higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

CIVIL AND STRUCTURAL STEELWORK DETAILING
NQF LEVEL 2

07 November 2022

This marking guideline consists of 6 pages.

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QUESTION 1: INTRODUCTION TO CIVIL AND STRUCTURAL STEELWORK

1.1 Bolting or welding (riveting) (2)

1.2 The main function of a structural-steel detailer is to prepare workshop drawings for steel fabrications. (2)

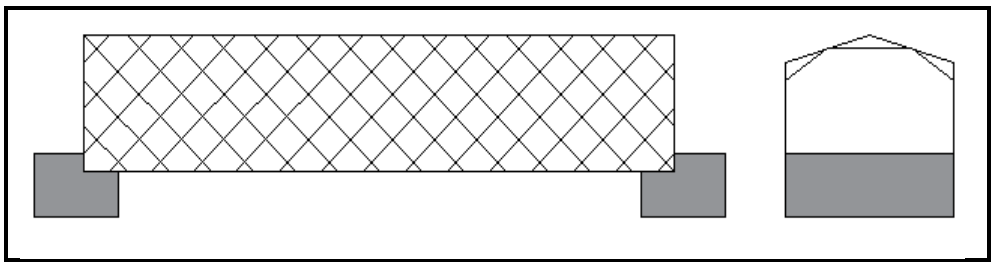
1.3
1.3.1 Roof bracing
1.3.2 Eaves line
1.3.3 Ridge line
1.3.4 Purlins
1.3.5 Sheeting rails (girts)
1.3.6 Brick wall
1.3.7 Column bracing
1.3.8 Column
1.3.9 Rafter
1.3.10 Base plate

(10 × 1) (10)

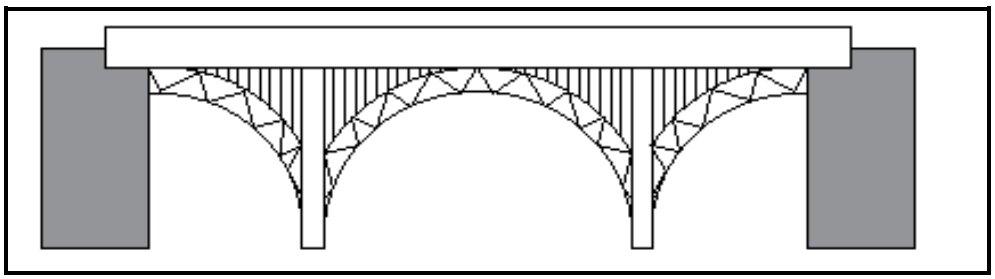
1.4
1.4.1 DPM
1.4.2 MH
1.4.3 IC
1.4.4 RE

(4 × 1) (4)

1.5 1.5.1



1.5.2



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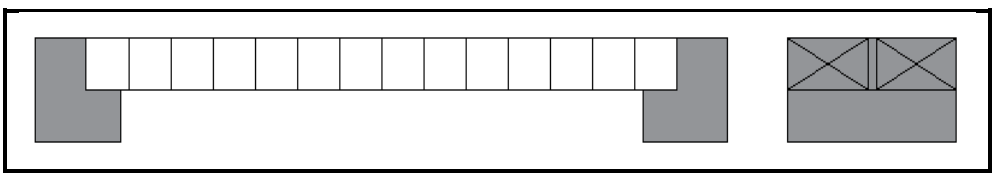

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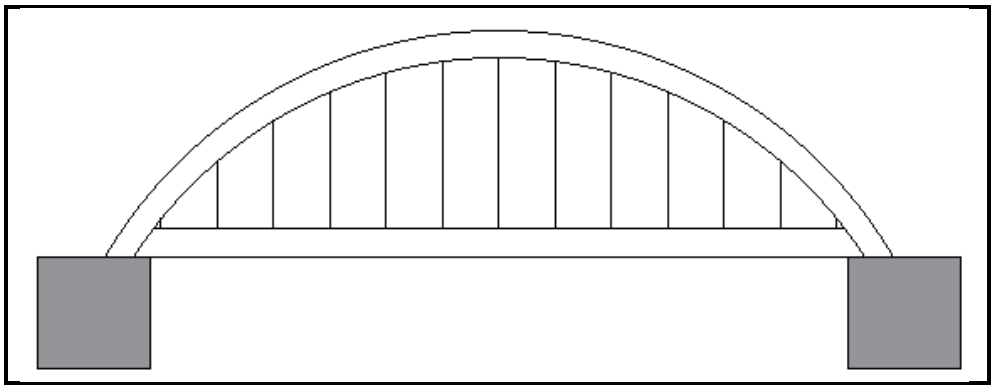

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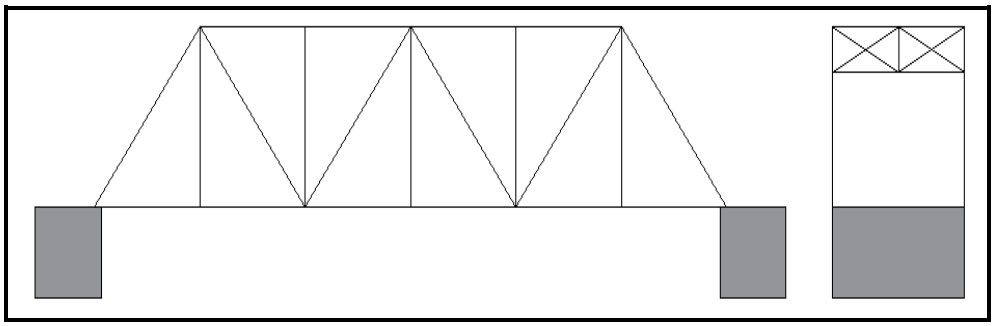
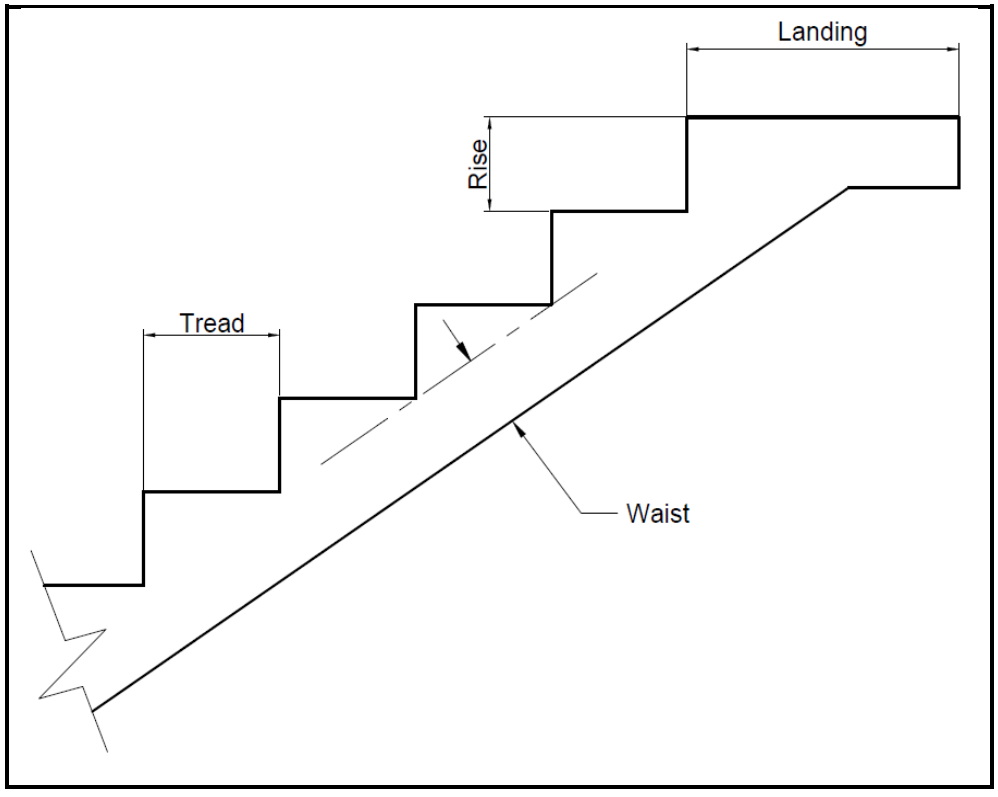
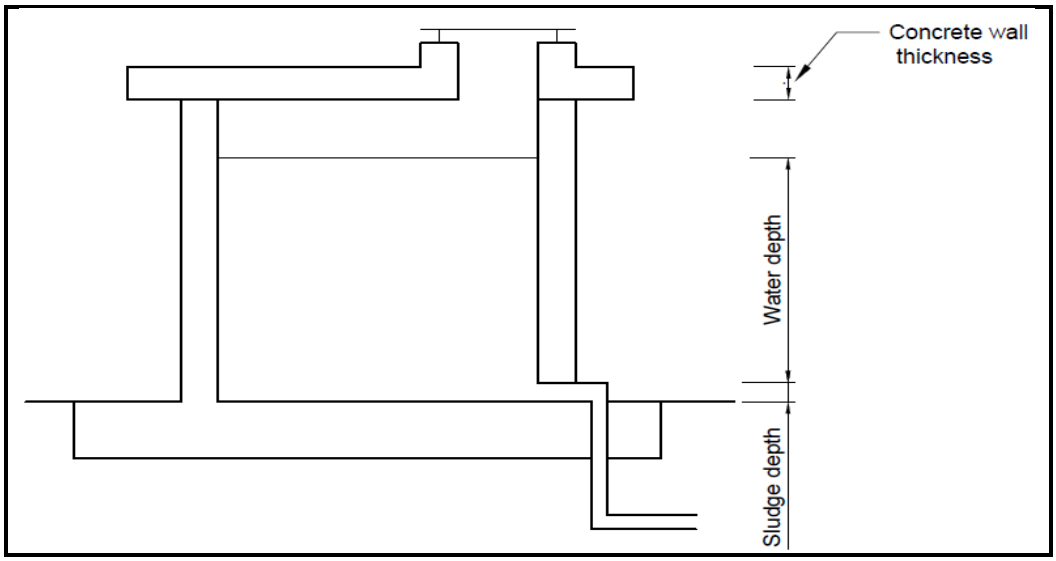


(5 × 3) (15)

1.6 1.6.1



1.6.2



(2 × 6) (12)
[45]

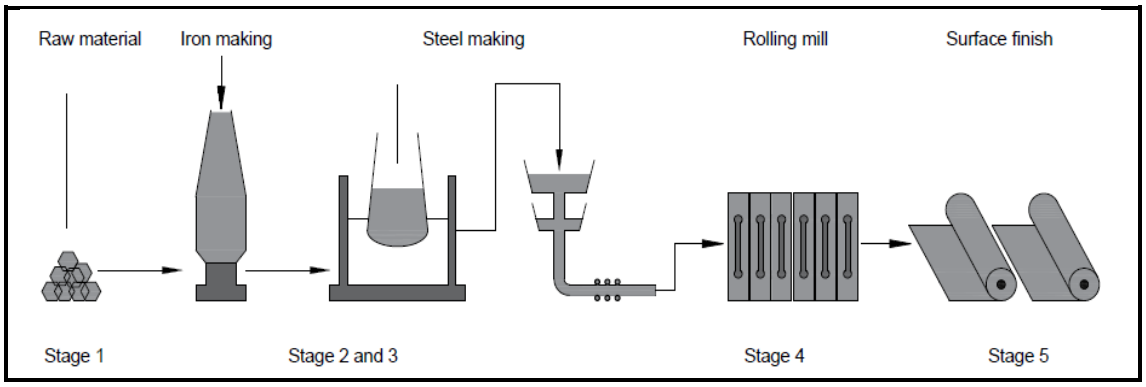
QUESTION 2: STRUCTURAL STEELWORK AND REINFORCED CONCRETE

2.1
2.1.1 D
2.1.2 C
2.1.3 E
2.1.4 B
2.1.5 A

(5 × 1) (5)

2.2 Reinforcing improves the tensile resistance of concrete.✓ Because of its considerable strength, steel serves as a resisting material at the bottom of the concrete. ✓ (2)

2.3



Stage 1: Iron ore has to be mined and transported to a refinery.
Stage 2 and 3: A furnace heats it up to the temperature of melted iron. The molten metal from the furnace is then solidified into semi-finished shapes.
Stage 4: A rolling mill forms the steel sections into various shapes.
Stage 5: Finishing mills then coat the steel with chemicals, paint or other metals. (20)

2.4
- Re-cyclable
- Light in weight
- Non-flammable
- Superior strength
- Quick and easy installation
- Can be fabricated accurately
- Easy to produce on a large scale
- No deformation at room temperature

(Any 5 × 1) (5)
[32]

QUESTION 3: BOLTS IN STRUCTURAL STEELWORK

3.1 3.1.1 The gauge is the distance between the centres of holes at 90° to the pitch.

3.1.2 The edge distance is the distance from the edge of a plate to the centre of a hole.

3.1.3 The pitch is the centre-to-centre distance between two bolts.

3.1.4 The back mark is the distance from the back of the channel or angle to the centre of the hole.

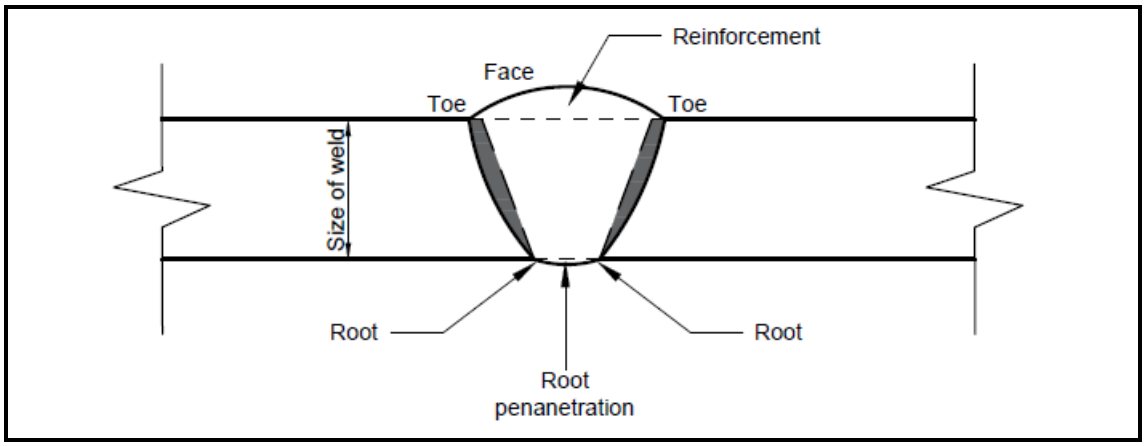
(4 × 2) (8)

3.2
- Tensile failure
- Bearing failure
- Shearing failure

(3)
[11]

QUESTION 4: WELDING SYMBOLS AND JOINTS

4.1



(7)

4.2
- Tail
- Arrow
- Dimensions
- Reference line
- Welding symbol (5)

[12]

TOTAL: 100

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