Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2017

Construction and the Built Environment

Assessment Unit 1
The Construction Industry for the 21st Century

GCB11

[GCB11]
TUESDAY 13 JUNE, AFTERNOON

TIME

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all ten** questions.
Questions **1**, **2**, **3**, **4** and **9** should be answered in relation to the enclosed house drawings and specifications previously issued as pre-release material.
You should not bring any of the material previously issued into this examination.
You will be provided with a clean copy of the pre-release material.

INFORMATION FOR CANDIDATES

The total mark for this paper is 120.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in questions **7** and **9**.

A scale ruler is required.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total Marks	

Section A

Answer **all** questions

Examiner Only	
Marks	Remark

Use the pre-release material to assist with answering questions 1, 2, 3, 4 and 9.

1 **(a)** What **type of roof construction** is used for the house shown in the pre-release material?

_____ [1]

(b) What are **two** of the main advantages of using this type of roof construction?

1. _____ [1]

2. _____ [1]

(c) List below **four** different external **elements** of the house shown in the pre-release material and state the **material from which each element is made**.

1. (i) External element _____ [1]

   (ii) Material from which the above element is made

   _____ [1]

2. (i) External element _____ [1]

   (ii) Material from which the above element is made

   _____ [1]

3. (i) External element _____ [1]

   (ii) Material from which the above element is made

   _____ [1]

4. (i) External element _____ [1]

   (ii) Material from which the above element is made

   _____ [1]

Examiner Only	
Marks	Remark

2 **(a)** Identify **three** of the main roles that a Site Manager would have in relation to the dwelling shown in the pre-release material.

Site Manager

1. _____

_____

2. _____

_____

3. _____

_____ [3]

(b) Identify **three** of the main roles that the following personnel would have for the project shown in the pre-release material.

Wall and Floor Tiler

1. _____

_____

2. _____

_____

3. _____

_____ [3]

Building Control Officer

1. _____

_____

2. _____

_____

3. _____

_____ [3]

Examiner Only	
Marks	Remark

3 **(a)** Using the attached pre-release material give the following internal room dimensions in millimetres.

Some dimensions may need to be scaled.

(i) The length and width of the lounge.

Length _____ mm Width _____ mm [4]

(ii) The overall length of the dwelling.

Length _____ mm [2]

(iii) The length and width of the study.

Length _____ mm Width _____ mm [4]

(b) Calculate the total floor area of the bathroom.

_____ square metres [2]

(c) What is the width of the kitchen window which is over the sink?

_____ mm [2]

Examiner Only	
Marks	Remark

4 Electricity is one of the most important services required to support the construction industry.

(a) What is the **correct supply voltage** for handheld power tools used on a construction site?

_____ Volts [2]

(b) List **five** safety checks which should be carried out before using a handheld electric drill on site.

1. _____ [1]

2. _____ [1]

3. _____ [1]

4. _____ [1]

5. _____ [1]

(c) Describe **three** different welfare facilities that an employer must provide to ensure a safe and healthy workplace for all employees. Your answers should reflect the housing development outlined in the pre-release material employing 25 site operatives.

1. _____

_____

_____ [3]

2. _____

_____

_____ [3]

3. _____

_____

_____ [3]

Fig. 1

5 **(a)** Name the part of a domestic house constructed from concrete blockwork and built below the finished floor level. An example of this is shown in **Fig. 1**.

_____ [2]

(b) What is the minimum height above finished ground level for the D.P.C. in a wall? Your answer should be given in millimetres.

_____ [2]

(c) List the **four** main materials/liquids used to make mortar.

1. _____ [1]

2. _____ [1]

3. _____ [1]

4. _____ [1]

Examiner Only	
Marks	Remark

Fig. 2

(d) In **Fig. 2** why is the blue plastic sheet secured to the base of the domestic house during the construction process?

_____

_____

_____

_____ [2]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

6 **(a)** List **six** different performance requirements of a new hardwood front door.

1. _____ [1]

2. _____ [1]

3. _____ [1]

4. _____ [1]

5. _____ [1]

6. _____ [1]

(b) What is the normal door size of an internal door used for a domestic house in Northern Ireland?

(i) Width _____ mm [1]

(ii) Height _____ mm [1]

(c) What is the correct name for the timber trim used to cover the joint between the door frame and plastered block wall? This trim can be seen in **Fig. 3**.

_____ [1]

Fig. 3

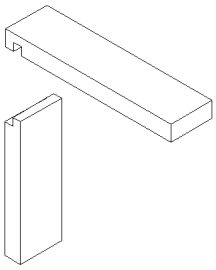

Fig. 4

(d) What is the correct name given to the joint used to secure the head and stile of a door frame? This joint can be seen in **Fig. 4**.

_____ [1]

Section B

Answer **all** questions

Examiner Only	
Marks	Remark

7 The four principal resources of the construction industry are:

Finance
Plant
Labour
Materials

Discuss **why each of these resources would be required** for a new hotel costing £11.5 million. The hotel is a steel framed structure, part of which is seven storeys high. A two level basement car park will have to be excavated below the ground.

[10]

Examiner Only	
Marks	Remark

8 **(a)** Complete the drawing in **Fig. 5** of a galvanised steel lintel and the wall above it.

[10]

(b) Add the annotations from the list below.

Outer skin of brickwork	Cavity insulation
Inner skin of blockwork	D.P.C.
Internal plaster	Mortar joint
Galvanised steel lintel	Window frame
Double glazing	Air gap sealed with flexible sealant

[10]

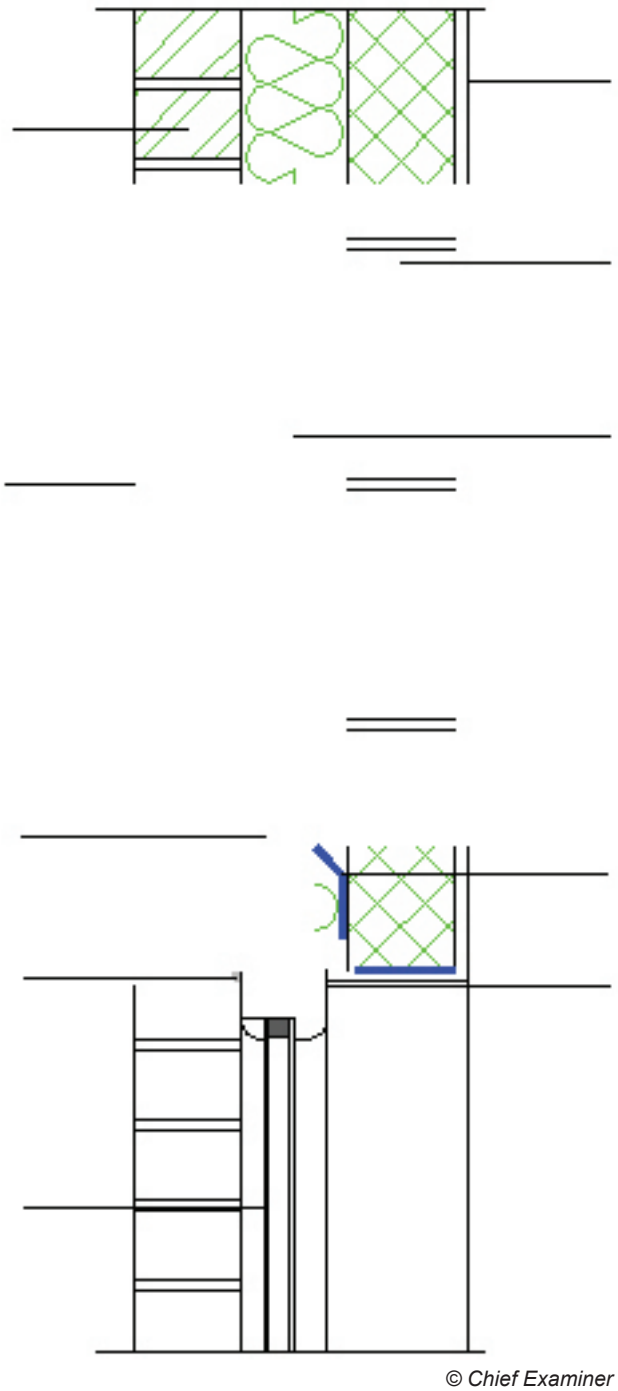

Fig. 5

Examiner Only	
Marks	Remark

9 Discuss the advantages and disadvantages of using different types of materials that could be used to finish the exterior of the house shown in the pre-release material.

[10]

Examiner Only	
Marks	Remark

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(Questions continue overleaf)

Examiner Only	
Marks	Remark

10 **Fig. 6** shows a section through a typical domestic house.

Specify how you would increase the energy efficiency of the following construction elements **in order to comply with part F of the Building Regulations**. Your answer **should show two** valid methods of improving fuel conservation for each element.

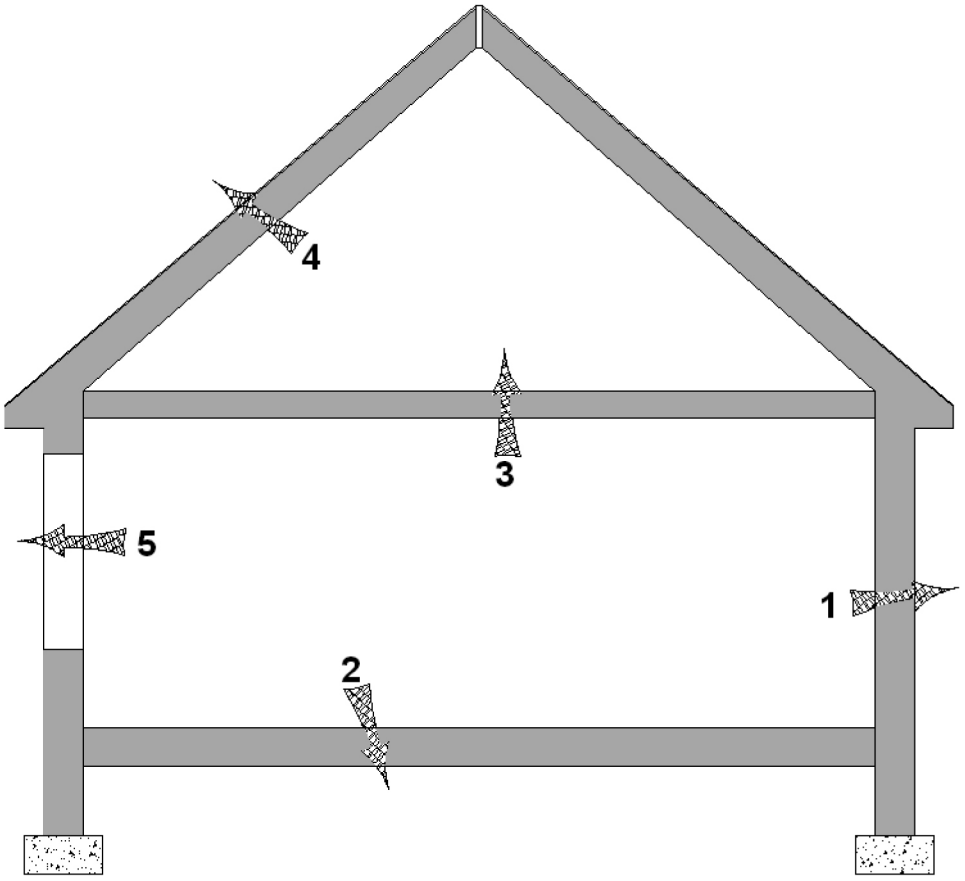

Fig. 6

Element 1 External walls

Element 2 Solid ground floor

Element 3 Ceiling

Element 4 Roof (where a bedroom will be located in the roofspace)

Element 5 Windows/Glazing

Element 1: External Walls

[2]

Element 2: Solid ground floor

[2]

Element 3: Ceiling

[2]

Element 4: Roof (where a bedroom will be located in the roofspace)

[2]

Examiner Only	
Marks	Remark

Element 5: Windows/Glazing

Examiner Only	
Marks	Remark

[2]

THIS IS THE END OF THE QUESTION PAPER

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General Certificate of Secondary Education
2017

Construction and the Built Environment

Pre-Release Material

Examination Copy

Assessment Unit 1: The Construction Industry for the 21st Century

GCB11

[GCB11]

TUESDAY 13 JUNE, AFTERNOON

You must use **this** clean copy of the Pre-Release Material in the examination and **not** your own annotated copy.

NOTE: Students will require the use of a scale ruler during the examination.

Introduction
A copy of the Pre-Release Material for this examination is included in the following pages.

The materials contain drawings and specifications relating to a dwelling which is to be constructed as part of a small housing development of 10 dwellings.
This development is expected to employ 25 site operatives for much of the construction phase.

The client has employed the following people to oversee the design of his development:

Architect
Quantity Surveyor

The contractor will employ the following team:

Site Manager
Plasterers
Wall and Floor Tilers
Joiners
Electricians
Plumbers

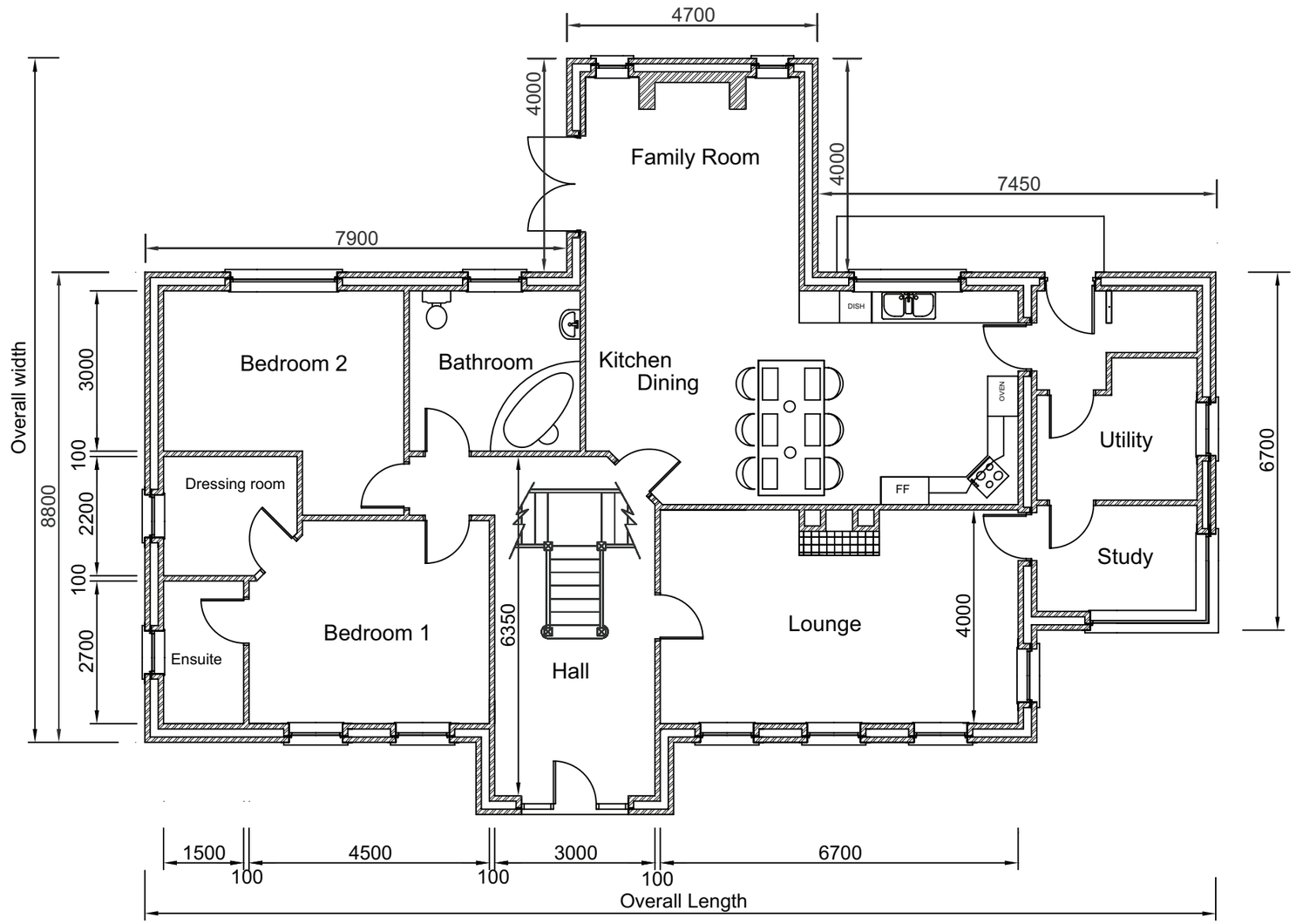
A Building Control Officer will also be employed to inspect work on site.

Wall Specification

Cavity Wall Construction
Outer leaf: 100 mm concrete block, 150 mm cavity, 150 mm insulation held in position using stainless steel insulation retaining wall ties to BS 1243.
Inner leaf: 100 mm concrete block work. Provide sand/cement plaster and carlite finish to inner face. Wall ties to be spaced at 750 mm horizontally, and 450 mm vertically, and un-bonded jambs ties to be spaced 300 mm vertically. 25 mm insulation to all jambs, between lintels and behind sill. D.P.C. in front of insulation in each case.

External Finishes walls

External walls to be wet dash, painted white.



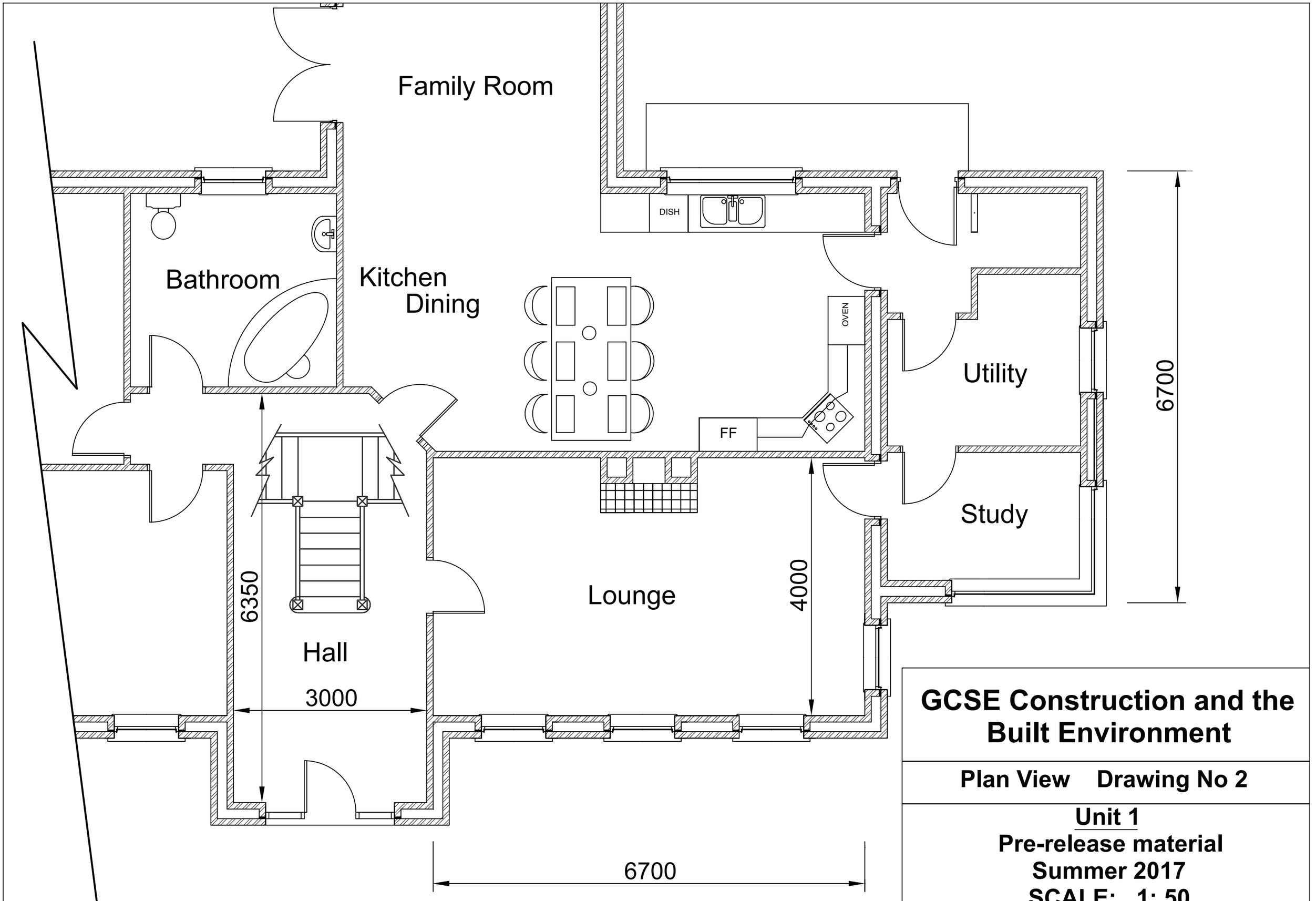
Materials Schedule for external elements

Concrete Interlocking grey roof tiles
Concrete Chimney Copings
White uPVC Barge board
White uPVC Fascia board
White powder coated aluminium gutter
Hardwood door and frame. Door painted red
White uPVC windows

GCSE Construction and the Built Environment

Working Drawing Drawing No 1

Unit 1
Pre-release material
Summer 2017
SCALE: 1: 100



GCSE Construction and the Built Environment

Plan View Drawing No 2

Unit 1
Pre-release material
Summer 2017
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GCSE Construction and the Built Environment

Front Elevation Drawing No 3

Unit 1
Pre-release material
Summer 2017
SCALE: 1: 50

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