FOR ARCHITECTS
HYPERFINE
No. 846
Brand
BY ARCHITECTS

PCM/PJM STUDY QUESTIONS

WEEK 1

Business Operations - Utilization Ratio
Business Operations - Insurance
Business Operations - Ethics
Business Operations - Standard of Care
Risk & Development - Instruments of Service
Finances - Loss-Profit Statement
Finances - Balance Sheets

WELCOME!

I hope this course marks the beginning of the end of your PCM/PJM experience!

Ever heard of muscle confusion? I think you can do something similar with studying, although Brain Confusion doesn't seem like it would really get popular. But hear me out. When studying for these exams I believe you have to be very regimented. You need to set an exam date, figure out everything you need to study between now and then, and write it down in a list. Seriously, use Excel and schedule exactly what you're going to study every night. You need to define a time for yourself to do all these things.

Those are your rules, and you need to do your best to follow them. Just like design, the best study results come when you follow the rules just enough to know when you can bend them. So be strict, but you can let yourself get off-topic in an efficient manner. Some things you shouldn't study in a specifically defined time. For PcM/PjM I think that one thing is the AIA Contracts. You need to get these down cold, and the best way is to have them always on your mind. Still define a time just for the contracts, but make sure you're looking at them a little bit every day all the way through.

To help you with this I am adding a suggested Article from different AIA Contracts to the end of each assignment. Look for it at the bottom of each page. These have nothing to do with the assignments above, just an extra thing to help you focus on something new.

I have an idea of what this course will be, but like the the PPD/PDD Course, these things sometimes take on a life of their own. So who know where we'll end up with this. I'm excited to find out though.

Thank you for signing up, do well on your exams and keep in touch!

Regards,
Ben

BUSINESS OPERATIONS - FINANCES

ASSIGNMENT 1

There are 7 key indicators of financial performance of which you need to be aware.

» What are these indicators?

» In your own words, define Utilization Rate

» What's a good utilization rate? What's too low? Is there a too high?

» Can you figure out your own personal utilization rate?

» What's the utilization rate for the employee shown to the right?

EMPLOYEE A	
Task	**Time**
Project A Schematic Design	25
Project A Design Development	10
Project B	17
Staff Training	2
Reading Hyperfine Blog	15
General Admin	5
Marketing & Website Work	6
Notes: Project B is billed Hourly Not to Exceed 15 Hours Staff Training Topic: 2015 IBC	

REFERENCES

EntreArchitect: 7 Key Financial Performance Indicators for a Successful Architecture Firm
Note: This article is written by the author of, and covers similar content to, the AHPP section listed below

AIA: High Performing Firms: By the Numbers
Note: Also get free Deltek report linked in this article. See pg 10+. Will need to give them an email address

Architect's Handbook of Professional Practice: Read Section 7.2 and pg 421 Direct & Indirect Time

Young Architect PCM 101: Lesson 2.1

YOUR NOTES

BUSINESS OPERATIONS - INSURANCE

ASSIGNMENT 2

Ugghhh insurance. So boring.

- What types of insurance are required by AIA-2017 B101?
- Briefly describe each type of insurance.
- Which one is also known as Errors & Omissions?
- Match the events on the right with the type of insurance policy they may be claimed against.
- You have $2,000,000 of coverage with a $100,000 deductible when you design a building. After the project is complete you reduce coverage to $1,000,000/$50,000. A claim is made for $1,750,000. How much will you have to pay?

- Employee crashes car going to site visit
- Client gets hurt walking down stairs in your office
- Employee who crashed car sues you because you made them drive to site when it was snowing.
- Foundation poured in wrong location because incorrect dimension shown on plans.
- Equal Opportunity Disibility Discrimination lawsuit filed against building owner because bathrooms were built too small, according to plans.
- Foundation cracks because PE provided incorrect rebar size and space for architect to use in drawings and specs.
- Foundation sinks because Geotechnical report listed incorrect soil bearing capacity.

REFERENCES

Harbor Compliance: Insurance for Architects and Engineers
Note: All the top Google results are from companies selling insurance. This is a quick overview of the three main types.

Schiff Hardin Lectures: Spring 2016 Tort Law, Professional Liability Insurance: Lecture Notes & Lecture MP3
Note: Lecture is mostly about torts and possible claims/architect responsibilities

The AIA Trust: Making the Transition to Running Your Own Firm
Note: If you read this you'll know everything.

Architect's Handbook of Professional Practice: Read Section 16.2

Professional Practice: A Guide for Turning Designs Into Buildings: pg 110-116

YOUR NOTES

AIA A101-2017 - ARTICLE 7 & AIA A201-2017 ARTICLE 14

RESOURCE MANAGEMENT - SCHEDULES

ASSIGNMENT 21

Project Managers need to know what work needs to get done and when

- What is a Gantt chart?
- Explain the Critical Path Method. What do the arrows represent? What about the circles?
- What is the Critical Path? What is Float?
- From the CPM diagram on the next page, highlight the critical path and list the milestones in order. Which tasks have float and how much? How long would the schedule be delayed if Plumbing took 8 days instead of 6 days as planned?
- Create a Gantt chart of the project schedule shown in the CPM diagram at right. Draw vertical lines between the Crititcal Milestones.

REFERENCES

YouTube / Hyperfine: ARE 5.0 - Critical Path Method and Gantt Charts

YouTube / Black Spectacles: Critical Path Method and Float

YouTube / Thayer School of Engineering at Dartmouth: Project Scheduling

Archtoolbox.com: Project Scheduling Methods

Smartsheet: Construction Critical Path

Architect's Handbook of Prof Practice 15th Ed: 10.3 Project Work Planning, and Monitoring pg 627-640

Professional Practice: A Guide to Turning Designs into Buildings: Ch 11 Project Management pg 120-123

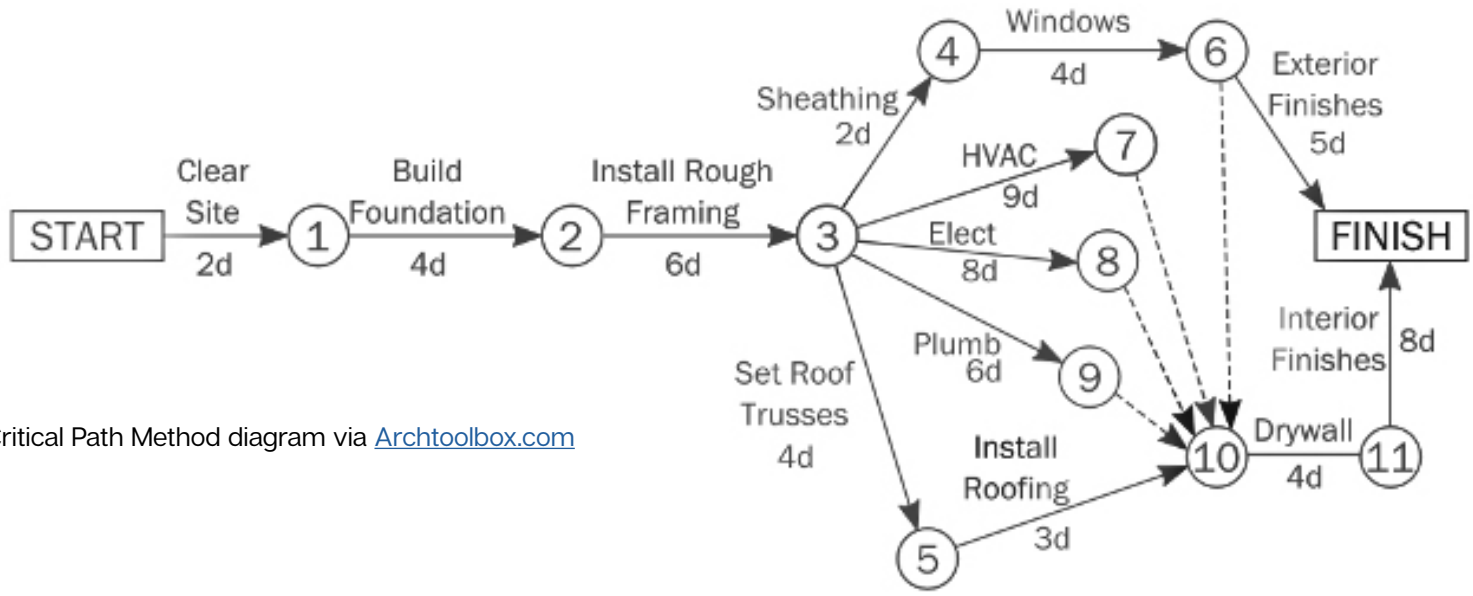
YOUR NOTES

AIA A201-2017 - ARTICLES 14 & 15

RESOURCE MANAGEMENT - SCHEDULES

ASSIGNMENT 21

Project Managers need to know what work needs to get done and when



Critical Path Method diagram via [Archtoolbox.com]

YOUR NOTES

AIA C401-2017 - ARTICLES 1 & 2

CONTRACTS - 2017 AIA B101

Standard Form of Agreement Between Owner and Architect

ASSIGNMENT 22

Learn this stuff cold. Free points if you put the work in now.

- What is the exact verbiage of the Standard of Care?
- What is a basic service? What is the first basic service the Architect provides to the owner per this contract? What is the first "design" task?
- What's the difference between Supplemental & Additional Services?
- What are two obligations the Architect has to the owner that are the same in the SD, DD and CD phases?
- The owner has 15 expressly written responsibilities. What is the Owner's responsibility when it comes to coordinating the work of the Owner's consultants with the work of the Architect?
- What is the Owner's responsibility when they notice the Architect's Floor Plan is not coordinated with the framing plan from the Structural Engineer acting as an Architect's Consultant?

The Owner submits the following list of services the Architect must provide for a proposed job. Which of the following should the Architect include as Supplemental Services?

Programming	
Coordination with local Government	
Multiple Preliminary Designs	
Measured Drawings	
Assist in Establishing a List of Contractors	
Development of BIM Model for Post-Construction Use	
As-Constructed Record Drawings	
Coordination of the Owner's Consultants	
Consideration of Sustainable Design alternatives	
Preliminary selection of major building systems during SD	

REFERENCES

AIA: Document B101 - 2017 Standard Form of Agreement Between Owner and Architect

Schiff Hardin Lectures - February 26 & March 5, 2018: 2017 B101 Owner Architect Agreement

Young Architect Academy: Understanding the AIA 2007 to 2017 B101 and A201 Comparative

Architect's Handbook of Professional Practice 15th Ed: 17.5 The AIA Document Program pg 1093-1111

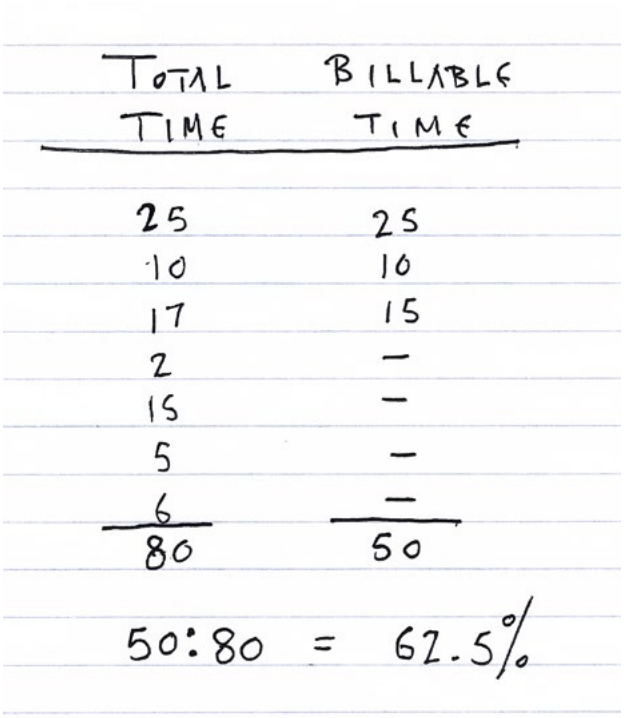
Young Architect Academy: AIA Contracts 101 - For PcM, PjM and CE

YOUR NOTES

ANSWERS

BUSINESS OPERATIONS - FINANCES

ANSWER 1



The 7 Key Indicators are:

- Utilization Rate
- Overhead Rate
- Break-Even Rate
- Net Multiplier
- Profit-to-Earnings Ratio
- Net Revenue Per Employee
- Aged Accounts Receivable

Utilization rate is the efficiency of labor. It is the ratio of work you get paid for to all the work you actually do. This gets expressed as a percentage. Remember, ratios don't have units, they are just a comparison of numbers. We multiply a ratio by 100 to read it as a percentage. You may encounter values in one form or the other on an exam. So 1:4 is a ratio and it's equivalent to saying 25%.

From the AIA Article, high-performing firms have a total utilization ratio of about 60%. From AHPP, target for the entire firm is 60%-65% and for principals and architects it should be above 75%.

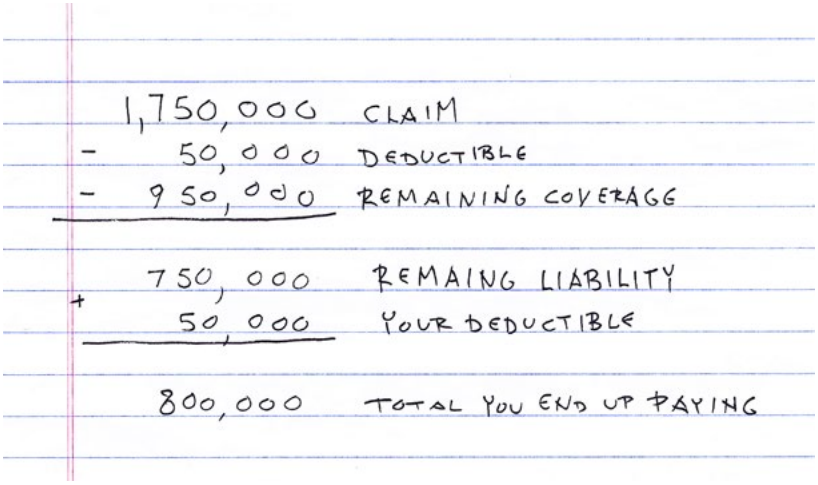
Below 60% is probably too low. I don't know if there's a too high but you can't really get to 100% and someone already above 85% might be too busy to take on new work.

Try to figure out what you actually did at work this week. I personally use Grindstone to track all my hours, and you can create reports and graphs. It's free.

See my math above for the utilization rate. I put it at 62.5%. Remember, not all work that gets billed under a project, only the amount for which you can actually charge. Stuff like admin and training don't count. Unfortunately neither does spending time on my website.

BUSINESS OPERATIONS - INSURANCE

ANSWER 2



- (AUTOMOBILE)
- (GENERAL LIABILITY)
- (EMPLOYER LIABILITY)
- (PROFESSIONAL LIABILITY)
- (PROFESSIONAL LIABILITY)
- (ARCHITECT'S PROFESSIONAL LIABILITY...then insurance company may try to recoup cost from PE)
- This last one should not fall on the Architect. Geotechnical report is provided by the owner and the Architect is allowed to rely on the owner to provide accurate information.

AIA-2017 B101 is the Owner-Architect Agreement. Article 2 Section 5 requires the following insurance types:

- Commercial General Liability
- Automobile Liability
- Workers Compensation
- Employers Liability
- Professional Liability

See AHPP 1018 for a description of these types of insurance:

Commercial General Liability protects against events that cause harm (I am not entirely clear on the difference between Commercial General Liability and General Liability).

Automobile insurance is car insurance a company provides for vehicles used for work trips even if they don't own the vehicle.

Worker's Comp protects employees who get injured while on the job.

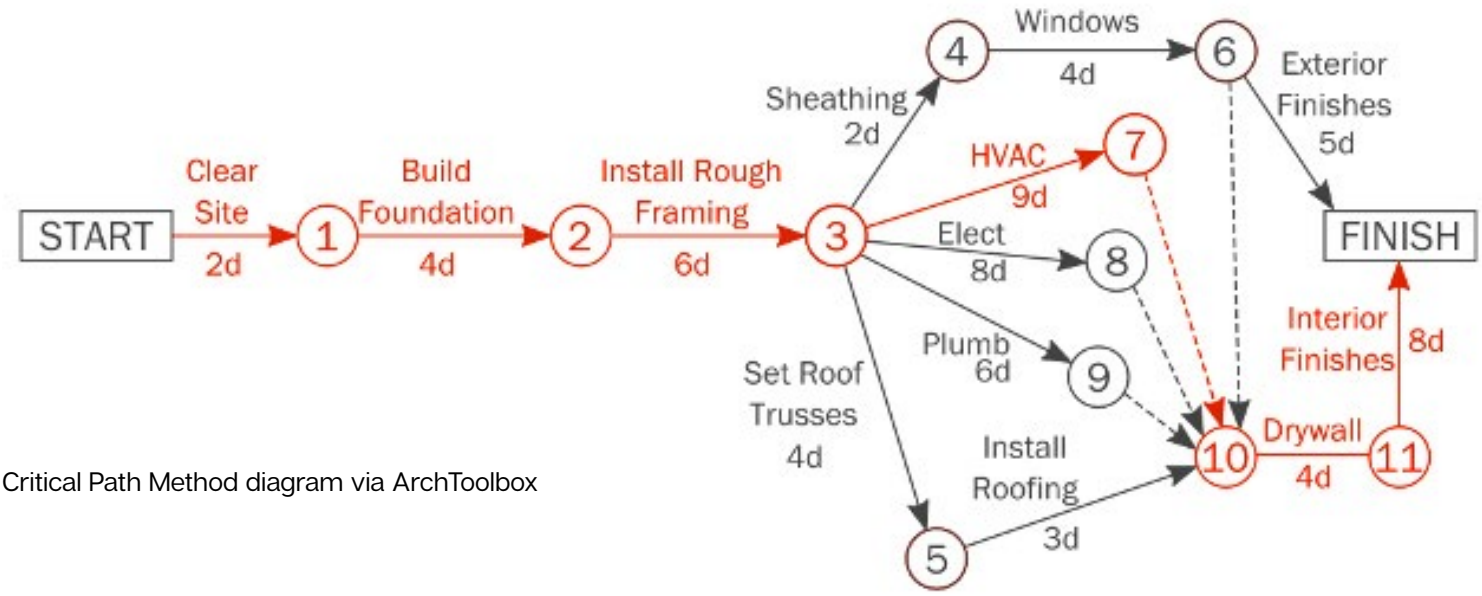
Employer's Liability protects the company against claims made by employees.

Professional Liability is also known as Errors and Ommissions. This is the big one, protecting against things that go wrong because of your drawings and specifications.

If you drop coverage to a lower level, and a claim is made against a project you did when you had more coverage, you **do not** get to use the higher coverage you a no longer paying. You would owe your deductible, plus any damages over your coverage limit, in this case a total of $800,000.

RESOURCE MANAGEMENT - SCHEDULES

ANSWER 21



Critical Path Method diagram via ArchToolbox

A Gantt chart is a bar graph of project tasks and durations. It's a good way to see start and end dates as well as overlap between tasks. You can also use a Gantt chart to represent the Crititcal Path for a project.

Critical Path Method lists or graphically represents the project tasks in order of when they can begin. Milestones are shown in circles. Tasks, with their expected duration, are shown as arrows between the milestones. A CPM diagram is an easy display of which tasks can begin once a milestone is reached. The actual Critical Path is the combined longest set of tasks between each milestone. All tasks that can be completed in less time than the Critical Path have Float. This means the projected time to complete these tasks can slip a little and not delay the overall project. Any delay in a critical path will push the entire project back.

See above for the Critical Path. This may also be represented as the order of milestones: 1-2-3-7-10-11.

Tasks that have Float:

- Electrical - 1 Day
- Plumbing - 3 Days
- Roof Trusses and Roofing - 2 days combined float
- Sheathing/Windows/Ext. Finishes - 10 days combined float*

*These tasks can begin as soon as Milestone 3 is reached and don't need to be completed until the end of the project.

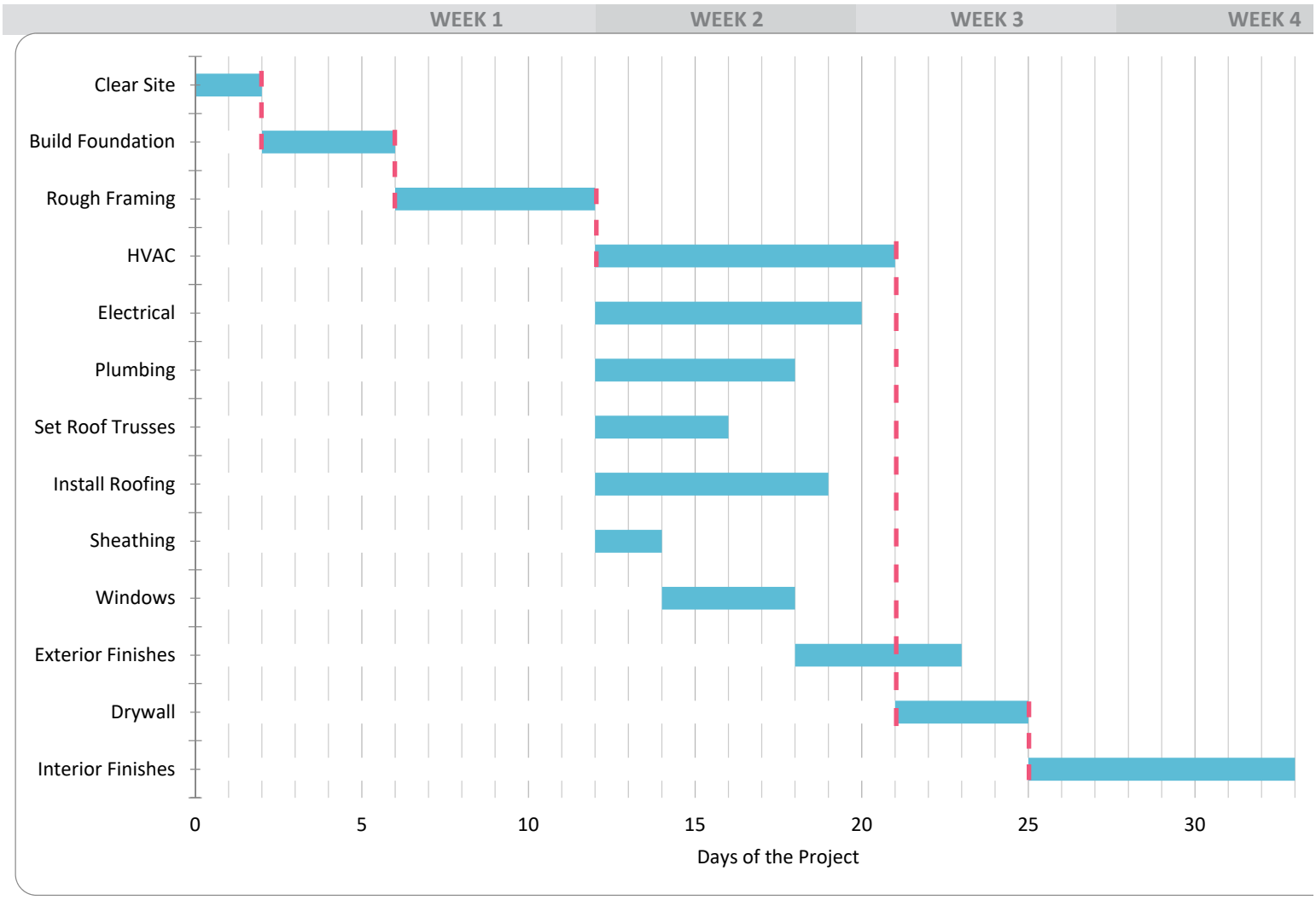
If plumbing took 8 days instead of 6 the project would still be completed on time. Plumbing has 3 days of float because it can start at the same time as HVAC, which is the Critical Path between Milestone 3 and Milestone 10.

I think the Ballast book does a good job explaining this, I have the old 4.0 version.

See next page for the Gantt chart version of the CPM. I made this with a free template from teamgantt.com. You didn't even have to enter your email address!

RESOURCE MANAGEMENT - SCHEDULES

ANSWER 21



CONTRACTS - 2017 AIA B101

ANSWER 22

§	4.1.1.1	Programming	X
§	3.15	Coordination with local Government	
§	4.1.1.2	Multiple Preliminary Designs	X
§	4.1.1.3	Measured Drawings	X
§	3.5.1	Assist in Establishing a List of Contractors	
§	4.1.1.7	Development of BIM Model for Post-Construction Use	X
§	4.1.1.15	As-Constructed Record Drawings	X
§	4.1.1.20	Coordination of the Owner's Consultants	X
§	3.2.5.1	Consideration of Sustainable Design alternatives	
§	3.2.5	Preliminary selection of major building systems during SD	

All the Section 4 line items are listed as Supplemental Services. These can be assigned to the Architect, the Owner or neither

Standard of Care § 2.2 The Architect shall perform its services consistent with the professional skill and care ordinarily provided by architects practicing in the same or similar locality under the same or similar circumstances. The Architect shall perform its services as expeditiously as is consistent with such professional skill and care and the orderly progress of the project.

Basic Services is the term for the normal work the Architect is required to do in accordance with the contract. § 3.1.1 and §3.1.2 list some general requirements of how the Architect has to behave, but the first task is in §3.1.3...create a schedule for when the Architect's services will be completed. The first design task is listed in the Schematic Design Phase, §3.2.1, review the program furnished by the owner. Remember, programming is the Owner's responsibility! The owner is supposed to come to the project with the program laid out. If the Architect has to do that it's supplemental services.

Supplemental Services is work the Architect is required to do outside of Basic Services that has been written into the contract. Additional services is work the Architect is required to do outside of what's in the contract and after the project has commenced.

In SD/DD/CD the Architect needs to provide the owner with an updated cost estimate and provide them with Design Documents, at the Owner's request.

The Owner is required to coordinate the work of their consultants with the work of the Architect. The Architect is responsible for coordinating the work of their own consultants, i.e. Structural Engineer, MEP, etc. Geotechnical and Civil Engineers are two Owner consultants you may encounter.

The Owner shall (means they have to) provide prompt written notice to the Architect if the Owner becomes aware of errors and other problemsn in the Architect's work. The Architect has the same responsibility to the Owner for documents the Owner provides.