DiKon

DigitalKonvergens

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Specification of Building Parts

– for 3D Models based on point clouds (Scan to BIM)

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Introduction

The purpose of this specification is to provide general guidelines for making 3D models based on cloud point scanning.

Ordering a 3D model based on the specification

The specification in its entirety must be provided to the part responsible for the modeling. For each building part, the level of LOR, LOG, and LOI must be specified. It can be done by making notes directly in this document.

General guidelines for modeling:

1) Building models must be modeled with 3D objects.
2) Objects that are not relevant for the project must not occur.
3) If DWG underlay is used, the model must be placed according to the underlay with True North set and coordinates acquired from the point cloud.
4) If the building project deals with several buildings, each building must be modeled in a separate file. Multiple building models use shared coordinates.
5) Objects must be modeled by using the correct tools (wall tool, floor tool, window tool, etc.).
6) Objects must always be related to the floor/level they belong to.
7) Objects spanning several levels must be broken down at each level. Except for technical systems.
8) Objects must not overlap or clash, i.e. no objects wholly or partly inside each other.
9) Horizontal cut planes are set to 1200 mm from a defined level.
10) The point cloud is only to be unloaded and not removed.
11) New types of objects must be named according to the Project naming convention.
12) Room numbers are set to 1, 2,… etc. (no identical room numbers), according to the Project naming convention.
13) If the dimension of an object is unknown or estimated the following parameters must be checked (set to Yes):
    a. Dimension unknown (e.g. wall where only one side is scanned)
    b. Dimension estimated (e.g. where only part of the object appears from scanning)

Setup of views and sheets:

1) Plan views are set for each level.
2) Elevations are set for facades and back yards.
3) Sheets are created for every plan view and elevation.

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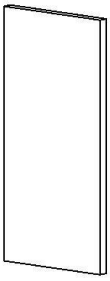
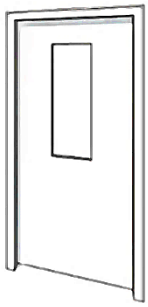
Specification for Door

Applies to doors

Version 2020-06-15

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
Type variation: To nearest 50 mm **Tolerances in placement:** 50 mm	**Type variation:** To nearest 25 mm **Tolerances in placement:** 30 mm	**Type variation:** **Tolerances in placement:**
LOG 100	**LOG 150**	**CUSTOM-LOG**
GENERIC LEVEL  Doors modelled as solids. The opening direction is specified where this can be determined with certainty.	DETAILED LEVEL  Doors modelled with infill The opening direction is specified where this can be determined with certainty.	
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

The above delivery requirements must be seen in relation to services selected in the Description of services for Building and Landscape 2018 (EN) (YBL2018). By selecting both the 9.8 Digitalisation of existing conditions in YBL2018 and the above LOD DK levels, the levels LOR, LOG and LOI are mandatory for each model element. See also the instructions for this publication.

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- For 3D Models based on point clouds (Scan to BIM)

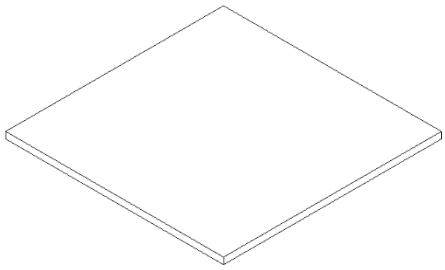
Specification for Floor separation

Applies to generic floor assemblies at all levels of design

Version 2020-06-15

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	I Information level 2	

LOR 100	LOR 150	CUSTOM-LOR
Type variation: 50 mm in thickness **Tolerances in placement:** 50 mm **Tolerances in slope:** 1:100	**Type variation:** 25 mm in thickness **Tolerances in placement:** 30 mm **Tolerances in slope:** 1:100	**Type variation:** **Tolerances in placement:** **Tolerances in slope:**

LOG 100 and LOG 150	CUSTOM-LOG
GENERIC LEVEL  Floor separations modeled as a single generic object without layers. The floor object can be a consistent surface across the level. Floors with slope more that 1:100 are modelled with slope Ceilings modeled separately in spaces where the room height differs significantly from other rooms.	

LOI 100	LOI 150	CUSTOM-LOI
ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES

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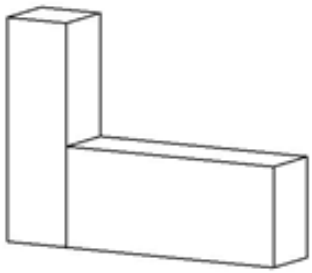
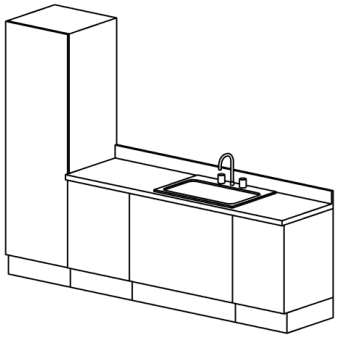
Specification of Building parts

- For 3D Models based on point clouds (Scan to BIM)

Specification for Furniture & Fittings

Version 2020-06-15

Applies to furniture, fittings, casework

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information Level 1	Information Level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
Type variation: To nearest 50 mm **Tolerances in placement:** 50 mm	**Type variation:** To nearest 25 mm **Tolerances in placement:** 30 mm	**Type variation:** **Tolerances in placement:**
LOG 100	**LOG 150**	**CUSTOM-LOG**
GENERIC LEVEL  Casework are modelled as simple sketch cabinets.	DETAILED LEVEL  Casework are modelled, technical installations must be specified and located.	
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

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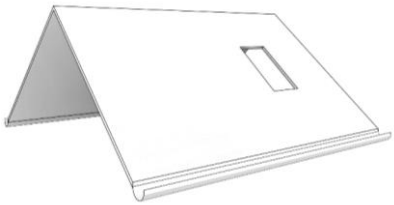
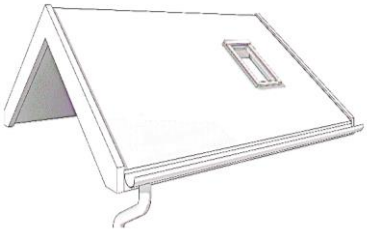
Specification for Roof

Version 2020-06-15

Applies to roofs

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information Level 1	Information Level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
Type variation: To nearest 50 mm **Tolerances in placement:** 50 mm	**Type variation:** To nearest 25 mm **Tolerances in placement:** 30 mm	**Type variation:** **Tolerances in placement:**
LOG 100	**LOG 150**	**CUSTOM- LOG**
GENERIC LEVEL  Roofs modelled as a single generic object without layers. Gutters and downpipes are modeled.	DETAILED LEVEL  Roofs modelled as a single generic object without layers. Visible construction is modeled. Gutters and downpipes are modeled.	
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

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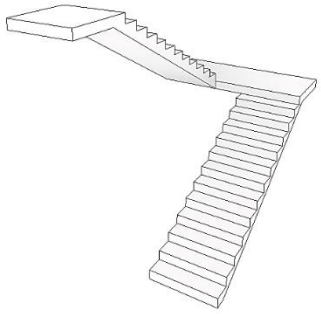
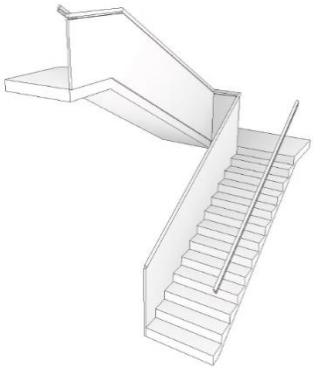
Specification for Stair and Ramp

Version 2020-06-15

Applies to in-situ and prefabricated stairs and ramps

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
Type variation: To nearest 50 mm **Tolerances in placement:** 50 mm	**Type variation:** To nearest 25 mm **Tolerances in placement:** 30 mm	**Type variation:** **Tolerances in placement:**
LOG 100	**LOG 150**	**CUSTOM-LOG**
GENERIC LEVEL  Stairs and ramps modeled as simple geometry.	DETAILED LEVEL  Railings modeled with raisers If risers differentiate in height, first and last riser height should be correct as well as the landing height.	
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

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Specification of Building parts

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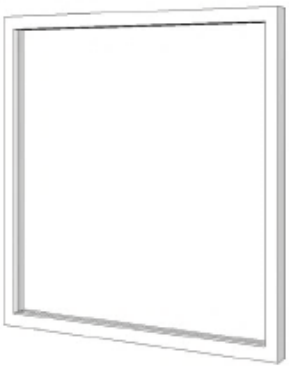
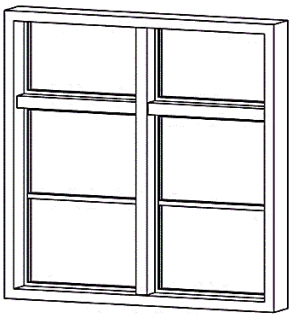
Specification for Window

Version 2020-06-15

Applies to windows, panes and panels

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
Type variation: To nearest 50 mm **Tolerances in placement:** 50 mm	**Type variation:** To nearest 25 mm **Tolerances in placement:** 30 mm	**Type variation:** **Tolerances in placement:**
LOG 100	**LOG 150**	**CUSTOM-LOG**
GENERIC LEVEL  Windows modelled as single frame. The opening direction of window is not set.	DETAILED LEVEL  Windows modelled with mullions and frame. The opening direction of window is not set.	
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

The above delivery requirements must be seen in relation to services selected in the Description of services for Building and Landscape 2018 (EN) (YBL2018). By selecting both the 9.8 Digitalisation of existing conditions in YBL2018 and the above LOD DK levels, the levels LOR, LOG and LOI are mandatory for each model element. See also the instructions for this publication.

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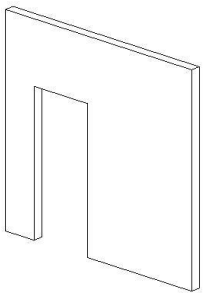
Specification for Partition Wall

Version 2020-06-15

Applies to load bearing walls, and non-load bearing walls

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
Type variation: 50 mm in thickness **Tolerances in placement:** 50 mm **Tolerances in slope:** 1:100	**Type variation:** 25 mm in thickness **Tolerances in placement:** 30 mm **Tolerances in slope:** 1:100	**Type variation:** **Tolerances in placement:** **Tolerances in slope:**
LOG 100		**CUSTOM-LOG**
GENERIC LEVEL  Walls modelled as a single generic object without layers. Interior walls are modelled from floor level to the floor separation above. Exterior walls are split for each level. Ensure that the inside/outside of the wall is properly set. Protrusions and recesses are not modeled. Openings are modeled with a tolerance of +/-**LOR** in dimension and location. If interior or exterior faces are out of plumb (1:100), walls are modelled as Mass in Place with category set as wall. If the difference between two opposite external walls is less than 0.2°, in the point cloud, these must be modelled as parallel. If the difference between two opposite external walls is more than 0.2°, in the point cloud, these should follow the point cloud. If the corner angle is between 89.5° and 90.5°, the corner must be modeled perpendicularly.		
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES

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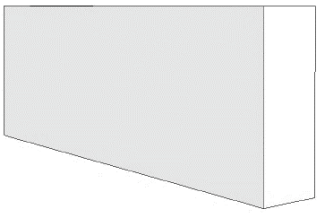
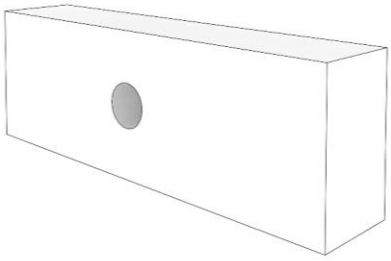
Specification for Beam

Version 2020-06-15

Applies to all types of beams

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
Type variation: To nearest 50 mm **Tolerances in placement:** 50 mm	**Type variation:** To nearest 25 mm **Tolerances in placement:** 30 mm	**Type variation:** **Tolerances in placement:**
LOG 100	**LOG 150**	**CUSTOM-LOG**
GENERIC LEVEL  Beams modelled as generic objects in maximum outer dimensions.	DETAILED LEVEL  Beams modelled with variation in height. Holes over 200 mm modeled.	
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES

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Specification of Building parts

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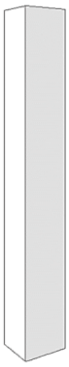
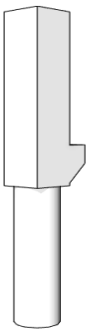
Specification for Column

Version 2020-06-15

Applies to all types of Columns

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
Type variation: To nearest 50 mm **Tolerances in placement:** 50 mm **Tolerances in slope:** 1:100	**Type variation:** To nearest 25 mm **Tolerances in placement:** 30 mm **Tolerances in slope:** 1:100	**Type variation:** **Tolerances in placement:** **Tolerances in slope:**
LOG 100	**LOG 150**	**CUSTOM-LOG**
GENERIC LEVEL  Columns are modelled as a straight column without variations in vertical thickness. Holes over 100 mm modelled.	DETAILED LEVEL  Columns are modelled with variation in base, shaft and capital. Protrusions and recesses are modelled. Holes over 100 mm modelled.	
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

The above delivery requirements must be seen in relation to services selected in the Description of services for Building and Landscape 2018 (EN) (YBL2018). By selecting both the 9.8 Digitalisation of existing conditions in YBL2018 and the above LOD DK levels, the levels LOR, LOG and LOI are mandatory for each model element. See also the instructions for this publication.

Specification of Building parts

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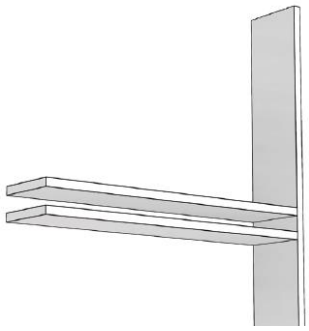
Specification for Electrical Routing

Version 2020-06-15

Applies to cable trays & ladders, installation channels cable ducts etc.

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	

LOR 100	LOR 150	CUSTOM-LOR
Type variation: 50 mm in thickness **Tolerances in placement:** 50 mm **Tolerances in slope:** 1:100	**Type variation:** 25 mm in thickness **Tolerances in placement:** 30 mm **Tolerances in slope:** 1:100	**Type variation:** **Tolerances in placement:** **Tolerances in slope:**

LOG 100	CUSTOM-LOG
GENERIC LEVEL  Electrical routings over 100 mm are modelled.	

LOI 100	LOI 150	CUSTOM-LOI
ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

The above delivery requirements must be seen in relation to services selected in the Description of services for Building and Landscape 2018 (EN) (YBL2018). By selecting both the 9.8 Digitalisation of existing conditions in YBL2018 and the above LOD DK levels, the levels LOR, LOG and LOI are mandatory for each model element. See also the instructions for this publication.

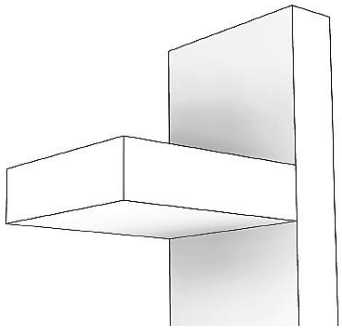
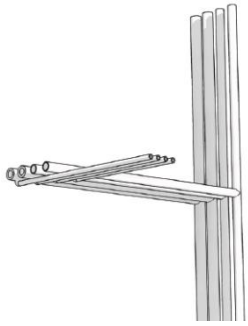
Specification of Building parts

- For 3D Models based on point clouds (Scan to BIM)

Specification for Pipes and Ducts Routing

Version 2020-06-15

Applies to cable trays & ladders, installation channels & cable ducts etc.

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
Type variation: To nearest 50 mm **Tolerances in placement:** 50 mm	**Type variation:** To nearest 25 mm **Tolerances in placement:** 30 mm	**Type variation:** **Tolerances in placement:**
LOG 100	**LOG 150**	**CUSTOM-LOG**
GENERIC LEVEL  Visible round pipelines greater than 50 mm are modelled as MEP pipes. Visible rectangular pipes are modelled as MEP ducts. Elbows for pipes and ducts are modelled - junctions, cross and transitions are not.	DETAILED LEVEL  Visible round pipelines between 50 - 149 mm are modelled as MEP pipes. Visible round pipelines over 150 mm are modelled as MEP ducts. Visible rectangular pipes are modelled as MEP ducts. Elbows for pipes and ducts are modelled - junctions, cross and transitions are not.	
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES Type name	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

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Specification of Building parts

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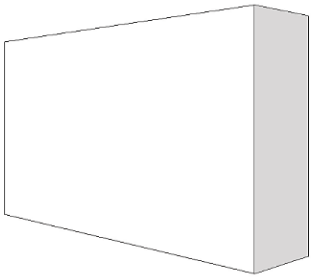
Specification for Component

Version 2020-06-15

Applies to MEP components

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	

LOR 100	LOR 150	CUSTOM-LOR
Type variation: 50 mm in thickness **Tolerances in placement:** 50 mm **Tolerances in slope:** 1:100	**Type variation:** 25 mm in thickness **Tolerances in placement:** 30 mm **Tolerances in slope:** 1:100	**Type variation:** **Tolerances in placement:** **Tolerances in slope:**

LOG 100	CUSTOM-LOG
GENERIC LEVEL  Radiators modeled. Aggregates modeled.	

LOI 100	LOI 150	CUSTOM-LOI
ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

The above delivery requirements must be seen in relation to services selected in the Description of services for Building and Landscape 2018 (EN) (YBL2018). By selecting both the 9.8 Digitalisation of existing conditions in YBL2018 and the above LOD DK levels, the levels LOR, LOG and LOI are mandatory for each model element. See also the instructions for this publication.

Specification of Building parts

- For 3D Models based on point clouds (Scan to BIM)

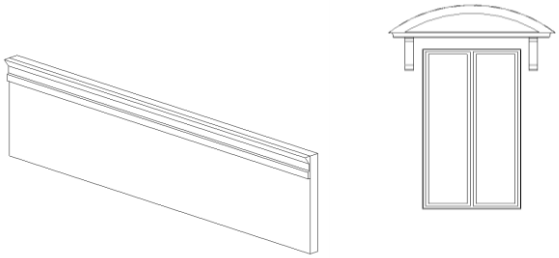
Specification for Decoration and ornament

Version 2020-06-15

Applies to all decorations and ornaments

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	

LOR 100	LOR 150	CUSTOM-LOR
Type variation: 50 mm in thickness **Tolerances in placement:** 50 mm **Tolerances in slope:** 1:100	**Type variation:** 25 mm in thickness **Tolerances in placement:** 30 mm **Tolerances in slope:** 1:100	**Type variation:** **Tolerances in placement:** **Tolerances in slope:**

LOG 100	CUSTOM-LOG
GENERIC LEVEL  Protrusions and recesses over 25 mm are modeled. Fixed-mounted fixtures and decorations on the façade are modeled	

LOI 100	LOI 150	CUSTOM-LOI
ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES Type name Thickness	ASSOCIATED PROPERTIES

Delivery specification from the Danish ARK and FRI

The above delivery requirements must be seen in relation to services selected in the Description of services for Building and Landscape 2018 (EN) (YBL2018). By selecting both the 9.8 Digitalisation of existing conditions in YBL2018 and the above LOD DK levels, the levels LOR, LOG and LOI are mandatory for each model element. See also the instructions for this publication.

DiKon
Digital Konvergens

Specification of Building parts

- For 3D Models based on point clouds (Scan to BIM)

Specification for Non-described object

Version 2020-06-15

LOD 100 DK	LOD 150 DK	CUSTOM-LOD
Information level 1	Information level 2	
LOR 100	**LOR 150**	**CUSTOM-LOR**
LOG 100	**LOG 150**	**CUSTOM-LOG**
GENERIC LEVEL	DETAILED LEVEL	
LOI 100	**LOI 150**	**CUSTOM-LOI**
ASSOCIATED PROPERTIES	ASSOCIATED PROPERTIES	ASSOCIATED PROPERTIES

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