The National BIM Library

User Guide: Door

Version 1.0

16th March 2012

www.nationalBIMlibrary.com

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1.0 Introduction

This guide covers the parameters of the external and internal doors with single and double leaf configurations.

All door objects are available in 3D PDF, IFC and a number of BIM software formats. A 3D PDF allows interaction with the object and its parameters through Adobe Acrobat reader. IFC files can be viewed with free model viewing software such as Solibri Model Viewer, Tekla BIMsight, Nemetschek IFC Viewer and many more. BIM software formats can be viewed and used with the relevant software package.

1.1 Door Naming

National BIM Library doors are named to identify their type and configuration. Fields are segregated using an under bar (_) and information within each field is segregated using hyphens (-). Fields are abbreviated to reduce characters and capitals used at the start of each abbreviation to aid readability. Details of the abbreviations used can be found in section 3.0. A full expanded description, of the name is included under the parameter 'Description'.

nbl_Door_Int-Vsn-Pnl-04-910x2100

A door type name translates to;

Field1 *Author*_**Field2** *Category*_**Field3** *Differentiator*

Field1:

Field 1 identifies the author of the family which in this case is the National BIM Library (nbl).

Field2:

This field identifies the building element.

Field3:

This field identifies the type of door, its application and configuration.

In the example shown 'Int' refers to Internal. This differentiator sorts building elements into their various types at base level, before further detail is defined.

2.0 Parameters

Parameters included in all National BIM Library doors are as follows.

2.1 National BIM Library Parameters

Parameters that control the geometry of the door are defined in the relevant Appendix for each software package.

NBL controlled identity parameters

Description	The full description of a door object.
Help	URL of a website where additional help notes are available.
IssueDate	The issue date of this object.
NBSDescription	NBS Uniclass title.
NBSReference	NBS Uniclass section/clause number.
Version	The version number of the object.

The following parameters are included within NBL door objects and can be used for scheduling purposes.

AirTransferGrille	FloorFinish	JambDetail
AirTransferGrilleSize	FrameFinish	KeySuiting
AntiFingerTrapRequirement	GlassType	LeafEdgings
BreakOutFacility	GlassThickness	LeafFacing
ComponentNumber	Handing	LeafSwing
Configuration	FrameMaterial	OpeningMechanism
Decoration	FrameProfile	PoweredOperation
DoorNumber	HardwareSet	SignageFire
ElectronicLock	HeadDetail	SignageSecurity
	HoldOpen	SignageWayfinding

Units	VisionPanelConfiguration

2.2 IFC Parameters

The door object is inserted as `a filler in an opening`, as defined by IFC. The actual parameter of the door as an occurrence is defined by IfcDoor which specifies the door width and height as StructuralOpeningWidth and StructuralOpeningHeight.

IfcDoorStyle defines the specific door parameters like the operation type, the particular attributes of the frame by the IfcDoorLiningProperties and the particular attributes of the door leaf by the IfcDoorPanelProperties.

The following IFC parameters are included within NBL door objects.

Note: IFC definitions have been obtained from BuildingSmart IFC2x3 website (http://buildingsmart-tech.org).

Accessible (HandicapAccessible)	Indication that this object is designed to be accessible by the handicapped. It is giving according to the requirements of the national building code.
AcousticRating	Acoustic rating for this object. It is giving according to the national building code. It indicates the sound transmission resistance of this object by an index ration (instead of providing full sound absorption values).
FinalExit (FireExit)	Indication whether this object is designed to serve as an exit in the case of fire (TRUE) or not (FALSE). Here it defines an exit door in accordance to the national building code.
FireRating	Fire rating for this object. It is given according to the national fire safety classification.
IsExternal	Indication whether the element is designed for use in the exterior (TRUE) or not (FALSE). If (TRUE) it is an external element and faces the outside of the building.
Reference	Reference ID for this specified type in this project (e.g. type 'A-

	1').
SecurityRating	Index based rating system indicating security level. It is giving according to the national building code.
SelfClosing	Indication whether this object is designed to close automatically after use (TRUE) or not (FALSE).
SmokeControl (SmokeStop)	Indication whether the object is designed to provide a smoke stop (TRUE) or not (FALSE).
ThermalTransmittance	Thermal transmittance coefficient (U-Value) of a material. Here the total thermal transmittance coefficient through the wall (including all materials).

2.3 COBie Parameters

The following COBie parameters have been included within each door object and can be used to prepare COBie data schedules.

AssetIdentifier	The asset identifier assigned to an occurrence of a product (prior to handover).
BarCode	The identity of the bar code (or rfid) given to an occurrence of the product.
Colour	Characteristic or primary colour of product.
Constituents	Optional constituent features, parts or finishes.
Features	Other important characteristics or features relevant to product specification.
Finish	Characteristic or primary finish of product.

Grade	Standard grading which the product corresponds.
InstallationDate	The date that the manufactured item was installed.
Material	Characteristic or primary material of product.
NominalHeight	Typically the vertical or secondary characteristic dimension.
NominalLength	Typically the larger or primary horizontal dimension.
NominalWidth	Typically the characteristic or secondary horizontal or characteristic dimension.
ProductionYear	The year of production of the manufactured item.
ReplacementCost	An indicative cost for unit replacement.
SerialNumber	The serial number assigned to an occurrence of a product by the manufacturer.
ServiceLifeDuration	The service life that an artefact is expected to have under current operating conditions.
Shape	Characteristic shape of product.
Size	Characteristic size of product.
TagNumber	The tag number assigned to an occurrence of a product (by the occupier).
WarrantyDescription	Description of the warranty.
WarrantyDurationLabour	Duration of labour warranty (years).
WarrantyDurationParts	Duration of parts warranty (years).
WarrantyGuarantorLabour	Organization acting as guarantor of labour warranty.
WarrantyGuarantorParts	Organization acting as guarantor of parts warranty.

WarrantyStartDate The date on which the warranty commences.

3.0 Abbreviations

The following list outlines all abbreviations used in the naming of National BIM Library door objects.

Blnk=blank door

Dbl=double leaf door

Eq=double door with equal leafs

Ext= external door

Int=internal door

Sgl=single leaf door

Uneq= double door with unequal leafs

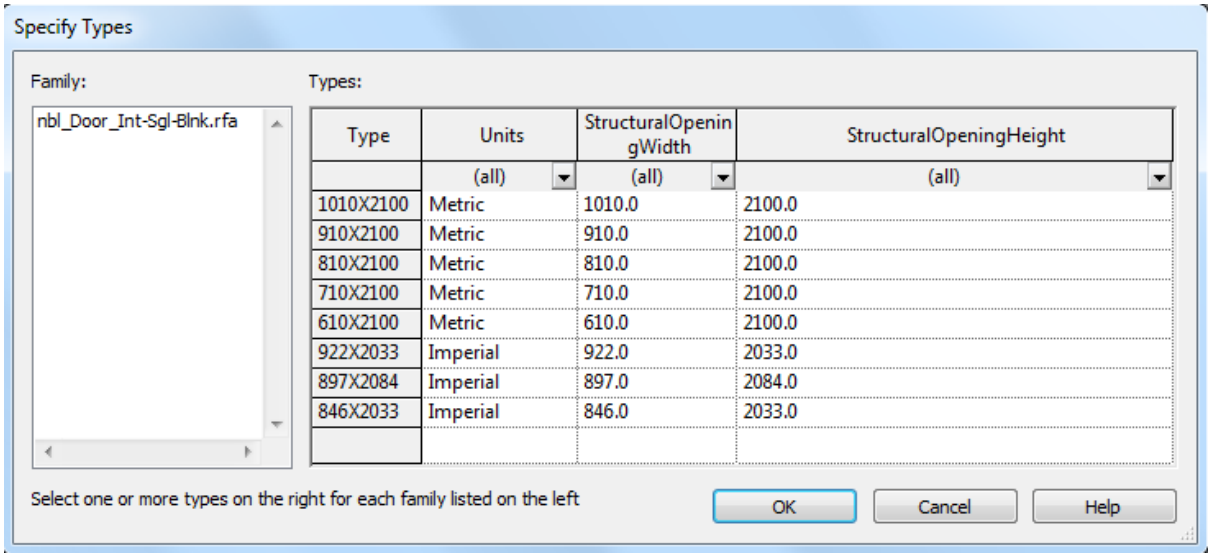
Vsn-Pnl= door with vision panel

4.0 Appendix

4.1 Autodesk Revit Architecture

4.1.1 Getting Started

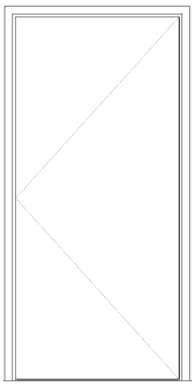
There are 20 door families that are divided into 5 categories: internal single, internal double, external single, external double and flexible doors. Each door family contains a selection of standard structural opening dimensions which are attached to the family in the .txt file. These dimensions are displayed as a catalogue of door types when a family is loaded into a project. It is essential that the .txt and .rvt file are saved in the same folder for the Catalogue to work. The structural opening dimensions are based upon common metric and imperial sizes.



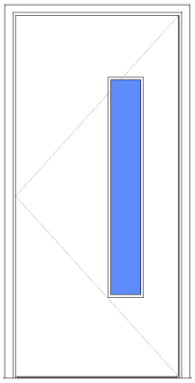
Type	Units	StructuralOpeningWidth	StructuralOpeningHeight
	(all)	(all)	(all)
1010X2100	Metric	1010.0	2100.0
910X2100	Metric	910.0	2100.0
810X2100	Metric	810.0	2100.0
710X2100	Metric	710.0	2100.0
610X2100	Metric	610.0	2100.0
922X2033	Imperial	922.0	2033.0
897X2084	Imperial	897.0	2084.0
846X2033	Imperial	846.0	2033.0

A master shared parameters file (nbl_MasterSharedParameters.txt) is included with the door object that can be used to attach COBie, NBL and IFC parameters to non-nbl doors used in the same project.

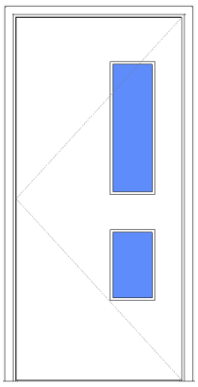
There are 4 internal single door families:



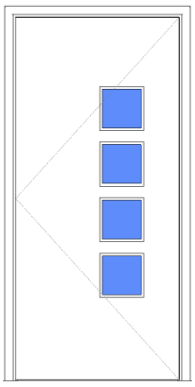
IS01- Internal single blank door



IS02- Internal single door with 1 vision panel

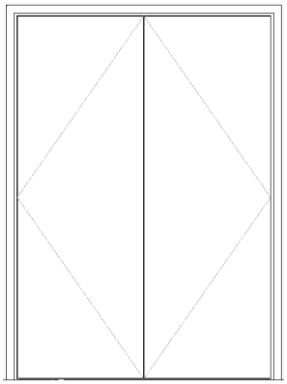


IS03- Internal single door with 2 vision panels

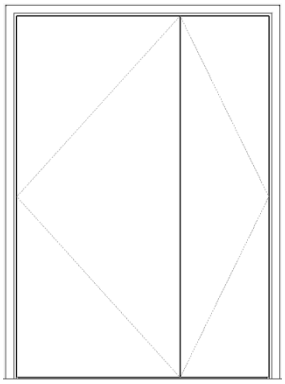


IS04- Internal single door with 4 vision panels

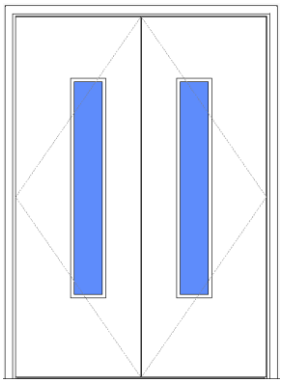
There are 5 internal double door families:



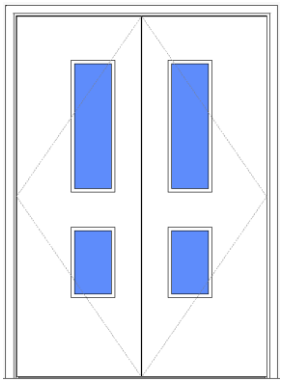
ID01- Internal double blank door with equal leafs



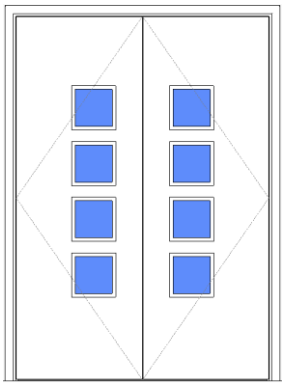
ID02- Internal double blank door with unequal leafs



ID03- Internal double door with 1 vision panel



ID04- Internal double door with 2 vision panels

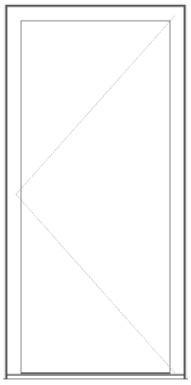


ID05- Internal double door with 4 vision panels

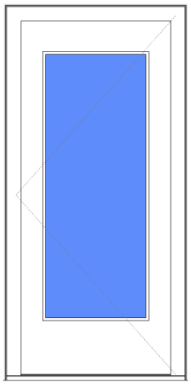
Note:

Where vision panels are indicated the dimensional setting out of the vision panel complies with BS 8300:2009 figure13. Altering the size of the vision panels may mean that they no longer comply with BS 8300.

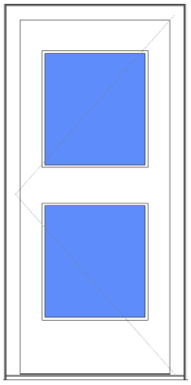
There are 3 external single door families:



ES01- External single blank door

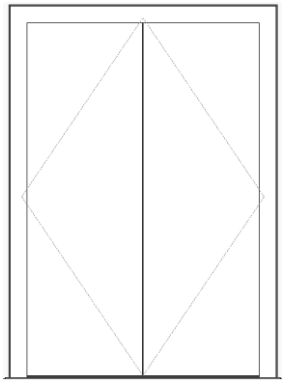


ES02- External single door with 1 vision panel

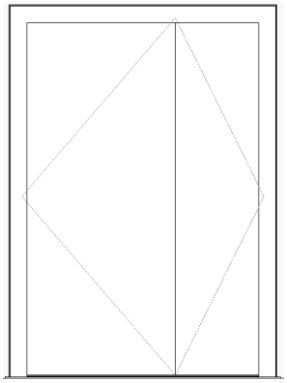


ES03- External single door with 2 vision panels

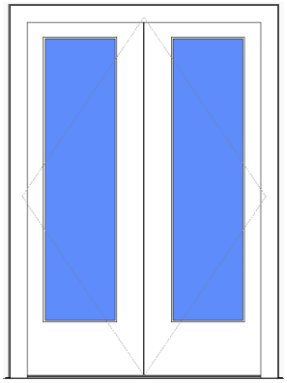
There are 4 external double door families:



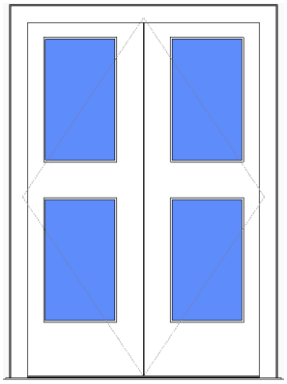
ED01- External double blank equal leaf door



ED02- External double blank unequal leaf door



ED03- External double door with 1 vision panel



ED04- External double door with 2 vision panels

4.1.2 Flexible Door

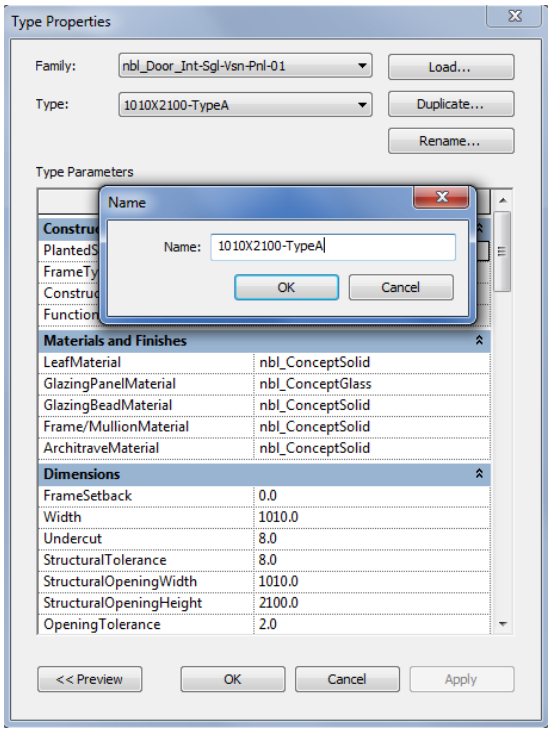
There are 4 flexible door families available: internal single, internal double, external single and external double. These objects offer more flexibility for varying door sizes useful for projects such as refurbishment. All parameters are set as instances so that each door can be unique. Most standard NBL parameters are applicable but there are some additional ones.

For the double door there is a selection box EqualLeafsRequired for selecting between equal leaf width and varying leaf width. It allows double and one and half leaf doors to be included in one door family. MainLeafWidthIfUnequal can be used to fill in the main leaf width in a double door instead of MainLeafwidth.

This door does not have any glazing panels.

4.1.3 Creating the Project Specific Door Type

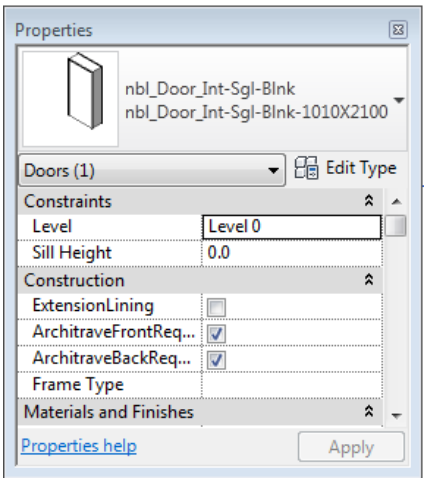
When creating a project specific door type, a duplicate is made of an existing door and an additional description added to the name to act as an identifier. To follow NBS specification standard the suggested suffix identifier is Type A/B/C.

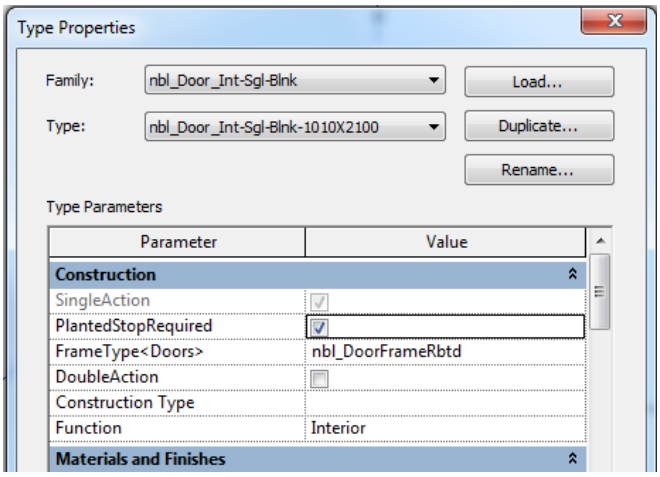


4.1.4 Yes/No Parameters

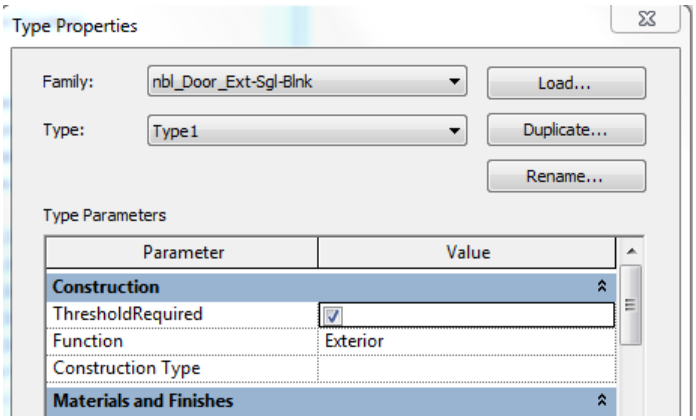
Yes/No parameters allow items to be switched on and off. All nbl_DoorInt objects can have their architrave and planted stop controlled using the yes/no parameters. The nbl_DoorExt object parameter - threshold visibility can be controlled in this manner too (assuming it exists in the family originally).

ArchitraveFrontRequired, ArchitraveBackRequired, ThresholdRequired and **PlantedStopRequired**.





All external doors are single acting (**OpeningStyle**) and for internal doors the operation **SingleAction** is automatically selected. This, as well as the `planted stop` and `architrave` option, can be de- selected in the internal door family by toggling the **DoubleAction** tick box.



ExtensionLining will add an extension lining to the rear of the door frame where the frame is less than the thickness of the wall.

4.1.5 Dimensions

Note: Certain parameter values are set by formulas and cannot be altered.

StructuralOpeningWidth = Opening of the wall including leaf widths (MainLeafWidth and SecondaryLeafWidth if present), FrameThickness and all tolerances (StructuralTolerance, OpeningTolerance, MeetingStileTolerance if present).

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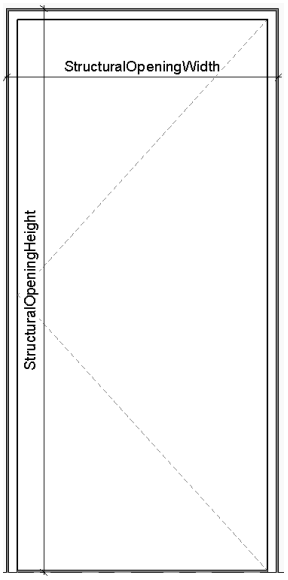
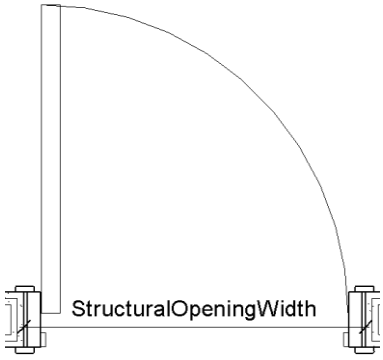
StructuralOpeningHeight = Opening of the wall including LeafHeight, FrameThickness, ThresholdThickness and all tolerances (StructuralTolerance, OpeningTolerance and Undercut). StructuralOpeningHeight is measured from the finished floor level to the top extremity of door opening.



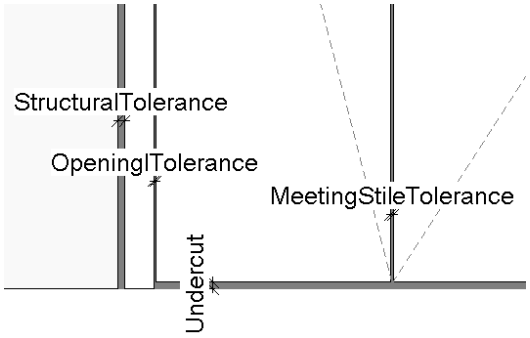
StructuralTolerance= Tolerance between the structural opening of the door and the door frame.

OpeningTolerance = Tolerance between the door frame and leafs (between leaf and jamb, leaf and head), preset to comply with BS 4787-1:1980.



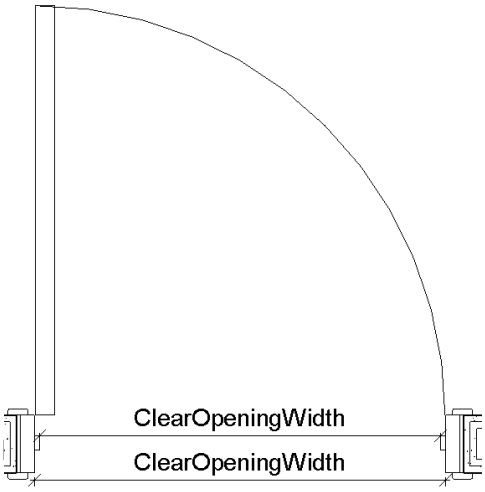
Undercut = Tolerance between the bottom of the door leaf and finished floor level, or threshold when activated.

MeetingStileTolerance = The distance between meeting door leafs in double doors.



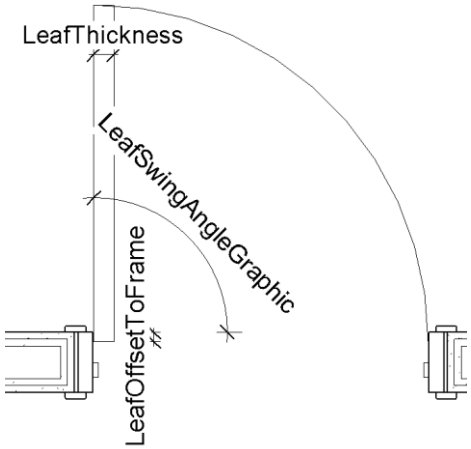
ClearOpening Width = StructuralOpeningWidth minus FrameThickness, OpeningTolerance, and PlantedStopThickness (if present).

ClearOpeningWidth cannot be entered manually; this parameter is controlled by a formula. This parameter does not represent an effective clear opening width, as required for Approved Document M compliance. It is a clear opening width as illustrated in BS EN 12159:2004.

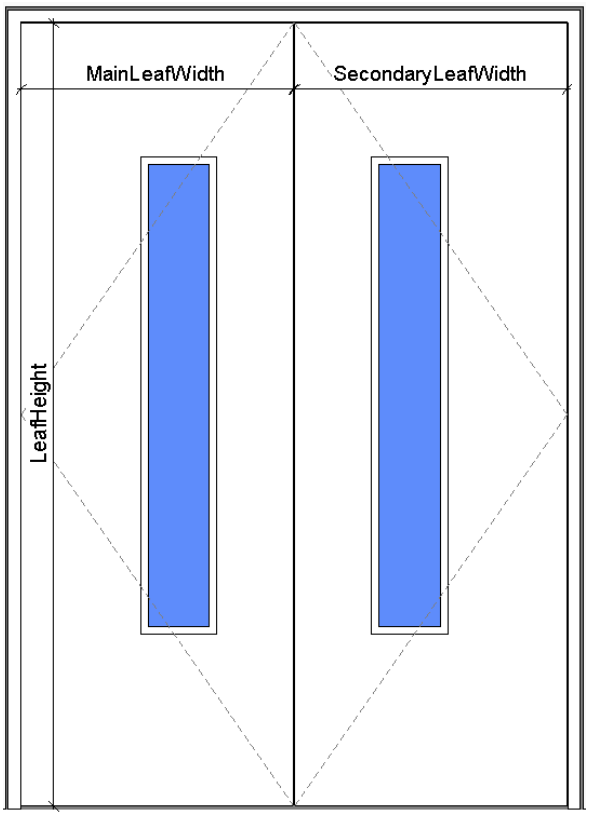


LeafThickness = The thickness of the door leaf which can be adjusted manually.

LeafOffsetToFrame = Distance from the front of the frame to the front of the leaf. When the rebated frame is selected then PlantedStopRequired parameter should be ticked for the rebate to move with the door leaf.



LeafSwingAngleGraphic = Parameter available for a internal single door leaf family (frame with planted stop). This allows the graphic display of the door leaf swing angle to be altered in a plan view, e.g. 60^0 , 90^0 as required.



LeafHeight =This reporting parameter is controlled by formula and cannot be manually altered.

MainLeafWidth = This reporting parameter is controlled by formula and cannot be manually altered unless the door has unequal leafs.

SecondaryLeafWidth = This reporting parameter is controlled by formula. It cannot be manually altered and applies to double door objects only.

FrameThickness = Thickness of the door frame (left/right wall), this can be manually adjusted, and does not include the rebate or planted stop thickness. Rebate and planted stop thicknesses are fixed in the

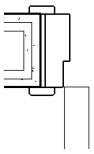
family and cannot be modified in the project.

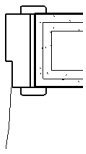
FrameWidth = Width of the door frame (front/ back wall). This can be manually adjusted, in an external door family, but defined as a reporting parameter in an internal door family. When reporting, the parameter is controlled by the thickness of the hosting wall and the FrameSetback parameter.

FrameSetback = The dimension of the door frame from the front of the wall to the front of the frame. When using the internal door family the centre of the frame is aligned to the centre of the wall. The setback parameter applies to both the back and front of the frame.

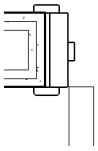
FrameType = For all the internal doors objects there is an option to choose between two door frames: DoorFrameRbtd (rebated door frame) and DoorFramePlntdStop (solid frame with planted stop).

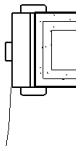
DoorFrameRbtd





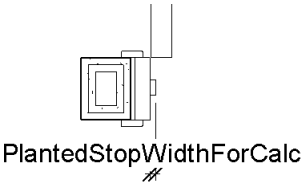
DoorFramePlntdStop



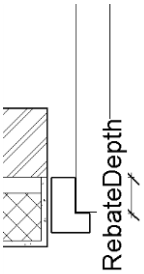


PlantedStopRequired= When unselecting PlantedStopRequired the frame with planted stop becomes a solid frame.

PlantedStopWidthForCalc =This parameter is controlled by a formula and is used to read and calculate the correct scheduling information and ClearOpeningWidth, taking into account the PlantedStopRequired parameter.



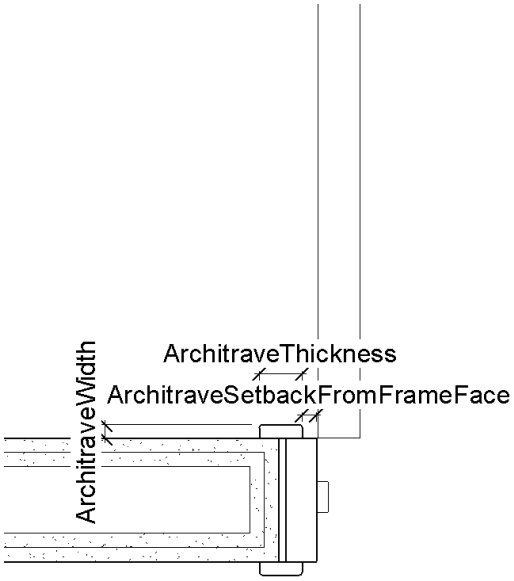
RebateDepth = Depth of the frame rebate (front/back wall). This parameter cannot be manually adjusted by but it will reflect the changes in LeafOffsetToFrame parameter.



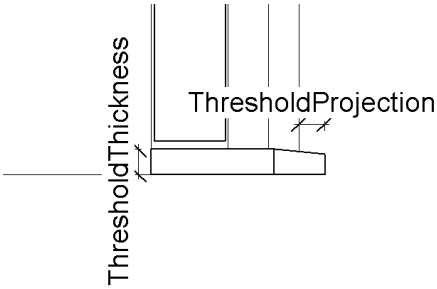
ArchitraveWidth = The width of the architrave from the front of the wall which can be manually adjusted.

ArchitraveThickness = Thickness of the architrave (left/right wall) which can be manually adjusted.

ArchitraveSetbackFromFrameFace = The architrave setback parameter defines the distance from the inside face of the door frame, to the nearest face of the architrave.



ThresholdThickness = Thickness of the threshold from the finished floor level to underside of door. When ThresholdRequired is unselected, this parameter value should be set to a minimum value of



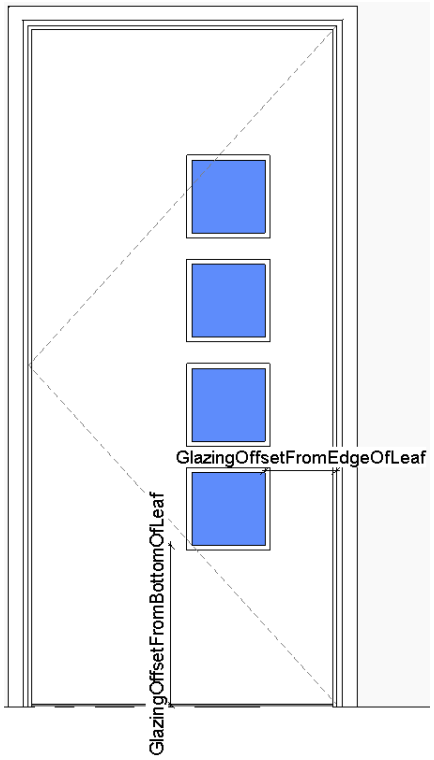
2mm to maintain the visual appearance of the door.

ThresholdThicknessForCalc =This parameter is controlled by a formula and is used to calculate scheduling information and LeafHeight, taking into account the ThresholdRequired parameter.

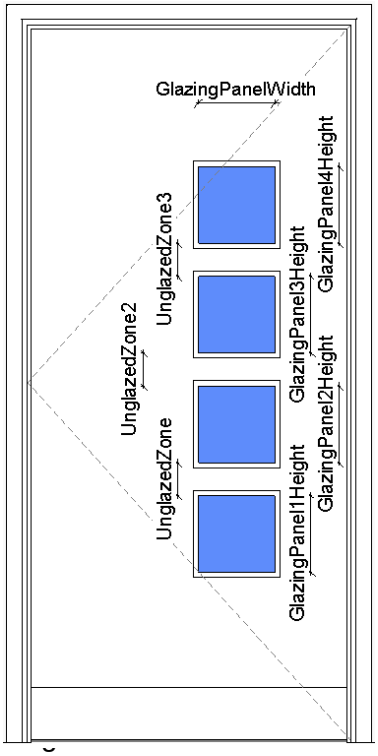
ThresholdProjection = Projection of threshold from front of wall to the front of threshold.

4.1.6 Glazing Panels

GlazingOffsetFromEdgeOfLeaf = This parameter controls the offset of the edge of the glazing panel from the edge of the door leaf. This parameter can be manually adjusted.



GlazingOffsetFromBottomOfLeaf = This parameter controls the offset of the bottom edge of the glazing panel, from the lower extremity of the door leaf. This parameter can be manually adjusted.



GlazingPanelWidth = A consistent width for all glazing panels, which can be manually adjusted.

GlazingPanel1Height = The lowest glazing panel height, which can be manually adjusted.

GlazingPanel2Height = Second lowest glazing panel height, which can be manually adjusted.

GlazingPanel3Height = Third lowest glazing panel height, which can be manually adjusted.

GlazingPanel4Height = Fourth lowest glazing panel height, which can be manually adjusted.

UnglazedZone = Unglazed zone height between glazing panel one and two, which can be manually adjusted.

UnglazedZone2 = Unglazed zone height between glazing panel two and three, which can be manually adjusted.

UnglazedZone 3 = Unglazed zone height between glazing panel three and four, which can be manually.

4.1.7 Revit Specific IFC Parameters

IfcExportAs	Specifies the desired IFC class (IfcDoor) for IFC export.
IfcExportType	Specifies the desired IFC type (IfcDoorStyle) for IFC export.

4.1.8 Material Parameters

The following parameters are used to control the visual appearance and rendering outcome of a door. For each parameter a separate material can be defined from the material library.

Frame/MullionMaterial = linked to door frame

ArchitraveMaterial = linked to both architraves

LeafMaterial = linked to door leaf

GlazingPanelMaterial = linked to all door vision panels

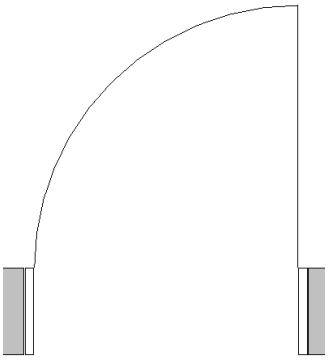
GlazingBeadMaterial = linked to all beads surrounding vision panels

ThresholdMaterial = linked to threshold in external door

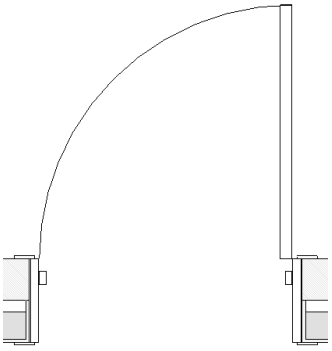
The door materials are preset to nbl_ConceptSolid and nbl_ConceptGlass.

4.1.9 Detail Level

Coarse = Architrave and planted stop do not appear in coarse views, door leaf (double/ single) appears as a single line in a plan view and the structural tolerance between the frame and a wall is not visible.



Fine/Medium = All door components are displayed in every view, door leaf in the plan view has a thickness.



4.2 Bentley Architecture

The National BIM Library content for Bentley Architecture has been created by Bentley Systems (UK) Ltd from the source IFC data.

Please visit www.nationalBIMlibrary.com to see the latest content available in native Bentley Architecture format.

4.3 Nemetschek Vectorworks

The National BIM Library content for Vectorworks has been created by Vectorworks UK Ltd from the source IFC data.

Please visit www.nationalBIMlibrary.com to see the latest content available in native Vectorworks format.

4.4 Graphisoft ArchiCAD

The National BIM Library content for ArchiCAD has been created by Graphisoft Technical Services from the source IFC data.

Please visit www.nationalBIMlibrary.com to see the latest content available in native ArchiCAD format.

The National BIM Library

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