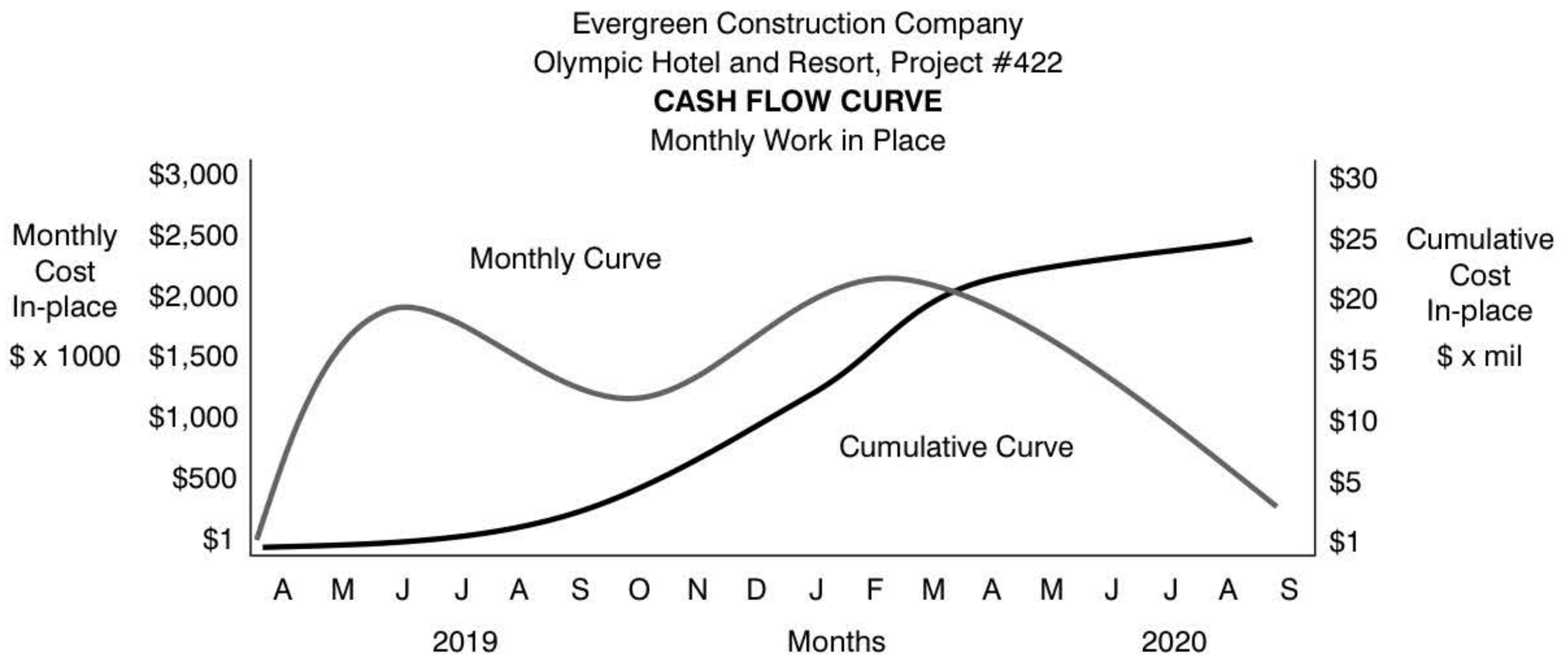

Figure 13.1 Cash flow curve

- Payment received: This reflects when payment was received by the GC from the owner and the owner from the bank. It will lag the formal monthly payment request by 10 to 30 days.
- Payment distributed: This curve reflects payments distributed to subcontractors and suppliers. It will generally lag payment received from the owner by an additional 10 to 30 days. This curve is shifted far right of the one drawn in Figure 13.1.

So, which measure of cash flow should the curve represent? In most instances, the general contractor's project manager will develop the curve based upon his or her schedule of construction that reflects the anticipated costs in place. This was the method used to develop the curve shown in Figure 13.1. The formal invoice will be one to four weeks behind this curve, and the receipt of cash and subsequent disbursement to subcontractors up to a total of two months behind the time when the work was accomplished. In this way, the actual cash flow will fall behind the original projection. The curve, once developed and submitted, should be monitored monthly as another check that the initial project cost control and financial management plan is relatively followed. The preparation of a whole project labor curve presented in Chapter 8 followed a similar process to the development of the cash flow curve.

Jobsite expenditures

As discussed prior, tracking job costs is one of the major and most time-consuming aspects of cost control. Much of the efforts in tracking jobsite expenditures during construction will be the responsibility of the project engineer, cost engineer, or jobsite cost accountant. In order for the fourth step in the cost control process – modification of processes, systems, and potentially people – to be effective, costs needed to be accurately tracked and reported prior. It is suggested the reader refer back to the cost control cycle in Figure 8.1. The processing of buying out subcontractors and suppliers and drafting and executing purchase orders and subcontract agreements was also introduced in previous chapters. Costs are 'committed' when contracts are let for materials and subcontractors and/or when materials are received, and labor is performed on the jobsite. These same committed costs are recorded when invoices and time sheets have been received and/or approved by the jobsite team. The costs are actually expended when checks are cut or electronic deposits are made. Different accounting systems and different contractors may account for 'costs incurred' under any of these scenarios. In this section, each of the activities and steps associated with tracking direct labor, materials, equipment, subcontract costs, and jobsite general conditions are stepped through.

Direct labor costs

1. Labor activities occur during week one.
2. On Friday of week one, the foreman responsible for each craft (carpenters versus laborers versus ironworkers) will fill out a time sheet for his or her crew. Sometimes this is done on a daily basis, especially for larger projects. On that time sheet they report hours worked against a description of work activities and the cost codes assigned to those activities. The jobsite cost accountant may assist the foreman with assigning cost codes. See Table 13.2 for a time sheet example.

Table 13.2 Daily time sheet

Evergreen Construction Company

Daily Timesheet

Project Number:	*422*				*Project:*	*Olympic*
Superintendent:	*Randy Smith*					
Foreman:	*Joe Wallace*				*Date:*	*12/15/2019*
	Construction Activities:	*Grout Frames*	*Install Frames*	*Hang Doors*	*Hardware*	
Crew/Craft:	*Cost Codes:*	*8.01*	*8.11*	*8.15*	*8.51*	*Total Hours*
Joe Wallace/Fore	Carp			2	6	8
Ron Roberts	Carp		8			8
Bruce Grun	Carp		4	4		8
Mark Ramstad	Carp			6	2	8
Kelli Gordon	Carp	2		8		10
Rob Murnen	Laborer	8	1	1		10
	Total Hours:	10	13	21	8	52
Overtime Explanation:	*Kelly and Rob came in early to get a jump start on grouting the frames before the crew arrived*					
Approvals:	*Randy Smith*			*Jennifer Thompson*		
	Superintendent			Cost Engineer		

3. The home office accounting department will enter the hours worked, against the cost codes assigned, into the weekly labor report which will be incorporated into the job cost history report. This is primarily a data processing activity.
4. Thursday evening or early Friday morning of week two the home office accounting department will cut checks for the direct crafts for week one. This may be performed by a payroll clerk. Those checks are distributed to the field Friday morning.
5. The general contractor's superintendent, assistant superintendent, or foremen will distribute last week's checks to the craftsmen at the end of day on Friday of week two. Today it is also common for electronic deposits to be made to construction craftsmen's bank accounts.

Direct material costs

1. Materials are received on site throughout month one.
2. Material deliveries will be accompanied by a 'delivery ticket' from the supplier. The foreman or project engineer who received and inspected the material before unloading will sign the ticket. The supplier will keep a copy and the jobsite will retain a copy.
3. The jobsite may enter the delivery ticket into a cost log for material at the site and send the receipt ticket to the main office awaiting the supplier's invoice. The cost code assigned to those materials from the original purchase order should be noted on the delivery ticket.

4. Suppliers send invoices to the contractor's home office. The supplier should note their PO number and their total PO value on the invoice. A copy of the material delivery ticket should be attached to their invoice. If short-form POs were used and the supplier has a copy of the PO, they should attach that to their invoice as well to assist processing.
5. The home office accounting department will match up all of the invoice paperwork from the supplier with their copies of delivery tickets and POs, if they have them, note the material invoice value in an accounts payable log, and send the invoice package to the jobsite for approval.
6. The jobsite cost accountant will receive the invoice and confirm receipt of the construction material, the amount of the invoice, the cost code, and other pertinent information. He or she will then initial approval and forward to the project manager and superintendent for their initials as well. A jobsite inspection may be necessary to validate the quantity of the material on site. On some open-book cost-plus projects the client's on-site representative may initial approval as well.
7. There is no need to deduct retention from suppliers or direct labor or equipment or indirect costs – only subcontractors receive a retention deduction.
8. The approved invoice will be returned to the home office awaiting payment and entered into the job cost history report.
9. If these materials were ordered via a short-form PO, the invoice may be processed within a week or ten days after jobsite approval.
10. If these materials were ordered via a long-form PO, and their costs more significant, payment may be held until month two, ten days after receipt of payment from the client.

Equipment expenditures

1. The processing of equipment rental invoices will be very similar to that of materials ordered with short-form purchase orders.
2. Equipment rentals will be checked against the jobsite equipment ledger and potentially the GC's superintendent's diary if there are disputes regarding time used on the project. Reference the previous chapter for additional discussion on equipment use and depreciation.

Subcontractor invoices

1. Subcontractors perform work throughout the month and incur labor and material and equipment costs similar to a general contractor.
2. Subcontractors are required to submit their pay requests to the GC on the 20th of month one which will forecast the amount of work anticipated to be completed through the end of that month.
3. Subcontractor pay requests sent to the GC's home office will be logged in as accounts payable and forwarded to the jobsite for approval.
4. The jobsite cost accountant will verify that the total amount billed does not exceed the amount approved in each contract and assign the appropriate cost code for each subcontractor. Similar to material invoices, the cost engineer will initial approval on the subcontractor pay requests.

5. The project manager will then review subcontractor pay requests, verify accuracy, and assemble them into the total project pay request to the client for month one. Five or ten percent retention will be withheld from each subcontractor; the same rate the client will be holding from the GC. See the next chapter on pay requests for additional discussion on this process.
6. The PM and superintendent may need to walk the project and verify percentage completion for each subcontractor request. The superintendent should initial invoice approval as well. Many contractors will include additional levels of invoice approvals from home office officers as a means of accounting checks and balances.
7. The PM will review a draft project pay request, including line items for each subcontractor, with the architect, bank, and/or client on the 25th of the month.
8. The formal/corrected GC payment request will be sent to the architect and then the client for approval by the 30th of the month.
9. The client will pay the GC by the 10th or 30th of month two.
10. The GC's home office accounting department will then release checks (or pay electronically) to the subcontractors ten days after receipt of payment from the owner. Subcontracts often include a 'pay-when-paid' clause which allows the GC to hold off paying subcontractors until the client has paid them. This keeps the GC from having to use its own cash. Contractors all endeavor to operate in the black, which means they have a positive cash flow. Conversely, if the GC operates in the red, it has a negative cash flow and will need to borrow from the bank or other equity partners. See methods to improve cash flow discussed later.
11. Third-tier subcontractors and suppliers are then paid ten or 30 days after the initial subcontractor receives its payment which could be as far off as month three from when materials were delivered, or work performed. Refer back to Figure 11.3.

Jobsite general conditions costs

1. Jobsite general conditions include indirect materials, equipment rental, and indirect labor expenses as was introduced in Chapter 5. The invoicing of indirect materials and equipment is similar to short-form purchase order materials and equipment.
2. Indirect labor is comprised of salaried personnel such as the superintendent, project manager, and jobsite cost accountant. Hourly direct craftsmen also perform indirect cost activities such as cleanup, forklift operation, and other temporary support activities.
3. The accounting for the direct craftsmen performing indirect activities is the same as that for craftsmen performing direct work as discussed earlier.
4. Salaried personnel, including the PM, superintendent, and cost engineer, generally do not complete time sheets as foremen do for their crews. They are individually assigned to a separate cost code within the jobsite general conditions estimate. The home office routinely records a portion of their monthly salary against their individual cost code which is incorporated into the labor report and job cost history report. In some cases, a PM may complete time sheets for his or her jobsite team.
5. Salaried personnel are generally paid twice monthly, and those intervals vary between firms. For example, assume they work through the 15th of month one and then are paid a week later for that half-month, on or about the 22nd. Their salary associated with the second half of month one would then be paid by the home office payroll clerk on or about the 7th of month

two. Often payroll for salaried personnel today is handled with a direct deposit made into the employee's bank account and not with a conventional paper check.

Jobsite revenue

As shown earlier, there are several jobsite expenditures which draw down the contractor's cash flow throughout the month; conversely, there is only one source of positive cash influx and that is receipt of payment from the client. This is usually once monthly, on or about the 10th of the month after the work was performed. In some cases, clients do not pay until the 30th of the month following the month the work was performed. The pay request process is discussed in the next chapter. In the case of speculative residential home builders, they receive one check at the sale or close of each home. Cash flow for speculative builders is therefore very erratic and often requires them to rely on a construction loan to make weekly and monthly payments until a home is sold. Custom home builders will receive monthly draws from the client similar to commercial contractors. Custom home builders and remodeling contractors will sometimes receive a down payment from the bank or the client which allows them some opportunity to operate in the black through the course of construction. So, although 'cash flow' for many contractors follows a typical bell shape or S-curve as presented in Figure 13.1, the revenue curve for a typical commercial GC is a stepped curve in that it is flat and then jumps vertically once monthly as is shown in Figure 13.2.

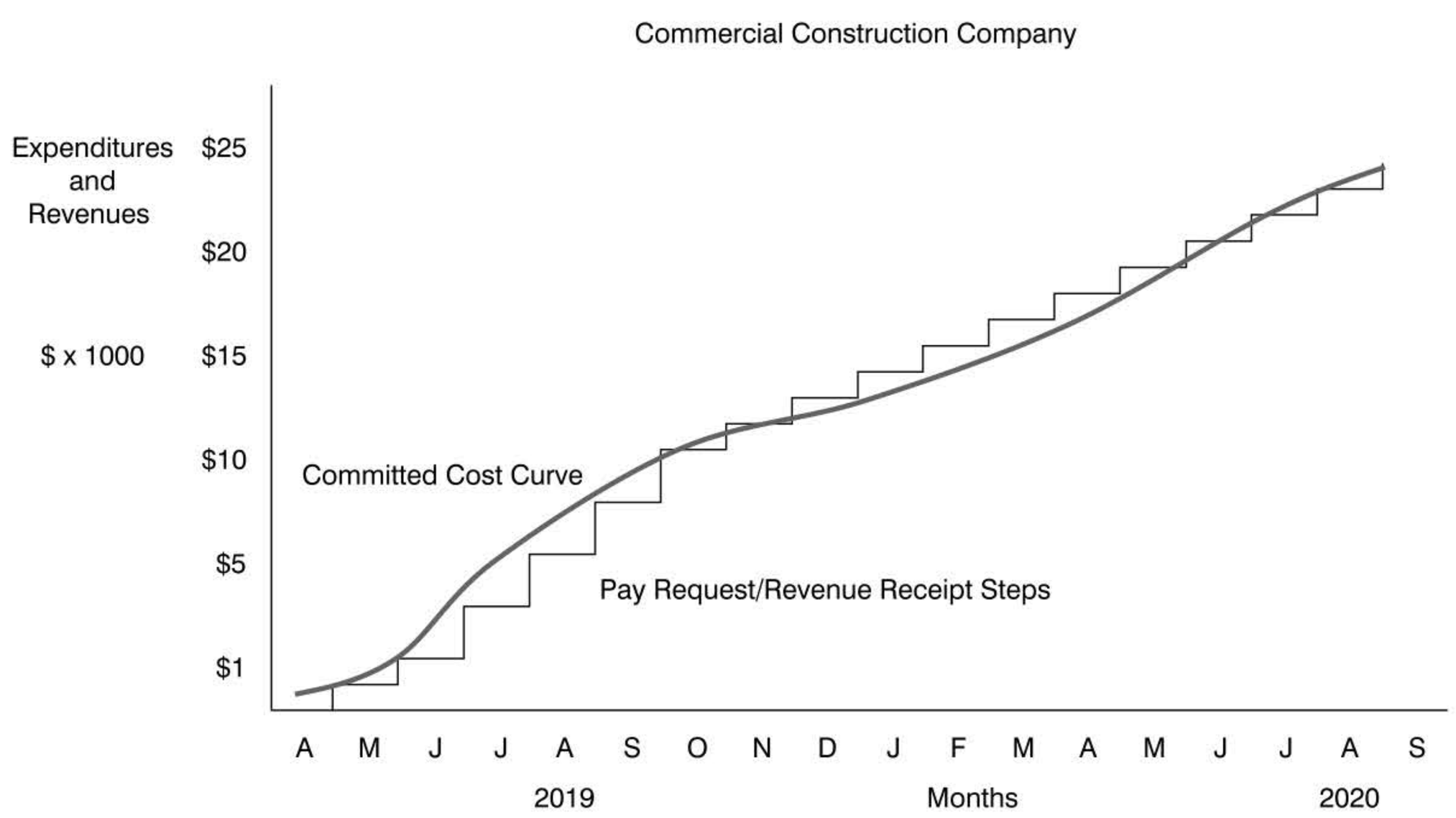

Figure 13.2 Revenue and expenditure curves

Net cash flow and impacts to home office

The CFO processes cash flow as needed to make payments on all of the contractor's jobsite expenditures and receives monthly checks from all of its clients. The contractor's officers and front office rely on a positive and not a negative balance of cash flow. Positive cash flow occurs when revenues exceed expenditures. They expect more money coming in than going out. The CFO will have an established line of credit with their bank and in the case of a short-term cash short-fall they will call on those funds but pay them back as soon as possible. Unless the construction company is owned by an individual and operates as a sole proprietorship, the company officers are typically accountable to a board of directors and equity investors and partners. These equity partners do not expect to have to dig into their pocket when the contractor is operating in the red; instead they expect a positive cash flow and an above-market return on equity due to the high risk of owning and investing in construction companies.

Revenues typically lag expenditures early in the project when there is an increased amount of direct labor expended to erect the structure. The general contractor pays direct labor on a weekly basis and does not withhold retention from the craftsmen's checks. Later in the project, such as during finishes, there is an increased mix of subcontractors from which retention is being withheld and the GC's cash flow needs are eased. The GC's revenue curve will rise above the expense curve when there are more subcontractors than direct labor and material expenditures. Similar to plotting the cash flow curve, there is no exact date this will occur, but it is usually approximately mid-way through construction for most typical commercial construction projects which employ 80–90% subcontractors.

Methods to improve cash flow

As stated repeatedly, general contractors are not in the business of providing construction loans to their clients. Speculative home builders will obtain loans and will pay the bank back when they sell the house – they do operate in the red and the associated interest costs are factored into their home prices. Real estate developers also obtain construction loans and their loan payments are factored into their pro forma as will be discussed in Chapter 19. Commercial GCs expect that their clients will obtain construction loans so that they can keep up with their monthly pay requests; in fact verification that the owner has financing in place is a good contract execution prerequisite. A long list of jobsite expenditures and the processes necessary to approve invoices and make payments was discussed earlier, but there is only one source of revenue which occurs monthly and up to 40 or more days after some contractor costs were expended or committed. So how does a contractor operate in the black and not have to borrow money? A variety of potentials for the GC to improve its cash flow position at the jobsite level, some of them ethical and legal, and are acceptable if negotiated into the contract terms, and others which are very unethical are also offered here. There may be serious ramifications for the GC from the client or even from subcontractors if any of the second bullet-list is used and the contractor's methods were discovered. We are not advocating for any contractor to incorporate them into its project plan.

Ethical cash improvement methods

- Subcontractors finance the general contractor in that subs are not paid until the client pays the GC and retention is held from subs the same as what the client holds from the GC. Employing more subcontractors and reducing the mix of direct labor, direct material, and equipment rental improves a GC's cash flow position.
- Include a mobilization charge in the schedule of values. This is standard with heavy-civil construction contracts.
- Require the client to make a down payment. This is standard with many types of custom residential projects or remodel projects. Many mechanical and electrical equipment manufacturers require down payments as do elevator subcontractors.
- Invoice the client twice monthly, assuming the contract allows this.
- The client pays the GC faster, say on the 10th of month two and not wait until the 30th, or better yet, on the 5th of month two and not the 10th.
- Even though the first month, or partial month, expenditures may be light, the GC should process an early pay request to a) improve its cash flow, and b) test the pay request process as will be discussed in the next chapter.
- Reduce retention held from 10% to 5%.
- The GC does not withhold retention on labor, material, equipment, or indirect costs; therefore, eliminate the client's retention held on these costs. Retention is then only held on the GC equal to the amount of retention held on its subcontractors.
- Release retention on portions of the work which have been completed and accepted. This is common with early subcontractors such as excavation, shoring, and site utilities. This early release requires to have been negotiated into the prime contract prior.
- If the contractor beats their estimate and performs work for less cost, and they are billing against an established schedule of values, they will improve their cash flow position. This is not possible for cost plus percentage fee or time and material projects where invoices are based on actual and not estimated or scheduled costs.
- Some contracts may allow the GC to invoice all of its insurance and other markups up front as a lump sum from the client, and then make distributions periodically.
- Fee will be invoiced proportionately with each monthly draw. The fee will not be paid out but will be banked by the contractor.
- Some GCs negotiate a higher fee to be paid on their direct work than subcontracted work as direct work is riskier, thereby improving its bank of fee as many of these tasks occur earlier.
- Most clients understand that GCs are not banks and will allow a small amount of front-loading of the SOV as discussed in the following, just not an excessive amount.

Unethical cash improvement methods

1. Modify the estimate before developing the schedule of values to reflect more costs on front end construction activities. For example, if the foundations had been originally estimated at $90,000 and the hotel room kitchenettes at $350,000 but reporting those amounts as $300,000 and $140,000 respectively on the SOV.

2. Different than falsifying the SOV as mentioned before, front-loading the SOV also is accomplished by placing a disproportionate share of jobsite general conditions and fee and other markups such as insurance and taxes on those activities which occur early in the project. This seldom can occur on open-book negotiated projects where these markups are invoiced as separate line items as discussed in the next chapter.
3. Increase the amount subcontractors are billing on their monthly requests and falsely report those amounts on the GC's SOV to the client.
4. Hold money back from the subcontractors' checks beyond the retention held due to unresolved disputes or back charges, even though the subcontractors' invoices were applied to the SOV at face value and approved by the project owner.
5. Hold the subcontractors' money long after the GC is paid. Ten days after the client pays the GC is our suggested time-period for a team-build project, but some GCs pay their subcontractors 30 days after they are paid, and some subcontractors do the same with their third-tier subcontractors and suppliers.
6. Hold more retention from subcontractors than the client holds from the GC. For example, if the client holds 5% on the GC then the GC holds 10% from the subcontractors. This is usually not allowed by contract.

Summary

Cash is one of the most powerful tools a client has with a general contractor and a GC has with its subcontractors. The lack of a positive flow of cash is one of the most common reasons for contractor bankruptcy. Contractors which deliver quality work, safely, on time, and within their budget but must continually rely on the bank to fund its operations will ultimately fail. One significant difference between speculative home builders and real estate developers from commercial contractors is that they obtain construction loans, and once the project is completed they realize a large influx of positive cash flow. But the interest they pay on the construction loan was factored into their estimates and pro forma. In commercial construction, as with heavy-civil and custom home construction, contractors expect that the client has either obtained the construction loan or has other sources of funding on hand.

Development of a cash flow curve is a simple task and one that the project manager should do to assist the owner and the bank with analyzing future financing obligations. The cash flow curve is charted from a cost loaded schedule which is developed from the contractor's summary schedule and summary estimate. There are several different cash flow curves which can be plotted, but the one that is most common and straight forward from the contractor's perspective is the work-in-place curve. Processing monthly invoices and receipt of payment will follow a month or so behind this curve.

Net cash flow is defined as revenues less expenditures. Revenue generally occurs once monthly for commercial contractors on the 10th of the month following when the work was performed. Expenses occur at a variety of times throughout the month. Jobsite expenditures include labor, material, equipment, subcontractors, and general conditions. Invoices are processed for all of these expenditures on slightly different tracks involving support from the home office accounting department and the jobsite cost engineer. In most cases, payments lag material delivery and installation by a week or two. In the case of subcontractors, they are paid ten days after the GC is

CHAPTER

14 Payment requests

Introduction

Construction project managers are responsible for many jobsite operations, but getting paid for the work performed is one of the most important. A project manager (PM) may have all of the tools necessary to earn a profit on a job, but if the owner does not pay for the work, the contractor will not be able to realize a profit. Some PMs do not acknowledge the importance of preparing prompt payment requests. This is especially true with many subcontractors. If a payment request is not submitted on time, the contractor will likely not get paid on time. Cash management is essential, or the general contractor (GC) may find that they are unable to pay suppliers, craftsmen, or subcontractors. The importance of a positive cash flow was the topic of the last chapter. PMs must be able to manage jobsite cash flow to be effective contributors to the operation of the construction company.

Processing pay requests is one of the most important aspects of construction financial management for the project manager. Although presented as a jobsite activity in this book, the PM will receive support from the home office accounting department. There are many aspects of construction management that relate to and are involved with the pay request process including contracts, schedule of values, retention, and lien management. This chapter will discuss all of these elements and others affecting the contractor's progress payment requests and associated interaction with the cost accounting processes. Some members of the built environment industry may use different terms for this important topic such as pay estimates, invoices, bills, draws, and progress payments; they are all considered similar for this discussion. Much of the material from this chapter has relied upon J. Schaufelberger and L. Holm's *Management of Construction Projects, a Constructor's Perspective (MCOP)* (2017). The reader is suggested to review that resource for additional discussions on payment requests and other more advanced project management processes.

Contract types

As stated previously, the construction industry differs from others for several reasons, and one of those is the monthly payment process. The formats and times for the pay request are specified in the supplemental or special conditions of the contract. Payment procedures used on the Olympic Resort and Hotel are contained in Article 12 of the AIA A102 cost plus fee with a guaranteed maximum price (GMP) contract. Regardless of the type of contract, many of the payment procedures are similar. This section will discuss some of the pay request differences that are affected by different types of contracts.

Open-book *cost-plus guaranteed maximum price construction contracts* differ from lump sum contracts as regards to the monthly pay request process. The project manager requests payments based on actual and projected expenses. He or she must have already received invoices from subcontractors and suppliers. The PM generally is required to submit subcontractor invoices and general contractor payrolls to the project owner as backup with the payment request. Fees, direct work items, and general conditions expenses are all billed using a schedule of values (SOV) and percentage of completion. It is almost impossible to overbill open-book projects as they are often subject to periodic owner audits of actual costs incurred.

Payment on a *lump sum contract* is also based on a pre-established schedule of values and percentage completion. Front-loading and overbilling can occur on this type of contract, as will be discussed later. General contractor records are rarely audited in a closed-book lump sum contract. A unit price contract allows for payment based upon quantities actually installed. If the contractor is to be paid $200 per lineal foot (LF) for water line installation in a remote location, and has installed 100 feet, then they will be paid $20,000 (100 LF x $200/LF) less any agreed upon retention. This process is quite objective and can be facilitated by an outside quantity measurement individual or firm. Payment on a time and materials (T&M) contract is based on actual labor hours multiplied by a labor rate plus reimbursement for materials based on supplier invoices. A loaded wage rate on a T&M project includes labor burden plus markups for overhead and profit.

Schedule of values

The first step to develop a construction pay request is to establish an agreed upon breakdown of the contract cost, or schedule of values. Often the contract will require that a SOV be submitted for approval within a certain time after executing the contract, for example within one week. This SOV should be established and agreed upon early in the job, well before the first significant request for payment is submitted, but only after all subcontracts have been awarded. If the SOV is established before subcontractor buyout it will not necessarily be accurate and may be difficult to invoice against.

One common method to develop the SOV is to first start with the summary estimate, similar to the process to prepare the cost loaded schedule. This is shown as the GMP cost column in the center of SOV worksheet Table 14.1. This would be the SOV used on a cost-plus contract because the general conditions and fee are listed separately. On a lump sum contract, the general conditions and fee would be distributed proportionately across all payment items as shown on the right side of Table 14.1. The SOV that the project manager would submit for a lump sum contract is the

Evergreen Construction Company

SOV Worksheet

Olympic Hotel and Resort, Project 422

CSI Division	*Description*	*GMP Value*	*% of Subtotal*	*GC & Fee Pro-rated*	*Adjusted Totals*
31, 33	Earthwork and Utilities	906,771			
32	Paving	205,550			
32	Misc. Site and Lscape	315,990			
31–33	Site Work Subtotal:	1,428,311	7.2%	332,912	**1,761,223**
	Subtotal w/o GC's and Fee:	19,893,271	**23.3%**	**4,636,744**	**24,530,015**
	Labor Burden	1,074,287			
1	Jobsite General Conditions	1,662,783			
	Fee & Insurance & Excise & Cont.	1,899,674			
	Subtotal Markups	4,636,744			
	TOTAL GMP:	**24,530,015**			

far right column titled 'adjusted totals'; none of the other columns would be shown. The same cost codes which match those from the estimate and the schedule should be applied here as well.

By combining line items within the SOV together, with the result being fewer line items, some contractors believe they can overbill or hide true estimates or cost values from the project owner. The SOV should be as detailed as is reasonable. The project manager should do all that is possible to assist the owner in paying completely and promptly. Nothing should be hidden. At a minimum, the former 16 Construction Specifications Institute (CSI) divisions, or relevant divisions from the new 49 CSI divisions, should be used as line items. Major subcontractors should be listed where possible. Separate building components, building wings, distinct site areas, phases, or systems should be listed individually in a detailed SOV. A narrow view or summarized SOV for a closed-book project might look like Table 14.2. An abbreviated or summary SOV like this may make it difficult for the PM to sell the monthly pay estimate to the owner and the bank. An open and honest pay request process facilitates the contractor's ultimate goal of timely payments.

It is a good practice for the project manager to submit the proposed SOV to the project owner even if the contract does not require it. The PM does not want any future arguments with an owner or architect over a payment request. The SOV should be submitted for approval, just as a door hardware schedule would. Most project owners appreciate a contractor's transparency which will help facilitate prompt payment as well as establish necessary respect and trust.

The fee on cost-plus guaranteed maximum price contracts is usually invoiced as a percentage complete that matches the overall project completion level. If the project is 80% complete, then 80% of the fee has been earned. Most owners will not take issue with this approach. General conditions on cost-plus contracts can be invoiced three different ways as was discussed with the cost loaded schedule preparation in the last chapter, including: straight line with equal payments for each month, percentage complete based upon work constructed, or actual costs incurred.

Table 14.2 Summary schedule of values

Evergreen Construction Company
1449 Columbia Avenue, Seattle, WA 98202
(206) 447-4222
Olympic Hotel and Resort, Project 422
4/1/2019
Summary Schedule of Values

CSI Division	*Description*	*Totals*
3	Concrete	$5,951,604
4	Masonry	$184,962
5	Structural and Misc. Metals	$506,923
6	Carpentry	$3,846,218
7	Thermal and Moisture	$1,719,919
8	Doors and Glass	$1,584,435
9	Finishes	$2,881,792
10	Specialties	$193,699
11–13	Equipment and Furnishings	$438,036
14	Elevator	$536,390
21–23	Mechanical Systems	$2,928,207
26, 27	Electrical Systems	$1,996,607
31–33	Site Work	$1,761,223
	Total Bid:	**$24,530,015**

Once change orders are approved their values can either be spread across the applicable schedule of values line items or added to the bottom as new line items. This second method generally is the easiest to administer, but this complicates the owner's ability to track subcontractor monthly and final lien releases. Conversely, reformatting the SOV each month by spreading change orders may cause the record of the original SOV to be lost.

Some contractors, especially those which specialize in lump sum bidding, may advocate hiding the fee and general conditions, or front-loading them. This is more prevalent on a bid contract than with negotiated work. We are recommending that each line item, including the fee and general conditions, be listed just as they would in the project cost accounting system. The schedule of values should look like the contractor's estimate. Trying to explain during an audit or a claim situation why the cost of the under-slab utility work was stated as $50,000 in the pay estimate, but was only $20,000 in the original bid, will be difficult if the contractor is found out. Spreading, but still hiding, the fee and general conditions as a weighted average over the SOV is common for both guaranteed maximum price and lump sum projects, and although this may be fair, it will be a difficult process for the project owner to track lien releases as discussed later.

Payment request process

Construction invoicing usually occurs at the end of each month. The jobsite cost engineer will assist the project manager and gather all of the costs in preparation of the monthly request that is to be submitted to the architect or owner for approval. This process should start on or about the 20th of the month. Subcontractors and major suppliers should be required to have their monthly invoices turned in to the general contractor by that time. Subcontractors often do not do a good job of managing their cash flow. The PM needs to encourage them to submit their monthly billings timely. Some GCs have the attitude that if the subcontractors do not get their invoices in on time, that is the subcontractors' problem and they will not get paid this month. While this may be contractually correct, it is counter-productive. The contractor's jobsite team must do all that is reasonable to keep the subcontractors with enough cash so that they do not suffer bankruptcy, at least while they are on this project. A senior executive at a major GC indicated his firm personally calls their subcontractors each month on the telephone – not by email – to remind them to get their invoices turned in on time.

The *subcontractors' invoices* received on the 20th of the month should reflect what percentage of work they believe they will have completed and in place through the end of the month. The suppliers also estimate what they plan to deliver to the site by the end of the month. These timelines will have been established in their contract agreements. The general contractor's project manager and superintendent, with the assistance of a jobsite cost engineer, also forecast the estimated cost of direct work activities they plan to have in place through the end of the month.

Subcontractors and suppliers often request payment for materials which have been delivered to their own warehouse but are not yet on the jobsite. Maybe fabrication is necessary, as is the case with hotel room kitchenettes or roof trusses, or maybe the supplier is ahead of schedule or the general contractor is behind. Sometimes payment for *off-site stored materials* is unavoidable due to scheduling reasons. Occasionally it may be financially beneficial for all parties. For example, the mechanical subcontractor was able to purchase the kitchen exhaust stainless steel ductwork at a discount because it was purchased with materials needed for another larger project. But payment for materials stored off the project site has complications associated with potential damage or theft. In these cases, the project manager needs to be sure that his or her interests, and that of the owner, are protected. The material must be stored in an insured and bonded warehouse. This also requires a personal inspection and verification. The jobsite cost accountant could help with this as well. Most GCs, architects, owners, and lenders try to avoid paying for off-site stored materials but it can be in all of their best interests if accounted for properly.

On approximately the 25th of the month the project manager and cost engineer collect all of these cost forecasts, estimates, and payment requests and assemble a *draft pay request* to submit to the architect, project owner, and/or the bank for review. This involves estimating the percentage complete for each item on the schedule of values through the end of the month. These percentages are multiplied by the value of each line item to produce the SOV continuation sheet shown in Table 14.3. The format shown is an Excel spreadsheet customized by Evergreen Construction Company for the Olympic Hotel and Resort project. Many contractors use similar spreadsheets for their monthly SOV submissions. A live version of this spreadsheet is available on the eResource. Alternatively AIA Form G703 or ConsensusDocs® Form 239 may be specified in the contract as the required SOV worksheet.

Evergreen Construction Company					Billing Period: From:		11/01/19
1449 Columbia Avenue, Seattle, WA 98202						To:	11/30/19
(206) 447-4222						Request #	8
Olympic Hotel and Resort, Project # 422						Invoice #	2927
PAY REQUEST SOV CONTINUATION SHEET							
A	*B*	*C*	*D*	*E*	*G (D+E)*	*G.1 (G/C)*	*H (C–G)*
Line Item	*Description*	*Contract Value*	*Previous Complete*	*Complete This Mo.*	*Complete To date*	*% Complete*	*To Go*
32.2	Misc. Site & Lscape	315,990	0	0	0	0%	315,990
	Subtotal Cost:	21,556,054	8,133,106	1,672,924	9,806,030	45%	11,750,024
90.0	Fee and other Markups	2,973,961	1,122,369	230,864	1,353,232	45%	1,620,729
99.1	Change Order No. 1	75,000	0	0	0	0%	75,000
99.2	Change Order No. 2	117,295	27,550	44,567	72,117	0%	45,178
	Current Totals	**24,722,310**	**9,283,025**	**1,948,355**	**11,231,379**	**45%**	**13,490,931**

Once the draft pay request is assembled, the project manager and jobsite cost engineer should schedule a short informal meeting with the architect, the owner, and the bank at the jobsite to review this month's proposed invoice. Often each of these *draft monthly pay request meetings* are scheduled for the entire project at the time of the initial project preconstruction meeting. At each of these meetings the pay request is presented as a draft for discussion and approval. If any of the approving parties has a problem with a particular line item or percentage, the general contractor still has time to request an explanation from a subcontractor or develop additional detail. A job walk during this meeting is extremely helpful to visualize the work completed or that will be in place by the end of the month. If necessary, subcontractor invoices can be attached to this draft for backup. This draft pay estimate and the meeting promote teamwork among the owner, the architect, and the GC's jobsite financial team. Similar pay request review processes are recommended for both bid and negotiated projects to facilitate timely payment.

The general contractor's project manager will submit the *formal pay request* for final approval and payment to the owner no later than the end of the month. This can be submitted earlier if possible but this date will have been prescribed in the prime contract agreement. ConsensusDocs® Form 291 and AIA Form G702 are popular copyrighted pay estimate summary coversheets; either of which may be stipulated as required in the contract special conditions. Figure 14.1 was developed by the hotel case study client as a customized example of a pay request summary and approval page which accompanies the detailed schedule of values shown in Table 14.3. This client builds hotels all across the country and has many standardized forms and procedures for managing its construction projects. Some contracts and lenders may also request that the architect sign off in the approval process. Although electronic submissions are popular today, it is still a good practice for the PM to hand carry the final payment request through the approval process to ensure there are not any issues.

PAY REQUEST SUMMARY

Where the basis of payment is a guaranteed maximum price

Client: Northwest Resorts, LLC
Address: 1001 First Ave., Seattle, WA 98202
(206) 392-5336

Contractor: Evergreen Construction Company
Address: 1449 Columbia Ave., Seattle, WA 98202
(206) 239-1422

Project: Olympic Hotel and Resort — Contractor's Project # *422*

Billing Period: From: *11/01/19* — Contractor's Request # *8*
To: *11/30/19* — Contractor's Invoice # *2927*

Original Contract Price:			*$24,530,015*
Approved Change Orders:	1 through 2		*$192,295*
Current Contract Price:			*$24,722,310*
Total work completed to date:	(See attached detailed SOV)		*$11,231,379*
Less total retention held at a rate of:		*5%*	*–$561,569*
Plus applicable State Sales tax added at a rate of:		*10.00%*	*$1,123,138*
Subtotal completed to-date less retention, inclusive of Sales Tax:			*$11,792,948*
Less prior applications for payment, net of retention and including tax:			*$9,747,176*
Net amount due this pay period:			*$2,045,772*

Contractor's Certification:
I hereby do certify that to the best of my knowledge the above accounts reflect a true and accurate estimate of the values of work completed and that all amounts paid prior have been distributed according to existing contractual requirements and the laws in existence at this jurisdication at the time of contract.

Contractor: *Chris Anderson* Date: *11/30/19*

Architect's Certification:
In accordance with the contract documents and limited on-site evaluations we have no reason to believe that the accounts presented by the contractor are not reflective of the work accomplished to date.

Architect: *Stan Zimmer* Date: *12/01/19*

Figure 14.1 Pay request summary

The prime contract will also describe *payment terms*. It is customary for the general contractor to be paid by the 10th of the following month if the payment request is submitted by the end of the current month, but some project owners pay on the following 30th, which puts a cash flow strain on the construction team. The specific time frames used on the Olympic Hotel are contained in Article 12 of the AIA A102 contract. The GC's project manager should volunteer to pick up the monthly check and hand-deliver it to his or her CFO and avoid the 'check's in the mail' scenario. Today many contractors will incorporate a direct electronic deposit process in their contract to expedite this step. After the GC has received the monthly payment from the owner, it should disburse funds to suppliers and subcontractors expeditiously. This usually is also done within ten days of receipt. The GC should not delay paying suppliers and subcontractors, but endeavor to keep them financially solvent.

Some third-tier subcontractors and suppliers will request *joint check agreements* between themselves and the second-tier subcontractor and the general contractor to ensure that they are paid expeditiously. In this case, one joint check is cut naming the GC and both the primary subcontractor and its supplier or third-tier subcontractor as recipients. Although some GCs see this as an arduous task, joint checks ultimately benefit and protect the GC and the project owner from the potential that second-tier subcontractors may not make payments to third-tier firms which may ultimately lien the project.

Cash as a tool

As discussed in detail in the last chapter, cash is one of the most powerful tools the project owner has with the general contractor and the GC has with their subcontractors. If a construction firm has a reputation of paying their subcontractors and suppliers promptly, they may receive more favorable prices on bid day. This will result in the GC getting more work. GCs (the same applies here for subcontractors) are not banks. The GC's role on the construction project is to build the building, not provide construction financing. Each contractor begins incurring labor and material expenses early in the month. Bills for these expenses are submitted at the end of the month, and payment is not received until the 10th or the 30th of the following month. This means the GC has provided funding for these expenses for a minimum of 40 and maybe up to 60 days. These time periods may be up to 30 days longer for subcontractors.

Unfortunately slow or delayed payments from project owners to GCs and from GCs to subcontractors motivate all contractors to attempt to *front-load and overbill*. The consequence of overbilling is that contractors may be caught and trust and faith in the jobsite team are lost by the project owner and the bank. The owner may allow a little overbilling so as not to place the contractor in a situation with too large a negative cash flow. The project manager should cooperate by not overbilling too much, as if discovered it might impede the monthly payment request process. The way some PMs overbill is to front-load the schedule of values. Ways of accomplishing this are to place all of the fee and general conditions (if not separately listed) on the early scheduled construction activities, such as foundations or concrete slabs. Another way is to artificially inflate these early activities or to falsify the amounts requested by subcontractors. These methods are counter-productive to building with a team attitude and will most often ultimately be discovered through interim lien releases or during an audit. An exercise has been included at the end of this chapter for front-loading a SOV for the interested reader, but the practice is not advocated by this author/contractor.

The use of *discounts* in the pay request process is another example of using cash as a tool. Discounts may be offered by material suppliers for early payment. If the general contractor pays within a certain time period, say ten days after receipt of an invoice, they can receive a small discount off the invoice price. For this reason, a project manager may elect to pay suppliers early, even though the owner has not made a payment. In this case, the GC is acting as a bank. Some owners will want to benefit also from these discounts. Discounts should only pass through from suppliers to the project owner if the owner has paid the GC up front, and the GC is not utilizing its own cash to realize the discount.

Retention

A portion of each monthly pay request is customarily held back by the project owner from the general contractor and subsequently held back by the GC from its subcontractors. This is referred to as retention, or retainage, and is another cash tool. The purpose of retention is to assure that the contractor's attention is focused on completion of the project, including close-out of all physical and paperwork activities. Financial close-out and the process utilized to receive release of final retention are discussed in Chapter 16.

The percentage of retention held will be dictated by the prime contract and on private projects may be a subject for negotiation, or, during the course of the project, re-negotiation. In the past, 10% was standard, but as the size of contracts has increased along with the value of money, 10% is considered by many as excessive in today's market. The most common percentages today are either 5% through the course of the job or alternatively 10% until the project is 50% complete and no further retention held thereafter, which also equals 5% upon completion. Paragraph 12.1.7 of the AIA A102 contract agreement for the Olympic Hotel indicates a retention rate of 5%.

Each subcontractor's contract agreement with the general contractor should be tied into the prime contract agreement between the GC and the project owner. In this way, the subcontractor is usually tied into whatever retention terms the GC has with the owner. This is usually in the subcontractor's best interest and prohibits the GC from over-withholding retention, which was one of the unethical cash flow improvement options discussed in the last chapter.

If the owner retains 5% of the entire job until 30 days after substantial completion (the standard time frame), does this mean that the foundation shoring subcontractor has to wait to receive final payment until all of the interior painting punch list items are complete? This is not fair to the early subcontractors and may result in undesirable financial burdens that can ultimately impact both the general contractor and the project owner. It is a good idea to include a clause in the prime contract that allows for release of a portion of the overall retention to facilitate paying off early subcontractors. The garage shoring contractor can go broke on another project, but the project manager may receive a lien on this project because the retention is still outstanding. This is not as applicable on short duration projects, but is extremely important on jobs that last a year or longer. Many GCs who pride themselves on team-build projects feel that if final and unconditional lien releases are received 30 days after early subcontractor work packages are completed, those subcontractors should be paid off. But not all project owners subscribe to this philosophy.

Retention establishes an account to finish the work in case contractors refuse or cannot do so. Retention also serves as an incentive for contractors to finish the project expeditiously. A general contractor may be able to convince a negotiated project owner that they do not need to hold as large a retention percentage, because the teams have worked together previously. Coincidently 5% retention approximately equals a mid-size commercial GC's fee. Obtaining the final retention release should be an incentive for any contractor to have a smooth and expeditious close-out process.

Lien management

Liens are legal rights by contractors and suppliers to secure payment for materials and work performed provided in the improvement of real estate. These rights attach to the property in a manner similar to a mortgage. If a contractor is owed money, and the owner refuses payment, the contractor can attach a lien to the owner's property. If the lien is not removed by payment, the lien claimant can demand legal foreclosure and have the obligation satisfied out of the proceeds of the sale of the property. Liens also make it difficult for a property owner to transition from a construction loan to a less expensive permanent loan. Liens should be avoided at all costs. They are expensive to deal with, they cause bad feelings, and they damage reputations. The project manager and cost engineer should work to protect the owner from liens from their own subcontractors and suppliers and from third-tier subcontractors and suppliers. This section describes several lien management or lien prevention techniques which may be implemented by the jobsite financial management team.

Material supplier's rights are protected by state law to assure project owners pay for goods they received. In most jurisdictions, suppliers are required to file what is known as a *materialmen's notice*. This notice is sent to the property owner notifying them that the supplier will be delivering material to their project. In many states the notice is technically required in order to preserve the supplier's lien rights. Some notices are also sent to the general contractor. The cost engineer should file all material notices received with each subcontract and purchase order. At the end of the project, it is appropriate for the GC to request unconditional lien releases from each supplier who filed material notices.

Project owners should require *conditional lien releases* to accompany each request for payment from the general contractor and the GC should require the same from its suppliers and subcontractors. The contract may require submission of interim (or conditional) lien releases from suppliers and subcontractors with each GC payment request to the owner. A project manager should require suppliers and subcontractors to submit conditional lien releases with their monthly pay requests, regardless of the owner's requirements. Interim lien releases should be collected and filed just in case a problem occurs. Regardless of whether a project has a lump sum or a guaranteed maximum price contract, if the project owner requests copies of subcontractor releases, the GC should provide them. The more protection the team can have from liens the better off they are.

A conditional lien release is conditioned upon receipt of payment. If the contractor receives payment for the requested amount, they release their rights to claim for that specific amount. An *unconditional lien release* means that all payments have been received to date, and those lien rights are unconditionally released. Some payment request procedures will require conditional releases to accompany each request for payment along with an unconditional release for the previous month's payment. Some owners will go so far as to physically trade checks for lien releases.

Lien releases can take on a variety of forms and many states produce standard lien release templates which comply with state law. Some owners will try to get contractors to release lien rights that are not required to be released by law. Releasing rights to claim for extra work are also sometimes hidden within the lien release or payment request language. An example lien release is shown in Figure 14.2. Lien releases are an area where legal counsel should be sought. The conditional release covers the month for which payment is requested, and the unconditional release is cumulative for the payments that have been received. A *final lien release* will be submitted for the entire general contractor's contract amount upon close-out to receive the last release of retention.

INTERIM LIEN/CLAIM WAIVER

From: *Evergreen Construction Company*
1449 Columbia Ave.
Seattle, WA 98202

Project: *Olympic Hotel*
Route 4 Box 787
Rainforest, WA 98088

Project Manager: *Chris Anderson*
Telephone: *(206) 447-4222*

Contact Person: *Sandi Chambers*
Telephone: *(206) 392-5336*

CONDITIONAL RELEASE

The undersigned does hereby acknowledge that upon receipt by the undersigned of a check from *Northwest Resorts, LLC* in the sum of *$2,045,722.00* and when the check has been properly endorsed and has been paid by the bank upon which it was drawn, this document shall become effective to release any and all claims and rights of lien which the undersigned has on the above references project for labor, services, equipment, materials furnished and/or any claims through *November 30, 2019*, except it does not cover any retention or items furnished thereafter. Before any recipient of these documents relies on it, said party should verify evidence of payment to the undersigned.

UNCONDITIONAL RELEASE

The undersigned does hereby acknowledge that the undersigned has been paid and has received progress payments in the sum of *$9,747,176.00* for labor, services, equipment, or materials furnished to the above referenced project and does hereby release any and all claims and rights of lien which the undersigned has on the above referenced project. The release covers all payment for labor, services, equipment and materials furnished, and/or claims to the above referenced project through *October 31, 2019* only and does not cover any retention or items furnished after that date.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF WASHINGTON THAT THE ABOVE IS A TRUE AND CORRECT STATEMENT.

Signature: *Robert Benson*
(Authorized Corporate Officer)
Officer-in-Charge

Date: *November 30, 2019*

Figure 14.2 Lien release

Other techniques the estimating, buyout, and cost engineering team should utilize to *manage the lien process* and protect their client from potential lines include the following:

- Request bids from only prequalified subcontractors and suppliers.
- Utilize efficient subcontractor buyout practices and buy smart, and not simply buy fast by mailing contract agreements to those with the (apparent) lowest quotes from bid day. Make sure each chosen subcontractor is a best-value subcontractor.
- Check subcontractor financial statements; similar to the process a client would practice with a general contractor.
- Draft tight subcontract agreements.
- The most common liens are filed from third- or even fourth-tier companies. These may be from an out-of-state supplier to another supplier to the third-tier subcontractor to the second-tier subcontractor. Complicated? Yes! The farther removed, the more difficult it is to prevent and ultimately resolve. Identify as many third- and fourth-tier subcontractors as is

possible, along with their contract amounts. If two-party checks are necessary, accommodate them.
- Pay subcontractors promptly after being paid by the client.
- Timely negotiate all change orders and back charges.
- Support retention release for early subcontractors.

So what happens if a supplier does not get paid within 30 days of the due date? Usually a *pre-lien notice* is filed which is not a lien, but is just a warning that if the supplier does not get paid by a certain date, it will file a lien. If an additional 30 days passes without payment (now maybe 90 days total since the invoice was sent or materials delivered) the supplier will file a formal lien. After the lien is filed, the supplier has an additional 90 days to foreclose. Many states have different rules with respect to liens and lien timing and foreclosures.

Liens are filed by contractors and suppliers against the owner's property. This appears to be an owner's problem, so why should the general contractor's project manager worry about them? Liens are seldom filed by the GC. It is the owner who has received a lien from the contractor's supplier. The GC is expected to protect the owner from liens. Once a lien is filed it becomes extremely difficult for the GC to process any further pay requests. But, contractors' and suppliers' rights to lien are sometimes necessary construction management tools and the PM and his or her jobsite cost accountant or cost engineer must understand and manage them and associated legal and contractual rules, language, and timing correctly.

Summary

Receipt of timely payment is one of the most important cash flow responsibilities of the general contractor's jobsite financial team. The exact format for submitting payment requests will vary depending on the type of contract. A schedule of values is used to support payment applications for lump sum and cost-plus contracts. The project manager is responsible for developing the payment request, making sure payment is received, and subsequently seeing that the subcontractors and suppliers are paid. The jobsite cost accountant will assist the PM with this. If payment has not been received on time, the PM should contact the owner to determine the cause. The financial relationship with the owner is the GC's PM's responsibility. The same scenario holds true with respect to subcontractors and suppliers; the GC's PM ensures that they are paid promptly. Owners usually retain a portion of each payment to ensure timely completion of the project; the retention rate is specified in the contract. Liens can be placed on a project if subcontractors or suppliers are not paid for their labor or materials; therefore project owners require lien releases to be submitted with monthly payment applications.

Review questions

1. Why should all team members wait until completion of subcontractor buyout to finalize the SOV?
2. Is Evergreen's GMP SOV as presented in the left hand side of Table 14.1 based upon the old or new CSI divisions?