Rewarding Learning

Centre Number	
71	

Candidate Number

General Certificate of Secondary Education
January 2009

Construction
Single Award

Unit 2: Construction Technology

[GSK21]

GSK21

FRIDAY 9 JANUARY, AFTERNOON

TIME

1 hour.

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 nine** questions.
Questions **1**, **2**, **3, 4** and **8** should be answered in relation to the enclosed house plans and specifications previously issued as Pre-release materials.
You should not bring any of the material previously issued into this examination.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

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

Examiner Only	
Marks	Remark

1 The skeleton frame of the Visitors' Centre shown in the attached plans is constructed from steel.

(a) The spaces in between the steel columns are filled with a brick and block structure which has insulation in the cavity. What is the correct name given to this type of external walling?

_____ [2]

(b) What is the colour of the smooth plaster used on the outside of the building?

_____ [2]

(c) What is the maximum gradient for the ramped access approach to the building?

_____ [2]

(d) What is the specification for the finish for the internal walls to be used in the Visitors' Centre?

_____ [2]

(e) What is the minimum depth of the profile sheet to be used on the roof of the Visitors' Centre?

_____ [2]

2 Hardwood sheet doors have been specified for use in the Visitors' Centre shown in the attached pre-release materials.

List **five** performance requirements of external hardwood doors.

_____ [1]

_____ [1]

_____ [1]

_____ [1]

_____ [1]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

3 The internal walls of the Visitors' Centre are to be plastered.

(a) List **two** reasons why you would plaster the internal walls of the Lecture Theatre.

1. _____

_____ [1]

2. _____

_____ [1]

(b) Write down a specification which you could use for the internal walls of the entrance hall of the Visitors' Centre. The words in the following list may help you with your answer, but additional words will be required to get full marks.

Paint/paper	12 mm thick,
Sand and Cement	gypsum plaster finish
Trowel smooth	

_____

_____

_____

_____

_____

_____

_____ [8]

Examiner Only	
Marks	Remark

4 Using the attached Visitors' Centre plans, give the following internal room dimensions in millimetres. Some dimensions may need to be scaled.

(a) The length and width of Exhibition area 2

Length _____ mm Width _____ mm [4]

(b) The length and width of Conference Room 2

Length _____ mm Width _____ mm [4]

(c) The overall width of the Visitors' Centre

Length _____ mm [2]

(d) How many wash basins are in the ground floor gents toilets in the Visitors' Centre?

Total number of wash basins in ground floor gents toilets is

_____ [2]

(e) How thick is the floor insulation that has been specified for the Visitors' Centre?

The insulation for the floor screed in the Visitors' Centre is _____ mm thick. [3]

Examiner Only	
Marks	Remark

5 Society requires many different types of buildings, which must be specifically designed to provide certain facilities. Identify each of the types of residential dwelling shown in this question and briefly state the distinguishing characteristics of each.

Fig. 1

(**a**) The type of dwelling shown in **Fig. 1** is _____ [1]

The distinguishing characteristics of this type of dwelling are

_____

_____

_____ [2]

Fig. 2

Examiner Only	
Marks	Remark

(b) The type of dwelling shown in **Fig. 2** is _____ [1]

The distinguishing characteristics of this type of dwelling are

_____

_____

_____ [2]

Fig. 3

Examiner Only	
Marks	Remark

(c) The type of dwelling shown in **Fig. 3** is _____ [1]

The distinguishing characteristics of this type of dwelling are

_____

_____

_____ [2]

6 State what you understand by the term Double Glazing.

_____

_____

_____

_____ [2]

7 Define the following terms as they relate to paint.

(a) Primer

_____

_____

_____ [3]

(b) Undercoat

_____

_____

_____ [3]

(c) Gloss coat

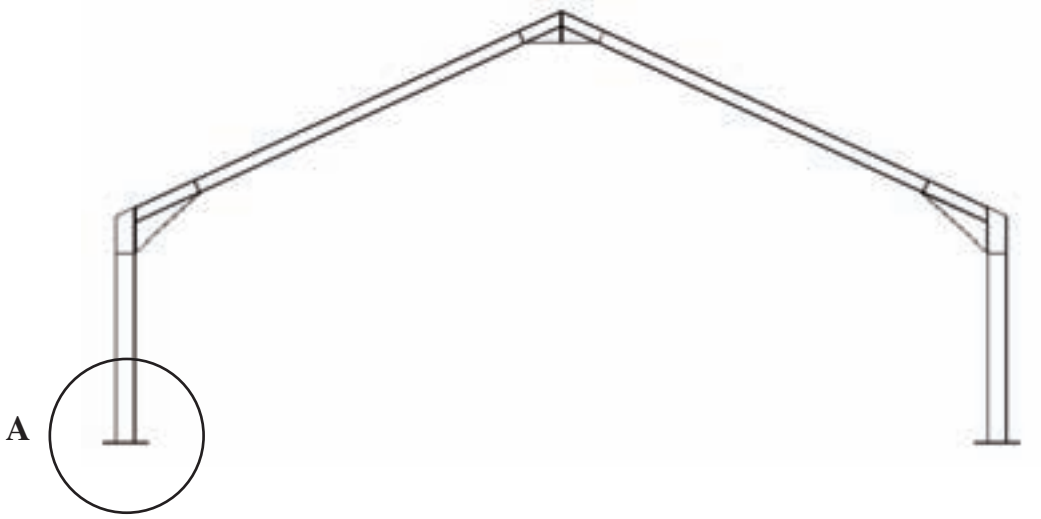
_____

_____

_____ [3]

Examiner Only	
Marks	Remark

8 The central hall of the Visitors' Centre shown in the pre-release materials is constructed from a steel Portal Frame such as the one shown below.



(a) Give the name of the jointing system shown at **A**.

_____ [2]

(b) Sketch joint **A** below, adding appropriate dimensions.

[8]

Examiner Only	
Marks	Remark

(c) List **five** advantages of a steel portal frame.

_____ [1]

_____ [1]

_____ [1]

_____ [1]

_____ [1]

(d) Explain how the structural stability of a portal frame is achieved.

_____

_____

_____

_____

_____

_____ [5]

Examiner Only	
Marks	Remark

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(Questions continue overleaf)

9 Using notes and/or annotated sketches, explain the way in which the design and structure of domestic wall construction has changed over the last century. The following terms, **Fig. 4** and **Fig. 5** may help you with your answer. [20]

Stone walls	Insulation	One brick thick wall
Cavity wall construction	Timber frame	DPC
Walls of the future		

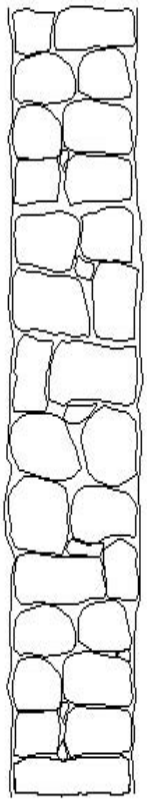


Fig. 4

Examiner Only	
Marks	Remark

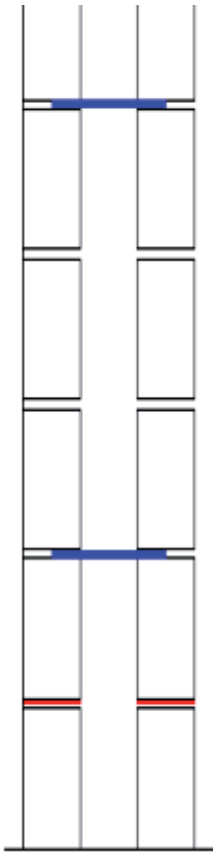
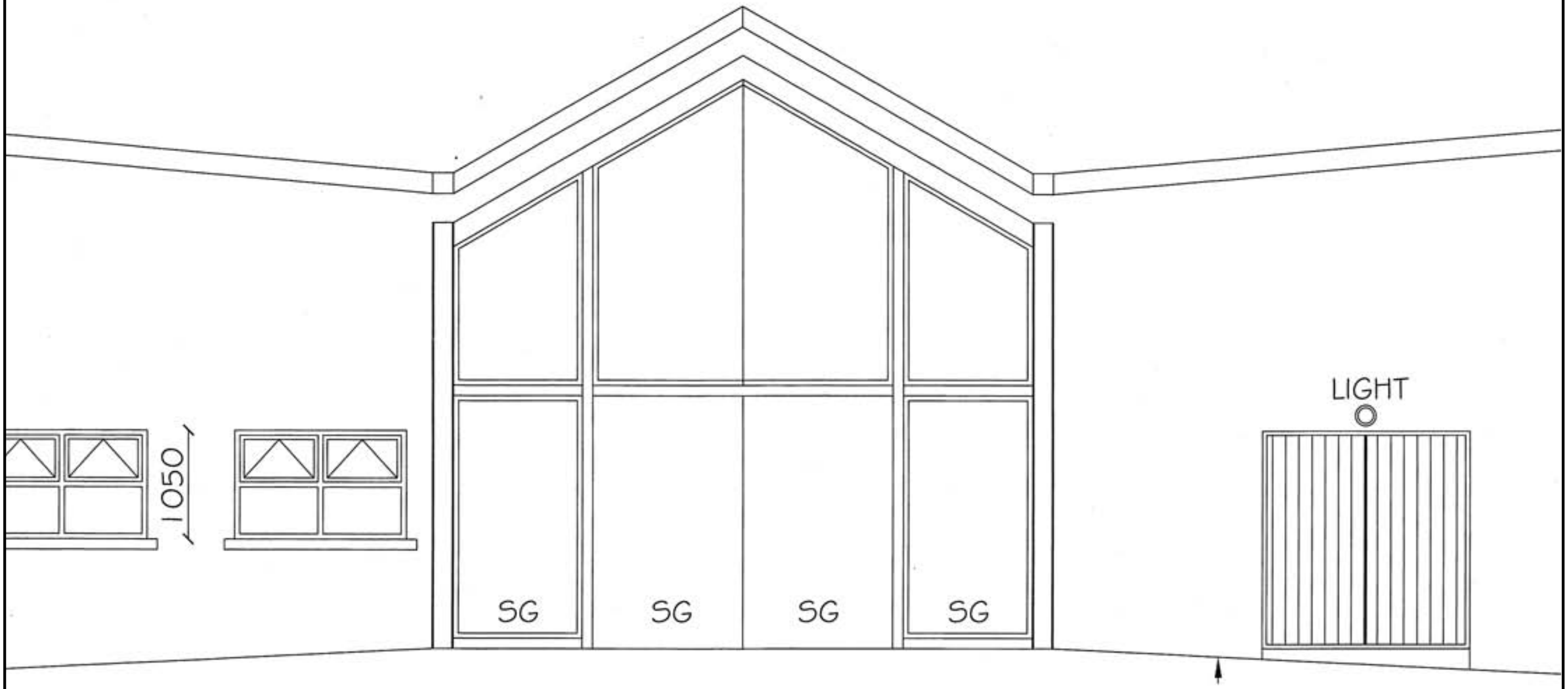


Fig. 5

Candidates will be required to scale drawings at 1:50 and/or 1:200 scale

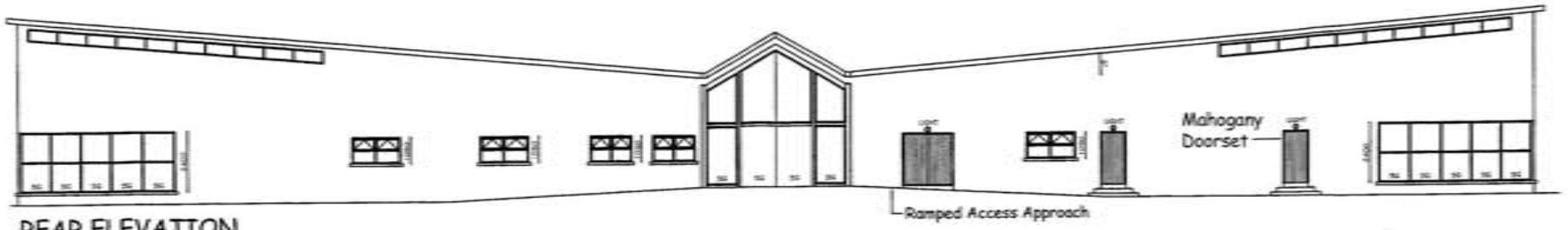


GCSE Construction

Pre-release materials

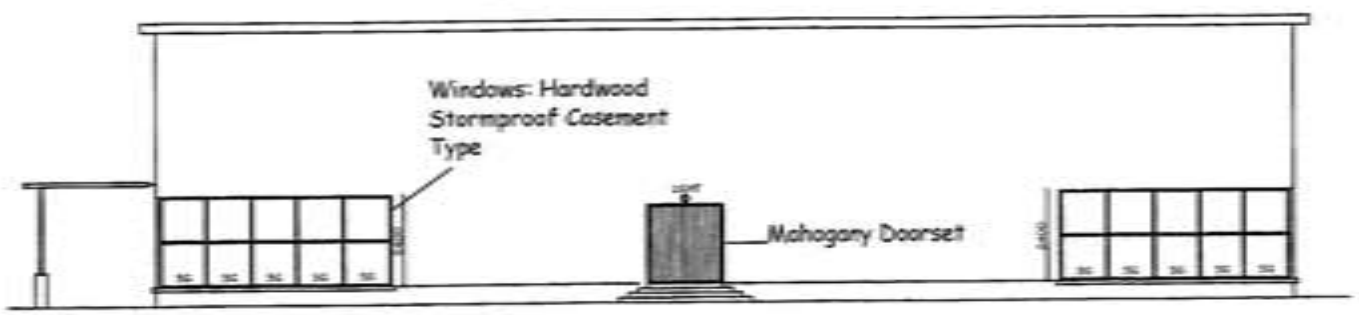
Date 2009

FRONT ELEVATION

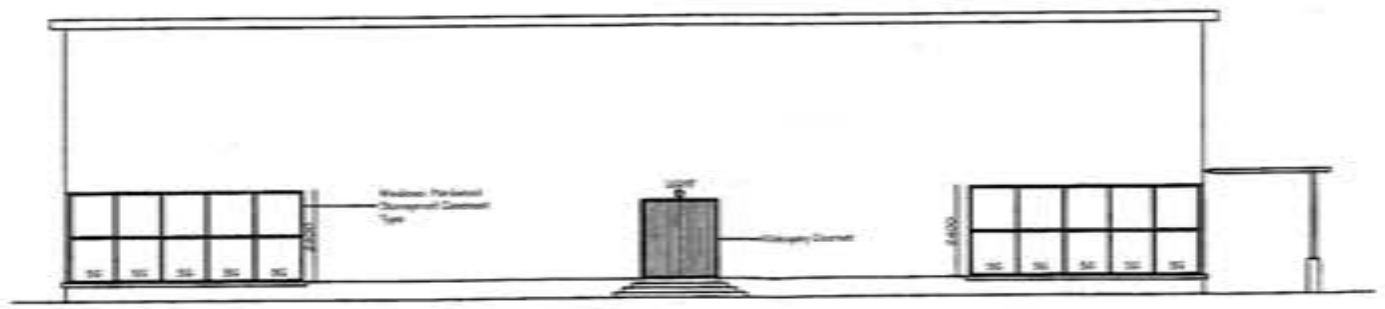


REAR ELEVATION

PROVIDE LEVEL ACCESS TO BUILDING
GROUND TO BE GRADED TO ACCESS
NOT EXCEEDING 1in20 AND A CROSSFALL
OF 1in40 ALLOW FOR LEVEL LANDING OF
1800mm.
PROVIDE ACO DOOR DRAIN WITH WATER
BAR REF DD930W.



LHS ELEVATION



RHS ELEVATION

ROOF CLADDING
ALL ROOF CLADDING TO BE COMPOSITE INSULATED PANELS AS MANUFACTURED BY KINGSPAN
BUILDING PRODUCTS LTD OR OTHER EQUAL AND APPROVED
THE OUTER SHEETING SHALL BE FORMED USING AT LEAST 0.50mm THICK HOT DIP GALVANIZED STEEL SHEET
TO BS.2989 WITH A ZINC COATING WEIGHT OF 275g/m . THE PROFILE DEPTH SHALL BE AT LEAST 35mm
AND SHALL GIVE 750-1000mm COVER WIDTH. THE OUTER SURFACE SHOULD BE PLASTISOL COATED AND A
GREY ALKYD BACKING COAT ON THE REVERSE SIDE.
THE INSULATION FOAM CORE SHOULD BE 50mm THICK POLYISOCYANURATE.
THE BACKING TRAY SHALL BE FORMED OF AT LEAST 0.50mm THICK HOT DIPPED GALVANIZED STEEL SHEET
TO BS.2989 WITH A ZINC COATING WEIGHT OF 275g/m . THE INTERNAL SURFACE OF THE BACKING TRAY
SHALL BE FINISHED WITH A DENSE WHITE POLYESTER PAINT WITH A DRY FILM THICKNESS OF 20 MICRONS.
THE OUTER SURFACE SHALL BE PVC COATED

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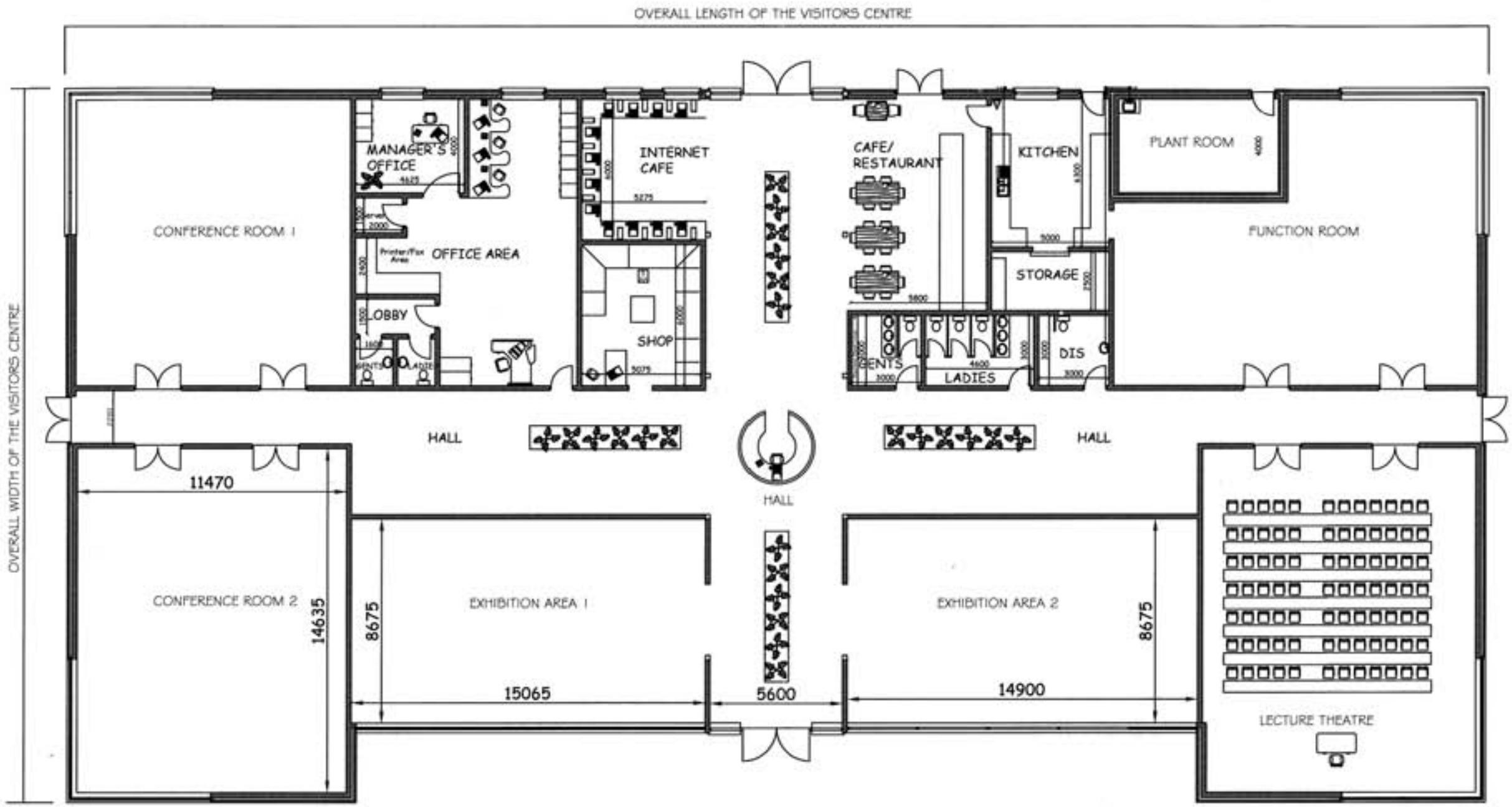

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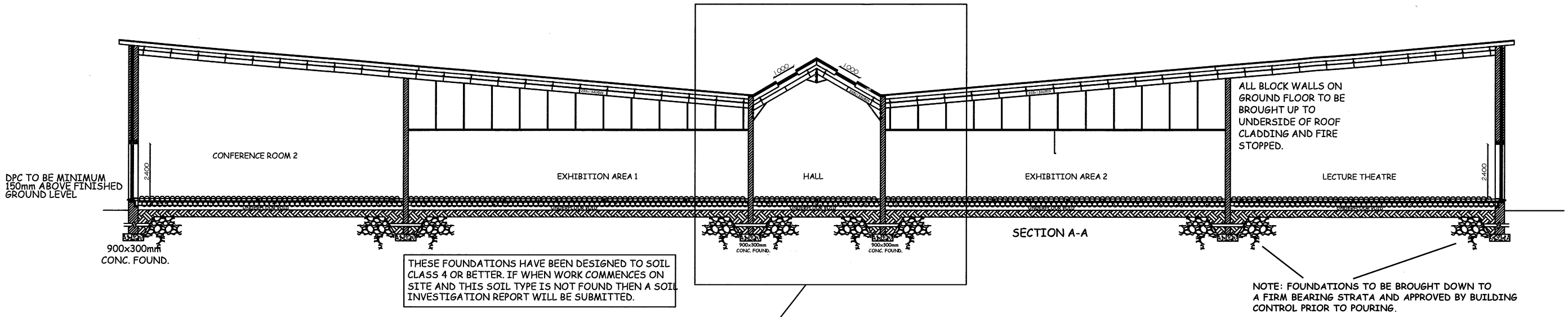

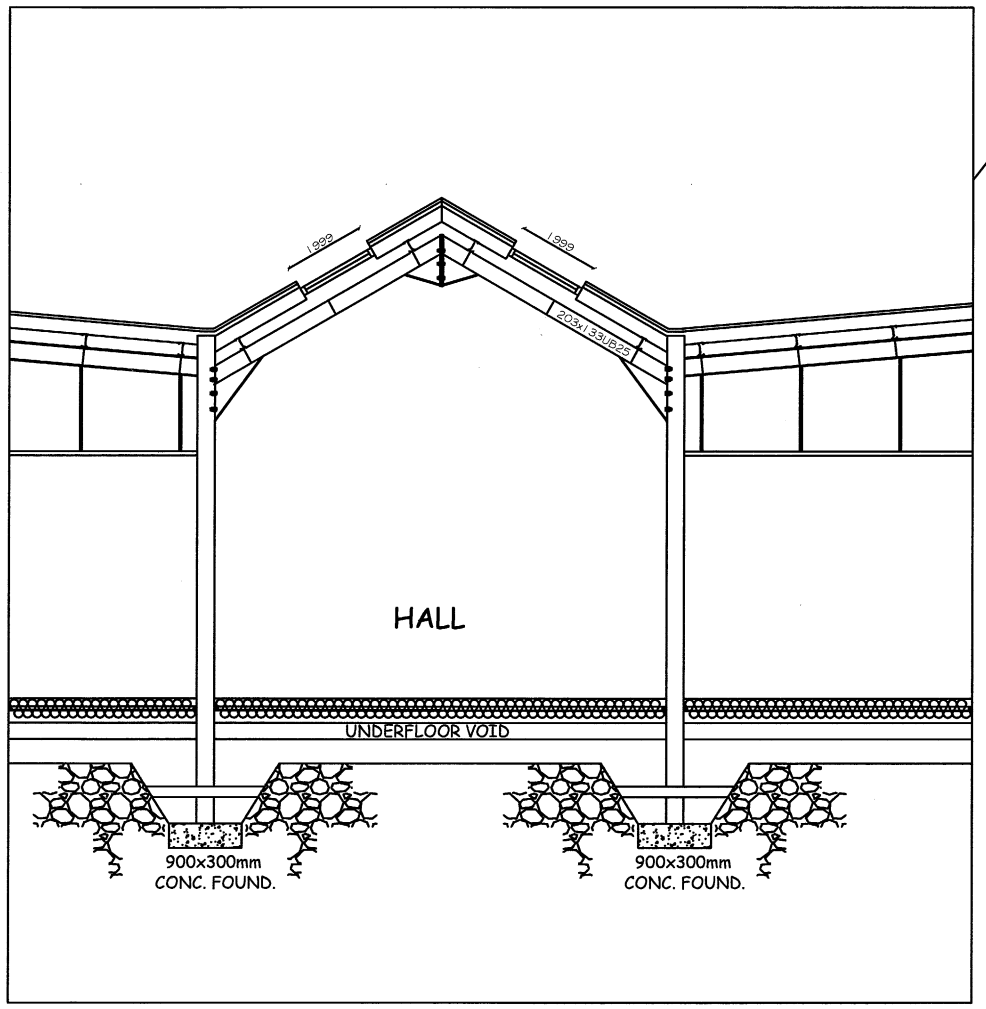

Wall construction:

Walls shall not exceed 12m in length, measured from centre to centre of buttressing walls, piers or chimneys providing restraint.
300 mm rendered block wall provide : 15mm external rendering
Outer leaf- 100mm dense concrete block 2100kg/m^3 with 40mm Low Emissivity Air-Space and 60mm Kingspan Kooltherm K8 cavity insulation held in place with insulation retaining wall ties (200mm long) stainless steel and conform to BS 1243 : 1978.
Inner Leaf- 100mm dense concrete block with 15mm plaster finish.

300mm Brick walls provide : 100mm brickwork (outer leaf) : 40mm low emissivity air space cavity : 60mm Kingspan Kooltherm K8 cavity insulation : 100mm dense concrete block2100kg/m^3 (inner leaf) 13mm plaster finish.

Ties to be spaced at 750mm Crs horizontally & 450mm Crs vertically. At unbonded jambs to all openings provide wall ties at 225mm vertical centres within 150mm of the opening.

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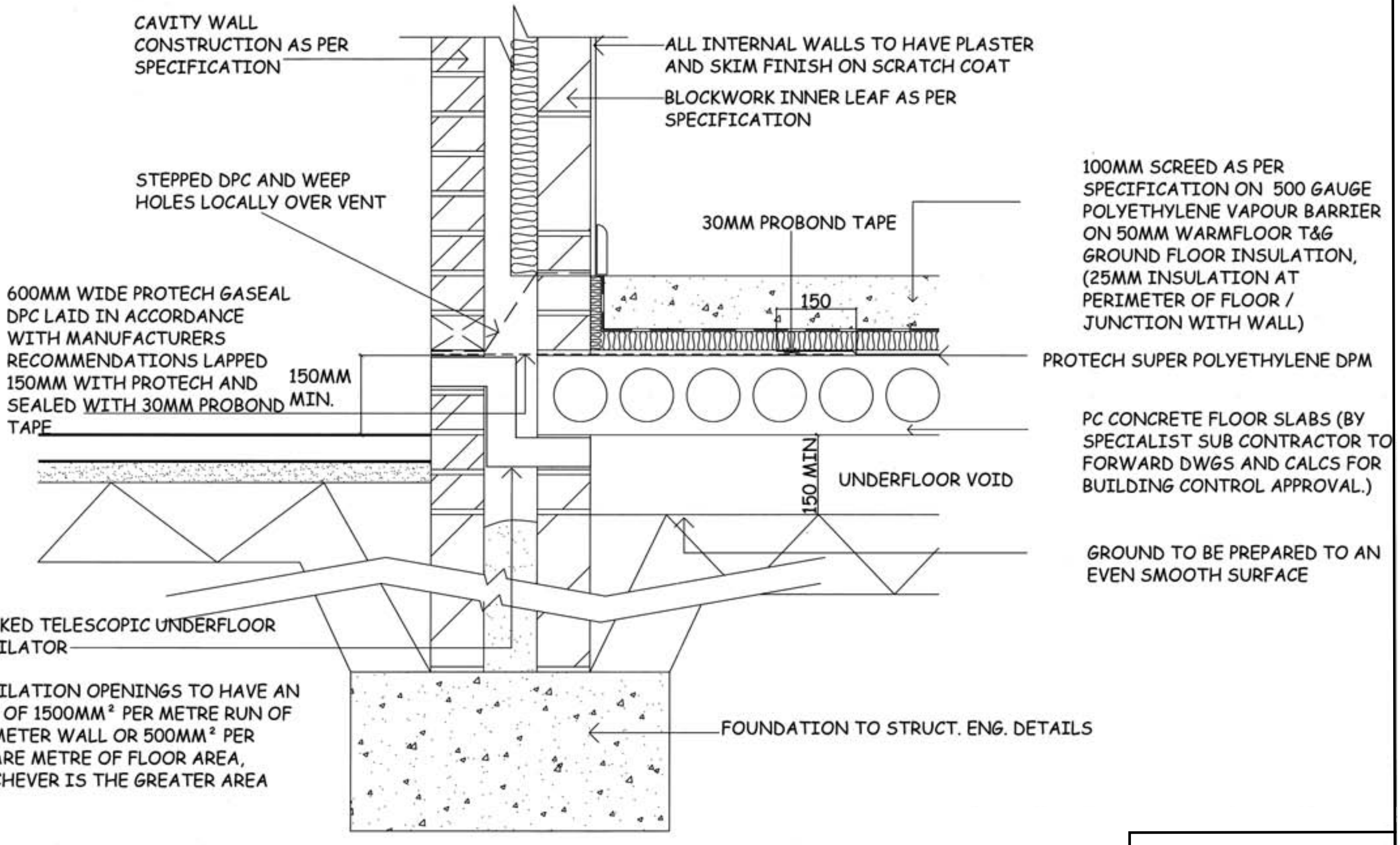
NOT TO SCALE Date 2009



SUSPENDED PRE-CAST FLOOR SLAB DETAIL

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