



# higher education & training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

## **MARKING GUIDELINE**

**NATIONAL CERTIFICATE**

**BUILDING AND STRUCTURAL CONSTRUCTION N5**

**14 July 2022**

**This marking guideline consists of 9 pages.**

**QUESTION 1**

QUESTION 1

250      710      250

460

250 mm  
ROUND COLUMN

250 X 250  
SQUARE COLUMN

TOP VIEW SCALE 1:10

GROUND BEAM REINFORCEMENT:  
Y20 MAIN BARS AT 150 c/c  
Y16 COMPRESSION BARS AT 150 c/c  
WITH R10 BINDERS AT 200 centres

ROUND COLUMN REINFORCEMENT:  
6Y16 MAIN BARS  
WITH R8 HELICAL  
AT 150 pitch

SQUARE COLUMN REINFORCEMENT:  
4Y16 MAIN BARS  
WITH R8 BINDERS  
AT 200 centres

600

SECTIONAL FRONT VIEW SCALE 1:10

MARK ALLOCATION						
TOP VIEW		SECTIONAL VIEW		Accuracy	3	TOTAL 5 + 8 + 7 20 Marks
Base corr	1	Base corr	1	labels	2	
Columns in place	2	Columns in place	2	Dimensions	2	
Reinforcement	2	Reinforcement	5		7	
	5		8			

## QUESTION 2

- 2.1 vertically
- 2.2 series of steps
- 2.3 tread (rise)
- 2.4 rise (tread)
- 2.5 landing
- 2.6 balustrade

(6 × 1)

[6]

## QUESTION 3

### Calculate reactions

#### 3.1 Take moments about RL:

$$\begin{aligned} (RR \times 11) + (38 \times 2) + (13 \times 2 \times 1) + (42 \times 2 \times 1) \\ = (78 \times 11) + (105 \times 7) + (42 \times 11 \times 5,5) + (13 \times 7 \times 3,5) \checkmark \end{aligned}$$

$$RR = \frac{(858 + 735 + 2\,541 + 318,5) - (76 + 26 + 48)}{11} \quad \left( \frac{4\,452,5 - 186}{11} \right)$$

$$RR = 387,86 \text{ kN} \checkmark$$

(2)

#### Take moments about RR:

$$(RL \times 11) = (38 \times 13) + (13 \times 9 \times 8,5) + (42 \times 13 \times 6,5) + (105 \times 4) \checkmark$$

$$RL = \frac{(499 + 994,5 + 3\,549 + 420)}{11} \quad \left( \frac{5\,457,5}{11} \right)$$

$$RL = 496,14 \text{ kN} \checkmark$$

(2)