CONSTRUCTION PROJECT MANAGEMENT



CONTRACTOR LICENSE SCHOOL

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CONSTRUCTION

PROJECT MANAGEMENT

Module 12

Final Advice and Conclusion
[Construction Project Management Tips]

Aim:

"Provides some valuable tips to make you a great construction project manager."

Final Advice and Conclusion

Module 12 - Unit 1

Course Objectives

 Introduction 	 Dealing with Problems
 Being Observant 	 Can You Avoid Problems on Project
 What to Look for When You Walk the Job 	 Examples of Problems that Escalated
 Never Look the Other Way 	 Avoiding the Unexpected
 Take a Good Look at Your Project 	 Examples of Project Problems
 Solving and Avoiding Problems 	 Contractor's Obligations
 Interpreting Information Correctly 	 Take Action to Avoid Problems

Slide 12.2 Introduction

- ☐ Being a Construction Project Manager is not an easy job
- ☐ Being a good Construction Project Manager takes experience and management skills.
- ☐ Most structures and buildings take countless <u>hours</u> to design and build, some even millions of hours. To do this:
 - They require a coordinated <u>effort</u> from people with a diverse array of skills which may include:
 - Civil, Mechanical and Electrical Engineers, Architects, Supervisors, Plumbers, Electricians, Carpenters, Tilers, Painters, Steelworkers, Operators, Form-workers and Labourers.
 - These people have to be welded into a coordinated <u>team</u> to deliver the project on time, within budget, to the right quality and without harming people or the environment.
- ☐ A unique type of <u>person</u> is required and given the responsibility of successfully delivering the project –

the Project Manager

Slide 12.4 Being observant

- In my time in senior management it always amazed me when I visited projects I frequently found problems which the Project Manager had walked past multiple times and not noticed.
- Did they not want to see the problem?
 More likely they were so preoccupied with other things that they did not notice.
 But maybe they were just unobservant.
- Being observant does not come easily and most of you would struggle to describe what you saw on the way to work today.

- Being observant on construction projects is vital, in fact it could mean the difference between life and death, even your life!
- Being observant could mean that you detect problems early, even prevent problems from occurring.
- Fortunately, we can teach ourselves to be more observant.

Slide 12.5 What do you look at when you walk the project?

- Projects cannot be run from the office alone. –
- It is essential Project Managers get out on the project to see what is happening. -
- Every time you walk the project, each time you look at the project, make use of the time to check:
 - The <u>quality</u> line stuff up by eye as you walk past to check it is straight, vertical, square. Look out for poor quality.
 - Safety is everyone working safely? Is the project tidy? Look at barricades.
 - Productivity can things be done <u>better</u>?
- Set a goal for yourself everyday to look for 1 quality issue, 1 safety item, and something related to productivity. –
- But don't only look for the bad stuff, congratulate those involved in good quality or good safety.
- At the end of the day check off the things you <u>noticed</u> and fixed out on the project.

Did you save money, did you prevent an incident, was your presence an asset to the project today?

Slide 12.6 Never look the other way

- ☐ It is tempting to <u>ignore</u> someone doing something wrong, perhaps working unsafely.
 - You wouldn't want to ignore an unsafe act, only to hear there was an accident and the person was seriously injured.
 - If you had stopped them the accident wouldn't have happened.
 - You wouldn't want that on your conscience. Never look the other way.
- But looking away or <u>condoning</u> poor safety, <u>unacceptable</u> quality, or poor <u>behavior</u> inevitably means you are disregarding, even condoning, these acts.
 - Those that witness your acceptance assume these practices are acceptable.
 - Ignoring poor safety, bad behavior, unacceptable quality, slacking workers or poor productivity, <u>promotes</u> this as being acceptable and encourages others to do the same
- If your team <u>knows</u> that you are <u>looking</u> they will undoubtedly work safer, be more productive and produce good quality. –
- If they know you don't care or notice, they will no doubt also not care.

Slides 12.7 — 12.11 Take a good look at your project

- ☐ Your projects are an advertisement for your company.
- ☐ Is your project a good or bad advertisement?

Take time to look at your project and consider:

On the outside

- Is there a company <u>signboard</u>, that is clear and straight?
- How is your project and your people impacting the neighbours?
- Is your project impacting the <u>public</u>?
- Are the fences and hoardings around the project in good condition?
- <u>Is</u> your project work damaging surrounding property?
- Is your project endangering the <u>safety</u> of the public?

Inside your project

project.

- Are your offices, stores, toilets, neat and <u>clean</u> and tidy?
- What is your crew wearing?
- What does your equipment look like? Is it clean and in good condition?
- Is your project <u>safe</u>? Are <u>barricades</u> in place?
- Is the project neat and orderly?
- Is the quality good?
- Is completed work protected? Are people working carefully?
- Is everyone, including Subcontractors, <u>focussed</u> on important and critical items?
 Do they know when it should be completed?
- Is your project clean with <u>trash</u> regularly cleared?
- Are people or equipment standing idle? Why?
- How can things be <u>improved</u> on the project? Done better?

☐ Take a good look at your project. Look at it from a different angle. You may be surprised by

	what you've missed, and what you've repeatedly walked past without noticing. Regularly take time to look at your project from a different angle. Learn to be more observant. It will save your project time, money, and reputation. Don't let the small things pull your project down – perhaps giving your Client and prospective future Clients a poor impression of the professionalism of your company.
Slides	12.13 — 12.15 Solving and avoiding problems
	People often prefer to hear comforting lies rather than the truth.
	Unfortunately, the truth almost always comes out <u>eventually</u> .
	You may not want to know that your project is losing money or falling behind schedule.
	But if you do not face the <u>truth</u> you cannot take <u>action</u> to fix the problem before it gets worse, or take action to limit the fallout from the problem.
	Problems <u>frequently</u> occur on construction projects – almost daily. –
	-They range from small to large issues, some of which can have a profound impact on the project,
	and even affect people's lives.
	Project Managers must be adept at solving problems quickly and efficiently.
	Problems can sometimes overwhelm Project Managers, who can feel left abandoned on the

- It is easy to leave problems <u>unsolved</u>, maybe in the too hard basket, hoping that the problem will go away, be easier to solve another day, or that someone else will come up with a solution.
 But problems on construction projects do not <u>magically</u> go away, if anything they usually get worse.
- Often problems go <u>undetected</u> until they become a raging <u>inferno</u> and have developed into a major issue.
- You cannot fix problems if you do not know there is a problem.
- ➤ It is important to prepare <u>accurate</u> reports such as cost reports and schedule updates.
- Early action must be taken to find the real issue, the underlying cause.
- Problems do not fix themselves.
- > Problems become harder to fix with time.
- Ask for <u>help</u> if necessary.
- > Stay motivated. Stay calm.
- <u>Talk</u> to your crew. Keep them <u>motivated</u>.
- > Be truthful with Management and the Client.
- Be realistic.
- > Be <u>sure</u> to claim for delays and costs caused by the Client.

Slides 12.16 – 12.17 Example of interpreting information correctly [Space for Notes]

Slide 12.18 Dealing with problems

- **How** you handle failure is an important element of project success.
- Failures are inevitable on construction projects, things will go wrong.
- But Clients will <u>often</u> remember how you dealt with and fixed a problem, rather than that there was a problem.
- Swift decisive action to <u>resolve</u> an issue will result in Clients having more confidence in you as a Contractor.
- Your team will have more confidence and respect for you.
- Hiding problems creates distrust, it creates unease.
- Blaming <u>others</u> does not solve problems.
- Excuses do not solve problems.
- > Denying culpability will not solve a problem.
- Learn to accept blame and admit to mistakes.
- Get on with solving the issue.
- Do not promise the <u>impossible</u>. Be clear what can be done to fix the issue.

Slide 12.19 Can you avoid problems on your project?

- ☐ Contractors are often an optimistic bunch —
- they do not believe things will go wrong on their project.
- ☐ When things go wrong, they often curse their bad luck, —
- the weather, the construction gods, the Client, the Estimator..... -
- Indeed anyone except themselves.
- But, can you foresee problems and avoid them?
- ☐ Can we take control of our projects and leave <u>less</u> to luck and chance and engineer our project's success?

Slides 12.20 – 12.21 Example of a problem that escalated [Space for Notes]

Slides 12.22 – 12.23 Avoid the unexpected on your project

- Are you a firefighter or a fire prevention officer?
- The more we plan the luckier we get.
- Employ the <u>right</u> team.
- Understand your team.
- **Forewarned** is forearmed.
- Collect the correct data and use it wisely.
- Your team are your eyes and ears.
- Visit the 'coal face' frequently. Get onto the construction project site.
- Understand the risks.
- Keep an eye on the big picture but don't forget the details.
- Eyes wide open are you looking but not seeing?
- Ask questions.
- Sometimes small actions can <u>save</u> you future problems.
- Check, check and check again.
- Take action as soon as a problem starts don't let a spark become a raging fire.

Slides 12.25 – 12.29 Examples of problems with projects

[Space for Notes]

Slides 12.30 — 12.36 The Contractor's obligations

Contractor's obligations:

- Managing and supervising the project to ensure it is successful and:
 - Is <u>completed</u> on time, unless the project is delayed by causes that the Contractor had no control over and reasons which the Contractor couldn't have been expected to allow for.
 - Meets the required <u>quality</u> standards.
 - Complies with the project <u>specifications</u>.
 - <u>Complies</u> with the local, state and national specifications.
 - Has no safety or environmental <u>incidents</u> and **complies with all safety regulations** as well as the Client's requirements outlined in the contract document.
 - Has no major industrial relations issues.
 - Meets all the contractual requirements in the contract document.
 - Is safe to use and occupy when complete.
- Not partaking in any <u>illegal</u> practices, which includes bribing of any officials or the Client's representatives.
- Ensuring they have adequate <u>resources</u> with the required skills to successfully complete the work in accordance with the construction schedule.
- > Planning, scheduling and coordinating the works, which includes:
 - <u>Coordinating</u> their employees.
 - Managing their subcontractors and suppliers.
 - Ensuring that all parties complete the project safely, to the required quality and on time.
 - Ensuring their team are <u>aware</u> of the construction schedule, rules, regulations, standards and specifications applicable to the project and that they comply with these.
- Reviewing drawings issued for construction to ensure they have sufficient information to construct the section of works.
- > Setting-out the works.
- Notifying the Client timeously of unexpected problems and variations (change orders).
- Invoicing for the work completed. These invoices must be submitted in accordance with the contract terms and conditions with the required supporting documentation.
- Ensuring all required insurances are in place.
- **Complying with the <u>terms</u> and conditions of the contract,** including submitting all contractual deliverables.
- When required, **coordinating the <u>work</u> with the Client's ongoing operations** as well as the Client's other Contractors.
- Paying their employees fairly and timeously.
- When pricing the project:
 - Ensuring that they understand the terms, conditions, and the scope of the project
 - That they have <u>diligently</u> researched the project to ensure that they have allowed for the project conditions in their price.
 - Where there are any ambiguities, or items in the pricing documentation which are unclear, then the contractor <u>should</u> query these before submitting their price, or should clarify what their price includes so that there are no mistakes.
 - Errors in pricing the project remain solely the contractor's responsibility.
- Paying all their Subcontractors and Suppliers timeously and without withholding money for undue reasons, or for reasons that haven't been communicated to them.
- Notifying the Client and the relevant authorities of serious accidents and injuries.

- Ensuring there is an <u>agreed</u> construction schedule in place, which
 - Has linked activities.
 - Allows for all project <u>restraints</u>.
 - Takes cognisance of the construction methodology.
 - Is achievable.
 - Is monitored and updated and any slippage should be addressed.
 - Clearly shows the Client's <u>obligations</u> and deliverables which are required so the Contractor can meet the construction <u>schedule</u>.
- Taking every action to avoid disputes and
 - When disputes arise try to resolve them amicably.
 - Where disputes are unavoidable the dispute <u>resolution</u> procedures outlined in the contract should be followed.
- **Following** <u>instructions</u> <u>issued</u> by the Client, or their representatives, providing these instructions are lawful and in terms of the conditions of the contract.
- Protecting <u>existing</u> services and utility lines.
- Not starting work before checking that all permits and approvals are in place.
- > Protecting surrounding property which could be impacted by the construction works.
- Communicating with the project's stakeholders.
- Understanding the terms and the <u>conditions</u> of the contract.
- Not stopping work for any reason, or cause, that <u>isn't</u> outlined in the contract, or without following due contractual <u>processes</u>. It should be noted that work may be stopped for safety concerns.

_	Contractors must understand their obligations.
	Many projects fail because Contractors, or their designated team, have failed to understand
	or fulfil their obligations.

Slide 12.37 Take action to avoid problems

Often construction projects run into difficulties because basic issues are overlooked or forgotten
Project Managers are often rushed off their feet, attending to the Client, organizing the project,
and solving problems.
Yet by applying a few basic actions the project can be more <u>successful</u> and problems reduced.

Final Advice and Conclusion

Module 12 - Unit 2

Course Objectives

 Steps to a Successful Project 	Final Advice
 Questions that Define a Good Project Manager 	Summary of Modules 1 to 12
 Example of NOT Checking Permits 	 Additional Resources for Construction Project Managers
Rooky Project Manager Mistakes	

Unit 2 Slide 12.39 Introduction

Slides 12.41 - 12.47 12 Steps to a successful project

12 Steps to a Successful Project:

- **1.** Ensure you **deliver a quality project.** Poor quality costs time and money to <u>rectify</u> and negatively impacts reputation.
 - While walking the site look with a keen eye to ensure work conforms.
 - <u>Don't</u> accept poor quality.
 - The project team must understand the quality <u>requirements</u> and that poor quality won't be tolerated.
 - Check that completed work isn't being damaged by follow on work.
 - Provide the correct tools and equipment so the team can deliver the expected quality.
 - Ensure all materials comply with quality requirements and specifications.
 - Employ skilled people and provide training when required.
 - Ask the guestions; "Am I proud of this work?" "Would I pay for this?"
- 2. Take safety <u>seriously</u>. Poor safety costs lives and money.
 - Lead by <u>example</u> obey the safety rules and use the designated PPE.
 - Never pass an unsafe act without correcting it.
 - Ensure project inductions appropriately address the project risks.
 - Put in place good safety practices from the <u>start</u> of the project.
 - Good safety paperwork is there to <u>protect</u> you and everyone on the project.

3. Communicate effectively.

- Greet people on your project when you pass them by.
- Say thank you and compliment people for a job well done.

- Be civil, polite, clear and concise.
- 4. Plan your project. Planning is more than formulating a construction schedule.
 - Take five minutes every day to look at your project:
 - what must happen today and how will it get done,
 - what must happen tomorrow, and what must be done today so that it happens tomorrow,
 - what must happen <u>next</u> week, and what must be done today so that next week's tasks can be done.
 - A little planning each day <u>prevents</u> crises. Crises take time to solve.
 - Ensure your team understands the plan.
- 5. Seek ways to improve productivity even small improvements can positively impact profits.
 - While on the project check that people and equipment are <u>utilized</u> efficiently.
 - <u>Always</u> ask yourself if there's a better solution, or better way of doing a task.
- **6. Manage <u>Subcontractors</u>** they are important to the project's success.
 - Pay them on <u>time</u> and treat them fairly.
 - Address instructions in writing to their responsible person.
 - Inform Subcontractors <u>immediately</u> when their quality isn't satisfactory, they fall behind schedule, or they aren't working safely.
 - Have <u>regular</u> meetings with your Subcontractor, and ensure all issues are addressed and take notes.
- 7. Ensure the company is paid for completed work.
 - All work must be claimed in progress valuations and <u>submitted</u> in accordance with the contract.
 - Follow up to ensure the Client pays the invoice.
 - Look-out for variation claims (<u>change</u> orders) caused by delays or changes beyond your control. Ensure your variation claim (change order) is well thought through, carefully prepared with all the supporting documentation, and submitted timeously.
- **8.** If the project starts going wrong take <u>action</u>. Don't wait until the situation has deteriorated.
 - Find the <u>reason</u> for the problem.
 - Develop a <u>solution</u>.
 - Take decisive action.
 - Ensure your team understands what <u>needs</u> to be done.
 - Ask for help if necessary. <u>Consult</u> an expert.

9. Develop your team - You depend on them.

- Provide feedback <u>both</u> positive and negative.
- Use their strengths and support their weaknesses.
- Send them on appropriate <u>training</u> courses.
- Mentor the next generation.

10. Pursue opportunities for further work for the company.

- Have business cards and company brochures available for prospective Clients.
- The best advertisement for a company is to deliver a quality <u>project</u> on time with least inconvenience to the Client, neighbours and the public.
- Talk to Clients, Engineers, Project Managers, Architects, Subcontractors, and local planning authorities to <u>learn</u> about projects they are working on and how your company can get involved.

11. Develop yourself.

- Look out for new and better <u>methods</u> of doing things. Learn from your team as well as from your competitors. I'm still learning.
- Attend <u>courses</u> especially those aimed at the softer skills such negotiation, delegation, communication and time management.

12. Manage your time more effectively.

- <u>Delegate</u> properly.
- Carry a <u>notebook</u> (paper or electronic) to note tasks and questions.
- Don't be distracted by incoming emails.
- Ensure both you and the project has an ordered filing system.
- The project must have affective and efficient management systems in place.

Slides 12.48 — 12.49 10 Questions to ask that will make you a better project manager

- 1. Am I proud of this work? Is this the standard that the Client will accept?
- 2. Is this safe?
- 3. Is there another way of doing this which could be safer or smarter?
- 4. Will we be paid for this? Is this included in our contract price?
- 5. Have we been paid? When will we be paid?
- 6. Have you checked? Is this correct?
- 7. Do you understand? Do you know what you have to do?
- **8.** What are the consequences of our action (or lack of action)? Will there be knock-on impacts on other activities?
- **9.** Is this the right (best) solution to the problem? What's the cause of the problem? Are we only treating the symptom or are we actually treating the root cause of the problem?
- 10. What are the risks? Have we mitigated the risks? Do we understand the risks?

Take a little extra time to ask these questions and your project will be completed safely, with good quality, more productively and quicker.

Slide 12.50 Example of the impact of not checking a building permit is in place

[Space for Notes]

Slides 12.51 – 12.52 Project manager rooky mistakes

Do not let these rooky mistakes trip up your project:

- Starting work without an agreed and signed contract in place.
- > Starting the project before all the permits, registrations and authorities are in place.
- Failing to have insurances in place before starting the project.
- Not locating the existing services and utility lines before beginning construction.
- Not planning the project properly before starting construction.
- Failing to invoice for all the work done.
- Not <u>reading</u> and understanding the contract document before starting the project.
- Not putting in <u>place</u> a project induction for everyone to attend before they start working on the project.
- Failing to get the Client to put all instructions in writing.
- > Trying to be the nice guy and not <u>submitting</u> variation claims (change orders).
- Not planning the installation of services to start with the deepest first.
- > Selecting Subcontractors and Suppliers simply because they are the cheapest.
- Ignoring poor safety practices.
- Ignoring poor quality or trying to hide and cover up poor quality.
- Not maintaining good project records and documents which can be easily located.

Slide 12.53 Closing remarks

- Don't be so bogged down in day-to-day problems of running the project that you forget to implement the basics correctly.
 - Often simple <u>changes</u>, that cost little time and effort, can make huge differences to the project, and make our lives less stressful.

Summary Module 12

Slides 12.55 - 12.57

- Being a good Project Manager is not <u>easy</u>. It takes <u>experience</u> and <u>management</u> skills.
- Construction Project Managers <u>must</u> manage the construction team, their Suppliers and Subcontractors, and often even the Client's team.
- Project Managers must never walk past an <u>unsafe</u> act, <u>bad</u> quality, or <u>poor</u> productivity without taking <u>action</u>.
- Project Managers <u>should</u> regularly take a hard look at their projects, inside and outside, to ensure they are safe, professional, and organised.
- Projects must have <u>systems</u> in place, such as construction schedule, cost reports, safety reports, etc, so that problems are detected early.
- Contractors have certain obligations and Project Managers must ensure that these obligations are met.
- By understanding the process and systems of <u>managing</u> construction projects, using technology, and managing people, Project Managers can ensure the <u>success</u> of their projects.
- Good safety and quality are <u>essential</u>.
- Good communication is vital
- Planning projects at the beginning, and daily planning, will ensure many problems are prevented and the project resources are productive.
- Project Managers must <u>continually</u> seek ways to improve productivity.
- You must understand <u>costs</u> and ensure your company is paid for work completed as soon as practical.
- Project Managers must be problem <u>solvers</u>, taking early decisive action to fix the root cause.
- Project Managers <u>depend</u> on a good team. Know the strengths and weaknesses of your team so you can use them effectively.
- They need to be effective time managers.
- But it is also important that Project Managers <u>continue</u> to develop themselves, learning new methods, learning from mistakes, and learning from successes.
- You should always be <u>proud</u> of your project proud to show your friends and family a good project
- Never start a project without insurances, permits, permissions, and contracts being in place.
- Project Managers must have a good relationship with the Client, but this should never be at the expense of the Contractor, or stop the Contractor claiming variations or change orders caused by changes and delays which the Contractor could not have foreseen or reasonably allowed for. Everything should be done in terms of the contract.
- Never <u>select</u> Subcontractors and Suppliers based solely on them being the cheapest.
- > All contractual communications must be in writing.
- It is <u>imperative</u> that Project Managers understand the contract documents.

omework

"HAQE:To level up"

Quiz - Module 12

True or False:

1.	If workers are unproductive, it is the Supervisor or Foreman's fault.
2.	It is not the Project Manager's responsibility to ensure the project meets the specifications.
3.	Contractors can walk off the project if they are not happy with the Client.
4.	Project Managers should ask themselves if there is a better way to do things.
5.	Project Managers depend on a good team.
6.	It is not the Project Manager's responsibility to find work for the company.
7.	You should never start a project without a written contract in place.
8.	Anyone with a little construction experience can be a good Construction Project Manager.
9.	It is not the Project Manager's responsibility to check that the company has been paid.
10.	The best Subcontractor is always the cheapest.

Multiple Choice

11. Contractors must:

- A. Understand the contract.
- B. plan and schedule the work.
- C. A & B.
- D. Invoice for the completed work.
- E. A, B & D.

12. Project Managers can improve safety by:

- A. Leading by example.
- B. Shouting at those who work unsafely.
- C. Correcting unsafe acts they see.
- D. All of the above.
- E. A & C.

13. If the project goes wrong Project Managers should.

- A. Not tell the Client.
- B. Hide the issue from their Manager.
- C. Find the cause of the problem.
- D. Order someone to fix the issue.
- E. All of the above.

14. Project Managers should:

- A. provide feedback to their team.
- B. Train and mentor their team.
- C. Use strengths and weaknesses of their team.
- D. Understand their team.
- E. All of the above.

15. Project Managers should ask the following question/s:

- A. Am I being paid enough?

 B. Am I proud of this work?
- C. Will the client notice the defect?
- D. Will the client notice if we double invoice them?
- E. All of the above.



Homework

- Read: Chapters 10 & 12 of "Successful Construction Project Management" pgs. 163-186 & 204-216
- Please complete all activities and or forms sent to your email as it pertains to the corresponding Module.
- take self evaluation below when done enter results in the following link

Activity Questions

Please answer the following questions based on Module 12. Once complete transfer your answers to our digital form for our teacher to review. (Forms provided in email) **Questions:** 1. What do you look at when you walk the project? 2. What do you do when there's a problem on your project? 3. How can you avoid the unexpected on your project? 4. What are the Contractor's obligations? 5. What rooky mistakes should you avoid? 6. What questions should you ask on your project?

Additional Reading Extra

Notes: Please see email for clickable links

Module 12 Conclusion

 In our course we've discussed improving construction productivity. Here are a few articles on poor productivity in construction. <u>Reinventing construction through a</u> <u>productivity revolution</u>. <u>Construction is broken</u>. And <u>Why is building so slow and</u> <u>expensive</u>.

The statistics in these articles make for sobering reading. The way we do construction must change. We hope that this course has given you some insights on how you can improve your project.

What will you do to improve productivity on your project? How will you take your project into the future? The future is in your hands – make it happen.

2. We've discussed lots of great points in this course. Something that's really vital is handling your own stress. <u>Stress leads to ill health</u>. Read <u>12 steps to reduce the stress of construction</u>.

Are you stressed? How can you manage your stress levels better? Hopefully following some of our tips and insights in this course will enable your project to run smoother, making it less stressful for you.



As we discussed being a Construction Project Manager is not easy, and successful Construction Project Managers have to master numerous skills.

In this course we discussed management and organisational skills, and after completing this course you will have the knowledge to be a successful Construction Project Manager. These skills will be honed with experience, and perhaps some good mentors. Of course, there are also important technical skills, which we haven't covered in this course.

To see how proficient a Project Manager you are, complete the following Construction Project Manager self-evaluation. Don't worry, we doubt that you will be perfect on everything right now. And no, we aren't going to be checking your answers. The self-assessment is there to enable you to see which skills you should work on further. So be honest with your answers. That's the only way to see where you should improve yourself.

If necessary, go back to the relevant sections in the course to remind yourself of things you may have forgotten. We know that the course was lengthy and we covered numerous topics, and you've probably forgotten some stuff already. Our Subcontract Management course, Contract Management course, and Change Order Management course, will also help improve some skills.

The self-assessment also serves as a valuable reminder of what you should be checking and doing on your projects. So don't forget the self-assessment after you close the manual and end the course. We know it's a long list, so keep a copy handy, and regularly refer back to the self-assessment. It will serve as a valuable guide when you start your projects — ensuring that you don't forget something important. Maybe even pin a copy in your office.

Good luck.

Paul and Allen

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Page 1				
Time Management	Always	Mostly	Seldom	Never
I'm good at managing my time				
I don't forget items	$\overline{\Box}$	$\overline{\Box}$	$\overline{\Box}$	$\overline{\Box}$
I delegate work effectively	ň	ĭ	\Box	$\overline{\Box}$
I manage meetings to avoid wasting time	ň	ĭ	$\overline{\Box}$	$\overline{}$
I have a good document filing system	ň	ĭ	\Box	$\overline{\Box}$
I return documents to the correct place	ň	\Box	\Box	\Box
I'm organised and know what must get done	ň	\Box	\Box	\Box
I set aside time to complete paperwork	$\overline{\Box}$	\Box	\Box	\Box
I make notes of items requiring attention	$\overline{}$	\Box	\Box	\Box
I'm not easily interrupted or distracted	\Box	\Box	\Box	\Box
Starting the Project I study the project drawings and documents	Always	Mostly	Seldom	Never
I understand the project scope and project rules	$ \vdash$	-H	-	-H
I understand the client's and our obligations	-	-H	-	-H
I plan how to construct the project	$ \vdash$	-H	-	-H
I select the most appropriate construction methods	$ \vdash$	-H	-H	-H
I ensure there is an approved construction schedule	$ \vdash$	-	-	-
	$ \vdash$	$-$ H $^{-}$	$-$ H $^{-}$	-
I plan roads, laydown and storage areas I ensure site facilities are constructed properly	$ \vdash$	$-$ H $^{-}$	-H $-$	-H
	$ \vdash$	$-$ H $^{-}$	$-$ H $^{-}$	-
Everyone attends a project induction	-	-	-	-
I ensure the project induction is worthwhile	-	-	\Box	-
I ensure utility lines are marked before starting work	$ \sqcup$	-	-	$ \square$
I resource the project correctly	$ \sqcup$	\Box	\Box	\Box
I ensure the project site is secure	$ \sqcup$	\Box	\Box	\Box
Appropriate signage is in place				\Box
I ensure people and equipment are available	$ \sqcup$	\Box	\Box	
I don't start work without a written contract				
I don't start work without checking insurances				
I don't start work without checking permits	$ \sqcup$			
I check the project site is acceptable and as per contract				
If necessary we do dilapidation (preconstruction)surveys				
Surrounding property is protected				
The environment is protected				
I communicate with neighbours				
I understand project risks and implement mitigating measures				
I notify the client of changes from what was priced				
I confirm the site boundaries are correct				

Page 2

Page 2				
Managing the Project	Always	Mostly	Seldom	Never
I maintain an accurate daily diary				
I keep notes of meetings				
I take photographs of the project				
I plan the work daily				
I think ahead				
I make timely and informed decisions				
I'm observant				
I'm aware of the different project stakeholders				
I'm prepared for project meetings		$\overline{\Box}$	$\overline{\Box}$	\Box
My project looks professionally managed		$\overline{\Box}$	$\overline{\Box}$	$\overline{\Box}$
I've good technical knowledge of construction processes				
C				
Communication	Always	Mostly	Seldom	Never
I keep communication civil and professional		\Box		\Box
Items of a contractual nature are in writing				\Box
I have good written communication skills		\Box		
Communication is addressed in the correct channels				
I check emails and think carefully before sending				
Drawings	Always	Mostly	Seldom	Never
I check drawings when I receive them				
I check new drawing revisions to see what's changed				
Old drawing revisions are clearly marked as such				
I ensure revised drawings aren't accidently used				
I don't assume anything if a drawing isn't clear				
Drawing queries are raised in writing				
Drawings are filed where they can easily be found				
Quality	Alwaye	Mostly	Seldom	Never
I understand the project quality requirements				
I never accept poor quality work	-	-	-H	\vdash
I communicate the quality standards to my crew	-	-	$-$ H $^{-}$	\vdash
Quality checks are completed in the field	-	-	-H	\vdash
Quality paperwork is filed correctly correctly		-	$-$ H $^{-}$	-
I ensure completed work isn't damaged	-	-	-	-
	-	-	-H $-$	-
I ensure the required tests are completed I double check measurements	-	-	-	\vdash
	-	-	-	
I understand the specifications		$ \sqcup$	\Box	\Box
I ensure defects are fixed properly as work progresses		\Box	$ \sqcup$	\Box
I'm proud of my work				

Page 3

Safety	Always	Mostly	Seldom	Never
I am safety conscious				
I Understand that I'm responsible for people's lives				
I understand safety legislation				
I understand the project safety rules				
I never accept poor safety				
I ensure the project is clean and tidy				
Toolbox (tailgate) safety meetings are held with the crews				
I keep all safety documentation up to date and filed				
My crews has emergency contact details				
My crews use the correct safety gear				
My project displays the appropriate safety signage				
Excavations and elevated areas are barricaded				
Alcohol and drugs aren't allowed on the project				
There's a fully stocked first-aid kit				
Everyone knows what to do if there's an accident				
Accidents are investigated		$\overline{\Box}$	$\overline{\Box}$	\Box
I don't put the lives of my team in danger		$\overline{\Box}$	$\overline{\Box}$	\Box
I lead by example	$\overline{}$	ĭ	\Box	\Box
Hazardous materials are dealt with correctly	$\overline{\Box}$	ĭ	\Box	\sqcap
I take steps to manage fatigue	$\overline{}$	\sqcap	\sqcap	\Box
Environmental	Always	Mostly	Seldom	Never
Cultural, historical and ecological areas are protected	-		\Box	\Box
Waste is minimised	\Box	\Box	\Box	\Box
We recycle	\Box	\Box	\Box	\Box
We minimise noise		\Box	\Box	\Box
We control dust		\Box	\Box	\Box
We dispose of hazardous materials correctly		\Box	\Box	\Box
I am environmentally conscious				
Construction Schedule	Always	Mostly	Seldom	Never
I understand the construction schedule				
I ensure the schedule takes account of all constraints	\Box	\Box		\Box
I check the schedule is workable and achievable	\Box	\Box	\Box	\Box
I see that the schedule makes efficient use of resources	\Box	\Box	\Box	\Box
Work is executed in accordance with the construction schedule	\Box	\Box	\Box	
I regularly monitor progress against the schedule	\Box	\Box	\Box	\Box
I ensure the client approves the schedule	\Box	\Box	\Box	\Box
If slippage occurs I find the cause and correct the slip	\Box	\Box	\Box	\Box
I inform the client when access & information is required	\Box	\exists	\Box	\exists
and the second of the second o				

Page 4

Page 4				
Construction Materials	Always	Mostly	Seldom	Never
I order the correct quantities of materials				
Materials are checked before offloading		$\overline{\Box}$	$\overline{\Box}$	$\overline{\Box}$
Materials are handled so they aren't damaged	$\overline{}$	$\overline{\Box}$	ĭ	$\overline{\ }$
Materials are stored correctly	\Box	$\overline{\Box}$	$\overline{\Box}$	$\overline{\Box}$
I plan cutting to minimise offcuts	$\overline{}$	$\overline{\Box}$	$\overline{\Box}$	$\overline{\Box}$
I obtain prices from several suppliers and compare them		$\overline{\Box}$	$\overline{\Box}$	$\overline{\Box}$
Materials are not wasted	$\overline{}$	$\overline{\Box}$	$\overline{\Box}$	$\overline{\Box}$
Subcontractors	Always	Mostly	Seldom	Never
I know what the subcontractor is responsible for				
I ensure subcontractors work safely		\Box	-	\Box
I check the quality of subcontractor's work		\Box	-	\Box
All instructions to subcontractors are in writing		\Box	-	\Box
I talk only to the subcontractor's responsible person		-	-	-
I ensure subcontractors have access to work areas		\Box	-	-
I coordinate work with the subcontractors		-	-	-
I take action when subcontractors don't perform		-	-	-
Where necessary subcontractors are back-charged	-	-	-H	-
I treat subcontractors fairly	-	-H	$-$ H $^-$	-
Tucat subcontractors fairly				
People Management	Alwaye	Mostly	Seldom	Never
People Management My team respects me	Always	Mostly	Seldom	Never
My team respects me	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate I'm conscious of various cultures	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate I'm conscious of various cultures I don't condone bullying	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate I'm conscious of various cultures I don't condone bullying I'm a good motivator and negotiator	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate I'm conscious of various cultures I don't condone bullying I'm a good motivator and negotiator I appreciate good people - no matter their job	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate I'm conscious of various cultures I don't condone bullying I'm a good motivator and negotiator I appreciate good people - no matter their job I understand the company's disciplinary procedures	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate I'm conscious of various cultures I don't condone bullying I'm a good motivator and negotiator I appreciate good people - no matter their job I understand the company's disciplinary procedures I apply disciplinary procedures correctly and fairly	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate I'm conscious of various cultures I don't condone bullying I'm a good motivator and negotiator I appreciate good people - no matter their job I understand the company's disciplinary procedures I apply disciplinary procedures correctly and fairly I know my team and know when there's a problem	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate I'm conscious of various cultures I don't condone bullying I'm a good motivator and negotiator I appreciate good people - no matter their job I understand the company's disciplinary procedures I apply disciplinary procedures correctly and fairly I know my team and know when there's a problem I know my team's strengths and weaknesses	Always	Mostly	Seldom	Never
My team respects me I treat people fairly but firmly I train and mentor my team I say thank you for a job well done I provide feedback to my team I regular communicate with my team My team knows what's required I listen to people I don't discriminate I'm conscious of various cultures I don't condone bullying I'm a good motivator and negotiator I appreciate good people - no matter their job I understand the company's disciplinary procedures I apply disciplinary procedures correctly and fairly I know my team and know when there's a problem	Always	Mostly	Seldom	Never

Page 5

Problem solving	Always	Mostly	Seldom	Never
I foresee problems before they arise				
I investigate problems to find the root cause				
I'm good at solving problems calmly and lodgically				
I ask for help when I need it				
Construction Equipment	Always	Mostly	Seldom	Never
Equipment is checked when it arrives on the project				
I check the equipment hire agreements				
Equipment is insured				
Hired equipment timesheets are completed daily				
Breakdowns are reported immediately				
Operators have the correct license				
Equipment is clean, serviced & stored safely				
Equipment is put off hire when it's not needed				
Damaged equipment is not used	$\overline{\Box}$	$\overline{}$	$\overline{\Box}$	$\overline{\Box}$
Crane hooks and slings are checked	\Box	\Box	\Box	$\overline{\Box}$
Cranes are not used during strong winds or lightning	\Box	$\overline{\Box}$	$\overline{\Box}$	$\overline{\Box}$
Client relations	Always	Mostly	Seldom	Never
I communicate and update the client				
I'm responsive to the client's concerns and requests				
I don't over promise and under-deliver				
I acknowledge and rectify mistakes				
I don't give in to unreasonable client demands				
I fight for what is fair and right				
I've a good relationship & understanding with the client				
When necessary I manage the client				
Legal and Financial				
7 . 101.6	Always	Mostly	Seldom	Never
I am mindful of costs	Always	Mostly	Seldom	Never
	Always	Mostly	Seldom	Never
Accidents and theft are reported to insurers Cost reports are prepared regularly	Always	Mostly	Seldom	Never
Accidents and theft are reported to insurers Cost reports are prepared regularly	Always	Mostly	Seldom	Never
Accidents and theft are reported to insurers	Always	Mostly	Seldom	Never
Accidents and theft are reported to insurers Cost reports are prepared regularly I check the cost reports When there's a loss I find the reason and take action	Always	Mostly	Seldom	Never
Accidents and theft are reported to insurers Cost reports are prepared regularly I check the cost reports When there's a loss I find the reason and take action I claim for delays and changes	Always	Mostly	Seldom	Never
Accidents and theft are reported to insurers Cost reports are prepared regularly I check the cost reports When there's a loss I find the reason and take action I claim for delays and changes I ensure change orders are resolved as soon as possible	Always	Mostly	Seldom	Never
Accidents and theft are reported to insurers Cost reports are prepared regularly I check the cost reports When there's a loss I find the reason and take action I claim for delays and changes	Always	Mostly	Seldom	Never
Accidents and theft are reported to insurers Cost reports are prepared regularly I check the cost reports When there's a loss I find the reason and take action I claim for delays and changes I ensure change orders are resolved as soon as possible I'm vigilant to avoid and detect theft	Always	Mostly	Seldom	Never

Page 6

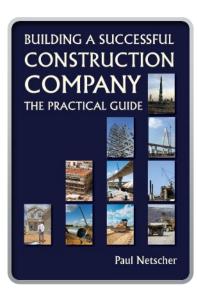
Page o				
Productivity	Always	Mostly	Seldom	Never
I strive to elliminate waste				
We don't work unnecessary overtime				
When overtime work is required it's managed				
The construction team is productive				
I look for better ways of doing things				
Equipment is used productively				
I ensure teams and equipment are balanced				
Completing the Project	Always	Mostly	Seldom	Never
I plan ahead for the project completion				
I know what's required to handover the project	$\overline{}$	\Box	\Box	\Box
I ensure the client issues a handover certificate	$\overline{}$	\Box	\Box	\Box
I check all hired equipment is returned	$\overline{}$	\Box	\Box	\Box
I ensure the site is cleared & tidied on completion	$\overline{}$	\Box	\Box	\Box
People are demobilised correctly		\Box	\Box	\Box
I claim back retainage money	$\overline{}$	\Box	\Box	\Box
I get surety (performance) bonds returned	$\overline{}$	\Box	\Box	\Box
All accounts are closed and settled at project completion	$\overline{}$	\Box	\Box	\Box
Project documentation is archived	$\overline{}$	\Box	\Box	\Box
I don't ignore complaints and follow up with the client	$\overline{}$	\Box	\Box	\Box
Defects post completion are fixed promptly & properly				
Innovation	Always	Mostly	Seldom	Never
I innovate to find better ways of doing things				
I'm a constant learner		-	-	\vdash
I use technology to benefit the project				
Character	Always	Mostly	Seldom	Never
I'm empathetic				
I'm ethical	-	-	-	\vdash
I don't bare a grudge	-	-	-	-
I'm resiliant	-	-H	-H	\vdash
I handle stress well	-	-	$-$ H $^{-}$	\vdash
I make time for family	-	-H	-H	-
I make time for failing				
Finding Work	Always	Mostly	Seldom	Never
I build relationships with clients				
I portray a positive image of the company	$\overline{\Box}$			\Box
I'm always on the look out for new projects	$\overline{\Box}$			
I ensure my team doesn't spoil the company's reputation	$\overline{\Box}$	$\overline{\Box}$		\Box
		_		

Subcontract Management Course



- Frequently construction projects employ Subcontractors. They are often an integral part of construction projects.
- Many construction projects fail because of the poor selection of Subcontractors, or because Subcontractors were poorly managed.
- Successful Construction Project Managers depend on successful Subcontractors.
- Subcontract Management is a short course which delves into the management of Subcontractors, from the selection process, contract documents, management, through to paying your Subcontractor correctly.

Building a Successful Construction Company: The Practical Guide – Author Paul Netscher



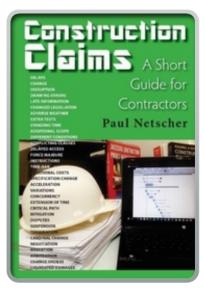
- Explores aspects of managing a construction company that impact its success and profitability.
- It considers the importance of selecting the right project, how to find projects, pricing and winning projects, delivering the project, reputation, and more.
- It's a valuable read for senior Project Managers and Company Owners

Contract Management Course



- Many Construction Project Managers don't read their contract document, or if they do, they look at it only when their project is in trouble – by then it's too late.
- The contract document contains the rules of the project. It sets out the obligations for both the Contractor and the Client. It contains the project scope, the terms and conditions, and specifications.
- Imagine playing football or baseball and you don't know the rules. Well constructing a project without reading and understanding the contract documents is the same. Failure to understand the contract document leads to costly mistakes.
- Our Contract Management course provides a brief overview of contract management to ensure that you are a successful Construction Project Manager.

Construction Claims: A Short Guide for Contractors – Author Paul Netscher



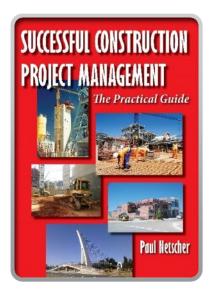
- Regrettably many Construction Project Managers don't understand their contractual rights and obligations.
- This easy to read book demystifies the construction project variation claims or change order process, ensuring Contractors are granted the extension of time and costs they're entitled to.

Change Order Management Course



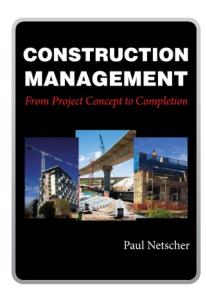
- Most construction projects have changes and delays things which the Contractor could not have foreseen.
- Failure to claim changes and delays could mean the Contractor works for free who works for free? It could result in the Contractor being penalized because the project is late – even when it's not their fault.
- But even when Contractors submit change orders, they are often disappointed when it is rejected. Why the rejection – invariably it's because the claim or change order is poorly presented without supporting documents.
- Our Change Order Management Course explains when you can claim, how to maximize your claim, what supporting documents to provide, how to negotiate a successful claim resolution, and how to avoid claims against your company.

Successful Construction Project Management: The Practical Guide – Author Paul Netscher



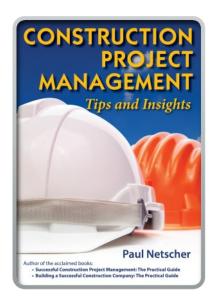
- Is an easy to read book packed with useful practical tips for managing a construction project and is aimed at construction professionals as well as those studying construction project management.
- It shows you how to avoid the many pitfalls in construction.

Construction Management: From Project Concept to Completion – Author Paul Netscher



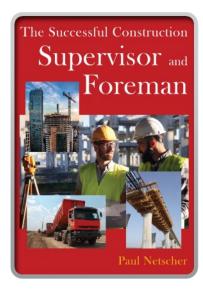
- Essential reading for Project Owners and Project Managers.
- Equips you with a comprehensive agenda to monitor each phase of your project from project concept, through construction, to completion.
- Filled with invaluable tips, insights and advice, and easy to read.

Construction Project Management: Tips and Insights – Author Paul Netscher



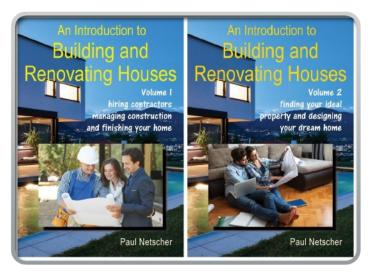
- Does your project need a helping hand?
- Sometimes our projects only require a little extra expertise to be a success. Conversely, small omissions can spell disaster.
- This book is filled with tips and insights that could provide the key to completing your project successfully.

The Successful Construction Supervisor and Foreman – Author Paul Netscher



• An easy to read practical guide that takes the reader through the whys, whats, and who in the construction industry, providing invaluable tips and insights to both new entrants to construction as well as those with years of experience.

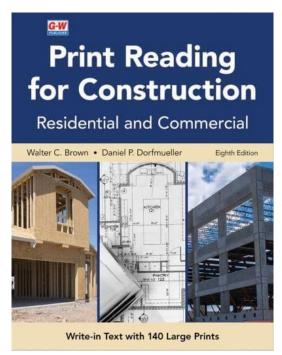
An Introduction to Building and Renovating Houses: Volumes 1 & 2 – Author Paul Netscher



- Do you want to renovate your existing home or build a new house but don't know where to start? These books have valuable tips and advice to help you.
- From planning your project, selecting Contractors, managing construction, finishing your project, and more.

www.pn-projectmanagement.com

- This website has blog pages filled with useful articles on managing construction projects.
- An easy to use index takes you directly to the information you are looking for.



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www.ContractorLicenseSchool.com

Slide 12.66 Final Words

- Our hope is that you've found this course useful and that you will continue learning and become a successful construction Project Manager –
- the industry is desperate for good Project Managers.
- ☐ From this course you see how essential it is to understand all aspects of construction management —
- from safety, quality, schedule, communication, finance, and more.
- ☐ It's critical that Project Managers manage every part of their project and leave nothing to chance.
- sure, you will often have a team, but you still have to manage the process and check that everything's done right.
- ☐ We invite you to attend our other courses to improve your knowledge further.
- ☐ Thanks for giving us your time.

Construction Project Management Course Legal Notices

- □ It should be noted that construction projects are varied, use different contracts, abide by different restrictions, regulations, codes and laws, which vary between countries, states, districts and cities. Furthermore, various industries have their own guidelines, acts and protocols, which the contractor must comply with. To complicate matters these laws, acts and restrictions are continually evolving and changing. Terminologies vary between counties, industries and contracts and may not be the same as those included in this course. It's therefore important that you use the information in this course, taking cognizance of the rules that apply to your particular project. □ Each project has its own sets of challenges and no one course can cover all the steps and
- □ Each project has its own sets of challenges and no one course can cover all the steps and processes in every project. This course covers a broad range of projects without being specific to a particular field of work. Some of the presenter's personal opinions may not be pertinent to some projects, clients or companies. Participants should undertake further research and reading on the topics relevant to them, even requesting expert advice when required.
- ☐ Therefore, the presenter and distributor assume no responsibility or liability for any loss or damage, of any kind, arising from course participants using the information or advice contained herein.
- ☐ The examples used in this course should not be viewed as a criticism of people or companies but should rather be viewed as cases which we can all learn from. After all we've all made mistakes. Any perceived slights are unintentional.
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CONSTRUCTION

PROJECT MANAGEMENT

Module Quiz Answers

Aim:

"I won't give you pop quizzes but life will."

Construction Project Management Course

Test Answers

Module 1	Module 3	Module 5	Module 7	Module 9
1. F	1. F	1. F	1. F	1. F
2. F	2. T	2. F	2. T	2. T
3. F	3. T	3. T	3. T	3. F
4. T	4. F	4. F	4. T	4. F
5. F	5. F	5. T	5. F	5. T
6. T	6. T	6. T	6. T	6. F
7. F	7. F	7. F	7. F	7. F
8. T	8. F	8. F	8. T	8. T
9. T	9. F	9. F	9. F	9. F
10. F	10. F	10. T	10. T	10. F
11. A	11. E	11. E	11. C	11. C
12. D	12. E	12. D	12. E	12. E
13. E	13. D	13. B	13. C	13. D
14. D	14. E	14. C	14. A	14. E
15. B	15. E	15. A	15. B	15. E
Module 2	Module 4	Module 6	Module 8	Module 10
Module 2 1. T	Module 4 1. F	Module 6 1. F	Module 8 1. F	Module 10 1. F
1. T	1. F	1. F	1. F	1. F
1. T 2. T	1. F 2. F	1. F 2. F	1. F 2. F	1. F 2. F
1. T 2. T 3. T	 F F F 	1. F 2. F 3. T	1. F 2. F 3. T	1. F 2. F 3. T
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1. T 2. T 3. T 4. F 5. F	 F F F F F 	 F F T F F 	 F F T F F 	 F F T T T
1. T 2. T 3. T 4. F 5. F 6. F	 F F F F F F 	 F F T F F F F 	 F F T F F F F 	 F F T T T F
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1. T 2. T 3. T 4. F 5. F 6. F 7. F 8. T 9. F	 F 	1. F 2. F 3. T 4. F 5. F 6. F 7. T 8. F 9. T	1. F 2. F 3. T 4. F 5. F 6. F 7. F 8. F 9. F	1. F 2. F 3. T 4. T 5. T 6. F 7. F 8. F 9. F
1. T 2. T 3. T 4. F 5. F 6. F 7. F 8. T 9. F 10. T	 F F F F F F F F T 	1. F 2. F 3. T 4. F 5. F 6. F 7. T 8. F 9. T 10. F	1. F 2. F 3. T 4. F 5. F 6. F 7. F 8. F 9. F	1. F 2. F 3. T 4. T 5. T 6. F 7. F 8. F 9. F 10. T
1. T 2. T 3. T 4. F 5. F 6. F 7. F 8. T 9. F 10. T 11. E	 F F F F F F F T A 	1. F 2. F 3. T 4. F 5. F 6. F 7. T 8. F 9. T 10. F 11. E	1. F 2. F 3. T 4. F 5. F 6. F 7. F 8. F 9. F 10. F 11. C	1. F 2. F 3. T 4. T 5. T 6. F 7. F 8. F 9. F 10. T 11. E
1. T 2. T 3. T 4. F 5. F 6. F 7. F 8. T 9. F 10. T 11. E 12. E	1. F 2. F 3. F 4. F 5. F 6. F 7. F 8. F 9. F 10. T 11. A 12. E	1. F 2. F 3. T 4. F 5. F 6. F 7. T 8. F 9. T 10. F 11. E 12. E	1. F 2. F 3. T 4. F 5. F 6. F 7. F 8. F 9. F 10. F 11. C 12. E	1. F 2. F 3. T 4. T 5. T 6. F 7. F 8. F 9. F 10. T 11. E 12. E

Module 11

- 1. F
- 2. T
- 3. F
- 4. F
- 5. F
- 6. T
- 7. T
- 8. F
- 9. T
- 10. F
- 11. E
- 12. E
- 13. C
- 14. E
- 15. E

Module 12

- 1. F
- 2. F
- 3. F
- 4. T
- 5. T
- 6. F
- 7. T
- 8. F
- 9. F
- 10. F
- 11. E
- 12. E
- 13. C
- 14. E
- 15. B

