

Construction Studies

Overview

What is Construction Studies

- Construction Studies can be broken up into three components:
 1. The study of the construction of a domestic dwelling house from planning permission-foundations-walls-roof and everything in between. (5th Year)
 2. Project work (6th Year)
 3. Practical Day test (6th Year)

How are the marks distributed?

- Terminal exam – 50%
- Project work – 25%
 - Artefact- 12.5%
 - Portfolio – 12.5%
- Practical Day Test – 25%

What skills do I need to possess in order to progress well in Construction Studies

- You must be:
 - Extremely **hard working** (25 chapters of theory to cover in 5th year)
Construction Studies is a very difficult subject to study if you are not prepared for hard work.
 - Prepared to complete **homework** on time and present it for class
 - Able to learn sizes, meaning of terms, processes, etc. after each class.
 - **Studious** in order to prepare for a class test at the end of each topic.
 - Good at the **practical** side of woodwork
 - Good at technical graphics in order to complete scaled drawings of various areas in a house
 - Good at freehand sketching
 - Disciplined to stick to deadlines for **project work**

Construction of a Domestic Dwelling House (50%)

- Topics to be covered:
 - Planning permission
 - Construction materials
 - Site safety
 - Sols and site investigation
 - Foundations
 - External walls
 - Roofs
 - Floors
 - Internal walls
 - Fireplaces and chimneys
 - Windows
 - Doors
 - Stairs
 - Water supply to houses
 - Drainage
 - Light
 - Heat and thermal insulation
 - Sound
 - Rendering and plastering
 - Finishing

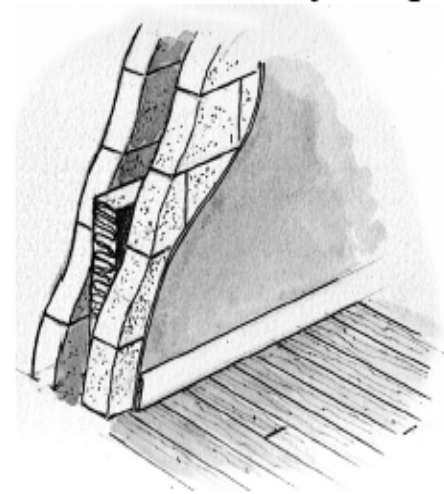
What is the exam layout?

- Exam is worth **50%**
- Higher Level exam is **3 hours** in duration
- All students must answer **question 1** and choose four other questions out of 10
- Question 1 is a drawing question where the student is asked to draw a scaled section through a particular part of the house.
- Questions 2 – 10 are a mix of theory based questions or other sectional drawing questions.
- Theory based questions need to be backed up using notes and **freehand sketches**

Example of Question 1 (2009)

1. An insulated suspended timber ground floor abuts the external wall of a dwelling house, as shown in the accompanying sketch. The external wall is a 350 mm concrete block wall with a 150 mm cavity. Rigid insulation board is fixed in the cavity. The suspended timber floor has a 25 mm tongued and grooved hardwood finish.

- (a) To a scale of 1:5, draw a vertical section through the external wall and the suspended timber ground floor. The section should show all the construction details from the bottom of the foundation to 400 mm above finished floor level. Include **four** typical dimensions on your drawing.
- (b) Indicate clearly the position of a barrier that would prevent radon gas entering the dwelling.

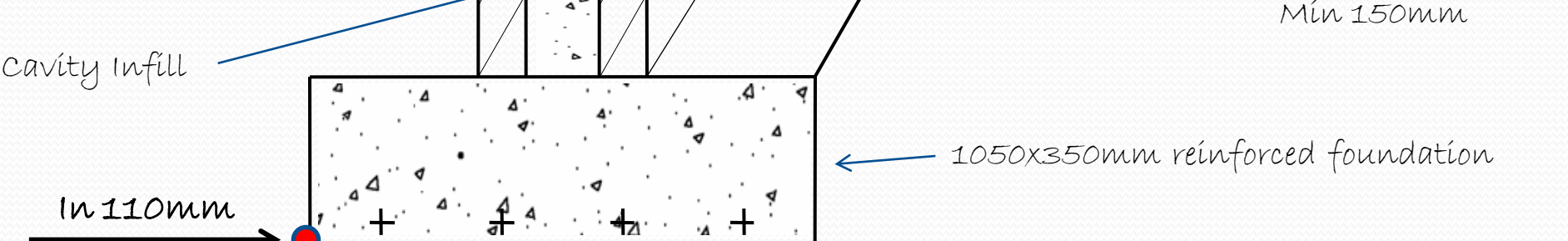


See sample answer on the next slide

Line up your A2 page in a landscape position on your drawing board

The starting point for the bottom left corner of the foundation is:

Up 5mm (from bottom margin)
 In 110mm (from left)



*The radon barrier is positioned below the oversite concrete slab and forms a continuous seal across the entire footprint of the house

Example of a Theory Question (2009)

2.
 - (a) Discuss in detail **two** functional requirements of a foundation for a dwelling house.
 - (b) Using notes and *freehand sketches* show **three** different foundation types suitable for a dwelling house. Show the position of the reinforcing and indicate typical dimensions of each foundation type.
 - (c) Discuss **two** factors that must be taken into account to ensure the maximum strength of concrete in a foundation.

See sample answer on the next slide

Ceist 2

(a) Two functional requirements of a foundation

- To distribute live and dead loads evenly over as great an area as possible
- To provide a level surface on which to build
- To anchor the structure to the ground
- To limit settlement
- To overcome movement due to seasonal variations in climate
- To prevent failure from any uneven stresses that may occur

(b) Strip Foundation

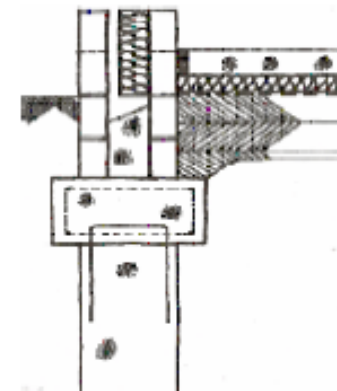
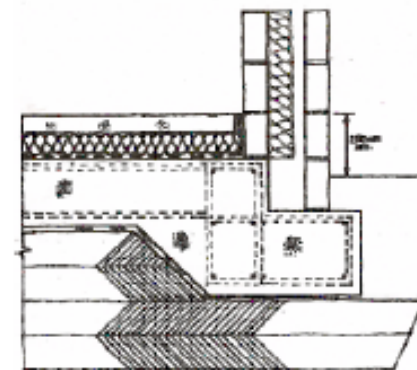
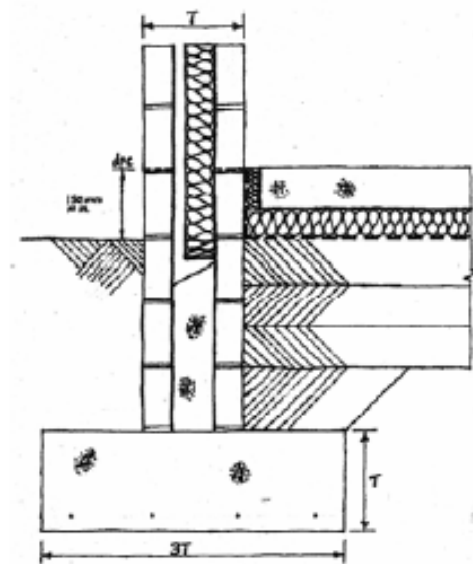
- Perimeter load is carried evenly
- Economical way to support load
- Environmentally sustainable
- less concrete and steel – lower embodied energy

Raft Foundation

- Floats on the subsoil spreading the load over as wide an area as possible
- Used on sites where soil is of low bearing capacity
- Even settlement

Short-bored Pile Foundation

- Used where the soil near the surface is of low bearing capacity, but the soil at greater depth is of sufficient bearing capacity to support load
- Where the soil is prone to movement



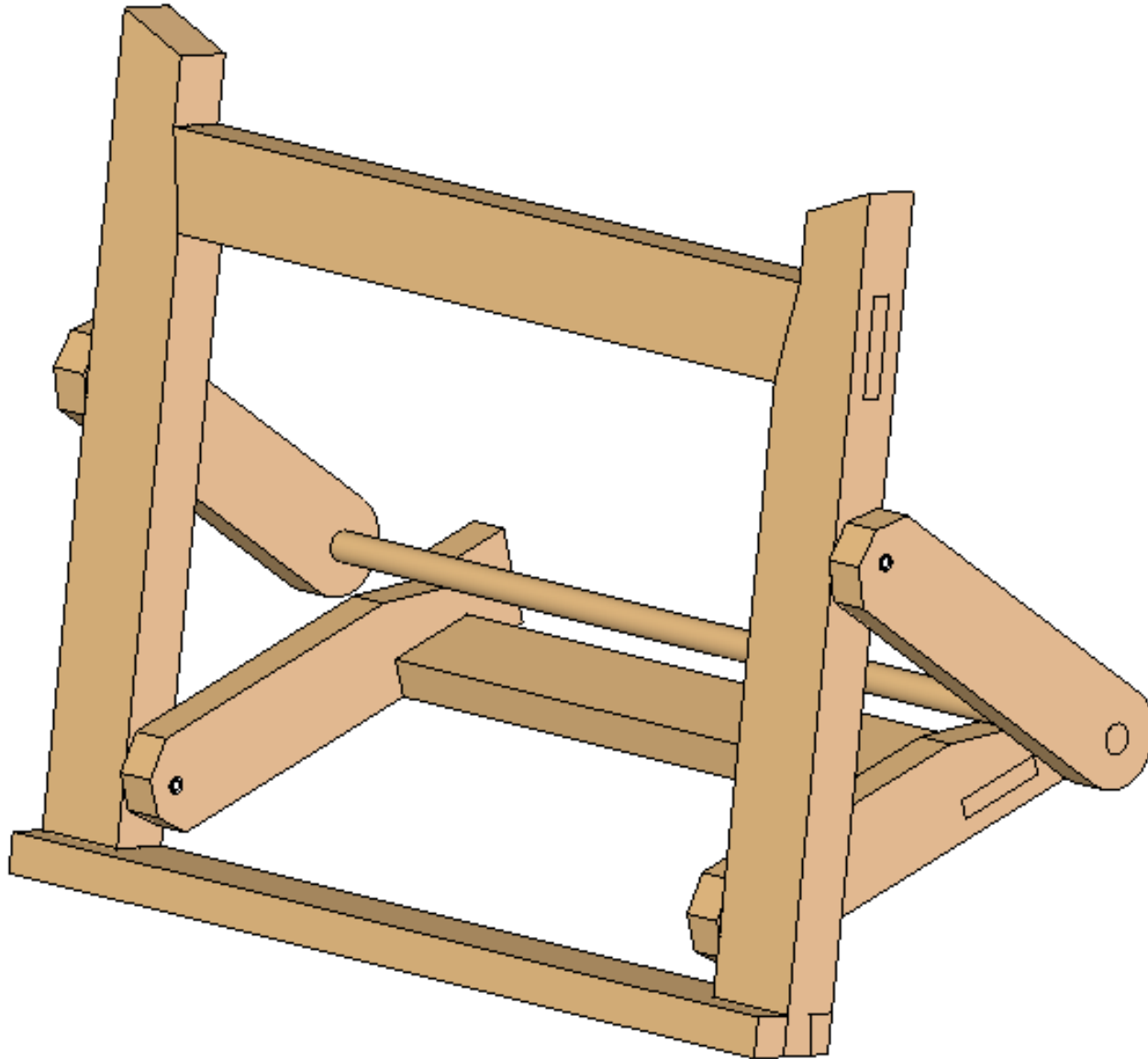
Project work (25%)

- Project can be chosen by the student once it has a link with the Construction Studies syllabus.
- Project types:
 - Furniture
 - Heritage model (Scaled)/ Research/ Drawing
 - Construction detail/ Research/ Scaled model of a part of a house

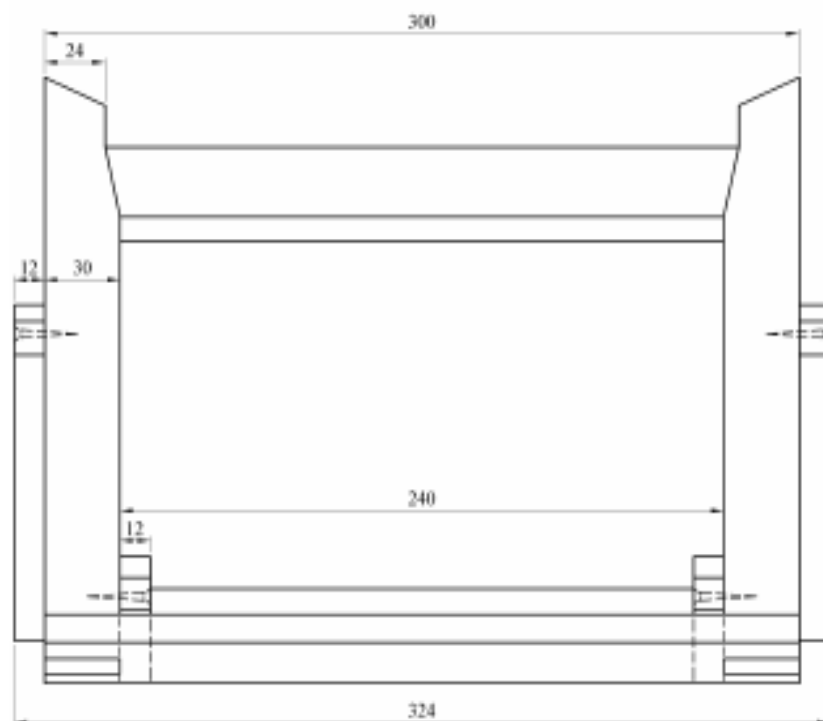
Practical Day Test (25%)

- Students are given several pieces of wood and the drawings of an artefact.
- Students have **4 hours** to complete the artefact using all hand tools available in the Construction Studies room.
- Pieces must be joined together and glue, sandpaper and machines are not permitted to be used.
- Pieces are joined using various joining methods:
 - M & T, dovetail, finger, bridle, screw...
- Any pieces that are broken cannot be replaced

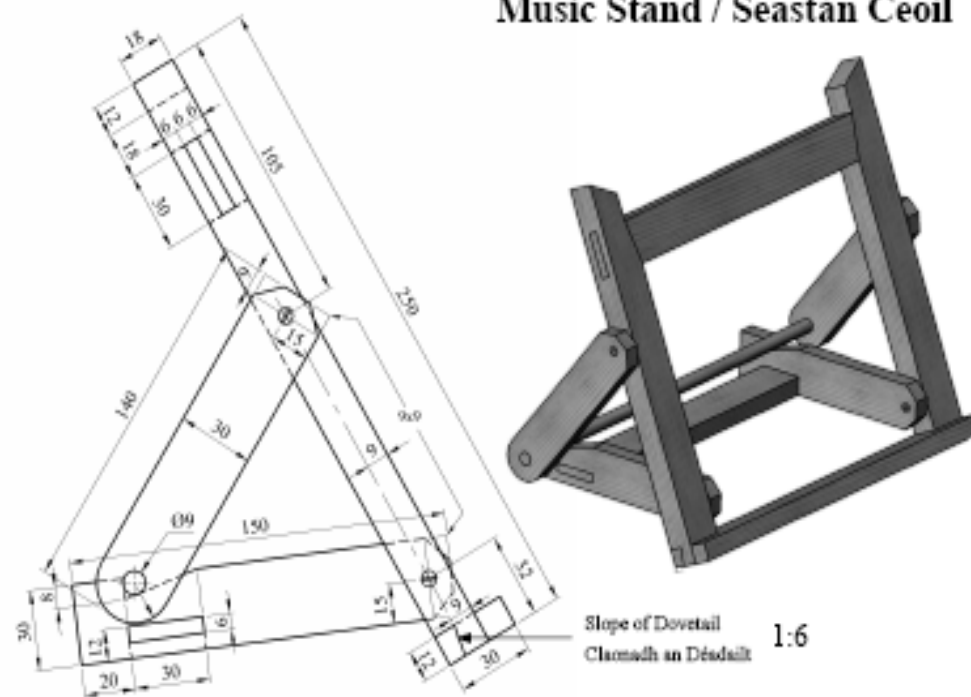
Practical Day Test Example (2009)



Music Stand / Seastán Ceoil



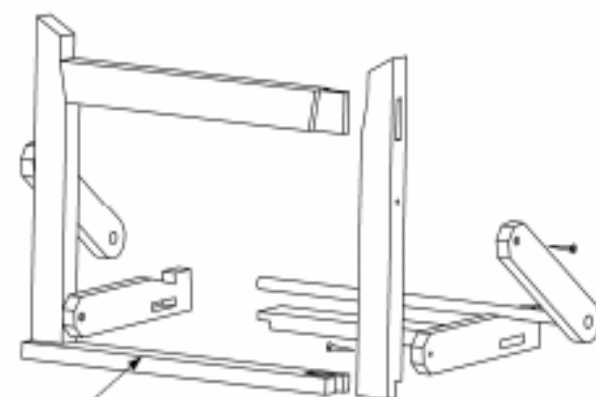
Elevation/Aghaidhchló



End View/Taobhchló



Plan/Bonnchló



Shaping of edge is left to the candidate

Fágfar faoin iarrthóir an choir a chríochnú go cuil

Note: Hand up this examination paper to the Superintendent at the end of examination.

Nóta: Tabhair ar ais an scrúdhaipéar seo don Fheitheoir ag deireadh an scrúdaithe.

Cavity Wall & Concrete Ground Floor

Scale= 1:5

