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| <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> | RARC03-TUS-XX-XX-SP-A-001-A1-P02       |

## Assignment 3 (33%) - Miscellaneous Activities in 3 Parts

|                         |                       |
|-------------------------|-----------------------|
| <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                              | No       |
| 2   | Produce plan views; elevations, and sections of small to medium sized buildings. | No       |
| 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                         | Yes      |

|                                |   |
|--------------------------------|---|
| <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  |

In these exercises you are required to create a number of new items and modify the existing designs created during Assignment 2 and Assignment 3. This assignment consists of 3 parts, each of which has its own set of deliverables and submission file(s).



Figure 1: Domestic Building - Indicative only

## Part 1 - Domestic Building Details

Using the Residential model developed for Assignment 1, make the following amendments to your design.

1. Roof: Change the roof name to Domestic Roof with Conc Tile finish, and change the roof make-up to
  - 30mm Concrete roofing tile on,
  - 38mm (Wood Lumber) Battens on,
  - 2mm Roofing Felt on,
  - 166mm Truss
2. First Floor: Add 12mm Oak Flooring layer on top of the suspended timber floor make-up
3. Ground Floor: Edit and Duplicate the ground floor type and rename as 'Ground Floor - Domestic w Oakwood Finish'. Edit the construction to reflect the following build-up:
  - 6mm Oakwood Flooring finish on,
  - 80mm Sand & Cement Screed on,
  - 100mm Rigid Insulation on,

- 150mm In-situ Concrete on,
- LDPE DPM / Radon Membrane on,
- 50mm Sand on,
- 200mm Site Hardcore

4. Produce the following 3D View and 3 Call-out views. Place these views on a new sheet, A105. Include annotations and dimensions as necessary.

- Call-out Detail of the Roof / External Wall interface @ 1:20
- Call-out Detail of the First Floor / External Wall interface @ 1:20
- Call-out Detail of the Ground Floor / External Wall / Foundation interface @ 1:20

5. The filenames should be of the form used in PAS/BS 1192. In this case, it will *RARC03-###-00-ZZ-M3-A-301-A1-P01*, where **###** is replaced by the last 3 digits of your K-number. An example would be '**RARC03-920-00-ZZ-M3-A-3001-A1-P01**', for K-number K20001920.

Make use of the Masking and Component tools, and the 'Repeating Detail' functionality in Revit. Annotations should include, at a minimum, the construction information outlined in items ??, ?? and ??.



Figure 2: Commercial Building

## Part 2 - Commercial Building Details

Using the Commercial Building model developed for Assignment 2, make the following amendments to your design.

1. Roof: Create a curved extruded roof similar to the diagram shown in Figure ??
2. 3D Views: Create 3 Autodesk 360 rendered images and import them into a new sheet, A-207.
  - External view of the building looking through the curtain wall glazing
  - Internal view of one retail unit facing the curtain wall, and picking up the stairs
  - Internal view of your choice from the First Floor landing
3. Solar Study: Create a solar study for the 16<sup>th</sup> of June 2018 and place a view of 14:30 hours onto sheet A-207. Render your image using the 'shaded' setting; do not fully render.
4. Walk-throughs: Create the following walk-throughs using the 'Shaded' setting. Do not fully render the animation. The maximum number of frames required is 300.
5. Sloping Toposurface: Create a sloped topographical surface (approx 80m x 90m) incorporating a slope from approx 5m hight at the rear, and 8.0m out from the building, to -225mm at the front of the building, and over the front area of the site.
  - Create a Building Pad incorporating an 8.0m hard-stand area to the rear and sides of the Retail Unit block and approx 15.0m at the front
  - Create a parking area for cars to the front of the building

- Provide an access road from the edge of the Site to the car park.
  - Add street lighting, trees, and other components from the 'Entourage', 'Site' and 'Planting' libraries as necessary
6. The filenames should be of the form used in PAS/BS 1192. In this case, it will *RARC03-###-00-ZZ-M3-A-302-A1-P01*, where **###** is replaced by the last 3 digits of your K-number. An example would be '**RARC03-920-00-ZZ-M3-A-302-A1-P01**', for K-number K20001920.

## **Part 3 - Interoperability (File Exchange formats)**

Using your Assignment 1 Building, create or export the following file types from Revit

1. Export the floor plan in Autocad .dwg format
2. Export the default 3D view in FBX format. FBX is used for many 3D applications as a semi-neutral format. You do not need to set LOD or Boundary Edges.
3. Export the floor plans in .gbXML format, used in Energy Analysis
4. Make a .pdf of the floor plan

The filenames should be of the form used in PAS/BS 1192. In this case, it will **RARC03-###-00-ZZ-\$-A-001-A1-P01**, where ### is replaced by the last 3 digits of your K-number and \$\$ is the PAS codes for Drawings and Models. An example would be '**RARC03-920-00-ZZ-MR-A-001-A1-P01**', for K-number K20001920, energy analysis model. Please do not use spaces in the filename. The codes are as follows:

| <b>Code</b> | <b>Usage</b>                    |
|-------------|---------------------------------|
| AF          | Animation File                  |
| CM          | Combined Model                  |
| CR          | Specific for Clash Detection    |
| DR          | 2D Drawing                      |
| M2          | 2D Model                        |
| M3          | 3D Model                        |
| MR          | Model file for other renditions |
| VS          | Visualisation                   |