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)

11 November 2022 (X-paper)
09:00–13:00

This question paper consists of 5 pages and 7 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. Use a CAD package for all drawing work including candidate information.
5. Take brick sizes as 220 mm × 110 mm × 75 mm.
6. All drawing work must comply with the latest National Building Regulations (SANS 10400) and all relevant (SABS) codes.
7. A balanced layout is very important and candidates will be penalised for poor planning.
8. Work neatly.

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QUESTION 1: STAIRCASES

DIAGRAM SHEET 7 (attached) shows a layout plan of a concrete escape staircase.

Draw, to scale 1:50, section X-X clearly showing the following annotations and dimensions:

1.1 Riser with dimension 200 mm maximum height

1.2 Tread work out using the over dimension of the staircase

1.3 Concrete thickness 200 mm

1.4 All detail of stairs 10, 11, 12, 13, 14

1.5 1 200 mm concrete landing

Print a suitable title and scale beneath the drawing. **[10]**

QUESTION 2: BUILDING PLANS (FLOOR PLAN LAYOUTS – LEVEL 1 AND LEVEL 2)

DIAGRAM SHEETS 1, 2 and 3 (attached) show rough conceptual sketches of a modified group of shipping containers. DIAGRAM SHEET 6 (attached) shows the dimensions of a typical shipping container and DIAGRAM SHEET 4 (attached) is a window and door schedule to be implemented into the modifications.

You work in an architectural office where the senior architectural technologist has set out drawings for you to capture onto CAD for an important client meeting this afternoon. You need to first familiarise yourself with the dimensions of a typical shipping container (DIAGRAM SHEET 6 (attached) and then draw the TWO layout plans with the window modifications and kitchen and bathroom of level 1 and 2 found on DIAGRAM SHEETS 1 and 2 (attached).

All measurements are not given so you need to apply your knowledge of ergonomic space to the functionality of the space.

The two shipping containers are put on 4 × 300 mm brick plinths on 800 mm × 800 mm × 200 mm pad foundations to the engineer's detail. To raise the containers off the ground by 200 mm, the third shipping container is balanced over the top and access is with a spiral staircase.

Each shipping container is a separate functional living space with a bathroom and kitchen facility for farm holiday letting or construction-site living.

Draw/Trace, to scale 1:50, on an A3 DRAWING SHEET the following:

2.1 Level 1 plan layout as on DIAGRAM SHEET 1 (attached) (20)

2.2 Level 2 plan layout as on DIAGRAM SHEET 2 (attached) (20)

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The following information must be indicated clearly on Level 1 and Level 2:

- Room titles and floor finishes
- The shown dimensions on Level 1 and Level 2 according to the recommended codes of drawing practice
- All new windows and doors as shown on the rough layouts
- Section lines and the directions of the section arrows
- Suitable north point
- Kitchen sink
- Suitable title for both Level 1 and Level 2 plan layouts

[40]

QUESTION 3: SECTION A-A THROUGH CONTAINERS

Draw, to scale 1:50, a section A-A through the containers. Key information for this section can be found on DIAGRAM SHEET 6 (attached).

Indicate the following:

3.1 Pad foundations and container raised 200 mm off the NGL

3.2 Height dimensions of both the FFL (finish floor levels) 1 and 2 and the overall height

3.3 Room titles clearly shown in sections

3.4 Accurately drawn section

3.5 All relevant hatching through brick plinth and pad foundation

[10]

QUESTION 4: ELEVATIONS

Draw, to scale 1:50, all FOUR elevations. DIAGRAM SHEET 3 (attached) will assist you in determining what the elevations will look like. DIAGRAM SHEET 5 (attached) is a window and door schedule which will give sizes to the relevant openings. Marks will be given for correct heights, neatness and vertical hatching lines for the outside of the container.

4.1	North elevation	(10)
4.2	South elevation	(10)
4.3	East elevation	(10)
4.4	West elevation	(10)
		[40]

TOTAL: 100

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DIAGRAM SHEET 1

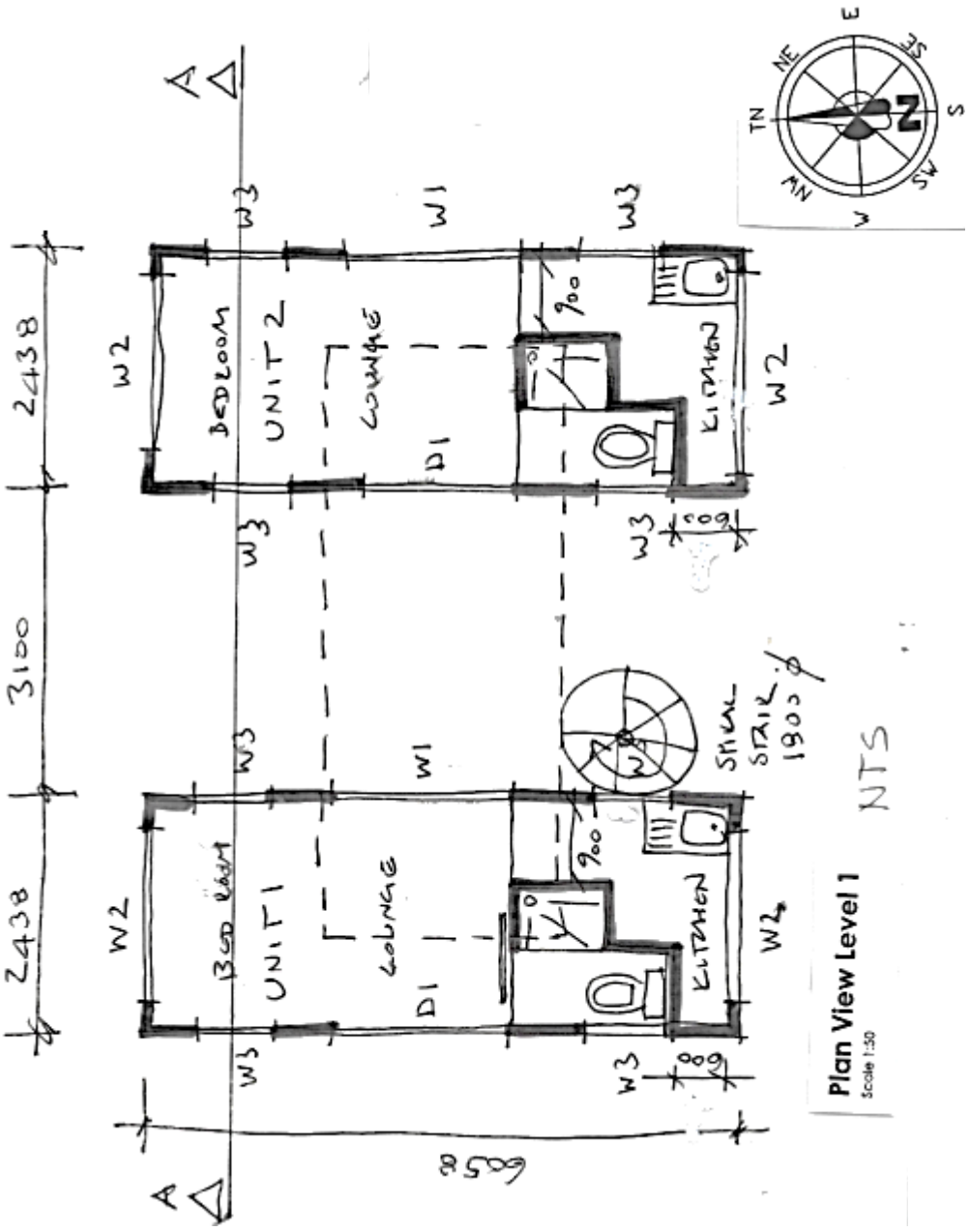

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DIAGRAM SHEET 2

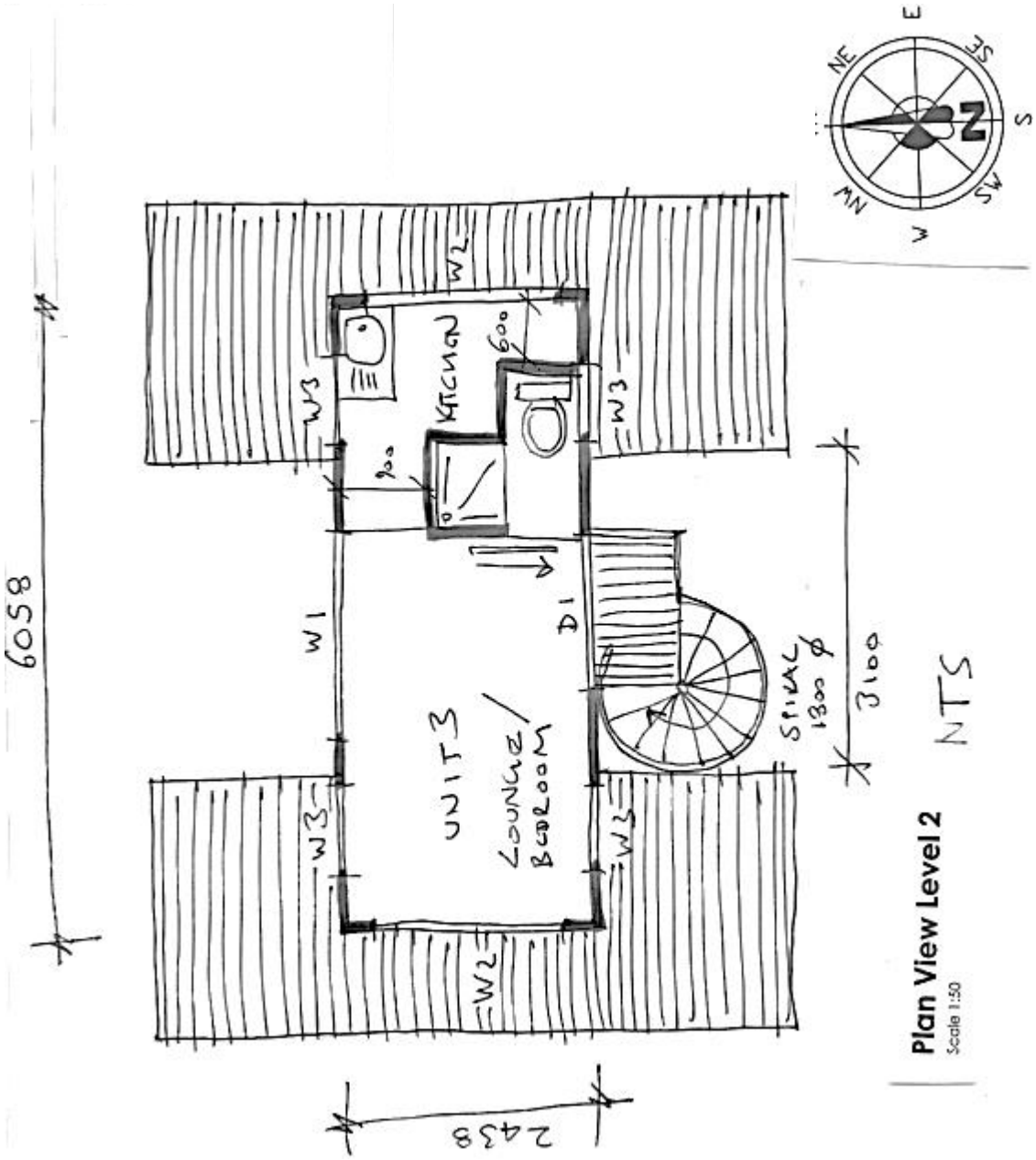

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DIAGRAM SHEET 3

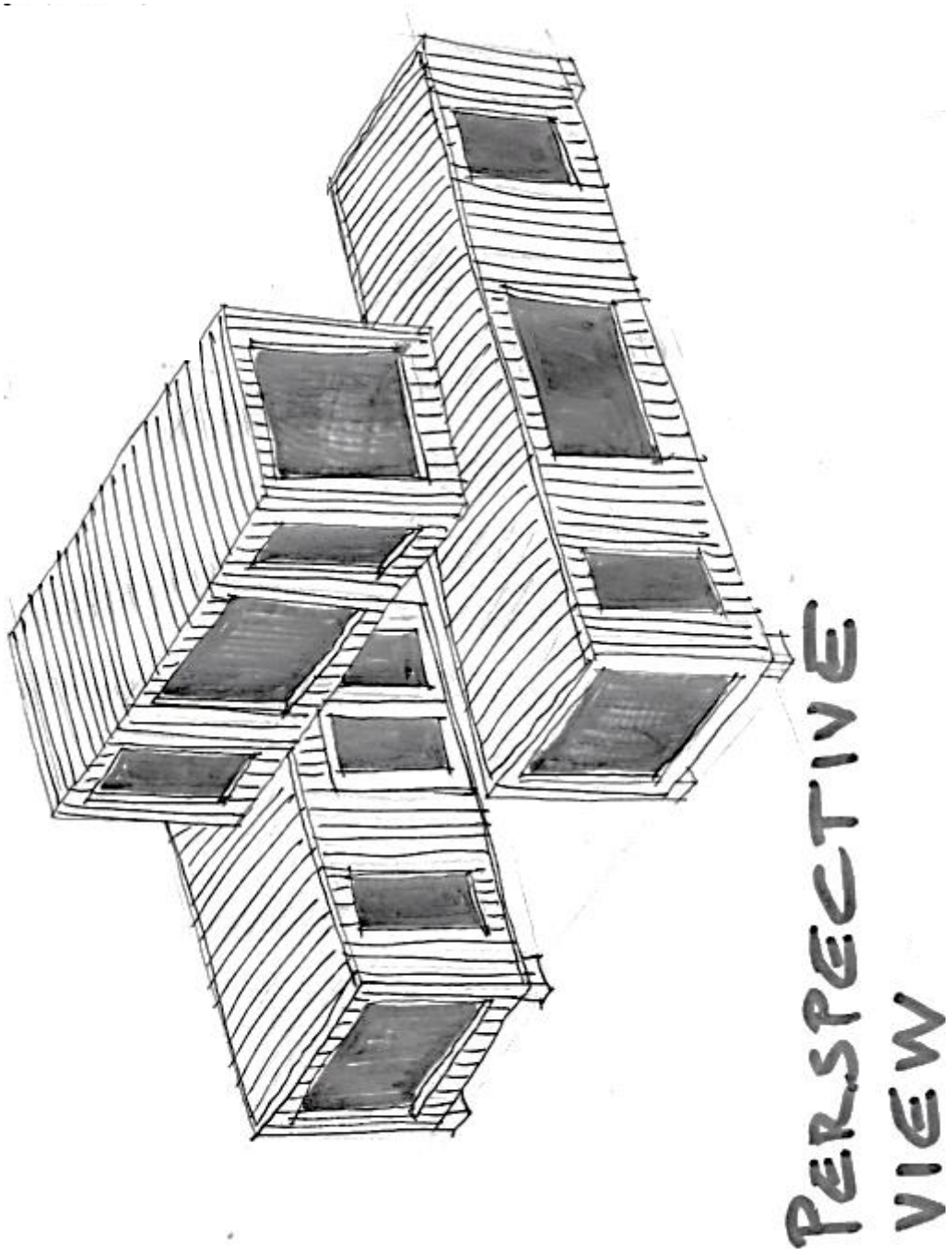

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DIAGRAM SHEET 4

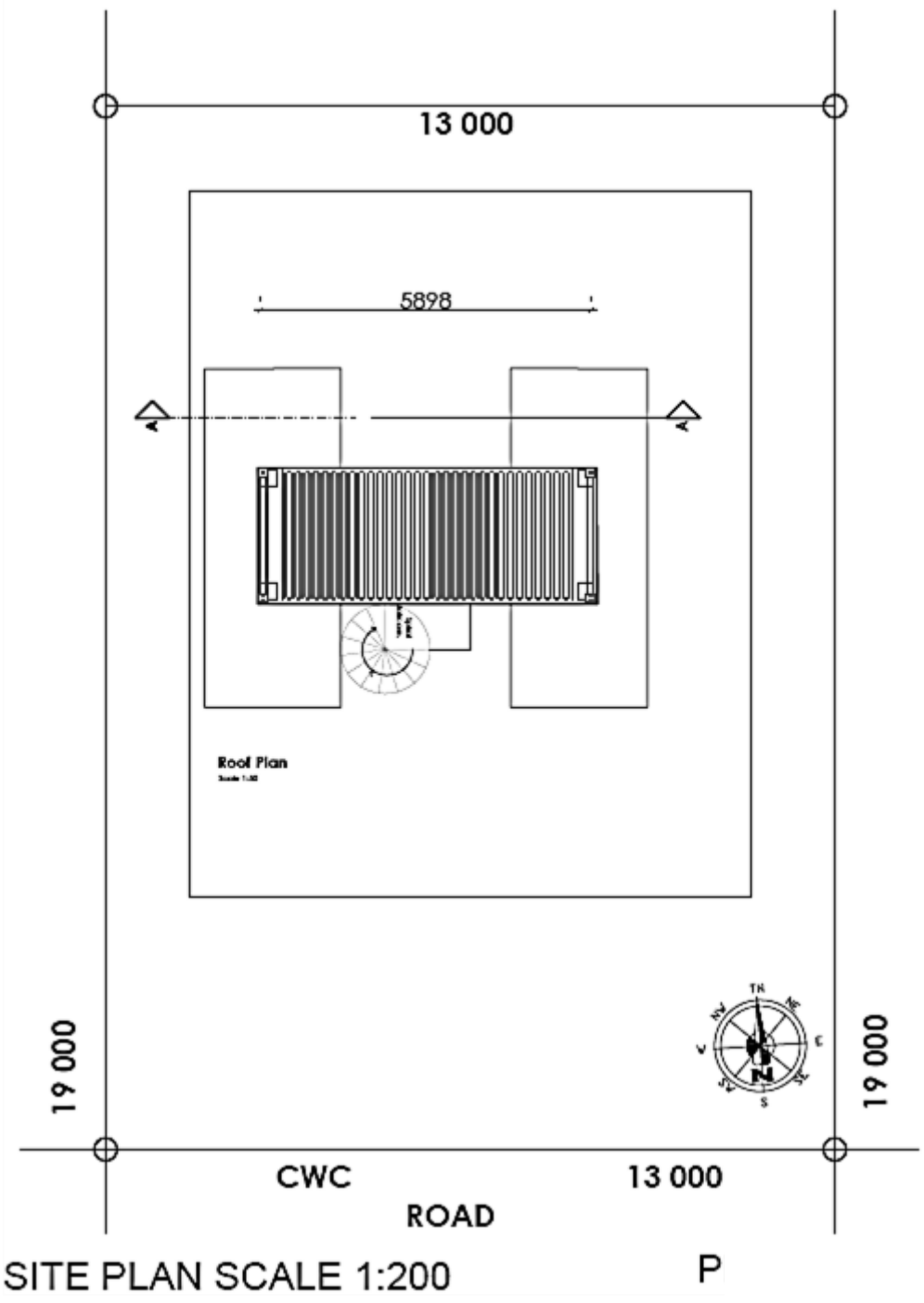

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DIAGRAM SHEET 5

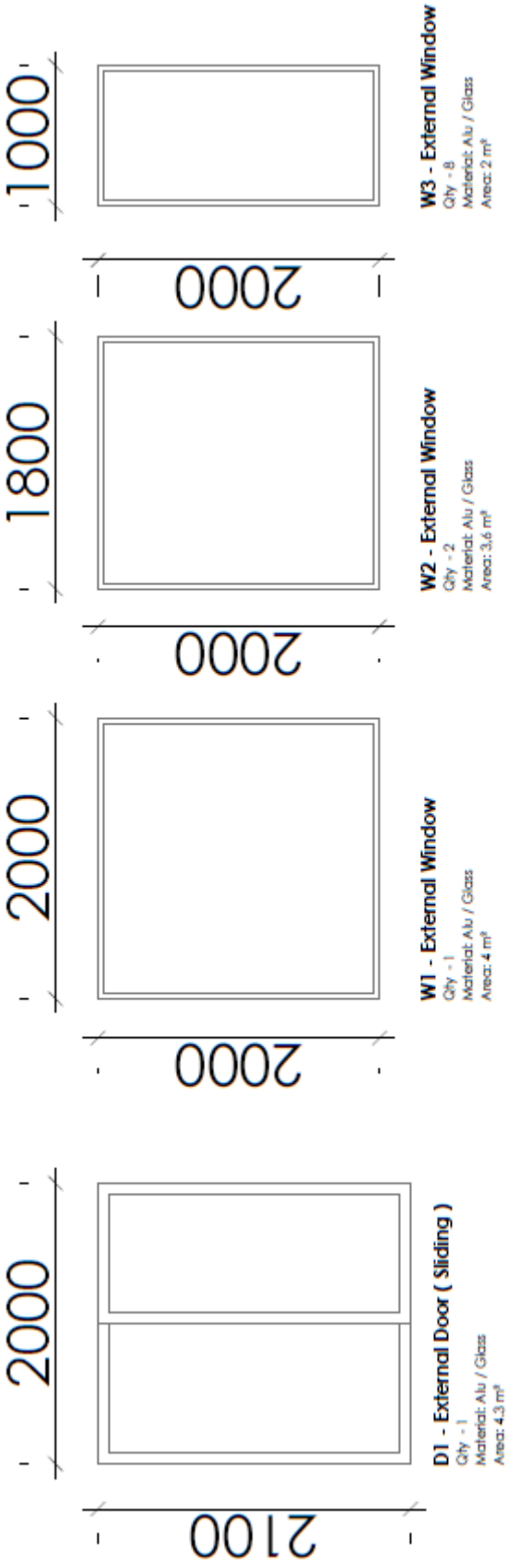

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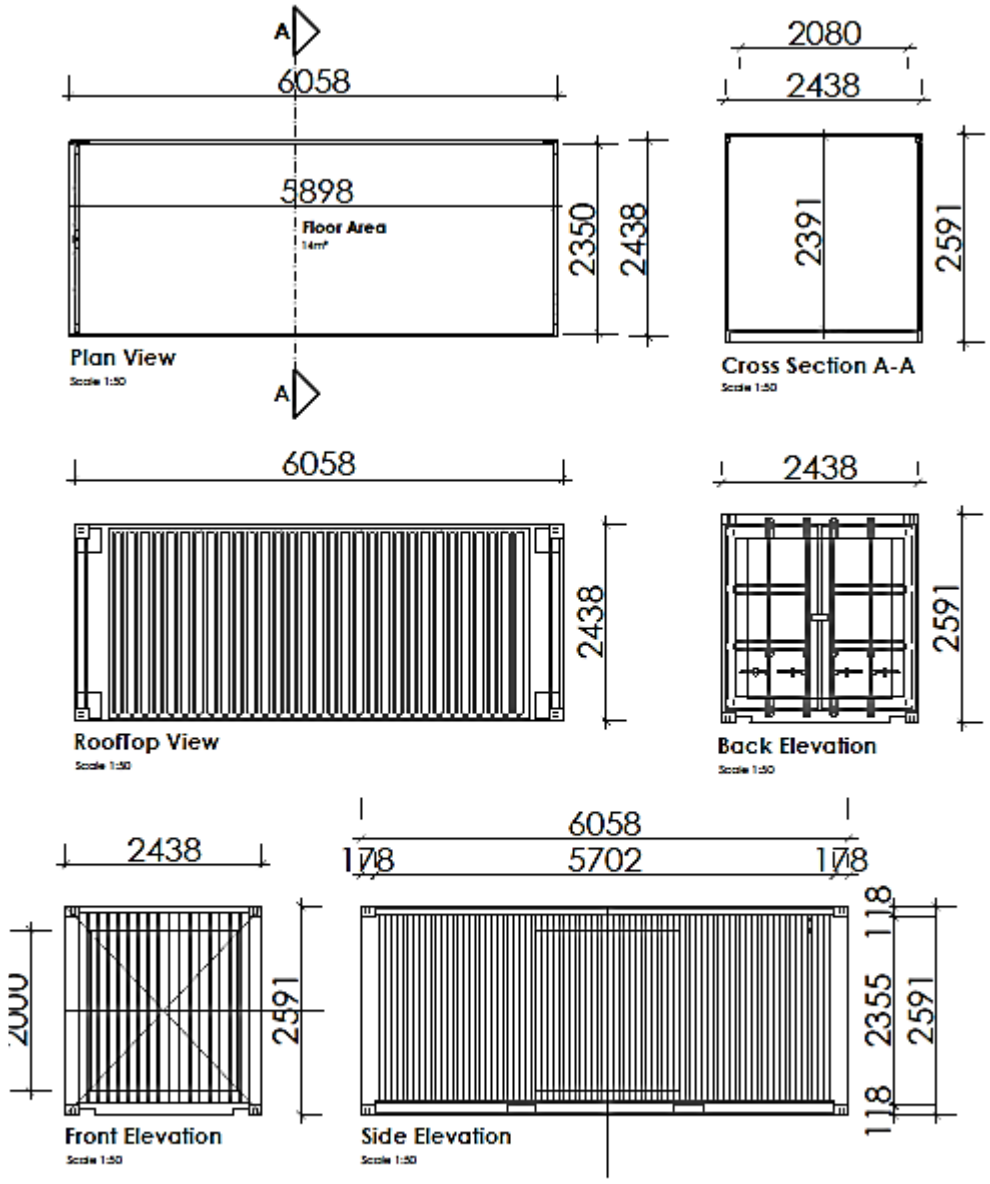
DIAGRAM SHEET 6



TYPICAL CONTAINER LAYOUT

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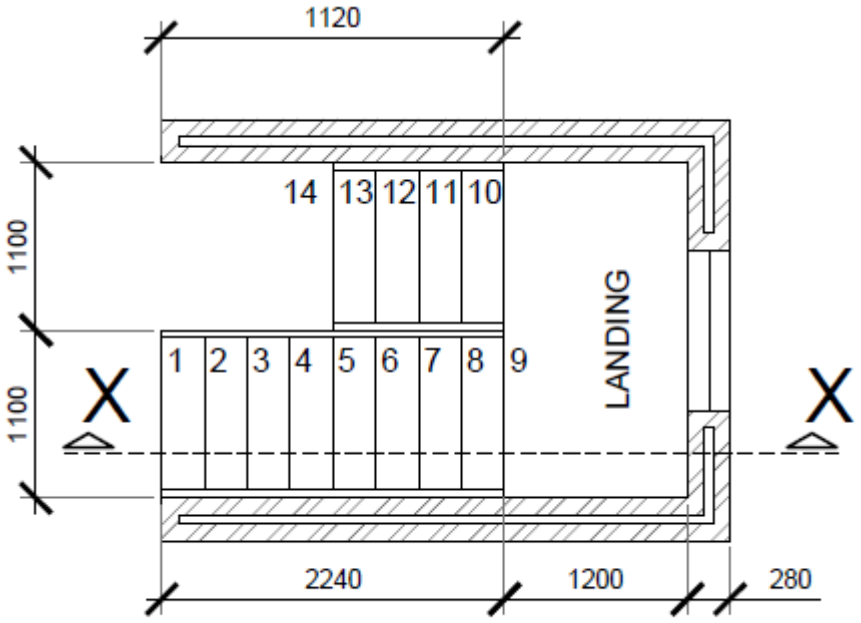
DIAGRAM SHEET 7



CONCRETE ESCAPE STAIR LAYOUT
SCALE NTS

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