Family Planning—from Custom Templates to Preparing for LOD and Sustainable Design

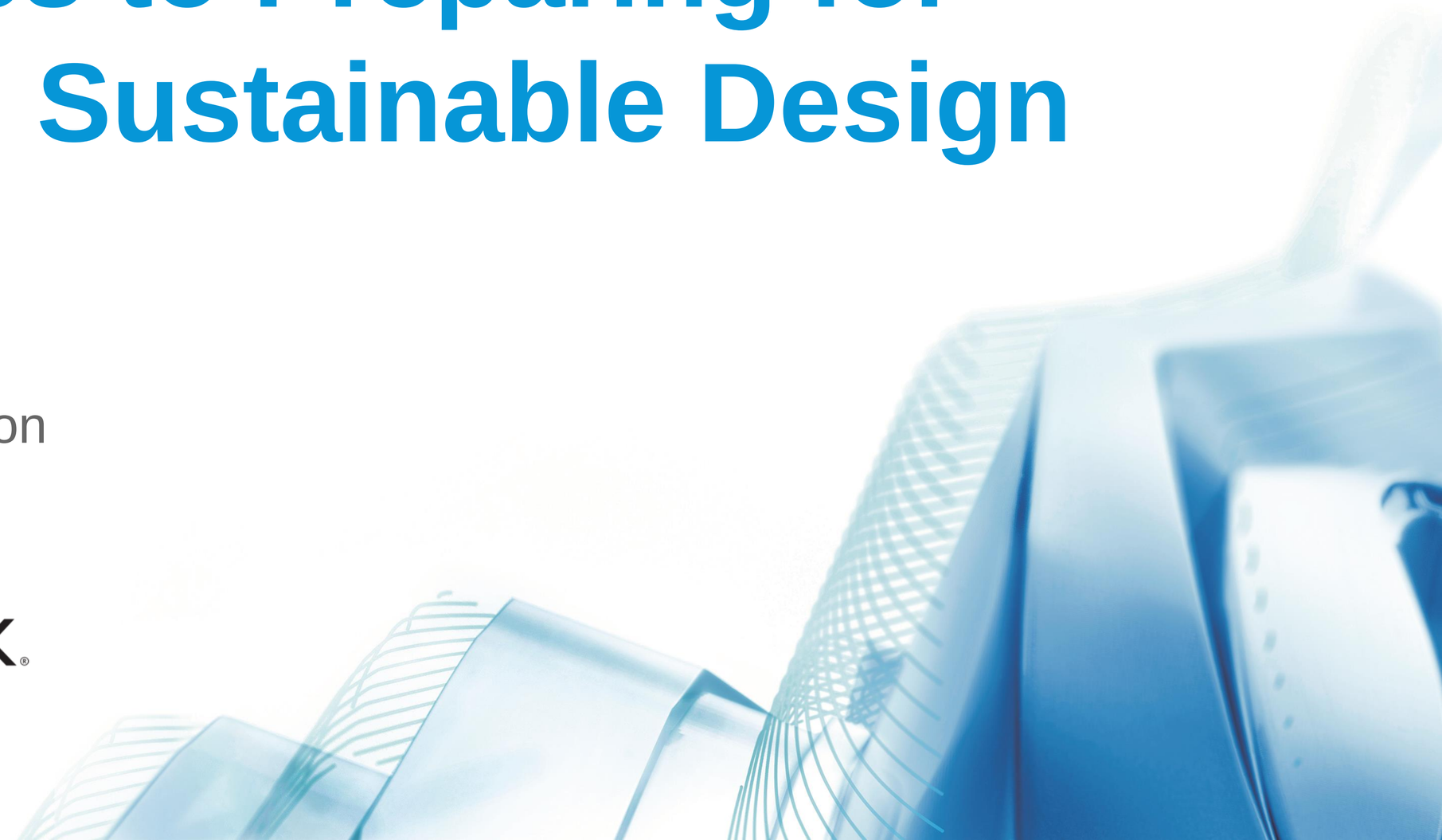
Cody Cummings

Designer

Donnia Tabor-Hanson

Revit Design Specialist

AUTODESK. UNIVERSITY



Who are we?
Why are we doing this?

- Are you a weekly family builder?
- Are you a daily family builder?
- Are you a family counselor?
- Are you a home wrecker?
- Are you Revit CSI?
- Are you a corrections officer?

Part 1 – Family Planning:

Custom Templates



Choose Wisely for a Starting Template

- Hosted
- Not hosted
- Profile
- Detail
- Annotation
- Titleblock
- Tag
- Category

Choose Wisely for a Starting Template

Name	Date modified	Type	Size

- Annotations
- Conceptual Mass
- Titleblocks
- Baluster.rft
- Baluster-Panel.rft
- Baluster-Post.rft
- Casework wall based.rft
- Casework.rft
- Column.rft
- Curtain Panel Pattern Based.rft
- Curtain Wall Panel.rft
- Data Device Hosted.rft
- Data Device.rft
- Data Panel.rft
- Detail Item line based.rft
- Detail Item.rft
- Division Profile.rft
- Door - Curtain Wall.rft
- Door.rft
- Duct Cross.rft
- Duct Elbow.rft
- Duct Tee.rft
- Duct Transition.rft
- Electrical Equipment.rft
- Electrical Fixture ceiling based.rft
- Electrical Fixture wall based.rft
- Electrical Fixture.rft
- Entourage.rft
- Fire Alarm Device Hosted.rft
- Fire Alarm Device.rft
- Furniture System.rft
- Furniture.rft
- Generic Model Adaptive.rft
- Generic Model ceiling based.rft
- Generic Model face based.rft
- Generic Model floor based.rft
- Generic Model line based.rft
- Generic Model Pattern Based.rft
- Generic Model roof based.rft
- Generic Model two level based.rft
- Generic Model wall based.rft
- Generic Model.rft
- Lighting Fixture ceiling based.rft
- Lighting Fixture wall based.rft
- Lighting Fixture.rft
- Linear Lighting Fixture ceiling based.rft
- Linear Lighting Fixture wall based.rft
- Linear Lighting Fixture.rft
- Mechanical Equipment ceiling based.rft
- Mechanical Equipment wall based.rft
- Mechanical Equipment.rft
- Parking.rft
- Planting.rft
- Plumbing Fixture wall based.rft
- Plumbing Fixture.rft
- Profile.rft
- Profile-Hosted.rft
- Profile-Mullion.rft
- Profile-Rail.rft
- Profile-Reveal.rft
- Profile-Stair Nosing.rft
- Railing Support.rft
- Railing Termination.rft
- Rebar Coupler Tag Template.rft
- Rebar Coupler Template.rft
- Rebar Shape Template.rft
- RPC Family.rft
- Site.rft
- Specialty Equipment wall based.rft
- Specialty Equipment.rft
- Spot Lighting Fixture ceiling based.rft
- Spot Lighting Fixture wall based.rft
- Spot Lighting Fixture.rft
- Structural Column.rft
- Structural Foundation.rft
- Structural Framing - Beams and Braces.rft
- Structural Framing - Complex and Trusses.rft
- Structural Stiffener Line Based.rft
- Structural Stiffener.rft
- Structural Trusses.rft
- Telephone Device Hosted.rft
- Telephone Device.rft
- Window - Curtain Wall.rft
- Window with trim.rft
- Window.rft

Choose Wisely for a Starting Template

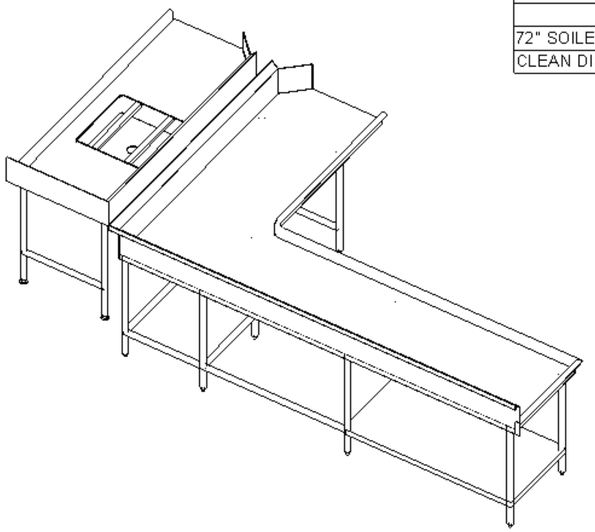
- Hosted by other objects or even levels are restrictive
- Will the desired “Host” be in the model or referenced in?
- Does the family need to be a certain **Category** such as **Lighting**?
- If the family is not on the level will using the **Offset** suffice?

Choose Wisely for a Starting Template

- Know your users
- Know your project types
- Know your **Tags** and **Schedules**
- Know your family rules

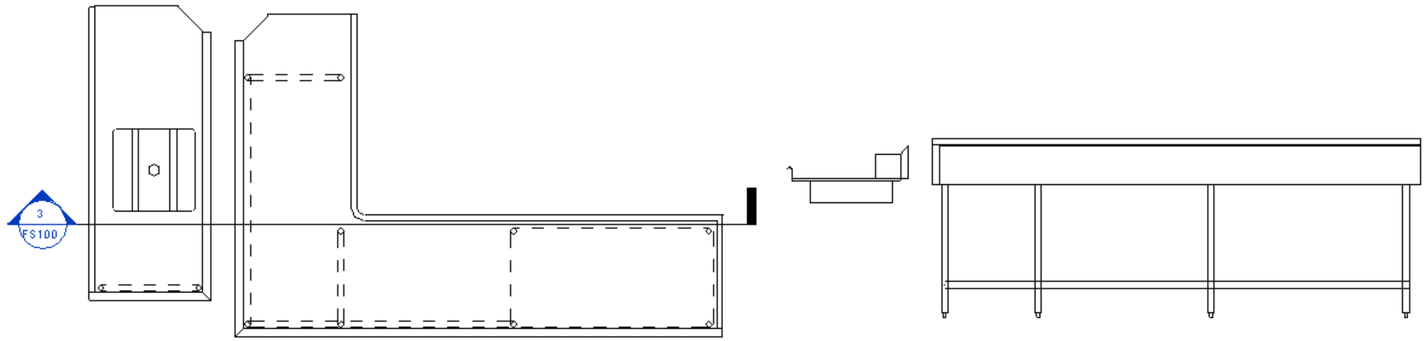
Choose Wisely for a Starting Template

An example of family rules – **Generic** vs **Plumbing** or **Specialty Equipment**



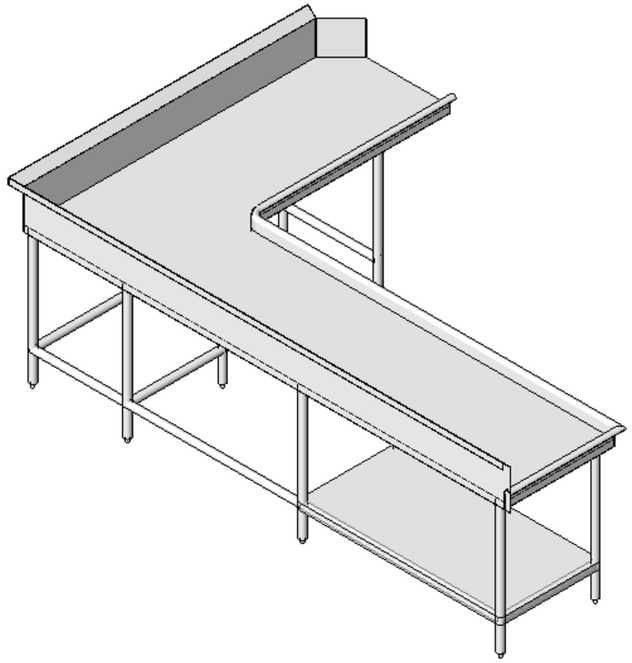
1_Working_Equipment Schedule

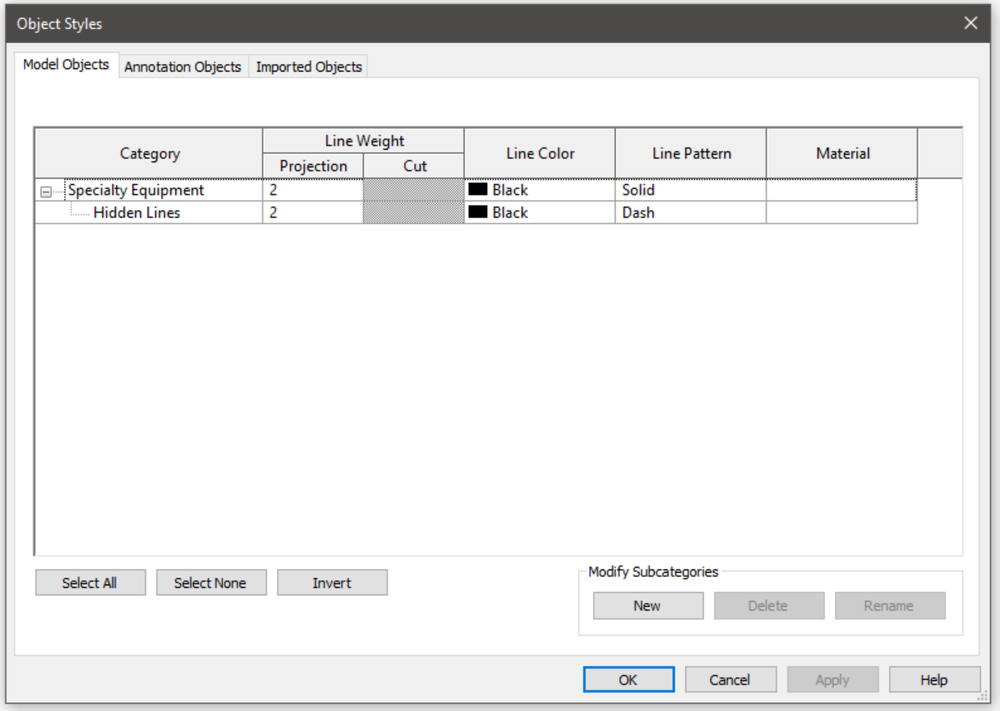
Description	Category	Model	Family	Type
72" SOILED DISHTABLE W/PRE-RINSE SINK	Generic Models	GENERIC MODEL	Dishtable_Soiled	30"D x 72"W
CLEAN DISHTABLE	Specialty Equipment	CUSTOM	Dishtable_Clean_LShape	Soiled Dishtable



Choose Wisely for a Starting Template

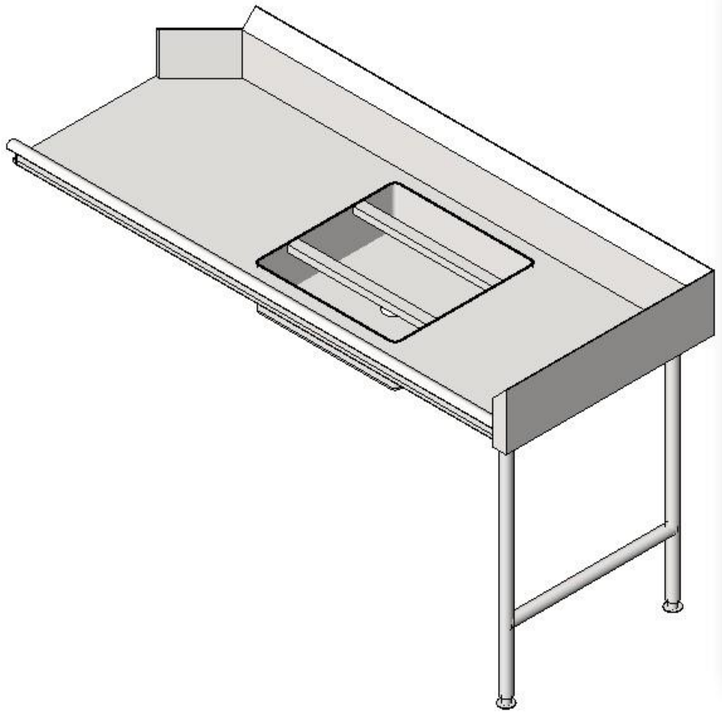
Each template has its own **Object Styles**

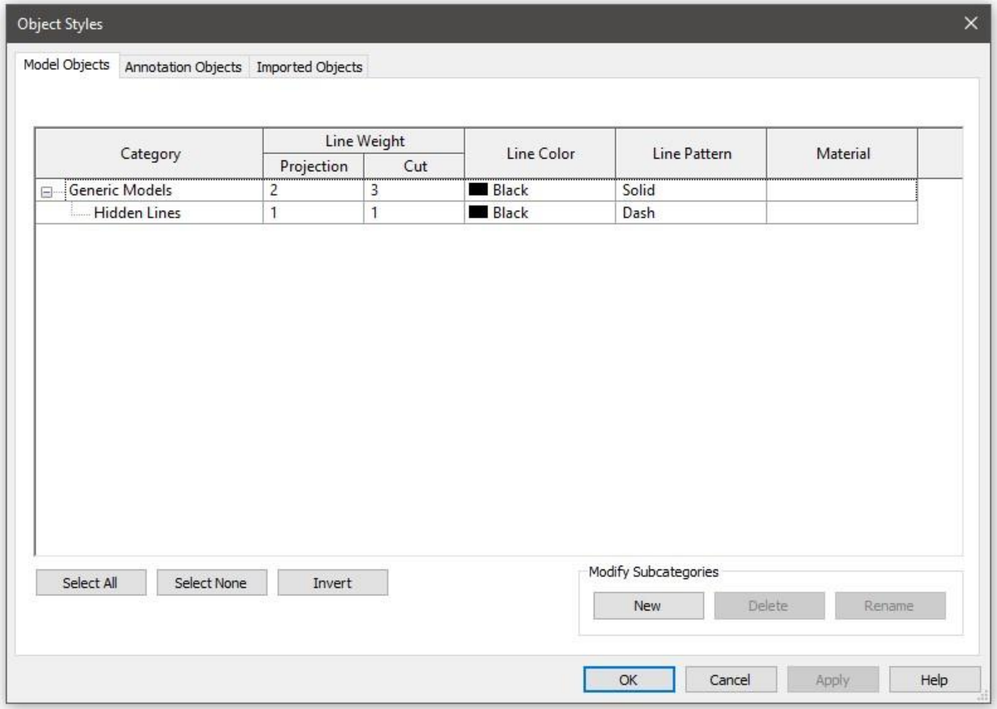




Choose Wisely for a Starting Template

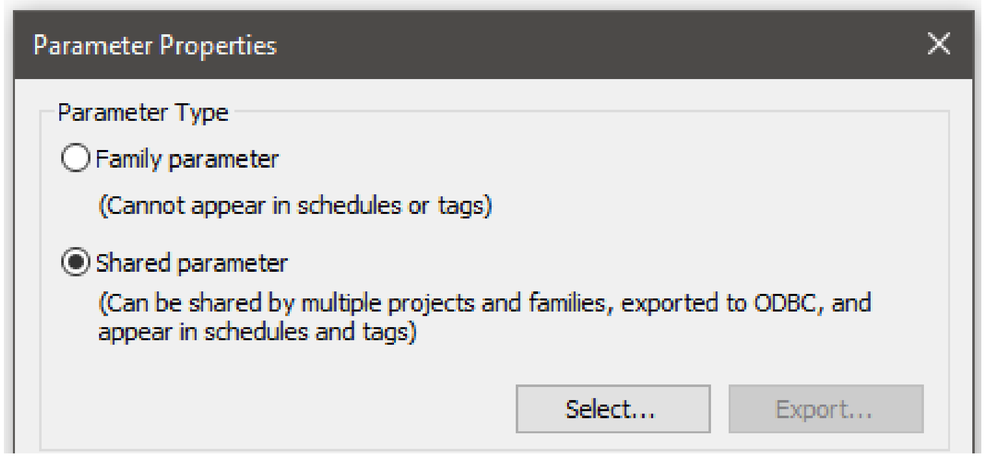
Each template has its own **Object Styles**





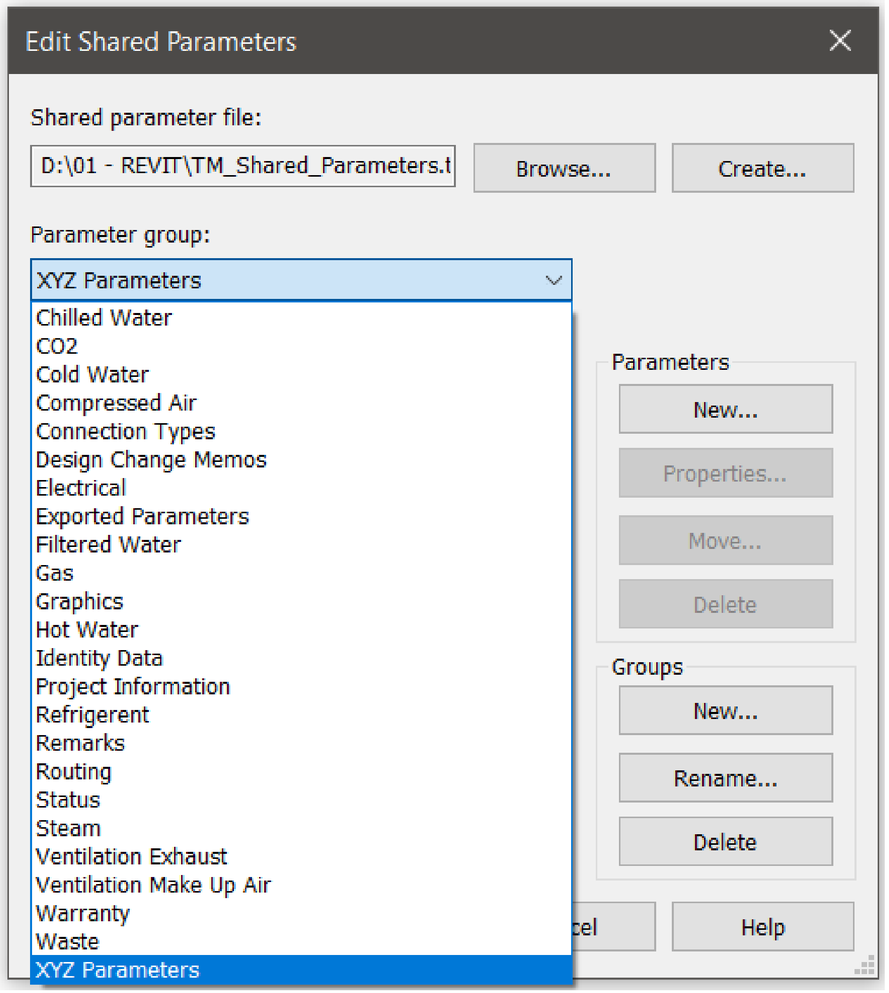
The Shared Parameter File

- Controls **Tags**, **Schedules**, **Project** parameters and some **Family** parameters
- Touch vs don’t touch
- Write protected
- BIM manager / VDC controls



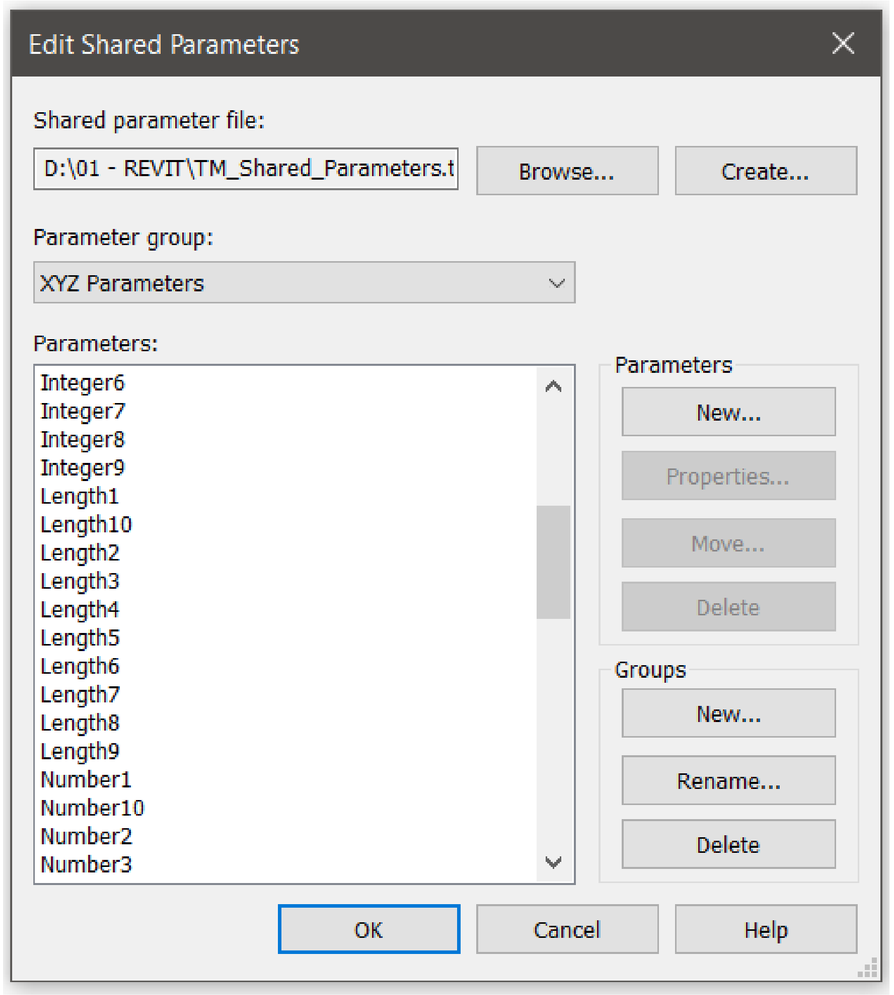
The Shared Parameter File

- Consider **XYZ parameters**
- Give flexibility
- Adds set parameters of different types
- Allows autonomy



The Shared Parameter File

- As wide a variety as can be
- Multiples of the types
- Keep a public running record where and how they are used



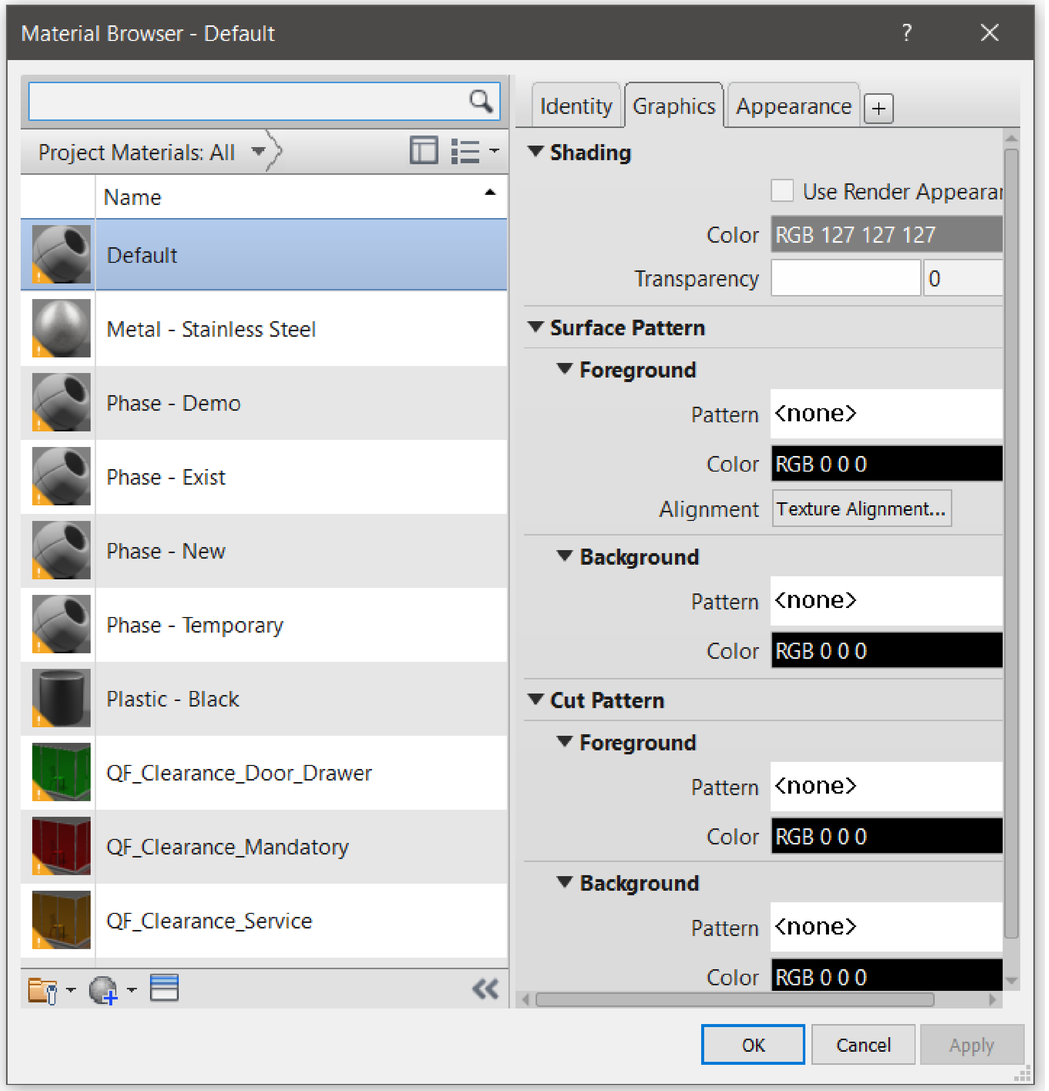
The Shared Parameter File

Notes on non-traditional shared parameters

- Text1 - second note on electrical - phasing out the notes from Specification by user that were not in a Hex Tag
- Text2 – Amps
- Text3 – KW
- Length1 – Top of shelving clear
- Length2 - used in formulas for computing shelf volume
- Volume1 – Shelf storage volume, uses Length2 in formula
- Yes_No1 - shows in Equipment Schedules but no inclination as to how/if it is used in a family
- Yes_No2 – Used to designate what families go into the Shelf volume report/schedule
- Integer1 - Used in condensers to filter them out for the CONDENSER schedule for walk ins
- Integer3 – Used in all nested electrical to have our schedules IGNORE families with Integer3=3
- Number1 - Used on the MOP Sink sheet title block for sheet #"1" of sheets #
- Number2 - Used on the MOP Sink sheet title block for sheet # of sheets # "1"

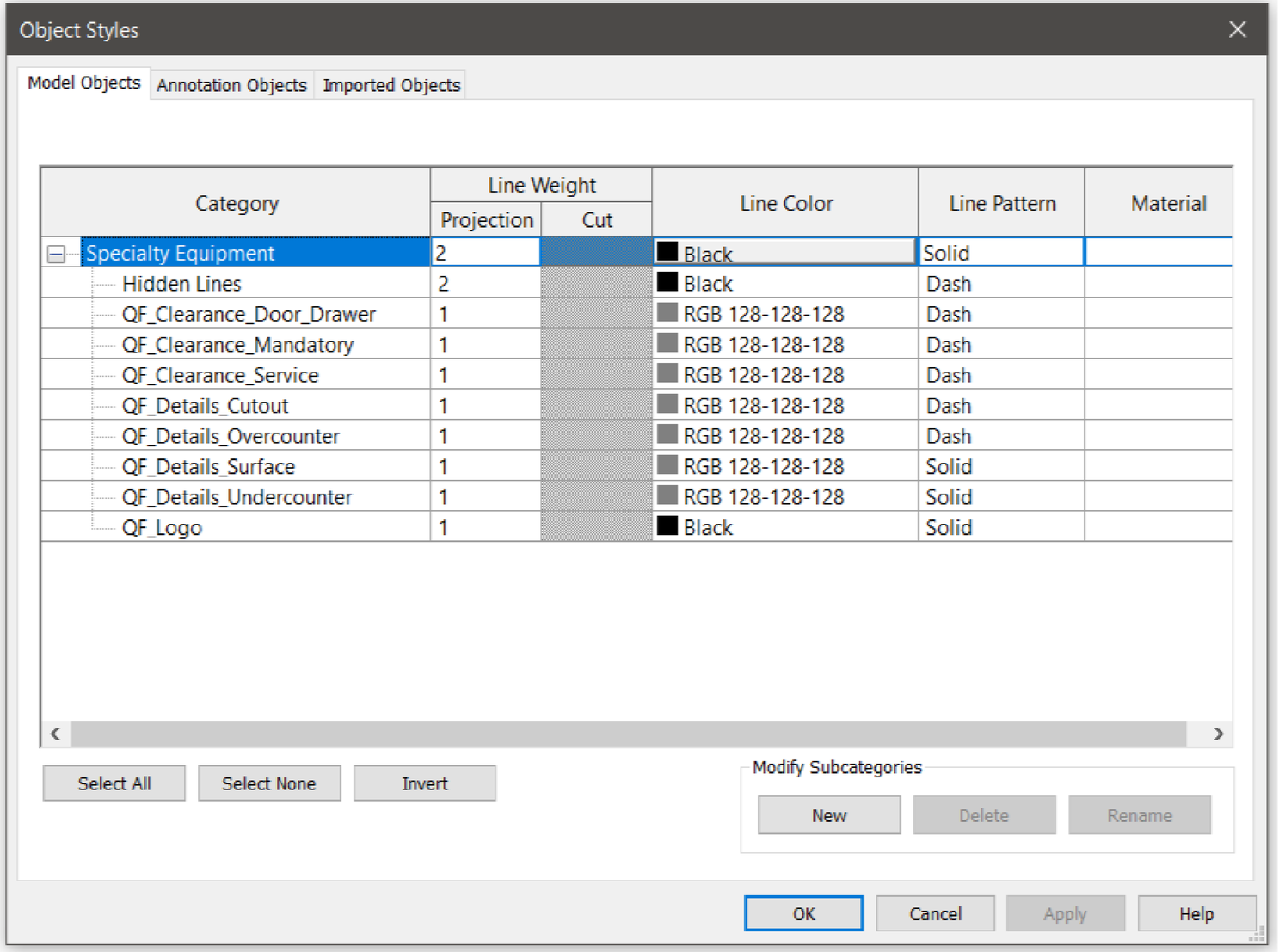
Materials

- Add most used
- Keep a record of materials – names and settings
- Easy to **Transfer Project Standards**



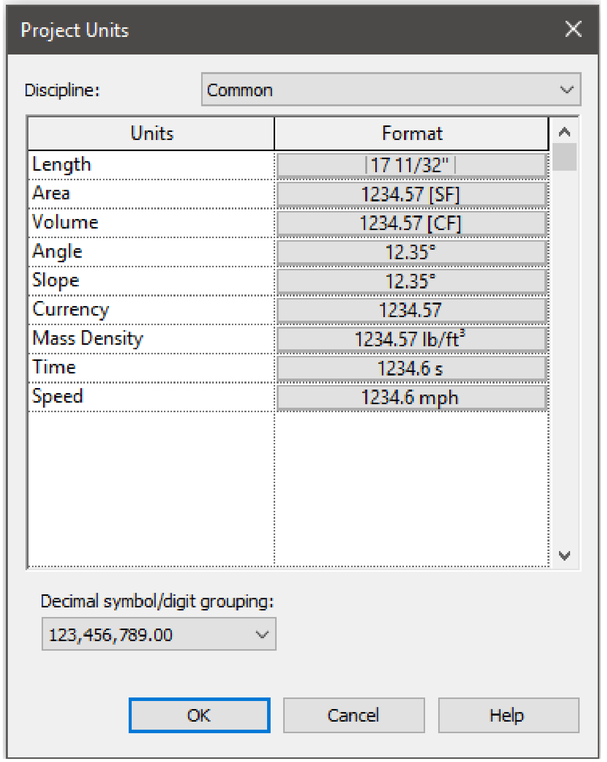
Object Styles

- Develop for consistency in **Category**, **Line Weight**, **Line Color**, **Line Pattern**



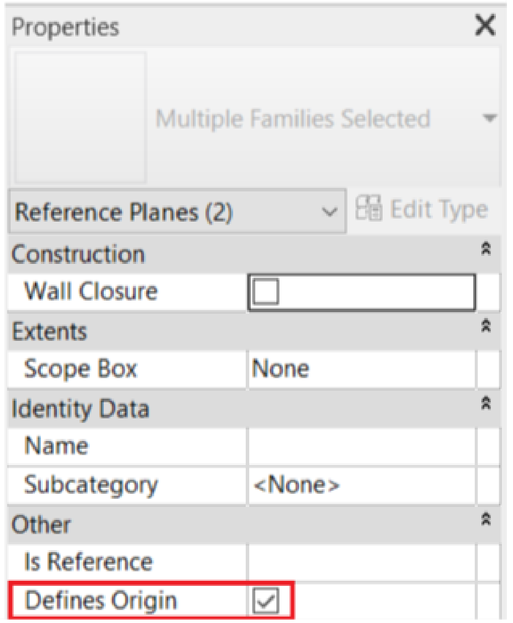
Project Units

- Set **Project Units** based on company preference
- Does not have to equal the dimensional preferences in projects



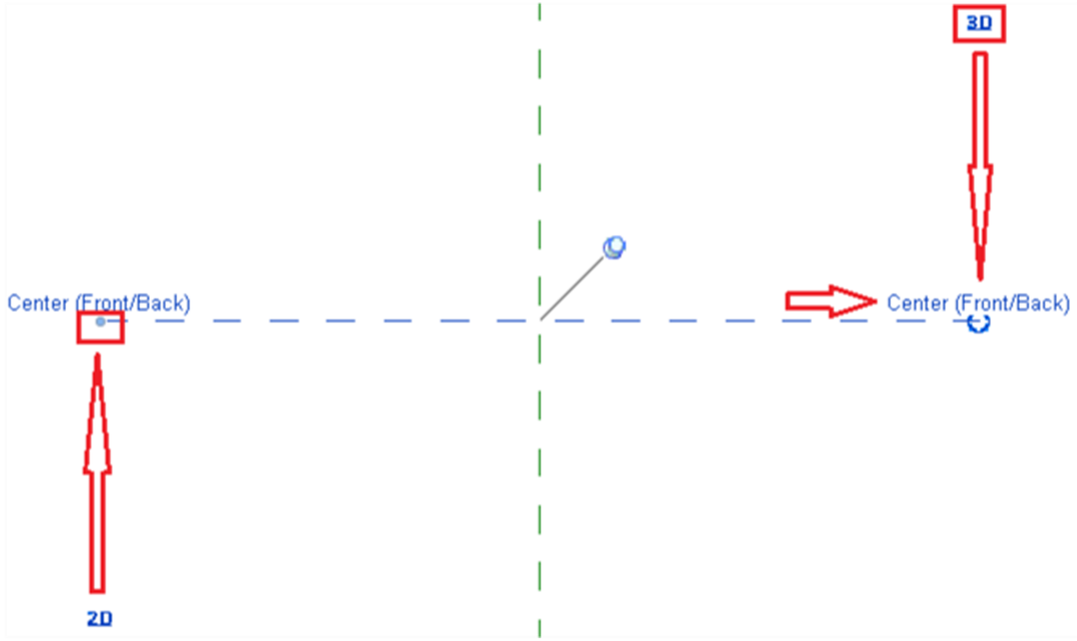
Family Framework - Reference Planes

- Defaults are **Center (Front/Back)** and **Center (Left/Right)**
- By default, these are set to **Defines Origin**



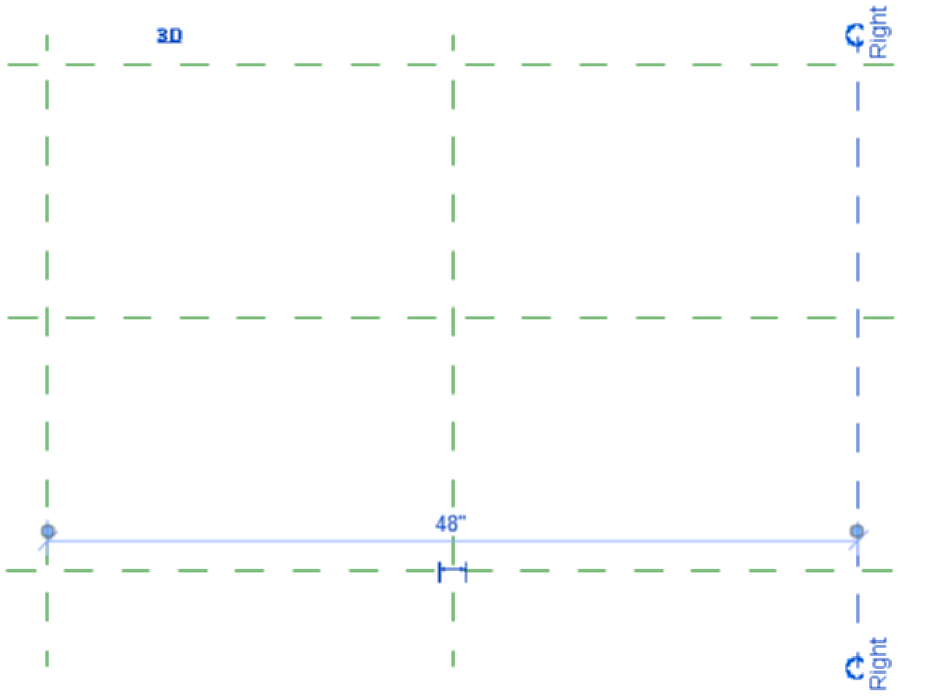
Family Framework - Reference Planes

- **2D** or **3D**
- Pulls for each
- Name and orientation

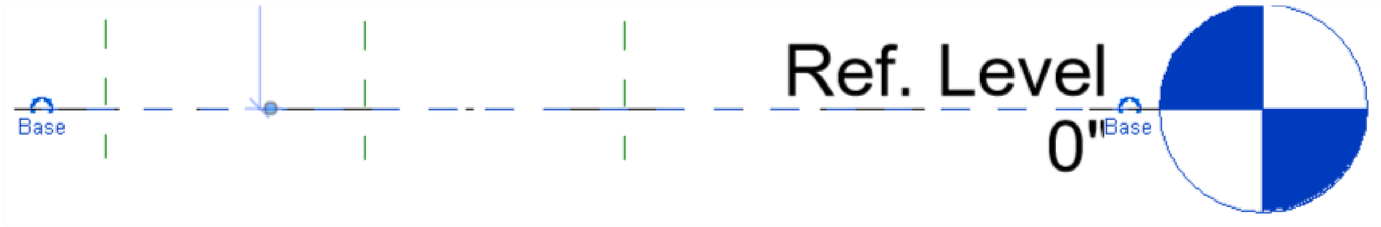


Family Framework - Reference Planes

- Draw around the center in counter clockwise rotation keeps back away from center
- Give names to typical ones: **Front**, **Back**, **Right**, **Left**



Family Framework - Reference Planes



- Name the original Reference Plane at **Ref. Level** in an elevation
- **Base** vs **Bottom**

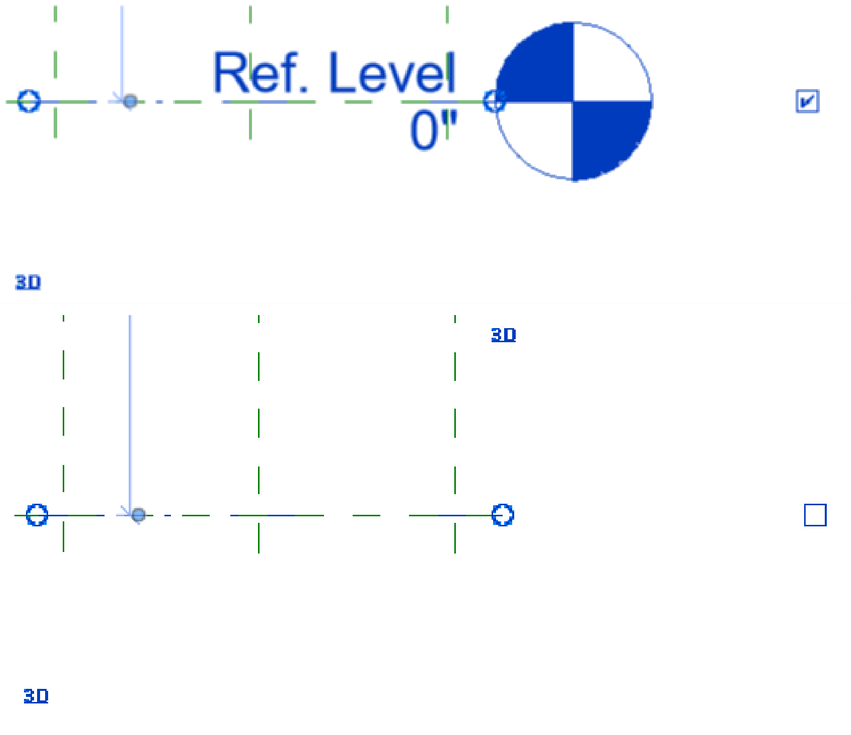
Family Framework - Reference Planes

Pull in the level line for **Ref.**

Level in both **Front/Back** and

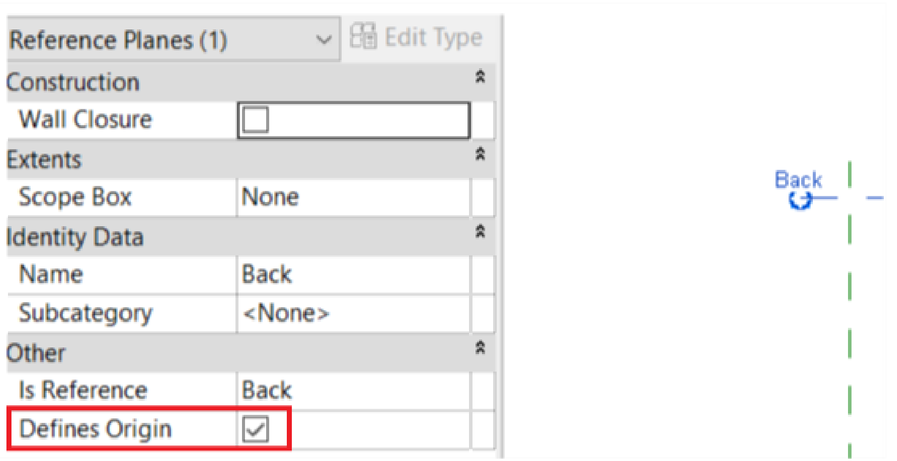
Left/Right orientation

Annotation an be turned off



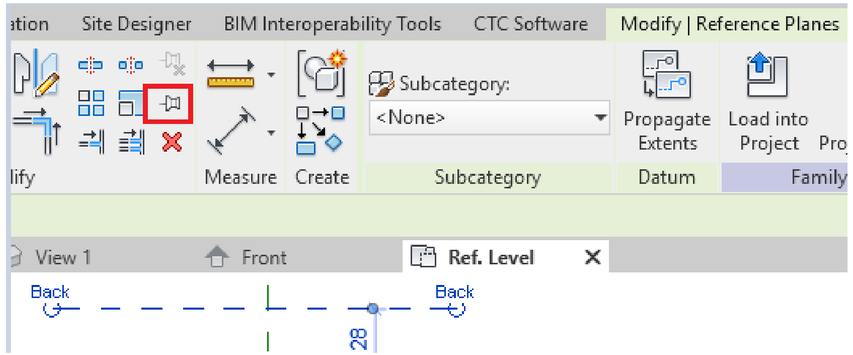
Family Framework - Reference Planes

- Determine which planes will define origin



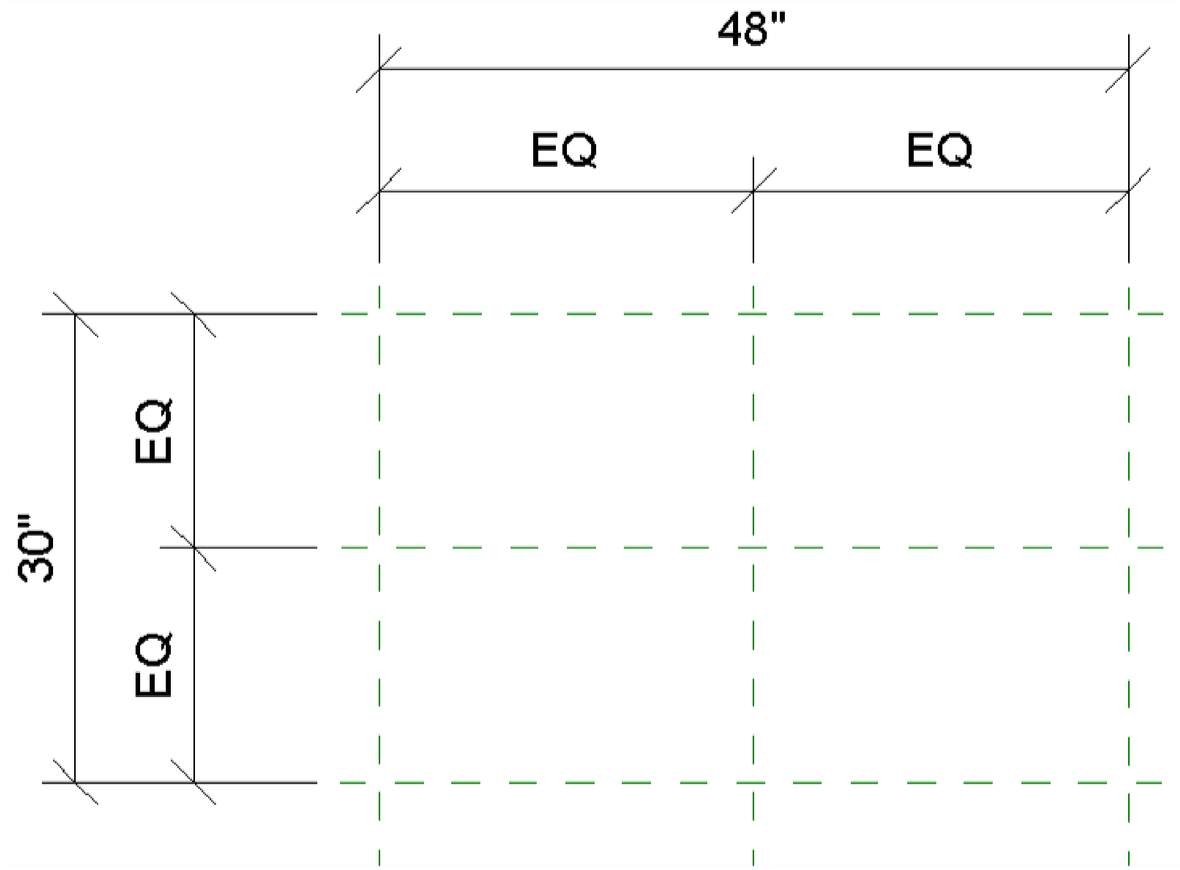
Family Framework - Reference Planes

- Pin down the planes defining the origin
- Why all this talk of reference planes?
- Why does it matter?



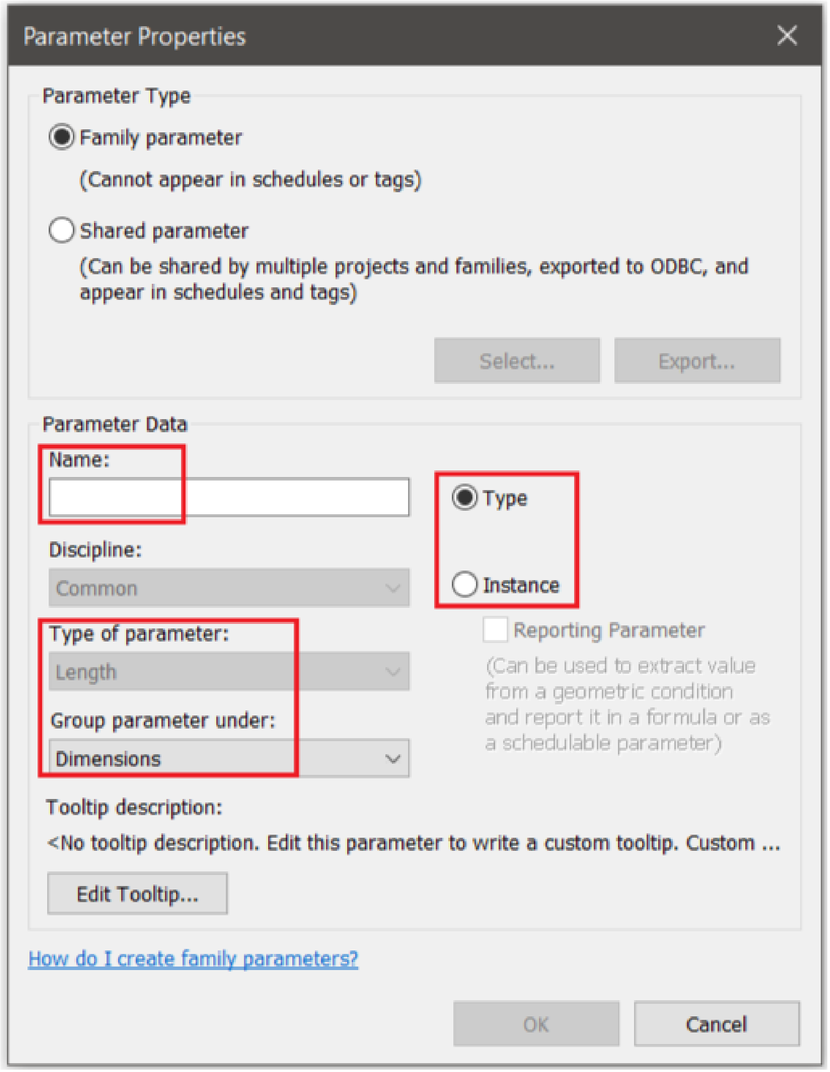
Preparing to Flex the Family

- Add **EQ** strings and basic dimensions
- Check elevations for any dimensions there
- Only dimension things like **Depth** in one view



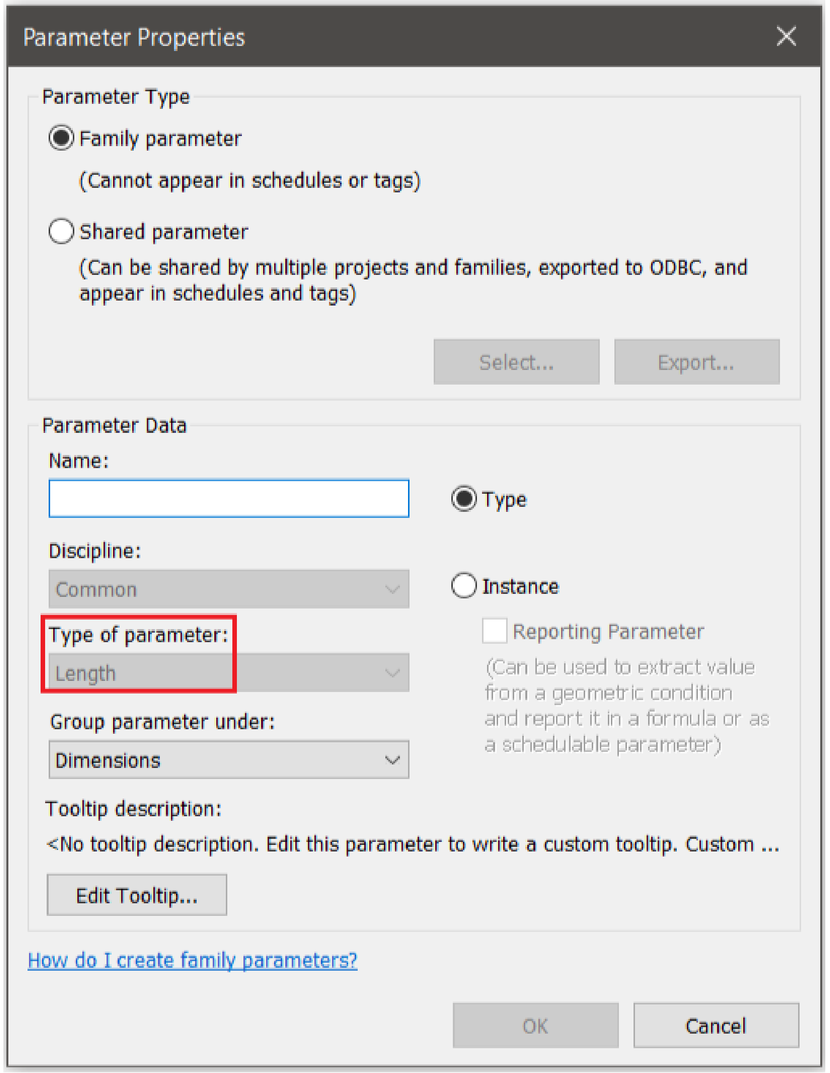
Adding Parameters

- Add a **Label** to pertinent dimension and give it a **Name:**
- Most dimensional parameters can be a **Family parameter**
- Choose **Type** or **Instance**
- Default to **Type of parameter: Length** and **Group parameter under: Dimension**

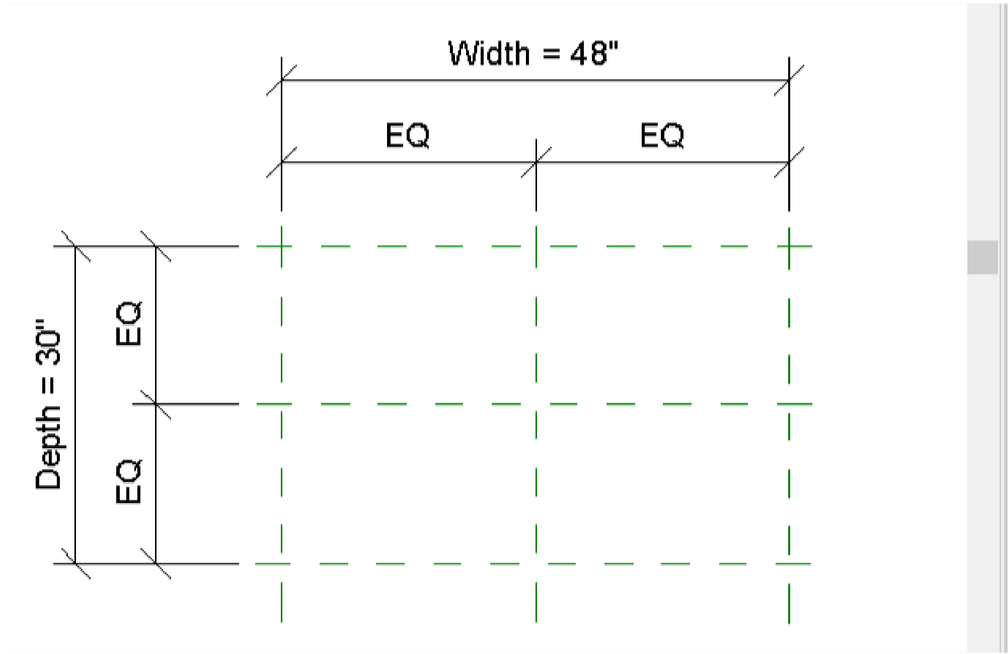


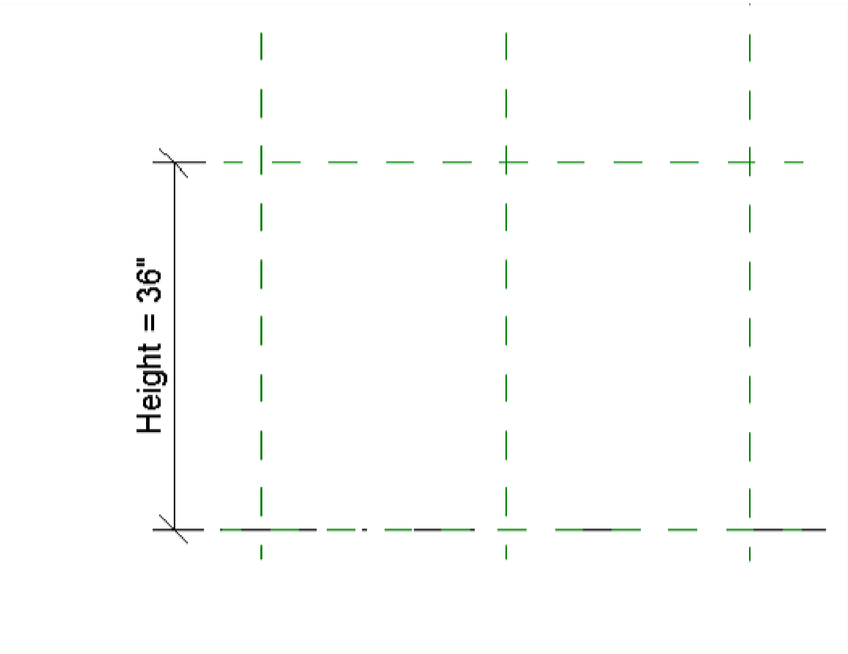
Adding Parameters

- Use the basics of **Height**, **Width**, and **Depth**
- **Length** may not be a great idea



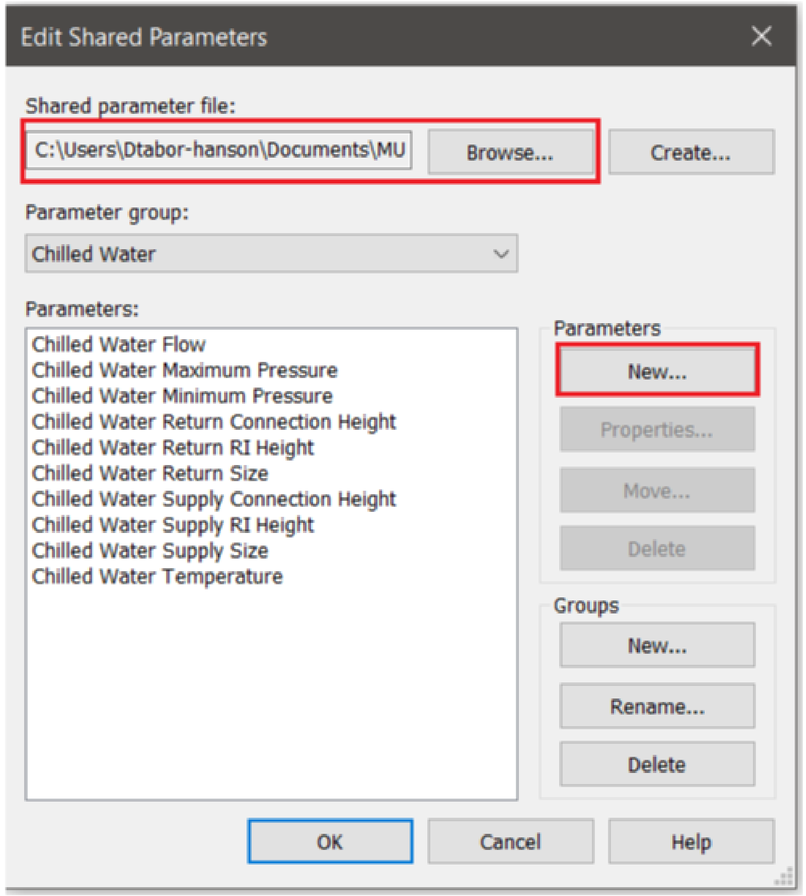
Adding Parameters





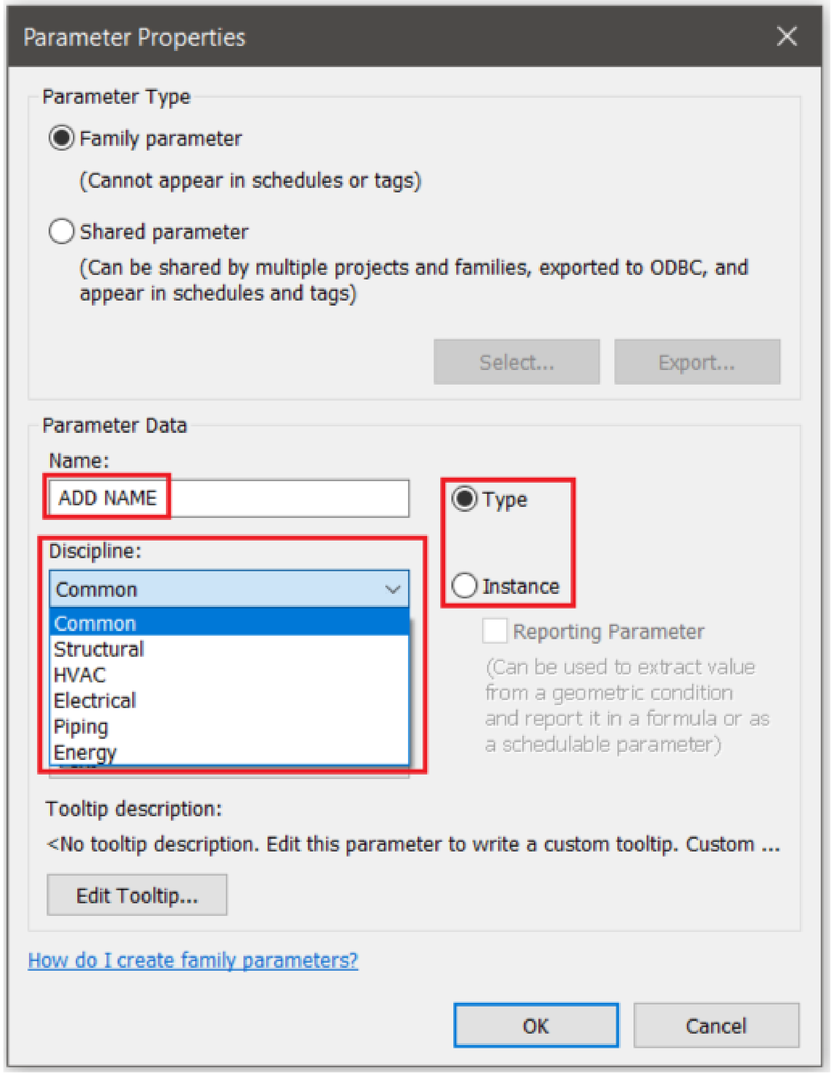
Adding Parameters

- The **Shared Parameter** file may need to be located
- Appears in a project as a **Tag** or in a **Schedule**
- Appears in a family as a **Label**



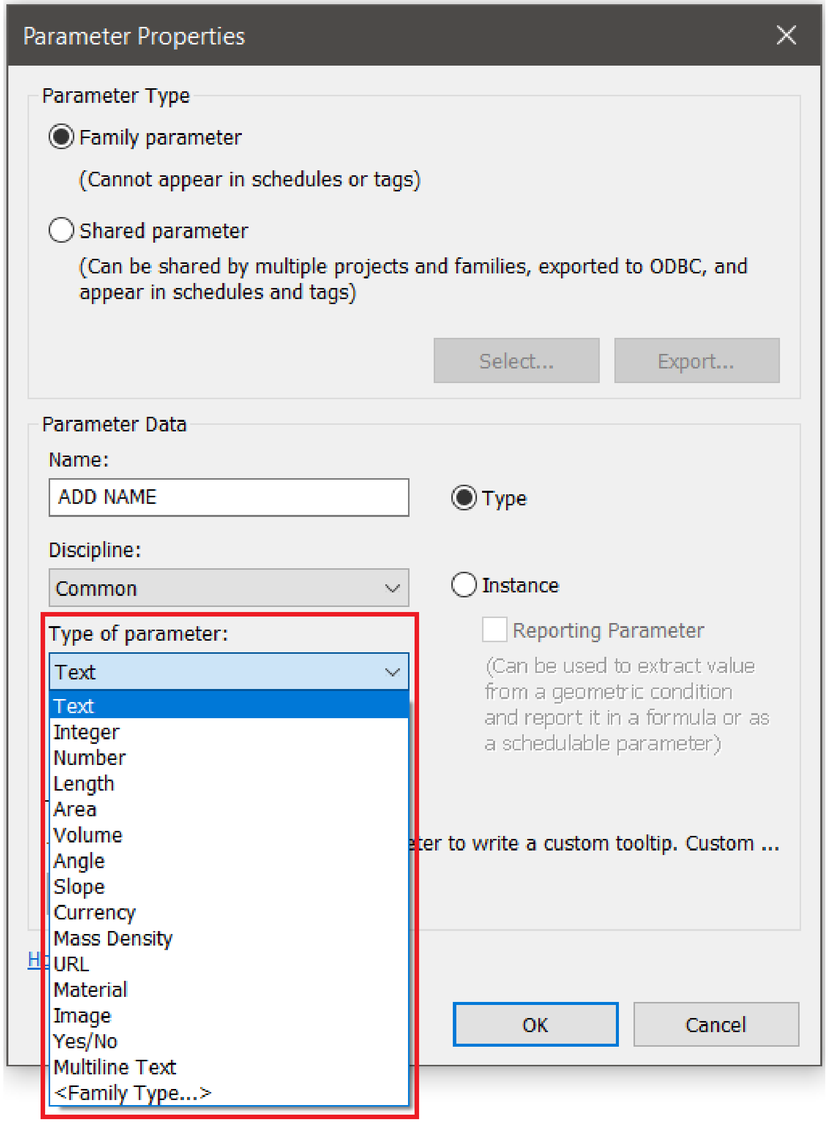
Adding Parameters

- Add any custom parameters especially those used in schedules
- Choose **Dicipline:** if required
- Select **Type** or **Instance**



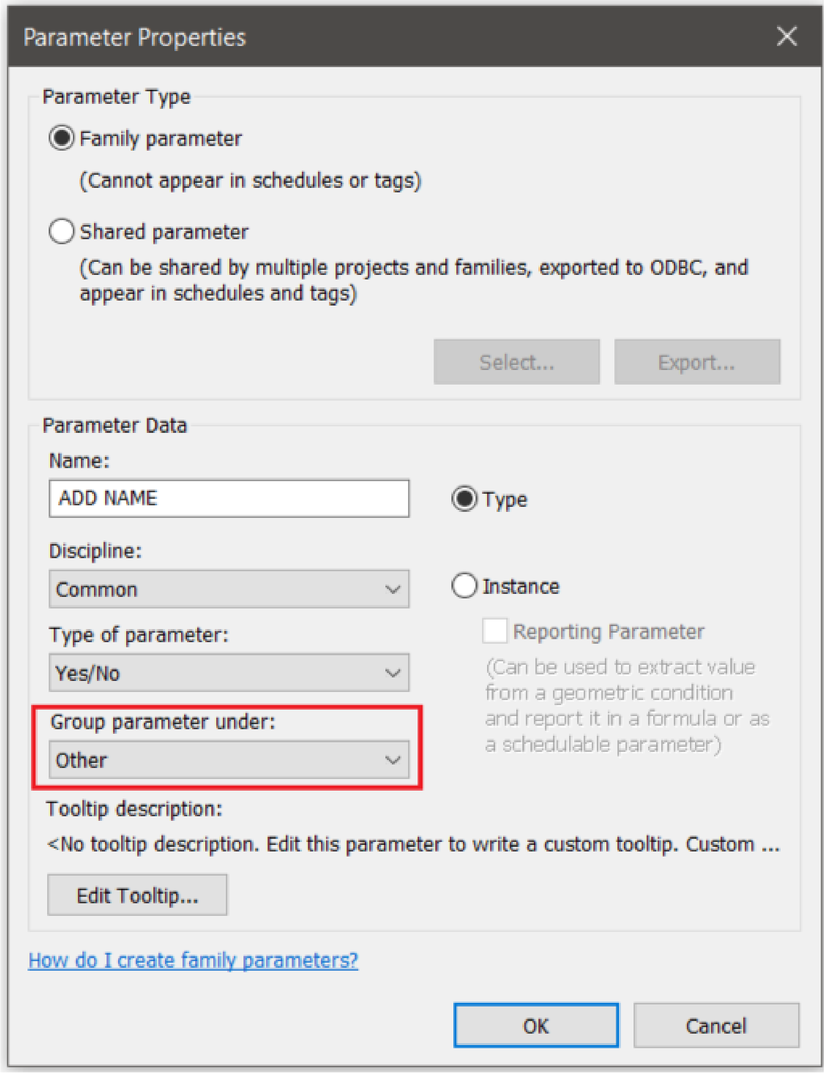
Adding Parameters

The **Type of parameter:** determines what type of information can be entered



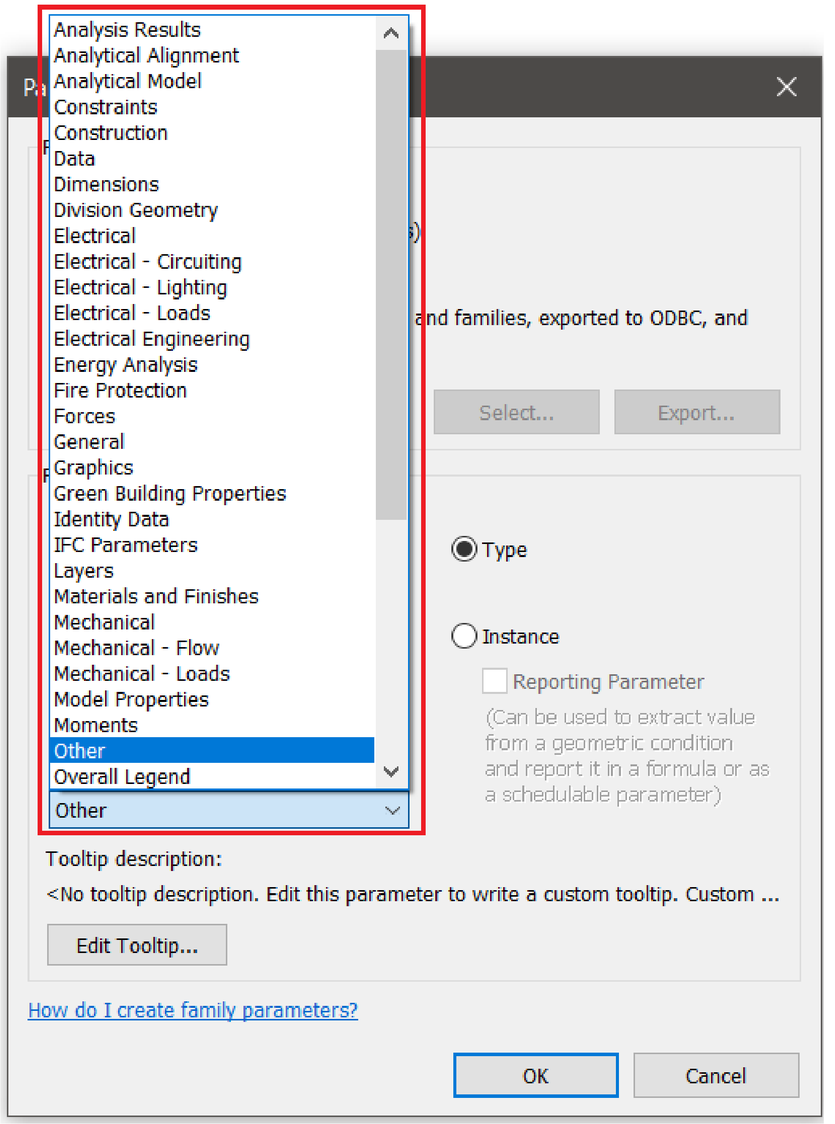
Adding Parameters

- Depending on the **Type of parameter:** some will have a default **Group parameter under:** setting



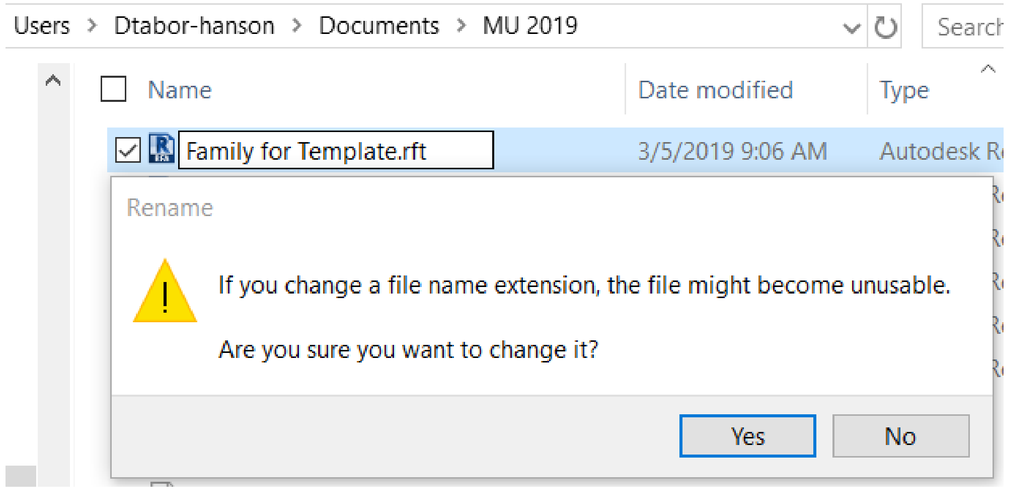
Adding Parameters

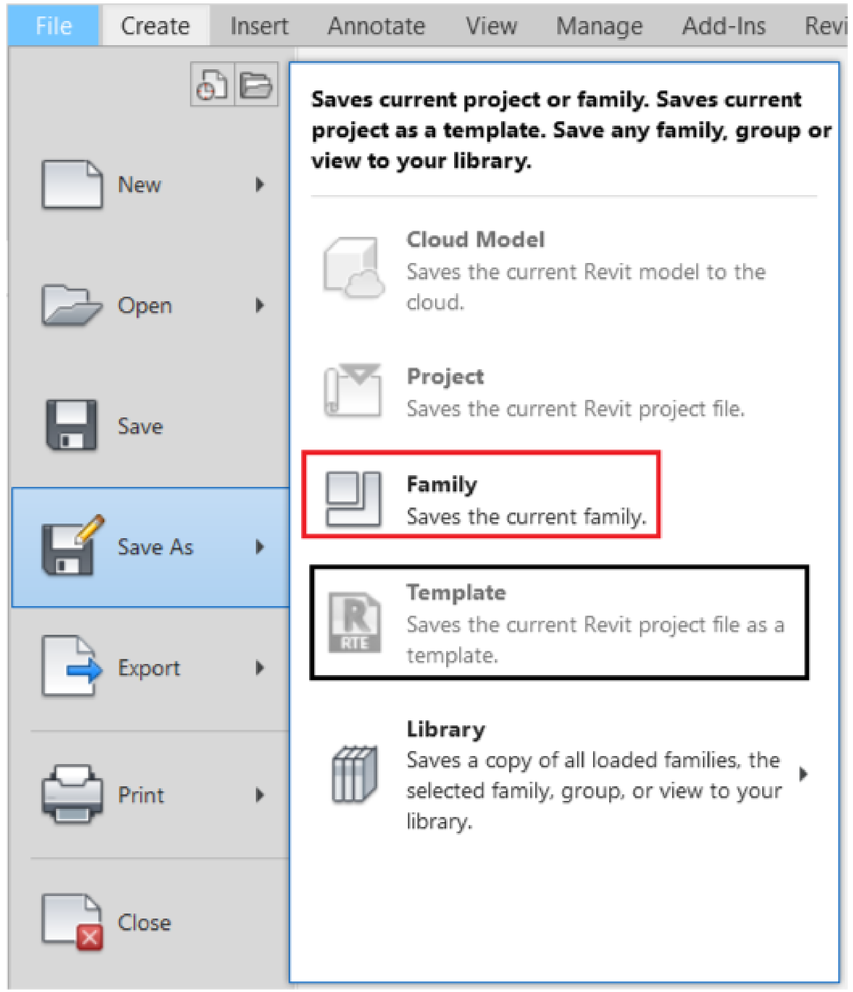
- **Group parameter under:** can be changed
- Be consistent



RFA vs RFT

- **Save As** has only one option
- To get a template you rename





RFA vs RFT

RFA:

- Can delete some dimensions and reference planes that are not used
- Has to use “Save As” to not save over original
- Use Write protection to protect files
- Have back ups in another location

RFA vs RFT

RFT:

- Locked down dimension and reference planes
- Can’t be overwritten
- Easy to start from

Choose Wisely when doing Family Planning

Part 2 – Family Planning:

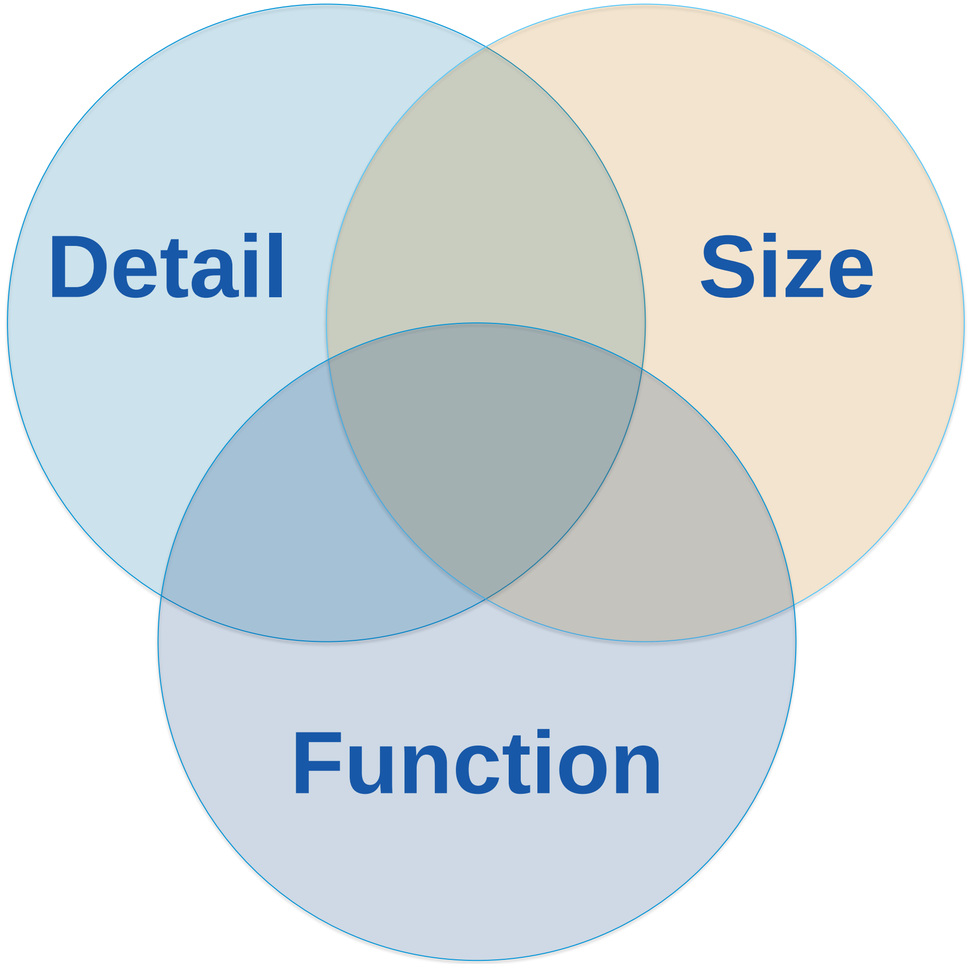
Sustainable modeling and LOD
Practicing safe modeling



What should you take away?

- Determine what your family needs are
- Sustainable modeling practices
- Develop family libraries quickly with LOD

What kind of traits does your family need?



Picking the Right Type of Family

Detail:

- Visual Hierarchy
- 10s-20ft-30% Rule
- Set a minimum level of detail

Picking the Right Type of Family

Functionality:

- Catalogs
- Flexibility for the user
- Future Modification

Picking the Right Type of Family

Size:

- Project Scope
- Number of Items
- Network Collaboration

Sustainable Modeling

- What is sustainable modeling?
- Why does it matter?
- How can I tell if I am overweight?

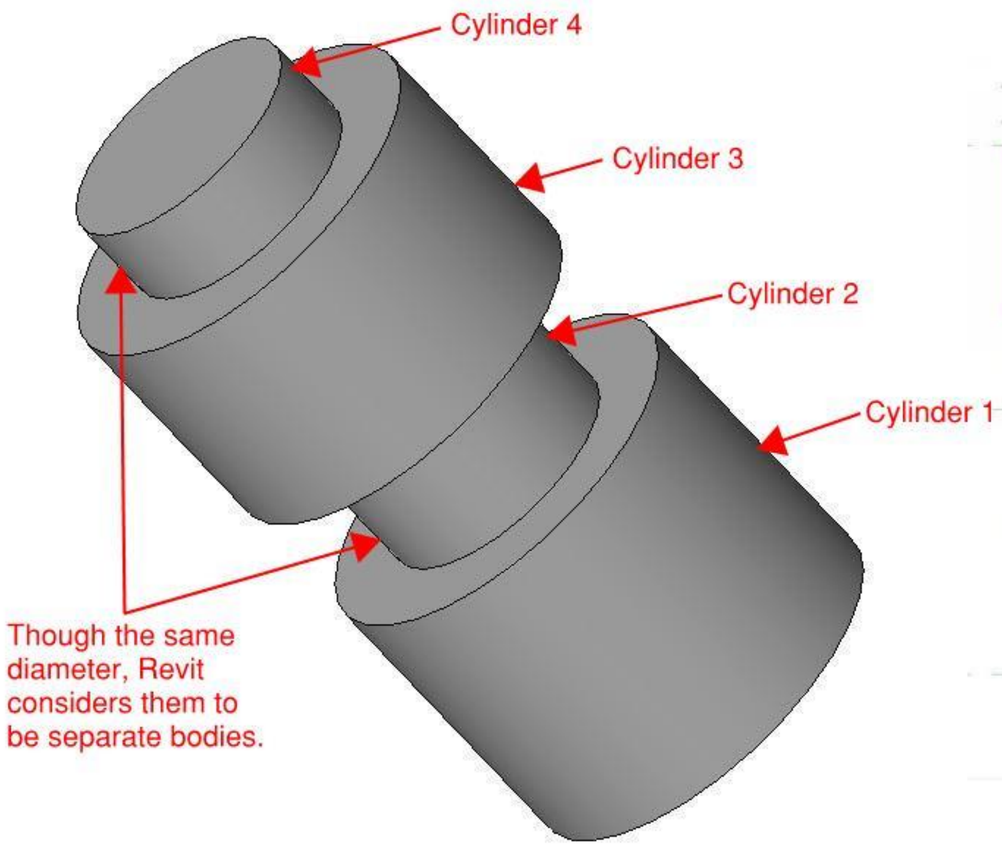
Sustainable Modeling

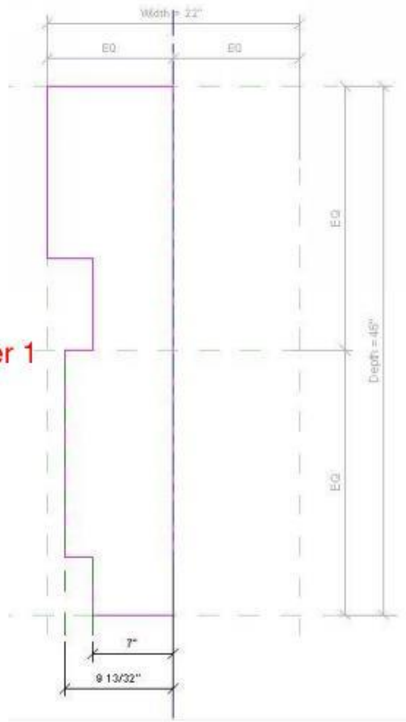
EXTRUSIONS

- BETWEEN 2-4KB
- **VOIDS** – GHOSTLY EXTRUSIONS
  (DON’T FEAR THE VOID)
- **JOIN** ONLY WHEN NECESSARY

Sustainable Modeling

Revolves







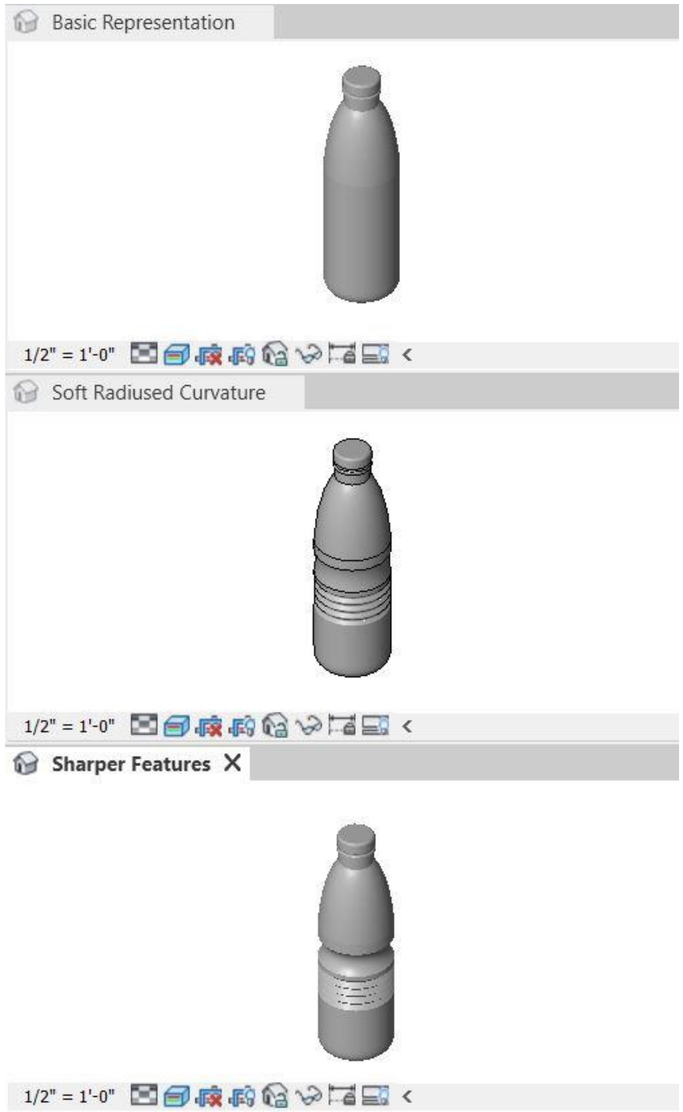
3 cylinder Extrusions.rfa
Autodesk Revit Family
300 KB



3 Cylinder Revolve.rfa
Autodesk Revit Family
304 KB

Sustainable Modeling

Revolves



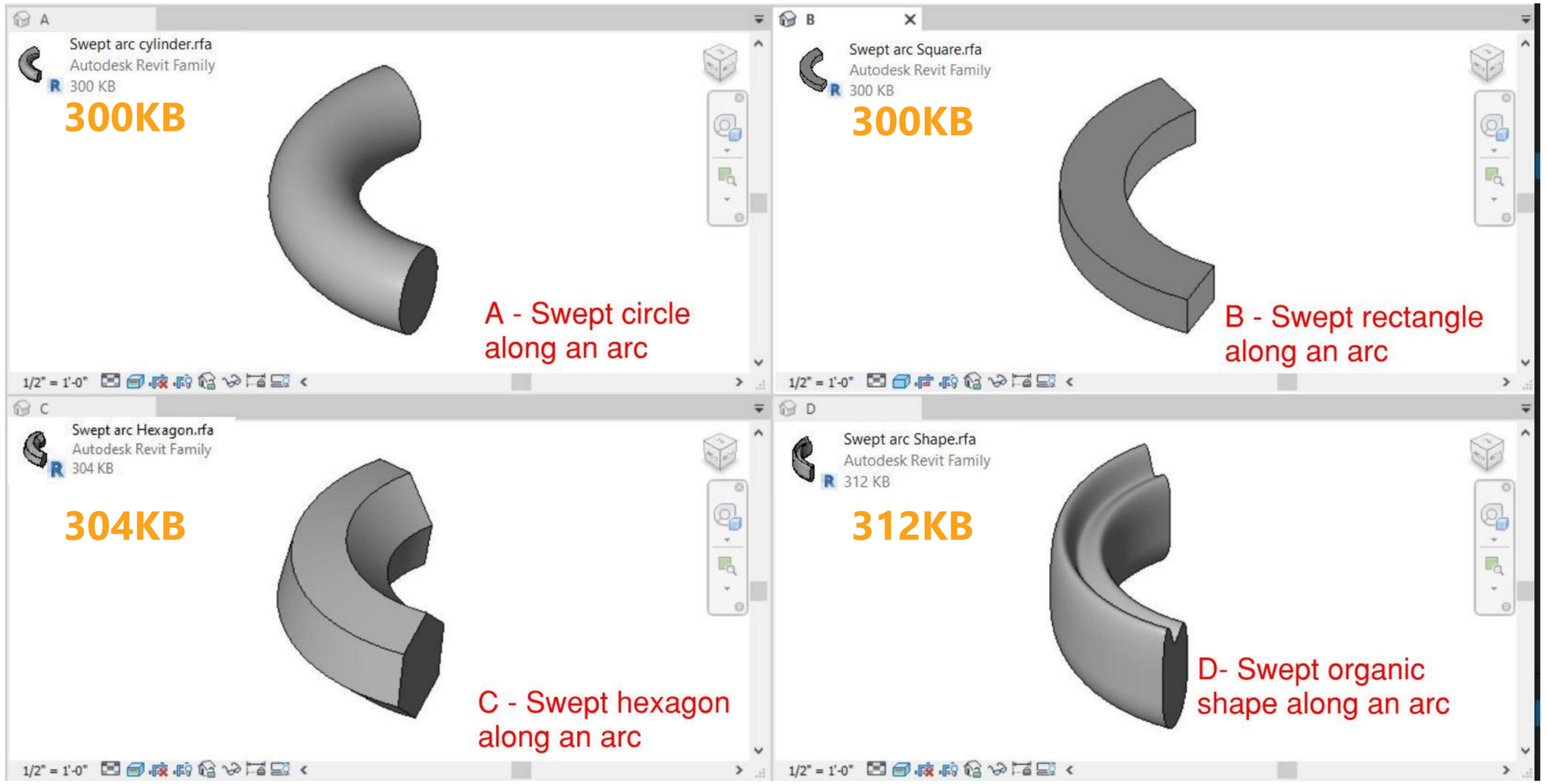






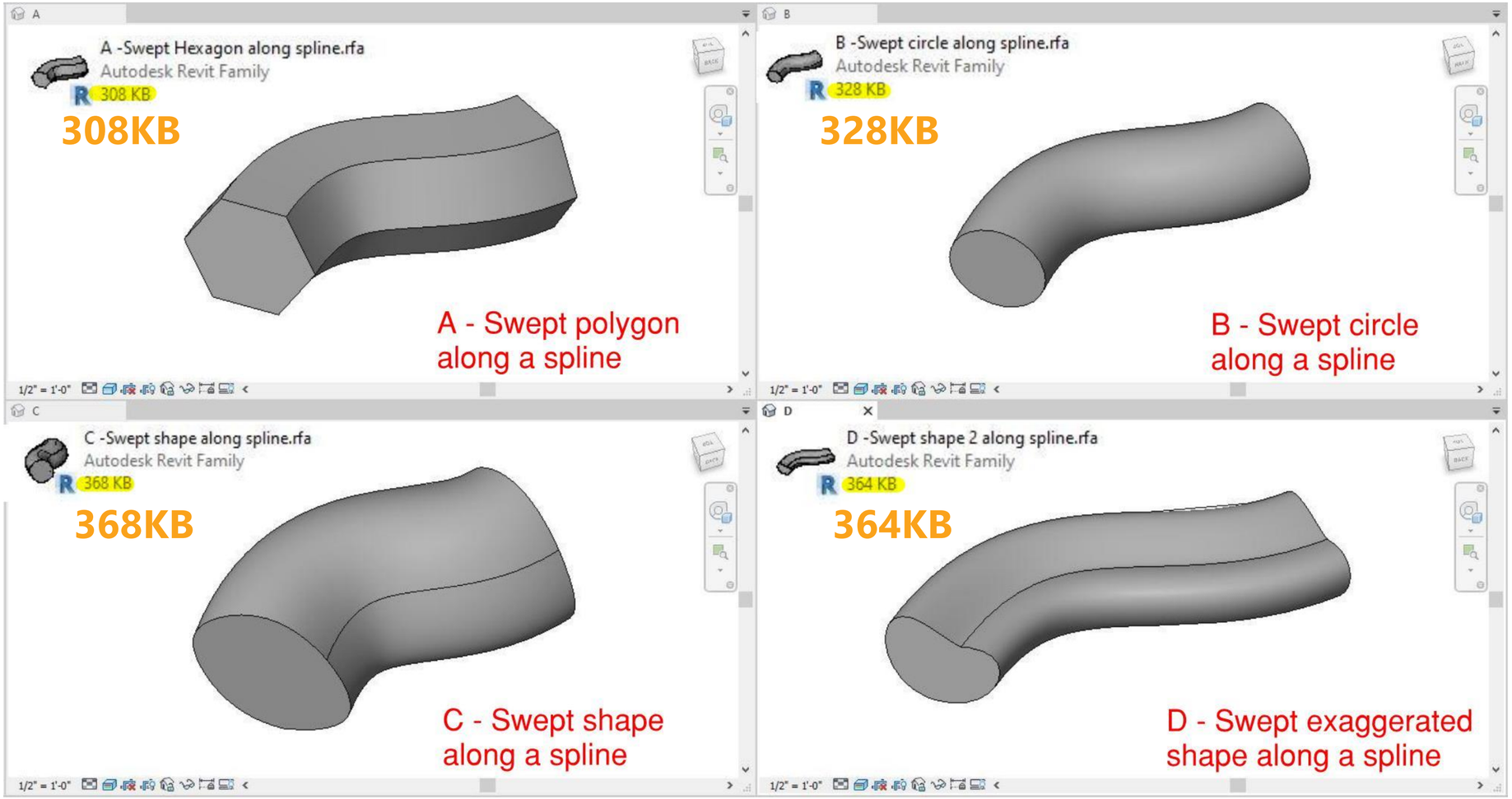
Sustainable Modeling

Sweeps – along an arc



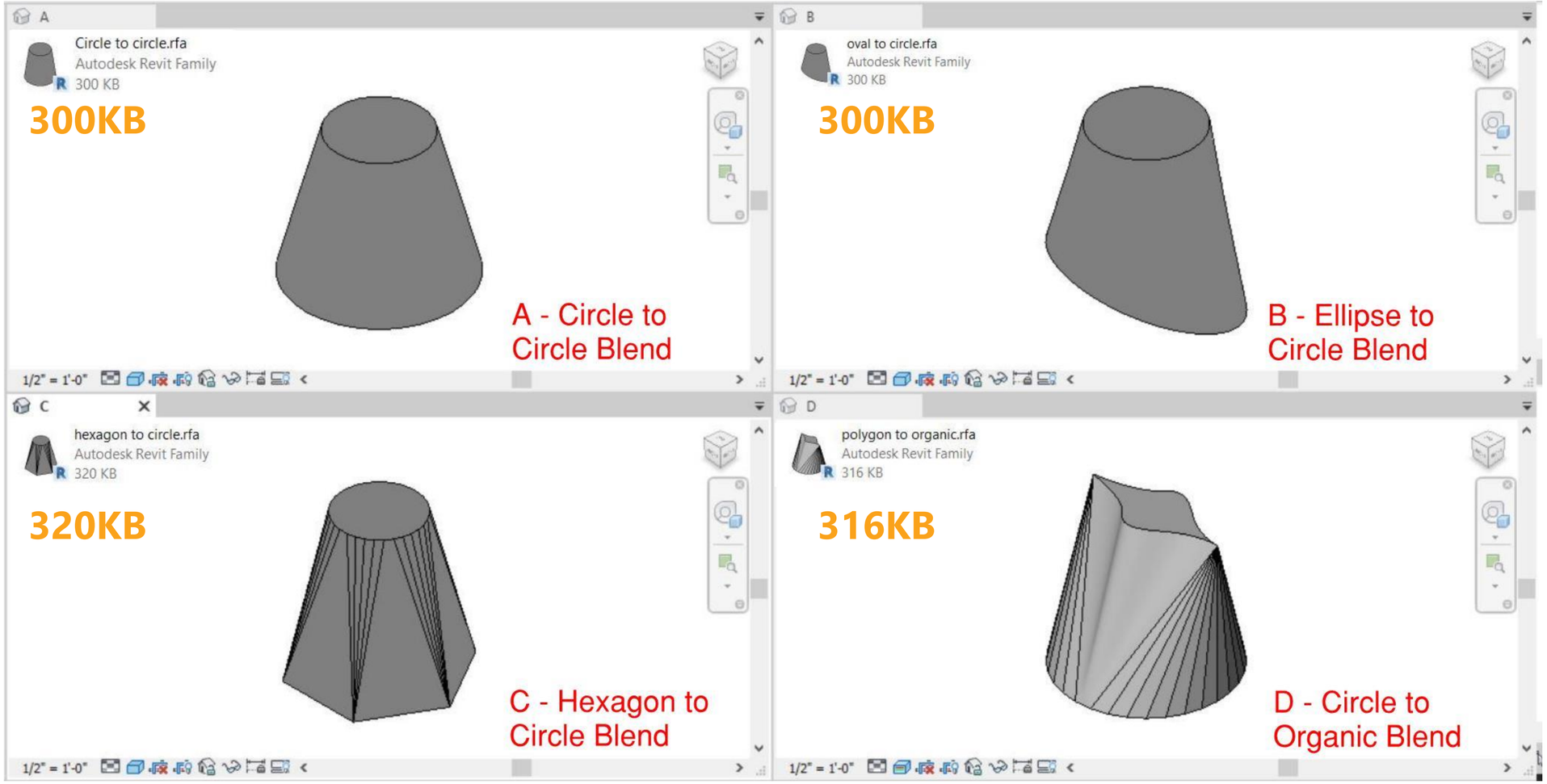
Sustainable Modeling

Sweeps – along a spline



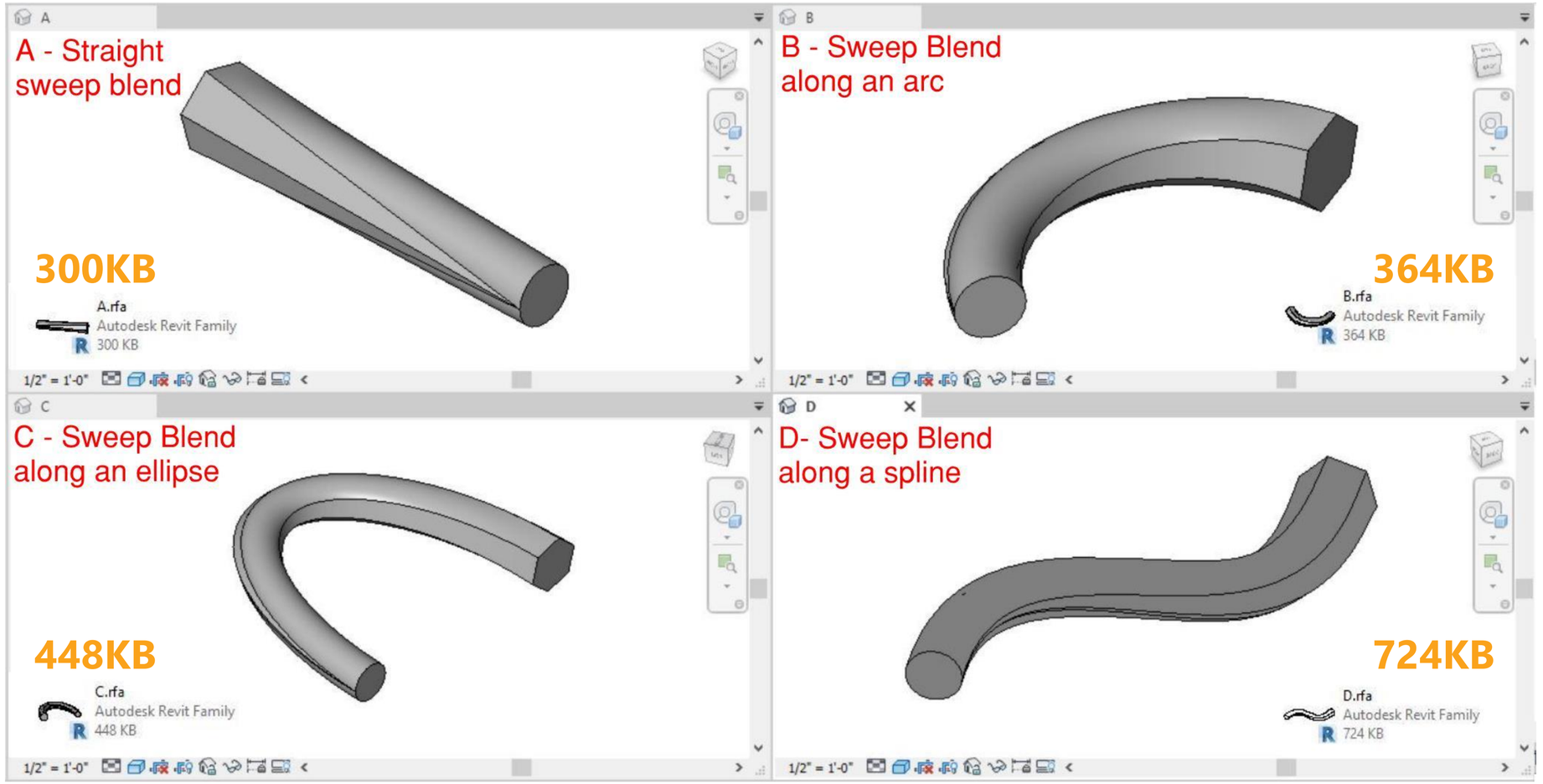
Sustainable Modeling

Blends



Sustainable Modeling

Sweep Blends



Planning for LOD

Level 200 Families

- Just the basics
- From catalog to equipment library
- Rapid ideation

Planning for LOD

Level 300 Families

- Edit type instance and resave as family
- Add CAD overlays
- Create and define reference planes
- Add/Remove Parameters
- Build in representative geometry

Planning for LOD

Level 350 Families

- Add final details
- Add specified analytical data

Thank You

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