



## CPCCBC4004A

### IDENTIFY AND PRODUCE ESTIMATED COSTS FOR BUILDING AND CONSTRUCTION PROJECTS

#### THEORY EXAM INSTRUCTIONS

- This exam will occur under standard assessment conditions.
  - An oral examination may be allowed under certain circumstances. Answers will be documented and FT003 (Oral examination declaration form) must be completed.
- Participants must provide enough detail in their responses to demonstrate their knowledge and skills.
- Please fill in the details below, providing your name, signature and date of assessment.
  - Your signature acknowledges that this is your own work.
- If a participant initially answers a question incorrectly but modifies their response, they must follow the instructions below:
  - If a participant changes their response in writing, they must put their initials next to the written change.
  - If a participant changes their response verbally, this must be noted on the exam paper by the assessor.

Participant name

DAVID MOORE

Participant signature

Assessor name

Assessor signature

Date

Click here to enter a date.08/02/18

| Number of questions | Number of questions answered correctly | Satisfactory?            |                          |
|---------------------|----------------------------------------|--------------------------|--------------------------|
|                     |                                        | Yes                      | No                       |
| 24                  |                                        | <input type="checkbox"/> | <input type="checkbox"/> |



## ASSESSOR COMMENTS



Q1. What is the critical aspect of identifying and interpreting plans, drawings and specifications for a building project?

Answer

Showing all parties involved in a building project the proposed structure and what it will look like when completed.



Q2. What is the purpose for date stamping of plans, drawings and specifications?

Answer

To mark when received, superseded and amended plans.



Q3. Nominate at least six (6) people and/or entities that would use plans drawings and specifications on a building project.

Answer

- \* Clients
- \* Councils
- \* Service supply companies e.g. power, sewage, electrical, gas
- \* Builders and sub-contractors
- \* Lending Body
- \* Engineers
- \* Trades
- \* Real Estate





Q4. Plans and drawings usually hold many and varied features.

Name some of the types of drawings and details you would expect to see on plans and drawings for a building project.

Answer

- Provide trades with information to make quotes or estimates
- Heights, position and sizes for council approvals
- Provide surveyor with details to set out.
- The structure planned for construction
- Feature location on the site.



Q5. It is necessary to acquire all building plans and specifications at the beginning of the negotiation period so we know all building project details prior to commencing work (including dimensions, construction materials, door and window schedules, masonry control joint locations and smoke alarm locations).

What else would be expected to be provided?

Answer

1. Architectural plans and elevations
  2. Building specifications
  3. Footing Construction Report and Foundation Soil Assessment
  4. Framing Plans
  5. Roof Truss computations
  6. Energy efficiency Report
- Other details for Bushfire prone areas or pool details, council approvals, service plan etc.



Q6. Drawings are usually arranged in the approximate order of construction. What might a set of drawings consist of?

Answer

Civil (C-1, C-2): includes site plans, utilities, easements, grading.  
 Structural: foundation, structural steel, building supports, roof framing.  
 Architectural: floor plans, elevations, sections, door/window schedules and room finishes.  
 Electrical: Electrical wiring, lighting plan, ceiling plan, panel layout.  
 Mechanical: heating, ventilation, air con, sprinkler.  
 Plumbing: hot + cold water layout, sewage disposal system.



Q7. Explain how to access the Building Code of Australia (BCA) and its relevance to estimating costs for building and construction projects.

Answer

www.abcb.gov.au relevance to ensure contractors are sticking to building codes + standards to prevent costs during certifying stage. Download pdf online.  
 Vol 1, Volume 2, Vol 3



Q8. Explain how to access the Plumbing Code of Australia (BCA) and its relevance to estimating costs for building and construction projects.

Answer

Download pdf Vol 3 BCA for plumbing codes. Ensure project and contractor following performance requirements.





Q9. Explain how to access Australian Standards and their relevance to estimating costs for building and construction projects.

Answer

Under the BCA codes Vol1, Vol2, Vol3 or visit  
[www.legislation.gov.au](http://www.legislation.gov.au) for building acts.  
 QBCC, HIA, MBA



Q10. Identify two (2) standards that would be relevant to the industry sector.

Answer

- Fixing standards e.g. Spacing requirements in gyprock
- Licencing requirements e.g. Trade, Sub-contractor, Builder



Q11. Explain the impact of WorkCover requirements on costs to the project.

Answer

Workers Compensation and Rehabilitation Act 2003 states  
 -an employer is legally liable for compensation for injury  
 sustained by a worker employed by the employer.  
 Employer needs to insure workers against injury with workcover.  
 This must be added by contractors and sub-contractor in  
 their quotes.





Q12. Explain the impact of Environmental Protection Agency requirements on costs to the project.

Answer

Permits and approvals have requirements and costs involved which should be considered in costing process.  
e.g. waste management, environmental effects on waterways.  
[www.legislation.qld.gov.au](http://www.legislation.qld.gov.au)  
Environmental Protection Regulation 2008.



Q13. Calculate and cost the lineal timber order for 93 x 19 DAR Meranti and allow 5% wastage. The cost per lineal metre is \$6.40.

The requirements are: 22 @ 2400; 30 @ 3600; 10 @ 4800; 12 @ 1880  
Show your calculations.

Answer

$$\begin{aligned} 22 \times 2400 &= 52800 = 52.8\text{m} \\ 30 \times 3600 &= 108000 = 108\text{m} \\ 10 \times 4800 &= 48000 = 48\text{m} \\ 12 \times 1880 &= 22560 = 22.56\text{m} \\ &+ 231.36\text{m} \\ &+ 5\% \text{ wastage } (11.57\text{m}) \\ &= \underline{242.93 \text{ Lineal metres}} \end{aligned}$$



$$\begin{aligned} &242.93\text{m} \\ &\times \$6.40 \\ &\hline &\underline{\$1554.75} \end{aligned}$$

Answer = \$1554.75

- Q14. A building floor plan measures 24000 x 14000 and the specification states the sheet flooring is 3.6 x 0.9 x 19mm Yellow TERMIFLOR T&G H2 at \$58.38 per sheet.

Calculate the area of floor sheeting required when an allowance of 2% is made for waste and cutting. Determine the number of sheets to order to the nearest whole sheet and calculate the cost for the flooring.

Show your calculations.

Answer

7 sheets

24 metres

14 metres

16 sheets

$= 16 \times 7$   
 $= 112 \text{ sheets}$   
 $+ 2\% \text{ } 2.24 \text{ sheets}$   
 $= 115 \text{ sheets}$

$= 115 \text{ sheet} \times \$58.38 \text{ each}$   
 $= \$6713.70$

- Q15. If a solid cavity brick wall is to be built 23000mm long and 2400mm high (no windows and no doors), how many bricks would be required if the number of bricks per square metre is 50? Show your calculations.

Answer

2.4m

23m

$23 \times 2.4$   
 $= 55.2 \text{ m}^2$

$55.2$   
 $\times 50$   


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 $2760$

= 2760 Bricks



- Q16. You are a QBCC licensed plasterer and a client (Owner Builder) Davey Jones-Locker of 100 Reef Avenue, Brisbane, Queensland wants you to quote for plastering an internal wall of his house build and has described to you the following information over the phone:**

The Client tells you the Council approved plans and drawings state the finished ceiling height from the top of slab floor is 2400mm. There is one external solid timber door (D4) is 2340 x 870 x 35 in this wall and no other openings. The length of this house end wall is 11 metres.

The house is of brick veneer construction and includes a 50mm cavity and the load bearing external framing is 70 x 45 MGP12 (a Boral product "Pineguard Blue"). The bricks are standard bricks 230 x 76 x 100mm. (L x H x W).

The Client tells you that the door is positioned 2100mm from an internal corner (RHS in aerial view) and as seen from inside the house looking out. The specification and drawings state 10mm regular internal plasterboard. You know from experience regular plasterboard is supplied in the following sizes lengths 6M, 4.8M, 4.2M, 3.6M, 3M, 2.7M and 2.4M with recessed edge and widths of 1200mm and 1350mm.

The Client wants a quote to fix and finish this internal wall with plasterboard.

Your labour and on-costs are charged at \$51.50 an hour per tradesman plus materials including sheets, fixing, finishing and sanding. You estimate ancillaries including stud glue, screws, base coat, top and finish coats at \$315.00 and that there is two (2) days' work.

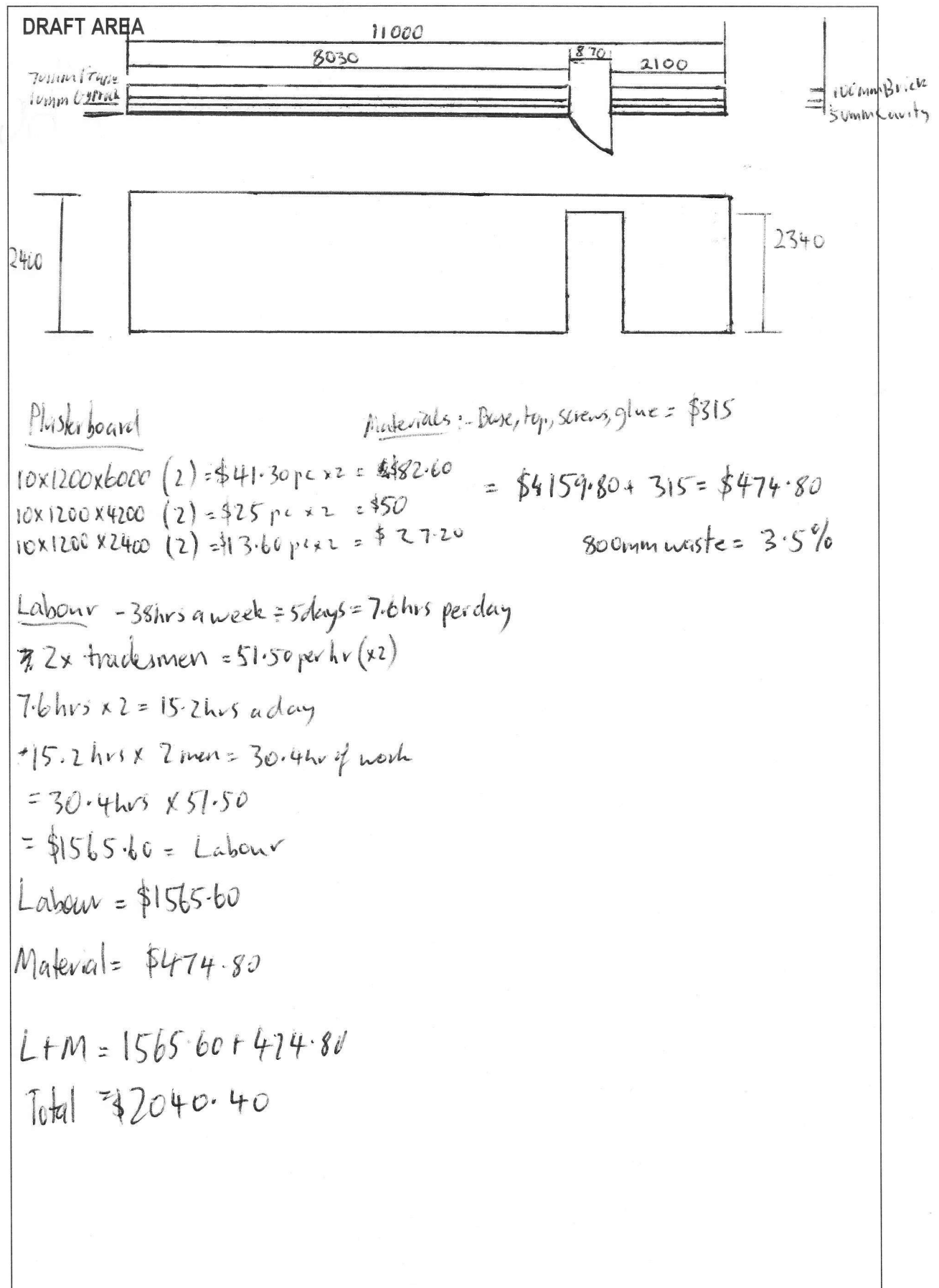
Your business works a 38 hour week you allow workers a 15 minute morning tea break and half hour for lunch. You will need two (2) tradesmen first day and one (1) tradesman second day including materials and equipment supply, fixing, finishing and sanding.

You are to research or acquire plasterboard sheet prices and attach this price list to your email. You are not required to supply or fix cornice.

Sketch the wall in Plan View (not to scale), dimension it with relevant measurements, and position the door on the right side of your plan view sketch and then calculate the plasterboard required and approximate waste expressed as a percentage (%) for internally lining this wall.

Estimate the cost of the job, including supplying plasterboard materials fixing setting, finishing and sanding plus labour. Then write a covering email to be sent to the client. You must show your methods for calculating cost of sheets, waste, plus fixing, setting, finishing and sanding.

Attach your quote, sketch, calculations and pricing list and email this to your Trainer/Assessor (details provided by them).



| DRAFT AREA      |  | Quote Install gyprock lomm walls, set, sand |  |           |
|-----------------|--|---------------------------------------------|--|-----------|
| Material        |  | Gyprock, plaster, screws, glue delivers     |  | 474.80    |
| Labor           |  | \$51.50 per hr                              |  | 1565.60   |
| Builders Margin |  | 20%                                         |  | 408.08    |
| Cost            |  | ex GST                                      |  | 2448.48   |
| Price           |  | +10 GST                                     |  | \$2693.32 |

Answer



- Q17. There are many different ways of estimating project costs. You can use your past experience, or 'square metre' rates but if you are unfamiliar with estimating and pricing then you should resort to the *materials and labour method* of costing using an item-by-item approach which is considered as the best industry approach to estimating.

What are at least three of the nominated methods for estimating?

Answer

1. Costing by area  
2. Costing by material and labour  
3. Costing by a costing guide or estimating manual



- Q18. Name some of the circumstances to consider in relation to labour adjustment factors when estimating a project for construction.

Answer

- Add 10-15% if working temperatures are too cold or too hot.
- Add 15-25% for work on a ladder or scaffold or remote from material storage point.
- Deduct 10% when work area is a large open and accessible area.
- Add 1% for each 3m that materials must be lifted above the ground.
- Add 5% to 50% for tradesmen with below average skills.
- Deduct 5-25% for highly motivated, highly skilled tradesmen.
- Deduct 10% - 20% for task repeated over several days.
- Add 30-50% on small jobs for fitting and matching existing material and busy site area.
- Add 25-50% for work done after major disaster while shortage of tradesmen and material costs may increase.
- Add 10-35% for demanding specs, rigid inspections, unreliable suppliers, a difficult client or inexperienced architect.

Q19. If a bricklayer lays 600 bricks in an eight (8) hour day, what is the average number of bricks laid per hour by the bricklayer?  
Tick your response.

Answer

| Choice                              | Possible Answers |
|-------------------------------------|------------------|
| <input type="checkbox"/>            | 65               |
| <input type="checkbox"/>            | 70               |
| <input type="checkbox"/>            | 55               |
| <input type="checkbox"/>            | 90               |
| <input checked="" type="checkbox"/> | 75               |
| <input type="checkbox"/>            | 105              |
| <input type="checkbox"/>            | 85               |

Q20. What and where are some of the potential sources you could go to in choosing your suppliers for goods and services?

Answer

- Online
- Yellow pages
- Industry Events
- Word of mouth



Q21. What are some of the primary (key) factors for choosing your suppliers?

Answer

- Price
- Reliability
- Quality



Q22. What are some of the ways you could communicate with your suppliers for gaining quotes?

Answer

- Email
- Face - to - Face
- Phone call
- Fax



Q23. Explain the concept of a 'Labour Only' quote?

Answer

Labour only quotes are quotes given to a client or builder for labour costing. This may include an hourly rate (\$35 p/hr) for a job, Per unit e.g. door fit out rate per door, Per lineal metre e.g. ~~4m~~ \$5 per lineal metre of architrave or per square metre e.g. wall of gyprock and finishing \$50 per sqm. Labour only quotes do not however include materials which are an extra.



**You will be provided an allocated period by your instructor to complete this task.  
You may use appropriate costing software programs in completing this task.**



Q24. Referring to the supplied set of house plans, you must do the following scheduling and costing:

- a. Identify and nominate a supplier/s and schedule the materials and cost the internal and external timber wall framing.
- b. Identify and nominate a supplier/s and schedule the materials and cost the foundations and lower floor concrete slab including the schedule and costing for reinforcement.
- c. Identify and nominate a supplier/s and schedule the materials and cost for the sub floor framing and the flooring for the upper floor plan.
- d. Calculate the architrave and skirting required for the fit out of the upper floor only in lineal metres.
- e. Calculate the wet area tiles for the upper floor only which are client chosen for both floors and walls with the wall tiles 250 x 100 and floor tiles 300 x 300.
- f. Estimate the labour only cost to tile all the wet areas only in the home. The tiler charges labour only \$44.00 per square metre.
- g. Determine the roofing material and number of square metres of it that are required.
- h. Complete the aluminium windows and doors schedule and other external doors schedule for the lower floor only.
- i. Complete a full internal doors schedule for the lower floor only. N.B. Assume all doors are flush panel 2040mm in height and 35mm thick.
- j. Estimate the labour only cost for hanging all doors on the lower floor – if a tradesman takes 2 hours to jamb an opening, hang the door, fit the door furniture, door stops, architrave and fit a door-open-restraint. The hourly rate is \$27.80 plus 20% on costs.

Answer

Refer to CPCCBC4005A Last question for detailed response. Approval cleared from RTO.