



مدیریت مالی، حسابداری و هزینه در پروژه ها و سازمان های پروژه محور

بخش دوازدهم:

مدیریت مالی: پیش بینی شبکه جریانهای نقدینگی پروژه

ارائه دهنده:

سید محمدرضا علوی پور

(PhD, PMP, CMIT)

Costs, payment, receipts, and value

☐ Cost

- ❖ **Cost** of work **performed without** P&O markup
- ❖ Does **not** consider time

☐ Payment

- ❖ **Cost** of work **performed without** P&O markup in which the **payment schedule** from **contractor** is **applied**
- ❖ Considers **time**

☐ Value

- ❖ Value of work based upon **contract** with the owner (**schedule of values**)
- ❖ **Includes** P&O markup
- ❖ Does **not** consider **time**

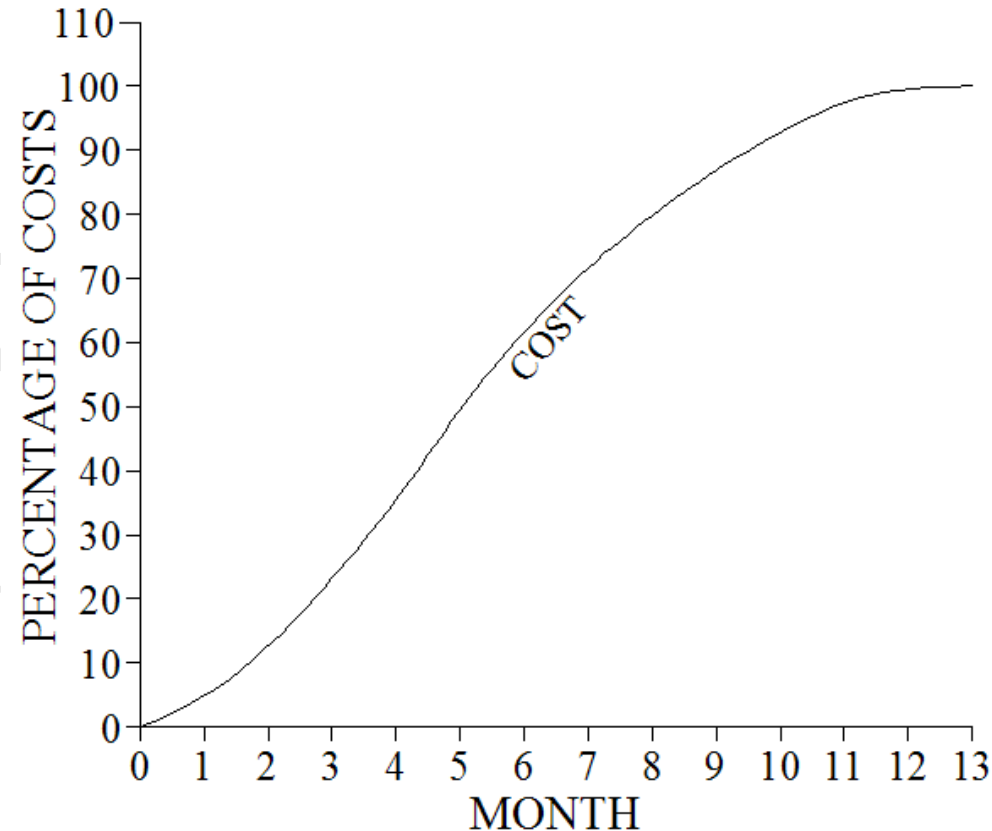
☐ Receipts

- ❖ **Payments** from the **owner with** P&O markup
- ❖ Considers **time**

How to determine a project cash flow?

Step 1: Prepare a cost-loaded schedule

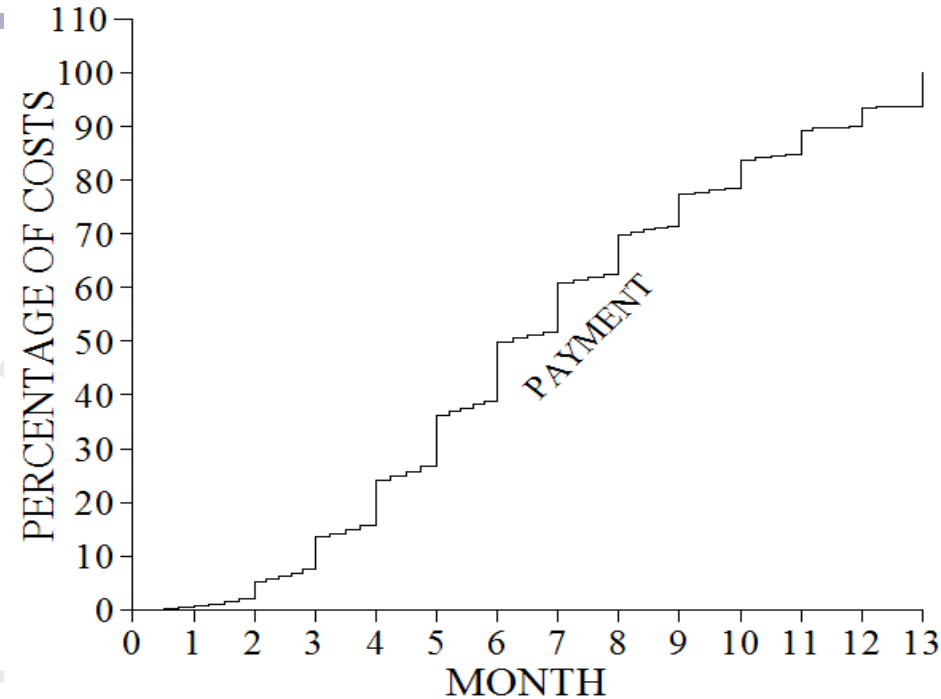
- ❑ The rate of **progress** on a **project** usually starts out **slowly**, picks up **speed** through the **middle** of the project, and **slows down** as the project **nears completion**.
- ❑ **Commonly**, the rate of progress at the **end** of the project is **slower** than at the **beginning of the project**.
- ❑ A **cost-loaded schedule** is often referred to as the **S curve** and is based on the **cost of the work performed**.
- ❑ **Profit and general overhead markup not included** in the graph (only construction costs including project overhead).



How to determine a project cash flow?

Step 2: Determine when costs will be paid

- ☐ Labor
- ☐ Material
- ☐ Subcontractor
- ☐ Equipment
- ☐ Others:
 - ❖ Project overhead
 - ❖ Mobilization
 - ❖ Cost of bonding
 - ❖ Permits
 - ❖ Insurance
 - ❖ Etc.



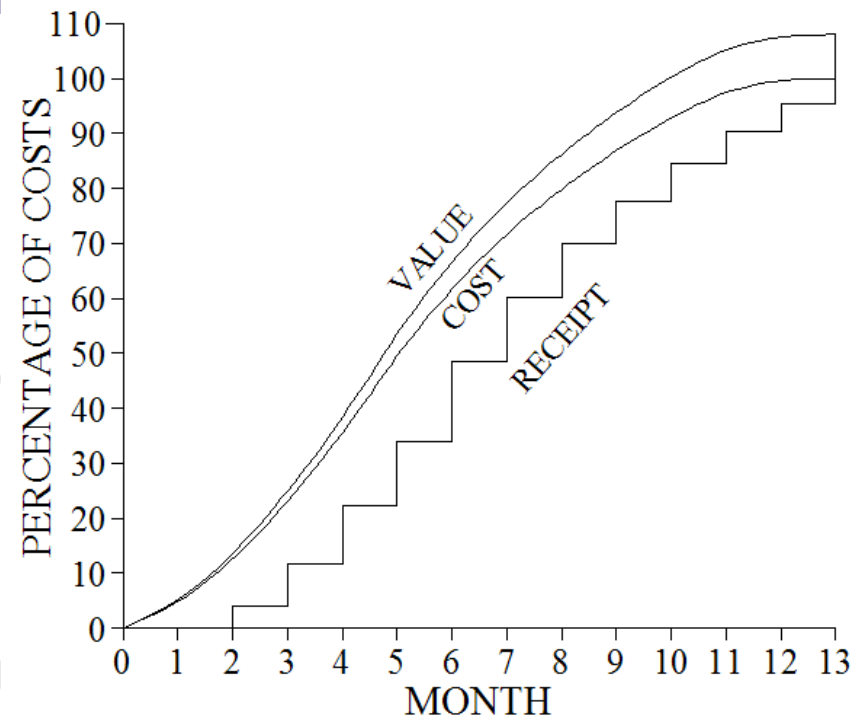
- ☐ The graph is based on **25%** of the costs being **materials**, **25%** being **labor**, and **50%** being **subcontractors**.
 - ✓ It is assumed that **material invoices** fully paid when **received**.
 - ✓ The labor is paid **weekly**.
 - ✓ The **subcontractors** are paid when payment is **received** from the **owner**, less **10%** retention that is withheld **until** the **retention** is released by the **owner**.
 - ✓ P & O markup **not included** in the graph (only construction cost)

How to determine a project cash flow?

Step 3: Determine when payments will be received from owner

- ☐ Advance payment
- ☐ When will bills be submitted
- ☐ When will bills be paid
- ☐ When will retainage be paid
- ☐ When will final payment be paid
- ❖ The bills **submitted** at the **end** of the **month**
- ❖ The bills **paid** with **one month delay** with **10% retention**.
- ❖ The **retention** is **released** at the **end** of the **thirteenth month**.
- ❖ “Receipt” and “Value” include **8% P & O markup**

- ☐ If the project's owner pays the bills **15 days after receipt**, the **receipt** curve would move **one-half** of a **month** to the **left**.
- ☐ If payments were received **45 days after receipt of the bill**, the **receipt** curve would move **one-half** of a **month** to the **right**.



How to determine a project cash flow?

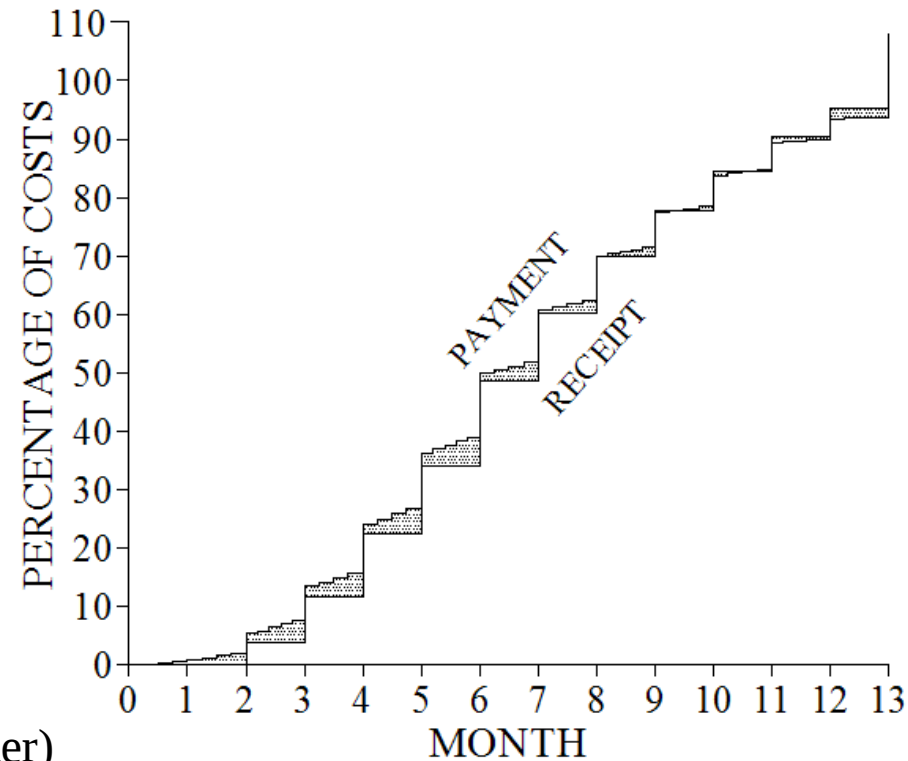
Step 4: Difference in cash flows

- ❑ This is the **cash** that should be **provided** by the **construction company**
- ❑ In this example, the project first experiences a **cash surplus** during the **tenth**.

❑ How to calculate?

❖ $Cash\ required = Receipts - Payment$

- ✓ Receipts: cash inflows (from owner)
- ✓ Payment: cash outflows (payment to labor, suppliers, and subcontractors)
- ✓ Calculate **monthly cash flow** at the **end of each month**
 - Occurs at the end of each month after owner payment is received.
 - $Cash\ Flow_n = Cash\ Receipts_n - Cash\ Disbursements_n$



How to determine a project cash flow?

Step 5: Calculate **total cash flow** at the **end of each month**

❑ Cumulative cash flow

- ❖ Occurs at the **end of each month** after **owner payment is received**.
- ❖ This is **not the maximum cash required** by the construction company **if** the construction company **pays some** of the costs **before payment is paid from the owner**.

$$Cash_n = Cash_{n-1} + Cash\ Flow_n$$

$$\text{❖ } Cash\ Flow_n = Cash\ Receipts_n - Cash\ Disbursements_n$$

How to determine a project cash flow?

Step 6: Calculate maximum cash needed during each month

- ☐ Occurs **during the month**, before owner payment is received, not at the end of each month.
- ☐ Calculate **if construction company** pays **some** of the cost **during** the month **before** the **owner pays** the bill.
- ☐ This is the maximum **cash needed** by construction company **during each month**
- ☐ **How to calculate?**
 - ❖ *Cash required = Payment*
 - ✓ *Cash Flow_n' = - Cash Disbursements_n*

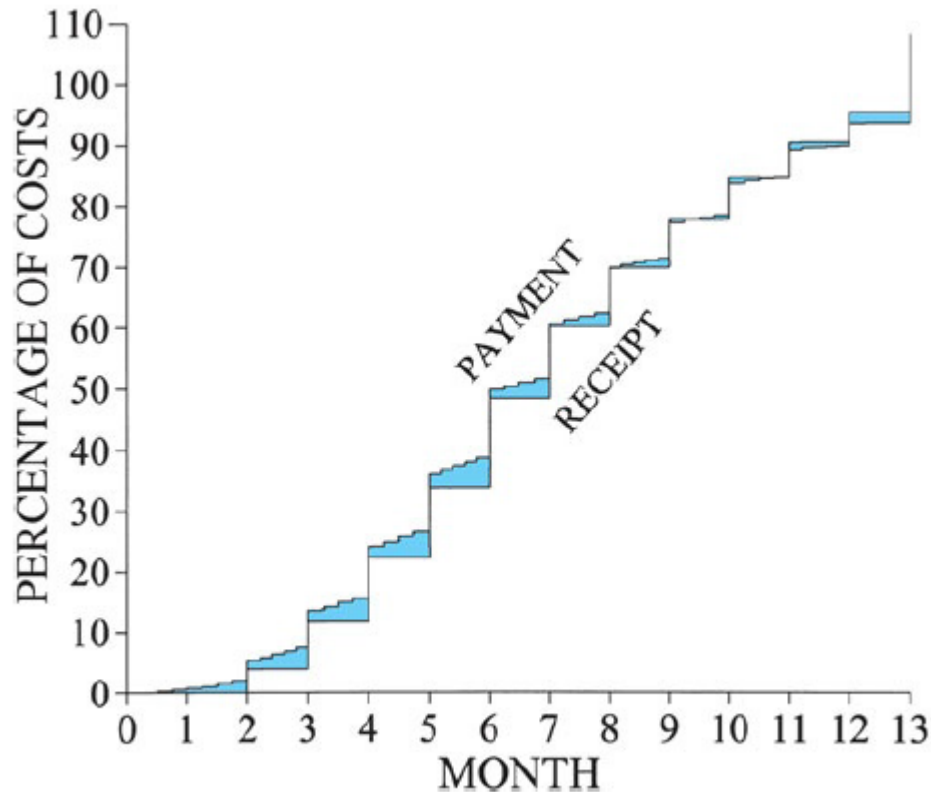
How to determine a project cash flow?

Step 7: Calculate **total maximum cash needed** during each month

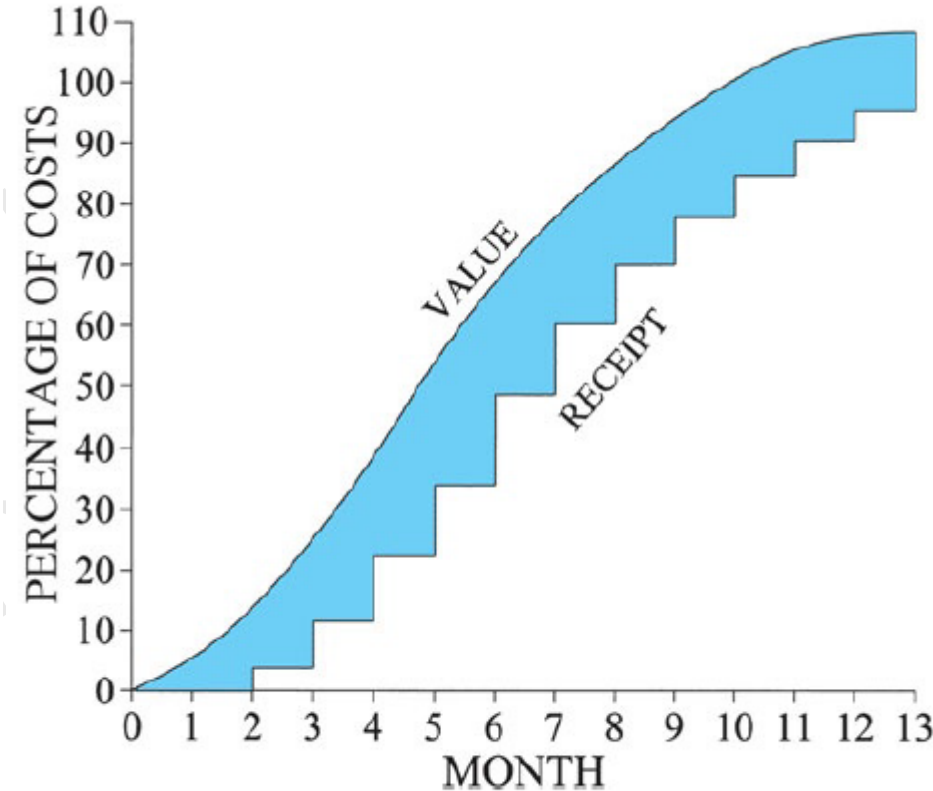
- ☐ **Cumulative maximum cash needed** by construction company
- ☐ Occurs **during the month**, **before owner payment** is received, **not at the end** of each month.
- ☐ Calculate **if** construction company pays **some** of the cost **during** the month **before the owner pays the bill.**
- ☐ This is the **total maximum** cash needed by construction company **during each month**
- ☐ How to calculate?
 - ❖ $\text{Cash}_n = \text{Cash}_{n-1} + \text{Cash Flow}_n$
 - ✓ $\text{Cash Flow}_n = - \text{Cash Disbursements}_n$

Cash provided by general contractors vs. other parties

- Value and Receipt include P&O markup (calculated for GC), whereas payment does not.



Cash Provided by Construction Company



Cash Provided by Construction Company, Labor, Suppliers, and Subcontractors

Notes about cash provided by construction company

1. When the greatest need for cash occurs?

- ☐ Just **prior** to **receipt** of the **payment** from the **owner**.
 - ❖ The cash **needed** at the **end** of the month is **often less** than the **peak amount** of cash **needed during** the **month**.

2. When the amount of cash tied up in retention increases?

- ☐ As the project is **progressed**.

3. When the rate of cash needed is greatest?

- ☐ As the project is **progressed**
- ☐ When the **rate of progress** is **greatest**

Project cash flow forecast for progress payments – Example 1

Example 1: Construction company is negotiating on a construction project with a six-month duration. On the last day of each month the construction company may bill the owner for the work completed during the month. The owner pays the monthly bills one month after they are received. For example, the construction company receives payment for work completed during June on July 31. The owner also holds 10% retention. Final payment is expected one month after completion of the project and will include payment of the retention. The construction company pays material suppliers in full when it receives payment from the owner. The construction company pays subcontractors when it receives payment from the owner but withholds 10% from the subcontractor's payment. The construction company pays for labor weekly. The projected monthly material, labor, and subcontractor costs, as well as the amount the construction company will bill the project's owner each month, are shown in table in next slide. Determine the

1. Monthly cash flows and the total cash generated by the project at the end of each month after and just before each payment is received from the project's owner.
2. What is the maximum amount of cash invested by the company during the completion of the project?

Project cash flow forecast for progress payments – Example 1

Step 1: Prepare a cost-loaded schedule (Costs)

Month	Costs			Bill to Owner (\$)
	Materials (\$)	Labor (\$)	Sub. (\$)	
1	30,400	34,900	54,700	129,600
2	57,300	48,900	123,800	248,400
3	80,500	73,100	136,400	313,200
4	29,200	34,000	106,800	183,600
5	27,800	26,200	66,000	129,600
6	15,400	11,300	43,300	75,600
Total	240,600	228,400	531,000	1,080,000

Assumptions:

In this example you **do not see equipment cost** because it is assumed that all **equipment work** has been **subcontracted**.

You **do not see** mobilization, bonding, insurance, project overhead, etc. **whereas** you **should do** this calculation in reality.

Labors paid every two weeks.

Project cash flow forecast for progress payments – Example 1

Retention Rate: 10%

Month		1	2	3	4	5	6	7
Bill to Owner	3	129,600	248,400	313,200	183,600	129,600	75,600	—
Materials		30,400	57,300	80,500	29,200	27,800	15,400	—
Labor	1	34,900	48,900	73,100	34,000	26,200	11,300	—
Subcontractor		54,700	123,800	136,400	106,800	66,000	43,300	—
Total Costs		120,000	230,000	290,000	170,000	120,000	70,000	—
P&O		9,600	18,400	23,200	13,600	9,600	5,600	—
Receipts	3	—	116,640	223,560	281,880	165,240	116,640	176,040
Payments								
Materials	2	—	30,400	57,300	80,500	29,200	27,800	15,400
Labor		34,900	48,900	73,100	34,000	26,200	11,300	—
Subcontractor		—	49,230	111,420	122,760	96,120	59,400	92,070
Total Payments		34,900	128,530	241,820	237,260	151,520	98,500	107,470
Cash Flow Before Payment	6	(34,900)	(48,900)	(73,100)	(34,000)	(26,200)	(11,300)	—
Total Cash Before Payment	7	(34,900)	(83,800)	(119,890)	(99,050)	(46,630)	(18,010)	11,430
Cash Flow at Month's End	4	(34,900)	(11,890)	(18,260)	44,620	13,720	18,140	68,570
Total Cash at Month's End	5	(34,900)	(46,790)	(65,050)	(20,430)	(6,710)	11,430	80,000

Project cash flow forecast for progress payments – Example 1

❑ Monthly cash flow and cash invested (cash generated)

❖ **Cash generated** is **cumulative**

❖ n' = before receipts and n = after receipts from owner

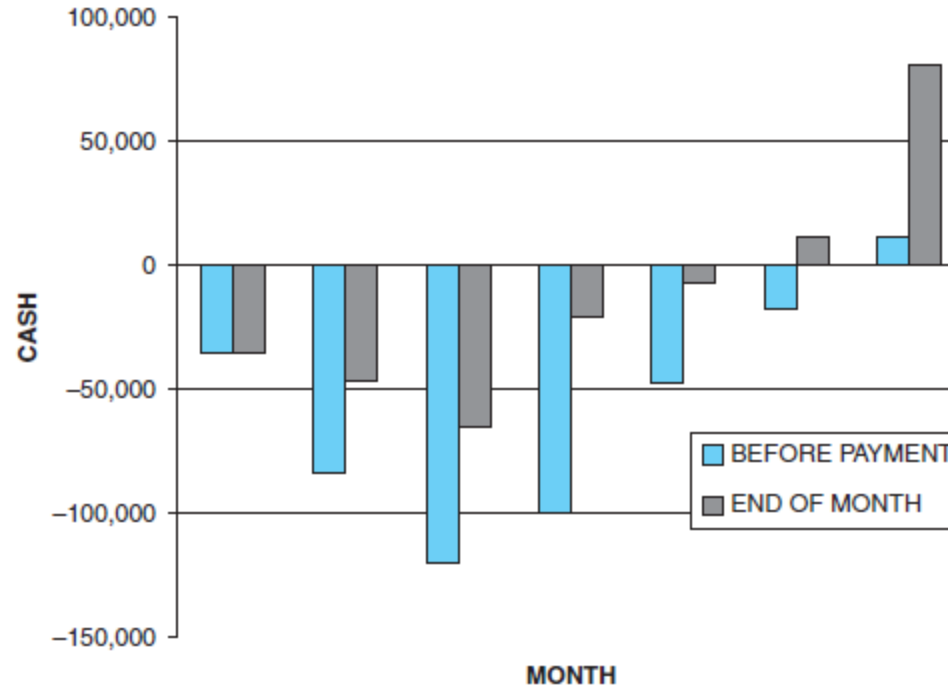
❑ The **maximum amount of cash invested** in the project by the construction company occurs in the **third month and is \$119,890**.

❑ What if we only looked at monthly cash flow?

Month	Monthly Cash Flow (\$)		Cash Generated (\$)	
	n'	n	n'	n
1	-34,900	-34,900	-34,900	-34,900
2	-48,900	-11,890	-83,800	-46,790
3	-73,100	-18,260	-119,890	-65,050
4	-34,000	44,620	-99,050	-20,430
5	-26,200	13,720	-46,630	-6,710
6	-11,300	18,140	-18,010	11,430
7	0	68,570	11,430	80,000

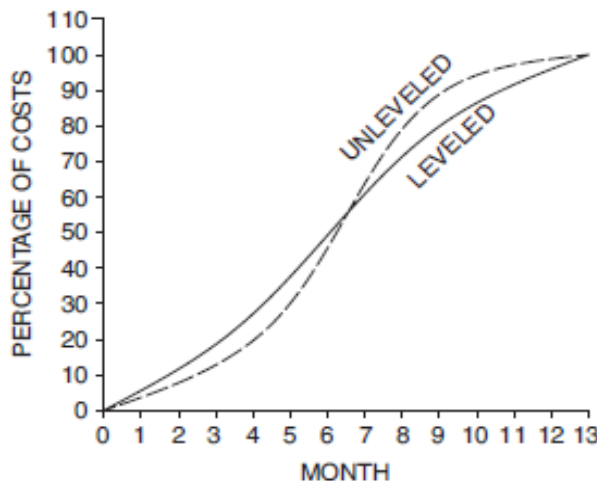
Project cash flow forecast for progress payments – Example 1

Monthly cash flow versus cash invested



How to reduce the cash required?

1. Increase use of **subcontracts** that are **paid when paid**
2. Reduce **retention** rate
3. Increase **profit** and **general overhead** markup
4. **Front-load** the schedule of **values**
 - ❖ Increase value of **early work** and **decrease value** of **later work** such that the total price **remains fixed**.
5. **Change** the **timing** of activities and **schedule** of work
6. Use **resource leveling** to reduce the peak amount of labor required on the project.



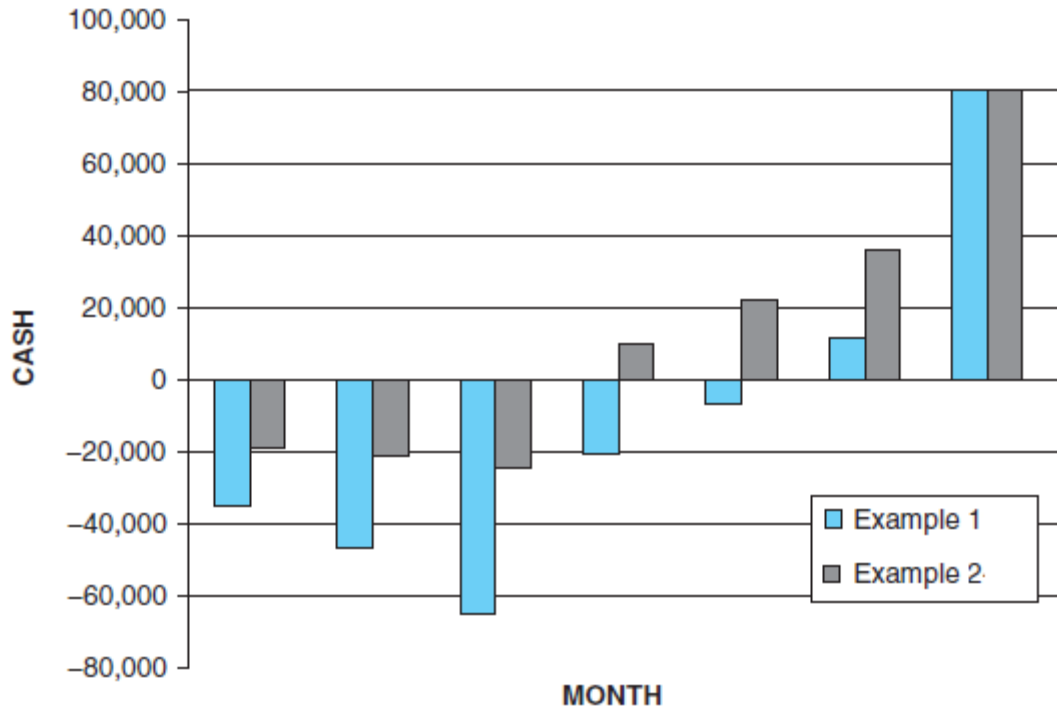
Project cash flow forecast for progress payments – Example 2

Example 2: How would the project's cash requirements change for the construction company in previous example if the amount of work performed by subcontractors increased from 53.1% to 74.1% as shown in the following table?

Month	Costs			Bill to Owner (\$)
	Materials (\$)	Labor (\$)	Sub. (\$)	
1	17,700	19,000	83,300	129,600
2	31,600	26,300	172,100	248,400
3	47,700	40,100	202,200	313,200
4	15,500	17,800	136,700	183,600
5	14,200	14,600	91,200	129,600
6	8,300	6,300	55,400	75,600
Total	135,000	124,100	740,900	1,080,000

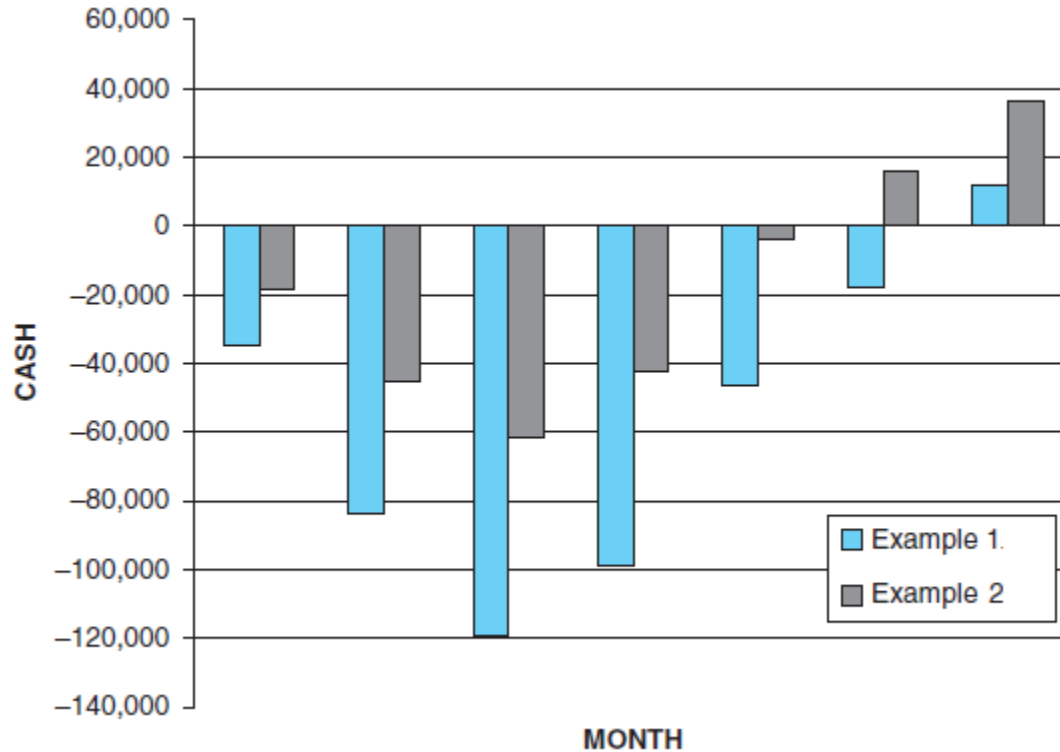
Project cash flow forecast for progress payments – Example 2

❑ Monthly cash flow at the end of each month for Examples 1 versus 2



Project cash flow forecast for progress payments – Example 2

❑ Maximum cash invested for Examples 1 versus 2



What if the owner's payments made at intervals other than monthly?

❑ Sometimes a project will receive progress payment from the project's owner at **intervals other than monthly**.

- ❖ For example, a project may receive progress payments at **25%, 50%, 75%, and 100% complete**.
- ❖ The **procedures** for calculating the project's cash needs are the **same** as for a project that **receives monthly payments**, with:
 1. Cash flows being calculated at the end of each month
 2. Cash flows being calculated just before each payment is received

What if the owner pays differently for different parts of the project?

- ☐ This type of cash flow **often occurs** when constructing **office, warehouse, residential** and **non-residential buildings** where the construction contractor gets paid **differently for each part**.
- ☐ This type of **cash flow is estimated** by:
 1. **Calculating** a cash flow for **each construction part**
 2. Then **combining** these cash flow projections

What if the contractor performs multiple projects simultaneously?

❑ This type of cash flow is estimated by:

1. Calculating a cash flow for each construction type
2. Then combining these cash flow projections

Cash flow for projects with a single payment

❑ Projects with a **single payment** differ in **three ways**:

1. The **Maximum amount of cash required** is equal to the **cash required at the end of the month** for all **but** the **last month** when the payment is received is **different**.
 - ❖ Because there are **no progress payments**.
2. **Retention** is **not held** because there are **no progress payments**.
3. The **construction company** may also be **paying some**, if **not all**, of the **soft costs**.
 - ❖ Soft costs **include** payments for the following:
 - ✓ The purchase of the land;
 - ✓ Engineering and design fees;
 - ✓ Permitting and other fees charged by government entities;
 - ✓ Construction interest and loan fees;
 - ✓ Taxes and insurance;
 - ✓ Other costs not typically included in the payments to the construction company

Cash flow for projects with a single payment – Example 3

Example 3: The construction company in Example 1 decides to act as the owner on the project. The construction company plans to sell the project for \$1,350,600 at the end of the seventh month. In addition to the construction costs, the construction company has the following soft costs: land purchase, \$200,000; engineering and design fees, \$30,000; building permits, \$5,600; government fees, \$20,000; and other miscellaneous costs, \$15,000. The soft cost will be paid at the end of month zero. The construction company pays material suppliers in full on the last day of the month following the month the materials were supplied to the project. For example, materials supplied during the first month will be paid for at the end of the second month. The subcontractors will be paid on the same schedule as the suppliers; however, the construction company will withhold 10% retention from the subcontractors' payments, which will be paid to the subcontractors at the end of the seventh month. The construction company pays for labor weekly. Determine the monthly cash flows and total cash generated by the project at the end of each month and just before the payment is received. What is the maximum amount of cash invested by the company during the completion of the project?

Cash flow for projects with a single payment – Example 3

We have **some changes** compared to Example 1:

1. We have **disbursement in time 0**
2. We **do not** have any receipts and bill to owner
3. **Cash flow before payment** is equal to the **cash flow at the end of the month, except the last month**

Cash flow for projects with a single payment – Example 3

Retention Rate: 10%

Month	1	2	3	4	5	6	7
Bill to Owner	129,600	248,400	313,200	183,600	129,600	75,600	—
Materials	30,400	57,300	80,500	29,200	27,800	15,400	—
Labor	34,900	48,900	73,100	34,000	26,200	11,300	—
Subcontractor	54,700	123,800	136,400	106,800	66,000	43,300	—
Total Costs	120,000	230,000	290,000	170,000	120,000	70,000	—
P&O	9,600	18,400	23,200	13,600	9,600	5,600	—
Receipts	—	116,640	223,560	281,880	165,240	116,640	176,040
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Total Cash Before Payment	(34,900)	(83,800)	(119,890)	(99,050)	(46,630)	(18,010)	11,430
Cash Flow at Month's End	(34,900)	(11,890)	(18,260)	44,620	13,720	18,140	68,570
Total Cash at Month's End	(34,900)	(46,790)	(65,050)	(20,430)	(6,710)	11,430	80,000

Cash flow for projects with a single payment – Example 3

- ❑ We begin by calculating the cash flow for month zero. The total cash disbursements for the soft costs are as follows:
 - ❖ $\text{Cash Disbursements}_0 = \$200,000 + \$30,000 + \$5,600 + \$20,000 + \$15,000 = \$270,600$
- ❑ The cash flow for month zero is as follows:
 - ❖ $\text{Cash Flow}_0 = \$0 - \$270,600 = -\$270,600$
- ❑ The total cash generated at the end of month zero is as follows:
 - ❖ $\text{Cash}_0 = \$0 + (-\$270,600) = -\$270,600$
- ❑ No payments to material suppliers or subcontractors will be made during the first month. During the first month the construction company will pay \$34,900 for labor. The cash flow for the first month remains identical to Example 1:
 - ❖ $\text{Cash Flow}_1 = \$0 - \$34,900 = -\$34,900$
- ❑ The total cash generated at the end of the first month is as follows:
 - ❖ $\text{Cash}_1 = -\$270,600 + (-\$34,900) = -\$305,500$

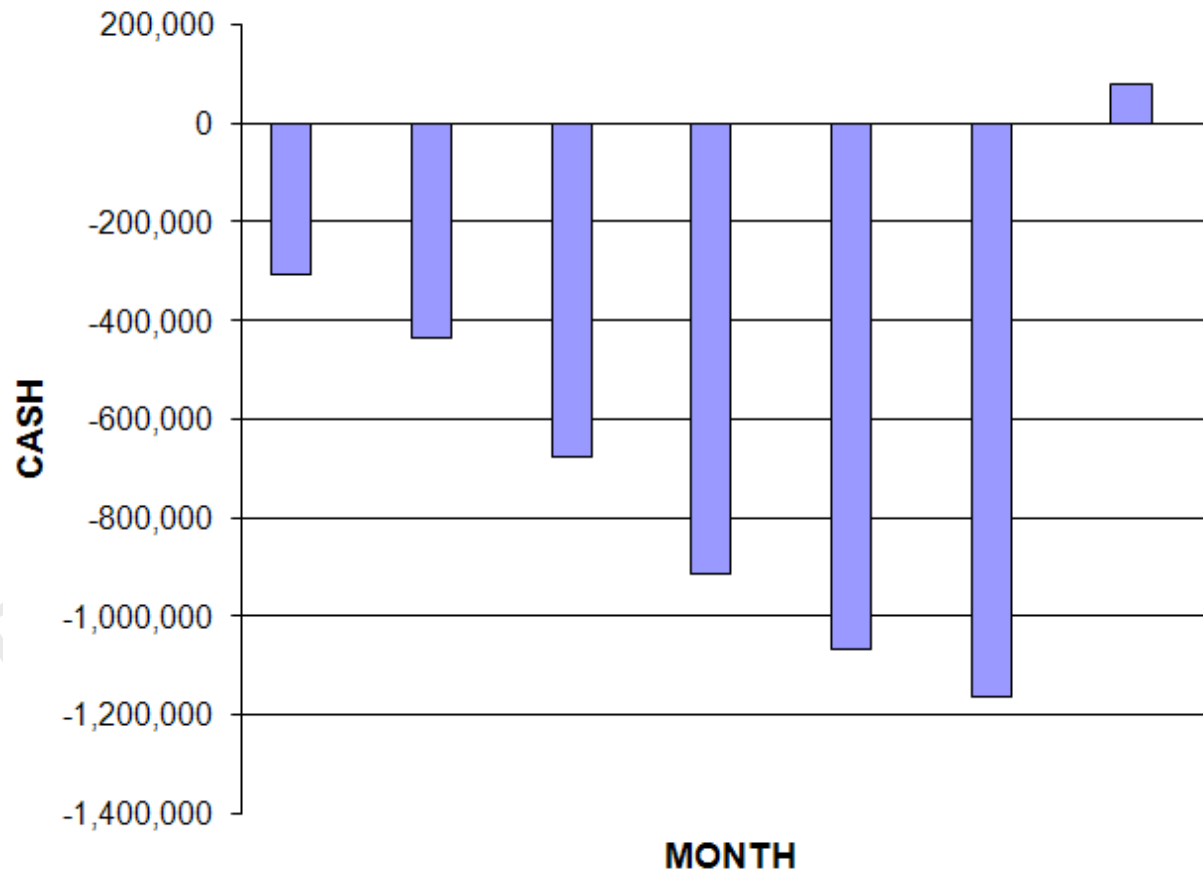
Cash flow for projects with a single payment – Example 3

- ❑ Monthly cash flow and cash invested
- ❑ $\text{Cash Flow}_7 = \$1,350,600 - (\$15,400 + \$92,070) = \$1,243,130$

Month	Monthly Cash Flow (\$)	Cash Generated (\$)
0	-270,600	-270,600
1	-34,900	-305,500
2	-128,530	-434,030
3	-241,820	-675,850
4	-237,260	-913,110
5	-151,520	-1,064,630
6	-98,500	-1,163,130
7'	0	-1,163,130
7	1,243,130	80,000

Cash flow for projects with a single payment – Example 3

- ☐ Cash generated in the project
- ☐ Project needs to finance \$1,163,130



Our research work

- ❑ Optimizing Financing Cost in Construction Projects with Fixed Project Duration
 - ❖ *Journal of construction engineering and management (ASCE)*
- ❑ Impact of contractor`s optimized financing cost on project bid price
 - ❖ *International journal of project management*
- ❑ Time-Cost Tradeoff Analysis with Minimized Project Financing Cost
 - ❖ *Automation in construction*
- ❑ Maximizing expected contractor profit using an integrated model
 - ❖ *Engineering, construction and architectural management*
- ❑ Optimizing financing cost using a line-of-credit and a long-term loan
 - ❖ *13th international project management conference, Tehran, Iran*



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جلسه سیزدهم:

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ارائه دهنده:

سید محمدرضا علوی پور

(PhD, PMP, CMIT)

What you will learn?

- ☐ Purpose of this session
- ☐ What is company cash flow?
- ☐ Why is company cash flow projection important?
- ☐ How to determine company cash flow?
- ☐ Process of developing an annual cash flow projection for company?
- ☐ Notes about company's cash flow projection
- ☐ Company's cash flow projection – Example 1

Purpose of this session

- ❑ Learn how to **prepare** an **annual cash flow projection** for a **construction company**.
- ❑ Learn how to **calculate** the **amount required** for the **financing** of upcoming year.
 - ❖ **Financial manager** should arrange for the **necessary financing** to provide the **necessary funds**.

What is company cash flow?

❑ **Financial manager** should **predict** the cash flow of the company with the **help of project team** to determine the **required funds** for the upcoming year.

❑ **Annual cash flow projections** for a company are prepared by **projecting the annual**

1. Revenues
2. Costs

by **combining** the cash flows from:

1. The individual jobs (projects), or
2. Based on historical data

What is company cash flow?

❑ The financial manager must then combine:

1. Projected revenue
2. Construction costs
3. General overhead budget
4. Projected income taxes
5. Company's available cash

to **determine** the **cash needs** of the company.

Why is company cash flow projection important?

- ❑ **Companies** should not **wait until** the need for **cash arises**.
- ❑ **Waiting** for the need to arise is **dangerous** for **two reasons**:
 1. It takes **time** to arrange for the necessary funding.
 2. Financing is **easier** to get when a company **does not need** it.
- ❑ For **companies with a surplus** of cash, the preparation of a cash flow projection allows the company to **wisely plan** the **investment** of its surplus cash.

How to determine company cash flow?

1. **Set target levels** for
 - ❖ Revenues
 - ❖ Costs
 - ❖ General overhead costs
 - ❖ Profit margin
2. Prepare a **cash flow projection** to determine the amount of **cash needed** to meet these **target levels**.
3. Develop a **plan** of **how** it is going to **obtain this cash**.
 - ❖ Sometimes management may find that the **target levels** need to be **revised** because:
 - ✓ It **cannot obtain** the required cash.
4. It is a good idea to **update this projection** a **few months before the end of the tax year**, thus:
 - ❖ Allowing management time to implement **year-end cash management** and **tax strategies**.

Process of developing an annual cash flow projection for company

Step 1: Determine cash flow from individual projects and sum them up

Or

Step 1: Estimate cash flow based on upon historical data

- ☐ Project revenues, project (construction) costs, cash receipts, and cash disbursements for the individual projects, as outlined in **previous session**.
- ☐ The estimate should include **current** and **future projects** to be obtained **during** the **year**.
- ☐ **Combine** the cash flow from the **projects** to get a cash flow for the company.

Process of developing an annual cash flow projection for company

Step 2: Estimate general overhead

- ☐ **Set general overhead budget** as outlined before.
- ☐ **Combine** this cash flow with the combined **cash flow from the Step 1**.
- ☐ The **result** may be referred to as the **“cash flow from operations.”**

Process of developing an annual cash flow projection for company

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

❑ Estimate loan payments, interest, income taxes, and determine the monthly cash flow.

❖ ***Taxable Income = Income – Tax Deductions***

- ✓ Include **underbillings** and **overbillings**
- ✓ **Not all cost** are tax deductible
- ✓ **Unused (unallowed) losses** may be carried forward

❖ ***Interest = Average balance for the month × Monthly Interest Rate***

- ✓ Approximated by:

Interest = (Beginning Balance – Monthly Labor / 2) × Monthly Interest Rate

Process of developing an annual cash flow projection for company

Step 4: Determine minimum monthly balance (MMB)

❑ For **companies** that receive most of their **revenue at the end of the month**, check the **minimum bank balance during the month**.

❖ Approximated by:

✓ **MMB = Beginning Balance – Monthly Labor**

Process of developing an annual cash flow projection for company

Step 5: Run what-if scenarios, sensitive analysis, and other simulations to determine how the company's needs change as the input parameters change.

1. Fine tuning, what if, and sensitivity analysis
2. Fine tuning—make adjustments to better fit reality (debug)
3. What if—run alternate scenarios
4. Sensitivity analysis—determine the sensitivity of each variable

Notes about company cash flow projection

❑ **NOTE:** As you develop these projections, it is important to remember that they are **only projections** and will need to be **revised during the year** because:

- ❖ Schedules change,
- ❖ Projects are **delayed** or **canceled**, and
- ❖ New opportunities arise

Developing these projections in a computer spreadsheet makes it **easy to make changes as circumstances change**.

Notes about company cash flow projection

❑ **Some** of the projects will **start before** or **finish after** the period of time for which the **company cash flow is being projected**.

❖ When this happens, only the revenues, construction costs, cash receipts, and cash disbursements that **occur during the period of time** for which the company cash flow is **being projected are included** in the calculations.

❑ The revenues, construction costs, cash receipts, and cash disbursements must be calculated for each **individual project** and then combined because the projects often have **different payment schedules** or **retention rates**.

Company cash flow projection – Example 1

Example 1: Determine the revenues, construction costs, cash receipts, and cash disbursements for a construction company that currently has three projects under contract for the next year and anticipates picking up a fourth project during the year. For the first project, the project's owner is holding \$50,000 in retention from this year's payments and will continue to hold 10% retention on all payments during the next year. The construction company is holding \$26,000 retention on its subcontractors from this year's payments. The retention for this project is expected to be released in June. The estimated bill to the project's owner and construction costs for the first project are shown in Table 1.

Table 1 Bill to Owner and Construction Costs for the First Project

Month	Bill to Owner (\$)	Costs			
		Material (\$)	Labor (\$)	Sub. (\$)	Other (\$)
Dec.	504,000	132,000	121,000	193,000	20,000
Jan.	448,000	98,000	109,000	192,000	15,000
Feb.	336,000	87,000	69,000	145,000	10,000
March	392,000	69,000	65,000	220,000	8,000
April	224,000	45,000	52,000	105,000	5,000
Total	1,904,000	431,000	416,000	855,000	58,000

Company cash flow projection – Example 1

Example 1: For the second project, the project's owner is holding \$150,000 in retention from this year's payments and will continue to hold 5% retention on all payments during the next year. The construction company is holding \$82,000 retention on its subcontractors from this year's payments. The project is expected to go on for another 15 months; therefore, the retention for this project is not expected to be released next year (the year for which we are making the projections). The estimated bill to the project's owner and construction costs for the second project are shown in Table 2 .

Table 2 Bill to Owner and Construction Costs for the Second Project

Month	Bill to Owner (\$)	Costs			
		Material (\$)	Labor (\$)	Sub. (\$)	Other (\$)
Dec.	160,000	54,000	55,000	18,000	15,000
Jan.	320,000	95,000	89,000	83,000	17,000
Feb.	256,000	85,000	85,000	38,000	20,000
March	288,000	85,000	81,000	69,000	21,000
April	320,000	82,000	76,000	104,000	22,000
May	320,000	75,000	81,000	107,000	21,000
June	320,000	65,000	69,000	127,000	23,000
July	320,000	62,000	59,000	139,000	24,000
Aug.	256,000	57,000	55,000	95,000	21,000
Sept.	192,000	45,000	49,000	58,000	18,000
Oct.	160,000	35,000	39,000	51,000	18,000
Nov.	192,000	30,000	33,000	92,000	15,000
Dec.	96,000	25,000	19,000	31,000	10,000
Total	3,200,000	795,000	790,000	1,012,000	245,000

Company cash flow projection – Example 1

Example 1: The third project is expected to start in February. The project's owner will hold 10% retention on all payments during the year. The retention for this project is expected to be released in December. The construction company will withhold retention from the payments to its subcontractors. The estimated bill to the project's owner and construction costs for the third project are shown in Table 3.

Table 3 Bill to Owner and Construction Costs for the Third Project

Month	Bill to Owner (\$)	Costs			
		Material (\$)	Labor (\$)	Sub. (\$)	Other (\$)
Feb.	120,000	35,000	42,000	24,000	7,000
March	105,000	37,000	32,000	18,000	8,000
April	225,000	55,000	53,000	86,000	8,000
May	240,000	47,000	52,000	109,000	8,000
June	225,000	49,000	45,000	100,000	8,000
July	180,000	35,000	41,000	78,000	8,000
Aug.	135,000	39,000	36,000	39,000	8,000
Sept.	150,000	35,000	32,000	60,000	8,000
Oct.	120,000	22,000	29,000	50,000	7,000
Total	1,500,000	354,000	362,000	564,000	70,000

Company cash flow projection – Example 1

Example 1: The company anticipates picking up a fourth project from a current customer with a start date of October. The owner of this project will not hold retention. The estimated bill to the project's owner and construction costs for the fourth project are shown in Table 4 .

Table 4 Bill to Owner and Construction Costs for the Fourth Project

Month	Bill to Owner (\$)	Costs			
		Material (\$)	Labor (\$)	Sub. (\$)	Other (\$)
Oct.	180,000	49,000	38,000	56,000	25,000
Nov.	300,000	75,000	67,000	111,000	27,000
Dec.	420,000	119,000	125,000	119,000	29,000
Total	900,000	243,000	230,000	286,000	81,000

Company cash flow projection – Example 1

Example 1: The company's fiscal and tax year starts in January and ends in December. The company uses the percentage of completion method of accounting. Cash receipts from the project's owner are received before the end of the month after the company bills its clients. Labor costs are paid weekly. Material bills are paid in full when the payment is received from the owner. Subcontractor bills are paid—less retention—when payment is received from the owner. The retention withheld from the subcontractor payments is based on the same retention rate that is held by the project's owner and will be paid to the subcontractor when the owner releases the retention. Other costs are paid at the end of the month the costs are incurred.

Company cash flow projection – Example 1

STEP 1: Determine cash flow from individual projects and sum

First, let's look at revenues. Because the company uses the **percentage-of-completion method**, the revenues are recognized when the company bills the owner; therefore, the monthly revenues equal the monthly billings to the project's owners. The revenues for January are calculated as follows:

$$\text{Revenues}_{\text{Dec}} = \$504,000 + \$160,000 + \$0 + \$0 = \$664,000$$

$$\text{Revenues}_{\text{Jan}} = \$448,000 + \$320,000 + \$0 + \$0 = \$768,000$$

- ❑ The revenues for the remaining months of the year are calculated in a similar manner. The revenues for next year are shown in Table 5 .

Table 5 Revenues for Next Year

Month	Revenues (\$)
Jan.	768,000
Feb.	712,000
March	785,000
April	769,000
May	560,000
June	545,000
July	500,000
Aug.	391,000
Sept.	342,000
Oct.	460,000
Nov.	492,000
Dec.	516,000
Total	6,840,000

Company cash flow projection – Example 1

STEP 1 : Next, let's look at **materials costs**. Because the company uses the percentage-of-completion method, the **construction costs are recognized when the company receives the material bill**; therefore, the material bills are received in the **same month that the costs are recognized**. This is true for **labor, subcontractor, and other costs**.

We begin by calculating materials costs in **December** of the **current year**, because these **costs will be paid in January of next year** and are needed to calculate **January's cash flow**. December's and January's materials costs are calculated as follows:

$$\text{Material}_{\text{Dec}} = \$132,000 + \$54,000 + \$0 + \$0 = \$186,000$$

$$\text{Material}_{\text{Jan}} = \$98,000 + \$95,000 + \$0 + \$0 = \$193,000$$

Table 6 Materials Costs for Next Year

Month	Materials (\$)
Jan.	193,000
Feb.	207,000
March	191,000
April	182,000
May	122,000
June	114,000
July	97,000
Aug.	96,000
Sept.	80,000
Oct.	106,000
Nov.	105,000
Dec.	144,000
Total	1,637,000

Company cash flow projection – Example 1

STEP 1 : Next, let's look at **labor** costs.

$$\text{Labor Costs}_{\text{Jan}} = \$109,000 + \$89,000 + \$0 + \$0 = \$198,000$$

Table 7 Labor Costs for Next Year

Month	Labor (\$)
Jan.	198,000
Feb.	196,000
March	178,000
April	181,000
May	133,000
June	114,000
July	100,000
Aug.	91,000
Sept.	81,000
Oct.	106,000
Nov.	100,000
Dec.	144,000
Total	1,622,000

Company cash flow projection – Example 1

STEP 1 : Next, let's look at **subcontractor** costs.

$$\text{Sub.Costs}_{\text{Dec}} = \$193,000 + \$18,000 + \$0 + \$0 = \$211,000$$

$$\text{Sub.Costs}_{\text{Jan}} = \$192,000 + \$83,000 + \$0 + \$0 = \$275,000$$

Table 8 Subcontractor Costs for Next Year

Month	Sub. (\$)
Jan.	275,000
Feb.	207,000
March	307,000
April	295,000
May	216,000
June	227,000
July	217,000
Aug.	134,000
Sept.	118,000
Oct.	157,000
Nov.	203,000
Dec.	150,000
Total	2,506,000

Company cash flow projection – Example 1

STEP 1 : Next, let's look at the **other costs**.

$$\text{Other Costs}_{\text{Jan}} = \$15,000 + \$17,000 + \$0 + \$0 = \$32,000$$

Table 9 Other Costs for Next Year

Month	Other (\$)
Jan.	32,000
Feb.	37,000
March	37,000
April	35,000
May	29,000
June	31,000
July	32,000
Aug.	29,000
Sept.	26,000
Oct.	50,000
Nov.	42,000
Dec.	39,000
Total	419,000

Company cash flow projection – Example 1

STEP 1 : The **total construction costs** for each month.

$$\text{Const. Costs}_{\text{Jan}} = \$193,000 + \$198,000 + \$275,000 + \$32,000 = \$698,000$$

Table 10 Total Costs for Next Year

Month	Total (\$)
Jan.	698,000
Feb.	647,000
March	713,000
April	693,000
May	500,000
June	486,000
July	446,000
Aug.	350,000
Sept.	305,000
Oct.	419,000
Nov.	450,000
Dec.	477,000
Total	6,184,000

Company cash flow projection – Example 1

Example 1: Determine the revenues, construction costs, cash receipts, and cash disbursements for a construction company that currently has three projects under contract for the next year and anticipates picking up a fourth project during the year. For the first project, the project's owner is holding \$50,000 in retention from this year's payments and will continue to hold 10% retention on all payments during the next year. The construction company is holding \$26,000 retention on its subcontractors from this year's payments. The retention for this project is expected to be released in June. The estimated bill to the project's owner and construction costs for the first project are shown in Table 1.

Table 1 Bill to Owner and Construction Costs for the First Project

Month	Bill to Owner (\$)	Costs			
		Material (\$)	Labor (\$)	Sub. (\$)	Other (\$)
Dec.	504,000	132,000	121,000	193,000	20,000
Jan.	448,000	98,000	109,000	192,000	15,000
Feb.	336,000	87,000	69,000	145,000	10,000
March	392,000	69,000	65,000	220,000	8,000
April	224,000	45,000	52,000	105,000	5,000
Total	1,904,000	431,000	416,000	855,000	58,000

Company cash flow projection – Example 1

STEP 1: Next, let's look at **cash receipts** for the first project.

$$\text{Retention}_{\text{Jan}} = \$504,000(0.10) = \$50,400$$

$$\text{Cash Receipt}_{\text{June}} = \$50,000 \text{ (holding from the this year)} + \$50,400 + \$44,800 + \$33,600 + \\ \$39,200 + \$22,400 = \$240,400$$

Table 11 Cash Receipts and Retention for the First Project for Next Year

Month	Cash Receipt (\$)	Retention (\$)
Jan.	453,600	50,400
Feb.	403,200	44,800
March	302,400	33,600
April	352,800	39,200
May	201,600	22,400
June	240,400	0
Total	1,954,000	

Company cash flow projection – Example 1

Example 1: For the second project, the project's owner is holding \$150,000 in retention from this year's payments and will continue to hold 5% retention on all payments during the next year. The construction company is holding \$82,000 retention on its subcontractors from this year's payments. The project is expected to go on for another 15 months; therefore, the retention for this project is not expected to be released next year (the year for which we are making the projections). The estimated bill to the project's owner and construction costs for the second project are shown in Table 2 .

Table 2 Bill to Owner and Construction Costs for the Second Project

Month	Bill to Owner (\$)	Costs			
		Material (\$)	Labor (\$)	Sub. (\$)	Other (\$)
Dec.	160,000	54,000	55,000	18,000	15,000
Jan.	320,000	95,000	89,000	83,000	17,000
Feb.	256,000	85,000	85,000	38,000	20,000
March	288,000	85,000	81,000	69,000	21,000
April	320,000	82,000	76,000	104,000	22,000
May	320,000	75,000	81,000	107,000	21,000
June	320,000	65,000	69,000	127,000	23,000
July	320,000	62,000	59,000	139,000	24,000
Aug.	256,000	57,000	55,000	95,000	21,000
Sept.	192,000	45,000	49,000	58,000	18,000
Oct.	160,000	35,000	39,000	51,000	18,000
Nov.	192,000	30,000	33,000	92,000	15,000
Dec.	96,000	25,000	19,000	31,000	10,000
Total	3,200,000	795,000	790,000	1,012,000	245,000

Company cash flow projection – Example 1

STEP 1: Next, let's look at **cash receipts** for the second project.

The **retention release** for the second project should **not be considered during the year**.

Table 12 Cash Receipts and Retention for the Second Project for Next Year

Month	Cash Receipt (\$)	Retention (\$)
Jan.	152,000	8,000
Feb.	304,000	16,000
March	243,200	12,800
April	273,600	14,400
May	304,000	16,000
June	304,000	16,000
July	304,000	16,000
Aug.	304,000	16,000
Sept.	243,200	12,800
Oct.	182,400	9,600
Nov.	152,000	8,000
Dec.	182,400	9,600
Total	2,948,800	

Company cash flow projection – Example 1

Example 1: The third project is expected to start in February. The project's owner will hold 10% retention on all payments during the year. The retention for this project is expected to be released in December. The construction company will withhold retention from the payments to its subcontractors. The estimated bill to the project's owner and construction costs for the third project are shown in Table 3.

Table 3 Bill to Owner and Construction Costs for the Third Project

Month	Bill to Owner (\$)	Costs			
		Material (\$)	Labor (\$)	Sub. (\$)	Other (\$)
Feb.	120,000	35,000	42,000	24,000	7,000
March	105,000	37,000	32,000	18,000	8,000
April	225,000	55,000	53,000	86,000	8,000
May	240,000	47,000	52,000	109,000	8,000
June	225,000	49,000	45,000	100,000	8,000
July	180,000	35,000	41,000	78,000	8,000
Aug.	135,000	39,000	36,000	39,000	8,000
Sept.	150,000	35,000	32,000	60,000	8,000
Oct.	120,000	22,000	29,000	50,000	7,000
Total	1,500,000	354,000	362,000	564,000	70,000

Company cash flow projection – Example 1

STEP 1: Next, let's look at **cash receipts** for the third project.

Table 13 · Cash Receipts and Retention for the Third Project for Next Year

Month	Cash Receipt (\$)	Retention (\$)
March	108,000	12,000
April	94,500	10,500
May	202,500	22,500
June	216,000	24,000
July	202,500	22,500
Aug.	162,000	18,000
Sept.	121,500	13,500
Oct.	135,000	15,000
Nov.	108,000	12,000
Dec.	150,000	0
Total	1,500,000	

Company cash flow projection – Example 1

Example 1: The company anticipates picking up a fourth project from a current customer with a start date of October. The owner of this project will not hold retention. The estimated bill to the project's owner and construction costs for the fourth project are shown in Table 4 .

Table 4 Bill to Owner and Construction Costs for the Fourth Project

Month	Bill to Owner (\$)	Costs			
		Material (\$)	Labor (\$)	Sub. (\$)	Other (\$)
Oct.	180,000	49,000	38,000	56,000	25,000
Nov.	300,000	75,000	67,000	111,000	27,000
Dec.	420,000	119,000	125,000	119,000	29,000
Total	900,000	243,000	230,000	286,000	81,000

Company cash flow projection – Example 1

STEP 1: For the fourth project, the first cash receipt will be **received in November**. The owner will **not hold retention**. The monthly cash receipts are as follows:

Cash Receipt_{Nov} = \$180,000

Cash Receipt_{Dec} = \$300,000

The total cash receipts for the fourth project for next year are \$480,000. Why? Because the bill for December will be paid in the following year after next year.

Company cash flow projection – Example 1

STEP 1: The **cash receipts for the company** equal the sum of the cash receipts for the individual projects. The **cash receipt for January** is calculated as follows:

$$\text{Cash Receipt}_{\text{Jan}} = \$453,600 + \$152,000 + \$0 + \$0$$

$$\text{Cash Receipt}_{\text{Jan}} = \$605,600$$

Table 14 Cash Receipts for Next Year

Month	Cash Receipts (\$)
Jan.	605,600
Feb.	707,200
March	653,600
April	720,900
May	708,100
June	760,400
July	506,500
Aug.	466,000
Sept.	364,700
Oct.	317,400
Nov.	440,000
Dec.	632,400
Total	6,882,800

Company cash flow projection – Example 1

STEP 1: Next, let's look at cash disbursements. Because the **timing of the disbursements** is **different** for materials, labor, subcontractors, and other costs, these costs need to be **addressed separately**.

The cash disbursements for each project will be calculated separately because **retention** is withheld from the **subcontractor's payments** and the **retention rates** vary from **project to project**.

Let's look at how we do this!

Company cash flow projection – Example 1

Example 1: Determine the revenues, construction costs, cash receipts, and cash disbursements for a construction company that currently has three projects under contract for the next year and anticipates picking up a fourth project during the year. For the first project, the project's owner is holding \$50,000 in retention from this year's payments and will continue to hold 10% retention on all payments during the next year. The construction company is holding \$26,000 retention on its subcontractors from this year's payments. The retention for this project is expected to be released in June. The estimated bill to the project's owner and construction costs for the first project are shown in Table 1.

Table 1 Bill to Owner and Construction Costs for the First Project

Month	Bill to Owner (\$)	Costs			
		Material (\$)	Labor (\$)	Sub. (\$)	Other (\$)
Dec.	504,000	132,000	121,000	193,000	20,000
Jan.	448,000	98,000	109,000	192,000	15,000
Feb.	336,000	87,000	69,000	145,000	10,000
March	392,000	69,000	65,000	220,000	8,000
April	224,000	45,000	52,000	105,000	5,000
Total	1,904,000	431,000	416,000	855,000	58,000

Company cash flow projection – Example 1

STEP 1 : Next, let's look at cash disbursements for the first project.

- ❑ January's cash disbursements for **materials** on the first project are \$132,000.
- ❑ January's cash disbursements for **labor** on the first project are \$109,000.
- ❑ The **retention** from January's payment to the SC is $\$193,000(0.10) = \$19,300$
- ❑ January's cash disbursements for **subcontractor** on the first project are \$173,700.
- ❑ January's cash disbursements for **other costs** on the first project are \$15,000.
- ❑ The **total cash disbursements** for the first project are the sum of the cash disbursements for materials, labor, subcontractors, and other costs.

$$\text{Cash Disbursements}_{\text{Jan}} = \$132,000 + \$109,000 + \$173,700 + \$15,000 = \$429,700$$

- ❑ The cash disbursements for the **remaining months** are calculated in a **similar manner**, **except** for the cash disbursements to **subcontractors** for the month of **June**.

$$\begin{aligned} \text{Sub. Cash Disbursements}_{\text{June}} &= \$26,000 \text{ (retention from this year)} + \$19,300 \\ &\quad \text{(retention from Dec.)} + \$19,200 + \$14,500 + \$22,000 \\ &\quad + \$10,500 = \$111,500 \end{aligned}$$

Company cash flow projection – Example 1

STEP 1: The cash disbursements for the **remaining projects** are calculated in the **same manner**. The cash disbursements for the projects are shown in Table 15.

Table 15 Cash Disbursements for Projects

Month	First (\$)	Second (\$)	Third (\$)	Fourth (\$)
Jan.	429,700	177,100	0	0
Feb.	349,800	278,850	49,000	0
March	290,500	223,100	96,600	0
April	324,000	248,550	114,200	0
May	139,500	282,800	192,400	0
June	111,500	268,650	198,100	0
July	0	268,650	188,000	0
Aug.	0	270,050	149,200	0
Sept.	0	214,250	114,100	0
Oct.	0	157,100	125,000	63,000
Nov.	0	131,450	67,000	199,000
Dec.	0	146,400	56,400	340,000
Total	1,645,000	2,666,950	1,350,000	602,000

Company cash flow projection – Example 1

STEP 1: The total cash disbursements for construction costs may be obtained by summing the cash disbursements for the individual projects. The **monthly cash disbursements** are shown in Table 16 .

Table 16 Total Cash Disbursements

Month	Cash Disbursements (\$)
Jan.	606,800
Feb.	677,650
March	610,200
April	686,750
May	614,700
June	578,250
July	456,650
Aug.	419,250
Sept.	328,350
Oct.	345,100
Nov.	397,450
Dec.	542,800
Total	6,263,950



Company cash flow projection – Example 1

STEP 1

Project 1

Retention: 10%
Previous Retention: 50,000
Sub. Retention: 26,000
Retention Paid in: June

Month	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Revenues	504,000	448,000	336,000	392,000	224,000	—	—	—	—	—	—	—	—	1,400,000
Construction Costs														
Materials	132,000	98,000	87,000	69,000	45,000	—	—	—	—	—	—	—	—	299,000
Labor	121,000	109,000	69,000	65,000	52,000	—	—	—	—	—	—	—	—	295,000
Subcontract	193,000	192,000	145,000	220,000	105,000	—	—	—	—	—	—	—	—	662,000
Other	20,000	15,000	10,000	8,000	5,000	—	—	—	—	—	—	—	—	38,000
Total	466,000	414,000	311,000	362,000	207,000	—	—	—	—	—	—	—	—	1,294,000
Cash Receipts		453,600	403,200	302,400	352,800	201,600	240,400	—	—	—	—	—	—	1,954,000
Cash Disbursements		429,700	349,800	290,500	324,000	139,500	111,500	—	—	—	—	—	—	1,645,000

Company cash flow projection – Example 1

STEP 1

Project 2

Retention: 5%

Previous Retention: 150,000

Sub. Retention: 82,000

Retention Paid in:

Month	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Revenues	160,000	320,000	256,000	288,000	320,000	320,000	320,000	320,000	256,000	192,000	160,000	192,000	96,000	3,040,000
Construction Costs														
Materials	54,000	95,000	85,000	85,000	82,000	75,000	65,000	62,000	57,000	45,000	35,000	30,000	25,000	741,000
Labor	55,000	89,000	85,000	81,000	76,000	81,000	69,000	59,000	55,000	49,000	39,000	33,000	19,000	735,000
Subcontract	18,000	83,000	38,000	69,000	104,000	107,000	127,000	139,000	95,000	58,000	51,000	92,000	31,000	994,000
Other	15,000	17,000	20,000	21,000	22,000	21,000	23,000	24,000	21,000	18,000	18,000	15,000	10,000	230,000
Total	142,000	284,000	228,000	256,000	284,000	284,000	284,000	284,000	228,000	170,000	143,000	170,000	85,000	2,700,000
Cash Receipts		152,000	304,000	243,200	273,600	304,000	304,000	304,000	304,000	243,200	182,400	152,000	182,400	2,948,800
Cash Disbursements		177,100	278,850	223,100	248,550	282,800	268,650	268,650	270,050	214,250	157,100	131,450	148,400	2,666,950



Company cash flow projection – Example 1

STEP 1

Project 3

Retention: 10%

Sub. Retention:

Previous Retention:

Retention Paid in: Dec.

Month	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Revenues	—	—	120,000	105,000	225,000	240,000	225,000	180,000	135,000	150,000	120,000	—	—	1,500,000
Construction Costs														
Materials	—	—	35,000	37,000	55,000	47,000	49,000	35,000	39,000	35,000	22,000	—	—	354,000
Labor	—	—	42,000	32,000	53,000	52,000	45,000	41,000	36,000	32,000	29,000	—	—	362,000
Subcontract	—	—	24,000	18,000	86,000	109,000	100,000	78,000	39,000	60,000	50,000	—	—	564,000
Other	—	—	7,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	7,000	—	—	70,000
Total	—	—	108,000	95,000	202,000	216,000	202,000	162,000	122,000	135,000	108,000	—	—	1,350,000
Cash Receipts		—	—	108,000	94,500	202,500	216,000	202,500	162,000	121,500	135,000	108,000	150,000	1,500,000
Cash Disbursements		—	49,000	96,600	114,200	192,400	198,100	188,000	149,200	114,100	125,000	67,000	56,400	1,350,000

Company cash flow projection – Example 1

STEP 1

Project 4

Retention: 0%

Previous Retention:

Sub. Retention:

Retention Paid in:

Month	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Revenues	—	—	—	—	—	—	—	—	—	—	180,000	300,000	420,000	900,000
Construction Costs														
Materials	—	—	—	—	—	—	—	—	—	—	49,000	75,000	119,000	243,000
Labor	—	—	—	—	—	—	—	—	—	—	38,000	67,000	125,000	230,000
Subcontract	—	—	—	—	—	—	—	—	—	—	56,000	111,000	119,000	286,000
Other	—	—	—	—	—	—	—	—	—	—	25,000	27,000	29,000	81,000
Total	—	—	—	—	—	—	—	—	—	—	168,000	280,000	392,000	840,000
Cash Receipts		—	—	—	—	—	—	—	—	—	—	180,000	300,000	480,000
Cash Disbursements		—	—	—	—	—	—	—	—	—	63,000	199,000	340,000	602,000

Company cash flow projection – Example 1

STEP 1

TOTAL														
Month	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Revenues	664,000	768,000	712,000	785,000	769,000	560,000	545,000	500,000	391,000	342,000	460,000	492,000	516,000	6,840,000
Materials	186,000	193,000	207,000	191,000	182,000	122,000	114,000	97,000	96,000	80,000	106,000	105,000	144,000	1,637,000
Labor	176,000	198,000	196,000	178,000	181,000	133,000	114,000	100,000	91,000	81,000	106,000	100,000	144,000	1,622,000
Subcontract	211,000	275,000	207,000	307,000	295,000	216,000	227,000	217,000	134,000	118,000	157,000	203,000	150,000	2,506,000
Other	35,000	32,000	37,000	37,000	35,000	29,000	31,000	32,000	29,000	26,000	50,000	42,000	39,000	419,000
Construction Costs	608,000	698,000	647,000	713,000	693,000	500,000	486,000	446,000	350,000	305,000	419,000	450,000	477,000	6,184,000
Cash Receipts	—	605,600	707,200	653,600	720,900	708,100	760,400	506,500	466,000	364,700	317,400	440,000	632,000	6,882,800
Cash Disbursements	—	606,800	677,650	610,200	686,750	614,700	578,250	456,650	419,250	328,350	345,100	397,450	542,800	6,263,950
Total Labor	176,000	198,000	196,000	178,000	181,000	133,000	114,000	100,000	91,000	81,000	106,000	100,000	144,000	1,622,000

Company cash flow projection – Example 1

STEP 2: Step 2: Estimate general overhead

- ❑ Once the **cash receipts** and **disbursements** have been calculated for **each** of the anticipated construction projects and have been **combined** for a company-wide total, we are **ready** to determine the **cash disbursements associated** with the **general overhead**.
- ❑ At this point we do **not include other income and expenses** that are not from **construction operations**—such as **interest**—and do not include **income taxes**.
- ❑ The **preparation** of a **general overhead budget** was covered in **THIS COURSE**.
- ❑ To prepare an annual cash flow, the **general overhead budget** must be **prepared** on a **monthly basis**.

Company cash flow projection – Example 1

STEP 2: Step 2: Estimate general overhead

Item	Annual Cash Flow From Operations												Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Revenues	768,000	712,000	785,000	769,000	560,000	545,000	500,000	391,000	342,000	460,000	492,000	516,000	6,840,000
Overhead:													
Advertising	7,680	7,120	7,850	7,690	5,600	5,450	5,000	3,910	3,420	4,600	4,920	5,160	68,400
Promotion	—	—	—	—	—	—	8,000	—	—	—	—	15,000	23,000
Car and Truck Expenses	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	13,200
Computer and Office Furniture	—	—	—	—	—	—	18,000	—	—	—	—	—	18,000
Employee Wages and Salaries	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	271,416
Employee Benefits	750	750	750	750	750	750	750	750	750	750	750	750	9,000
Employee Retirement	679	679	679	679	679	679	679	679	679	679	679	679	8,142
Employee Taxes	2,300	2,238	2,046	1,994	1,924	1,878	1,809	1,809	1,809	1,801	1,565	1,144	22,317
Insurance	4,366	4,086	4,451	4,371	3,326	3,251	3,026	2,481	2,236	2,826	2,986	3,106	40,514
Taxes & Licenses	100	—	—	—	—	—	—	—	—	—	—	—	100
Office Supplies	500	500	500	500	500	500	500	500	500	500	500	500	6,000
Office Rent	500	500	500	500	500	500	500	500	500	500	500	500	6,000
Office Utilities	350	350	250	250	250	350	350	350	250	250	350	350	3,700
Postage and Delivery	100	100	100	100	100	100	100	100	100	100	100	100	1,200
Janitorial and Cleaning	433	433	433	433	433	433	433	433	433	433	433	433	5,200
Telephone	440	440	440	440	440	440	440	440	440	440	440	440	5,280
Charitable Contributions	—	—	—	—	—	—	—	—	—	—	—	3,000	3,000
Dues and Memberships	—	—	—	1,500	—	—	—	—	—	—	—	—	1,500
Legal and Professional Services	1,000	—	—	3,000	—	—	1,000	—	—	1,000	—	—	6,000
Meals and Entertainment	867	867	867	867	867	867	867	867	867	867	867	867	10,400
Bank Fees	50	50	50	50	50	50	50	50	50	50	50	50	600
Miscellaneous	100	100	100	100	100	100	100	100	100	100	100	100	1,200
Total Overhead	43,933	41,931	42,734	46,942	39,237	39,066	65,321	36,686	35,851	38,614	37,958	55,897	524,170

General Overhead Budget

Company cash flow projection – Example 1

STEP 2: Step 2: Estimate general overhead

- ❑ Assume that all overhead costs— **except labor** —are **paid at the end of the month** they occur. Labor will be paid weekly.

Table 17 Monthly General Overhead Budget

Month	Budget (\$)
Jan.	43,934
Feb.	41,932
March	42,735
April	46,945
May	39,239
June	39,068
July	65,323
Aug.	36,688
Sept.	35,853
Oct.	38,613
Nov.	37,960
Dec.	55,898
Total	524,188



Company cash flow projection – Example 1

FROM STEP 1

TOTAL	Month	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Revenues		664,000	768,000	712,000	785,000	769,000	560,000	545,000	500,000	391,000	342,000	460,000	492,000	516,000	6,840,000
Materials		186,000	193,000	207,000	191,000	182,000	122,000	114,000	97,000	96,000	80,000	106,000	105,000	144,000	1,637,000
Labor		176,000	198,000	196,000	178,000	181,000	133,000	114,000	100,000	91,000	81,000	106,000	100,000	144,000	1,622,000
Subcontract		211,000	275,000	207,000	307,000	295,000	216,000	227,000	217,000	134,000	118,000	157,000	203,000	150,000	2,506,000
Other		35,000	32,000	37,000	37,000	35,000	29,000	31,000	32,000	29,000	26,000	50,000	42,000	39,000	419,000
Construction Costs		608,000	698,000	647,000	713,000	693,000	500,000	486,000	446,000	350,000	305,000	419,000	450,000	477,000	6,184,000
Cash Receipts		—	605,600	707,200	653,600	720,900	708,100	760,400	506,500	466,000	364,700	317,400	440,000	632,000	6,882,800
Cash Disbursements		—	606,800	677,650	610,200	686,750	614,700	578,250	456,650	419,250	328,350	345,100	397,450	542,800	6,263,950
Total Labor		176,000	198,000	196,000	178,000	181,000	133,000	114,000	100,000	91,000	81,000	106,000	100,000	144,000	1,622,000

Company cash flow projection – Example 1

Step 2: Estimate general overhead

Cash Flow = Cash Receipts - Cash Disbursements – General Overhead

$$\text{Cash Flow}_{\text{Jan}} = \$605,600 - \$606,800 - \$43,934 = - \$45,134$$

Table 18 Monthly Cash Flow from Operations
for Next Year

Month	Budget (\$)
Jan.	-45,134
Feb.	-12,382
March	665
April	-12,795
May	54,161
June	143,082
July	-15,473
Aug.	10,062
Sept.	497
Oct.	-66,313
Nov.	4,590
Dec.	33,702
Total	94,662

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

- ❑ To get the monthly cash flow, the **cash flow** from **operations** needs to be **reduced** by the cash flows that result from paying **other expenses** (such as loan payments) and **income taxes** and **increased** by the **monthly cash flows** resulting from other **income** (including interest).
- ❑ The **monthly cash flows** will then affect the **company's cash balance** at the **end of the month**, which cash balance is **stored in bank accounts**.
 - ❖ **Positive cash flow** will increase the **company's cash balance**.
 - ✓ **Company's cash balance changes** each month as a result of the monthly cash flows, which **affects the amount of interest paid** on the bank accounts.

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

- ❑ When calculating the **monthly interest**, we should use the **average balance** for the **month**.
 - ❖ During the course of the month our **beginning balance in the bank** will be **reduced** by the **bills paid during the month** just **before** the **revenues are received**.
- ❑ For the company in Example 1, the **balance just before the revenues** occur may be **approximated** by **reducing** the **beginning balance** by the **monthly labor costs**, which are the **only costs** that are paid **throughout the month**.
 - ❖ The balance **may then** be **averaged** with the **beginning balance** to get a representative average balance for the account.

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

❑ If **income taxes** are **paid during** any of the months **other than the last month** of the year, the payment of taxes **will result** in:

- ❖ A cash flow that **reduces** the amount of **cash in the bank**
- ❖ Reducing the amount of **interest paid by the bank**
- ❖ Reducing the **amount of taxes**

❑ This creates a **loop or circular reference** that can be **solved only by iteration.**

- ❖ This iteration is **easily handled by spreadsheets**; however, when preparing the calculations manually, it is **time consuming** to use iteration to solve the problem.

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

- ☐ The company has a **loan** with a **payment of \$1,626 per month**. Of the **entire year's** loan payments, **\$10,900** will be in the form of **interest**.
- ☐ The **surplus cash** from each month will be **placed in a bank account** earning a monthly **interest rate of 0.5%**. **At the beginning of the year**, the balance for the bank account will be **\$200,000**.



Company cash flow projection – Example 1

FROM STEP 1

TOTAL														
Month	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Revenues	664,000	768,000	712,000	785,000	769,000	560,000	545,000	500,000	391,000	342,000	460,000	492,000	516,000	6,840,000
Materials	186,000	193,000	207,000	191,000	182,000	122,000	114,000	97,000	96,000	80,000	106,000	105,000	144,000	1,637,000
Labor	176,000	198,000	196,000	178,000	181,000	133,000	114,000	100,000	91,000	81,000	106,000	100,000	144,000	1,622,000
Subcontract	211,000	275,000	207,000	307,000	295,000	216,000	227,000	217,000	134,000	118,000	157,000	203,000	150,000	2,506,000
Other	35,000	32,000	37,000	37,000	35,000	29,000	31,000	32,000	29,000	26,000	50,000	42,000	39,000	419,000
Construction Costs	608,000	698,000	647,000	713,000	693,000	500,000	486,000	446,000	350,000	305,000	419,000	450,000	477,000	6,184,000
Cash Receipts	—	605,600	707,200	653,600	720,900	708,100	760,400	506,500	466,000	364,700	317,400	440,000	632,000	6,882,800
Cash Disbursements	—	606,800	677,650	610,200	686,750	614,700	578,250	456,650	419,250	328,350	345,100	397,450	542,800	6,263,950
Total Labor	176,000	198,000	196,000	178,000	181,000	133,000	114,000	100,000	91,000	81,000	106,000	100,000	144,000	1,622,000

Company cash flow projection – Example 1

FROM STEP 2

Table 18 Monthly Cash Flow from Operations
for Next Year

Month	Budget (\$)
Jan.	-45,134
Feb.	-12,382
March	665
April	-12,795
May	54,161
June	143,082
July	-15,473
Aug.	10,062
Sept.	497
Oct.	-66,313
Nov.	4,590
Dec.	33,702
Total	94,662

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

- ❑ To get the cash flow **for January**, we must **add** the **interest** from the bank account and **subtract the loan payment**. The **average balance** for **January** is calculated as follows:

$$\text{Average Balance} = [\text{Beginning Balance} + (\text{Beginning Balance} - \text{Labor})] / 2$$

$$\text{Average Balance} = \text{Beginning Balance} - \text{Labor} / 2$$

$$\begin{aligned} \text{Average Balance}_{\text{Jan}} &= \$200,000 \text{ (from current year)} - (\$198,000 \text{ (labor cost from projects)}) \\ &\quad + \$22,618 \text{ (general overhead labor)} / 2 = \$89,691 \end{aligned}$$

- ❑ The **interest on the bank account** for **January** is calculated as follows:

$$\text{Interest}_{\text{Jan}} = \$89,691(0.005) = \$448$$

- ❑ The **cash flow for January** is calculated by **adding the interest** to the cash flow from operations and **subtracting the monthly loan payment**, as follows:

$$\text{Cash Flow}_{\text{Jan}} = -\$45,134 \text{ (cash flow in Step 2)} + \$448 - \$1,626 = -\$46,312$$

$$\text{Cumulative cash flow (end of Jan)} = \$200,000 - \$46,312 = \$153,688$$

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

- ❑ This cash will be withdrawn from the bank account **leaving it with a balance of \$153,688 (\$200,000 - \$46,312)**. The **average balance for February** is calculated as follows:

$$\text{Average Balance}_{\text{Feb}} = \$153,688 - (\$196,000 + \$22,618) / 2 = \$44,379$$

- ❑ The **interest on the bank account** for the month of **February** is calculated as follows:

$$\text{Interest}_{\text{Feb}} = \$44,379(0.005) = \$222$$

- ❑ The **cash flow for February** is calculated as follows:

$$\text{Cash Flow}_{\text{Feb}} = -\$12,382 \text{ (cash flow in Step 2)} + \$222 - \$1,626 = -\$13,786$$

$$\text{Cumulative cash flow (end of Feb)} = \$153,688 - \$13,786 = \$139,902$$

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

- ❑ The interest on the bank account, the monthly cash flow, and cumulative cash flow for the months of **March through November** are calculated in a **similar manner**. At the end of November, the **cumulative cash flow (balance in the bank account)** will be **\$250,923**.

$$\text{Average Balance}_{\text{Dec}} = \$250,923 - (\$144,000 + \$22,618) / 2 = \$167,614$$

$$\text{Interest}_{\text{Dec}} = \$167,614(0.005) = \$838$$

$$\begin{aligned} \text{Total interest throughout the year} &= \$448 + \$222 + \$198 + \$187 + \$235 + \$547 + \\ &\quad \$1,292 + \$1,235 + \$1,309 + \$1,247 + \$929 + \$838 \\ &= \$8,687 \end{aligned}$$

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

- ☐ To get the **cash flow for December**, we must **include the tax**.
- ☐ This tax is based on the **estimated income taxes** for the year:

Estimated taxes = marginal tax rate × estimated taxable income

✓ *Estimated taxable income = revenues (adjusted for changes in overbillings and underbillings) - construction costs - portion of overhead that is tax deductible - other expenses (namely, interest paid) + other income (namely, interest received).*



Company cash flow projection – Example 1

FROM STEP 1

TOTAL														
Month	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Revenues	664,000	768,000	712,000	785,000	769,000	560,000	545,000	500,000	391,000	342,000	460,000	492,000	516,000	6,840,000
Materials	186,000	193,000	207,000	191,000	182,000	122,000	114,000	97,000	96,000	80,000	106,000	105,000	144,000	1,637,000
Labor	176,000	198,000	196,000	178,000	181,000	133,000	114,000	100,000	91,000	81,000	106,000	100,000	144,000	1,622,000
Subcontract	211,000	275,000	207,000	307,000	295,000	216,000	227,000	217,000	134,000	118,000	157,000	203,000	150,000	2,506,000
Other	35,000	32,000	37,000	37,000	35,000	29,000	31,000	32,000	29,000	26,000	50,000	42,000	39,000	419,000
Construction Costs	608,000	698,000	647,000	713,000	693,000	500,000	486,000	446,000	350,000	305,000	419,000	450,000	477,000	6,184,000
Cash Receipts	—	605,600	707,200	653,600	720,900	708,100	760,400	506,500	466,000	364,700	317,400	440,000	632,000	6,882,800
Cash Disbursements	—	606,800	677,650	610,200	686,750	614,700	578,250	456,650	419,250	328,350	345,100	397,450	542,800	6,263,950
Total Labor	176,000	198,000	196,000	178,000	181,000	133,000	114,000	100,000	91,000	81,000	106,000	100,000	144,000	1,622,000

Company cash flow projection – Example 1

- ❑ Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.
- ❑ **Projected underbillings and overbilling** for **this year and next year**, is shown.
- ❑ An increase in underbillings increases revenues and an increase in overbillings decreases revenues; therefore, a decrease in overbillings increases revenues.
- ❑ **Adjusted Revenues = Revenues + Change in Underbillings - Change in Overbillings**
- ❑ Adjusted Revenues = \$6,840,000 + \$10,138 (\$15,843 - \$5,705) - (-\$9,748 (0 - \$9,748))

End of This Year											
Job #	Job Name	Current Contract Amount	Total Estimated Cost at Completion	Estimated Profit (C - D)	Actual Costs To Date	Earned Profit (E x F / D)	Costs & Earned Profit (F + G)	Total Billed	Costs & Profits in Excess of Billings (H - I)	Billings in Excess of Costs & Profits (I - H)	Percent Complete (F x 100 / D)
1	Project 1	1,900,000	1,744,000	156,000	450,000	40,252	490,252	500,000	—	9,748	26
2	Project 2	6,285,000	5,850,000	435,000	265,000	19,705	284,705	279,000	5,705	—	5
									5,705	9,748	
End of Next Year											
Job #	Job Name	Current Contract Amount	Total Estimated Cost at Completion	Estimated Profit (C - D)	Actual Costs To Date	Earned Profit (E x F / D)	Costs & Earned Profit (F + G)	Total Billed	Costs & Profits in Excess of Billings (H - I)	Billings in Excess of Costs & Profits (I - H)	Percent Complete (F x 100 / D)
1	Project 1	1,900,000	1,744,000	156,000	1,744,000	156,000	1,900,000	1,900,000	—	—	100
2	Project 2	6,285,000	5,850,000	435,000	5,850,000	435,000	6,285,000	6,285,000	—	—	100
3	Project 3	1,500,000	1,350,000	150,000	1,350,000	150,000	1,500,000	1,500,000	—	—	100
4	Project 4	2,560,000	2,348,000	212,000	840,000	75,843	915,843	900,000	15,843	—	36
									15,843	—	
Change									10,138	(9,748)	

FIGURE-2 Work on Hand Worksheet for Example 1

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

Adjusted Revenues = \$6,859,886

- ☐ **50% of meals and entertainment is deductible.** This will decrease the tax-deductible overhead by 50% of the meals and entertainment cost or **\$5,202** ($\$10,404 \times 0.50$).
- ☐ The company has **\$6,000 in depreciation** from the previous year's purchases.
- ☐ In the current overhead calculations, the money spent on a **new computer system (\$18,000)** has been deducted and depreciation has been ignored (**\$3,600** for the first year).
Tax deductible overhead = \$524,188 (general overhead budget for the next year) - \$5,202 - \$18,000 (new asset) + \$6,000 + \$3,600 = \$510,586
- ☐ The company has an outstanding **loan** in which **\$10,900 interest will be paid.**
- ☐ The **taxable income** equals the adjusted revenues less construction costs less overhead less interest paid plus interest received, and is calculated as follows:
Taxable Income = \$6,859,886 - \$6,184,000 - \$510,586 - \$10,900 + \$8,687 = \$163,087

The estimated taxes are 35.0% of the taxable income or \$57,080 ($\$163,087 \times 0.35$).

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

Taxable income

Tax Rate	35.0%
Tax Calculations	
Revenues	6,840,000
Plus Changes in Underbillings	10,138
Less Changes in Overbillings	(9,748)
Adjusted Revenues	6,859,886
Construction Costs	6,184,000
Gross Profit	675,886
Overhead—Cash Flow	524,170
Less 50% of Meals & Enter.	5,200
Less Office Equipment	18,000
Plus Past Depreciation	6,000
Plus New Depreciation	3,600
Total Deductible Overhead	510,570
Net Profit From Operations	165,316
Less Interest Paid	10,900
Plus Interest	8,687
Taxable Income	163,103
Estimated Taxes	57,086

Tax Calculations

Company cash flow projection – Example 1

FROM STEP 2

Table 18 Monthly Cash Flow from Operations
for Next Year

Month	Budget (\$)
Jan.	-45,134
Feb.	-12,382
March	665
April	-12,795
May	54,161
June	143,082
July	-15,473
Aug.	10,062
Sept.	497
Oct.	-66,313
Nov.	4,590
Dec.	33,702
Total	94,662

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

- ❑ The interest on the bank account, the monthly cash flow, and cumulative cash flow for the months of **March through November** are calculated in a **similar manner**. At the end of November, the **cumulative cash flow (balance in the bank account)** will be **\$250,923**.

$$\text{Average Balance}_{\text{Dec}} = \$250,923 - (\$144,000 + \$22,618) / 2 = \$167,614$$

$$\text{Interest}_{\text{Dec}} = \$167,614(0.005) = \$838$$

$$\begin{aligned} \text{Total interest throughout the year} &= \$448 + \$222 + \$198 + \$187 + \$235 + \$547 + \\ &\quad \$1,292 + \$1,235 + \$1,309 + \$1,247 + \$929 + \$838 \\ &= \$8,687 \end{aligned}$$

Company cash flow projection – Example 1

Step 3: Incorporate other income and expenses to the cash flow prepared in Step 2.

The cash flow for December is calculated as follows:

$$\text{Cash Flow}_{\text{Dec}} = \$33,702 \text{ (from Step 2)} + \$838 - \$1,626 - \$57,080$$

$$\text{Cash Flow}_{\text{Dec}} = -\$24,166$$

This cash will be withdrawn from the bank account, leaving it with a balance of \$226,757 (\$250,923 – \$24,166).

Table 19 Monthly Balances, Interest, Income Tax, and Cash Flow

Month	Bank Account			Income Taxes (\$)	Monthly Cash Flow (\$)
	Beginning Balance (\$)	Interest Received (\$)	Ending Balance (\$)		
Jan.	200,000	448	153,688	0	-46,312
Feb.	153,688	222	139,902	0	-13,786
March	139,902	198	139,139	0	-763
April	139,139	187	124,905	0	-14,234
May	124,905	235	177,675	0	52,770
June	177,675	547	319,678	0	142,003
July	319,678	1,292	303,871	0	-15,807
Aug.	303,871	1,235	313,542	0	9,671
Sept.	313,542	1,309	313,722	0	180
Oct.	313,722	1,247	247,030	0	-66,692
Nov.	247,030	929	250,923	0	3,893
Dec.	250,923	838	226,757	57,080	-24,166

Company cash flow projection – Example 1

Step 4: Determine minimum monthly balance (MMB)

- ❑ For construction companies, the **balances at the end of the month may or may not** be representative of the company's needs for **cash during the month**.
- ❑ For construction companies whose **cash receipts** are **distributed evenly throughout the month**, the **balances at the end** of the month are often fairly representative of the **entire month**.
 - ❖ For many **medium- to large-volume homebuilders** who have **multiple sales spread throughout the month**, this is the case.
 - ❖ For many **commercial construction companies**, the **bulk of their cash receipts** occur **during one week of the month, often near the end of the month**.
 - ✓ These companies have to **fund cash disbursements** that occur from the **beginning of the month until the cash receipts begin**.
 - ✓ Because the company is **using its cash to pay these bills**, the **available cash is reduced below the balances reported at the end of each month, often by a significant amount**.

Company cash flow projection – Example 1

Step 4: Determine minimum monthly balance (MMB)

Minimum Balance = Beginning balance – Labor – General overhead labor

Minimum Balance_{Jan} = \$200,000 - \$198,000 - \$22,618 = - \$20,618

Minimum Balance_{Feb} = \$153,688 - \$196,000 - \$22,618 = - \$64,930

- ☐ The remaining months are calculated in a similar manner. The minimum monthly balances for the year are shown in Table 20.
- ☐ **Based on Step 3**, MMB = \$124,905 in April === we do not need to borrow money?
- ☐ MMB = -\$64,930 in Feb.
- ☐ To be on the safe side?

Table 20 Minimum Monthly Balances

Month	Budget
Jan.	-20,618
Feb.	-64,930
March	-60,716
April	-64,479
May	-30,713
June	41,057
July	197,060
Aug.	190,253
Sept.	209,924
Oct.	185,104
Nov.	124,412
Dec.	84,305

Item	Annual Cash Flow From Operations												Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Cash Receipts	605,600	707,200	653,600	720,900	708,100	760,400	506,500	466,000	364,700	317,400	440,000	632,400	6,882,800
Cash Disbursements	606,800	677,650	610,200	686,750	614,700	578,250	456,650	419,250	328,350	345,100	397,450	542,800	6,263,950
Overhead:													
Advertising	7,680	7,120	7,850	7,690	5,600	5,450	5,000	3,910	3,420	4,600	4,920	5,160	68,400
Promotion	—	—	—	—	—	—	8,000	—	—	—	—	15,000	23,000
Car and Truck Expenses	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	13,200
Computer and Office Furniture	—	—	—	—	—	—	18,000	—	—	—	—	—	18,000
Employee Wages and Salaries	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	22,618	271,416
Employee Benefits	750	750	750	750	750	750	750	750	750	750	750	750	9,000
Employee Retirement	679	679	679	679	679	679	679	679	679	679	679	679	8,142
Employee Taxes	2,300	2,238	2,046	1,994	1,924	1,878	1,809	1,809	1,809	1,801	1,565	1,144	22,317
Insurance	4,366	4,086	4,451	4,371	3,326	3,251	3,026	2,481	2,236	2,826	2,986	3,106	40,514
Taxes & Licenses	100	—	—	—	—	—	—	—	—	—	—	—	100
Office Supplies	500	500	500	500	500	500	500	500	500	500	500	500	6,000
Office Rent	500	500	500	500	500	500	500	500	500	500	500	500	6,000
Office Utilities	350	350	250	250	250	350	350	350	250	250	350	350	3,700
Postage and Delivery	100	100	100	100	100	100	100	100	100	100	100	100	1,200
Janitorial and Cleaning	433	433	433	433	433	433	433	433	433	433	433	433	5,200
Telephone	440	440	440	440	440	440	440	440	440	440	440	440	5,280
Charitable Contributions	—	—	—	—	—	—	—	—	—	—	—	3,000	3,000
Dues and Memberships	—	—	—	1,500	—	—	—	—	—	—	—	—	1,500
Legal and Professional Services	1,000	—	—	3,000	—	—	1,000	—	—	1,000	—	—	6,000
Meals and Entertainment	867	867	867	867	867	867	867	867	867	867	867	867	10,400
Bank Fees	50	50	50	50	50	50	50	50	50	50	50	50	600
Miscellaneous	100	100	100	100	100	100	100	100	100	100	100	100	1,200
Total Overhead	43,933	41,931	42,734	46,942	39,237	39,066	65,321	36,686	35,851	38,614	37,958	55,897	524,170
Cash Flow From Operations	(45,133)	(12,381)	666	(12,792)	54,163	143,084	(15,471)	10,064	499	(66,314)	4,592	33,703	94,680
Interest Received	448	222	198	187	236	547	1,292	1,235	1,309	1,247	929	838	8,687
Loan Payments	1,626	1,626	1,626	1,626	1,626	1,626	1,626	1,626	1,626	1,626	1,626	1,626	19,512
Estimated Income Taxes	—	—	—	—	—	—	—	—	—	—	—	57,086	57,086
Cash Flow After Income Tax	(46,311)	(13,785)	(762)	(14,232)	52,772	142,005	(15,805)	9,673	181	(66,693)	3,895	(24,171)	26,769
Savings Account													
Beginning Balance	200,000	153,689	139,905	139,143	124,911	177,684	319,689	303,883	313,557	313,738	247,045	250,940	
Deposit or (Withdrawal)	(46,311)	(13,785)	(762)	(14,232)	52,772	142,005	(15,805)	9,673	181	(66,693)	3,895	(24,171)	26,769
Ending Balance	153,689	139,905	139,143	124,911	177,684	319,689	303,883	313,557	313,738	247,045	250,940	26,769	
Monthly Labor Costs	220,618	218,618	200,618	203,618	155,618	136,618	122,618	113,618	103,618	128,618	122,618	166,618	
Minimum Monthly Bank Balance	(20,618)	(64,929)	(60,713)	(64,475)	(30,707)	41,066	197,071	190,265	209,939	185,120	124,427	84,322	

Company cash flow projection – Example 1

Step 5: Run what-if scenarios, sensitive analysis, and other simulations to determine how the company's needs change as the input parameters change.

❑ The calculations performed in Example 1 are **easily set up in a spreadsheet**. Setting up a spreadsheet to perform the cash flow analysis for the company is **less time consuming** than performing the calculations manually. There are **three additional reasons** to set up the cash flow analysis in a **spreadsheet**.

1. It allows the user to easily **change the input parameters** and **immediately** see how the **changes affect** the **cash flows**.

❑ This is essential for **fine-tuning** a cash flow analysis.

For example, after running the cash flow analysis, we decide that **we need to reduce our overhead** to ensure that we are **profitable**. This can be done quickly by **changing the budgets for the individual overhead** items until **we meet our profitability goals**.

Company cash flow projection – Example 1

Step 5: Run what-if scenarios, sensitive analysis, and other simulations to determine how the company's needs change as the input parameters change.

2. we can **ask ourselves, “What if ...”** and **see what happens.**

❑ For example, we may ask ourselves, “**What if the retention on Project 1 is released in July instead of June? How** will that **affect** our **need for cash** during the next year?”

By making the **change**, we would see that although the **cash flow** for **June** and **July** changed, **we still needed the same amount of cash** for next year and it would **not increase the number of months** over which the **additional cash** was needed.

Company cash flow projection – Example 1

Step 5: Run what-if scenarios, sensitive analysis, and other simulations to determine how the company's needs change as the input parameters change.

3. The **third reason** is so that we can perform a **sensitive analysis** to determine which **input variables** the cash flow analysis is **most sensitive** to.

- ❑ By **changing** some **variables** by a **large amount**, we may see **little change** in the cash flow analysis, whereas **minor changes to other variables** may make a **major change** in the **cash flow analysis**.

For example, if we **doubled bank fees** from **\$50 to \$100**, little change would occur and we would say that the **cash flow analysis is not very sensitive** to the bank fees.

However, if we **reduce the amount of work subcontracted** out on **Project 1** during the month of **February by 10%** and perform that **work with our labor**, we **increase** the amount of **additional cash** we need **from \$64,713 to \$79,429**. Here we see that we are **very sensitive** to the amount of **labor performed by our company** during the month of **February**.

موسسه مهندسی و مدیریت ساخت علوی پور (ACEMI)

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