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Fabrication Parts: Getting Past Service Setup and Beyond

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Learning Objectives

- Learn how different routing methods in Revit use the service differently.
- Learn how to quickly create a service from scratch and begin routing.
- Learn how customizing parts can speed product selection and routing.
- Learn simple button mapping to optimize design to fabrication conversions.

Description

When switching to Revit MEP Fabrication Parts, one of the first hurdles you need to cross is understanding how to get services and service templates configured in Fabrication software. Knowing how to navigate the services in Fabrication is key. You'll be surprised by what little customization is required to get a basic service to function correctly in Revit software. Many of the settings that Fabrication CADmep software and Fabrication ESTmep software require are not necessarily required when using these services in Revit. We'll cover how to deal with issues of connectivity and routing while in Revit and what changes to the database will improve routing and product selection. At the end of the class, you'll be able to take full advantage of the design-to-fabrication feature in Revit to convert engineers' design models and reduce coordination time needed to fabricate.

Speaker

Ralph Schoch is the Software, Technology, and Internal Support Manager in the Virtual Design and Construction (VDC) department at Victaulic, a leading manufacturer of mechanical pipe-joining and fire protection systems. For 23 years he has been devoted to 3D piping system layout and design for global projects. His interest in 3D modeling software led him to begin developing content for Revit in 2009. Ralph develops Revit families and add-in applications that allow engineers and contractors to design piping systems within Revit using Victaulic products. These families and tools have been used around the world from engineering to construction with full fabrication from the Revit model. In addition to Revit, Ralph has experience in Autodesk Fabrication, Navisworks, Inventor, Solidworks, and Bentley Autoplant. He is a board member for the Lehigh Valley BIM Professionals Group and is a member of Autodesk Developers Network and Professional Member of AUGI. He also enjoys speaking at conference events for Autodesk University, BILT, and various other industry events.

What are Fabrication Parts?

The technology that is now MEP Fabrication Parts in Revit has its origins in the Autodesk Fabrication software. Fabrication CADmep is an AutoCAD arx based software developed in the late 1980's by MAP out of Europe. It uses the same database thru its suite of products from estimation to modelling to fabrication. (ESTmep, CADmep, FABmep, & CAMduct).

There are three basic elements to fabrication.

- Configuration/Database – contains connector, specification, & pricing information
- ITM files – Based off specific patterns developed by Autodesk (One pattern for all elbows, one pattern for all valves)
- Services – Define what products are placed when routing a specific system based on pipe size and material.

Fabrication Parts - Setup

To be able to route with fabrication parts you need to have access to an Autodesk Fabrication configuration. During the installation of Revit two default configurations are loaded. For basic testing these configurations will suffice.
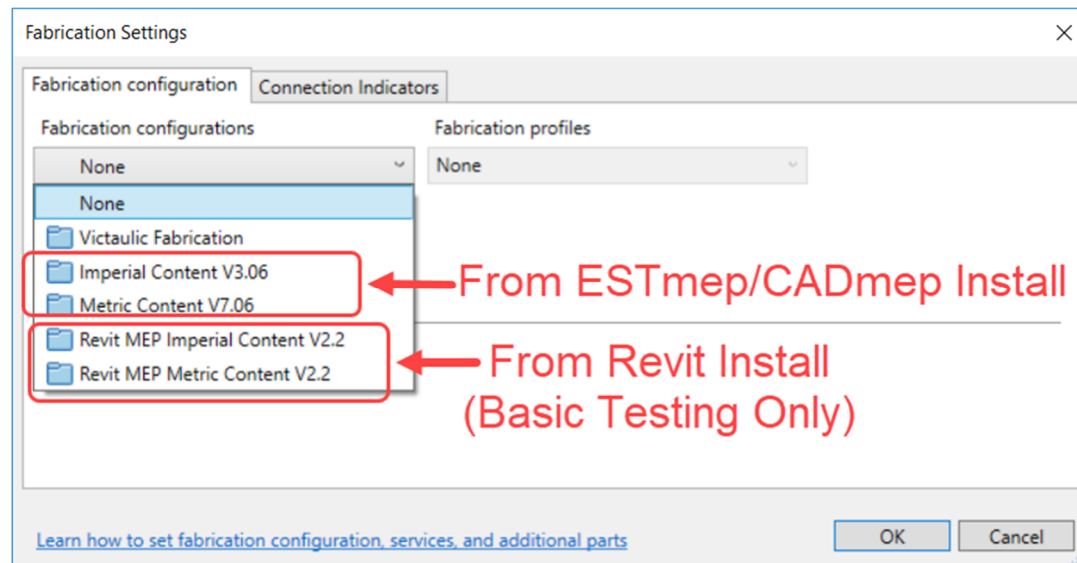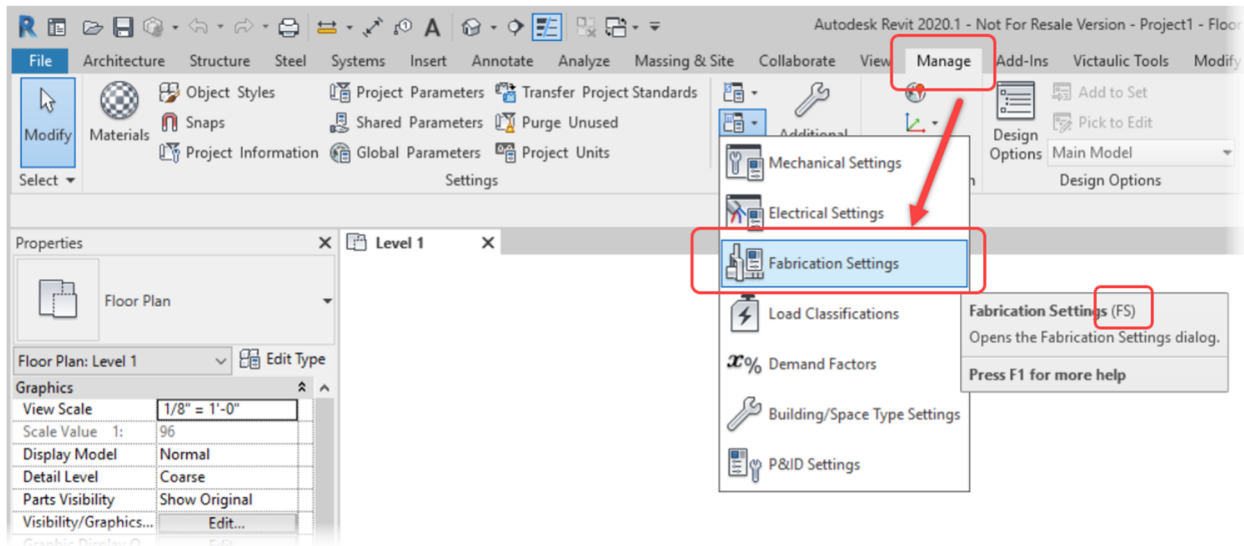
Beyond that you will want to download the ESTmep or CADmep software to get access to a large library of products and services. I like using the ESTmep configuration as they have sample pricing data loaded.

To download the ESTmep software you can go to the link below.
https://www.autodesk.com/products/fabrication-products/free-trial

Importing and Exporting Modeled Fabrication Parts

To import or export MEP Fabrication Parts routings you will need to download the Revit Extension for Fabrication. This can be found on the Autodesk Desktop Application.

https://knowledge.autodesk.com/search-result/caas/sfdcarticles/sfdcarticles/About-Autodesk-desktop-app.html
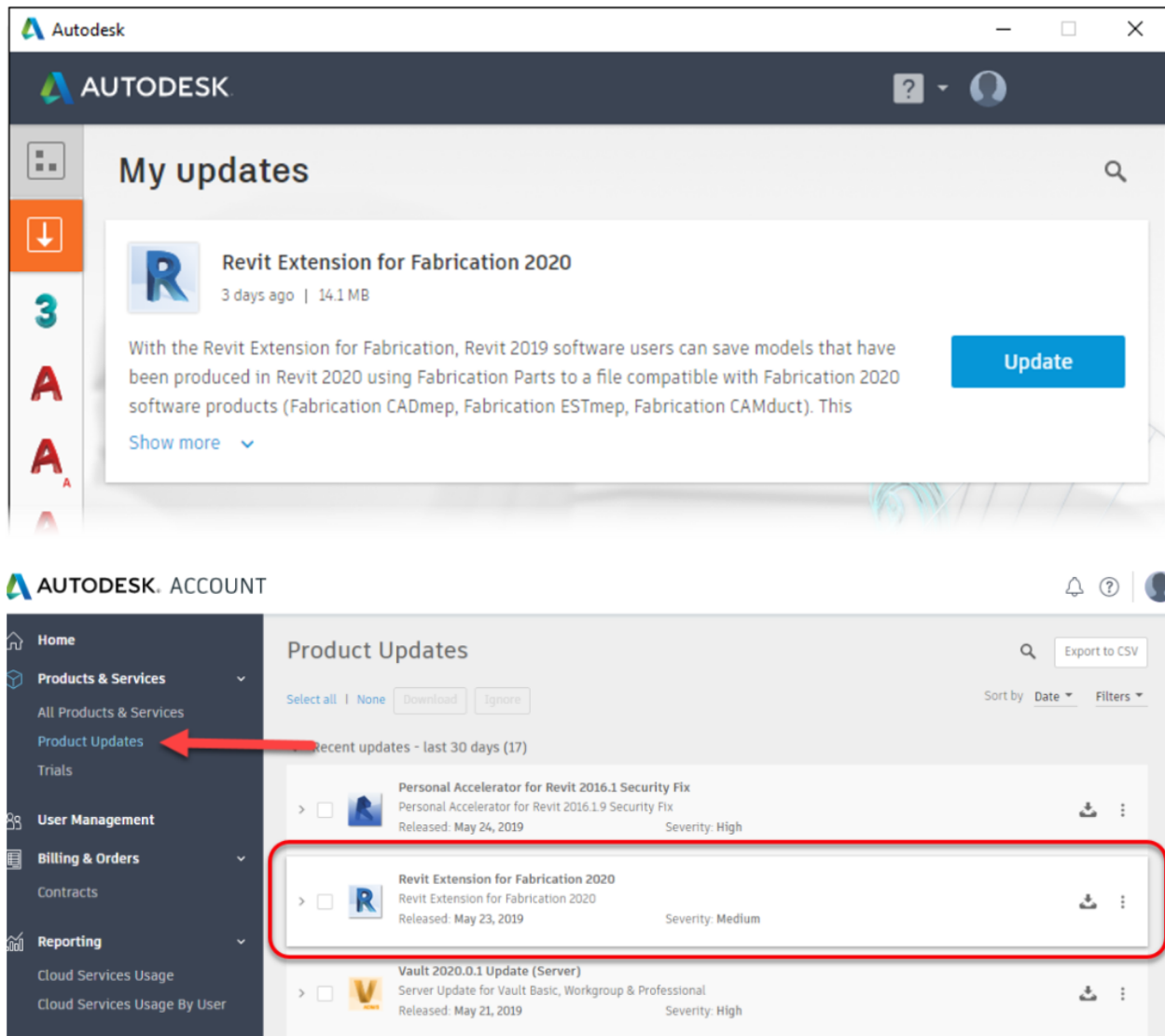
Importing and Exporting Modeled Fabrication Parts (Continued)

When exporting, a .maj file is used to transfer the data to/from Revit to/from any application within the Autodesk Fabrication Suite (CADmep, ESTmep, etc.).
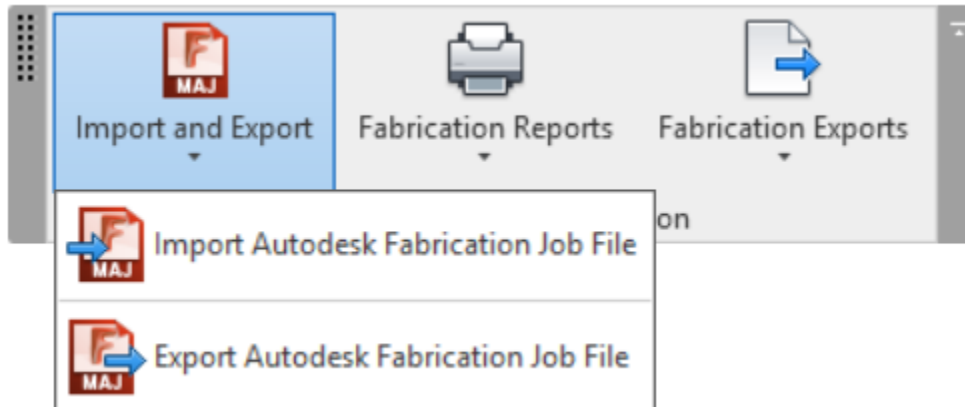
You will also need access to the Fabrication configuration database that was used to create the model. This can be a sizeable task since a working database can be over 500mb and contains over 17,000 files. You can also find contractors will not freely provide this database as it contains trade secret information on how they fabricate their duct components and may represent years of development.

For this reason, when possible I would recommend the contractor to provide a Revit project with all the fabrication parts imported.

Keep in mind that if you want to make changes to the fabrication parts services, and service templates you will need to have the fabrication configuration used to create the model.

Available Parts

Fabrication Parts are saved in the .itm file format. The item library is saved by default to the location below for imperial content.

All configurations can be found at:
C:\Users\Public\Documents\Autodesk\Fabrication 2020

Imperial Content configuration:
C:\Users\Public\Documents\Autodesk\Fabrication 2020\Imperial Content\V3.06\Items\Imperial Content

Search Autodesk Fabrication Parts Database for additional parts.
http://www.building3dcontent.com/search_models.aspx
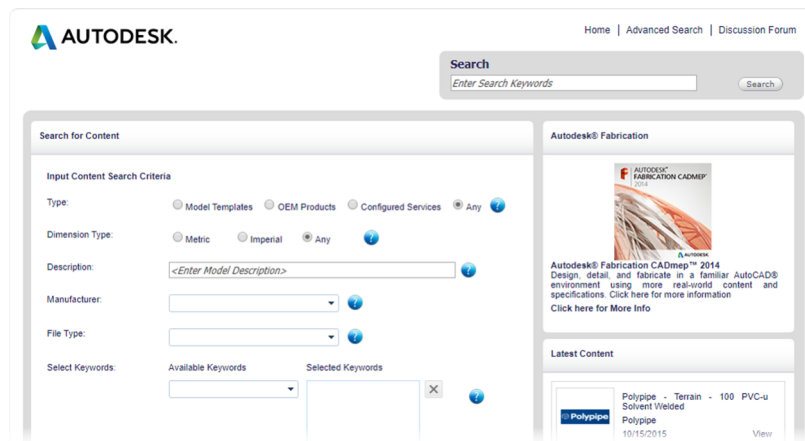
IEZ files are used to import content into your service using the fabrication software.
http://www.building3dcontent.com/
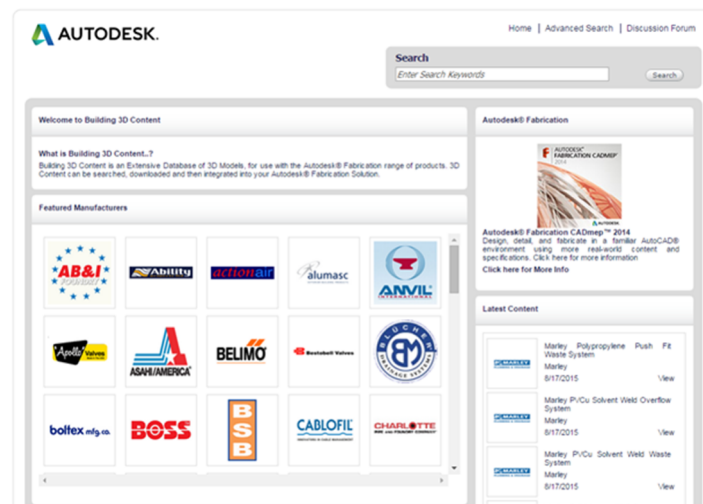
Accessing the Fabrication Configuration in Revit

The Keyboard shortcut "FS" will allow you to access the Fabrication Settings window, there you can select the desired fabrication configuration. Imperial and Metric configurations are available or load a customize company specific configuration.

> Note: To customize the configuration this is limited to the Fabrication software and not currently available in Revit.

> Tip: I use the ESTmep software, so you don't need to open AutoCAD to edit and create services. With ESTmep you also get access to the labor and costing data. If you don't have a license of ESTmep you can use CADmep as it is part of the AEC Collection.
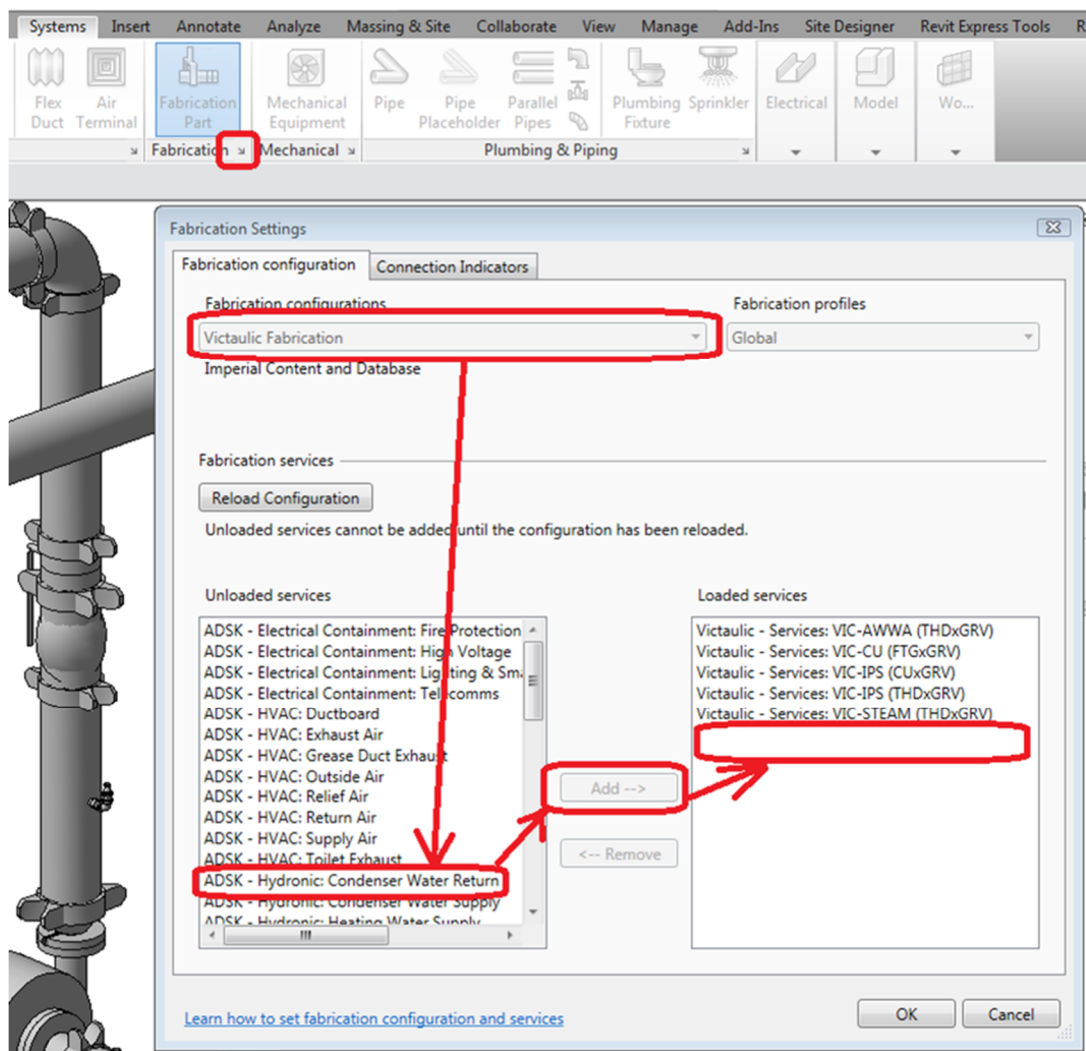
Placing Fabrication Parts
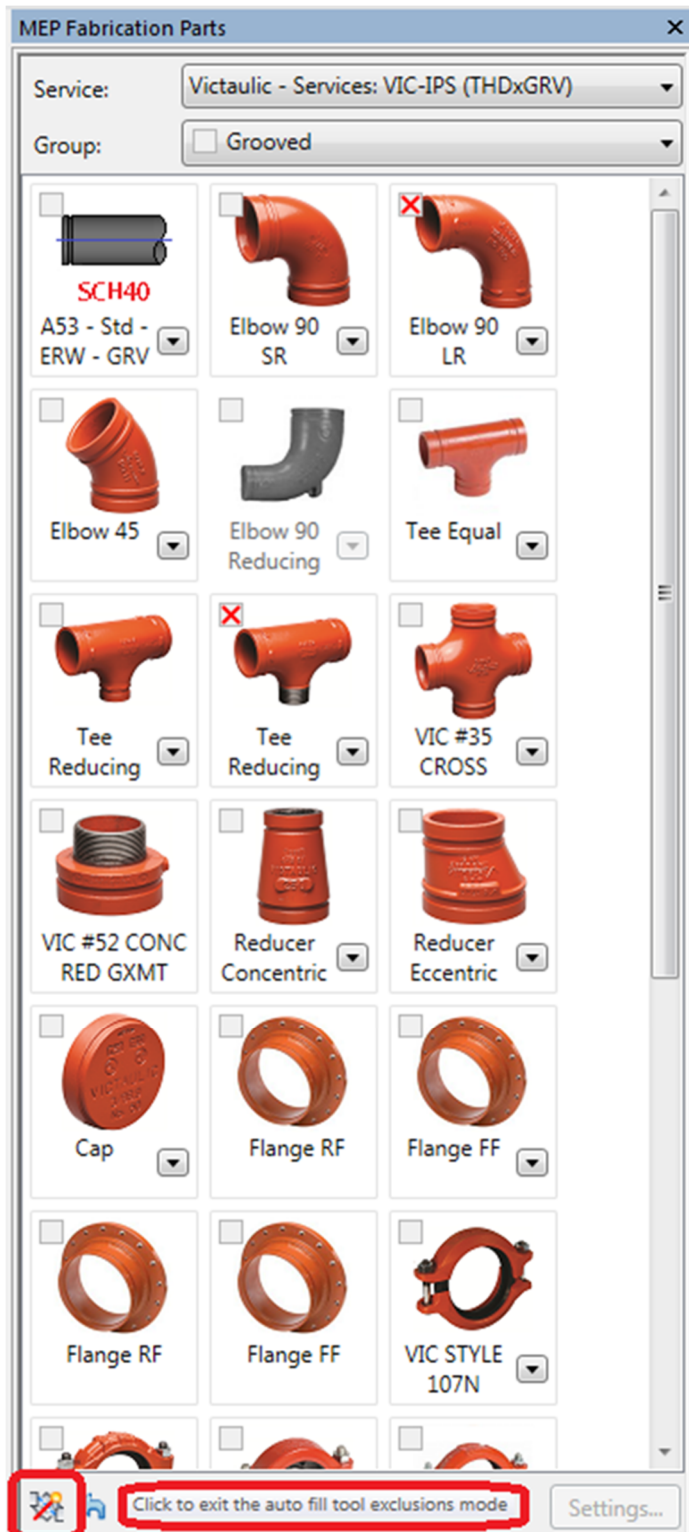
Using the keyboard shortcut "PB" the MEP Fabrication Parts palette will appear.

Select your desired Service and Group.

Now you can place fabrication parts using any of the parts buttons.

Notice some buttons have an arrow revealing addition parts available in the same button.

With Revit 2017.1 and newer you have the auto fill tool exclusions mode. This allows you to select which button or group is excluded from automatically filling. You can have a full service with many routing methods.

Exclude Groups like (Square/Round or Welded/Grooved/Threaded).

Exclude Buttons for (Long radius vs short radius elbows).

Design to Fabrication

Convert Revit design routings to fabrication parts by making a selection and you will see the Design to Fabrication button appear in the contextual ribbon. This allows you to convert to fabrication parts.
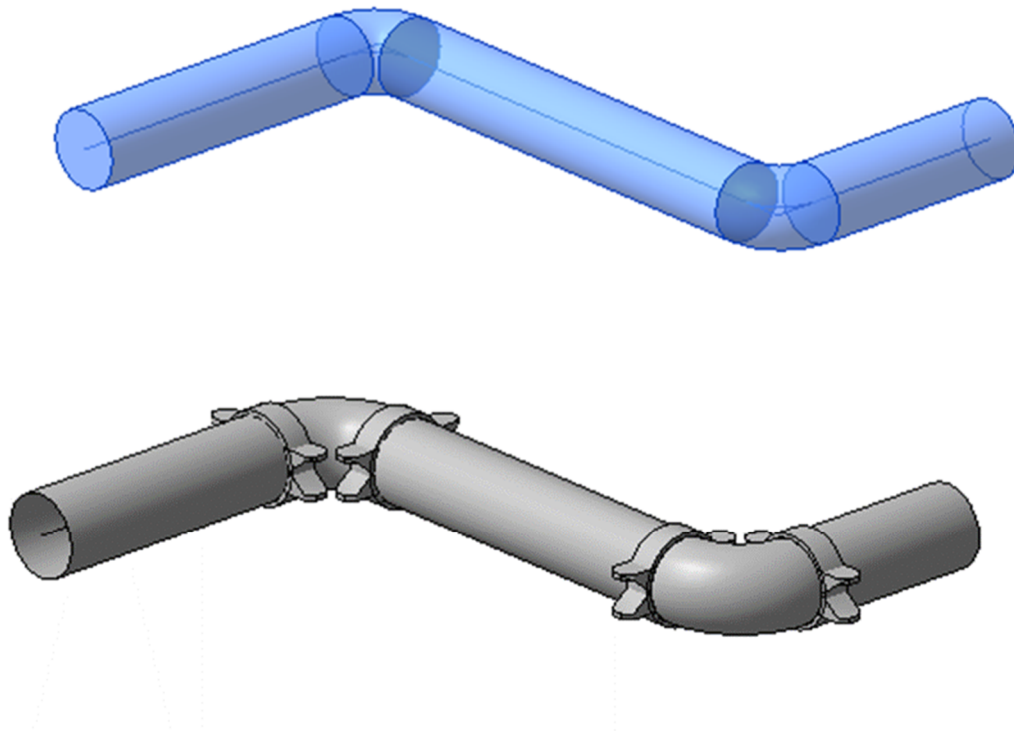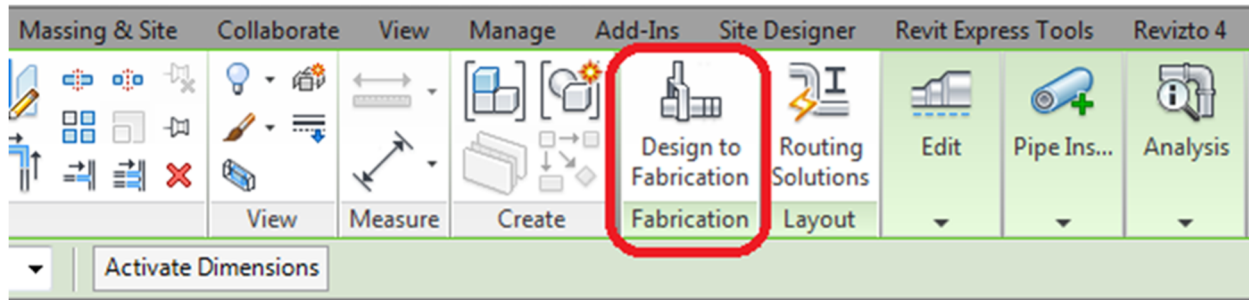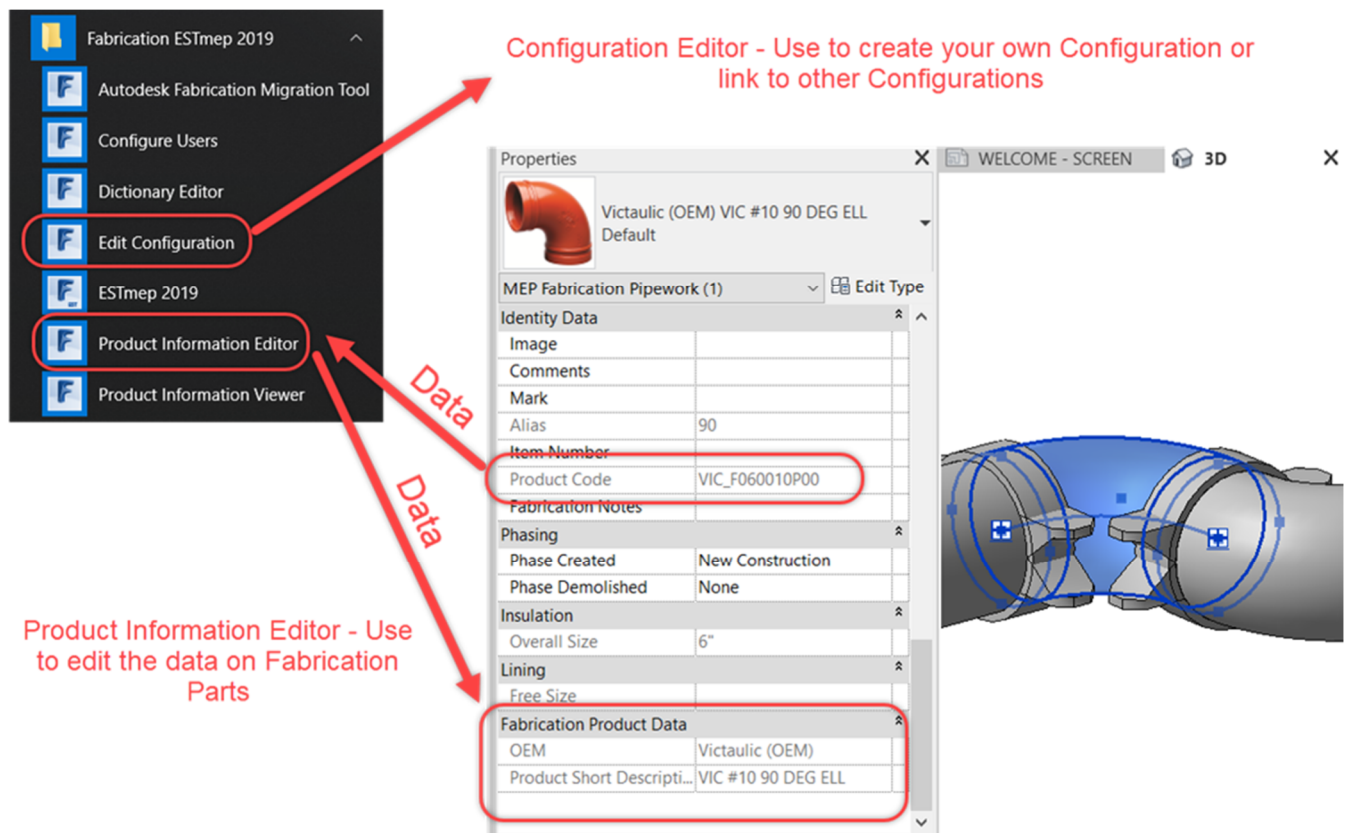
Button Mapping

The Design to Fabrication feature in Revit requires that the button mapping in Revit be correctly configured.

Where is the data? Product Information Editor

The Product Information Editor (a program that can be found under Fabrication CADmep or Estmep software in the Windows Start button) contains much of the data for the MEP Fabrication parts. The data in the Product Information Editor is linked via the part ID in each item.

Configuration Editor - Use to create your own Configuration or link to other Configurations

Product Information Editor - Use to edit the data on Fabrication Parts

Product Information Editor – How is the Data linked?

The data in the Product Information Editor is linked via the part ID in each item. Below you can see the ID's within each fabrication item (.itm). This same ID needs to be found in the product information editor.

Tip: Since the ID's are stored in each part it would be a manual process to compile all the ID's into one table to be imported into the Project Information Editor (Also known as MAPprod). There are scripts that can be run within ESTmep and CADmep that will export this data for you.
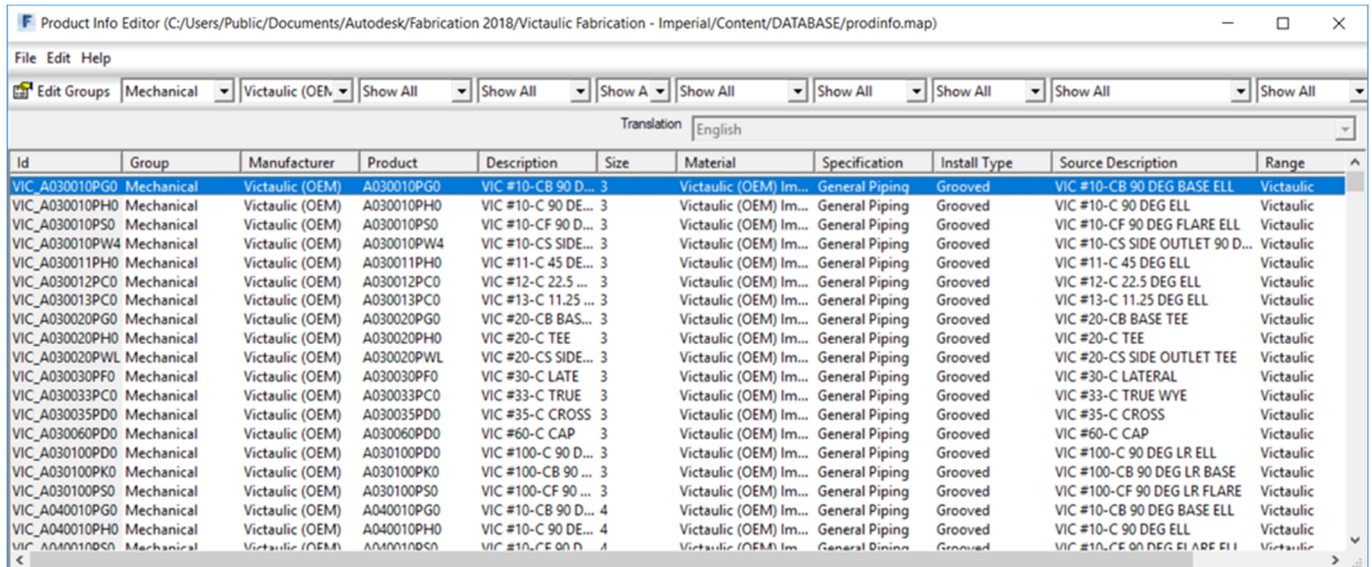
Below I am "Right" clicking on the Elbow button and following the screen I can access the ID's for each items size.

Product Information Editor

The Product Information Editor can be used to store relevant data need to organize and procure fabrication parts.

More data is available under Show Suppliers. Product codes from various suppliers can be added and the pulled from in Item Reports
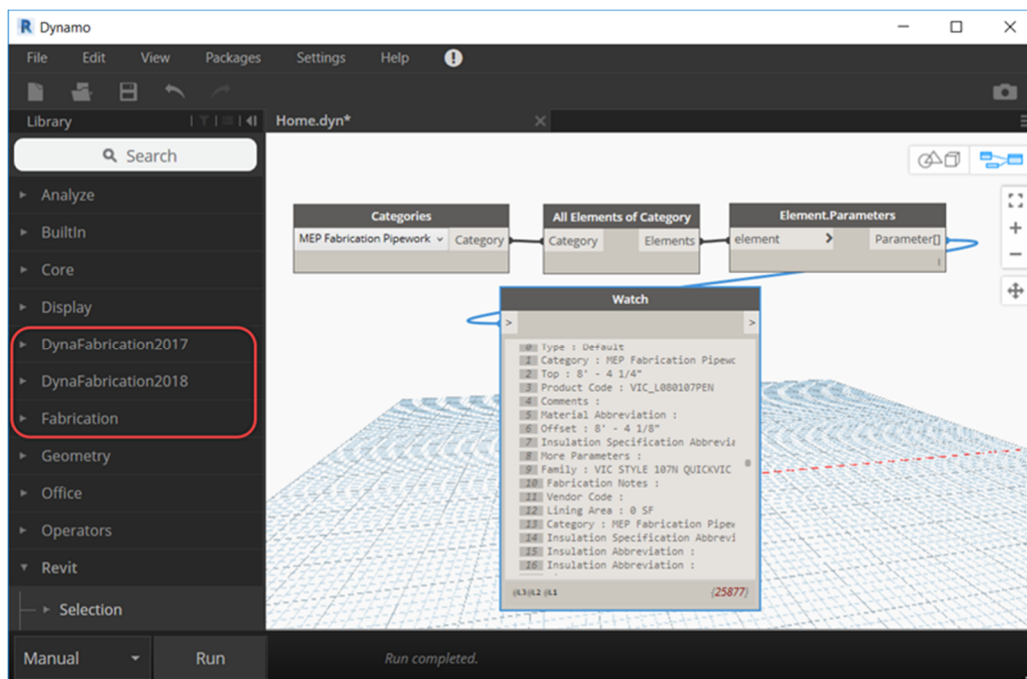
Fabrication Reports

Fabrication Reports will allow you access to all the data within fabrication parts. Not all the data is available in Revit through parameters that can report in schedules and tags.
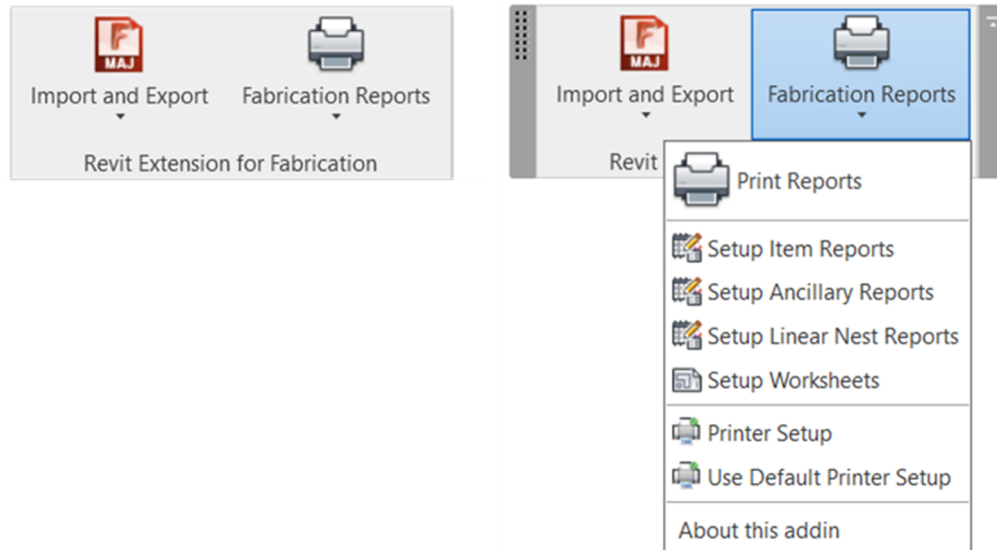

Data Through Dynamo

A common workflow is to access missing data through Dynamo. Create the required parameters and use Dynamo to populate the parameter.
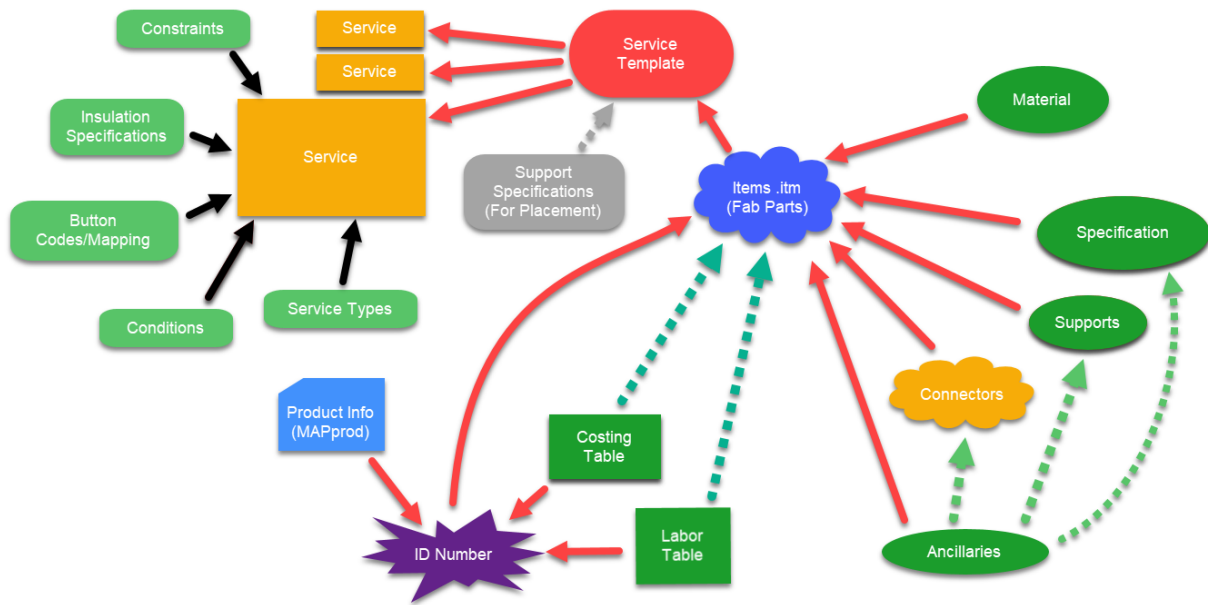
Creating and Editing Services

Currently, the only way to create or edit a Fabrication Part service is through one of the Autodesk Fabrication Verticals (CADmep, ESTmep, and CAMduct). Editing of the service and service template cannot be done in Revit. For Revit 2019 a parts tab was added to the service pallet and for the first time you can add parts to that tab within Revit.

Opening ESTmep you can create a blank job file and as shown below you can access the fabrication services following the steps below.
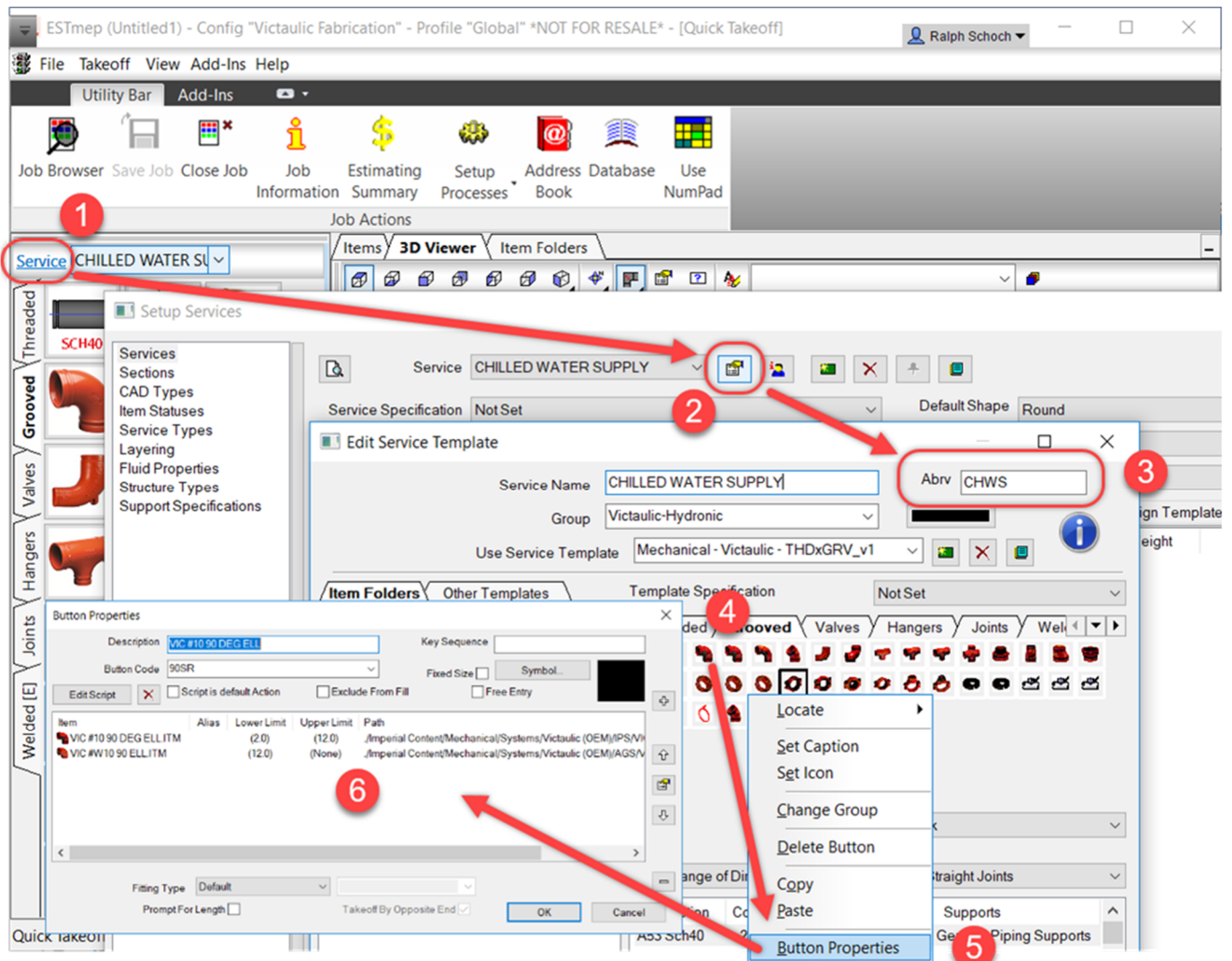
The Fabrication Data Map

Service Data Map