LIT
BUILT
ENVIRONMENT

Subject:	Building Information Modelling with Revit Architecture
Course:	Revit Architecture Online
Session:	Autumn 2021
Lecturer:	Paul Vesey BEng, MIE, HDip
Filename:	RARC01-LIT-00-ZZ-SP-A-001-A1-P02

Assignment 1 (33%) - Detached 2 Storey Residence

Issue Date:	As stated on MS Teams
Submission Date:	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	No
4	Produce Revit generated material schedules and take-off lists	Yes
5	Use Revit to create presentation graphics and renderings	Yes

Excellent (70+%)	Faithful recreation of the original drawings with no errors, and shows improvements over the original drawing set
Good (56% to 69%)	Recreation of the original drawing set with some minor errors or omissions in presentation and modelling
Acceptable (40% to 55%)	Recreation of the original drawing set with numerous minor errors or omissions in presentation and modelling that could be addressed with minimal additional work
Poor (<40%)	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

Sheet Size	Sheet No.	Title
A4	A-001	Cover Sheet
A1	A-002	Floor Plans
A1	A-003	Elevations
A1	A-004	Sections and Details
A1	A-005	Room Usage

Details of the requirements for each drawing are given below:

A-001 - 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

A-002 - Floor Plans

- Ground and First Floor Plans @ 1:50 with dimensions, Room Titles and some fixed furniture
- Two internal camera views, (scaled to suit the sheet size) rendered using the Autodesk 360 cloud rendering service. *One of the fireplace and one of the kitchen units*

A-003 - Elevations

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

A-004 - Sections and Details

- Three sections are required
- Section thro' Kitchen / Sitting Room facing East (towards fireplace) @ 1:100
- Section thro' Kitchen / Sitting Room facing West (towards kitchen units) @ 1:100
- Section thro' the Hallway / Landing showing the Stairs and the Dormer @ 1:100
- One full height detail (Call-outs) @ 1:20, including Repeating Details showing the following:
  - Foundation / External Wall / Floor Interfaces
  - Facia / Soffit and Roof Details
  - All necessary notes

A-005 - Room Usage

- Ground Floor Room usage Color Fill Legend @ 1:50
- First Floor Room usage Color Fill Legend @ 1:50

Additional Sheets may be submitted if so desired.

Presentation and Submission

1. All drawing sheets must have the LIT Built Environment logo and be clearly marked 'Educational Exercise - Not for Construction'
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 PAS/BS 1192. In this case, it will *RARC01-###-00-ZZ-M3-A-001-A1-P01*, where ### is replaced by the last 3 digits of your K-number. An example would be **'RARC01-920-00-ZZ-M3-A-001-A1-P01'**, for K-number K20001920. Do not use spaces in the filename

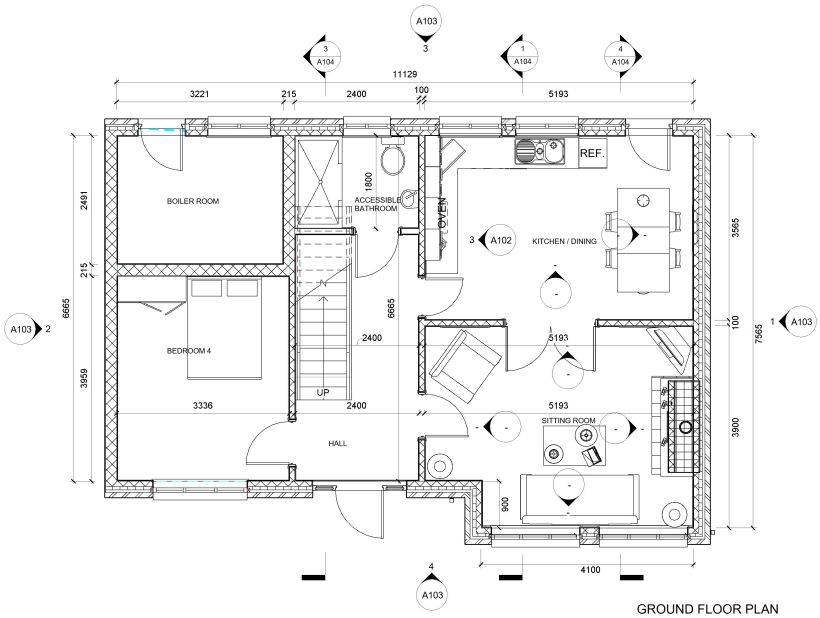

Figure 1: Ground Floor

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

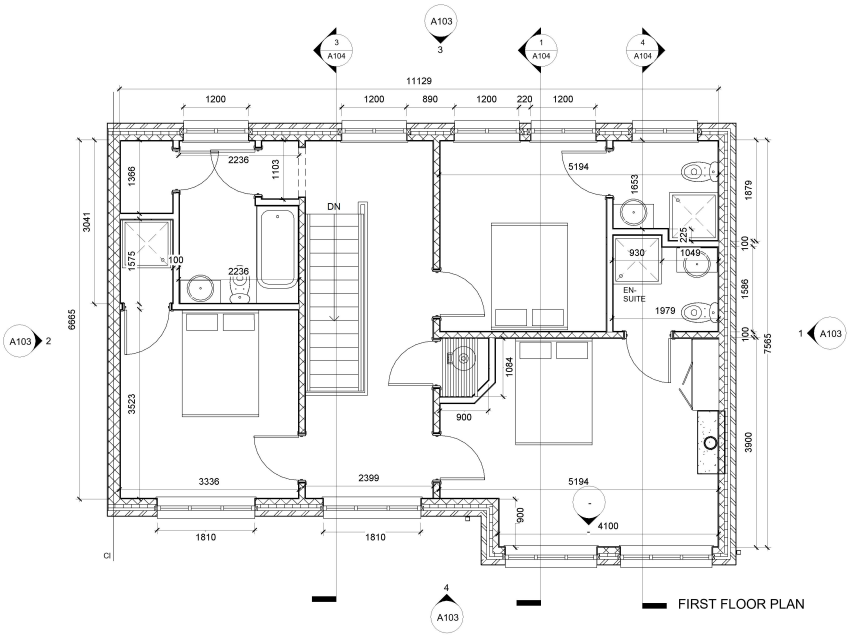

Figure 2: First Floor Plan

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 (Gen Dom)
    - Layer 1 (TopLayer) 'Variable'
    - (315mm 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_15Rnd-100Blk-50Air-65Ins-100DBlk-25Ins (Plinth)
    - Layer 2 (Intermediate Layer) 225mm high
    - (315mm wide insulated Cavity Wall at Plinth level)
    - 15mm 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

1350 wide x 450 deep strip foundation

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
- Dormer window: Rectangle or circular type as desired.

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