higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# NATIONAL CERTIFICATE (VOCATIONAL)

# ARCHITECTURAL GRAPHICS AND TECHNOLOGY

(First Paper)

**NQF LEVEL 4**

(12050644)

**19 November 2019 (X-Paper)**
**09:00–13:00**

**REQUIREMENTS: A3 drawing sheets**

**Calculators and drawing instruments may be used.**

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

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**TIME: 4 HOURS**
**MARKS: 100**

## 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. ALL drawing work, including candidate information, must be done using an approved CAD software package and printed and titled correctly.
5. ALL drawing work must comply with the relevant SANS (SABS) recommended codes.
6. Take brick sizes as 220 × 110 × 75 mm.
7. ALL abbreviations and symbols must comply with the latest National Building Regulations and ALL relevant SANS (SABS) codes.
8. Check DIAGRAM SHEETS 1–6 carefully and crosscheck written information in the questions – some of the information is doubled up, this is intentional and for ease of reference.
9. A balanced layout is very important and candidates will be penalised for poor planning.
10. Write neatly and legibly.

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## QUESTION 1: STAIRCASES

Draw, to scale 1:10, a sectional view of a timber staircase detail showing at least FIVE stairs.

Clearly show the following annotations and dimensions:

1.1. Riser @ 180 mm

1.2 Tread @ 320 mm + 55 mm going

1.3 220 × 70 mm stringer

1.4 950 mm high handrail/balustrade with vertical balustrading min 100 mm gap

1.5 75 mm newel posts 1 300 mm c/c

1.6 Print a suitable title and scale beneath the sectional view. **[10]**

## QUESTION 2: LEVEL 1 AND LEVEL 2 FLOOR-PLAN LAYOUTS

DIAGRAM SHEET 1 (attached) and DIAGRAM SHEET 2 (attached) show rough-layout architectural conceptual sketches of TWO levels of a double-storey dwelling. DIAGRAM SHEET 3 (attached) shows a site plan with key site dimensions.

Specifications:

- Roof pitch: single pitch roof = 5 degrees
- Roof cover: grey IBR-treated sheeting
- Level 1 floor to underside concrete slab: 2 800 mm
- Level 2 floor to top of wall plate: 2 800 mm
- Level 1 is 1 000 mm above the NGL.

- Roof rafter: 220 × 70 @ 750 mm c/c
- Concrete foundations: 700 mm × 230 mm
- External walls: 280 mm cavity wall
- Internal walls: 110 mm brick wall
- Concrete floor Level 1: 100 mm concrete on 250 mcm polythene DPM lapped and sealed on 50 mm blinding on 250 mm hard core
- Concrete slab Level 2: 250 mm reinforced concrete slab to engineer's detail
- Fascia boards: 220 mm × 32 mm SA pine
- Windows and doors: see DIAGRAM SHEET 4

You must compile a finished set of working drawings of the TWO levels provided by using the given information and the rough sketches. You can scale off the rough-layout sketches where the dimensions are not given, however key dimensions must be the same as on DIAGRAM SHEET 1 and DIAGRAM SHEET 2.

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Trace, to scale 1:100, the following in full detail:

2.1 Level 1 plan layout (20)

2.2 Level 2 plan layout (20)

Indicate the following:

- Include room names and floor finishes for Level 1 and Level 2.
- Give ALL dimensions for Level 1 and Level 2 according to the recommended codes for Drawing Practice.
- Use symbols on ALL windows and doors as shown.
- Show section lines and give the direction of section arrows AA.
- Give a suitable title and scale for both Level 1 and Level 2 plan layouts.
- Indicate a suitable north point.
- Include a kitchen sink and stove.
- Include a dog-leg staircase with the correct number of risers numbered for height. **[40]**

**QUESTION 3: SECTION AA THROUGH DWELLING**

Draw, to scale 1:50, a section AA through the dwelling.

Indicate the following specifications as shown on DIAGRAM SHEET 5.

3.1 Correct roof pitch, roof covering, rafters and heights

3.2 Gutter and fascia

3.3 Strip foundations

3.4 Level 1 concrete slab, Level 2 concrete slab

3.5 ALL relevant section hatching **[20]**

**QUESTION 4: ELEVATIONS**

Draw, to scale 1:100, any TWO elevations of the home shown on DIAGRAM SHEET 6.

Indicate the following specifications:

4.1 Correct pitch, roof covering, truss and heights

4.2 Types of finishes

4.3 Correct windows according to schedule **[30]**

**TOTAL: 100**

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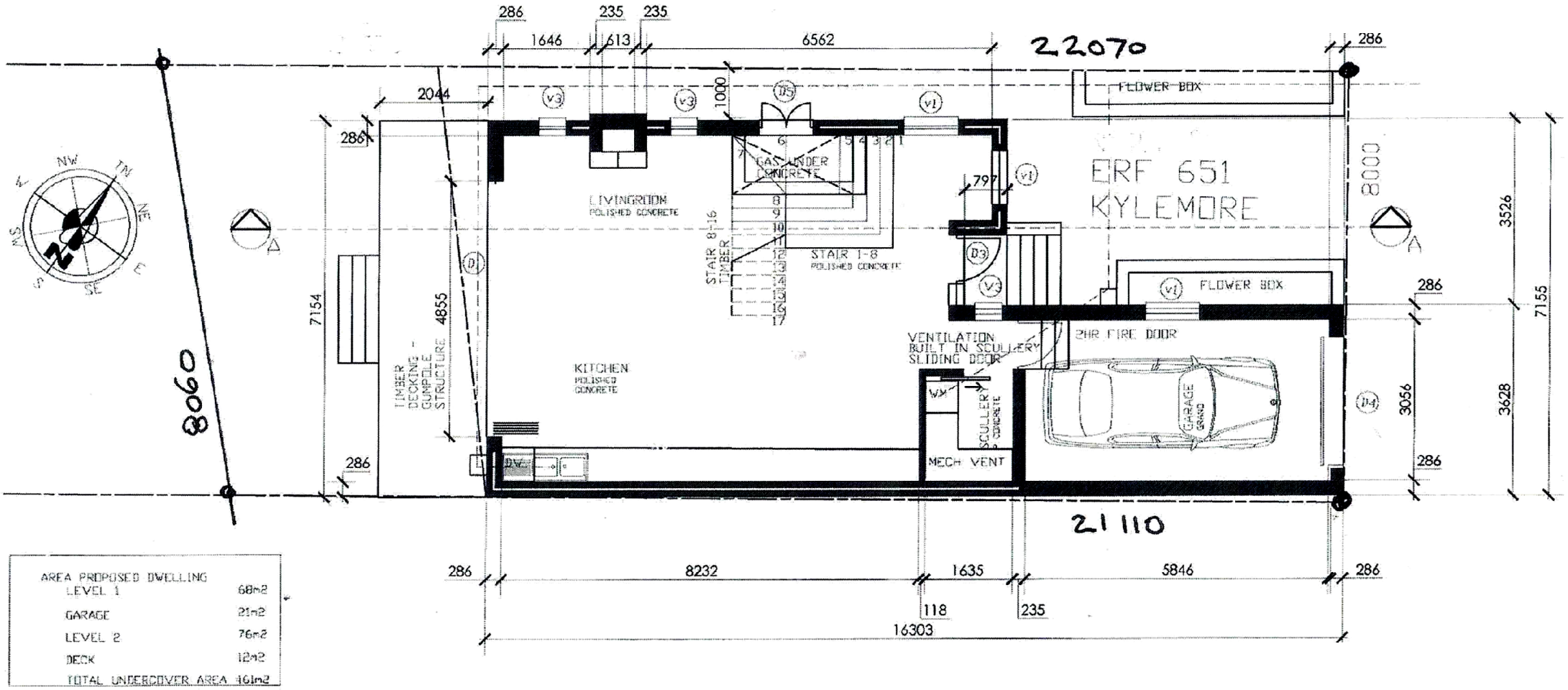
## DIAGRAM SHEET 1




| AREA PROPOSED DWELLING | |
|---|---|
| LEVEL 1 | 68m2 |
| GARAGE | 21m2 |
| LEVEL 2 | 76m2 |
| DECK | 12m2 |
| TOTAL UNDERCOVER AREA | 161m2 |

**LEVEL 1 PLAN LAYOUT**
**SCALE 1:100**

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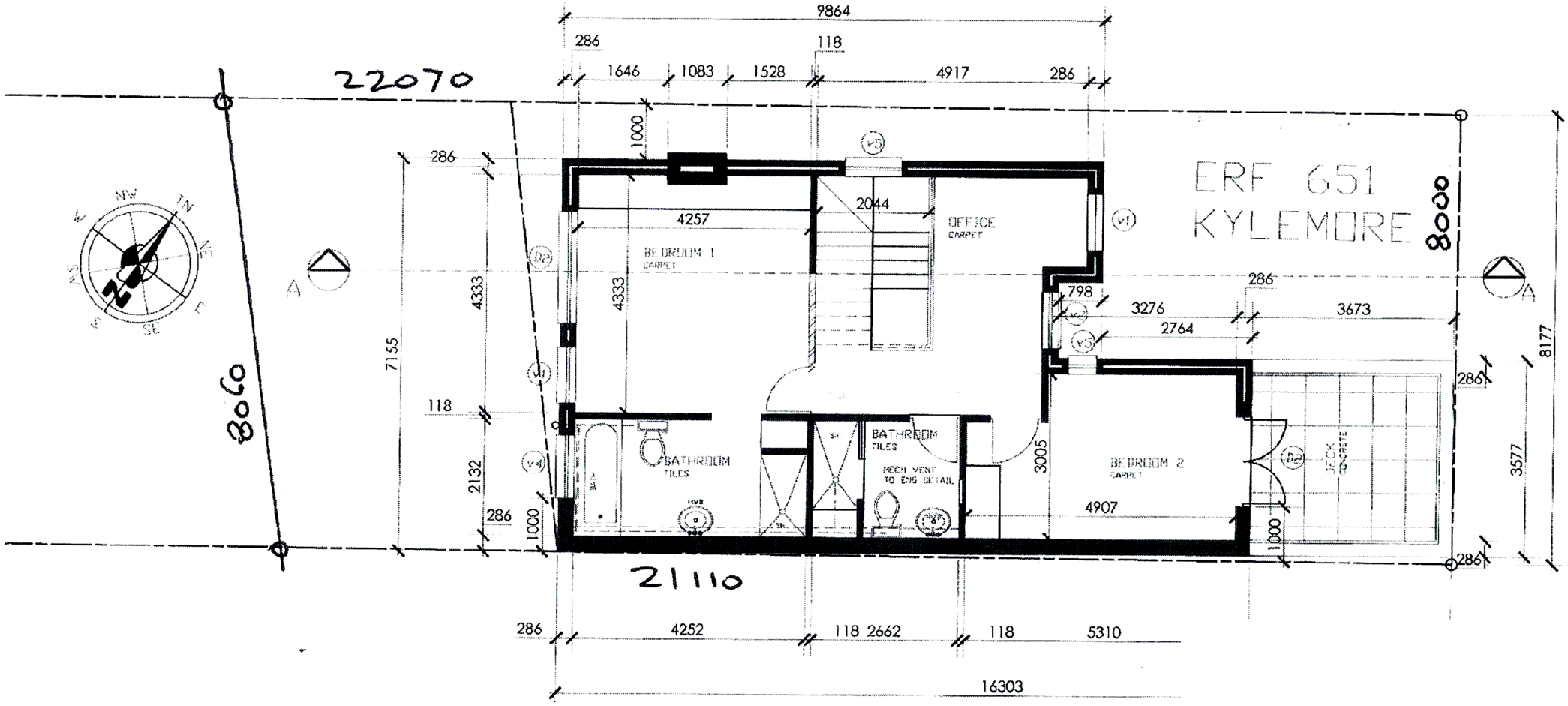
**DIAGRAM SHEET 2**




**LEVEL 2 PLAN LAYOUT**
**SCALE 1:100**

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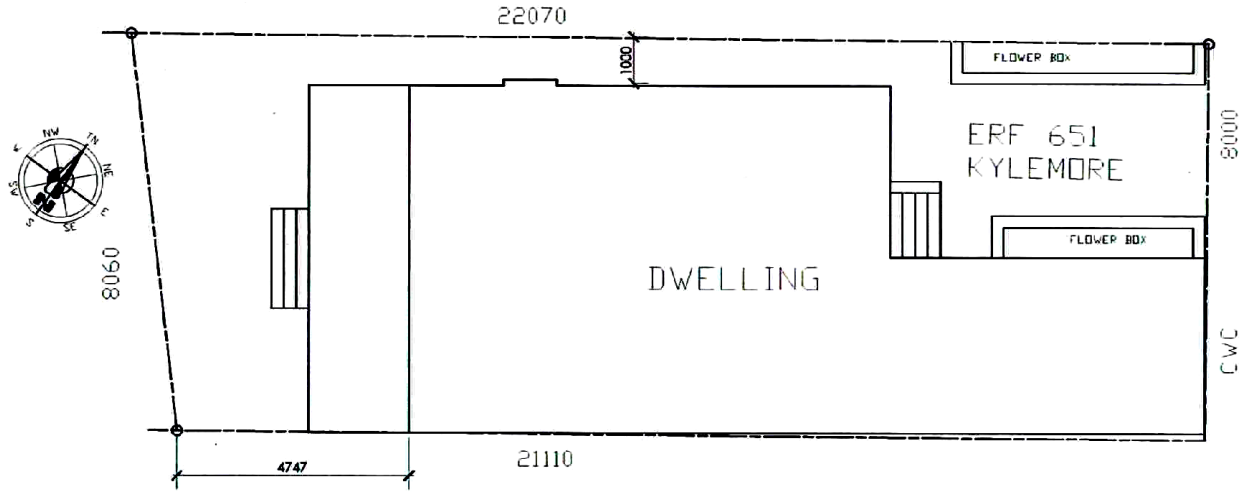
**DIAGRAM SHEET 3**




**SITE PLAN**
**SCALE 1:100**

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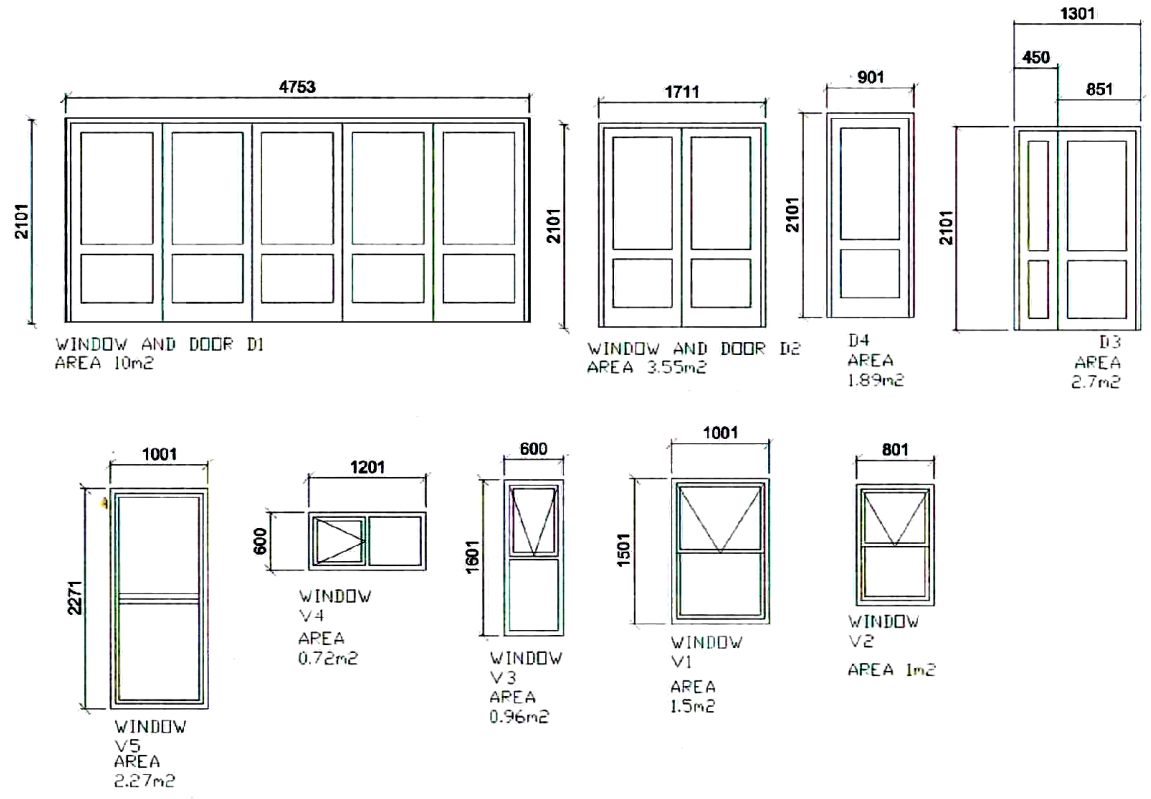
## DIAGRAM SHEET 4




**WINDOW AND DOOR SCHEDULE**
**SCALE 1:50**

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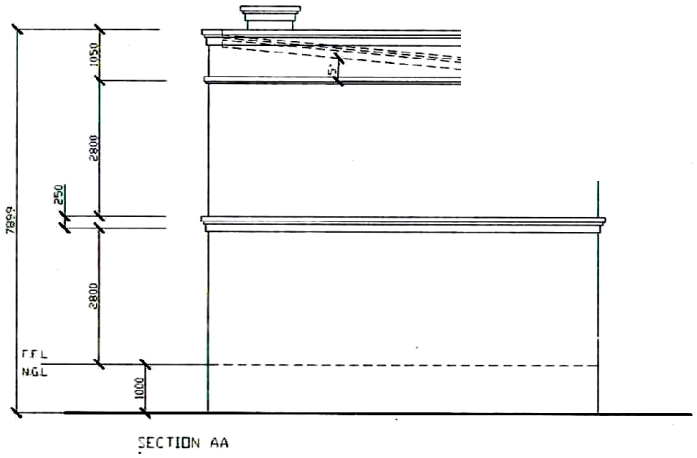
**DIAGRAM SHEET 5**




**ROOF SLOPE DIAGRAM**
**SCALE 1:100**

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**DIAGRAM SHEET 6**



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