



CPCCBC4006B

SELECT, PROCURE AND STORE CONSTRUCTION MATERIALS FOR LOW RISE 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.

16/02/2018

Number of questions	Number of questions answered correctly	Satisfactory?	
		Yes	No
32		☐	☐



This assessment reflects on what is required to supervise the systems through which materials are typically selected, acquired and stored on site for projects described by the Building Code of Australia (BCA) as low rise building or construction work (low rise' licensing classification with reference to Class 1 and 10 construction and Class 2 to 9 with a gross floor area not exceeding 2000M², not including Type A or Type B construction). It ensures the delivery to the site of materials that meet contract specifications and service requirements for low rise projects.

Q1. Who is responsible for supervision on a building construction site?

Answer The contractor (Builder) under a contract to a client takes on all supervision on a building site under their building licence. Or builders representative.



Q2. Who is then responsible for supervision when a Builder has a Construction Manager on site?

Answer The Construction Manager is representing the builder and is hired to supervise the running of a job site. Overall the builder /rep is responsible for supervision on site



Q3. Who is responsible to supervise and coordinate tradespeople working on site?

Answer Subcontractors will manage their staff in accordance with the builders rules + regulations. The contractor/ builder will co-ordinate trades in a manner to maximize productivity and quality at a costing within the contract.





- Q4. Identify ten (10) *materials* commonly used for *low rise buildings* in your region (with slab on ground, prefabricated timber wall frames and roof trusses, brick veneer construction, plasterboard linings and texture coated external finish over brickwork along with metal or concrete tiled roof).

For each material, identify the following:

- Its name
- A supplier for this material
- Properties of the material

- Bricks
- Steel reinforcement
- Treated pine
- Gyprock sheet
- Paint
- Render - cement
- Plaster - internal
- Roof sheet - metal
- Tiles
- Nails

- Nails
- Strength
 - ~~Easy~~ application
 - Inexpensive
 - Fast application
 - Longevity.

- Reinforcement steel:

- Bunnings
- Strength
- Toughness
- Ductility
- Weldability
- Durability

- Bricks

- Bunnings
- Shape, size, color, density, Thermal durability, strength

- Structural Pine

- Drying improves strength, nail holding stiffness, light, easy to handle, low moisture content.

Tiles - Ceramic

- Bunnings
- Dirt resistance
- Stain resistance
- Hygienic
- Fast installation
- Durable
- Easy maintenance

Render

- Bunnings
- ease of applications
- level finish
- durability

Plaster

- ease of application
- level finish
- durability
- Fast construction method

Roof sheet

- Bunnings
- Fast application
- waterproof
- Durability heat/weather
- Inexpensive excessive
- lightweight
- weather resistance
- longevity.

Drywall

- Bunnings
- Calcium sulfate dihydrate
- ease of installation
- fire resistant, sound control
- ~~Pen~~ - lightweight
- Vulnerable to moisture

Paint

- Bunnings
- ease of application, forms protective film
- quick drying
- Corrosion resistance.
- water resistance / heat.
- easily cleaned.



Answer

#	Material name	Supplier	Properties
1	Rebar (Reinforced) (Steel bar)	• Bunnings	• Iron - Mined from earth • Carbon - Natural occurring Environmentally destructive on large scale.
2	Bricks	• Bunnings	• Clay • Water • Heat
3	Pine Timber Framing	• Bunnings	• Wood (Trees)
4	Nails	Bunnings	• Iron Ore • Carbon (mining)
5	Drywall	Bunnings	Calcium Sulfate dihydrate (mining)
6	Cement Render	• Bunnings	• Lime (mining)





7	Plaster (Drywall coat)	• Bunnings	• Calcium sulfate dihydrate
8	Paint	Bunnings	• Pigments
9	Tiles Ceramic	Bunnings	• Clay • Heat • Paint
10	Roof Sheet	Bunnings	• Iron



- Q5. For each of the materials in Q4. identify the following:
- Quality of the material (i.e. safety, required fire resistance rating, suitability to the application, durability, serviceability, cost effectiveness and compliance with Australian Standards)
 - Compatibility and non-compatibility of the material (i.e. what it would/would not be suitable for)



Answer

#	Quality	Compatibility
1	- Ductility, Durability - Strength, weldability - Standard sizes - Australian standard Rebar (reinforced steel) Bar	Suitable for concrete construction, fast + cost effective. Not suitable for ecofriendly construction, timber project/house.
2	- Thermal Durability - Shape - Size - Density	Suitable - Eco-friendly compared to cement construction, low maintenance builds Not suitable - earthquake prone areas - fast project - low budget house
3	- Drying, improves strength - Light - Stiffness - Low moisture content - Fast to grow/harvest - Industry standards	Suitable - Cost effective, quick application construction, small time frame/budget. Not suitable - Heritage house reno, General Open to weather areas, Furniture A-class
4	- Longevity - Fast application - Strength - Fast Application	Suitable - Small time frame, Residential + commercial projects, Timber construction Not suitable - Heritage furniture, Some handpainted projects, concrete construction.
5	- Fire resistant products - Sound resistant products - Lightweight - Ease of installation - Vulnerable to moisture	Suitable - residential + commercial construction, economical build, fast timeframe build Not suitable - Heritage, eco-friendly, wet areas.



Rebar

Bricks

Pine Timber

Nails

Drywall



Cement Render	6	• Durability • Level finish • Productive • Ease of Application	Suitable - residential + commercial projects, Block/brick projects Not suitable - Timber house, eco-friendly
Plaster (drywall coat)	7	• Fast construction method • Level finish • Durability •	Suitable - Residential, Commercial short time frame build. Drywall application. Not suitable - eco-friendly, open to weather
Paint	8	• Protective film • Quick drying • Corrosion resistance • Water resistance • Easy to clean.	Suitable - Internal + External commercial + residential, Not suitable - eco-friendly house.
Tiles Ceramic	9	• Easy maintenance • Durable • Hygienic • Ease of installation	Suitable - commercial + residential construction. Kitchen, bathroom. Not suitable - Timber houses, eco-friendly.
Roof Sheet	10	• Ease of application • Lightweight • Waterproof • Longevity • Durable heat/weather	Suitable - hot climate, commercial/residential, fast build timeframe. Not suitable - eco friendly, heritage listed. Cold climate.

Q6. For each of the materials in Q4. identify the following:

- Environmental impacts
- Tolerances for installing and assembling these materials in regard to the nature of the work being performed and the requirements of Housing/Residential industry and the Australian standards



Answer	#	Environmental impact	Tolerances	☐
<u>Rebar</u>	1	High Enviro impact due to iron-ore mining, waterways, rainforests, animals, air-pollution	• Cost - high • Corrosion/rust due to exposure to moisture • Weight	
<u>Bricks</u>	2	Mining of clay from the earth, high energy of cooking the bricks, loss of fertile land.	• Weight • Sound insulation • Cost of labor • Cracking due to movement	
<u>Pine Timber</u>	3	Removal of native tree and animals for mass farming. • Loss of species living/habitat	• Prone to termites (short life) • Harvested at young age - reduces strength • Prone to damage (soft wood)	
<u>Nails</u>	4	Mining for iron-ore has a high impact on the natural environment	• Corrosion rust. • Poor strength compared to timber joints	
<u>Drywall</u>	5	Mining destruction of the earth, high energy to make	• Prone to moisture damage • Poor durability when bumped. • Difficult to recycle.	
<u>Cement Render</u>	6	Mining destruction	• Prone to cracks, moisture entering building. • Upkeep • Cost	
<u>Plaster (Gyproc)</u>	7	Mining destruction	• Only suit to internal use. • Not suitable for wet areas • Cost compared to sand + cement plaster.	
<u>Paint</u>	8	Poisoning the waterways & seas from run off.	• Flammable • Toxic odor • Discolor overtime - life span	
<u>Tiles Ceramic</u>	9	Mining destruction, energy to manufacture.	• Weight • Discolor overtime • Cost	
<u>Roof Sheet</u>	10	Mining Destruction.	• Insulation weather • Sound insulation • Discoloration • Prone to denting.	

Q7. For this task, please refer to the brief below. You are required to develop a preliminary quote and construction timeframe with schedule.



You have been approached as a local builder by Ian and Grace Fleming to build their home on their 1 hectare of level accessible land at 106 Blue Heeler Drive, Greenbank, Queensland.

The home is a slab on ground, four bedrooms and is of standard brick veneer construction with plasterboard internal lining and metal roof over 600mm eaves and two car garage with attached and roofed alfresco deck off the lounge and kitchen areas (see floor plan supplied below).

Levelling for the house pad requires a cut of 350mm to nothing (west to east) from the garage side of the building with north south reasonably level across the floor slab pad. The deck is facing in a northerly direction.

The Clients have provided you with a contour survey and the geotechnical report which suggests stable substrate soils with the possibility of small to medium boulder size rock within a metre underground. They also advise you, with photographs, that several large eucalypt trees will need to be removed for the house slab location. They want these trees chipped and all bark to be stockpiled on the site for future landscaping.

There is a 7 metre wide double gate access and 100 metres of cracker dust and gravel road into the property and ending literally at the future location of the garage doors. The block is fully fenced with timber posts and chain wire approximately 2 metres high. There is a concrete causeway rated to 120T at the entry gate and crossing over the roadside water table. There is bitumen road access all the way to the property from all access routes with nearest major community hubs being Springfield, and Greenbank/Browns Plains/Parkinson.

In preparation for developing your preliminary quote you need to create a schedule for this build describing estimates for time and labour. You are using sub-contract labour only except for the plumber

The list below is not definitive and you can add and subtract as determined:

Base Stage	Framing Stage	Enclosed Stage	Fixing Stage
- Site located and confirmed - Site signs installed - Safety signage installed - Traffic Management Plan established - Safety Plan instigated - Land clearing determined and actioned - Temporary sanitary units established - Temporary power supply installed - Sedimentary controls installed <i>SURVEYOR x1</i> - Waste skip installed - Profiling/Layout for foundations - Excavation <i>-planthire x1</i> - Footings established <i>x4</i> - Base brickwork installed <i>x4</i> - Reinforcement installed <i>x4</i> - Rough in (Electrician & Plumber) <i>x3</i> - Other (Security/VacuMaid/etc.) - Slab on ground established <i>x4</i>	- Erect load bearing walls <i>x4</i> - Erect non-load bearing walls <i>x4</i> - Install sheet, and strap bracing, tie downs etc. <i>x4</i> - Roofing timbers installed <i>x4</i> (Trusses) - Other? ? <i>10 Rough in plumber electrician x2</i>	- External brickwork established and laid (excluding sills) <i>x4</i> - Fascia and gutters installed <i>x3</i> - Roof fixed (without soffit lining, final scribing and screwing off) <i>x3</i> - External windows fixed <i>x2</i> - External doors fitted with locks <i>x2</i> - Garage doors fitted or if not then internal door from garage to house fitted with lock <i>x2</i>	- Internal linings (stopping setting and finishing) <i>6x</i> - Roof (final scribing and fully screwed off) <i>3x</i> - Soffits lined and brick sills installed <i>x4</i> - Architraves (http://www.woman.com.au/julie-rainbow-clarity-road/) <i>x4</i> - Cornices <i>x2</i> - Skirting <i>x2</i> - Doors to rooms <i>x2</i> - Baths - Shower trays - Wet area waterproofing <i>x2</i> - Wet area tiling <i>x2</i> - Built-in shelves fitted and fixed <i>x2</i> - Built-in cabinets fitted and fixed <i>x2</i> - Built-in cupboards fitted and fixed <i>x2</i>

3 day curing of concrete



3000
3m³
concrete
10m³

30
57
2300x100

4.5, 6.1, 3
= 13.5

15
13.5
202m²

6, 3, 6, 2, 3, 4
15m



- Q8. There are four types of residential structures nominated in the BCA. Two of these are *residential structures with concrete skeleton* and slabs and *residential structures constructed from non-metallic materials*.

Name the other two.

Answer

• Constructed from masonry materials
• Constructed in fire prove area.



- Q9. Building materials can be generally categorised into two sources: Natural and Synthetic. Explain these two terms.

Answer

Natural:- Building materials are those that are unprocessed or minimally processed by industry, such as lumber or glass.

Synthetic:- Building materials are made in industrial settings after much human manipulation, such as plastics and petroleum based paints. Both have their uses.



- Q10. Name at least five (5) naturally occurring materials that were and can still be used to create homes to suit local climate and weather conditions.

Bamboo

Straw Bales

Coconut - Tree, Leaves

Earth bags - Earth + Sack

Clay

Lime

Hempcrete - Hemp chips + Lime

Wood



Answer

* Bamboo
 * Straw bales
 * Bamboo - Coconut
 * Wood
 * Hempcrete
 * Lime
 * Clay



Q11. Choose any five of these building materials from Q10. and discuss the materials' properties, and pros and cons for use and incorporation in a low rise residential construction.

Bamboo

Properties, pros and cons for use and incorporation in a low rise residential construction

Bamboo has a higher compressive strength than wood, brick, concrete and a specific tensile strength that rivals steel. In a cylinder shaped form hollow on the inner stem with cross-sections on the inside. Used for a building material, a food source, and as a versatile raw product. Very fast growing up to 40cm a day and can be used for all sections of construction. Bamboos use in low rise residential construction range from laminated flooring, tiles, walls, roofs, scaffolding, furniture and fencing.

Pros

- * Inexpensive
- * High strength to weight ratio
- * Very environmentally friendly
- * Fast to grow - renewable
- * Easy to grow / harvest

Cons

- * Grows more in tropical regions
- * Prone to insect damage
- * Varies in quality + size



Answer

Lime

Lime is used in the building industry for cement, concrete and mortar. The uses in low-rise residential construction is all throughout the phases of construction like foundations, walls, floors and furniture. Qualities of lime include cohesion, adhesion, air content, crystal shape, setting time etc.

Pros

- * Quick application
- * Strength and ease to use
- * Readily available
- * Can be recycled

Cons

- * Environmental destruction due to mining
- * Harmful for workers silicosis
- * Air pollution when cut/demolished

Hempcrete

Hempcrete is a bio-composite material, a mixture of hemp hurds and lime used as a material for construction and insulation acting as an insulator and moisture regulator. In low-rise construction hempcrete is used for walls, ceilings and roofs for great thermal insulation.

Pros

- * Environmentally Friendly
- * Low carbon footprint
- * Extremely windproof
- * Excellent insulation
- * Non-hazardous to work with
- * Recyclable
- * Natural Pest Resistance

Cons

- * Contractors need specific training to do a good job.



Answer

Clay

Clay is a finely-grained natural rock or soil material that combines one or more clay materials with traces of metal oxides and organic matter. Natural occurring like stone and wood. A primary example in natural building technique, clay is used to create adobe, cob, cordwood and rammed earth structures in regards to low-rise construction. Clay can be used as a ceramic building material e.g. bricks, clay plaster, clay floors mainly bricks are the clay product used in low rise building construction.

Pros

- * Low maintenance
- * Insulation

Straw Bales

Straw is an agricultural by-product, the dry stalks of cereal plants, after the grain and chaff have been removed e.g. barley, oats, rice, rye, wheat. Uses of straw include fuel, livestock bedding and fodder, thatching, basket making and construction material. Relating to low rise buildings straw bales are used as structural elements and building insulation. Considered a sustainable building product both in energy and environmentally.

Pros

- * Environmental sustainable
- * Cost effective
- * Insulation

Cons

- * Time consuming
- * Environmental Damage
- * Not used in earthquake area

Cons

- * Moisture
- * Mold
- * Fire rating



Q12. Every building material comes with an environmental cost of some sort. Discuss the principles that can help guide our choice of sustainable materials and construction systems.

Answer

Step 1: Where possible use recycled materials or opt for renovations rather than demolition and rebuilding a house. Use durable, low maintenance materials.

Step 2: Use materials with low environmental impact, that is 'sustainable' materials that do not impact negatively on non-renewable resources, the environment and human health. Consider all stages of life in your choice (upstream, operational and downstream stages)



Q13. When using building systems what are the five steps we can follow for considering ways of reducing environmental impacts when erecting building structures?

Answer

1. Materials safe to install e.g. Dust for contractors
2. Renewable source/fast growth e.g. Bamboo, Hempcrete
3. Pollution into waterways
4. Waste management
5. Longterm effects e.g. mining.





Q14. You or the company you work for should have a **Building Quality Standards Policy**. Why would such a policy be needed and what would be useful source and reference materials in developing such a policy?

Answer

Building Quality Standards Policy is the minimum quality criteria for all your construction projects. This document should also assist to manage workplace issues and health and safety obligations. Useful materials for developing the policy would be the Australian Standards.



Q15. What is the purpose of a building specification in conjunction with the plans and drawings for the building of a residential home or other building structure?

Answer

Building specifications set out the project description and requirements for materials and workmanship. These building materials should be established during preliminary stages with the client after identifying the materials than it is time to draft plans and drawing using the set materials chosen by the client.





Q16. Explain the two terms Building Life Cycle (BLC) and Life Cycle Costing (LCC).

Answer

Building Life Cycle :- Refers to the view of a building over its entire life which includes operational build, design, construction, demolition and waste treatment.

Life Cycle Costing :- Long term environmentally sustainable solutions which take energy and sustainable innovations to a new level.



Q17. When would Life Cycle Costing (LCC) and sustainable solutions need to be considered?

Answer

LCC needs to be considered when:

- Designing
- Building
- Installing
- Maintaining environmental innovations
- Branding a service under LCC/sustainable solutions



Q18. What is a 'Green Home'?

Answer

A green home is a type of house designed to be environmentally friendly and sustainable, while also focusing on the efficient use of energy, water and building materials.





Q19. When considering alternative building materials what must we take into consideration, other than the clients' requirements?

Answer

- | | |
|---|--|
| <ul style="list-style-type: none"> • Availability • Transportation • Handling • Testing • Waste reduction • Recycling • Renewable • Environmental impact • Fire resistance • Compatible with location | <ul style="list-style-type: none"> • Life cycle cost • Acoustic properties • Short and long term degradation • Time to install • Base Cost • Australian Standards requirements |
|---|--|



Q20. How do you take a delivery and deal with damages of materials and products delivered to site?

Answer

- Before delivery person leaves and before you sign anything
- Confirm the correct quantity
 - confirm the condition of the delivery.
 - Check for damages.
 - Do not receive damage goods and note the supplier of this.
 - Prepare for delays of damage goods.





Q21. What is a critical factor to consider when coordinating the delivery of materials to site?

Answer

- Ensure employee taking delivery is the right person for quality control.
- Always have your sales order to compare to the picking ticket on delivery to prevent any problems on items and quantity.



Q22. Explain in detail how building materials are handled on a building site.

Answer

Building materials are accepting in perfect condition. They are stored on or offsite in a secure location consideration should be taken that the materials are safe from theft, weather or potential damage. If damage or loss of material take place this will have a great cost element added at the builders cost. Machines like cranes or manual handling may be effective choice for taking the delivery. When possible schedule the materials close as possible to the date of installation to prevent storage costs and space available on the site. Materials should be stored close to sub-contractors location for installation to prevent added costs to the sub-contractor which may become a variation.





Q23. What is the main aim when storing materials on a construction site?

Answer

- Prevent loss or damage of materials
- Prevent added costs to builder
- Ease of access to contractors
- Safe
- Productivity.



Q24. What does it mean to store materials safely and carefully?

Answer

Store materials in a secure location e.g. lockable storage container, or close to area of installation. To carefully store materials we must keep in mind not to damage, block, access or slow productivity. Prevent loss of time, cost, productivity on the contract.





Q25. What are some of the general points for storage of materials that office and worksite personnel should be aware of?

Answer

- Site supervisors to provide facilities for storage and handling of building materials.
- Site areas should be designated for material delivery & storage.
- Temporary Storage area should be away from traffic.
- Storage area also located near entrance.
- Place erodible materials on hard surfaces
- Don't place materials near rubbish skip.
- Do not store material on road reserve without permits / approval from council.
- Materials must not cause hazard or block traffic.
- Storage of flammable material must comply with fire codes.
- Hazardous materials storage onsite should be minimized
- Prevent waste from materials into stormwaterways
- Store in a dry area if in rainy season
- MSDS should be supplied for all hazardous materials
- Clean up chemical spills immediately and keep stored off the ground.





Q26. How might you convey information to the workforce and visiting personnel when it comes to the use and installation of materials stored and/or delivered to site for immediate installation?

Answer

- Site inductions
- Daily Prestarts
- Contractual agreements
- Communication with appropriate manager of the sub-contractor to pass to team.

Workforce to be trained on the proper material delivery and storage practices.



Q27. Paying attention to natural phenomena affecting design/build considerations is important. A region and site location will present unique biological, geographical, geological, and meteorological conditions which may require special materials and methods.

Briefly explain who you can go to if you need further advice in this regard.

Answer

Engineer and architect will work closely together to achieve a design which may require special materials and methods.





Q28. What can you do (on-site and in the office) to improve reliable documentation and records of deliveries from suppliers, material, plant and equipment acceptance at site from delivery and installations by your own tradespeople and sub-contractors?

Answer

Keep an accurate up-to-date inventory of materials delivered and stored onsite. Have trades and workforce trained on the proper material delivery and storage practices.



Q29. What considerations come into play when selecting building materials? When would it be appropriate to consider alternative materials or building practices?

Answer

Environmentally sustainable materials, cost, time of installation, local product are some considerations to think about. It would be appropriate to consider alternative materials or building practices if it is not suited to the cost or environmental conditions e.g. Bamboo house with thatch roof in siberia.





Q30. Explain the difference between ferrous and non-ferrous metals. What is the principal reason why in cosmetic applications non-ferrous metals would be preferred over ferrous metals in building and construction?

Answer

The difference between ferrous and non-ferrous metals are that non-ferrous metals do not contain iron, are not magnetic and are usually more resistant to corrosion than ferrous metals e.g. Aluminium, copper. Non-ferrous metals are usually more resistant to corrosion than ferrous metals this makes them more of a preferred material for construction to give a longer life span of the product installed. An example would be building a house on the beach which may cause rust to metals like exposed iron. So the aluminium would be a preferred material.





Q31. Supervision of your project requires a consistent, organised approach to each phase of construction. What would this entail?

Answer

Planning - have a set plan detailing the project from preliminary talks with the client up to the closure or finish of the contract. e.g. timeframe (gantt chart), costs, sub-contractors, suppliers, staff. Determine the risks involved and have a plan for if these were to occur. Communication is a key factor to an organised approach during the project this will include meeting with the client, suppliers, sub-contractors, company staff and local government offices. These meetings could be done weekly to bring up issues, adjust schedules that may result in loss of time and costs to the project. Quality of finishes and materials to be to standards should be checked regularly and determine actions to be taken. e.g. supervisor onsite to monitor and quality control the project. Regular checks to schedule and adjust if necessary, be sure to supply changes of schedules, plans to all parties involved. Another phase of planning will be workplace health and safety which should be a key objective in daily prestart meetings and onsite inductions, this will reduce risk of site closures and injury which in turn adds cost and time to your contract.





Please read the information below in responding to Error! Reference source not found.

Given the variety of circumstances in residential construction, it becomes very difficult to create a master checklist covering all circumstances. Checklists by their very nature need to be comprehensive enough to provide sufficient information upon which to act or react and serve merely be regarded as a guide and should NOT be used as a means to troubleshoot your project.

The most important aspect of the checklist is to understand the level of detail you'll encounter should you decide to act as the builder or when using the services of a construction manager or general contractor to assist in project management duties.

Q32. You are to produce a sample quality control checklist.

Keep in mind that whilst your checklist needs to be reasonably comprehensive, it will not become a substitute for good observation and critical thinking about quality control for your project and the product and material specifications applicable to it.

Your checklist should cover everything about the build from begin to end.

As an example could have headings like:

- **PRECONSTRUCTION** – including site access, temporary facilities, storage and protection, cleaning and debris
- **SITWORKS** – including demolition layout, site clearing, excavation, back fill, grading, retain walls, asphalt paving, concrete paving, brick paving, public utilities, storm water controls, foundation drainage, trees plants groundcover
- **FOUNDATION** – including slabs, damp proofing, including set outs, footings including white ant system protection, walls, slabs, damp proofing and wall and crawl spaces
- **FRAMING** – including floor, wall, roof, roof sheeting and flashing etc.

Answer

