

PLUMBIM SOLUTIONS FOR MEP DESIGNERS

User Manual for
Valsir Revit® families
for waste and supply
systems



valsir®
QUALITY FOR PLUMBING

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FOREWORD

1 FOREWORD

1.1 BIM and Revit®

“It is not the strongest of the species that survives, nor the most intelligent, but rather the one that is most adaptable to change.”

BIM - an acronym for Building Information Modelling - is the most radical and fascinating **revolution** that the entire construction industry will have to face in the immediate future. Rather than merely a new design tool, it is an incredible new **opportunity** for designers to **improve the quality** of their projects in terms of creativity, accuracy, collaboration with colleagues and delivery to clients, and one that designers cannot and must not miss. Current trends in the construction industry suggest that the advance of the BIM methodology is an ineluctable fact, when you consider these factors:

- current practices are oriented towards using prefabricated structural parts;
- building system engineering is becoming increasingly pervasive, detailed and sophisticated;
- clients have developed very **specific attitudes** towards the environmental, energy and acoustic properties of buildings;
- designers face an increasing need to **provide** accurate timelines and costs to clients, and allow them to manage the building during its lifecycle and maintenance stages.

All this requires **great care** for details and the utmost accuracy when designing a building. The real challenge is approaching building design just like the design of mechanical parts: the **integrated involvement** of all specialists is required to avoid or eliminate the likelihood of any errors in the final product. Basically, the critical phase is design rather than construction: analysing a construction down to the tiniest detail is the key to ensuring that final clients will get exactly the requested product at the agreed time and price.

Embracing this **change of attitude** may seem a complex endeavour. Nonetheless, every opportunity carries some challenges with it, which may be a blessing rather than curse. When faced with technological innovation, we are forced to **question** our established practices and evaluate their strengths and critical weaknesses in view of future changes. In the process, we become more aware of our abilities, gain new knowledge and **improve** our professional skills.

Which are the key innovative aspects of BIM? BIM offers great benefits in terms of **cost and time saving**, extremely accurate material list estimates and is very effective in avoiding errors, modifications and revisions due to lack of communication. This involves a dramatic rethinking of the “project” and a total change in the mindset of designers, as the building and the related construction work need to be virtually simulated using three-dimensional models that are as close as possible to real-life objects. The real challenge consists in gathering all designers involved - with their very specific requirements - at the concept stage, analyse the full information requested by the client and share it, addressing each and every issue to be solved during the design stage instead than on the building site.

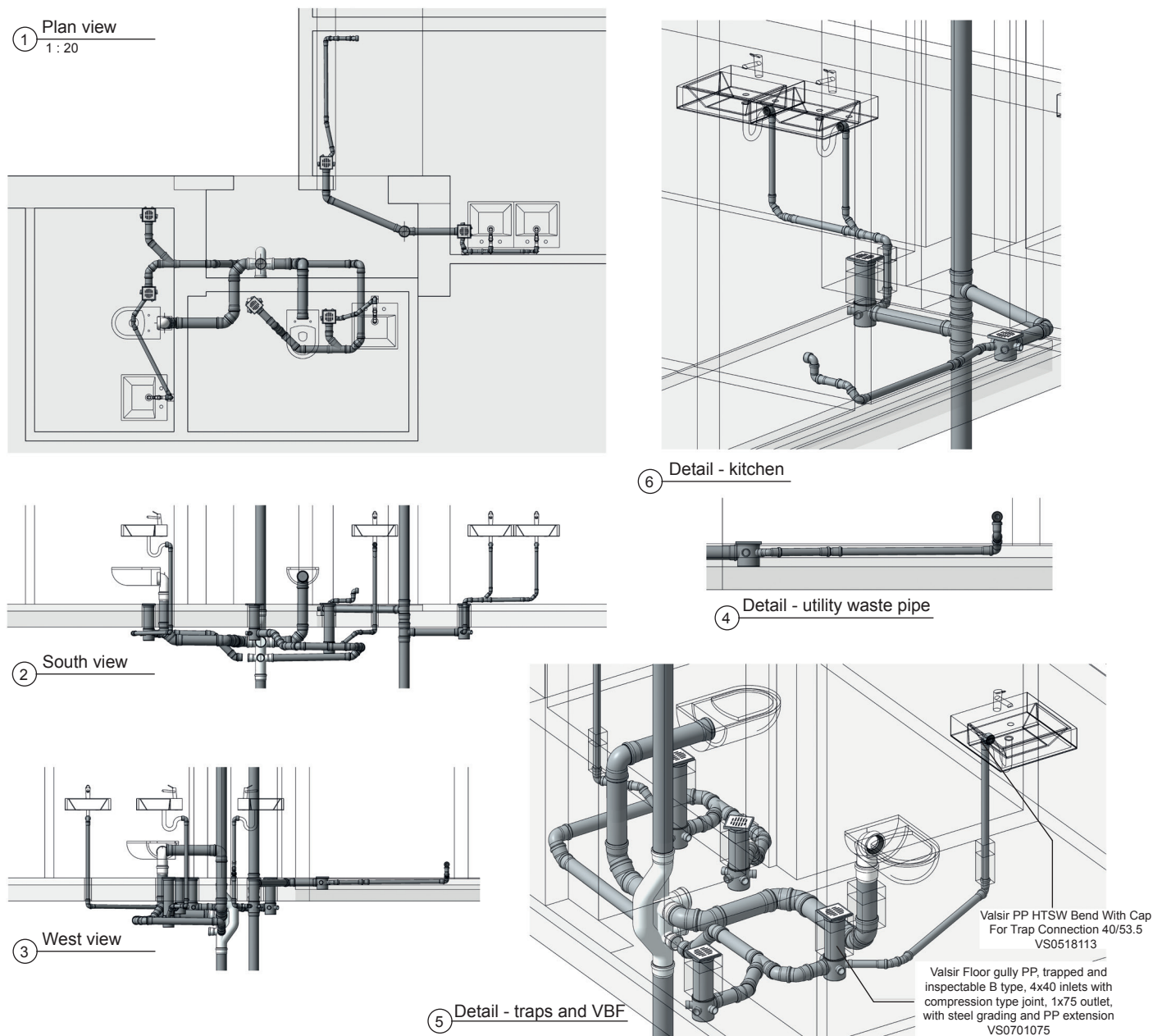
BIM requires a change from a pyramidal to a horizontal approach. A **single three-dimensional model** as close as possible to the final real-life configuration of the building is created, and all designers involved (architect, structural engineer, MEP engineer, and so on) **work at this model** at the same time, each within their scope of work. They add graphic elements (doors, pillars, windows, pipes, fittings, etc.) that are the exact representations of real-life objects, with the same geometry, overall dimensions and above all specifications (physical, chemical, mechanical, material properties, etc.). Any **interferences** among these objects are **immediately recognized**

by the system and brought to the attention of the affected designers, so that they can find a solution. Error margin shrinks dramatically. In addition, a model may be subject to structural testing, energy performance analysis, environmental assessments and used to generate extremely accurate bills of quantities.

1.2 Valsir Revit® MEP families

Valsir offers the **parametric models** of its products developed in the Autodesk Revit® environment for industry professionals to embrace the BIM methodology in their design work.

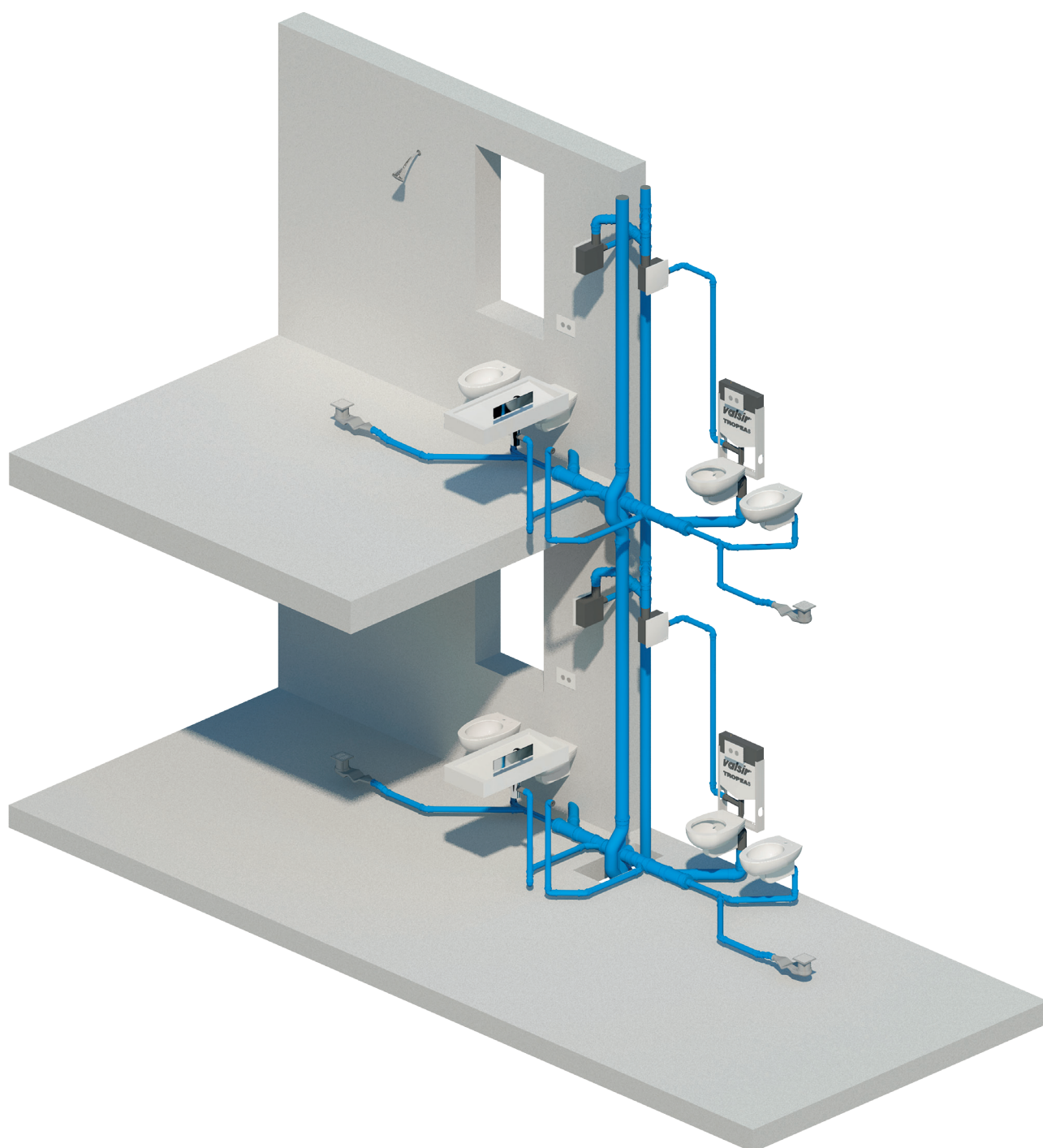
Figure 1.1 Example of a system developed using VBF (Ventilation Branch Fitting).



The key **properties** that make Valsir Revit® MEP families extremely **competitive** are the following:

- **speed of use** with versatile element configuration thanks to auto-routing feature and a high level of parameterisation;
- **ease of use** - engineers can quickly elaborate any solutions that they have devised;
- **flexibility of use** across the different design stages that professionals need to address, is assured by accurate levels of detail developed for each model;
- **accurate element geometry**, reflecting the real-life products to ensure the utmost accuracy when analysing any spatial interference within a project;
- **small-sized files** enable easy, accurate management of any type of project, from the most simple to the most complex;
- **large quantity of data and information** make every model as “query-able” as possible.

Figure 1.2 Example of a waste system.





USE OF VALSIR REVIT® MEP FAMILIES

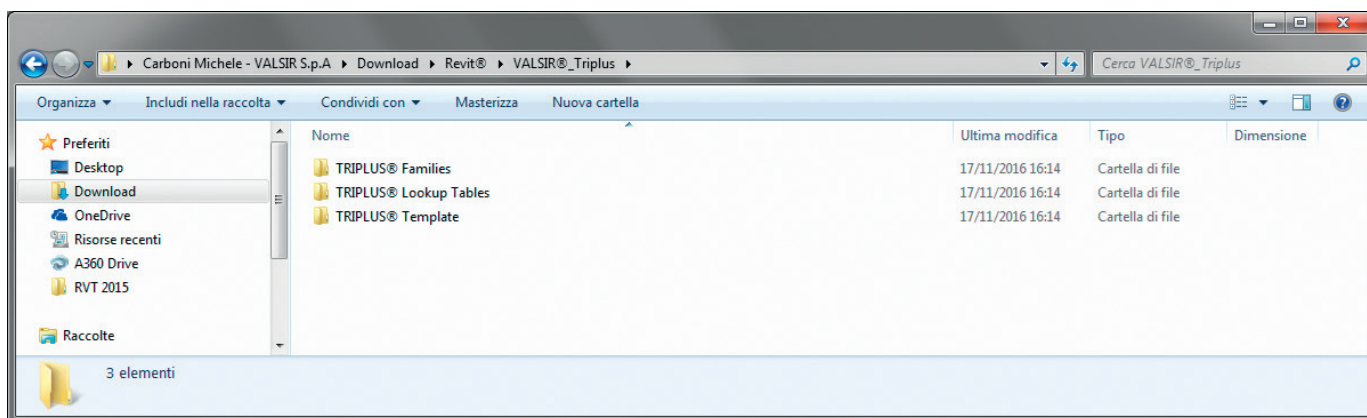
USE OF VALSIR REVIT® MEP FAMILIES

Valsir provides a full, ready-to-use package for system creation.

Files are available for download on the BIMObject® portal (<http://bimobject.com/en>). Starting a project is a matter of a **few steps**; the procedure described below applies to all Valsir product lines, for both waste and supply systems.

The install package contains three folders that contain Lookup Tables files (*.csv), product family files (*.rfa) and template files (*.rte). Main product families are preloaded in the template file.

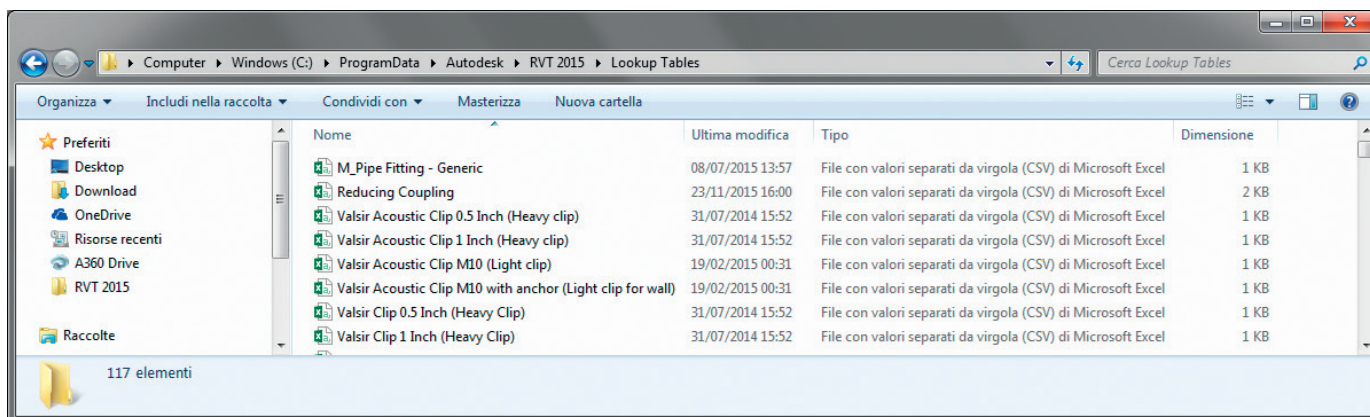
Figure 2.1 Example of download folder location.



2.1 Copying parametric files (required)

Copy “*.csv” files from the Lookup Tables folder to the appropriate Revit® folder named “...\ProgramData\Autodesk\RVT 2015\Lookup Tables”. If the “ProgramData” folder is hidden, enable display of hidden folders using the Control Panel.

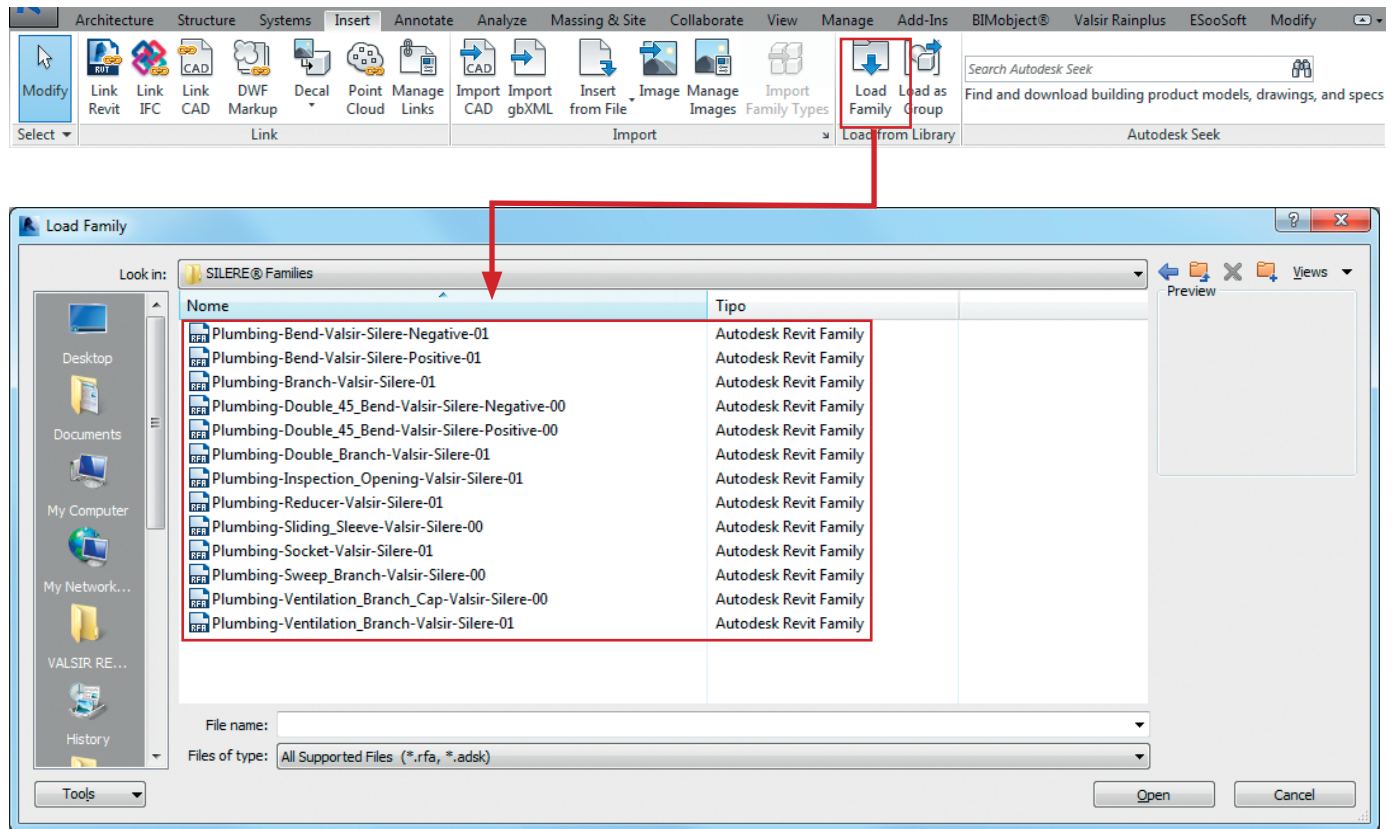
Figure 2.2 Lookup tables folder for Revit® 2015.



2.2 Template import (option)

Each Valsir product line has its specific template with **preloaded** basic fitting families (pipe bends, branches, etc.). If you need to import additional families, use the “Load family” function in “Add” menu and select the “*.rfa” files in the folder of the required product family. The file with the newly imported models can be saved as a template for future projects.

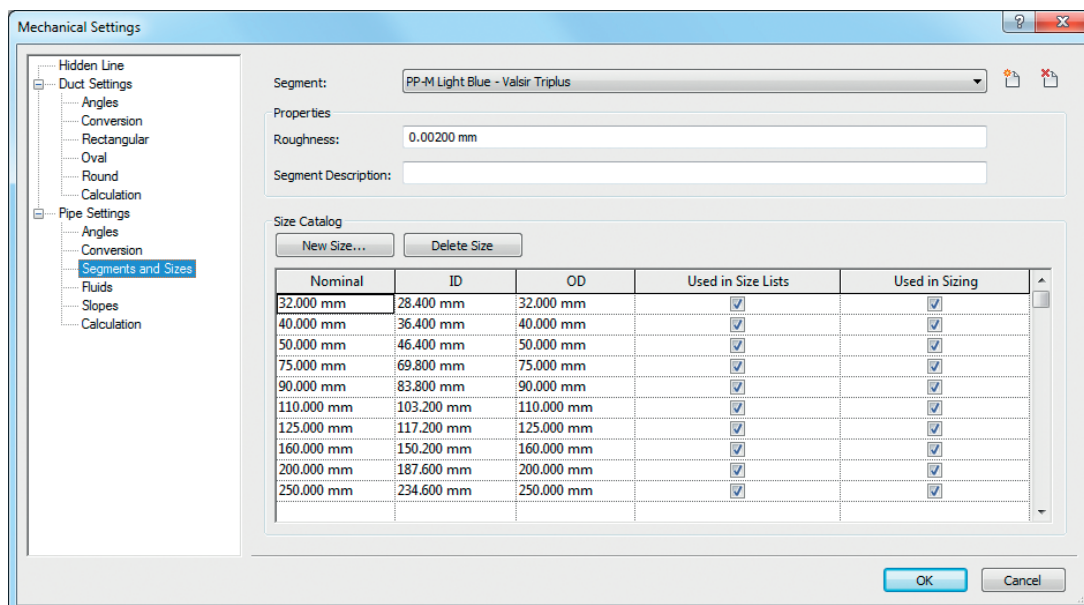
Figure 2.3 Graphic interface for family loading.



2.3 Valsir pipes

Revit® handles pipes as System Families, that are managed and defined within each project. Template “*.rte” contains **the information** and **accurate dimensions** of all Valsir pipes of a specific family. Alternatively, you may create a table like the one shown below, or use “Transfer project standard” in the “Manage” menu to transfer a pipe system family from the Valsir template to the project being processed.

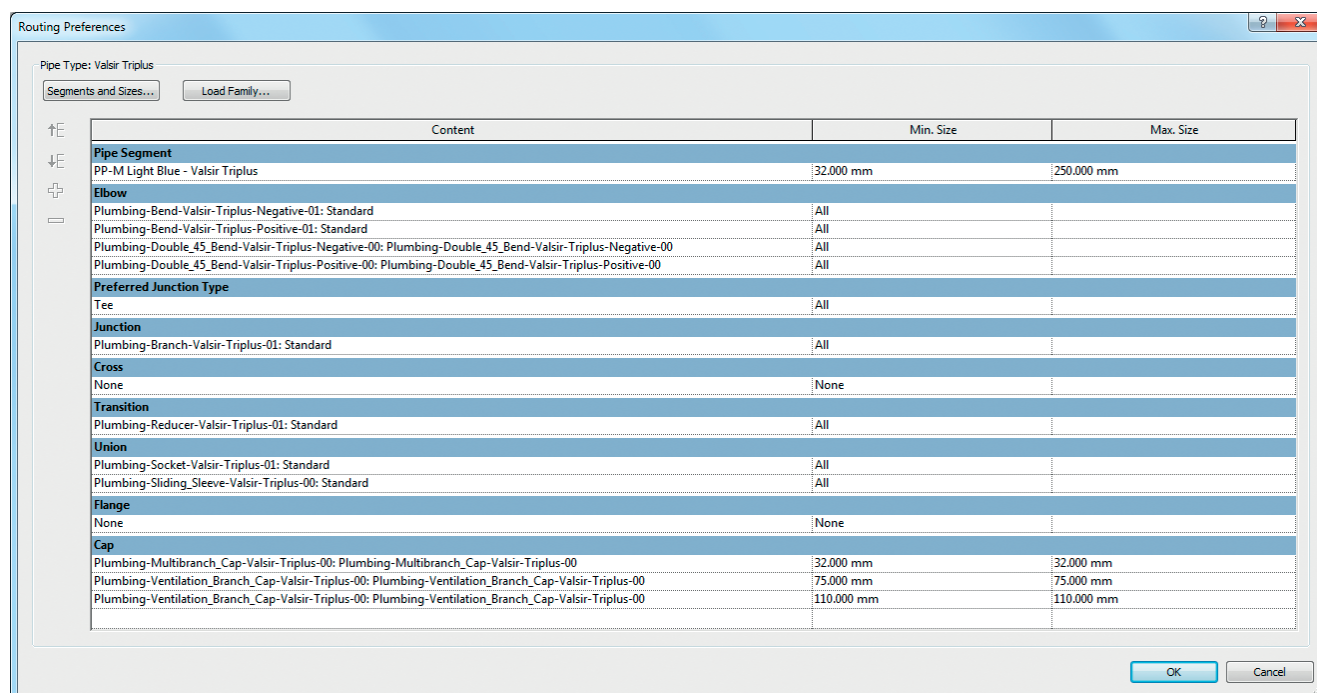
Figure 2.4 Dialogue window for mechanical settings.



2.4 Fittings - Routing preferences

Revit® handles pipes as rigid elements and direction changes are managed by setting the desired type of fitting. Template “*.rte” contains the standard **routing preferences** for a specific Valsir pipe family.

Figure 2.5 Dialogue window for routing preferences.



2.5 Data and Information

Generally, all templates contain the following data: Manufacturer, Article No., Model Description, Dimension, Material, Colours, etc. They provide a quick overview of the type of product, its specifications, chemical and physical properties, and the purchase reference information that will be reported in the Schedules with the bills of materials.

2.5.1 Schedules and tables

“*.rte” template files include preloaded table families (formats A0, A1, A2 and A3) with key project property information in the title block.

A few preset Schedules are also available, which provide the bills of materials for pipes, fittings and plumbing fixtures.

Figure 2.6 Schedule of pipes.


 <Valsir Triplus Pipes>				
A	B	C	D	E
Model Description	Article No.	Diameter	Effective Length	Waste System
Split Pipe (Max 3000 mm)	Split Pipe (Max 3000 mm)	75 mm	3200.00	Valsir Triplus
1			3200.00	
Valsir Triplus D75 L150mm	VS0650061	75 mm	120.00	Valsir Triplus
1			120.00	
Valsir Triplus D75 L3000mm	VS0650073	75 mm	2700.00	Valsir Triplus
1			2700.00	
Valsir Triplus D110 L2000mm	VS0650111	110 mm	1866.00	Valsir Triplus
1			1866.00	
Valsir Triplus D110 L3000mm	VS0650113	110 mm	2500.00	Valsir Triplus
1			2500.00	

Figure 2.7 Schedule of fittings.



 <Valsir Triplus Fittings>		
A	B	C
Model Description	Article No.	Quantity
Valsir Triplus Bend D75/45°	VS0650435	2
Valsir Triplus Inspection Opening With Screw Cap D110	VS0650907	1
VBF. D.110 TRIPLUS 110-110-110/75-75-75	VS0651111111	1


Figure 2.8 Schedule of fixtures.

 <Valsir Triplus Trap Connections & Accessories>		
A	B	C
Model Description	Article No.	Conteggio
Firenze trap D110 with access	VS0533110	1
Valsir Floor gully PP, trapped and inspectable B type, 4x40 in	VS0701075	1

In Revit®, pipes are represented as simple cylindrical forms of any length.

The schedule of pipes for **waste systems** has been designed this way in order to allow a quick matching of the actual length of drawn pipes to the length of the corresponding commercial product. When a pipe is drawn too long and none of the available commercial products match that length, the schedule will generate an alert and that pipe is highlighted in yellow so it can be divided into lengths that are available in the market. Please read chapters 3.1.9 and 3.2.9 for more details.

Figure 2.9 Schedule of pipes with inconsistent size alert.

 <Valsir Triplus Pipes>				
A	B	C	D	E
Model Description	Article No.	Diameter	Effective Length	Waste System
Split Pipe (Max 3000 mm)	Split Pipe (Max 3000 mm)	75 mm	5300.00	Valsir Triplus
1			5300.00	

Two Schedules with pipe lengths have been created for **water supply systems**. One is for straight lengths, the other one for bent lengths of pipe. Both Schedules are formatted in order to provide totals easily and quickly. To obtain the overall length of multilayer pipes used in the project, **simply add up** both totals.

Figure 2.10 Project area, circuit with Mixal® pipe is highlighted.

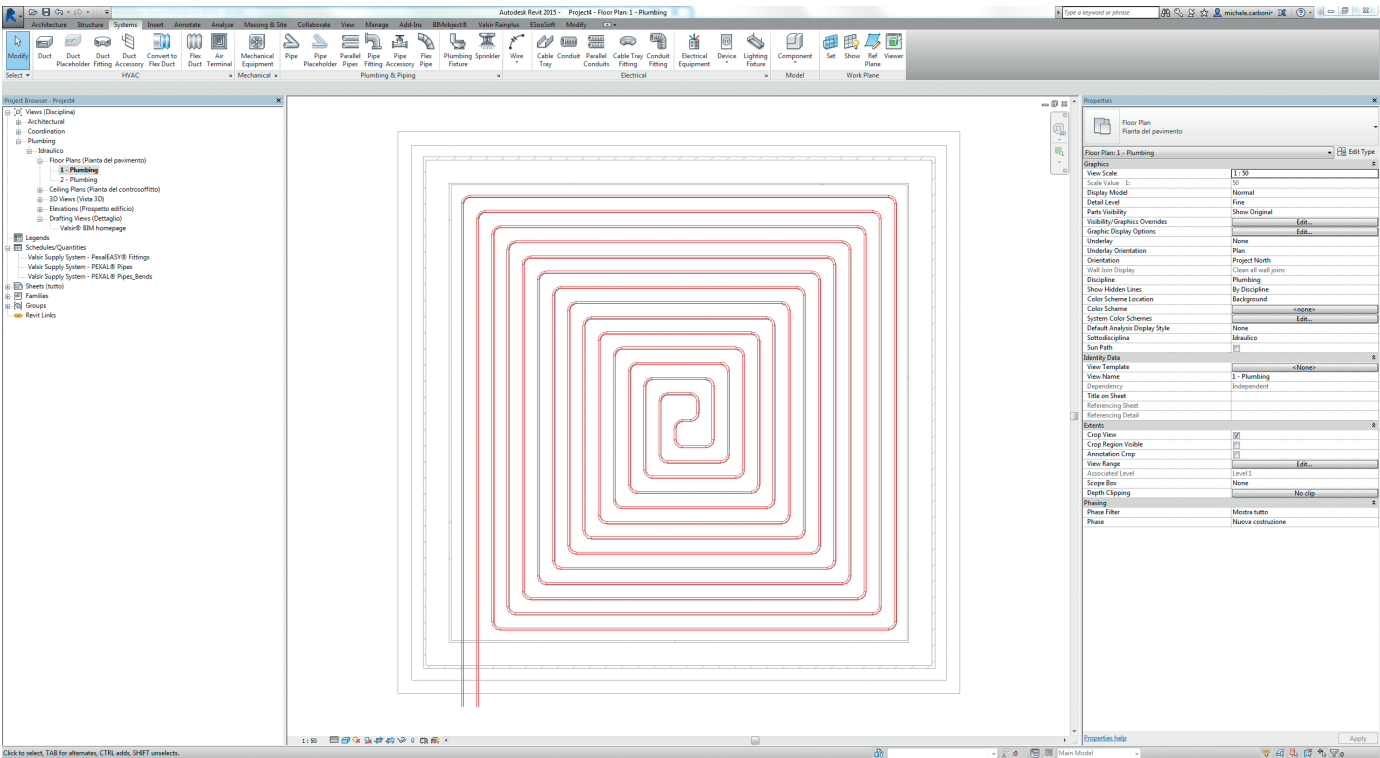


Figure 2.11 Schedules, see Figure 2.10.

Project Browser - Project4

- Views (Disciplina)
- Architectural
- Coordination
- Plumbing
 - Istradico
 - Floor Plans (Pianta del pavimento)
 - 1 - Plumbing
 - 2 - Plumbing
 - Ceiling Plans (Pianta del controsoffitto)
 - 3D Views (Vista 3D)
 - Elevations (Prospetto edificio)
 - Drafting Views (Dettaglio)
 - Valsir® BIM homepage
- Legends
- Schedules/Quantities
 - Valsir Supply System - PexalEASY® Fittings
 - Valsir Supply System - PEXAL® Pipes**
 - Valsir Supply System - PEXAL® Pipes_Bends
- Sheets (tutlo)
- Families
- Groups
- Revit Links

Schedule: Valsir Supply System - PEXAL® Pipes - Project4

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<Valsir Supply System - PEXAL® Pipes>

A	B	C	D	E	F	G
Article No.	Model Description	Diameter	Effective Length	System Name	Pipe Model	Insulation Type
Valsir PEXAL® Multilayer pipe in coils 16x2 - L100m						
V50100107	Valsir PEXAL® Multilayer pipe in coils 16x2 - L100m	16.000 mm	82.49 m	Acqua calda sanitaria 2	Pexal®	
V50100107			82.49 m			

Schedule: Valsir Supply System - PEXAL® Pipes_Bends - Project4

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<Valsir Supply System - PEXAL® Pipes_Bends>

A	B	C	D	E	F
Model Description	Diameter	Effective Length	System Name	Pipe Model	Insulation Type
Valsir PEXAL® Multilayer pipe in coils 16x2 - L100m					
Valsir PEXAL® Multilayer pipe in coils 16x2 - L100m	16.000 mm	2.74 m	Acqua calda sanitaria 2	Pexal®	
		2.74 m			



WASTE SYSTEMS

3

WASTE SYSTEMS

3

Valsir makes available Revit® models of every range of pipes and fittings for waste and rainwater drainage systems: weld, push-fit, soundproofing and non-soundproofing ones. These products are extremely versatile and easy to install, and enable the realisation of any type of system.

Figure 3.1



3.1 Push-fit waste systems (PP/PP3, Triplus®, Silere®)

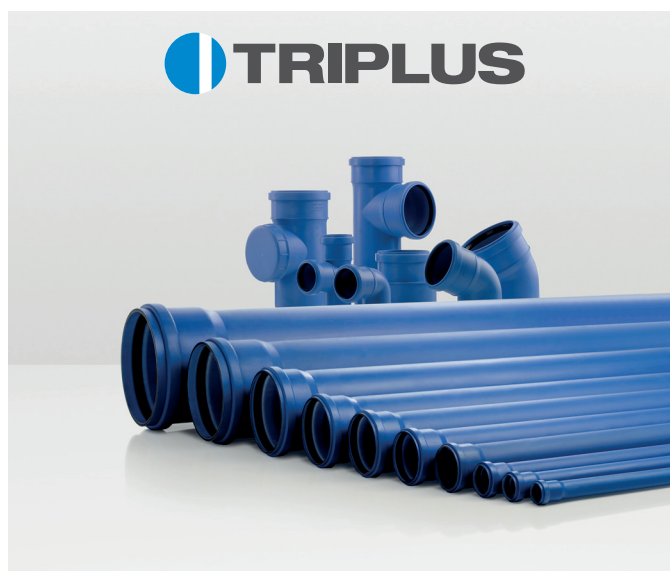
Valsir push-fit waste systems are classified as follows:

PP, single-layer self-extinguishing polypropylene pipe system, extremely lightweight and easy to use.

PP3, three-layer pipe system in polypropylene with mineral fillers, which offers good mechanical strength and lightweight for great use versatility.

Triplus®, soundproofing triple-layer system in polypropylene with mineral fillers, characterised by high mechanical strength at low temperatures.

Silere®, soundproofing single-layer system in polypropylene with mineral fillers, whose soundproofing performance ranks among the best ones currently available in the market.



3.1.1 Using pipes and fittings in the project

In the Revit® environment, select “Pipe” in the “Systems” menu and draft the layout of the desired system. You may manage this operation through the “Diameter” box of the options bar: Valsir chose to develop “auto-routing” parametric models so that the layout will update automatically according to user’s selections.

Figure 3.2 Selecting the drawing dimension of a pipe.

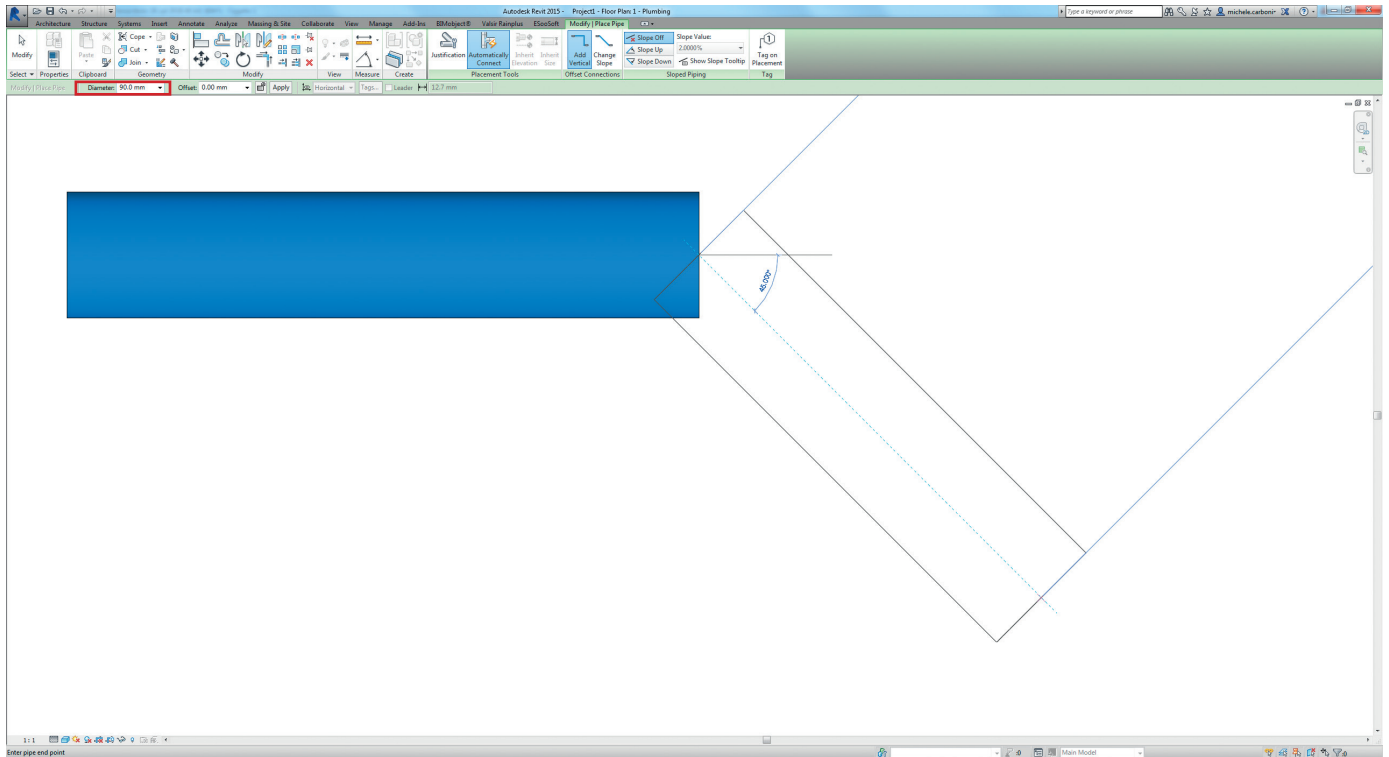
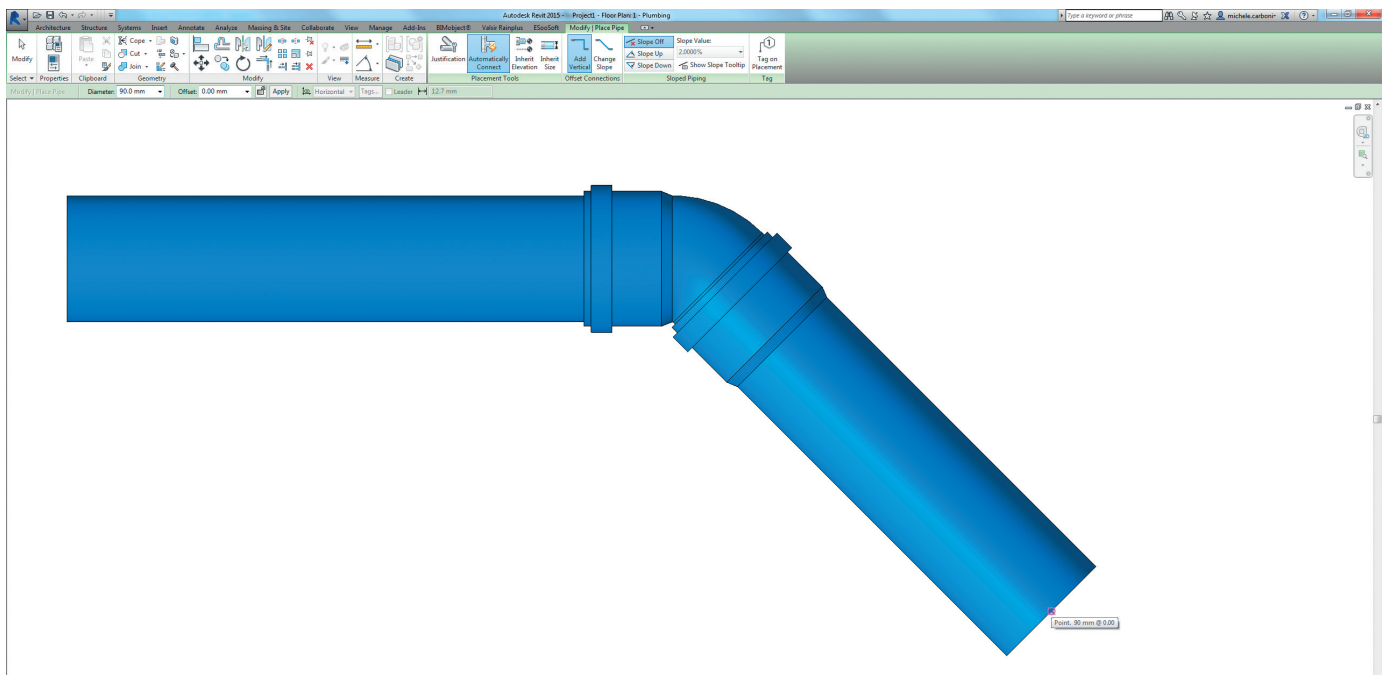
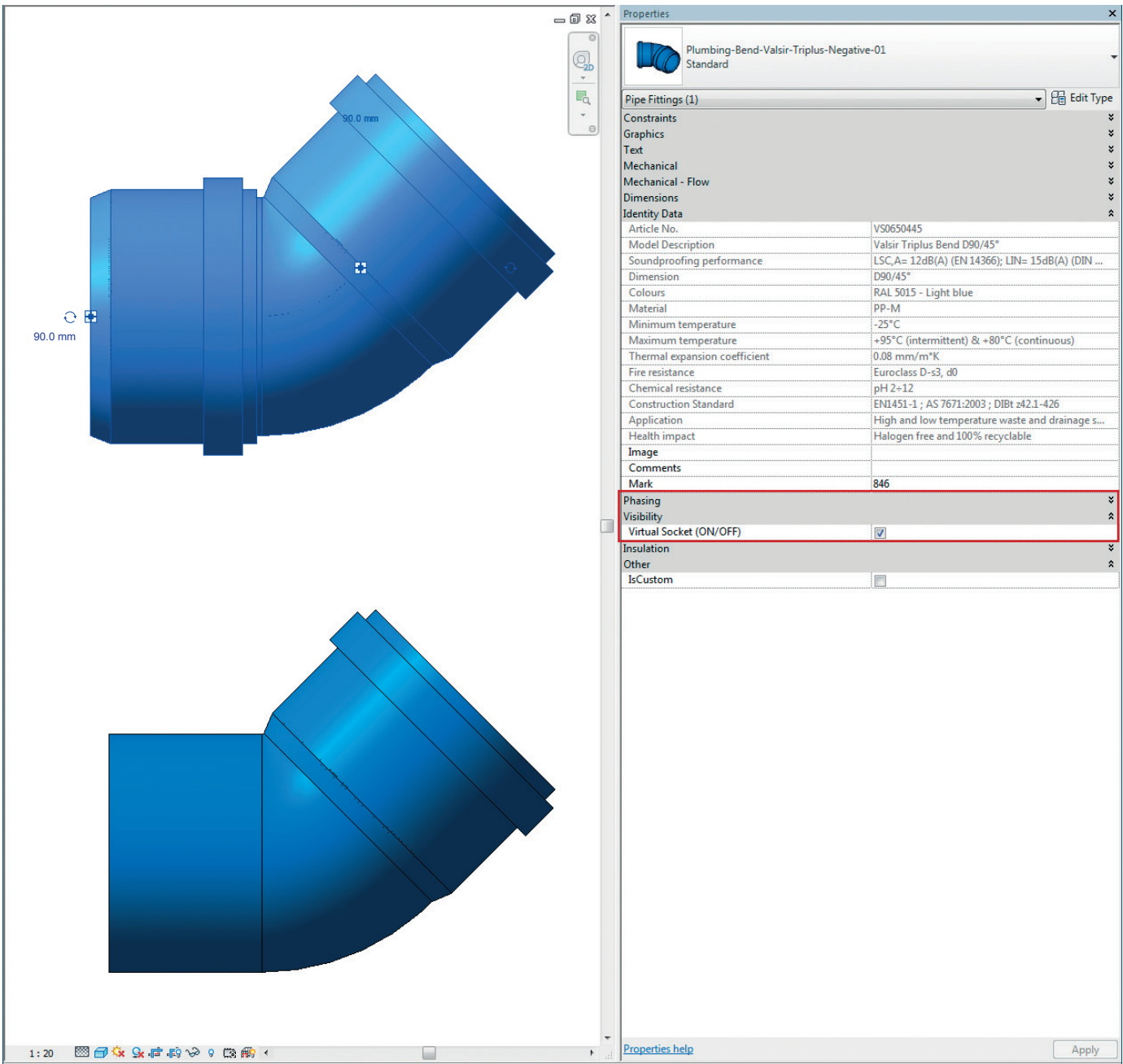


Figure 3.3 Automatic addition of fitting between two drafted pipes.



Moreover, Revit® handles pipes as simple cylindrical shapes and does not provide for sockets. When developing the models of its push-fit waste systems, Valsir opted for a more **life-like representation** of its products and created fitting with sockets at both the inlet and outlet ends. Whether this “**Virtual Socket**” on the fitting is to be **shown** or hidden is determined by a like-named parameter. When this element is not necessary (as is the case with two consecutive fittings), user can hide it and obtain the actual overall dimensions of the element.

Figure 3.4 Turning virtual socket on/off in fittings.



3.1.2 How to use Bend fittings

Bend fittings are automatically managed by Revit® according to the change of direction requested by user. Due to Revit® properties, bends may sometimes be inserted in the wrong direction in respect to waste flow. The reason why Valsir created two families for these fittings, that only differ in bend orientation. Socket connections are classified as “Positive” and “Negative”: whenever the software represents a socket connection in the direction opposite to the flow, once you have drafted system layout, all you need to do is select it and change it from “Positive” to “Negative” or vice versa.

Figure 3.5 Bend drafted in opposite direction to the flow.

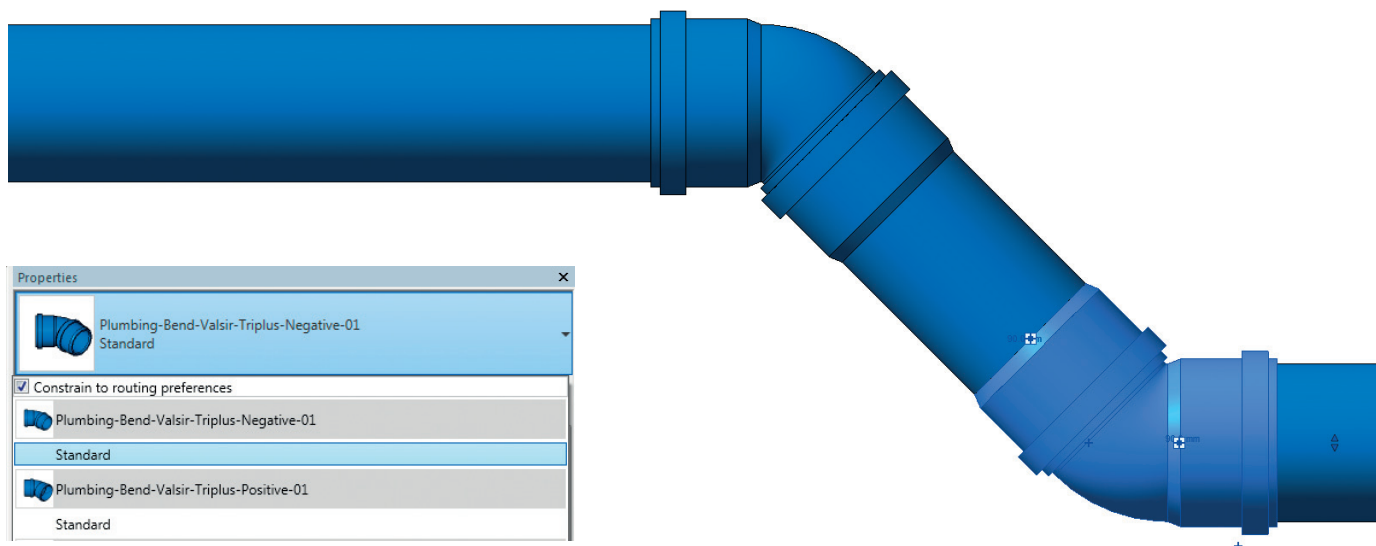
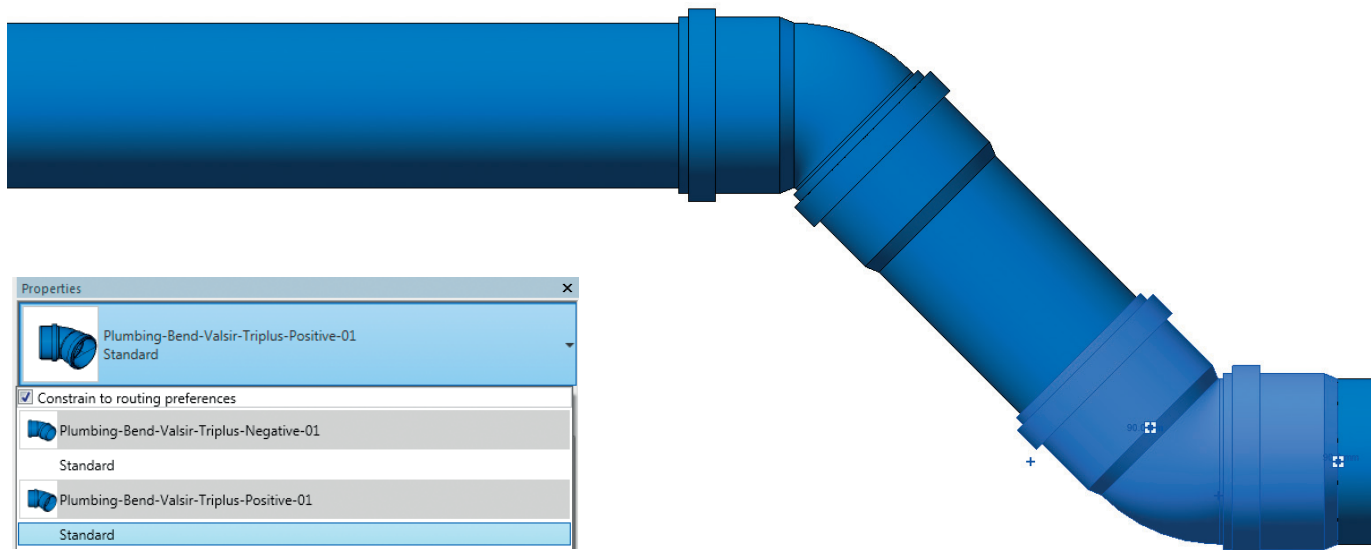


Figure 3.6 Bend properly oriented towards the same direction of the flow.



To facilitate and speed up project elaboration, bends can cover all angles up to 90°. Article number is only shown for those bends that have angles available in the catalogue, i.e. commercially available in the market. Commercial angles are recognised up to $\pm 3^\circ$ tolerance. Any other angles are defined as “Non Standard”, so that they can be **quickly identified** in the Schedules and modified.

Figure 3.7 Commercial bends available from the catalogue.

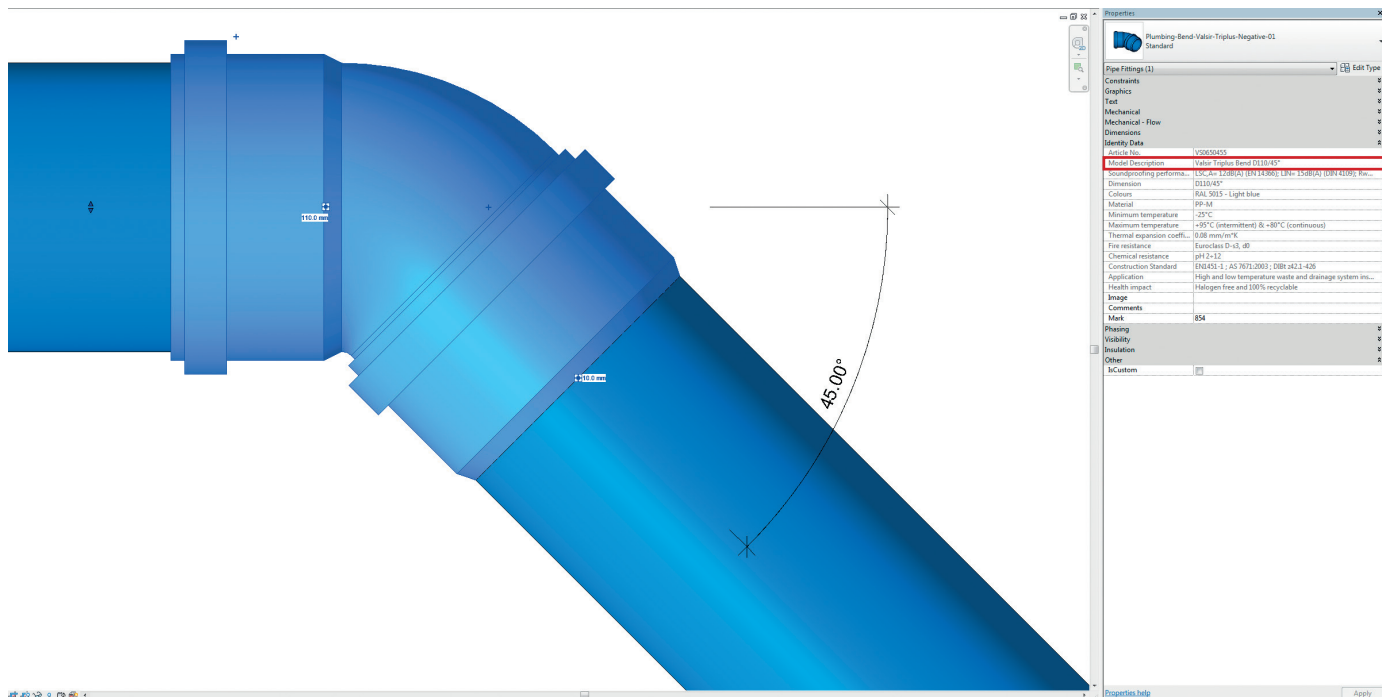
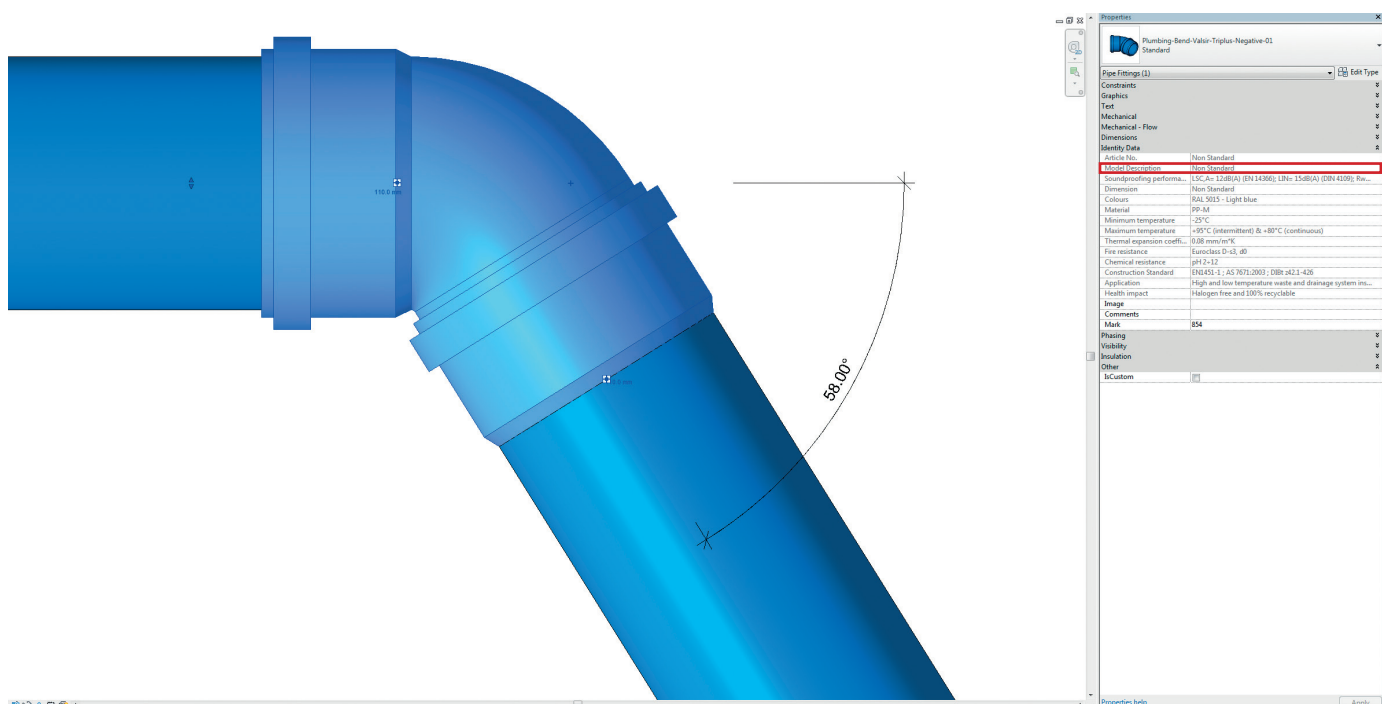


Figure 3.8 Non-commercial bends, geometries do not match catalogue shapes.



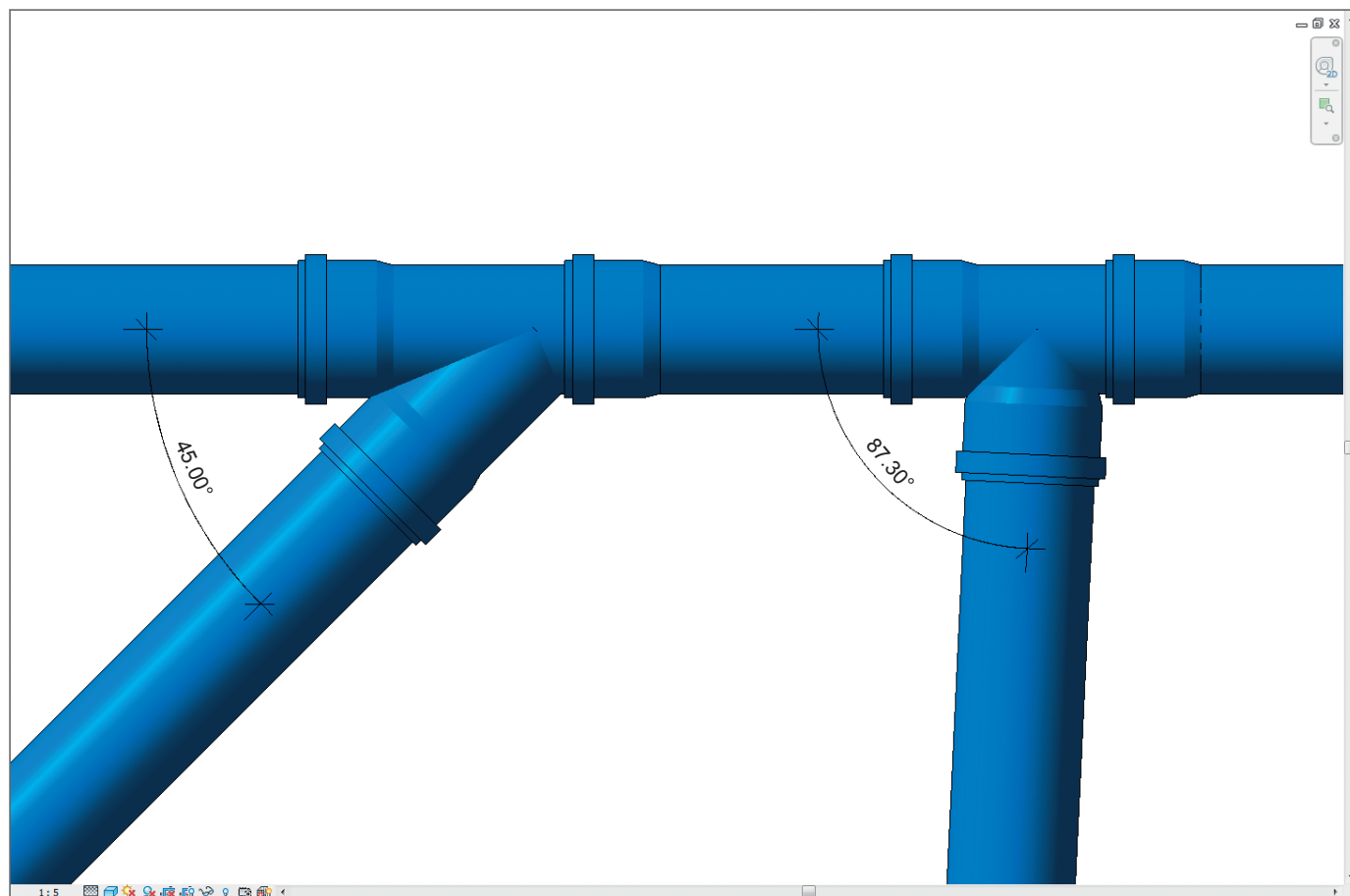
A **specific family** named “Double 45° Bend” has been created for those applications that require double 45° bends in place of 90° bends. 90° bends can be selected and the family type changed from the pull-down menu available in the “Properties” window.

3.1.3 How to use Branch fittings

Branches feature standard 45° and $87^\circ 30'$ angles with $\pm 3^\circ$ tolerance. Fittings are added **automatically** when a pipe is inserted one into another in the proper direction of the flow.

Unlike Bend fitting models, branch fitting models only provide for the standard configuration of catalogue elements.

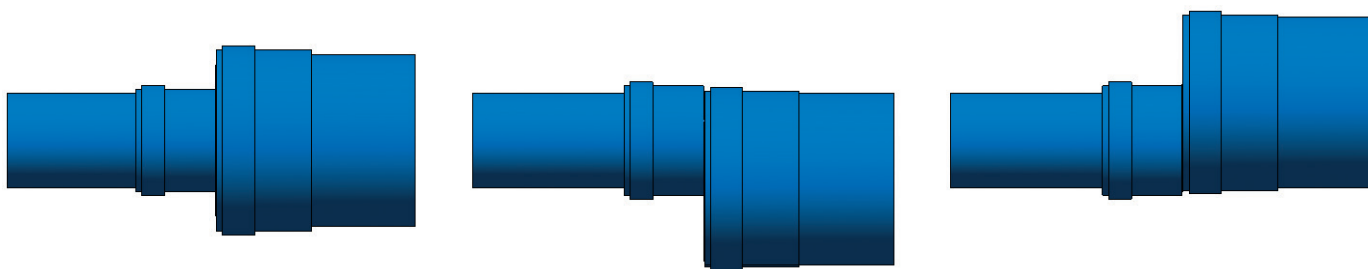
Figure 3.9 45° and $87^\circ 30'$ branches.



3.1.4 How to use Reducing fittings

Most reducing fittings are of the eccentric type. However, their geometry will also accommodate concentric drafting according to the drafting settings selected in Revit®. This solution was conceived to **facilitate and speed up** drafting of the entire waste piping system. Article number is displayed in both configurations, regardless of which drafting option - concentric or eccentric - has been selected.

Figure 3.10 Configuration of reducing fittings.



3.1.5 How to use an Inspection fitting

Inspection fitting must be placed directly on the pipe at the desired location. To change insertion orientation, press the spacebar before placing the fitting on the pipe.

Figure 3.11 Adding an inspection fitting to pipe.

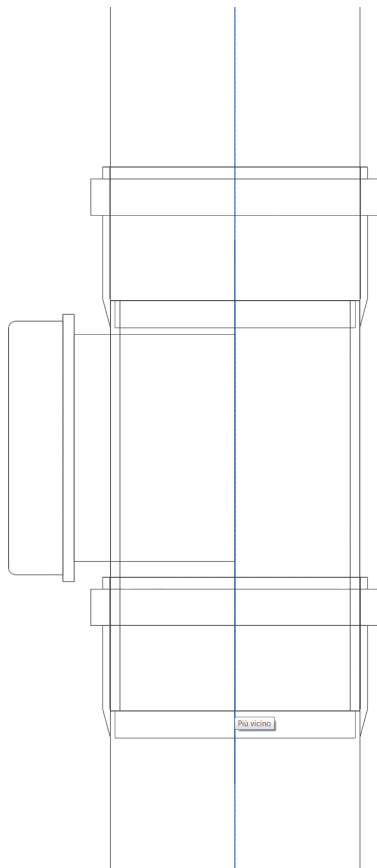
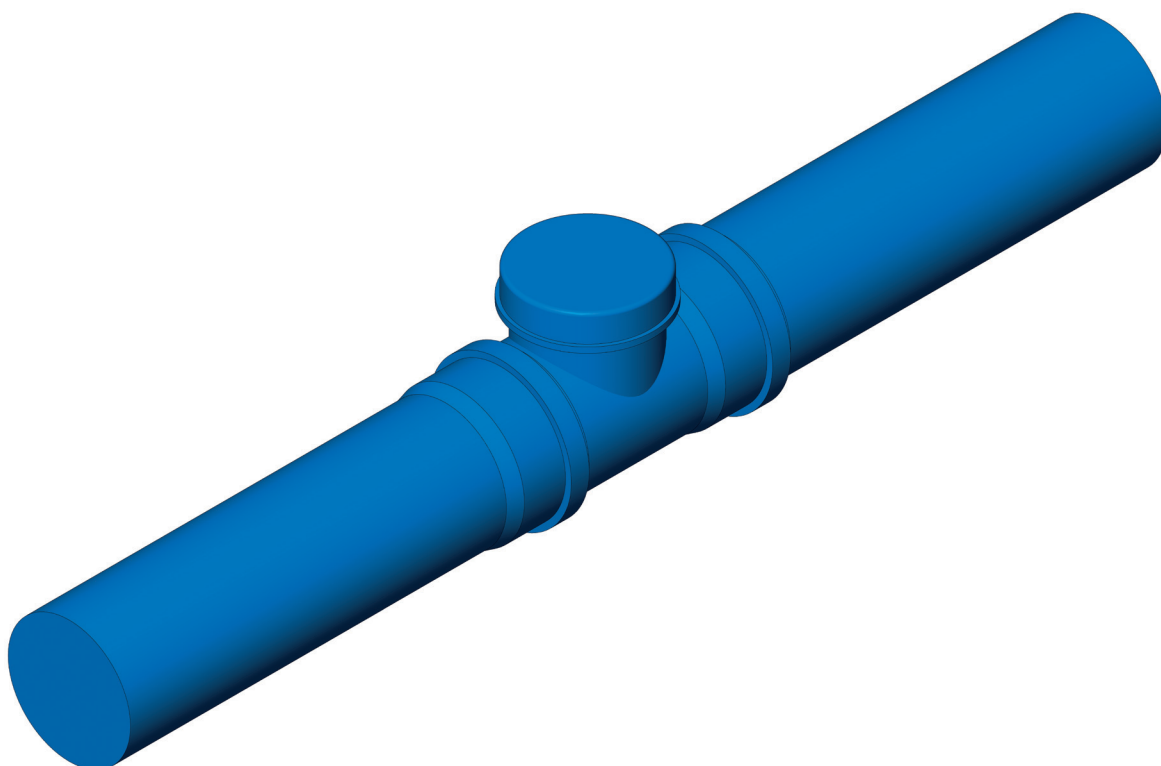


Figure 3.12 3D view of inspection added in Figure 3.11.



3.1.6 How to use double branches

Double branches must be placed directly on the pipe. Inlet connections may be drafted using the **connectors** of the branch.

Figure 3.13 Adding a double branch to main pipe.

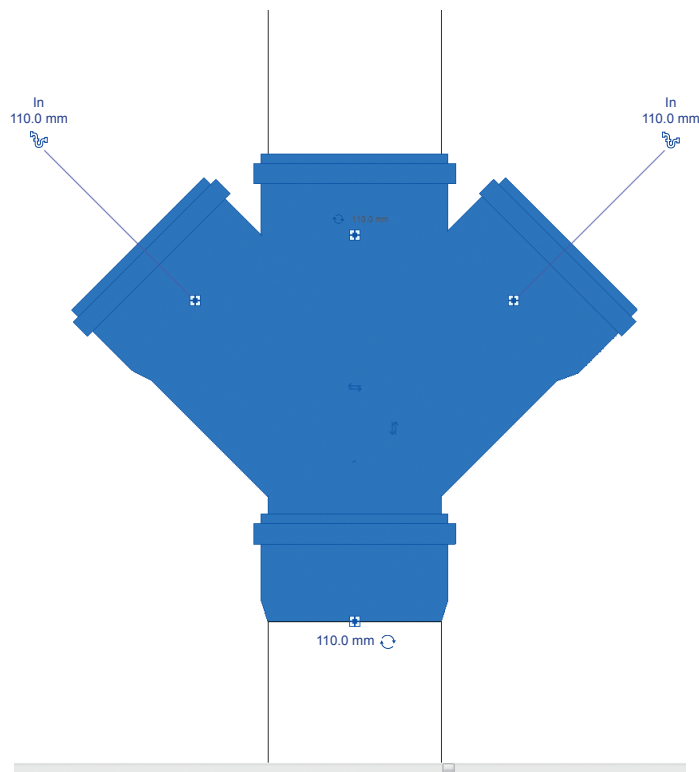
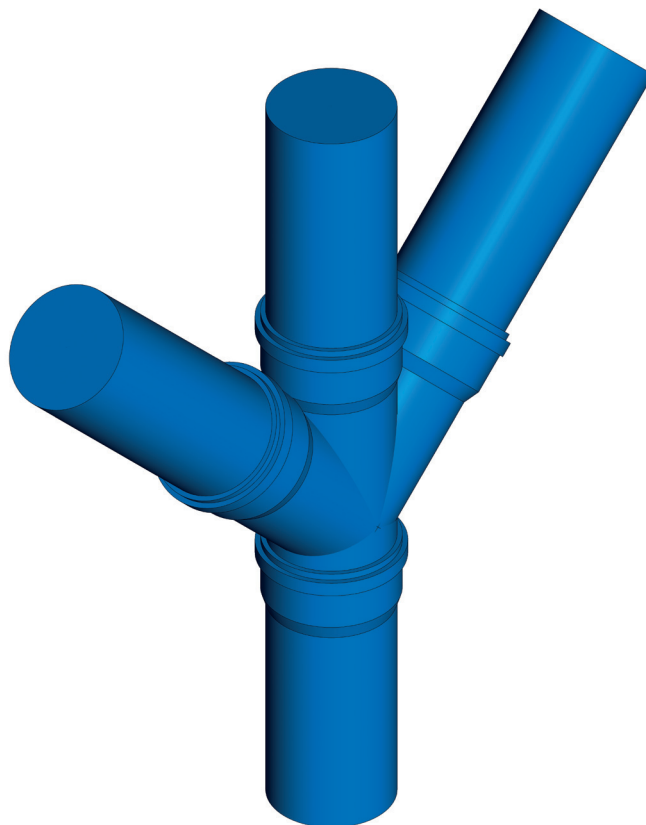


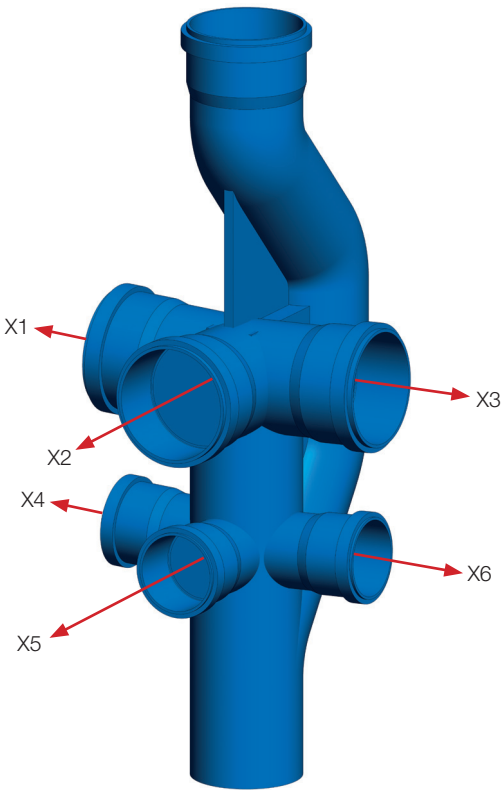
Figure 3.14 3D view of double branch added in Figure 3.13 with inlet branch lines.





3.1.7 How to use a Ventilation Branch Fitting (VBF)

This model must be added directly to the waste stack, inlet connections may be drafted using the available connectors. To obtain the configuration of inlet connections, use flags X1, X2, X3, X4, X5 and X6 in the fitting properties. This way, the fitting is drafted automatically according to required configuration and the proper article number is shown.

Figure 3.15 Configuration parameters of VBF branch.

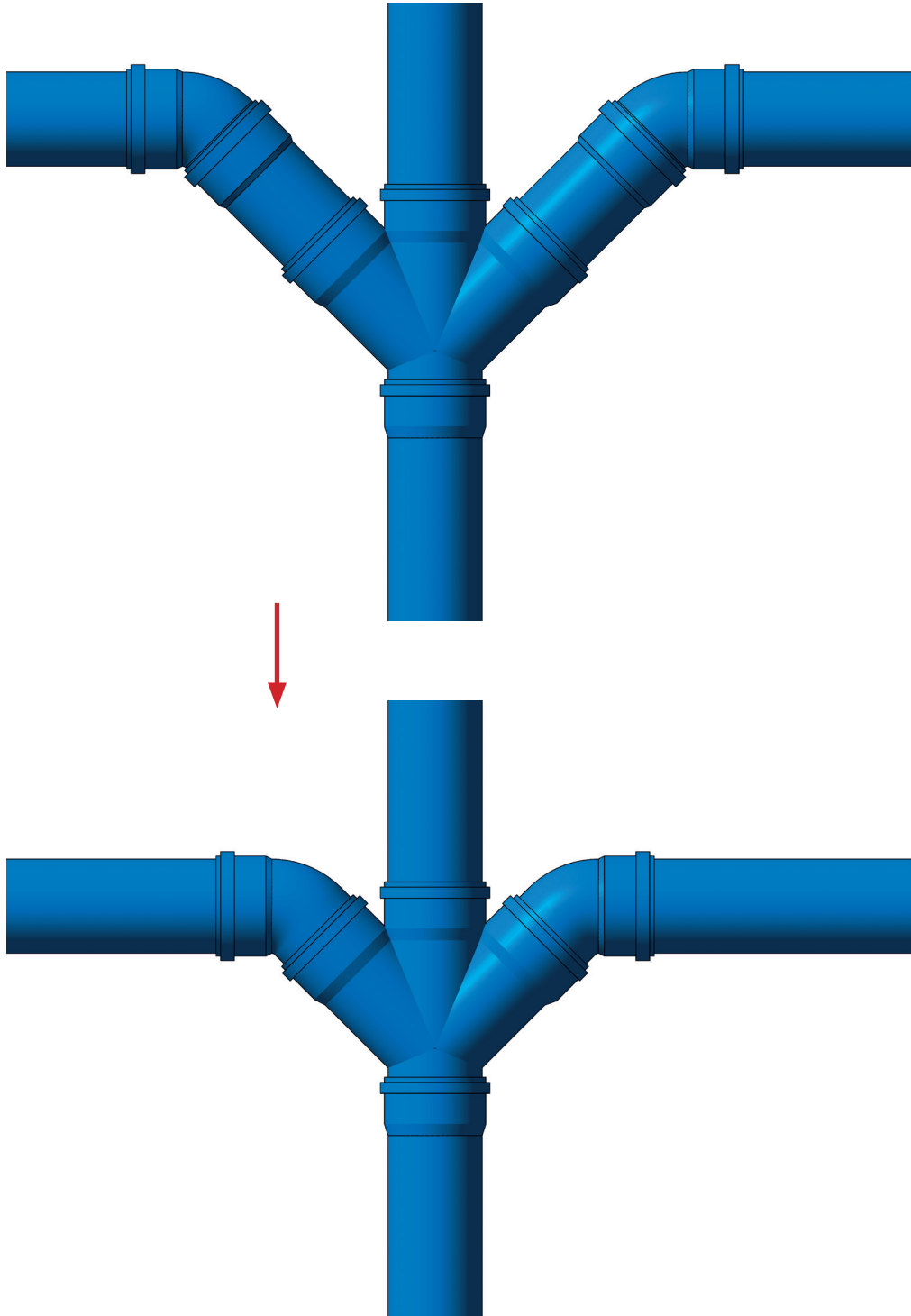


Properties	
	Plumbing-Ventilation_Branch-Valsir-Triplus-01 Standard
Pipe Fittings (1)	 Edit Type
Constraints	⌵
Graphics	⌵
Mechanical	⌵
Mechanical - Flow	⌵
Dimensions	⌵
Identity Data	⌵
Phasing	⌵
Visibility	⌵
Insulation	⌵
Other	⌵
X6	<input checked="" type="checkbox"/>
X5	<input checked="" type="checkbox"/>
X4	<input checked="" type="checkbox"/>
X3	<input checked="" type="checkbox"/>
X2	<input checked="" type="checkbox"/>
X1	<input checked="" type="checkbox"/>
IsCustom	<input type="checkbox"/>

3.1.8 Connecting two fittings

Revit® does not connect two consecutive fittings automatically, but rather adds a length of pipe between them. In order to connect the two fittings, you need to eliminate the length of pipe between them and then drag each fitting until it touches the edge of the other one, so as to make the system whole again. In this type of connection, the “Virtual Socket” visibility parameter discussed in chapter 3.1.1 provides a more life-like representation of the connection.

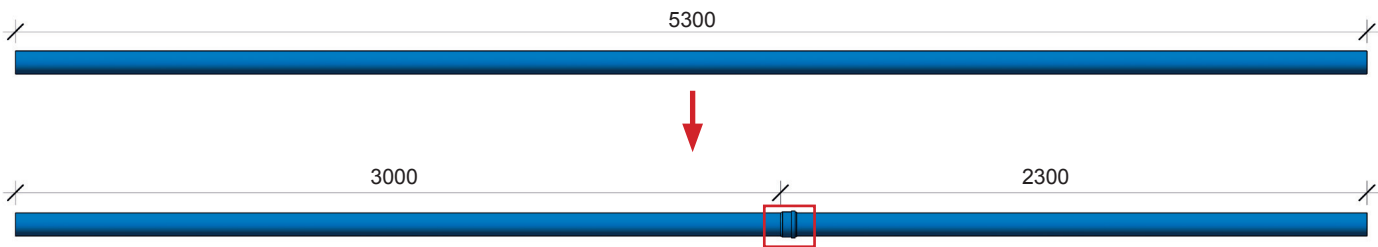
Figure 3.16 Direct connection between two connectors.



3.1.9 Splitting pipes


As outlined in chapter 2.5.1, a pipe can be split into two lengths by adding a “Socket” or a “Sliding Sleeve”. These models are classified as “Pipe fitting”. When inserted **directly** on the desired pipe, they match its diameter and **automatically** split the pipe into two elements. Obviously enough, the “Socket” model does not include any article numbers.


Figure 3.17 Splitting a pipe.



This procedure comes handy when you need to **resolve** any of the alerts discussed in chapter 2.5.1 and obtain a **list of materials** for pipes that matches the sales catalogue.

Figure 3.18 Schedule of pipes before and after splitting pipes into commercial lengths.

<div> QUALITY FOR PLUMBING</div> <div><Valsir Triplus Pipes></div>				
A	B	C	D	E
Model Description	Article No.	Diameter	Effective Length	Waste System
Split Pipe (Max 3000 mm)	Split Pipe (Max 3000 mm)	75 mm	5300.00	Valsir Triplus
1			5300.00	

<div> QUALITY FOR PLUMBING</div> <div><Valsir Triplus Pipes></div>				
A	B	C	D	E
Model Description	Article No.	Diameter	Effective Length	Waste System
Valsir Triplus D75 L3000mm	VS0650073	75 mm	2296	Valsir Triplus
Valsir Triplus D75 L3000mm	VS0650073	75 mm	3000	Valsir Triplus
2			5296	

3.2 Weld-type waste systems (HDPE)

Valsir **HDPE** is the high-density polyethylene waste system made up of pipes, fittings and fixtures that will fit any type of installation for waste and rainwater drainage systems.

Valsir HDPE is the ideal solution for both above-ground installation (thanks to its UV resistance), and underground installation or buried in concrete, thanks to its excellent mechanical properties.



3.2.1 Using pipes and fittings in the project

Pipes and fittings for weld-type waste systems are basically used as specified in chapter 3.1.1, except that there are no sockets.

3.2.2 How to use Bend fittings

The instructions provided in chapter 3.1.2 apply, except that there are no sockets (nor the “Virtual Socket” parameter). Bend angles are also managed differently, as the catalogue of bend fittings for weld-type waste system covers all angles up to 90°.

For changes of direction at 45° and 90°, the article number of the corresponding bends with a $\pm 3^\circ$ tolerance is displayed. For any other angles, article number refers to long-radius bends, which are designed for these particular changes of direction.

Figure 3.19 Commercial bends available from the catalogue.

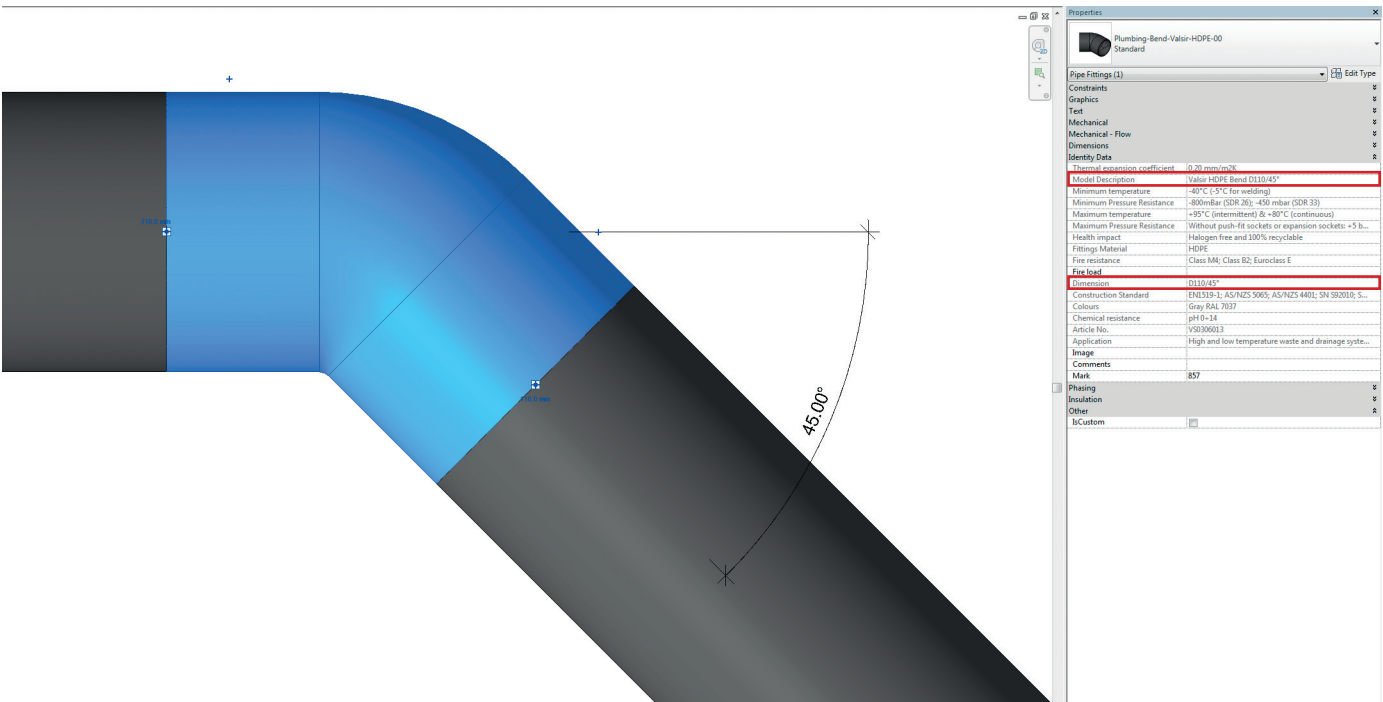
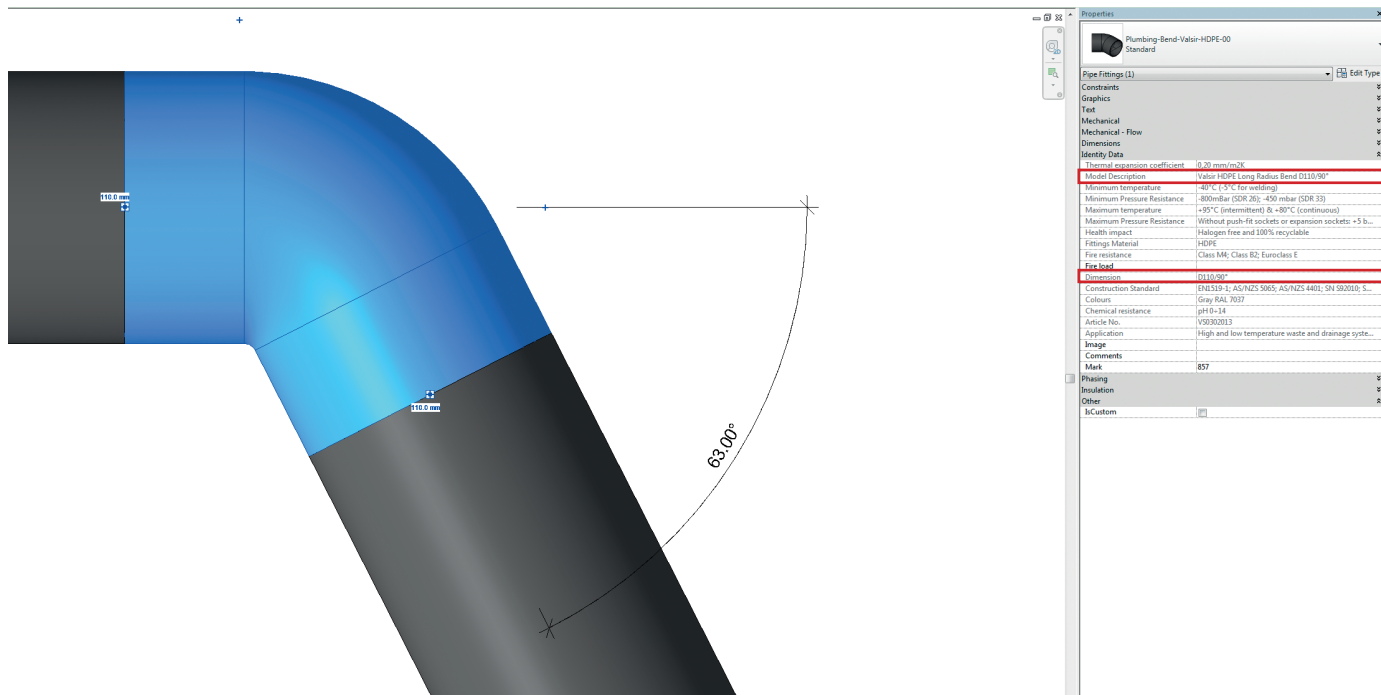


Figure 3.20 Adding item 90° bend for different angles, in accordance with installation methodology.



A **specific family** named “Double 45° Bend” has been created for those applications that require double 45° bends in place of 90° bends. 90° bends can be selected and the family type changed from the pull-down menu available in the “Properties” window.

3.2.3 How to use Branch fittings

Please see chapter 3.1.3.

3.2.4 How to use Reducing fittings

For weld-type waste systems, the reducing fitting catalogue includes both concentric and eccentric elements. Article number is displayed according to the drafting setting selected by user, i.e. concentric or eccentric.

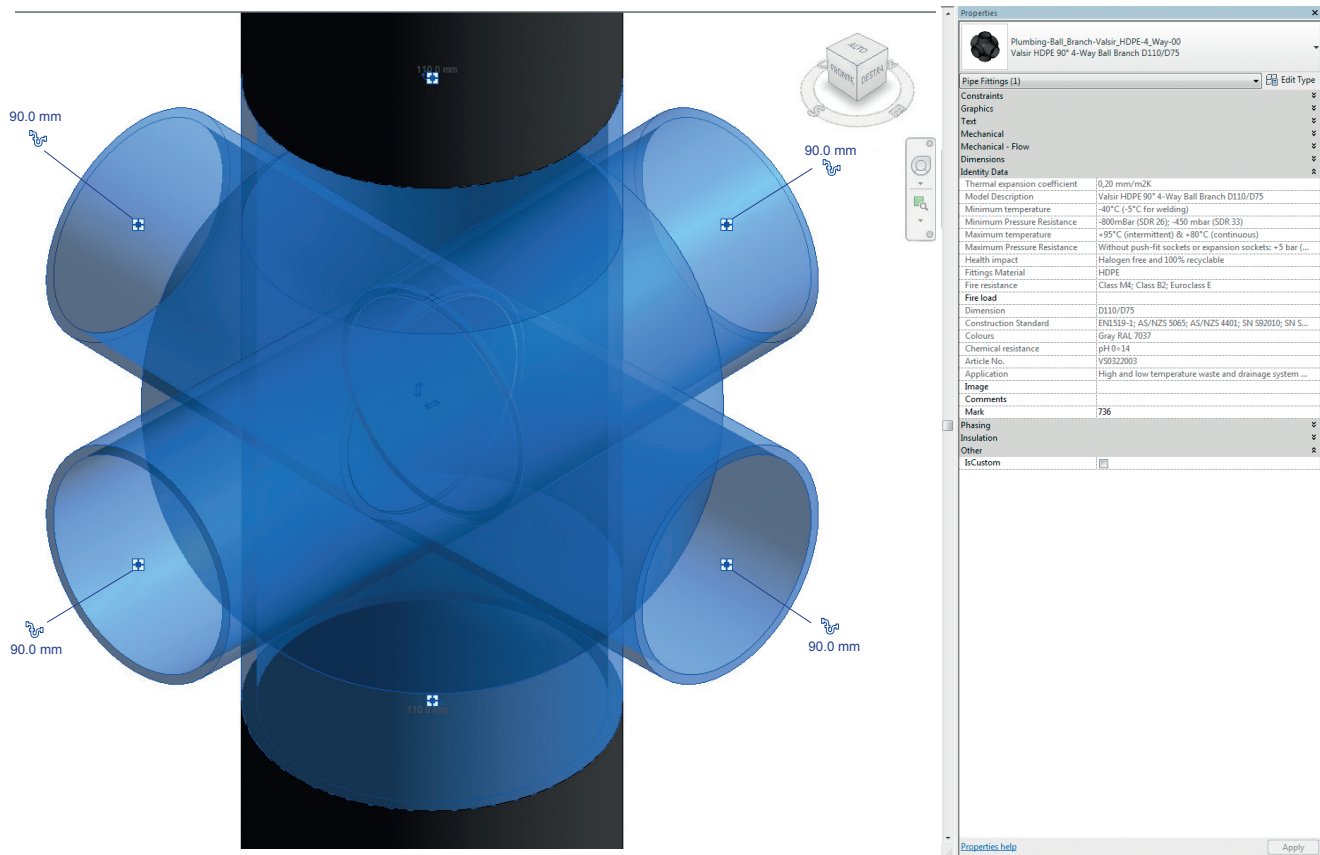
3.2.5 How to use Inspection fittings

Please see chapter 3.1.5.

3.2.6 How to use Ball branches and a Double branch

These models must be placed directly on the pipe, just like inspection fittings. Inlet connections can be drafted using their **connectors**.

Figure 3.21 Adding a ball branch to a stack.



3.2.7 How to use a Ventilation Branch Fitting (VBF)

Just like the fittings discussed in chapters 3.2.5 and 3.2.6, this model must be added directly to the waste stack. Inlet connections can be drafted using VBF own connections.

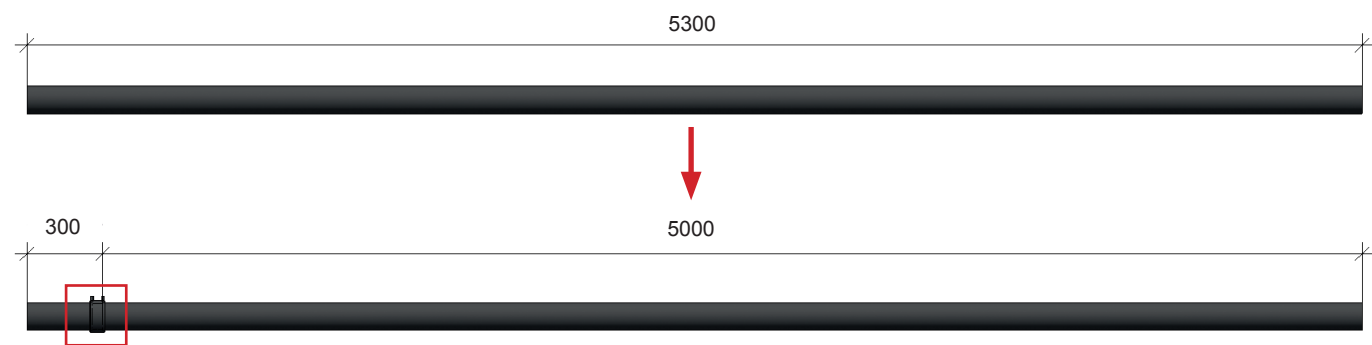
3.2.8 Connecting two fittings

The method of connecting two fittings is basically the same specified in chapter 3.1.8, except that there are no sockets.

3.2.9 Splitting pipes


As outlined in chapter 2.5.1, a pipe can be split into two lengths by adding an “Electro fusion coupling”. This model is classified as “Pipe fitting”. It must be inserted **directly** on the desired pipe, it **matches** its diameter and **automatically** splits the pipe into two elements. The article number of the electro fusion coupling is then shown correctly.


Figure 3.22 Splitting a pipe.



This procedure comes handy when you need to **resolve** any of the alerts discussed in chapter 2.5.1 and obtain a **list of materials** for pipes that matches the sales catalogue.

Figure 3.23 Schedule of pipes before and after splitting pipes into commercial lengths.

<div> QUALITY FOR PLUMBING</div> <div><Valsir HDPE Pipes></div>				
A	B	C	D	E
Model Description	Article No.	Diameter	Effective Lenght	Waste System
Split Pipe (Max5000mm)	Split Pipe (Max5000mm)	110 mm	5300	Valsir HDPE SDR26
1			5300	

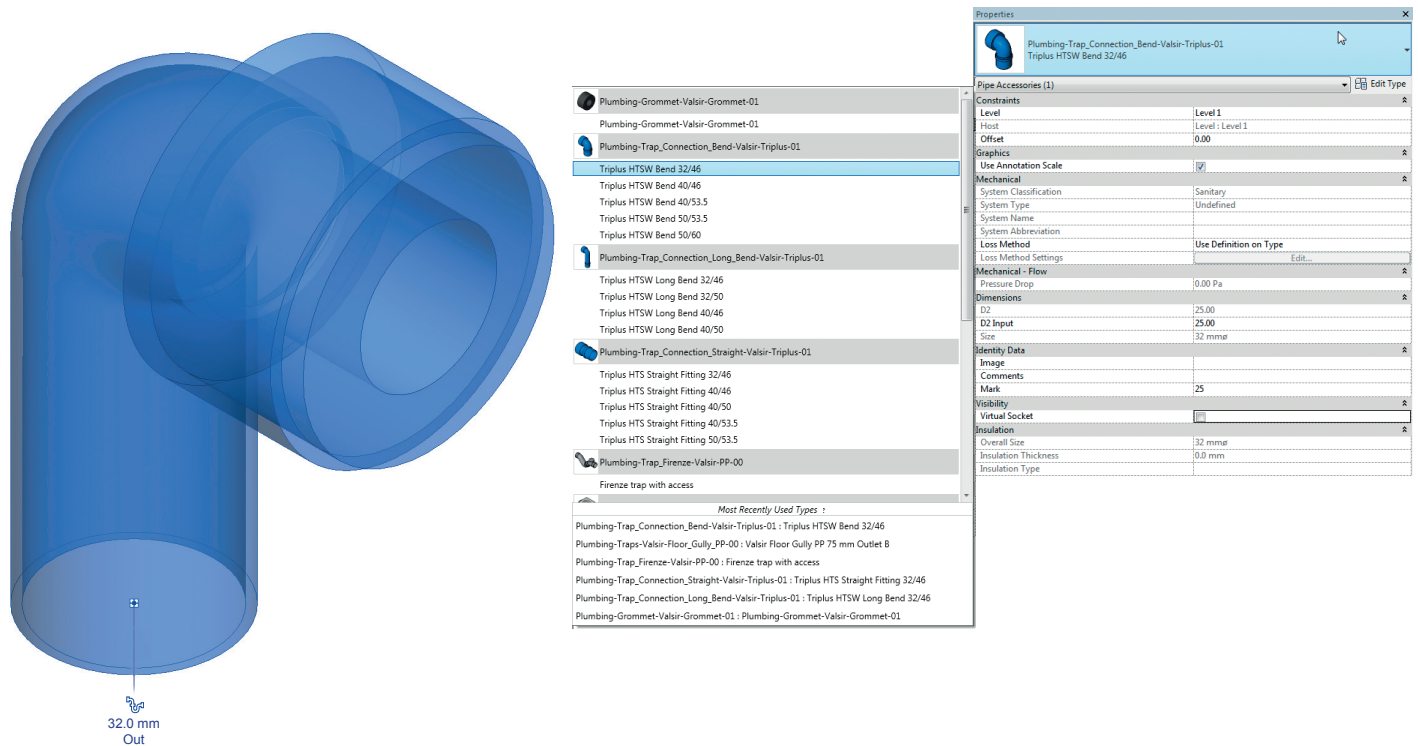
<div> QUALITY FOR PLUMBING</div> <div><Valsir HDPE Pipes></div>				
A	B	C	D	E
Model Description	Article No.	Diameter	Effective Lenght	Waste System
Valsir HDPE D110 SDR26 L3000mm	VS0301011	110 mm	260	Valsir HDPE SDR26
1			260	
Valsir HDPE D110 SDR26 L5000mm	VS0300013	110 mm	5000	Valsir HDPE SDR26
1			5000	

3.3 Trap connection bends

There is no dedicated template file “*.rte” for these families. They need to be loaded into the project file as outlined in chapter 2.2.

Trap connection bends are classified as “Pipe accessory” and have been developed to act as the **starting point of the system**: user must select the type of fitting to be added from the pull-down menu in the “Properties” window.

Figure 3.24 Trap connection bend: parameters and family types.



These models include an outlet connector to start drafting the layout. The size of the inlet connection (siphon of basin, bidet, etc.) may be edited using parameter “D2 Input”, and the corresponding “Grommet” will be updated **automatically**.

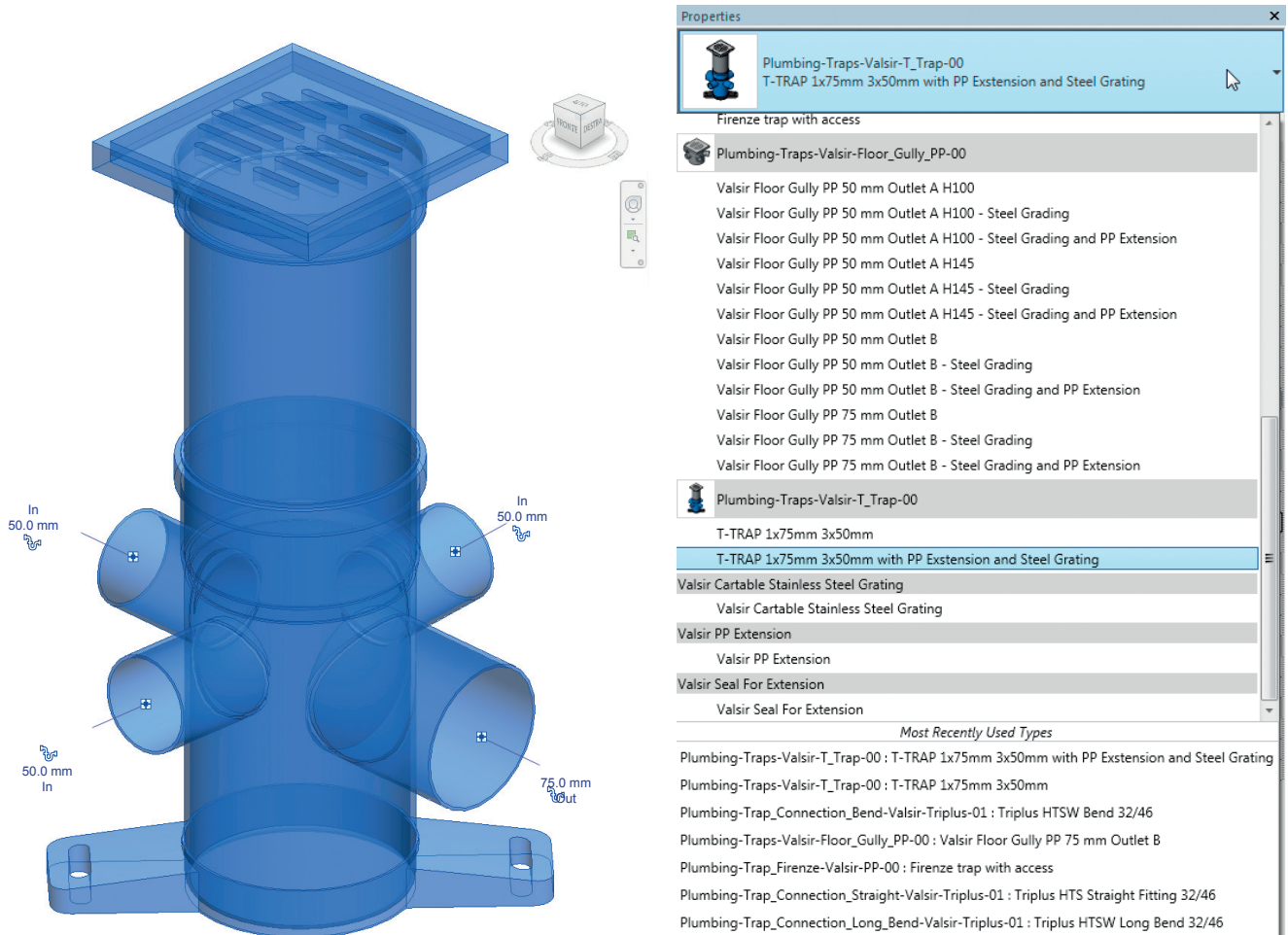
3.4 Traps and siphons

There is no dedicated template file “*.rte” for these families. They need to be loaded into the project file as outlined in chapter 2.2.

3.4.1 Traps

Traps are classified as “Pipe accessory”. User must select the type of trap to be added from the pull-down menu available in the “Properties” window.

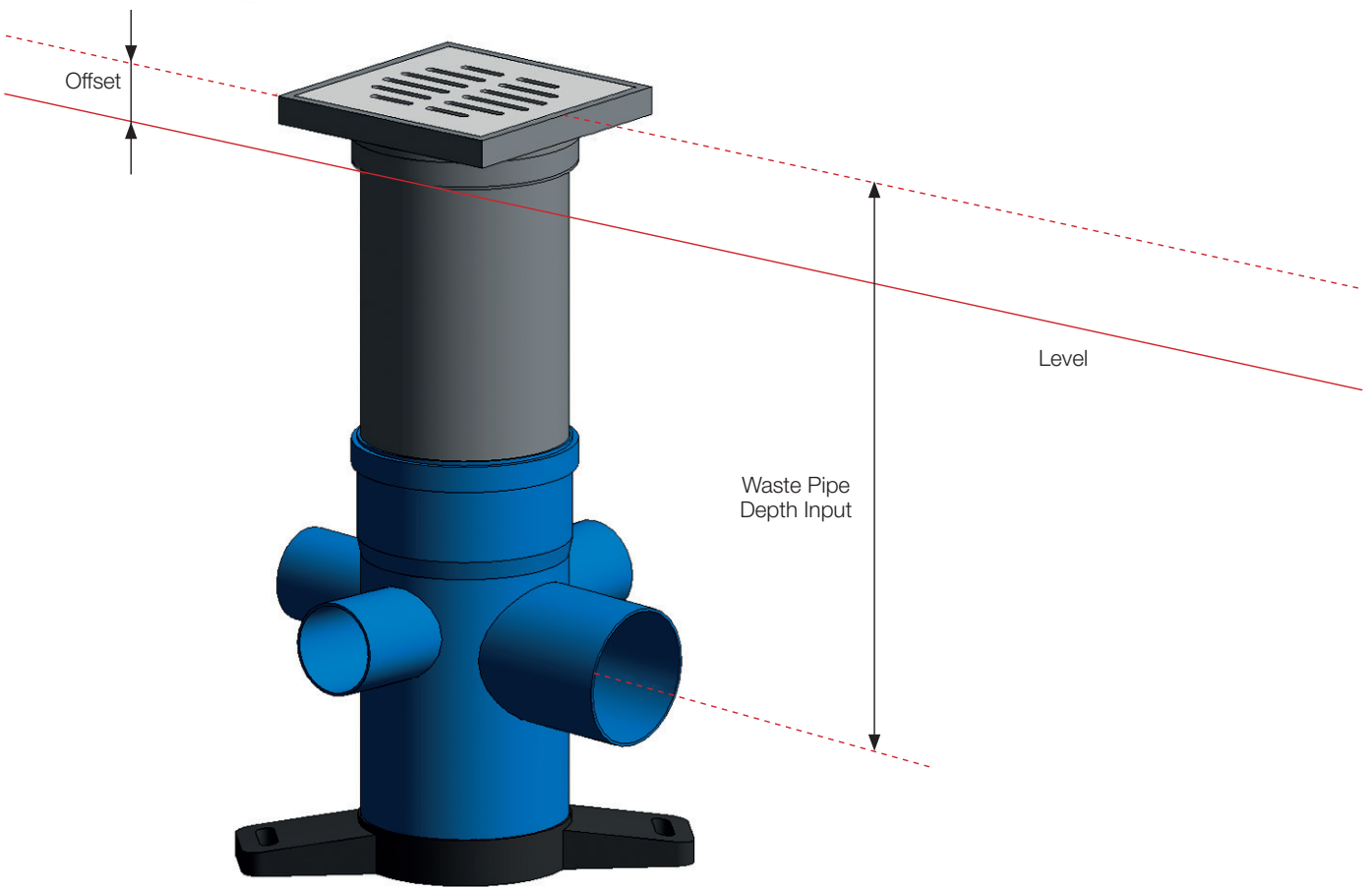
Figure 3.25 T-Trap: types of families and connections.



User can **manage** these models by means of two parameters (see Figure 3.26):

- “Offset” enables user to modify the distance from model insertion point to the level where the model has been positioned;
- “Waste Pipe Depth Input” enables user to modify the distance between model insertion point and the axis of the outlet connector.

Figure 3.26 T-Trap: editable parameters.

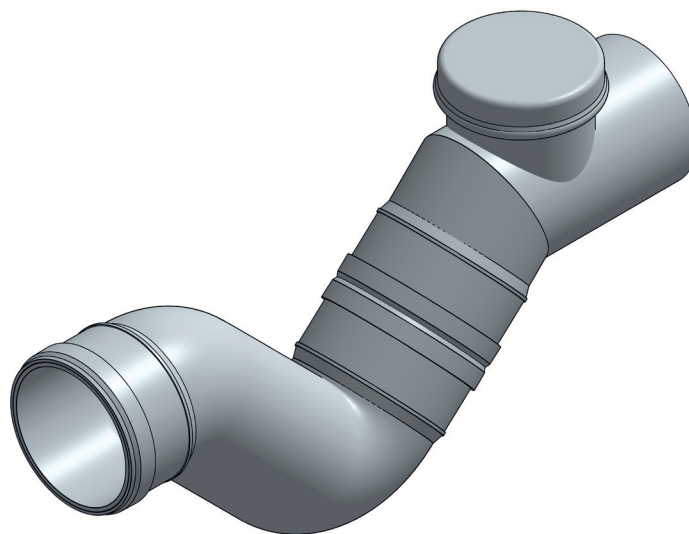


3.4.2 Siphons

Siphons models are classified as “Pipe accessory”. The method for adding them varies according to function:

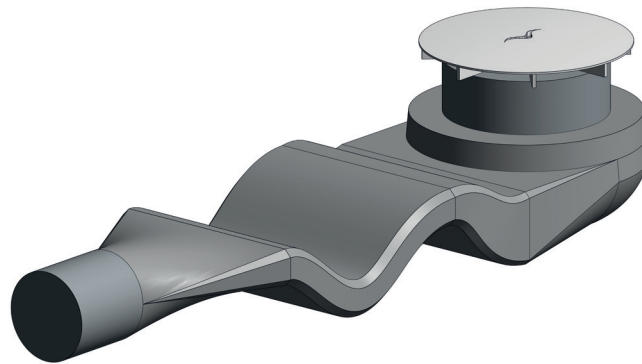
- Firenze siphons may be placed **directly** at the terminal end of the pipe. **Their geometry is automatically adapted** to pipe diameter;

Figure 3.27 3D model of Firenze siphon.



- Siphon for bathroom systems have been developed to work as the starting point of the waste/soil system. User must select the type of syphon to be added from the pull-down menu available in the “Properties” window.

Figure 3.28 3D model of T-58 siphon.

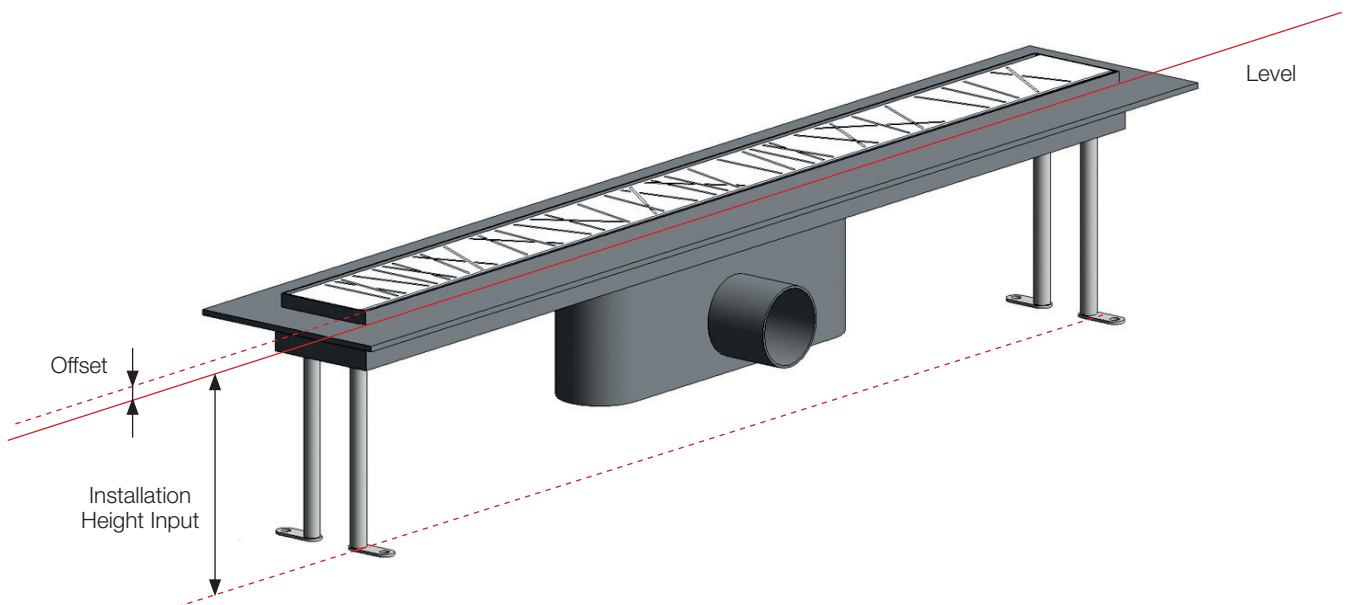


User can **manage** the model of shallow T-58 syphon following the same procedure for traps outlined in chapter 3.4.1.

The model of the Linea siphon can be managed by user by means of two parameters:

- “Offset” enables user to modify the distance from model insertion point and the level at which model has been positioned;
- “Installation Height Input” enables users to modify the height of support feet.

Figure 3.29 Linea siphon: editable parameters.

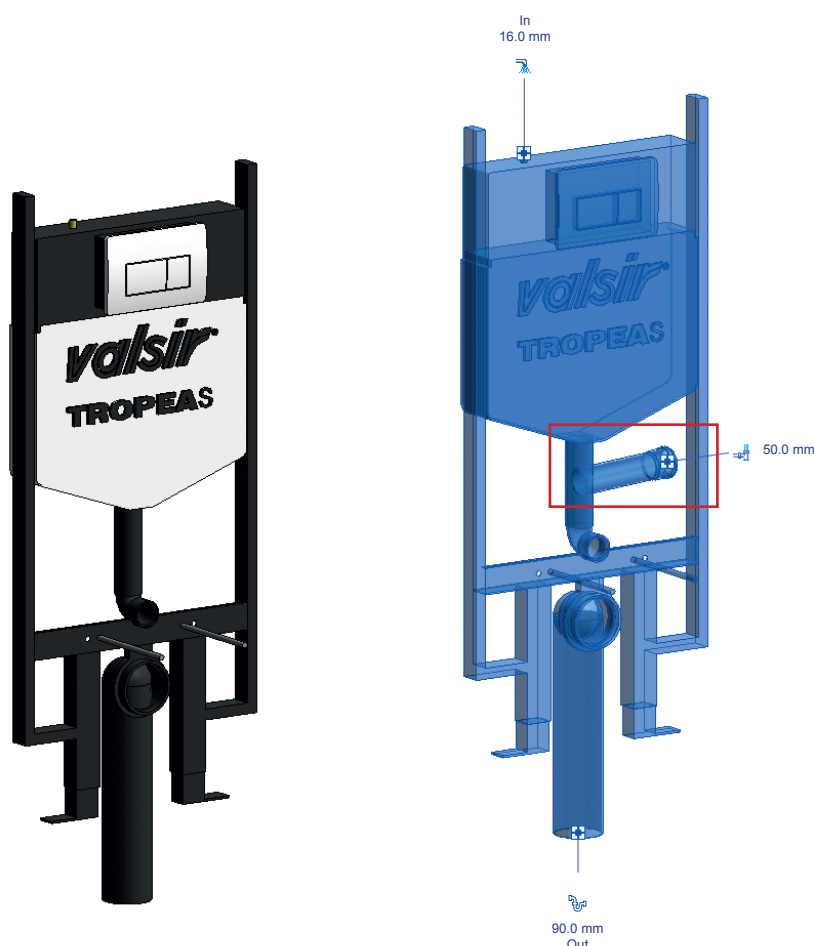


3.5 Flush cisterns

There is no dedicated template file “*.rte” for these families. They need to be loaded into the project file as outlined in chapter 2.2.

The models of Valsir flush cisterns are classified as “Plumbing fixture”; they have been developed to **work as** both, starting and terminal point of a system, and feature two **connectors**: a waste and a supply connector. Specific models for the **Ariapur** ventilation system feature an additional connector that enables users to create the dedicated layout and **connect** it to the Ariapur element (to be imported following the procedure outlined in chapter 2.2).

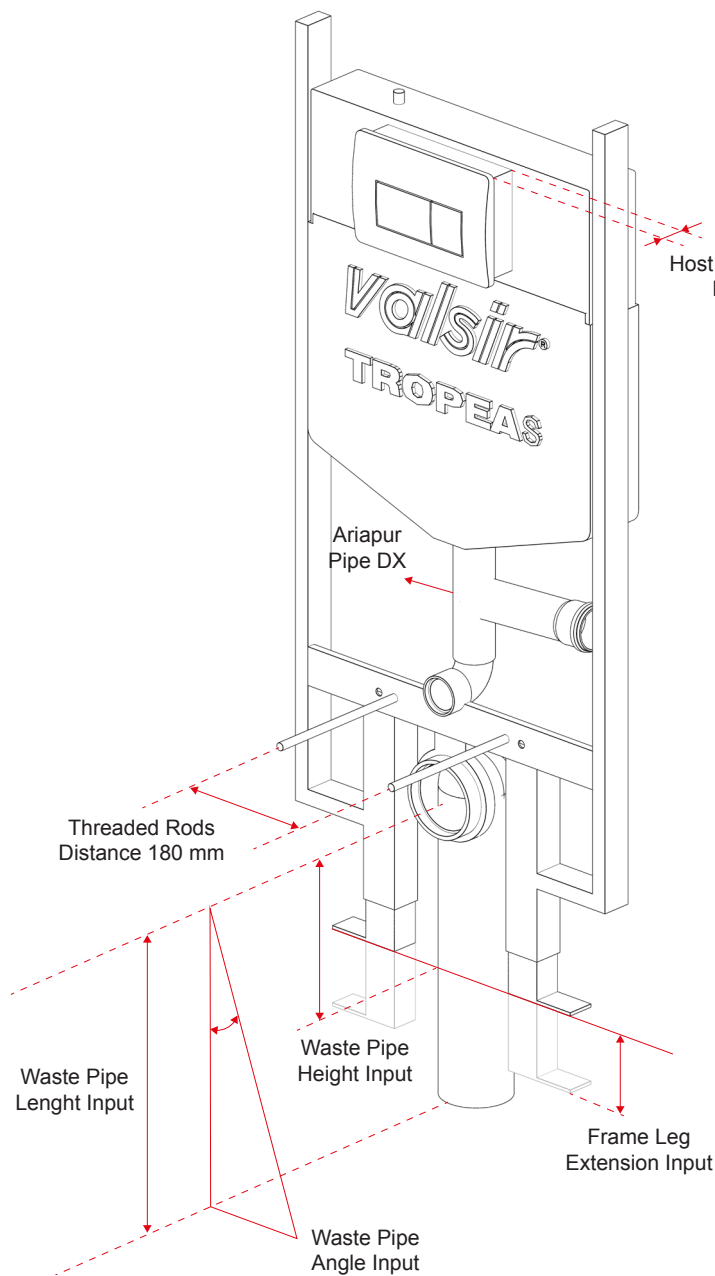
Figure 3.30 Flush cistern with and without Ariapur.





The reference point for inserting the model is the centre of the flush-mounted plate. User needs to add the object at the desired location in the floor layout plan and select its orientation using the spacebar.

User can set up the model using the specific editable parameters in the pull-down menu available in the “Properties” windows, such as installation depth, inclination and length of waste pipe, height above reference level, orientation of Ariapur system connection, etc.

Figure 3.31 Flush cistern: editable parameters.



Properties	
 Flush_System-Valsir-Tropeas-Block_S90_Mechanic_Ariapur-00 Tropeas-Block-S90-Mechanic-Ariapur	
Plumbing Fixtures (1) 	
Constraints	
Level	Level 1
Host	Level : Level 1
Offset	0.00
Mechanical	
System Classification	Vent,Domestic Cold Water,Sanitary
System Type	Undefined
System Name	
System Abbreviation	
Dimensions	
Waste Pipe Height Input	230.00
Waste Pipe Height	230.00
Host Distance Input	40.00
Host Distance	40.00
Waste Pipe Angle Input	0.000°
Waste Pipe Angle	0.000°
Waste Pipe Length Input	400.00
Waste Pipe Length	400.00
Frame Leg Extension Input	0.00
Frame Leg extension	0.00
Ariapur Pipe Angle	90.000°
D1	45.00
Identity Data	
Image	
Comments	
Mark	5
Phasing	
Other	
Ariapur Pipe DX	<input checked="" type="checkbox"/>
Ariapur Pipe SX	<input type="checkbox"/>
Front Push Plate	<input checked="" type="checkbox"/>
Flush Plate Type<Specialty Equipment>	Valsir Mechanic Flush Plate : P1 Mechanic White
Threaded Rods Distance 180 mm	<input checked="" type="checkbox"/>
Threaded Rods Distance 230 mm	<input type="checkbox"/>

4

WATER SUPPLY SYSTEMS

WATER SUPPLY SYSTEMS

Revit® models are available for Valsir multilayer pipes and fittings for supply systems:

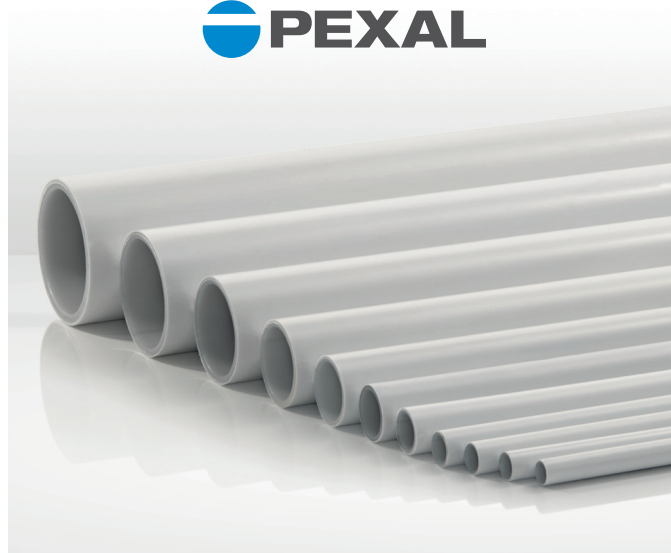
- Pexal® and Mixal® multilayer pipes;
- Pexal® Easy and Pexal® Brass fittings.

The Revit® model of product Pexal® Connex-T derivation clamp for multilayer systems is also available.

These products feature high mechanical, chemical and physical resistance, offer great flexibility during construction, and are extremely easy and quick to install.

Multilayer pipes (Pexal® and Mixal®)

Pexal® - These innovative multilayer pipes made of cross-linked polyethylene and butt-welded aluminium combine the benefits of PE-Xb (resistance to abrasion, corrosion and chemical agents, excellent hygienic properties) with those of aluminium (resistance to high temperatures and high pressure, dimensional stability, impermeability to oxygen and light, as well as low heat expansion).



Mixal® - These multilayer pipes offer the main features of Pexal® pipes, and provide great laying flexibility thanks to flexibility during construction, as well as long-term stability of the installed layout.



Fittings (Pexal® Easy and Pexal® Brass)

Pexal® Easy is a cutting-edge fitting system in technopolymer (PPSU). When installed with Pexal® pipes, these fittings ensure full bore flow. They reduce considerably the installation time and can be reused. PPSU technopolymer features excellent mechanical resistance, and high resistance to oxidation, corrosion and to the main chemical components dissolved in water, cement and lime. Thanks to these properties, it outperforms common polymers.

 **PEXAL EASY**



Pexal® Brass is a versatile press fitting system. The fittings feature a brass alloy body and stainless steel sleeve. Jointing technique has been developed to facilitate and speed up mounting and installation, and the fitting insert is specially designed to provide a leakage detection point and immediately identify any unpressed fittings. These fittings are a perfect match for Pexal® and Mixal® pipes.

 **PEXAL BRASS**



Bravopress® is the press fitting system made of technopolymer (PPSU), a plastic material with excellent mechanical and corrosion resistance. Bravopress® fittings are used with Pexal® and Mixal® multilayer pipes and Thermoline® cross-linked polyethylene pipes to create water supply systems, heating and cooling systems, and industrial applications.

 **BRAVOPRESS**



Derivation clamp

Pexal® Connex-T - Developed by Valsir to add branch lines to new or existing multilayer piping systems with large diameters, this product has revolutionised multilayer piping installation. It comes in broad range of diameters (from 50 mm Ø to 90 mm Ø with outlets in sizes 1/2" through to 1"). Extremely easy and quick to install, it significantly reduces installation time and costs and facilitates maintenance.

 **PEXALCONNEX-T**



Figure 4.1



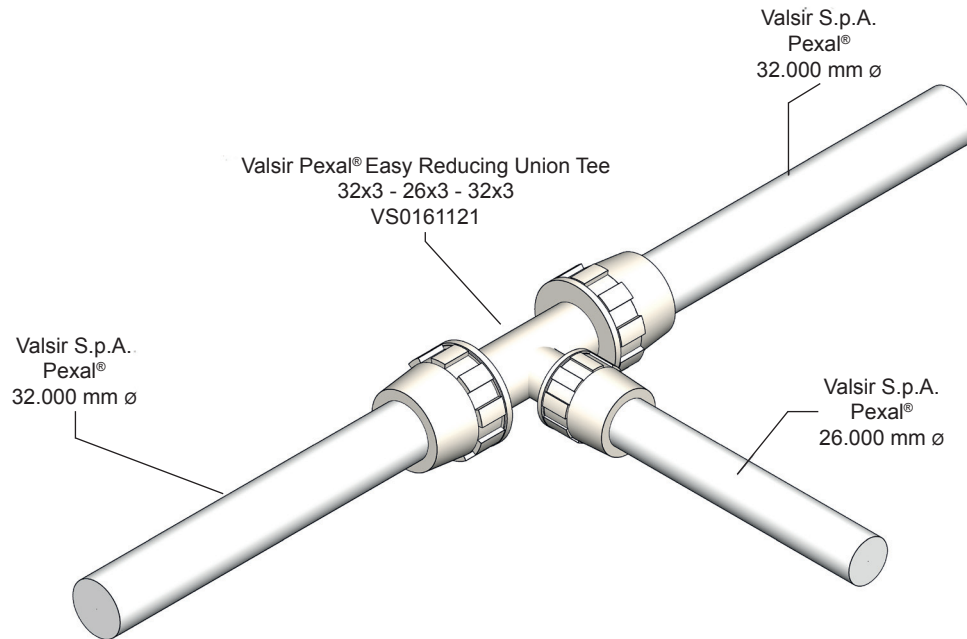
4.1 Template file for water supply systems

Valsir developed one individual “*.rte” template file for each water supply fittings system, as done for waste/drainage systems.

Currently, designers can model the following systems in Revit®:

- water supply systems with full-bore PPSU fittings;
- water supply systems with PPSU press fittings;
- water supply systems with brass press fittings.

Figure 4.2 Tee with Pexal® Easy fitting and indication of elements.



When starting modelling in Revit®, it is very important for users to be aware of the options offered by each Valsir templates. After selecting “Pipe” in the “Systems” menu, user can choose which type of multilayer pipe is compatible with the dedicated fitting series to use to draft system layout. Valsir offers a very flexible range of design options.

4.2 Water supply system with full-bore Pexal® Easy fittings

This system is unique in its ability to offer full bore flow. It uses Pexal® Easy fittings and Pexal® pipes, both in the “Standard” and “Overthickness” versions.

4.2.1 Using pipes and fittings in the project

As outlined above, in Revit®, select “Pipe” in the “Systems” menu, choose a compatible pipe and draft the layout of the desired system.

You may manage this operation through the “Diameter” box of the options bar: Valsir chose to develop “auto-routing” parametric models so that the layout will update automatically according to user’s selections.

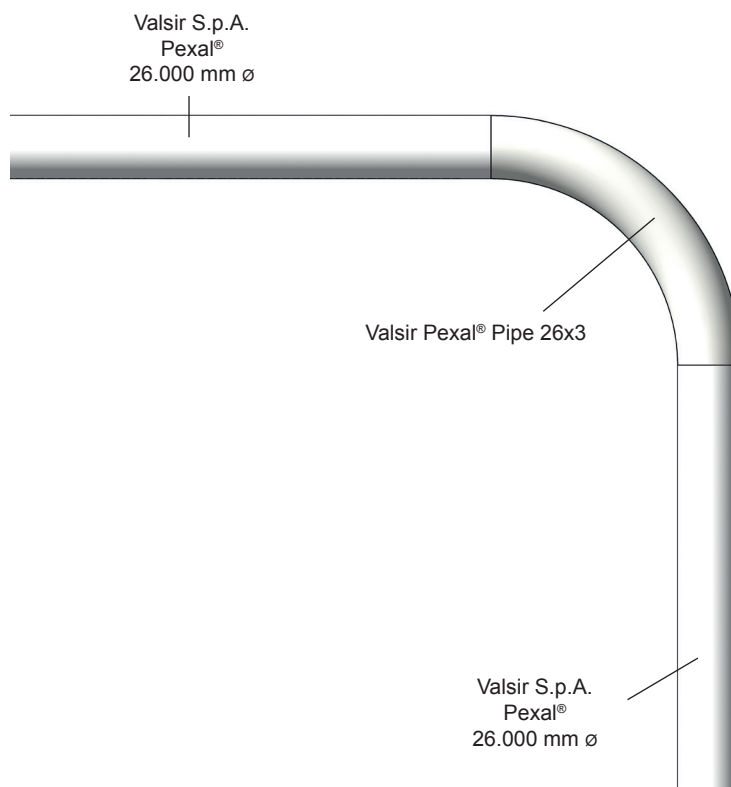
4.2.2 How to manage changes in direction

Unlike waste systems, changes of direction in multilayer pipes for water supply systems can be managed in two ways:

- by bending the pipe;
- by adding an elbow.

As mentioned in chapter 2.4, Revit® handles pipes as rigid elements and changes of direction are managed by setting the desired type of fitting. Within specific routing preferences, Valsir choose the bending technique, as multilayer pipes offer excellent flexibility. This superior property is reflected in the template by a specific family of “pipe fittings” named “Pipe_Bend” that faithfully reproduces pipe behaviour when a pipe is bended by means of pipe bender. A length of bent pipe is automatically generated according to pipe diameter and bend angle. A key feature of this family is the ability to draft any branch angles up to 90° and obtain a life-like representation of the actual overall dimensions of the entire system.

Figure 4.3 Managing changes in direction with *pipe bend*.



In addition, Valsir chose to offer users the ability to unselect parameter “Mechanical bending” for each “Pipe_Bend” generated, and choose manual bending instead of bending with a tool.

Figure 4.4 Pipe bend sized for installation with pipe bending tool.

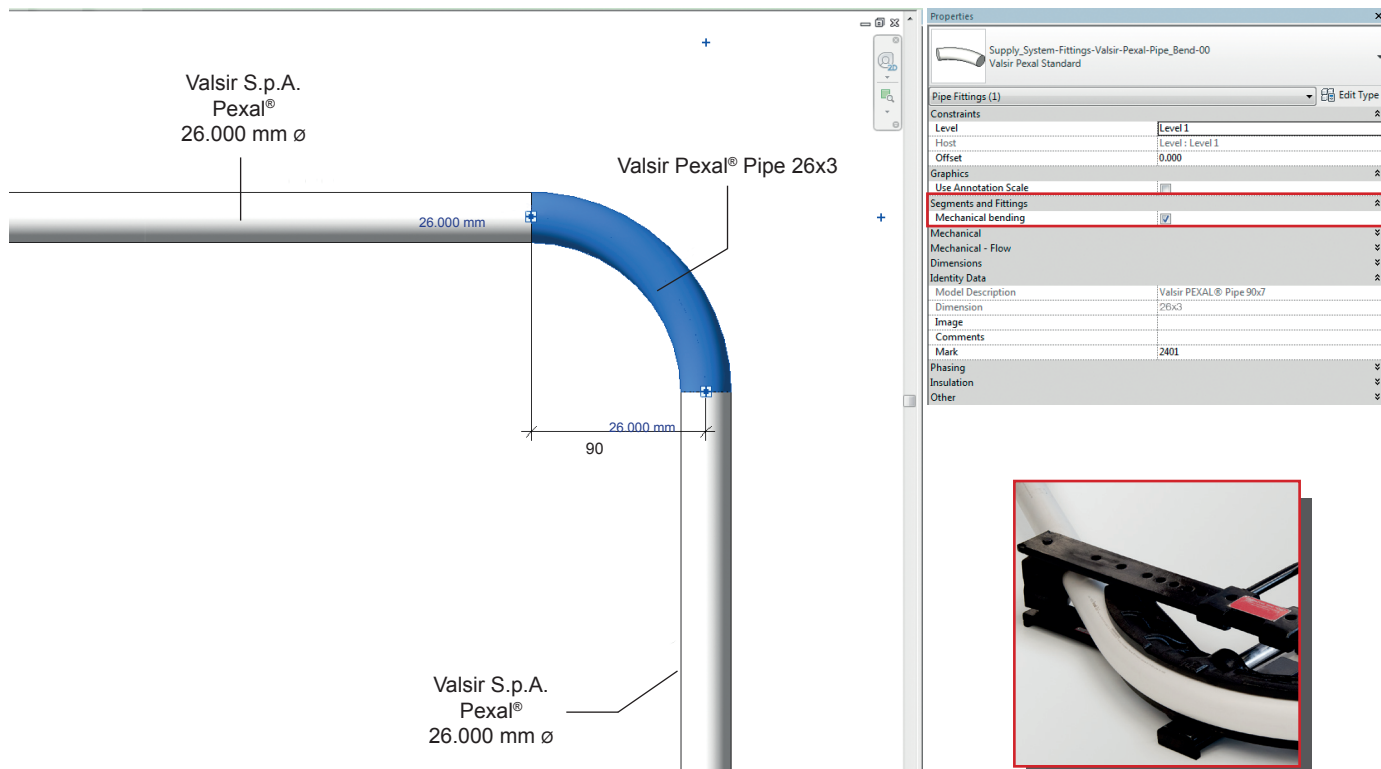


Figure 4.5 Pipe bend sized for installation with manual bending.

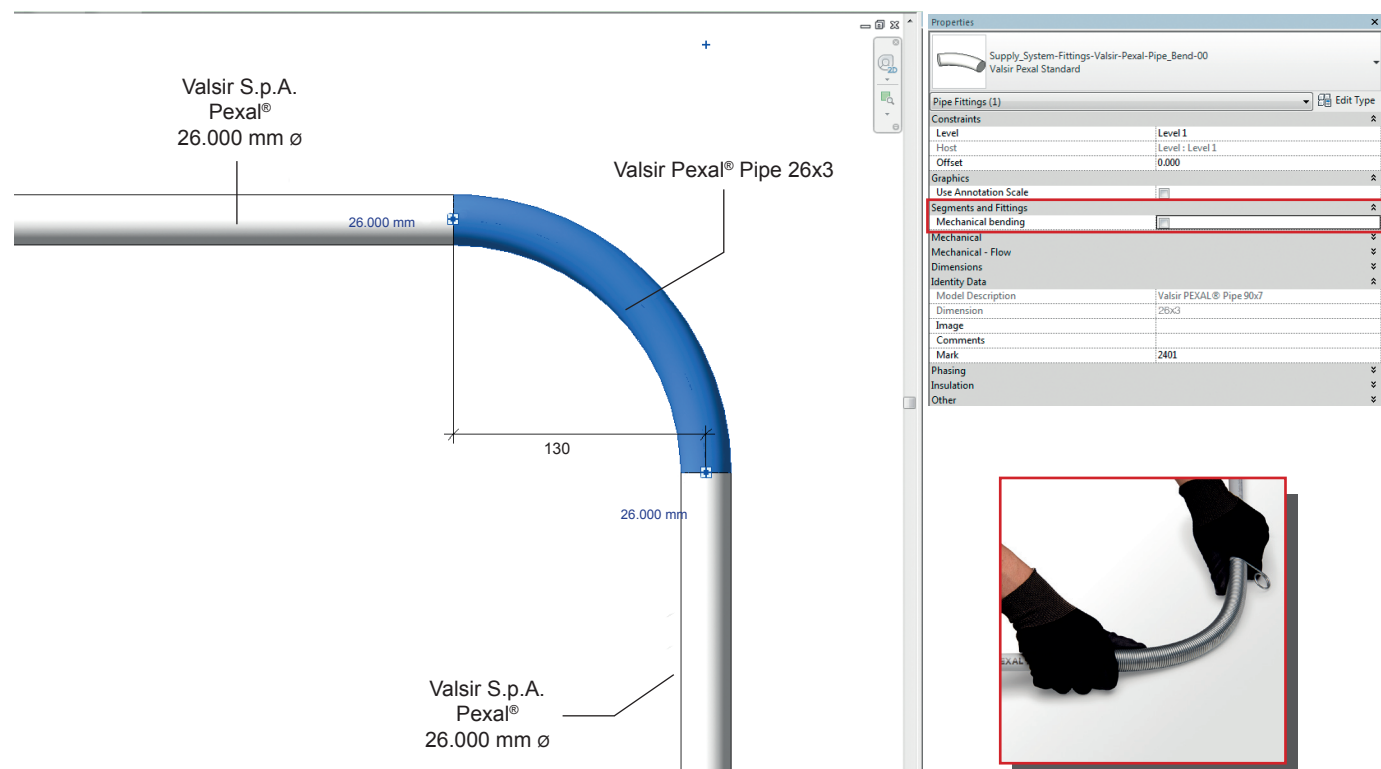
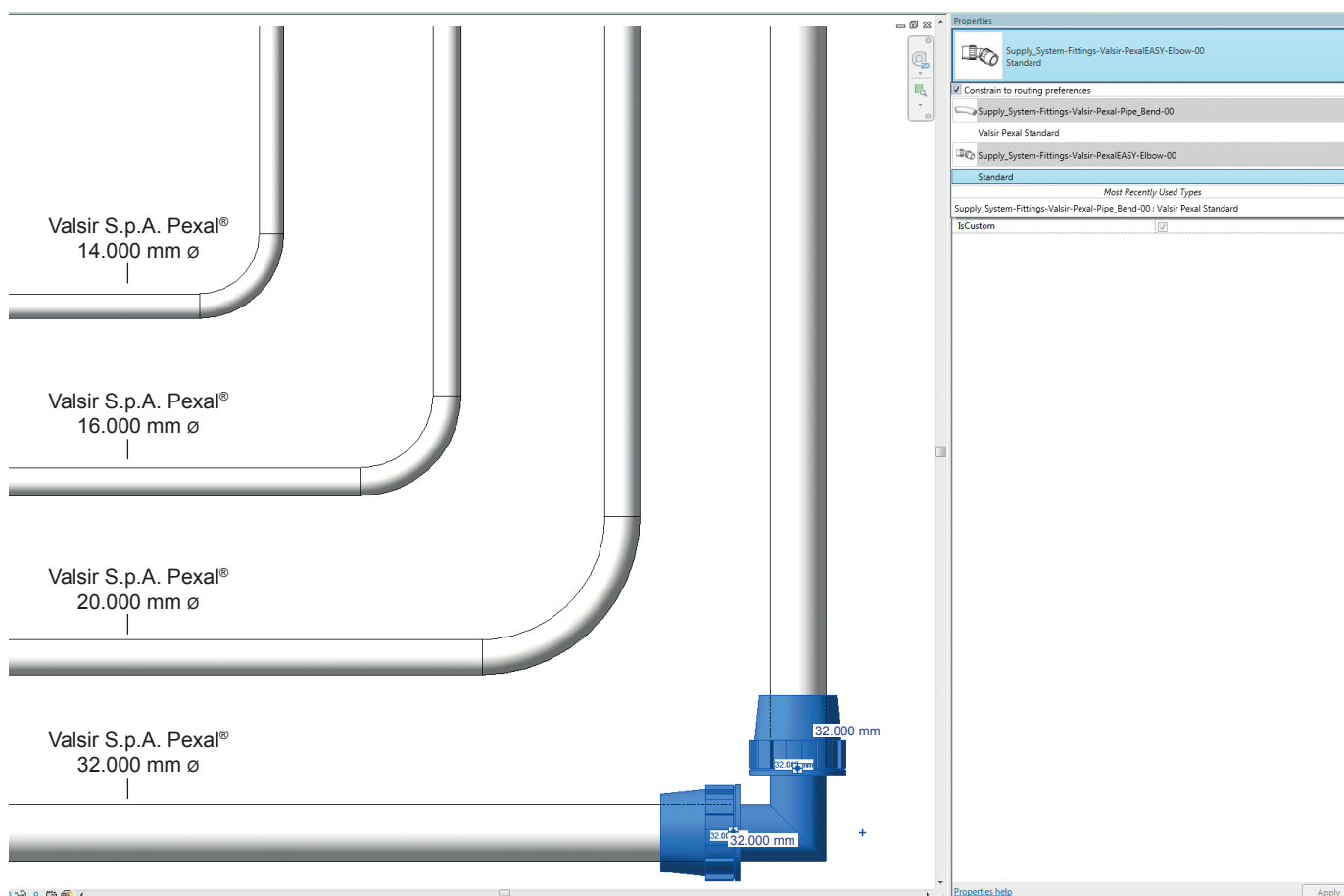


Table 4.1 Bending radii for Pexal® and Mixal® multilayer pipes.

Outer diameter De [mm]	Bending radius [mm]	
	Manual bending $R = 5 \times De$	Mechanical bending
14	70	41
16	80	49
18	90	65
20	100	80
25 / 26	130	90
32	160	120
40	-	150
50	-	190
63	-	240
75	-	320
90	-	530

The “Pipe_Bend” family has no “Article No.” as it is treated as an integral part of the pipe (see chapter 2.5.1). When needed, users may use the “Elbow” model - which can represent changes in direction at 45° and 90° - instead of the “Pipe_Bend” model. Family can be changed after generating the fitting (by changing family type from the pull-down menu in the “Properties” window) or before drafting the system (by changing routing preferences and selecting “Elbow” family as the primary option, and “Pipe_Bend” family as the secondary option).

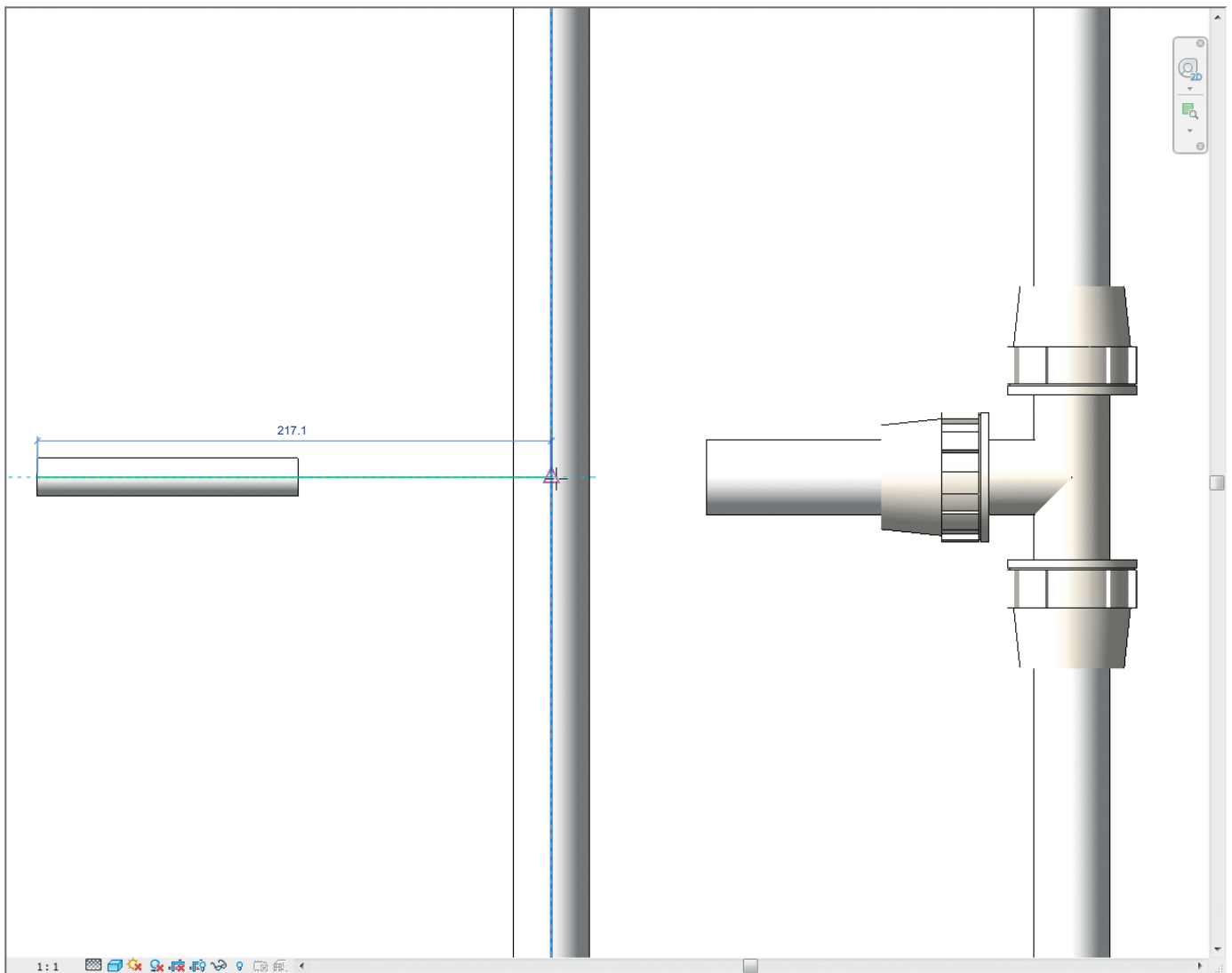
Figure 4.6 Changing from pipe bend to elbow.



4.2.3 How to use Tees

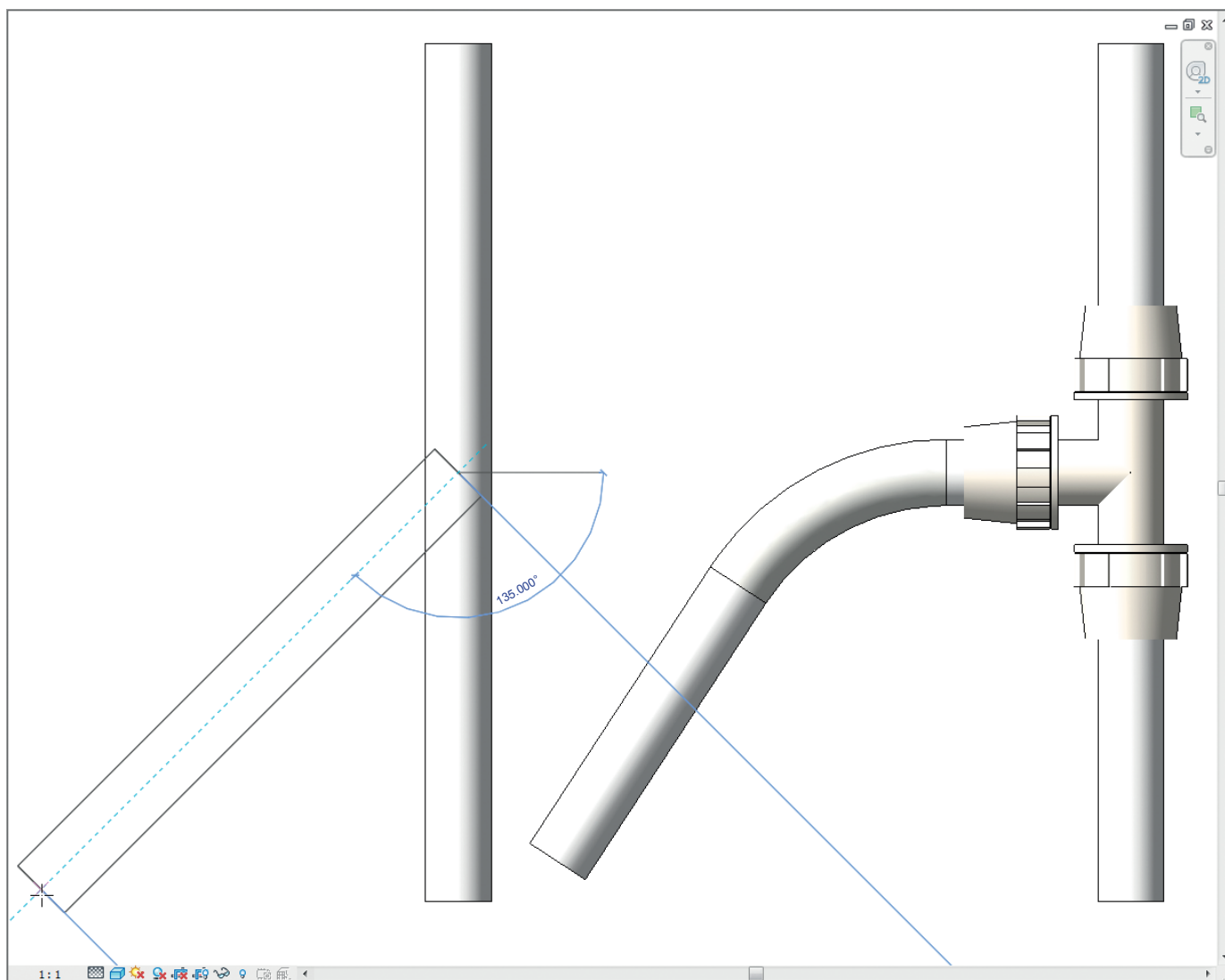
A Tee is added automatically when a pipe connects to another pipe in a right angle connection.

Figure 4.7 Automatic addition of Tee at right angle connections.



In case the User needs to connect the two pipes with non-standard angles, Revit® will generate a Tee fitting and a bend on the pipe in order to adjust automatically the angle inclination (see Figure 4.8).

Figure 4.8 Automatic addition of Tee at non-right-angle connections.

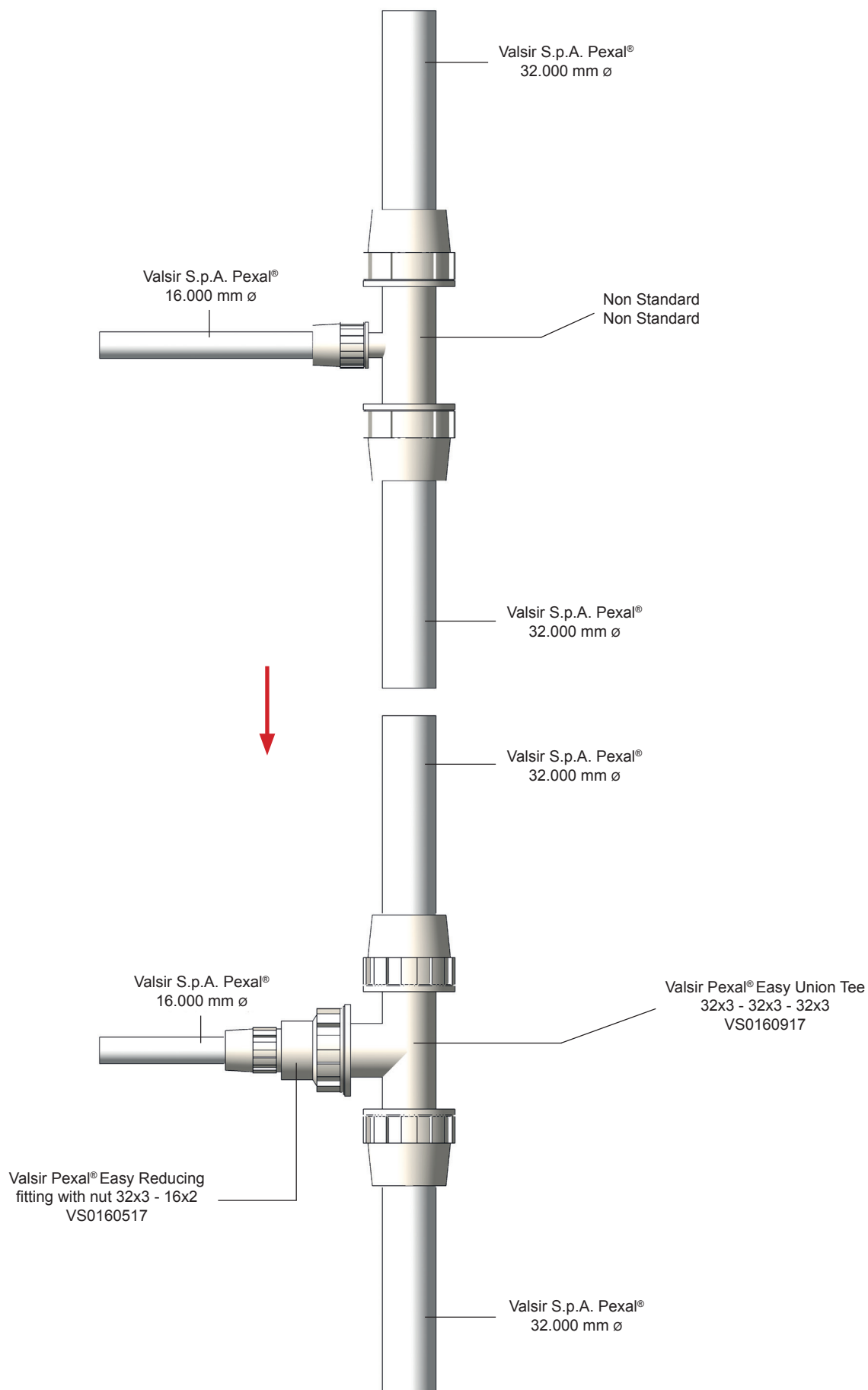


If user's layout does not match any catalogue products, Revit® will generate a fitting with "Non Standard" labels in the "Article No." and "Model Description" parameters fields, so that these elements can be quickly identified in the Schedules and be modified.

Considering the special design of the components of the Pexal® Easy series, Valsir developed a specific family named "Plumbing-Fittings-Valsir-PexalEASY-Tee_COMPLETE". This makes possible to search in the catalogue for a solution compatible with the "Non Standard" layout generated by user, by associating to a Tee fitting, a reduction on one or more outlets.

Select the "Non Standard" fitting and replace it with the above mentioned family, and - assuming that the layout is feasible - a reduction is automatically associated to one or more outlets of the Tee, while the Schedule of the fittings is updated accordingly.

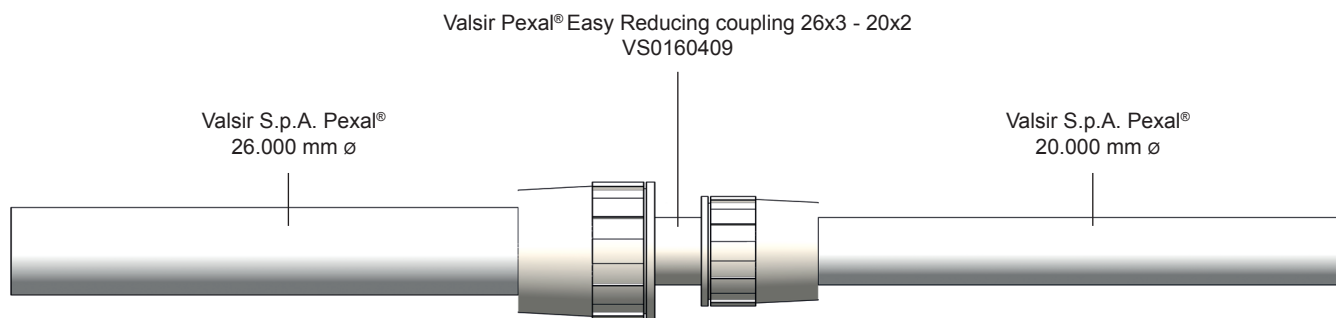
Figure 4.9 Changing family from *Tee* to *Tee_COMPLETE* to manage non-standard fittings.



4.2.4 How to manage Reducing fittings

Straight reducing fittings are generated when user changes diameter while drafting a straight pipeline.

Figure 4.10 Change in pipe diameter with Pexal® Easy fitting and indication of elements.

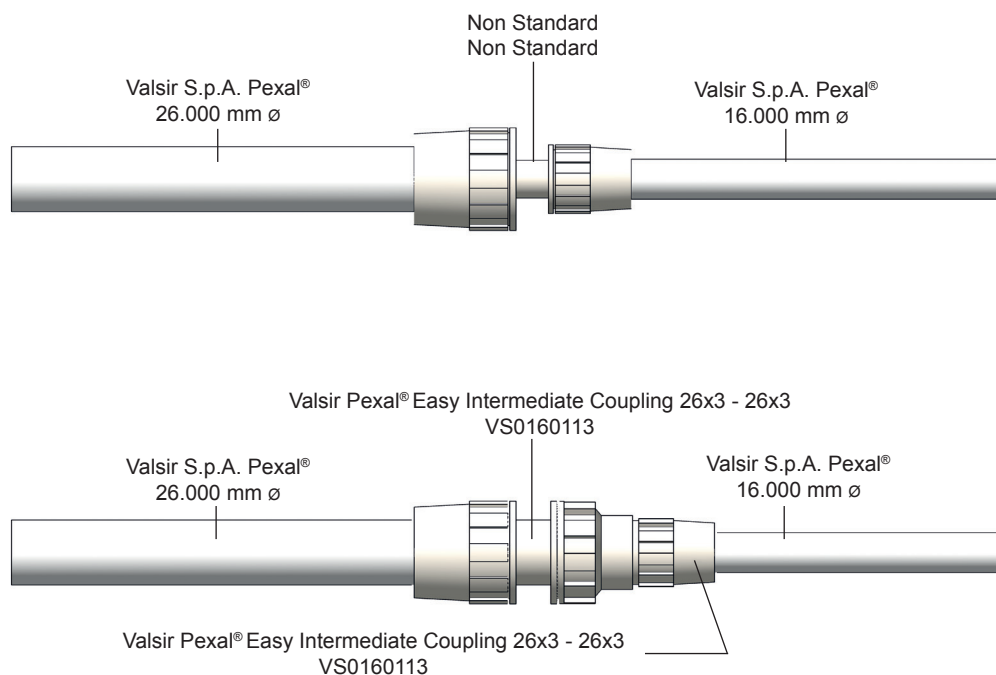


Valsir chose to develop these models using the same approach as for Tees.

If user's layout does not match any catalogue products, Revit® will generate a fitting with "Non Standard" labels in the "Article No." and "Model Description" parameters fields, so that these elements can be quickly identified in the Schedules and modified.

To this end, a specific family named "Supply_System-Fittings-Valsir-PexalEASY-Coupling_Reducing_COMPLETE" was developed. This allows to search in the catalogue for a solution compatible with the "Non Standard" layout generated by user, by associating an intermediate straight fitting to an outlet reducing fitting. Select the "Non Standard" fitting and replace it with the above mentioned family, and - provided that the layout is feasible - an outlet reducing fitting is automatically associated to the intermediate straight fitting, while the Schedule of fittings is updated accordingly.

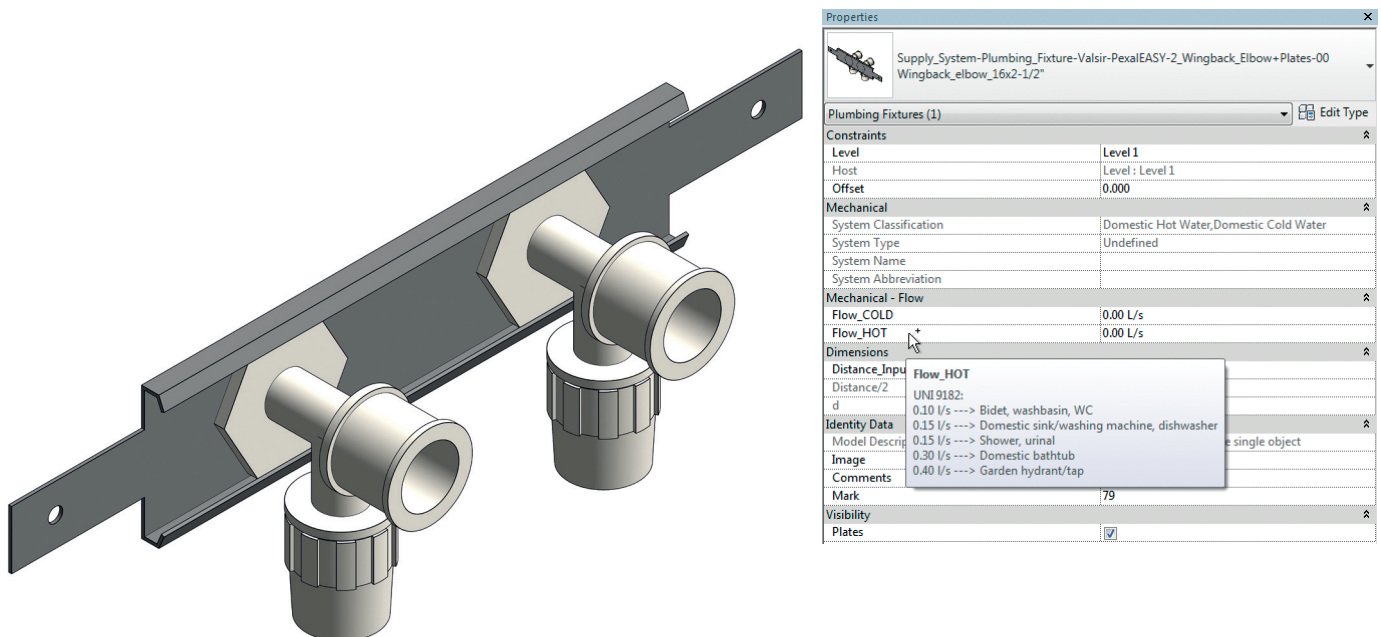
Figure 4.11 Changing family from *Coupling_Reducing* to *Coupling_Reducing_COMPLETE* to manage non-standard fittings.



4.2.5 How to use wingback elbows

Wingback elbows are classified as “Plumbing fixture” and have been developed to work as the starting or terminal point of the water supply system: user must select the type of flanged fitting wingback elbow to be added from the pull-down menu in the “Properties” window and place it at the desired height. These models include an outlet connector to start drafting the layout.

Figure 4.12 Wingback elbows: flow rate parameters can be edited to suit sanitary fixture and system.

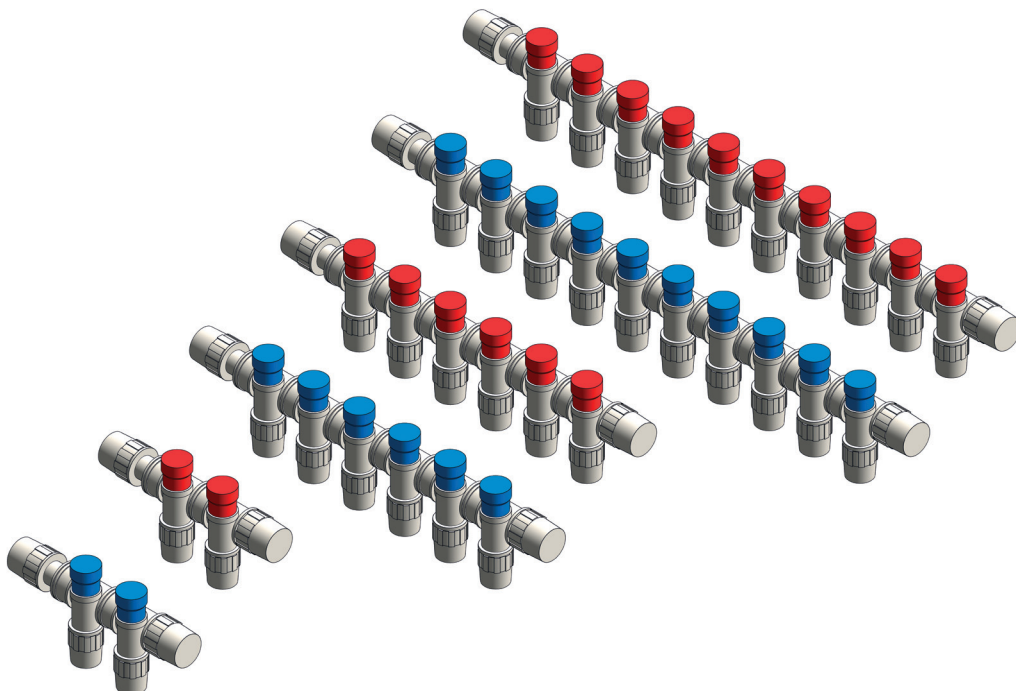


4.2.6 How to use manifolds

Manifold models are classified as “Plumbing fixture” and are grouped in different individual families according to:

- type of system (domestic hot or cold water);
- number of outlets (from 2 to 10).

Figure 4.13 Pexal® Easy manifold series.

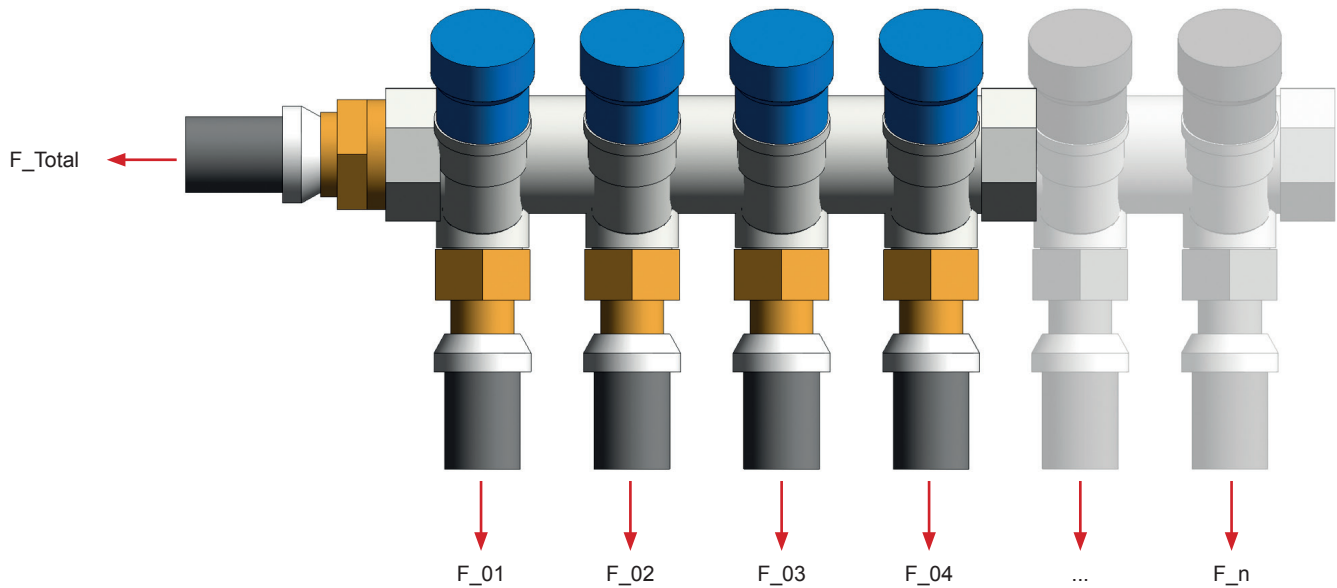


Valsir chose this approach to overcome a Revit® limitation that does not allow to change and/or add connectors automatically to a family. Each manifold layout is assigned one or more “Article No(s).”, as per catalogue.

Manifolds have been developed to work as the intermediate point of the water supply system to be added between wingback elbows and system source: user must select the type of manifold to be added from the pull-down menu in the “Properties” window. These models must be placed at the desired location and height, and allow user to draft a layout either manually (using the connectors available in the model) or automatically (using the “Generate Layout” function of Revit®).

Valsir named the individual connectors in the manifold models as indicated below.

Figure 4.14 Classifications of manifold connectors.



4.3 Water supply system with press fittings: Pexal® Brass (brass) and Bravopress® (technopolymer - PPSU)

These systems are extremely versatile as they can use either Pexal® Brass press fittings or Bravopress® technopolymer fittings, which are compatible with Pexal® and Mixal® pipes, both in the “Standard” and “Overthickness” versions.

4.3.1 Using pipes and fittings in the project

Please see chapter 4.2.1.

4.3.2 How to manage changes in direction

Please see chapter 4.2.2.

4.3.3 How to use Tees

The instructions provided in chapter 4.2.3 apply, except that “Non Standard” elements are not managed using the family “Plumbing-Fittings-Valsir-PexalEASY-Tee_COMPLETE”, as the Pexal® Brass line of intermediate reducing tees offers a broader range of diameter combinations.

4.3.4 How to manage Reducing fittings

The instructions provided in chapter 4.2.4 apply, except that “Non Standard” elements are not managed using the family “Supply_System-Fittings-Valsir-PexalEASY-Coupling_Reducing_COMPLETE”, as the Pexal® Brass line of straight reducing fittings offers a broader range of diameter combinations.

4.3.5 How to use wingback elbows

Please see chapter 4.2.5.

4.3.6 How to use manifolds

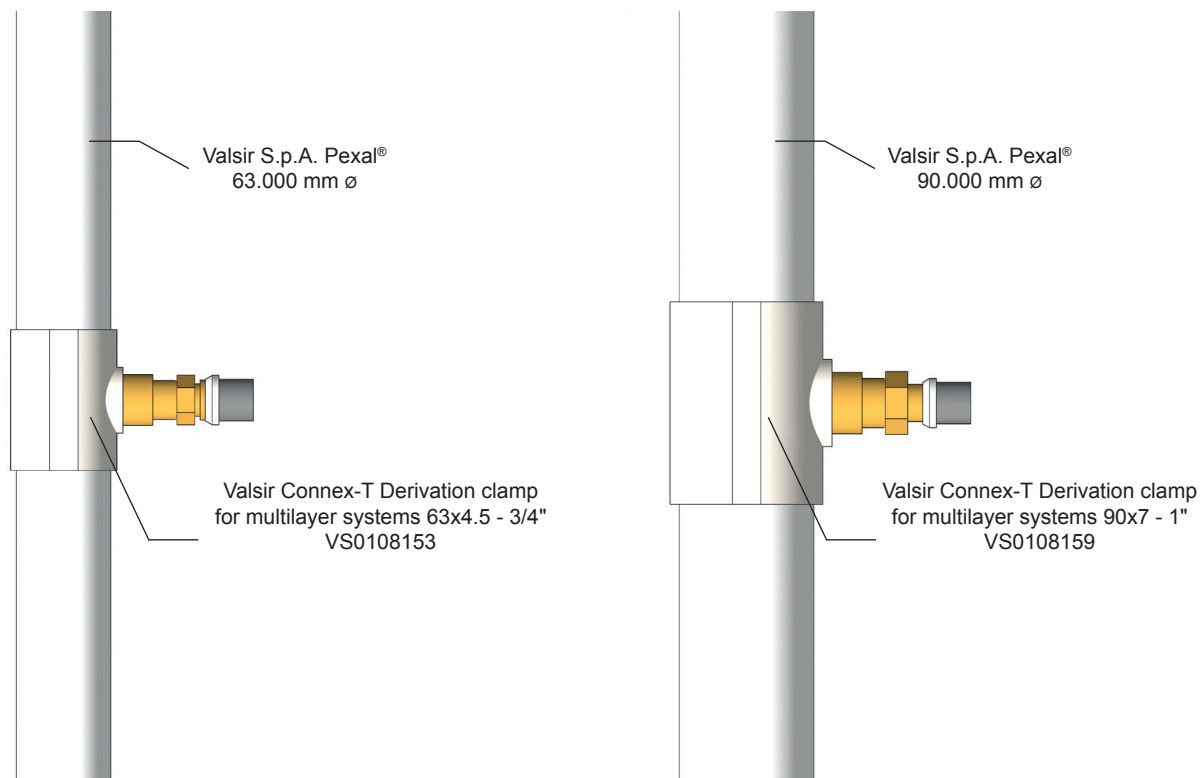
Please see chapter 4.2.6.

4.4 Derivation clamp for multilayer systems (Pexal® Connex-T)

There is no dedicated template file “*.rte” for this product. It needs to be loaded into the project file as outlined in chapter 2.2.

It is classified as “Pipe fitting” and has been developed to automatically match the diameter of the pipe it is added to.

Figure 4.15 Adding Connex-T to large-diameter pipes and indication of elements.

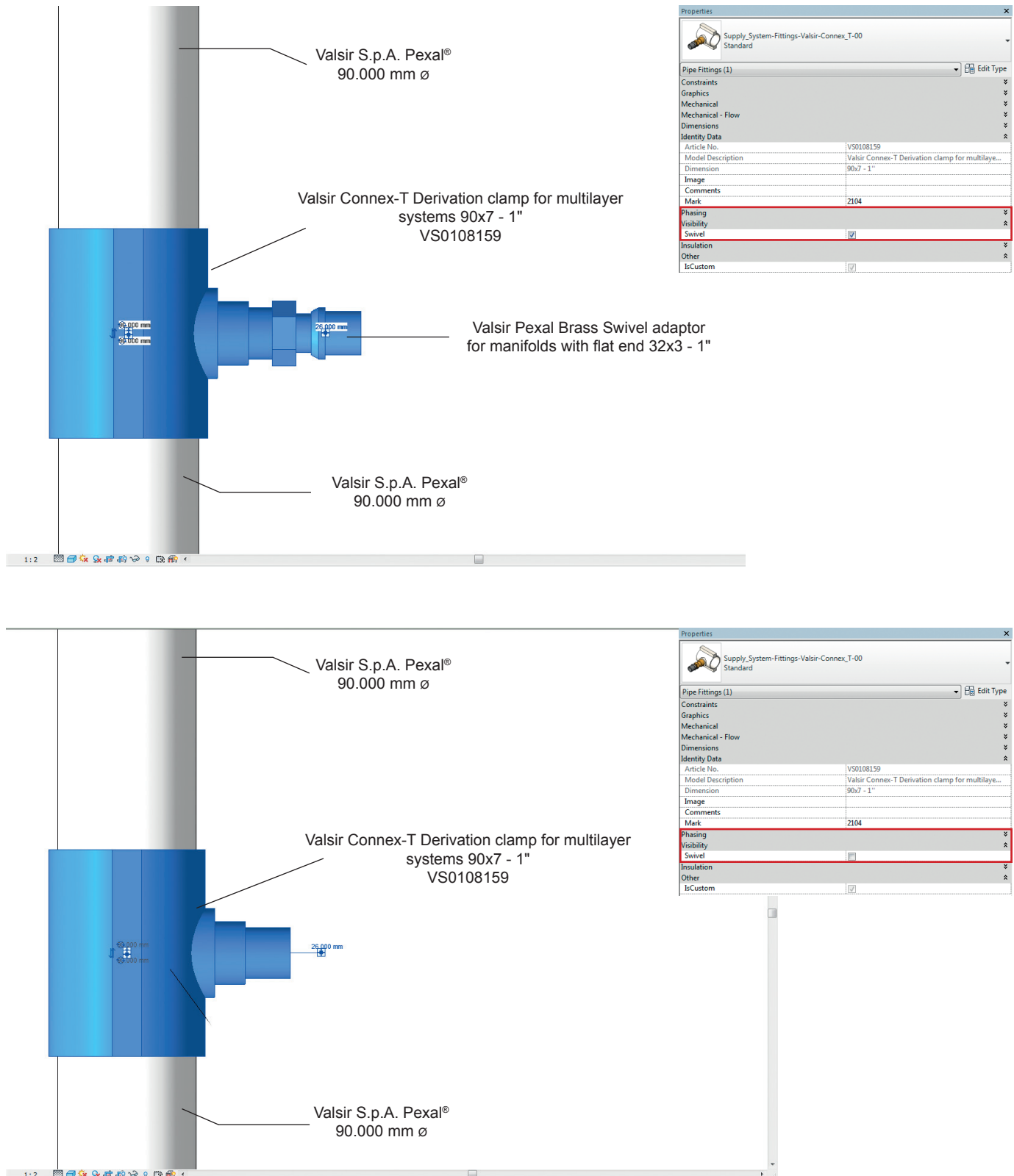


Valsir included a nested family named “Valsir-Pexal-BRASS-Swivel-00” in the template. This family represents the straight female swivel terminal with flat bottom (product line Pexal® Brass) that must be screwed onto Pexal® Connex-T to use the branch line. User can control branch line diameter using parameter “OD_2”, choosing from the different options available in the catalogue.

This way, the system offers the correct configuration for the branch created by user. Layout accurately replicates the geometry (overall dimensions and diameters) and bill of materials (article numbers) of the installation.

A “Swivel” visibility parameter is available for user to turn the outlet threaded fitting off when needed.

Figure 4.16 Turning threaded fitting on/off in Pexal® Connex-T.



If user's layout does not match any threaded fitting in the catalogue, Revit® will generate a fitting with "Non Standard" labels in the "Article No." and "Model Description" parameter fields, so that these elements can be quickly identified in the Schedules and modified.

5

SIPHONIC DRAINAGE SYSTEMS

5

SIPHONIC DRAINAGE SYSTEMS

For rainwater drainage systems, Valsir developed the **Rainplus®** solution, a siphonic system designed to use building height as the driving force to achieve high speed flow rates and maximise drainage efficiency. Valsir took action to respond to the increasing rainfall rates experienced over the last few years, developing a safe solution to drain rainwater from the roofs of large and medium-sized buildings. The system consists of special engineered and tested outlets connected to Valsir HDPE pipes and combined with an effective bracketing system. These outlets feature special components for installation on any type of roof, gutter or waterproofing membrane.



A siphonic drainage system can be designed using the cutting-edge Rainplus® software. The software can perform full calculation and dimensioning and provide all functional and geometric parameters of the system in accordance with the VDI 3806 and BS 8490 technical standards.

Revit® models are available for Rainplus® outlets, the key elements of the siphonic system. User can load these models into a specific project following the procedure outlined in chapter 2.2, and use them as a starting point to draft the drainage system.

Figure 5.1 Rainplus® outlet.



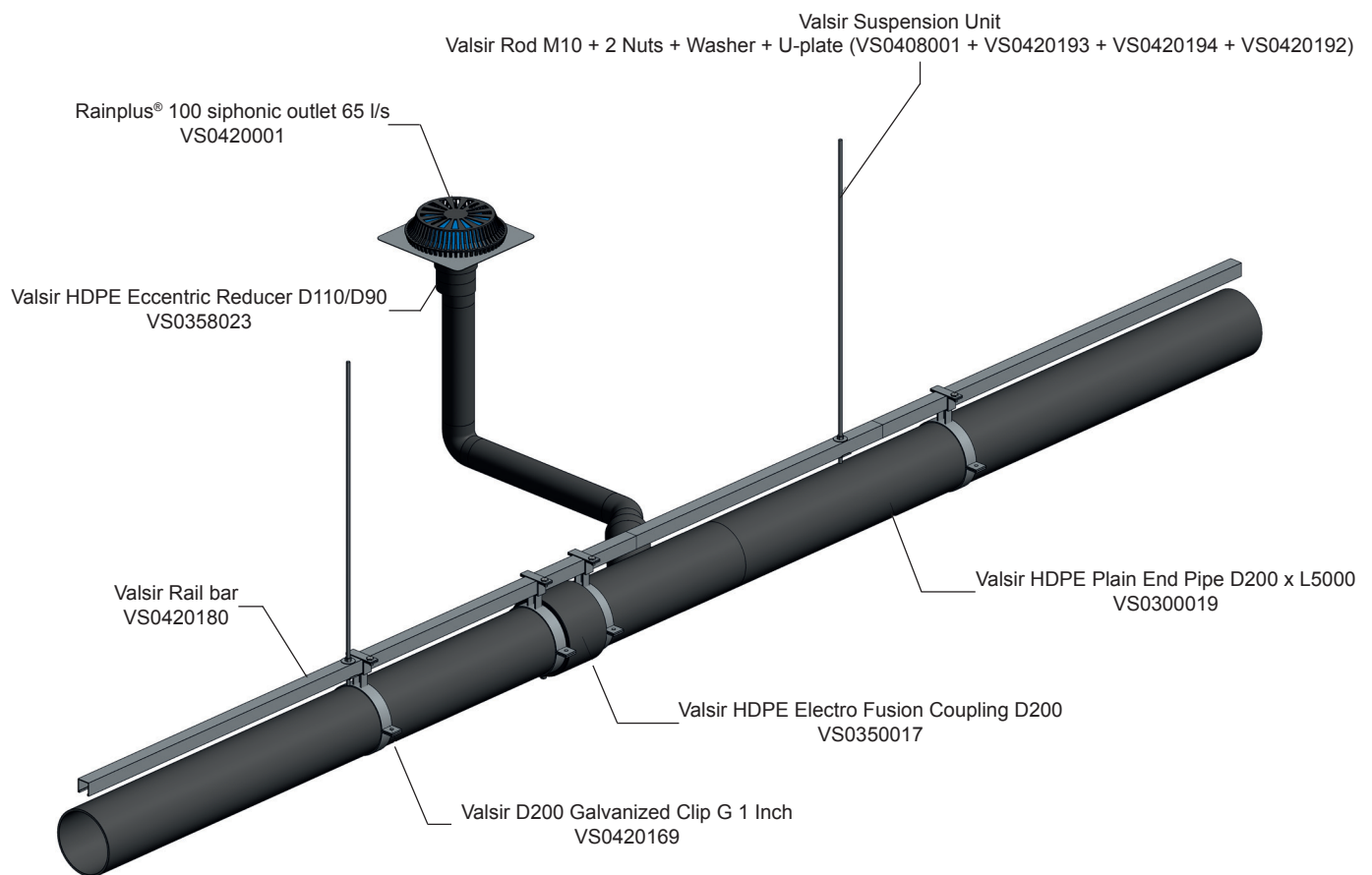
5.1 Integration of Rainplus® software and Autodesk Revit®

Designers have frequently expressed the need for a system capable of interfacing with BIM. In order to address this emerging need, Valsir developed an Autodesk Revit® add-on, capable of importing an entire siphonic system project prepared with the Rainplus® software and incorporate the full potential of BIM.

The procedure is simple and fast.

- In the Rainplus® software:
 - 1) check the project (flow rates, pressures, speed, overall dimensions of pipe-fittings-brackets connections, etc.);
 - 2) click “Export to Revit” in the “File” menu and then select the reference outlet;
 - 3) save the generated “*.xml” file.
- In Autodesk Revit®:
 - 1) open a new project using template “Valsir Rainplus”;
 - 2) select “Load Rainplus Design” from the “Valsir Rainplus” add-on;
 - 3) click a point in space, and Revit® will associate the reference outlet you had selected previously to that point;
 - 4) from the active dialogue window, load the “*.xml” file generated previously.

Figure 5.2 3D detail view of Rainplus® siphonic drainage system and indication of elements.



6

USAGE EXAMPLES OF VALSIR REVIT® MEP FAMILIES

6

USAGE EXAMPLES OF VALSIR REVIT® MEP FAMILIES

Figure 6.1

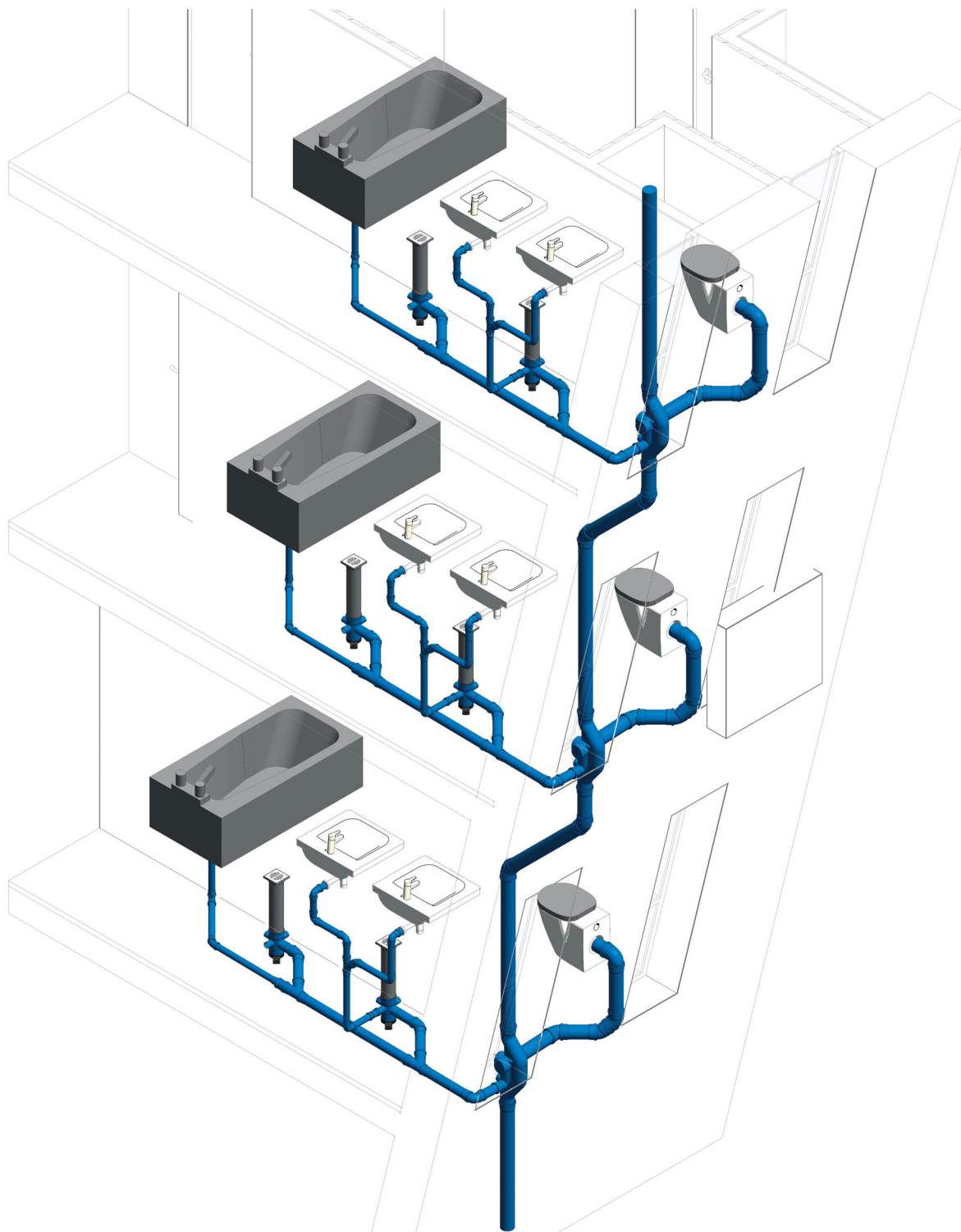


Figure 6.2

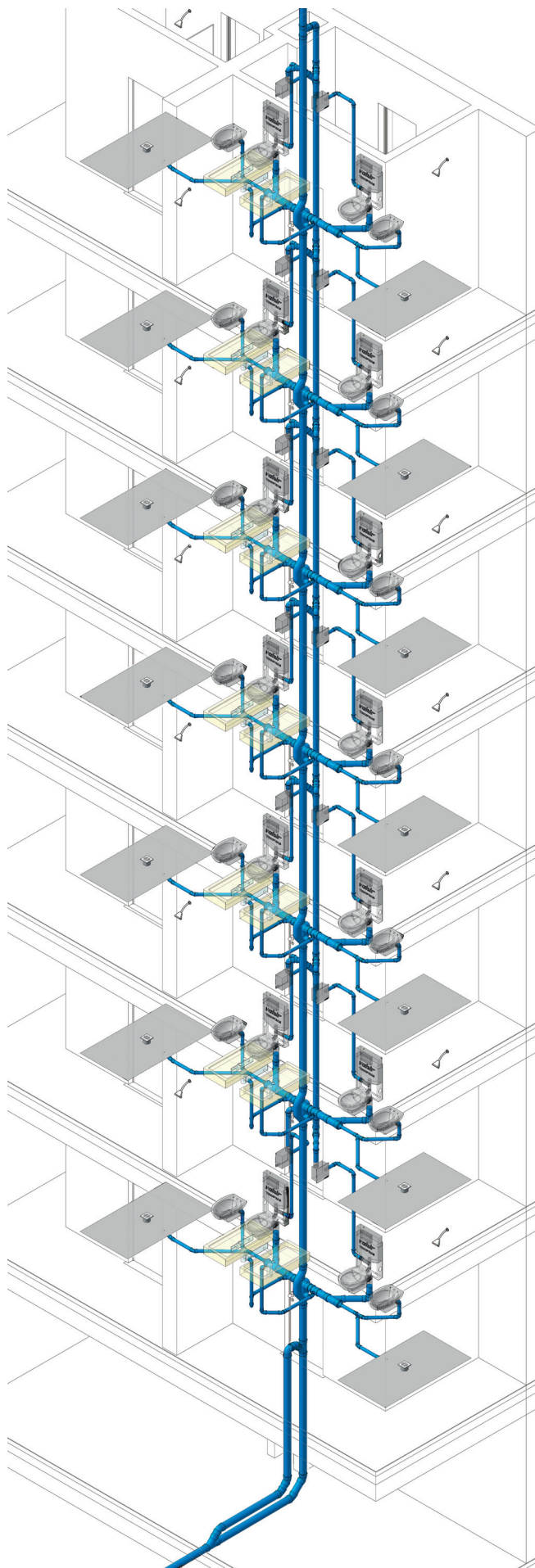


Figure 6.3

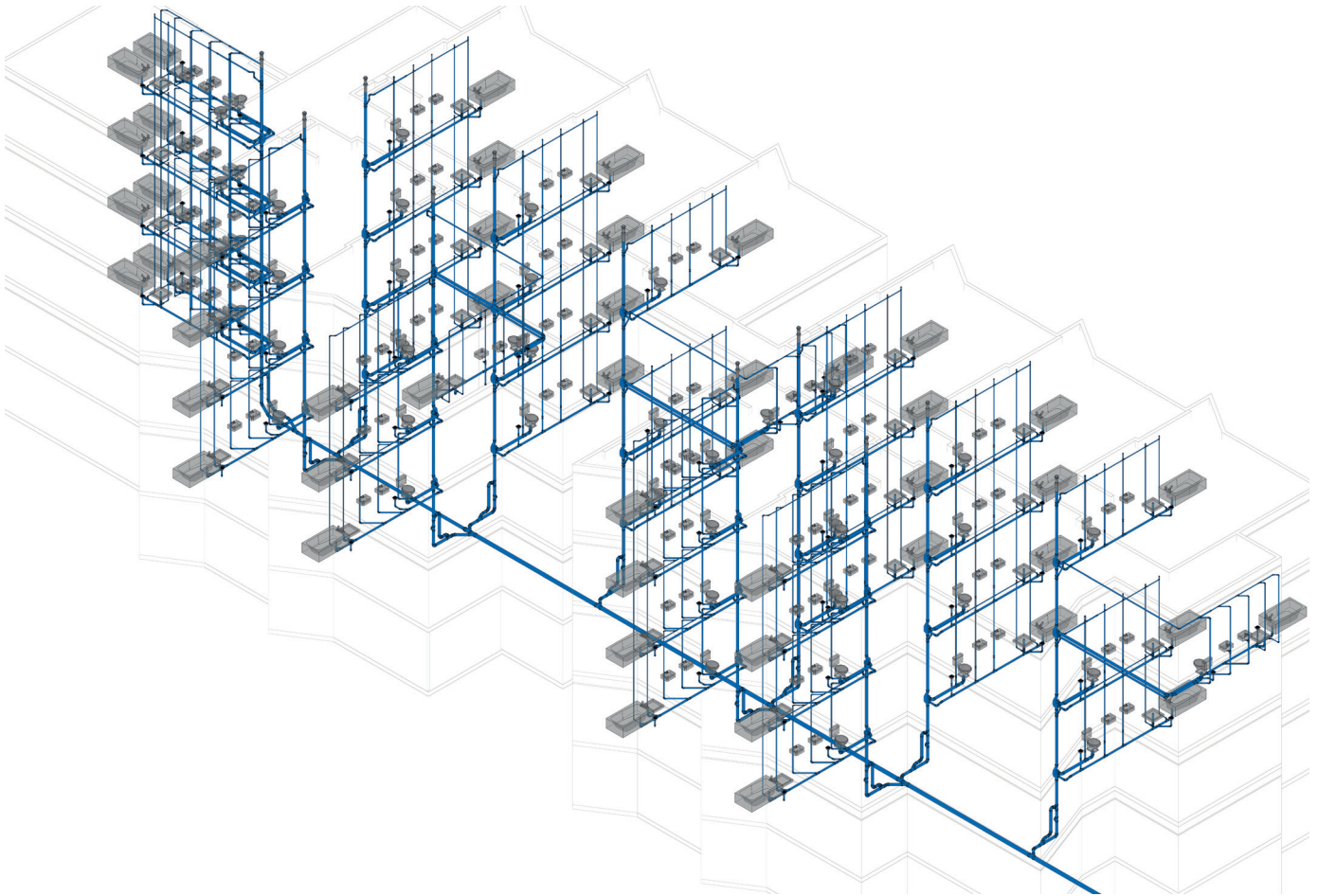


Figure 6.4

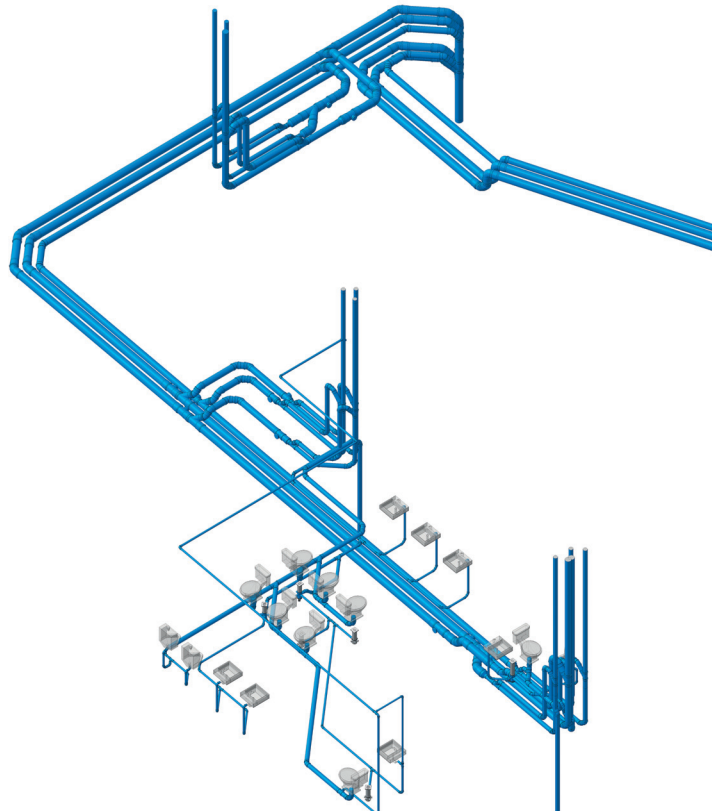


Figure 6.5

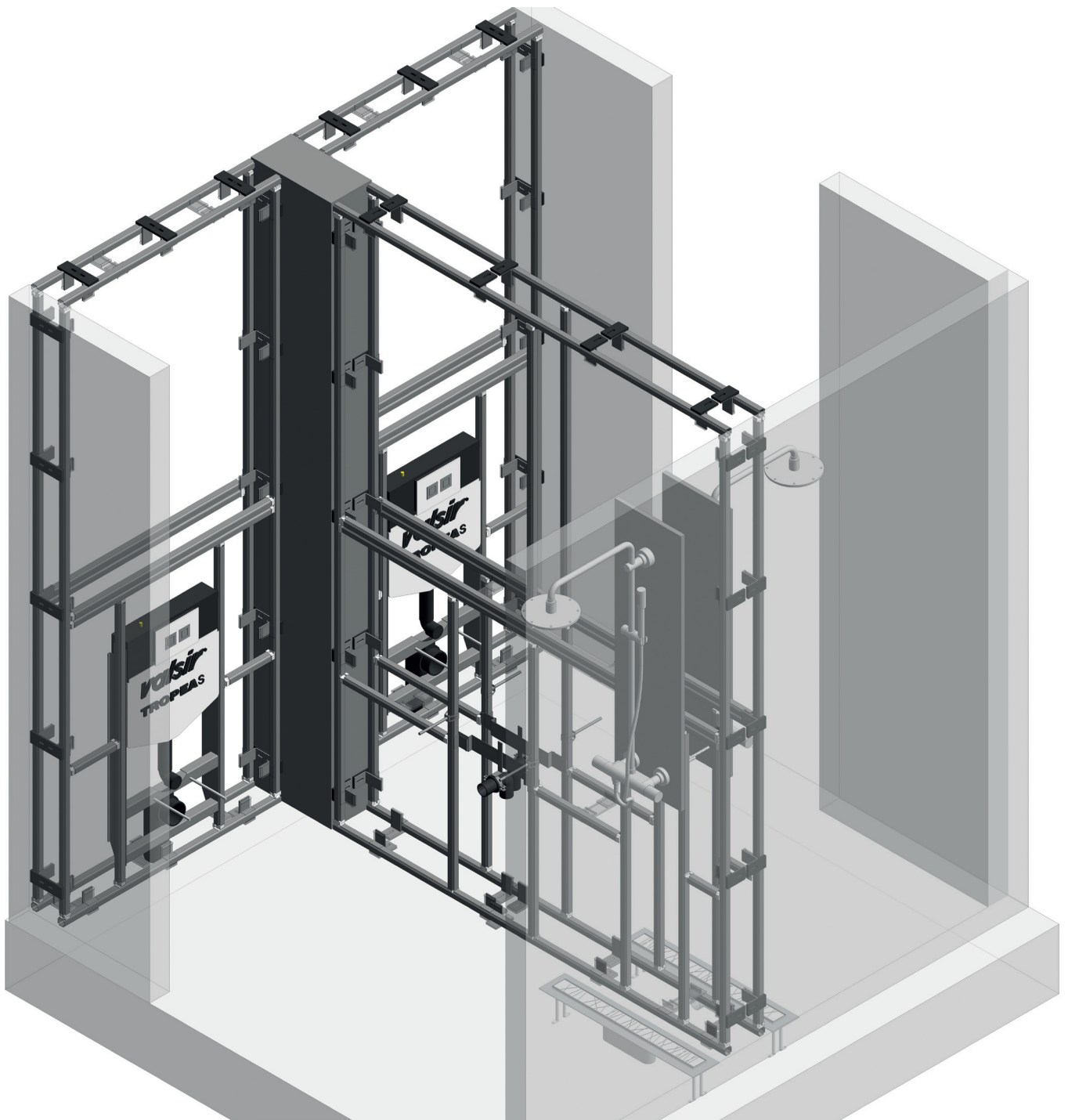


Figure 6.6

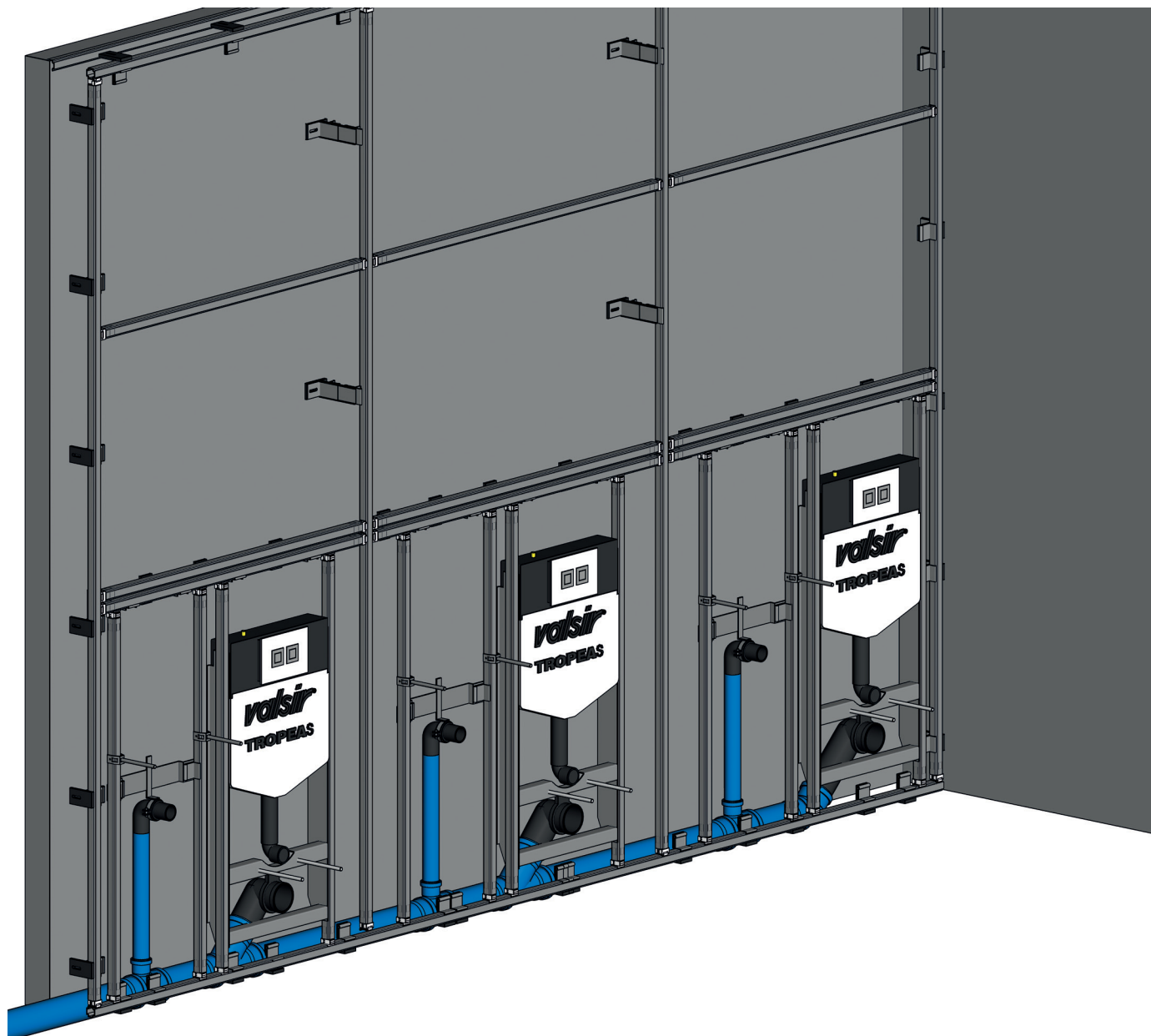


Figure 6.7

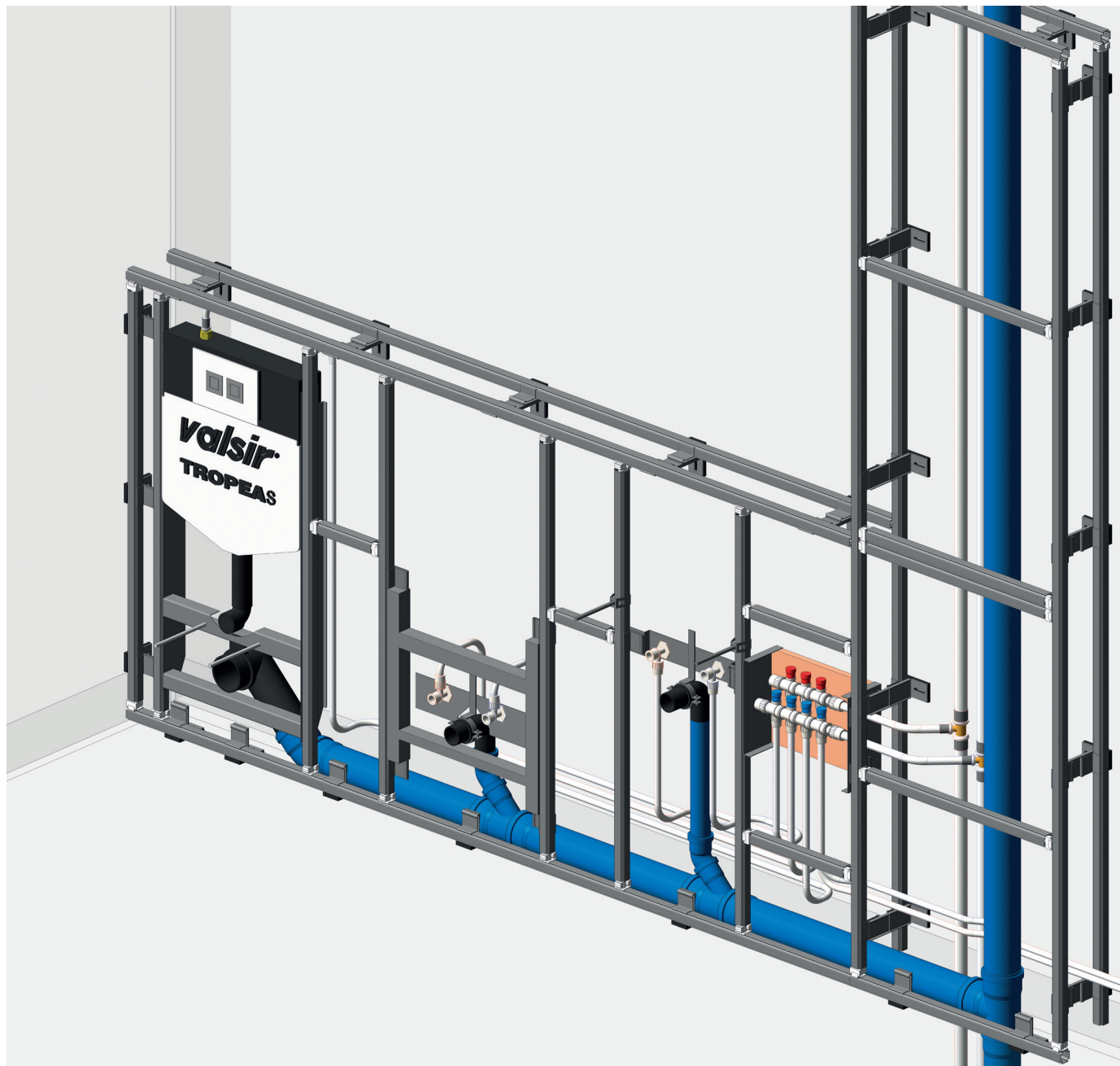


Figure 6.8

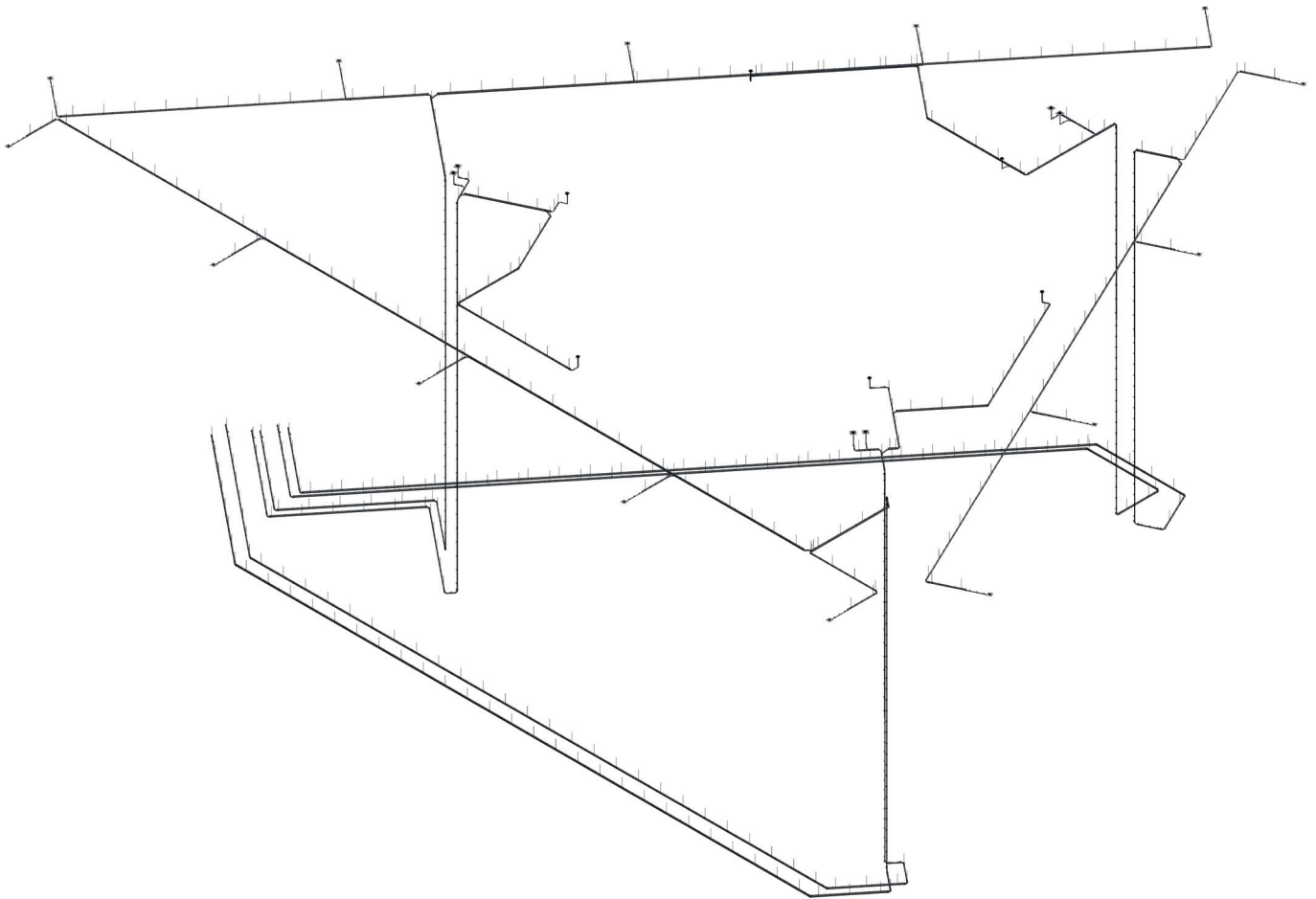


Figure 6.9

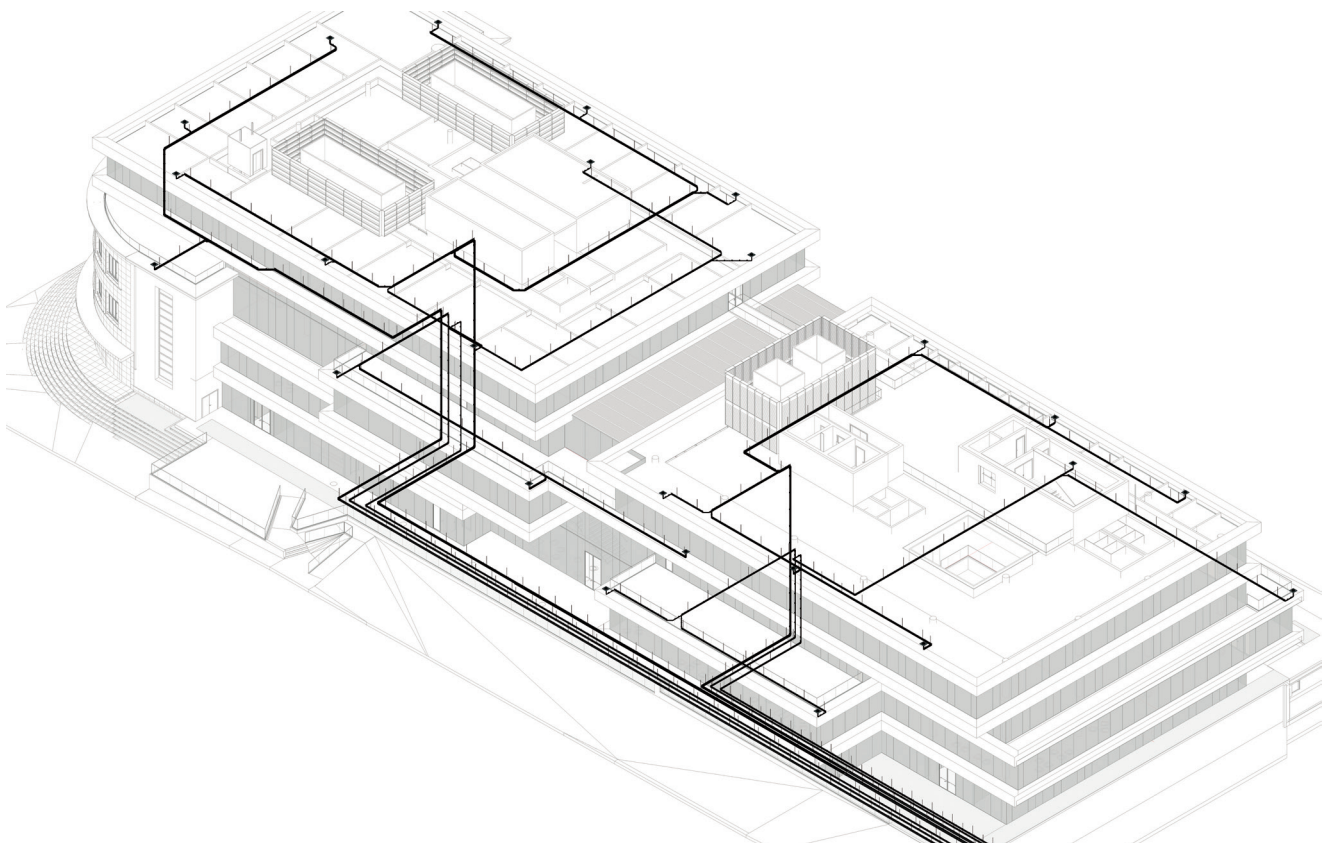
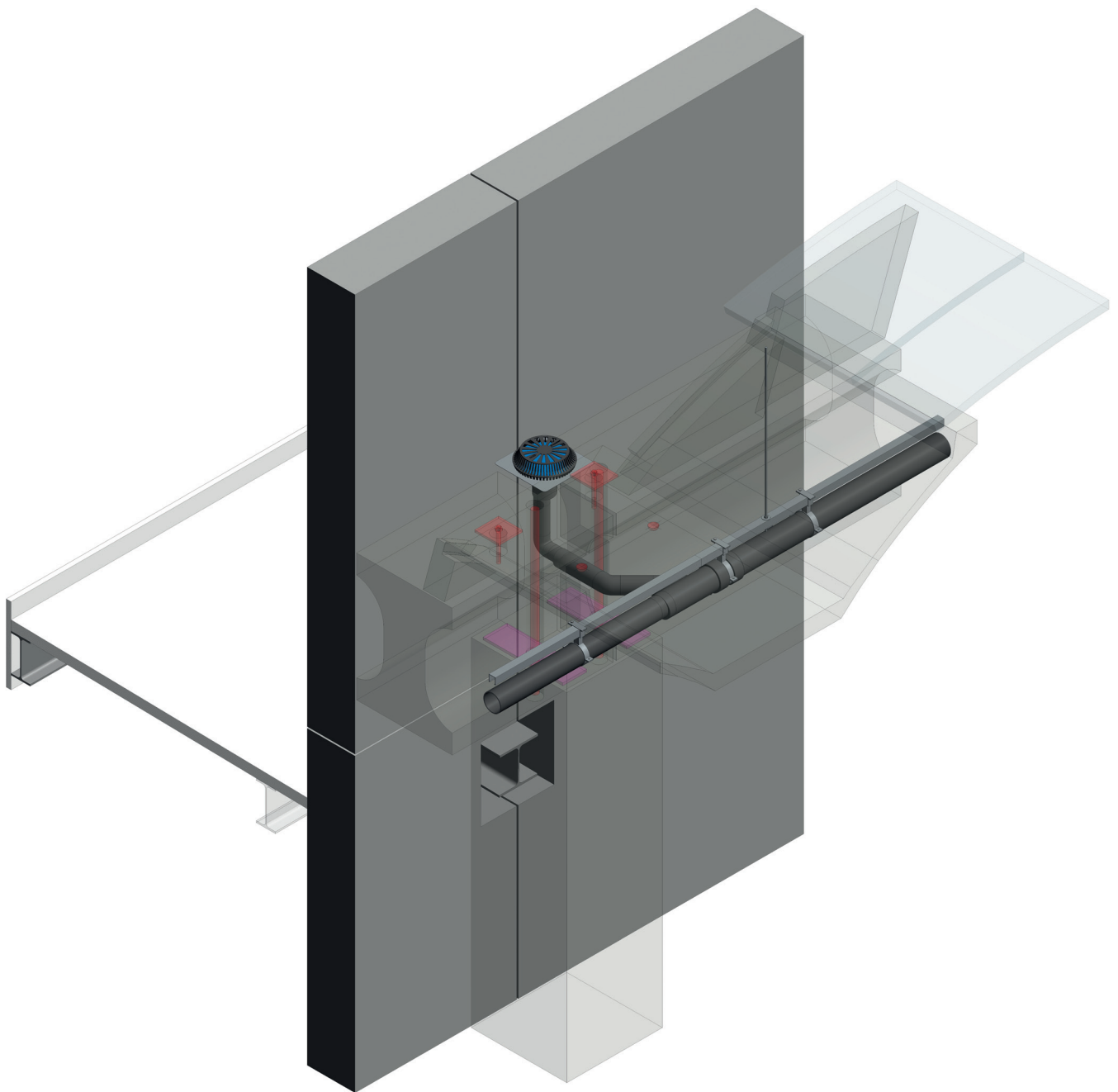


Figure 6.10





FAQ

Can I open your families with another software?

No, the .rfe files can only be opened and used with Autodesk Revit®. However, you can create a system in the Revit® environment and save it as an IFC file that can be read by other software.

Do your models contain only 3D information?

No, these models contain a large quantity of information besides three-dimensional geometry.

Can your models be used in order to size systems?

To ensure an accurate design, we suggest to use a dedicated software (for instance, Valsir Silvestro) and then reporting the dimensions in Revit®. Calculation and programming rules do not allow a sizing process that will comply to all of the different national standards.

Does Valsir Silvestro provide export to Revit®?

No, unlike Valsir Rainplus®, Valsir Silvestro cannot export files to be imported to Revit®.

Should I upload the individual families or the preset Valsir templates into my project? Which is the best way to go?

We recommend to upload the Valsir templates using “Transfer project standard”. This transfers both system families (and their settings) and uploadable families.

What are the dimensions associated with threaded fittings?

When a connector is referred to a threaded fitting, usually managed by a parameter named “Thread_OD”, the associated dimensions will be as follows:

1/2"--- > 21 mm; 3/4"--- > 26 mm; 1"--- > 33 mm; 1"1/4--- > 42 mm; 1"1/2--- > 48 mm; 2"--- > 60 mm

In the Revit® environment, you can find this indication by moving the cursor to the parameter name. This will display a window with the above information.



Watch the Valsir videos
<http://www.valsir.it/video>



Download the Valsir models
<http://www.valsir.it/bim>

Valsir was founded in 1987, on the basis of a precise industrial strategy adopted by the Fondital Group - a holding that is leader in the plumbing and heating market with a sales turnover of over 800 million Euro and 2,600 employees - with factories in Italy, in Valsabbia to the north of Brescia and abroad in Portugal, Poland, Russia, Romania, Ukraine, France, South Africa, Australia, India, China and Thailand.

Valsir is today a solid and expanding firm within a group whose true points of cohesion and strength lie within a strong sense of collaboration and the contribution of specific professional skills of each single component.

The head and heart of Valsir are in Vestone, in Valsabbia, on the route which leads from Lake Garda to the Brenta Dolomites.

It is here that the strategies of this globally oriented company are defined, involving business agreements and joint-ventures in Europe, Asia and Africa.

Economic growth, technological development, pursuit of quality, on-going research, project design activities, the strong presence in European markets and in the rest of the world are the elements that have guided and still guide Valsir policies today.

WASTE SYSTEMS



SUPPLY SYSTEMS



GAS SYSTEMS



FLUSH SYSTEMS



BATHROOM SYSTEMS



TRAPS



RADIANT SYSTEMS



DRAINAGE SYSTEMS



HRV SYSTEM



ACADEMY



SEWER SYSTEMS



WATER TREATMENT



Value: 14,00€



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