higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

CIVIL AND STRUCTURAL STEEL WORK DETAILING

(Second paper)

NQF LEVEL 4

(12050674)

3 December 2020 (X-paper)
09:00–12:00

REQUIREMENTS: **A4 drawing sheets**
Yellow cover folder (BOE 8/15)
Standard hot-rolled structural steel sections (BOE 8/1)

Calculators and CAD software may be used.

This question paper consists of 4 pages and 1 diagram sheet.

247Q2N2003

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TIME: 3 HOURS
MARKS: 75

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Start each question on a new page.
5. Work neatly.

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QUESTION 1: REINFORCED CONCRETE DETAILING AND SPECIFICATIONS

1.1 Draw, to a suitable scale, only the side view of a floor layout of a building.

Include and label the following specifications:

Number of storeys:	2
Longitudinal spacing:	8 m
Transverse spacing:	8 m
Column size:	300 × 300 mm
Longitudinal beams:	300 × 300 × 24 300 mm
Transverse beam:	16 300 mm
Height of storey:	2 500 mm
Depth of footings:	600 mm
Length of footings:	1m

All footings are embedded below ground at 600mm from the ground level to the top of the footing. (20)

1.2 Draw, to scale 1:60, a typical concrete culvert structure.

Use the following information:

Total length of culvert:	8,6 m
Spacing between culverts:	150 mm
Distance from ground level:	1,4 m
Type of culvert:	Pipe
Number of culverts:	4
Culvert radius:	900 mm
Height of culvert:	1,8 m

(20)
[40]

QUESTION 2

2.1 Draw, to scale 1:1, the top and sectional views of the rectangular grid shown in FIGURE 1, DIAGRAM SHEET (attached):

Height of grid:	10mm
Dimensions of grid holes:	10mm x 10mm
Distance between grid holes:	2mm

Use your discretion for dimensions not given (15)

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2.2 FIGURE 2, below shows a line diagram of a typical WELDED latticed girder. Draw, to scale 1: 5, typical details of the following:

2.2.1 Detail A
2.2.2 Detail B
2.2.3 Detail C



Specifications:

Top and Bottom booms: rolled steel angle profiles, 120 x120 x 10
All internal members: rolled steel angle profiles, 100 x100 x 8
All gusset plates are 10 mm thick.
Do not insert any dimensions.
Gusset plate sizes, as well as information not given, are left to your own discretion.

(20)
[35]

TOTAL: 75

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DIAGRAM SHEET

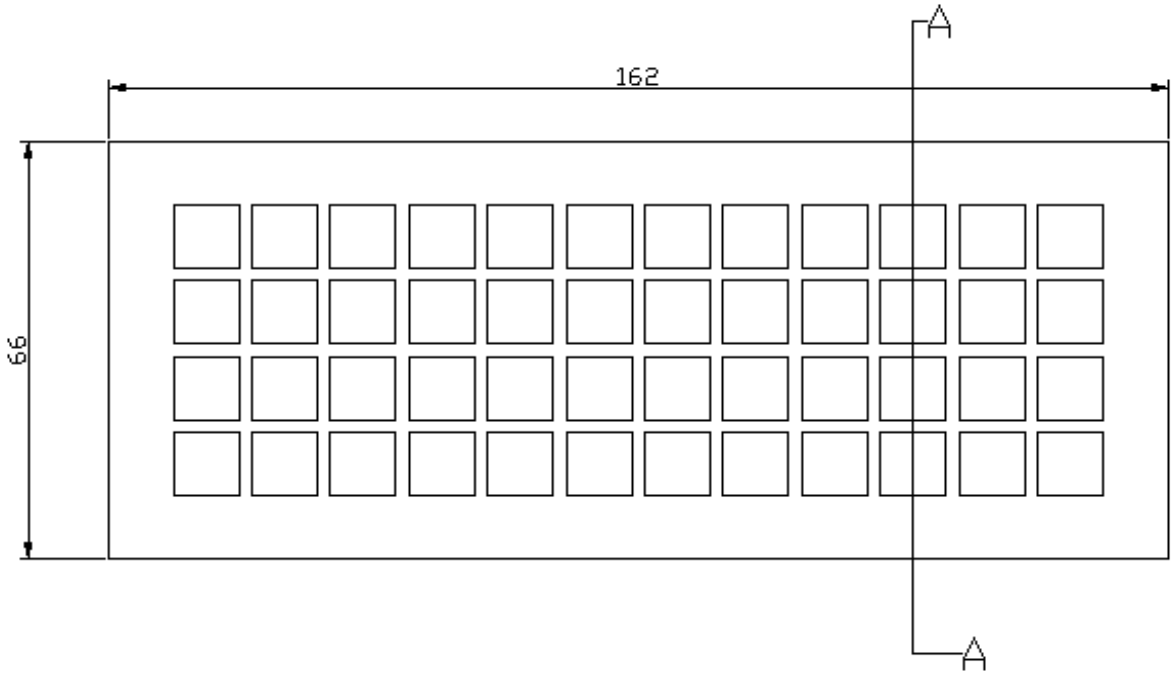

FIGURE 1

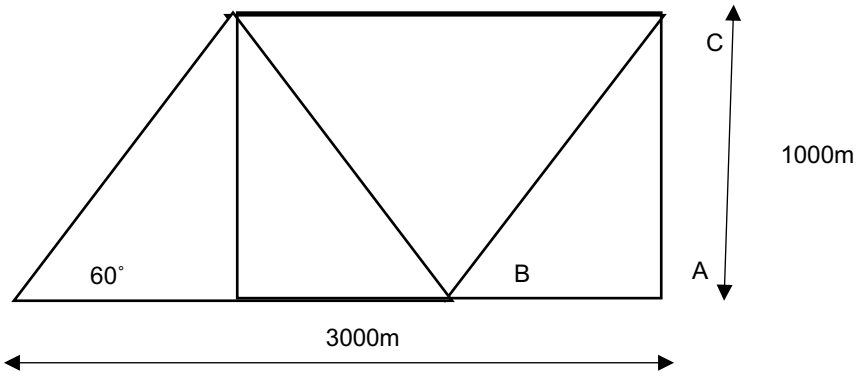

FIGURE 2

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