

**TUS**

Technological University of the Shannon:  
Midlands Midwest  
Ollscoil Teicneolaíochta na Sionainne:  
Lár Tíre Iarthar Láir

<b>Subject:</b>	CADD06018: BIM with Revit Architecture
<b>Course:</b>	Revit Architecture Online
<b>Session:</b>	Spring 2022
<b>Lecturer:</b>	Paul Vesey BEng, MIE, HDip
<b>Filename:</b>	CADD06021-01-X-X-XXX-SP-TUS-AR-0001-P9-D-0

## Assignment 1 (33%) - Detached 2 Storey Residence

<b>Issue Date:</b>	As stated on MS Teams
<b>Submission Date:</b>	As stated on MS Teams

### Assignment Outline

This assignment will examine the following learning outcomes:

No.	Learning Outcome	Assessed
1	Produce multi-view, isometric, and oblique drawings	Yes
2	Produce plan views; elevations, and sections of small to medium sized buildings.	Yes
3	Edit existing CAD drawings	Yes
4	Produce Revit generated material schedules and take-off lists	Yes
5	Use Revit to create presentation graphics and renderings	No

<b>Excellent (70+%)</b>	Faithful recreation of the original drawings with no errors, and shows improvements over the original drawing set
<b>Good (56% to 69%)</b>	Recreation of the original drawing set with some minor errors or omissions in presentation and modelling
<b>Acceptable (40% to 55%)</b>	Recreation of the original drawing set with numerous minor errors or omissions in presentation and modelling that could be addressed with minimal additional work
<b>Poor (&lt;40%)</b>	Modelling incomplete, Views missing, Major Annotation Missing, general poor presentation of the design

You are required to model a two storey house and to digitally submit you project file (.rvt) showing your model on one A4 sheet and four A1 sheets.

## **Your Submission should contain the following drawings**

<b>Sheet Size</b>	<b>Sheet No.</b>	<b>Title</b>
A4	AR-0001	Cover Sheet
A1	AR-0002	Ground Floor Plans and Internal Views
A1	AR-0003	Upper Floor Plans and Internal Views
A1	AR-0004	Foundations
A1	AR-0005	Elevations
A1	AR-0006	Sections and Details
A1	AR-0007	Room Usage

Details of the requirements for each drawing are given below:

### **AR-0001 - Cover Sheet**

- Three Dimensional (Aerial View) of the model (scaled to suit the sheet size) Shaded
- A list of the drawings in the design pack

### **AR-0002 - Ground Floor Plans and Internal Views**

- Ground Floor Plans @ 1:50 with dimensions, Room Titles and some fixed furniture
- Ground Floor 3D Section
- Door and Window Schedule

### **AR-0003 - Upper Floor Plans and Internal Views**

- Upper Floor Plans @ 1:50 with dimensions, Room Titles and some fixed furniture
- Upper Floor 3D Section
- Door and Window Schedule

### **AR-0004 - Foundations**

- Foundation Plan @ 1:50 with dimensions
- Detail of Foundation
- 3D View of Foundation Layout

**AR-0005 - Elevations**

- South Elevation @ 1:50
- North, East and West Elevations @ 1:100
- Window Legend

**AR-0006 - Sections, Details and Schedules**

- Three sections are required
- Section thro' Kitchen / Sitting Room facing East @ 1:100
- Section thro' Kitchen / Sitting Room facing West (towards kitchen units) @ 1:100
- Section thro' the Hallway / Landing showing the Stairs @ 1:100
- One full height detail (Call-outs) @ 1:25, including Repeating Details showing the following:
  - Foundation / External Wall / Floor Interfaces
  - Facia / Soffit and Roof Details
  - All necessary notes

**AR-0007 - Room Usage**

- Ground Floor Room usage Color Fill Legend @ 1:50
- First Floor Room usage Color Fill Legend @ 1:50
- Two Rendered Views (Cloud Render or Revit Local Render)

Additional Sheets may be submitted if so desired.

## Presentation and Submission

1. All drawing sheets must have the TUS logo and be clearly marked 'Educational Exercise - Not for Construction'. Titleblocks have been provided
2. You are required to submit you project as a single Revit (.rvt) file through MS Teams
3. Drawings should show all necessary information to communicate design intent
4. The Revit filename should be of the form used in NA-2021 to I.S. EN ISO 19650-2-2018. In this case, it will *CADD06021-01-X-X-XXX-M3-###-AR-0001-P9-D-0*, where *###* is replaced by the last 3 digits of your K-number. An example would be '**CADD06021-01-X-X-XXX-M3-920-AR-0001-P9-D-0**', for K-number K20001920. Do not use spaces in the filename

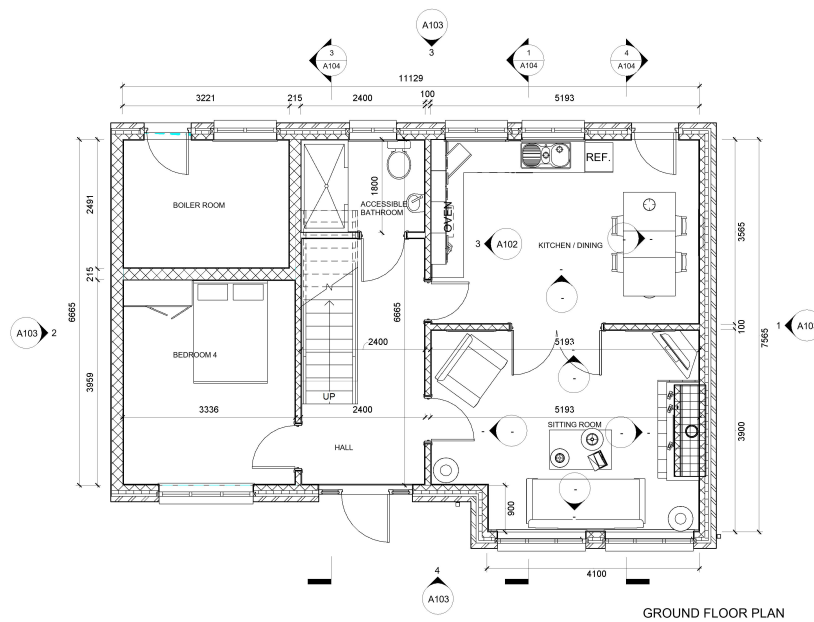


Figure 1: Ground Floor

## Design Specification

The total floor area of the house should be approx  $150m^2$

The following design may be used as a guide. You may modify the proportions provided you maintain a protrusion at the front of the building.

- Entrance Hall (2400mm wide)
- Universally Accessible Bathroom / Toilet
- Kitchen / Dining (with fixed and loose furniture)
- Living Room / Sitting Room (with direct access to kitchen)
- Ground Floor Bedroom (Playroom / Study)
- Externally accessed boiler house/shed
- Stairs 900mm wide (Rise 171.9mm, Going 280mm)

- 3 Bedrooms with en-suite sanitary facilities
- Main Bathroom with Bath or Shower, WC and sink
- Hot Press

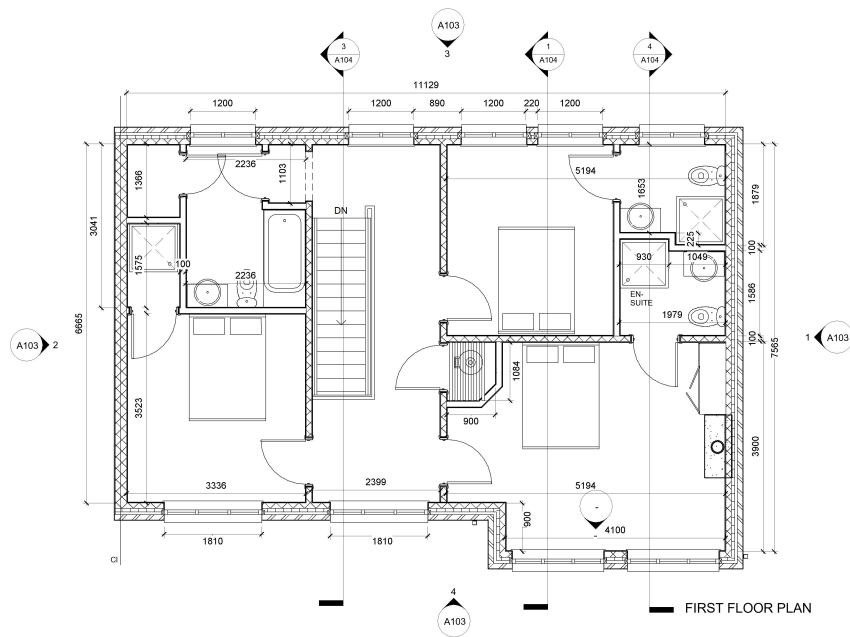


Figure 2: First Floor Plan

## Construction Specification

### External Wall Specification

External walls are to be twin leaf cavity construction and be of a 4 part Stacked Wall Type Wall-Ext-Stacked\_317 (4-Part-Dom) with the following layers

1. L1\_Wall-Ext-Cav\_102Bwk-50Air-65Ins-100DBlk-15Rnd&P
  - Layer 1 (TopLayer) 'Variable'
  - (332mm wide insulated Cavity Walls over DPC level - Generally)
  - Made up of 102.5mm Brick / 50mm Air-gap / 65mm Insulation / 100mm Blockwork inner leaf
  - Internal Finish 15mm (total) Render and Plaster
2. L2\_Wall-Ext-Cav\_20Rnd-100Blk-50Air-65Ins-100DBlk-25Ins
  - Layer 2 (Intermediate Layer) 225mm high
  - (360mm wide insulated Cavity Wall at Plinth level)
  - 20mm Cement Render (Plinth) / 100mm block / 50mm Air-gap / 65mm Insulation / 100mm Block
  - 25mm thick perimeter insulation up-stand to internal face
3. L3\_Wall-Ext-Cav\_100Blk-115Conc-100DBlk (Rising Wall)
  - Layer 3 (Intermediate Layer) 225mm high
  - (315mm wide un-insulated Rising Wall)
  - 100mm Block / 115mm wide Concrete filled cavity / 100mm Block inner leaf
4. L4\_Wall-Solid-440\_Trench-Blk
  - Layer 4 (Base Layer) 675mm high
  - (440mm wide Solid Trench Blockwork)

Foundations (Footings)

- 1350 wide x 450 deep strip foundation
- Top of Strip foundation to be 1050mm below Gr. Floor level

### Internal Wall Specification

- Ground Floor Internal Walls
  - Generally, Single leaf 100mm concrete block walls 15mm render / plaster both sides, (Wall-Part\_15Rnd&P-100Blk-15Rnd&P)
- First Floor Internal Walls
  - Landing Area: Single leaf 100mm concrete block walls, 15mm render / plaster both sides (Wall-Part\_15Rnd&P-100Blk-15Rnd&P)
  - Elsewhere: 100mm timber stud partition, 15mm plaster slab / plaster both sides (Wall-Stud-Part\_15Gwb&P-100Stud-15Gwb&P)



## **Floor Specification**

- Ground Floor: Revit Library modified floor type (Floor-Grnd-Bearing) to be duplicated and used(Floor-Grnd-Bearing\_65Scr-100Ins-150Conc-DPM-50SBld-200Hcore)
  - 65mm Sand & Cement Screed on
  - 100mm Floor Insulation on
  - 150mm Reinforced Concrete Slab on
  - Damp Proof Membrane on
  - 50mm Sand Blinding on
  - 200mm Selected and Graded Hardcore laid in 2 No. 100mm layers
- First Floor: Revit Library modified floor type (Floor\_Timber\_25Cbd-225Joist) may be used: Finished First Floor Level to be 2750mm (GFL to FFL)

## **Windows and Doors**

- Head height - 2100mm
- Revit Library standard door types may be used
- External Front Door: Decorative type (panelled door with glazed side panels)
- External Kitchen and Boiler house doors to have glazed panels
- Generally, internal single doors to be standard flush-panel or regency panelled type
- Kitchen to living room doors to be double leaf, glazed multi-panel style
- Windows generally to be double or triple sash type with opening vents

## **Electrical Fittings – Optional: no marks allocated**

- Kitchen and Living Room only, to be visible in Section or Camera View
- 2 No. Ceiling or Wall mounted light fittings per room
- 2 no. Twin Switched Socket power outlets per room

## **Ceilings**

- 3mm Skim Coat Plaster on Gypsum Wall Board
- Revit Library 'modified' ceiling type (Compound Ceiling Plain)
- Ceiling Cut-outs required for Stairs and Dormer Window.

## Roof Type

- Roof by Footprint
- Pitch 35°
- Main Roof overhang to be approx 300mm clear of outer leaf

## Roof Construction Specification

- Revit roof type 'Roof\_Pitched\_38Tile-25Bat-0Felt-25Bat-100Ins-150Truss-12PBd to be modified as follows: Roof\_Pitched\_38Tile-38Bat-0Feld-150Truss.
  - 38mm Roofing Tile on
  - 38mm battens on
  - Roof Membrane on
  - 150mm Structure (Truss / Rafter)

## General Building – Optional: no marks allocated

Provide the following

- Facia Boards, Flat Soffits, Rainwater Gutters, Downpipes and all necessary information to communicate design intent.

## Site

- A basic flat topographical layer (Toposurface) is to be inserted in the Site View. The toposurface be created at an elevation of -225mm