

Lesson 5 – Revit, Export/Import, Massing, Family Editor

Export (From Revit to other programs) – “File/Export” pull-down menu

DWG - Current view determines:

1. If a 2D view, exports 2D line work visible in view (i.e. the first floor plan).
DWG is full scale
Can be imported into Adobe Illustrator. Will need to set scale factor.
2. If a 3D view, exports entire model.

FBX – Alternate import/link into 3ds MAX and other 3D programs, like Unity
Only available in a Camera or "{3D}" view
Exports whole model.

Image and Animation (scroll down)

Stills

Current window or Selected view/sheet
Image Size – Number of pixels
Format - JPG, PNG, TIF.

Walkthrough

AVI (for walkthroughs)
Must create walkthrough and activate “Walkthrough” view

To Create:

“View” tab and “3D View/Walkthrough”
Click camera’s “keyframes” in plan, then “Finish”
“Edit Walkthrough” to play

Import/Link (From other programs into Revit) - "Insert" tab.

Revit (RVT) – Links all (bldg) geometry into current RVT file

“CAD” - Vector formats:

DWG – Equal or older file to Revit release
SKP – 2020 or older format. May need to save down.
3DM - Best for importing Rhino geometry (massing). NURBS-only
ACIS (SAT) – Alternate for importing Rhino geometry (massing)

“Image” - Places a raster image in the current (2D) view

Formats – JPG, PNG, TIF
Can resize, although quality suffers when increased (thus lowering dpi).

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Reference Plane – Serves two purposes:

1. Construction lines and work planes in the project environment
2. Parametric extents in the family editor

Work Plane – Creates an XY plane. Each view has an associated work plane Set

Name – From existing work planes and named reference planes

Pick a Plane – Highlight and click a surface

Pick a Line – Pick a model line

Show – Makes current work plane visible

Viewer – Drawing plane parallel to work plane

Massing ("Massing & Site" tab) – Similar to "Sketch Mode"

Conceptual Mass

"Show Mass Form and Floors" (masses are hidden by default)

1. Place Mass - Predefined objects

Load Family - mass RFA (Primitives or user created RFA) or in-place

"Place on Face" (uses existing mass surface) or "Place on Work Plane"

2. In-Place Mass - **ONE** mass at a time. Mass needs a name.

Three Steps:

1. Create Profile
2. Create Form (from profile)
3. Finish, cancel or create additional (solid or void) forms

1. Profile - Draw/Model (line, rectangle, etc...)

Draw on work plane (must set ahead of time)

Draw on face

2. "Create Form" - two types:

Solid (surfaces)

Void (boolean-subtraction)

Forms created depend on profiles selected

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2. “Create Form” (cont...)

Extrusion

Closed (loop) profile = Solid

Open profile = Surface

Revolve - Closed profile + Line (axis of revolution - same work plane)

Loft - Profiles in different work planes (i.e. Level 1 + Level 2 +...)

Sweep – Requires a “path” and a “shape”

Closed profile(s) “shape” perpendicular to “path”

Can use workplanes or faces

Offered the choice of swapping “path” and “shape”

Model by Face - Builds on top of masses ("Massing & Site" or "Architecture" tabs)

Wall (by Face)

Select type (in properties panel), then face(s)

Location Line – Determines where wall is placed

“Attach Top/Base”

Roof (by Face)

Properties panel - Select type and “Picked Face Location”

Select "horizontal" face(s).

Click "Create Roof"

Floor (by Face) - Must create "mass floors" first (“massing” tab)

Levels must exist to place mass floors

1. Select mass, Click "Mass Floors"
2. Choose which levels. Not all mass floor levels need floors
3. Select mass floor(s)
4. Type of floor (property panel).
5. Click "Create Floor"

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Model by Face (cont...)

Curtain Wall System - Requires existing mass, applied by face.

Can be applied to Horizontal as well as vertical faces.

Type driven - Use loaded systems or Edit type and “duplicate” to create.
Create “curtain wall system” process identical to “curtain wall”

Steps

1. Select face(s) of a mass
2. Choose (or create) a type from properties panel.
3. Click "Create System"

Can add/edit using previously discussed curtain wall tools

Modifying Masses – Select mass, “Edit In-Place”

Create additional forms (Solid or Void)

Sub-Objects (Vertex, Edge, Face) – Select (use tab to cycle through choices)

“Form Element” panel – Contextual (depending on what’s selected)
Move - Use Move tool or "Gizmo"

X-Ray Mode - More control of "Sub-Objects"

Add Edge - Vertical
Add Profile - Horizontal
Dissolve - Removes surfaces

Mode – Edit Profile. Use draw/modify tools

Massing & External geometry

Create a mass, then use the Insert tab

File types – 3DM (Rhino), SKP, DWG or SAT

Imported geometry becomes the named mass.
Apply walls, roofs, etc...

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Family Editor - Create new RFA. Choose a template

1. Choose a family category and Save as a new a name
2. Set “Reference Planes” to define limits. “Measure” sets dimensions
Can lock values or set “EQ” about a centerline

Dimension can become a parameter. Use “Label Dimension” and “New”
Family Parameter

Parameter Data

Name

Type (affects all instances) or Instance (affects single instance)

3. Create a Form – Similar to massing tools
When edge is locked to a reference plane, it becomes parametric

Use “Model” tools to create profile(s).

“Forms” (Extrusion, etc...) to create solids

“Void Forms” to subtract from solids

Finish or Cancel

4. Assign materials (if any)

Can also import geometry (SAT, DWG, SKP).

Select “CAD Formats in “Insert” tab

Make sure to use the correct family category

Use “Family Types” in “Properties” to make additional types

Save and Load or “Load into Project” (assumes an open RVT file)

Model in Place – Building a component inside project environment

Tools identical to “Family Editor”

Edit in Place – Adjust model or extrusion shape