higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T240(E)(N14)T
NOVEMBER 2011

NATIONAL CERTIFICATE: MULTI-DISCIPLINARY DRAWING OFFICE PRACTICE

BUILDING DRAUGHTING

(2050035)

14 November (X-Paper)
09:00 – 13:00

CLOSED-BOOK EXAMINATION

REQUIREMENTS: ONE A3 drawing paper

Candidates will require drawing instruments.

Calculators may be used.

This question paper consists of 6 pages and 4 diagram sheets.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE: MULTI-DISCIPLINARY DRAWING
OFFICE PRACTICE
BUILDING DRAUGHTING
TIME: 4 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Use BOTH sides of the drawing paper.
5. A balanced layout is very important and candidates will be penalized for bad planning.
6. A 15 mm border must be drawn around the drawing sheet (BOTH sides).
7. The question numbers must be clearly indicated.
8. ALL drawing work, including candidate information, must be done in pencil.
9. ALL the drawing work must comply with the SANS Recommended Code of Practice for Building Drawing as well as the SANS 10111-1990.
10. ALL the building regulations must comply with the National Building Regulations SANS 10400-1990.
11. For the purpose of the examination brick sizes should be taken as 220 mm x 110 mm x 75 mm.
12. ALL the abbreviations and symbols must comply with the latest National

QUESTION 1: APPLICATION OF THE NATIONAL BUILDING REGULATIONS

.1 Any person intending to erect any building shall submit to the local authority the following plans in the table below. Draw the table and complete the TRUE or FALSE in the second column.

DESCRIPTION	TRUE or FALSE
ENGINEERING DRAWINGS	
SITE PLAN	
LAYOUT DRAWINGS	
DRAINAGE INSTALLATION DRAWINGS	
ELECTRICAL LAYOUT DRAWINGS	

.2 Site plans shall be coloured as indicated in the table below. Draw the table and complete the TRUE or FALSE in the third column.

DESCRIPTION	COLOUR (IN PLAN OR SECTION)	TRUE or FALSE
PROPOSED WORK	GREY	
EXISTING WORK	GREEN	
WORK TO BE DEMOLISHED	BLACK	
PROPOSED DRAINAGE	BLUE	
PROPOSED SURFACE WATER CHANNELS	RED	

QUESTION 2: FLOOR PLAN LAYOUT

FIGURE 1, DIAGRAM SHEET 1 (attached), shows a site plan of a proposed single-storey dwelling with a garage.

BRIEF SPECIFICATIONS:

Roof pitch	17,5 degrees
Roof truss	Howe-type roof trusses
Roof covering	clay tiles
Concrete foundations	600 x 200 mm
Foundation walls	1 brick solid
Concrete floor	75 mm
Barge boards	222 x 32 mm SA pine
Rain-water goods	PVC
Windows and doors	as per attached DIAGRAM SHEET 3

As a draughtsperson, you must design a single-storey dwelling by using the outside dimensions given on the site plan.

Draw, using scale 1:100, a fully detailed working drawing of the floor plan layout of the dwelling. The following must be included and indicated on the plan:

2.1 A garage, 4 bedrooms, kitchen, dining/living-room and a full bathroom

2.2 Room names and floor finishes

2.3 All external, internal and wall dimensions

2.4 Window and door symbols

2.5 Sanitary installation symbols must be in accordance with the SANS Code of Practice for Building Drawing

2.6 Window codes

2.7 Section arrows

2.8 Title and scale

2.9 True north point

QUESTION 3: SECTION THROUGH DWELLING

Draw, using scale 1:50, a section A-A through the dwelling as shown on the site plan (attached DIAGRAM SHEET 1). Indicate the following specifications:

3.1 The pitch, roof cover, truss and ceiling

3.2 Gutter on fascia

3.3 Roof covering (eaves projection) = 300 mm

3.4 Strip foundation (to include sizes)

3.5 Concrete slab

3.6 Damp-proof course (to include minimum height above FGL)

3.7 Damp-proof membrane

3.8 Compacted fill

3.9 Screed

3.10 External and internal walls

3.11 Finished ground level and finished floor level

3.12 Dimension the ceiling height, roof overhang, total height and the minimum damp-proof course distance from the ground level

3.13 Title and scale

[

QUESTION 4: ELEVATIONS

Draw, using scale 1:100, ALL the views (north, east, south and west) from your design of the single-storey dwelling plan. Indicate the following on each elevation:

4.1 Wall finish (plaster)

4.2 Roof bracing (use hidden lines on roof)

4.3 Title and scale

QUESTION 5: SITE PLAN

Refer to FIGURE 1, DIAGRAM SHEET 1 attached, and copy the site plan using scale 1:200. The following must be included and indicated on the site plan:

5.1 The boundary lines and pegs

5.2 The position of the driveway (carriage-way crossing)

5.3 The building lines as shown

5.4 The proposed dwelling in the correct position (show the roof as seen from the top)

5.5 The drainage system

5.6 The direction of the true north

5.7 Title and scale

5.8 The name of the street

TOTAL:

THIS FIGURE ABCDE REPRESENTS ERF 390
DIE FIGUUR ABCDE VERTEENWOORDIG ERF 390
SITUATED IN CAPE TOWN
GELEE IN KAAPSTAD
SURVEYED ON 12 – 01 – 76
OPGEMEET OP
LAND SURVEYOR
LANDMETER

SEWAGE CONNECTION POINT IS 1,5M
SETBACK FROM SIDE AND ROAD BOUNDARIES
AND IS THE DEPTH OF 1,3M
RIOLERING AANSLUITPUNT IS 1,5M
TERUG VANAF SY–EN STRAAT GRENSE EN
IS 1,2M DIEP

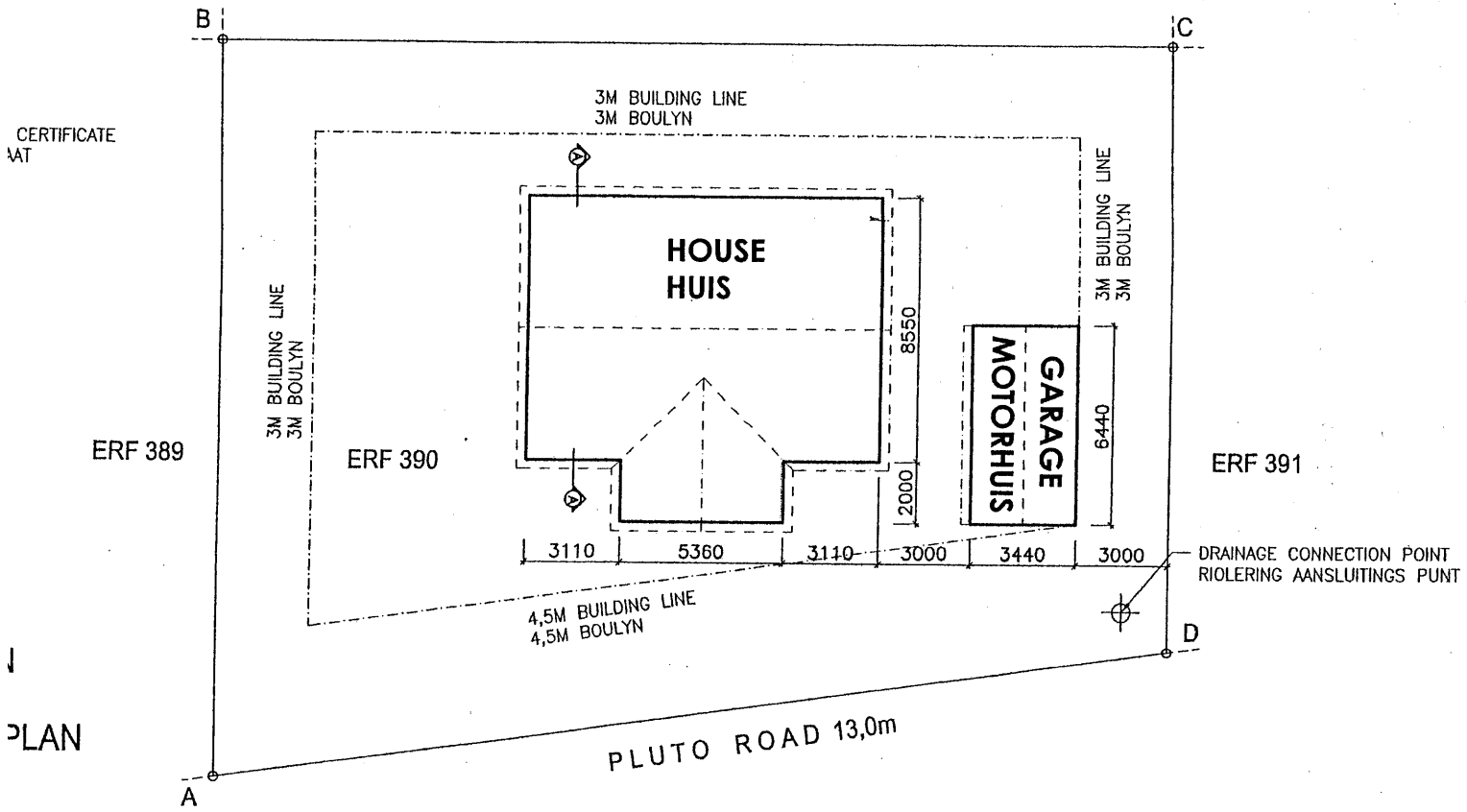
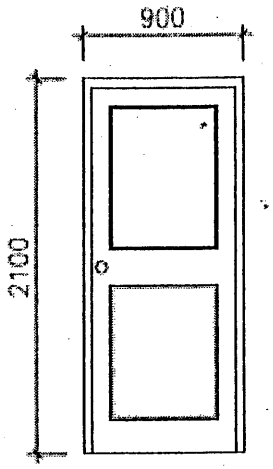


FIGURE / FIGUUR 1

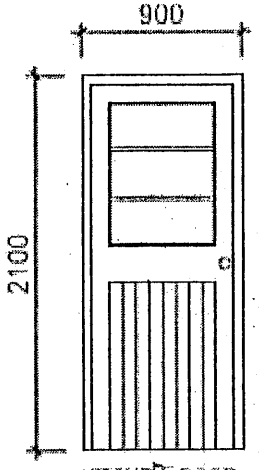
'RUSS SPANS FOR VARIOUS RAFTER AND TIE-BEAM SIZES: SANS 10400:1990

2	3	4	5	6
		Max. span, m/	Max. span, m/	Max. span, m/
RUSS MEMBER	NOMINAL TIMBER SIZE mm	TIMBER GRADE 4	TIMBER GRADE 6	TIMBER GRADE 8
after	38 x 114 mm 38 x 152 mm 38 x 228 mm	3,1 4,0 6,1	4,6 5,8 8,5	5,8 7,2 10,0
e-beam	38 x 114 mm 38 x 152 mm 38 x 228 mm	3,1 4,5 7,1	4,5 6,4 10,0	6,2 8.3 10,0
after	38 x 114 mm 38 x 152 mm 38 x 228 mm	6,0 8,2 10,0	9,0 10,0 10,0	10,0 10,0 10,0
e-beam	38 x 114 mm 38 x 152 mm 38 x 228 mm	4,7 5,9 7,2	6,7 8,5 10,0	9,4 10,0 10,0
ıfter	38 x 114 mm 38 x 152 mm 38 x 228 mm	6,2 8,0 10,0	9,0 10,0 10,0	10,0 10,0 10,0
e-beam	38 x 114 mm 38 x 152 mm 38 x 228 mm	4,5 5,9 8,7	6,7 8,7 10,0	9,0 10,0 10,0

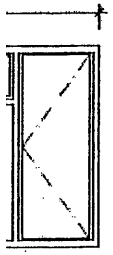
udes metal sheets and fibre-cement sheets
udes concrete tiles, clay tiles or similar materials and thatch
udes metal roof tiles

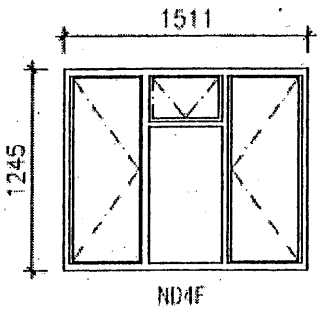


ENTRANCE DOOR
INGANG DEUR

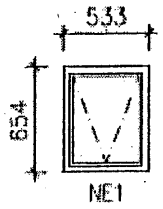


KITCHEN DOOR
KOMBUIS DEUR

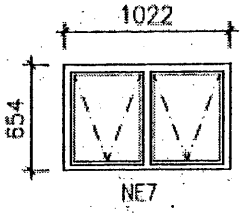




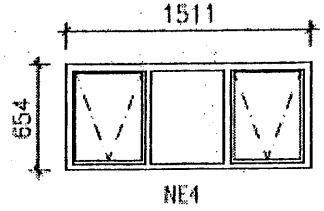
ND4F



NE1



NE7



NE4

DIAGRAM SHEET 4

ROOMS AND THEIR DIMENSIONS: SANS 10400:1990

1	2
ROOM OR SPACE	**MINIMUM HEIGHT AND FLOOR AREA**
Any habitable room other than a kitchen, scullery or laundry	2,4 m over a minimum of 70% of the floor a and not less than 2,1 m over the remaining floor area. 6 m^2 with no linear dimension of less than 2
Bedroom	2,4 m over a floor area of at least 6 m^2 with clear height of at least 1,8 m at any point m than 0,75 m from the edge of the floor spac
All habitable rooms other than those listed above.	2,4 m 6 m^2 with no linear dimension of less than 2
Passage or entrance hall	2,1 m
Bathroom, shower-room, laundry or room containing a WC pan	2,1 m over any area where a person would normally be in a standing position.
Open mezzanine floor which has an area not exceeding 25% of the area of the floor immediately below it.	2,1 m above and below the mezzanine floo