higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

BUILDING AND CIVIL TECHNOLOGY N3

25 November 2022

This marking guideline consists of 6 pages.

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QUESTION 1

1.1

1.1.1	True
1.1.2	True
1.1.3	True
1.1.4	True
1.1.5	False
1.1.6	True
1.1.7	False
1.1.8	True
1.1.9	False
1.1.10	True

(10 × 1) (10)

1.2

- To enclose the site
- To set out the structure according to the block plan
- To arrange for a water connection from the local authority
- To attend meetings before the commencement of work and during construction
- To work in close co-operation with the project staff and builder's main office
- To honour the defects liability clause in the contract
- To decide whether he/she is capable of doing the work, i.e. whether he/she is able to complete the work in accordance with the architects wishes(as stated in the BBQ drawings and specifications),
- To carry out a full investigation of the site so that nothing, which may affect the tender price, is overlooked,
- To submit his/hers tender price to the architect within the stipulated time period,
- To carry out all the necessary planning and retain the services of the subcontractors that are needed,
- To draw up all the necessary charts regarding pant, labour, materials, subcontractors, etc. for the erection of the project,
- To exercise proper control and to ensure that programmes are adhered to and crucial dates are met,
- To work in close co-operation with the professional staff and the builders main office,
- To ensure that the work is carried out in accordance with the plan and the wishes of the architect,
- To supply the quantity surveyor with all necessary data for drawing up of the final certificates and extra-contractual payments,

(6)
[16]

QUESTION 2

2.1

- Pile foundation
- Cantilever column foundation
- Reinforced pad foundation
- Mass concrete foundation (4)

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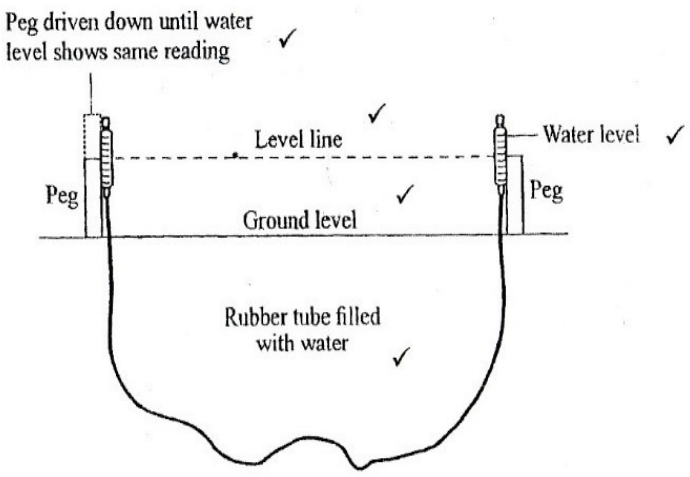
- Float or raft foundation
- Combined column foundation
- Reinforced steel-strip foundation
- Isolated or pad foundation (Any 4 × 1)

2.2
- Notify the owners of adjoining building and give them all the relevant information.
- Carry out a detailed inspection of the building and record any defects, cracks, etc. Take photographs as evidence of what you find.
- Check the levels at certain points and record them. Continue to check these levels during construction to see if there is any further movement.
- Carry out soil tests to determine the cause of settlement. These tests will allow you to apply the correct remedial measures.
- Remove any imposing loads and apply shoring, where required.
- A detailed survey of the particular area should be carried out and substantiated by photographs and the signature of the owner of the building.
- Notices should be given to adjoining occupants, their consent obtained and agreement reached on the commencement date of work.
- Tell-tales (thin glass coated with plaster of Paris) should be fixed where there are existing cracks, to indicate any further movement.
- The structure must be cordoned off by the contractor or protection unit force

(Any 4 × 1) (4)

2.3



(6)

2.4
- A scaffold is a temporary structure to support works✓ and materials during building operations.✓
- A scaffold is a temporary frame providing a stable platform on which labourers can work✓ and where the necessary building materials can be temporarily stored.✓
- Scaffolding is a temporary platform carried by a framework erected on site✓ to give access for trades like bricklaying and painting and to carry materials.✓ (Any 2 × 1) (2)

[16]

QUESTION 3

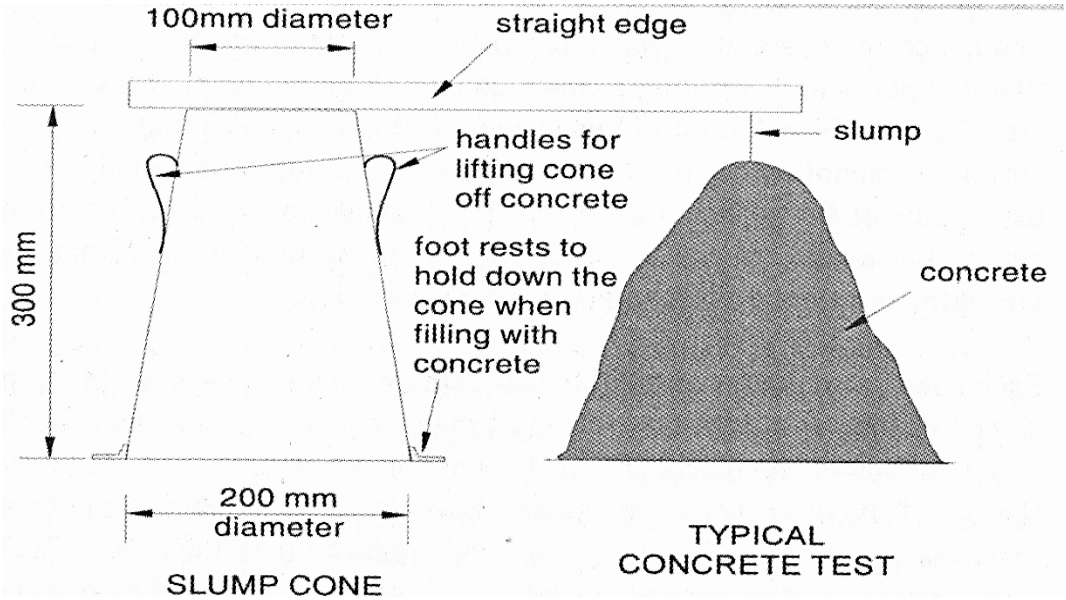
3.1
- Keep framework in place, especially columns and beam.
- Water must be pounded frequently in areas exposed to the elements.
- Cover the surface with sand, sawdust, etc. and moisten it with water.
- Spray water onto the concrete at frequent intervals.
- Cover the exposed surface with plastic sheeting.
- Spray a liquid sealant (colourless) on the surface. (Any 4 × 1) (4)

3.2 3.2.1 Testing the concrete strength after it has set.

3.2.2 Testing the workability of the concrete.

(2 × 2) (4)

3.3



Mark allocation:
Labels = 2
Correct sketch = 2
Neatness = 1
Total = 5

(5)

3.4 Mass of water = Ratio × Cement
= 0,6 × 600✓
= 360 kg✓
= 360 litres✓ (3)

[16]

QUESTION 4

4.1
4.1.1 Bidet
4.1.2 Rodding eye
4.1.3 Cover level
4.1.4 Foam inlet
4.1.5 Cleaning eye

(5 × 1) (5)

4.2 1. Universal column
2. Base plate
3. Fillet weld
4. Slab or bloom base
5. Hole for holding down bolts/reverts (5)

4.3
- Knots warp the thread and decrease the strength.
- They are harder than the surrounding wood.
- Knots can crack or get loose from the surrounding wood and affect the appearance.
- Knots cause a wastage of wood where they have to be cut out. (4)

4.4 4.4.1 Strength grade (visual)

4.4.2 Strength grade (mechanical)

(2 × 1) (2)
[16]

QUESTION 5

5.1 5.1.1 Crocodile cracks: These are caused by extensive deflection over an unstable base✓ or sub grade. The extent of damage differs.✓

5.1.2 Edge cracks: These are longitudinal cracks usually within 0,5 m of the edge of the surfacing,✓ sometimes within transverse crack towards the edge. Common causes are lack of shoulder support causing settlement of roots and trees.✓

5.1.3 Joint cracks: These may occur on the weak longitudinal seam formed by two or more✓ runs of the paver. If the paver is only one lane wide on a two-lane road, these will be a central joint in between. Weather conditions may change and the mix may differ, causing a difference in strength.✓

(3 × 2) (6)

5.2 Edging is used instead of kerbs for certain low-traffic roads when the shoulder or side walk is of inadequate stability.✓✓ (2)

5.3
- Durability:✓ The material to be used must have a reasonable life span.✓
- Resistance:✓ The floor material should withstand a heavy load placed on top of it.✓
- Economical:✓ The initial capital investment and maintenance of the floor area.✓
- Cleaning operations:✓ The floor should be cleaned with ease.✓
- Non-slip qualities: The material used for particular traffic or storage purposes should be of non-slip qualities to ensure safety.
- Appearance: It is important to consider which type of material to apply for a specific room. (Any 4 × 2) (8)

[16]

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QUESTION 6

6.1
1. Semi-precast road
2. Barrier kerbing
3. Barrier kerbstone with channel (3)

6.2 Potholes are caused by localised disintegration. (1)

6.3 6.3.1 Square area = $\frac{9\,000}{100}$✓
= 90 m^2✓

6.3.2 Cost of labour = 90 m^2 × R250✓
= R22 500✓
(2 × 2) (4)

6.4 6.4.1 Number of bricks = 150 × 100✓
= 15 000 bricks✓

6.4.2 Amount of sand = 15 000/1 000✓
= 15 ton of sand✓
(2 × 2) (4)

6.5 Concrete foundation = 8 × 600 mm × 0,250✓
Amount of concrete = 1,2 m^2✓

Cost of concrete = 1,2 × R450✓
= R540✓ (4)

6.6
1. Subbase
2. Base course
3. Wearing course
4. Channel (4)

[20]

TOTAL: 100