higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

CARPENTRY AND ROOF WORK
NQF LEVEL 3

7 December 2020

This marking guideline consists of 5 pages.

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QUESTION 1: HIPPED ROOFS

1.1
1.1.1 D
1.1.2 A
1.1.3 B
1.1.4 B
1.1.5 C

(5 × 1) (5)

1.2
- *Deemed-to-satisfy* roof – A carpenter uses his experience and knowledge of the load tables✓ to construct the roof trusses.✓
- *Rationally-designed* roof – A roof designer uses scientific calculations to design the trusses✓ which are then manufactured by a truss-manufacturing company.✓ (4)

1.3
- The roof span is greater than 8 metres.
- The roof has hips/valleys. (2)

1.4
1.4.1 True
1.4.2 False
1.4.3 False
1.4.4 True
1.4.5 True

(5 × 1) (5)

1.5
- It ensures safe construction.
- No building work will be approved if it does not meet the National Standards.
- All parties will aim for similar goals. (3)

1.6
- To plan for the carrying and storing of the trusses.
- To see if any internal walls are complete.
- To check if the site has electricity.
- To check if the load-bearing walls are of the same height. (Any 3 × 1) (3)

1.7
- 100 mm nails
- M12 bolts (2)

1.8
- To ensure good joints between the wall plates
- To simplify lining up of the rafters (2)

1.9
- The top of the fascia on a tiled roof should be 60 mm above the top of the rafter.
- The top of the fascia on a sheeted roof should be level with the purlins. (2)

1.10 The wall plate (1)

1.11 The thickness of the tile used (1)

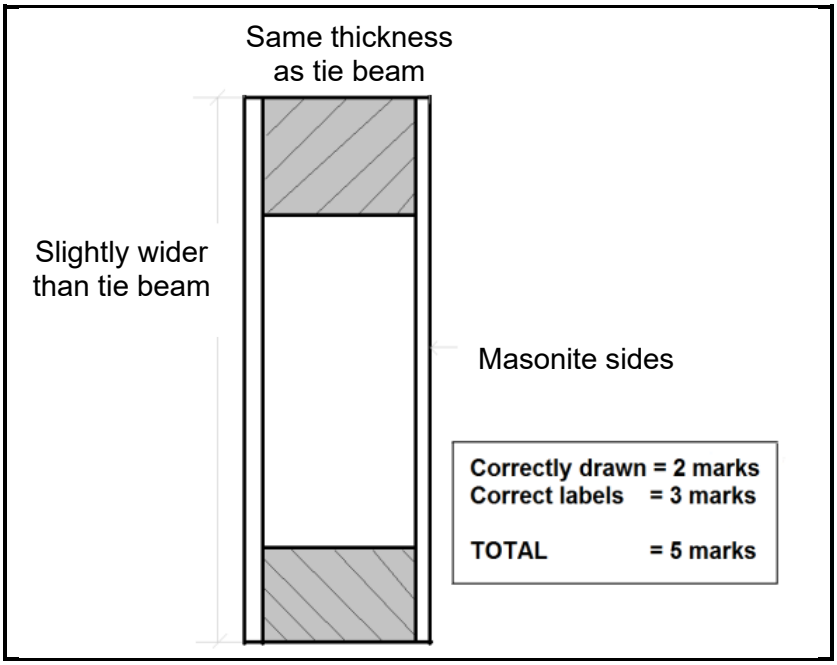
[30]

QUESTION 2: ERECTING AN L-SHAPED ROOF

2.1
2.1.1 D
2.1.2 E
2.1.3 B
2.1.4 A
2.1.5 C

(5 × 1) (5)

2.2



VOID FORMER (5)

2.3
- Standard or monopitch truss
- Valley jack truss
- Valley girder (3)

2.4 First : Valley girder
Second: Standard or monopitch truss
Third: Valley jack truss (3)

2.5 2.5.1
- The bottom chord of the girder is wider than the bottom chord of the standard truss.
- The runner therefore abuts against the girder. (2)

2.5.2 A metal bracket can be used to reinforce the joint between the runner and the girder. (1)

2.6 An inverted ridge capping can be used as a valley lining. (1)

2.7
- The valley lining must be nailed into the top of the valley batten.
- Do not fix the valley lining too far over the valley batten.
- An alternate way of fixing the lining is to curl it over the batten.
- Apply mastic between the valley planks and the lining.
- Ensure that the valley lining projects about 50 mm into the gutter. (5)

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2.8
- The valley experiences more water load than the roof pitches.
- The valley can be an area of weakness if not properly constructed.
- Leaves and twigs, et cetera tend to accumulate in the gutter, blocking the flow of water. (3)

2.9
- Create a deeper valley
- by fixing the valley planks between the rafters. (2)

[30]

QUESTION 3: INSPECTION OF ROOF STRUCTURES

3.1
3.1.1 The home/building owner
3.1.2 An accredited roof inspector
3.1.3 The builder/contractor
3.1.4 The engineer responsible for the design of the roof
3.1.5 The NHBRC

(5 × 1) (5)

3.2
- Trusses
- Girders
- Top-chord bracing
- Bottom-chord bracing
- Web bracing
- Purlins
- Battens
- Special trusses (Any 5 × 1) (5)

3.3
- The cutting of tiles is minimised.
- The horizontal lines of the tile courses
- are regular and true.
- The perpendicular lines of the tile edges
- will align with a truss. (5)

[15]

QUESTION 4: HOW TO COVER A ROOF

4.1
- Thatch
- Polycarbonate roof sheeting (2)

4.2
- The minimum pitch/slope
- for a roof when using concrete tiles is 17° (2)

4.3
- Battens
- Purlins (2)

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4.4
- The size of the roofing members
- Batten/purlin spacing
- Roof span
- Rafter spacing
- Roof slope
- Types of bolts and connectors
- Timber grade
- Truss spacing (Any 5 × 1) (5)

4.5
- Undertile membrane or underlay is thick waterproof
- plastic sheeting. (2)

4.6 Before fixing the tile battens (1)

4.7 Coastal regions (1)

4.8
4.8.1 16
4.8.2 6
4.8.3 0,310 mm
4.8.4 6,000 metres
4.8.5 0,300 mm
(5 × 1) (5)

4.9
- The ridge and fascia✓ must be parallel.✓
- The two gables✓ must be at 90° to the ridge and fascia.✓ (2 × 2) (4)

4.10 To prevent white rust (1)
[25]

TOTAL: 100

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