

#### Content

#### Page Sheet 2 Wall 3 Door 4 Window 5 Floor build up 6 Stairs, ramps, railings 7 <u>Roof</u> 8 Furniture and equipment 9 <u>Room</u> 10 Areas 11 Steel column

12 Steel beam

13 Concrete column 14 Concrete beam

15 Concrete wall

16 Concrete slab 17 Foundations

18 Electrical routings

19 Electrical components

20 Ventilation routings 21 Ventilation components

22 Heating+sanitation routings

23 Heating+sanitation components

Description

**Revision date** 

10-09-2016 10-09-2016

10-09-2016

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Description
Applies to all outside and inside walls
Applies to all outside and inside doors and gates
Applies to all windows, with panes and opaque areas
Applies to all floor dividers that make a horizontal separati
Applies to all site-cast and prefabricated stairs and ramps a
Applies to all roof structures that close the building from a
Applies to loose and permanent fittings
Applies to all room objects bounded by 3D structures
Applies to all areas bounded by 3D structures
Applies to steel columns
Applies to steel beams
Applies to site-cast and prefabricated concrete columns
Applies to site-cast and prefabricated concrete beams
Applies to site-cast and prefabricated concrete walls
Applies to site-cast and prefabricated concrete slabs
Applies to linear and point foundations
Applies to cable trays, cable ladders, installation channels,
Applies to all types of components for electrical installation
Applies to channels and channel fittings
Applies to all types of components for ventilation (ventilat
Applies to pipes and pipe fittings

Applies to all types of components for heating and sanitation (exchangers, vessels, filters, pumps, valves, radiators etc.)

### **Specification of Building Parts**

- for selected building parts in building models

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tion and associated railings above

, cable ducts etc. ons (boards, control units, rack cabinets, luminaires, plugs, workstations etc.)

ation units, fans, diffusers, dampers, silencers etc.)

Building element Description	Wall Applies to all o	utside and ins	de walls			
Revision date	10-09-2016	-				
<b>2</b>	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Inform
Geometry						
			Walls are modelled as generic objects in max. outer contour broken down into overall types. Expected dimension and location. Openings with expected dimension and location.	Walls are modelled as assemblies with details of materials. Specified main dimension and location. Openings with specified dimension and location. Layers with thickness of more than 25mm is modelled	Walls are modelled as assemblies with details of materials. Final dimension and location. Openings with final dimension and location. Surfaces down to 5 mm. Layers with thickness of more than 25mm is modelled	Walls are modelled details of materials Final structure, dim Openings with final location. Surfaces down to 5 Components, joints Layers with thickne is modelled
Mandatory attributes			Classification Type Type name		Floor Classification Type Type name Fire rating Acoustic rating	Floor Classification Type Type name Fire rating Acoustic rating
Other attributes			Floor Width Length Height	Floor Width Length Height U-value Material Surface	Width Length Height U-value Material Surface Contract	Width Length Height U-value Material Surface Contract
Attributes used for meassuring when quantities are required in models*	-		Area: M_AD_11_A1 / R0	Area: M_AD_11_A1 / RO	Area: M_AD_11_A1 / R0	Area: M_AD_11_A1 / RO
Comment				1		1



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ed as assemblies with	
ls.	
mension and location. al dimension and	
al dimension and	
5 mm. Its, holes etc. ness of more than 25mm	
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Building element Description	Door Applies to all o	utside and insi	de doors and gates			
Revision date	10-09-2016					
	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Informa
Geometry			Doors are modelled as generic objects in max. outer contour broken down into overall types. Expected dimension and location. Doors are modelled in simple geometry.	Doors are modelled with hinges, frame, architrave, door sill / threshold. Specified dimension and location. Material on door panel modelled as glass or solid.	Doors are modelled with hinges, frame, architrave, door sill / threshold. Final dimension and location. Material on door panel modelled as glass or solid. Conspicuous fittings are modelled.	Doors are modelled architrave, door sill Final structure, dimo Material of door par Conspicuous fittings
Mandatory attributes			Width Height Classification Type name	Width Height Classification Type Type name Fire rating Acoustic rating	Width Height Floor Classification Type Type name Fire rating Acoustic rating Equipment Fittings	Width Height Floor Classification Type Type name Fire rating Acoustic rating Equipment Fittings
Other attributes			Type Area Floor Orientation	Area Floor Orientation Contract Wall width U-value Material Surface Equipment	Area Orientation Contract Wall width U-value Material Surface	Area Orientation Contract Wall width U-value Material Surface
Attributes used for meassuring - when quantities are required in models* Comment			Count M_QQC_11_N1 / R0	Count M_QQC_11_N1 / R0	Count M_QQC_11_N1 / R0	Count M_QQC_11_N1 / RC
Comment * Quantities in models must be ac	tivated in Descrip	tion of Services	for the project			



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ed with hinges, frame, sill / threshold. imension and location. panel is modelled. ngs are modelled.	
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Building element Description		vindows, with p	oanes and opaque areas				
Revision date	10-09-2016						
Geometry	Inf. 1	Inf. 2	Information level 3     Image: Second state of the second state o	Information level 4     Image: Constraint of the second seco	Information level 5     Image: Constraint of the second seco	Information level 6     Image: Constraint of the second seco	Inf. 7
Mandatory attributes			Width Height Classification Type name	Width Height Classification Type Type name Fire rating Acoustic rating	Width Height Floor Classification Type Type name Fire rating Acoustic rating U-value	Width Height Floor Classification Type Type name Fire rating Acoustic rating Equipment U-value Fittings	
Other attributes			Type Area Floor Orientation	Area Floor Orientation Contract Wall width U-value Equipment Fittings Material			
Attributes used for meassuring when quantities are required in models* Comment * Quantities in models must be a		tion of Services	for the project				

### Model delivery specification

Building element Description Revision date	Floor build up Applies to all fl 10-09-2016	oor dividers th	at make a horizontal separation			
Revision date	ID-09-2016	Inf. 2	Information level 3	Information level 4	Information level 5	Information
Geometry						
			Floor build ups are modelled as a combined generic object (floor, slab and ceiling) broken down into overall types. Floor dividers are a continuous surface over the whole of the relevant storey. Expected dimension and location.	Floor build ups are modelled as assemblies broken down into floors, slabs and ceilings. Floors and ceilings may be a continuous surface over the whole of the relevant storey Specified main dimension and location. Larger apertures are modelled.	Floor build ups are modelled as assemblies broken down into floors, slabs and ceilings. Ceilings and floors are divided by walls etc. Final dimension and location incl. any risers etc. Panel divisions marked with hatching. Larger apertures are modelled.	broken down into floors,
Mandatory attributes			Height Classification Type name	Height Classification Type Type name	Height Floor Classification Type Type name Fire rating Acoustic rating	Height Floor Classification Type Type name Fire rating Acoustic rating
Other attributes			Туре Floor	Floo Contract Fire rating Acoustic rating U-value	Contract U-value Material Surface	Contract U-value Material Surface
Attributes used for meassuring when quantities are required in models* Comment			Areal M_AC_11_A1 / R0	Areal M_AC_11_A1 / R0	Areal M_AC_11_A1 / R0	Areal M_AC_11_A1 / R0

\* Quantities in models must be activated in Description of Services for the project



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delled as assemblies rs, slabs and ceilings. separated by walls sion and location I with hatching. nodelled.	

Description	Applies to all si	ite-cast and nr	efabricated stairs and ramps and asso	ociated railings		
Revision date	10-09-2016		chabileatea stairs and ramps and ass			
	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Inform
Geometry			Staircases are modelled. Expected dimension and location.	Specified dimension and location. Staircases and railings are modelled.	Staircases, railings, balustres and handrails are modelled. Final dimension and location.	
Mandatory attributes			Classification Type name	Ramp slope Classification Type Type name	Ramp slope Floor Classification Type Type name Fire rating	Ramp slope Floor Classification Type Type name Fire rating
Other attributes			Floor	Floor Contract Material Surface	Contract Material Surface	Contract Material Surface
Attributes used for meassuring - when quantities are required in models*	-		Count (stairs) M_AF_11_N1 / R0 Count (ramps) M_AG_11_N1 / R0	Count (stairs) M_AF_11_N1 / R0 Count (ramps) M_AG_11_N1 / R0	Count (ramps)	Count (stairs) M_AF_11_N1 / RO Count (ramps) M_AG_11_N1 / RO

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s, handrails and balustres	
nd location (element number, shape and prackets, holes, joints.	
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Description	Applies to all ro	oof structures t	that close the building from above			
Revision date	10-09-2016		-			
	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Informa
Geometry						
			Roofs are modelled as a collective generic	Roofs are modelled as assemblies broken	Roofs are modelled as assemblies broken	Roofs are modelled
			object without sub-structures and divided	down into roof slab, roof structure,	down into roof slab, roof structure,	down into roof slab
			into overall types.	insulation and membrane.	insulation and membrane.	insulation and mem
			Expected dimension and location.	Specified dimension and location.	Final dimension and location. Finish, roof gradient and materials are included. Roof gutters and downpipes are	Final dimension and Finish, roof gradien joists, components
					modelled.	modelled.
Mandatory attributes			Classification	Classification	Floor	Floo
Mandatory attributes			Type name	Туре	Classification	Classification
			Type hame	Type name	Туре	Туре
				i ype nume	Type name Fire rating	Type name Fire rating
Other attributes			Туре	Height	Height	Height
			Height	Floor	Contract	Contract
			Floor	Contract	U-value	U-value
				Fire rating	Material	Material
				U-value	Surface	Surface
				Material		
				Surface		
Attributes used for meassuring	-		Area (Roof)	Area (Roof)	Area (Roof)	Area (Roof)
when quantities are required in models*			M_NCE_11_A1 / R0	M_NCE_11_A1 / R0	M_NCE_11_A1 / R0	M_NCE_11_A1 / R0
Comment						

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ed as assemblies broken ab, roof structure, embrane. and location. ent, holes, elements, ts and materials are	
RO	

Building element Description Revision date	Furniture and equipment Applies to loose and permanent fittings 10-09-2016							
	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Inform		
Geometry								
			Modelled as generic objects in max. outer contour.	Modelled with specified geometry and category.	Modelled with final geometry and category.	Modelled with fin category.		
Mandatory attributes			Classification Type name	Width Height Length Classification Type Type name	Width Height Length Floor Classification Type Type name	Width Height Length Floor Classification Type Type name		
Other attributes			Type Floor	Floor Contract	Contract	Contract		
Attributes used for meassuring when quantities are required in models*	-		Count M_RB_11_N1	Count M_RB_11_N1	Count M_RB_11_N1	Count M_RB_11_N1		
Comment								
* Quantities in models must be a	ctivated in Descri	ption of Services	for the project					

#### Model delivery specification

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nal geometry and	

16 1 Inf. 2	Information level 3	Information level 4	Information level 5	Informa
		Room objects are inserted and bounded by 3D structures. Modelled to soffit of ceiling.		
	Volume Room name	Volume Room name Room number	Room name	Volume Location Room name Room number
	Location Floor surface Ceiling surface Planned area	Ceiling surface		Floor surface Ceiling surface Wall surface Planned area
	Area (floor) M_FR?_11_A2 / R0		Area (floor) M_FR?_11_A2 / R0	Area (floor) M_FR?_11_A2 / R0
	escription of Service		M_FR?_11_A2 / R0	M_FR?_11_A2 / R0 M_FR?_11_A2 / R0 M_FR?_11_A2 / R0

#### Model delivery specification

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re inserted and bounded by Aodelled to soffit of ceiling.	
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Object Description	<b>Area</b> Applies to all ar	eas hounded by	v 3D structures			
Revision date	10-09-2016					
	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Inform
Geometry		1111. 2				
			Areas are used to define e.g. the total area and/or sub-areas of the building. Areas may be divided into sub-areas (building, floor, section, room)	Areas are used to define e.g. the total area and/or sub-areas of the building. Areas may be divided into sub-areas (building, floor, section, room)	Areas are used to define e.g. the total area and/or sub-areas of the building. Areas may be divided into sub-areas (building, floor, section, room)	Areas are used to d and/or sub-areas o Areas may be divid (building, floor, sec
Mandatory attributes			Gross area Sub-areas	Gross area Sub-areas	Gross area Sub-areas	Gross area Sub-areas
			Area name	Area name		Area name
Other attributes						
Attributes used for meassuring when quantities are required in models* Comment	-					

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o define e.g. the total area of the building. ided into sub-areas ection, room)	

Building element	Steel column						
Description	Applies to steel	l columns					
Revision date	10-09-2016						
	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Information level 6	Inf. 7
Geometry							
			Columns are modelled as generic objects in max. outer contour broken down into overall types. Expected main geometry, orientation and location.	Columns are modelled in specified main dimension, orientation and location. Larger holes for main lead-throughs with specified size and location.	profile length, orientation and location and in producable lengths. Final brackets and holes for lead-throughs. Fire insulation is modelled where it is	Columns are modelled in final dimension, orientation, location and profile length for production. Final brackets, holes for lead-throughs, bolts, connection plates, welds and fire insulation.	
Mandatory attributes			Classification Type name	Profile Classification Type name Type Construction type	Location (e.g. building number or floor) Classification Type name Type Construction type	Profile Location (e.g. building number or floor) Classification Type name Type Construction type Steel quality Serial number Steel quality Surface treatment Fire rating Insulation type Insulation thickness Contract	
Other attributes				Contract Location	Fire rating Insulation type Insulation thickness Corrosion class Serial number Contract Steel quality Surface treatment		
Attributes used for meassuring - when quantities are required in models*				Length M_ULD_23_L1 / VA	Length M_ULD_23_L1 / VA	Length M_ULD_23_L1 / VA	
Comment * Quantities in models must be a	ctivated in Descrip	tion of Services f	or the project				



Description Revision date Geometry	Applies to steel 10-09-2016 Inf. 1	beams Inf. 2	Information level 3		-	
		Inf. 2	Information level 3			
Geometry	Inf. 1	Inf. 2	Information level 3			
Seometry				Information level 4	Information level 5	Information level 6
					00	
			Beams are modelled as generic objects in max. outer contour broken down into overall types. Expected main geometry, orientation and location.	Beams are modelled in specified main dimension, orientation and location. Larger holes for main lead-throughs with specified size and location.	Beams are modelled in final dimension, profile length, orientation and location and in producable lengths. Final brackets and holes for lead- throughs. Fire insulation is modelled on the underside of beams where it is crucial to inter-disciplinary coordination.	Beams are modelled in final dimension, orientation, location and profile length for production. Final brackets, holes for lead-throughs, bolts, connection plates, welds and fire insulation.
Mandatory attributes			Profile Classification Type name	Profile Classification Type Type Construction type	Profile Location (e.g. building number or floor) Classification Type name Type Construction type	Profile Location (e.g. building number or floor) Classification Type name Type Serial number Construction type Steel quality Surface treatment Corrosion class Fire rating Insulation type Insulation thickness Environmental class Contract
Other attributes				Contract Location	Fire rating Insulation type Insulation thickness Corrosion class Serial number Contract Steel quality Surface treatment	
Attributes used for meassurin when quantities are required models* Comment * Quantities in models must b	in		Length M_ULE_23_L1 / VA	Length M_ULE_23_L1 / VA	Length M_ULE_23_L1 / VA	Length M_ULE_23_L1 / VA

#### Model delivery specification



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floor)	

Page 12 of 23

Building element Description Revision date	Concrete colun Applies to site- 10-09-2016		pricated concrete columns				
	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Information level 6	Inf. 7
Geometry							
			Columns are modelled as generic objects in max. outer contour broken down into overall types. Expected main geometry, orientation and Location.	Columns are modelled in specified main dimension, orientation and Location. Larger holes for main lead-throughs with specified size and Location.	Columns are modelled in final dimension, element length, orientation and location and in producable lengths. Final brackets, corrugated pipes and holes for lead-throughs.	Columns are modelled in final dimension, production length, orientation and Location. Final brackets, holes for lead-throughs, joints, reinforcement incl. supports, mounting points, bevels and insert plates.	
Mandatory attributes			Cross section Classification Type name	Cross section Classification Type name Type Construction type	Cross section Location (e.g. building number or floor) Classification Type name Type Construction type	Cross section Location (e.g. building number or floor) Classification Type name Type Serial number Construction type Concrete strength Environmental class Max. stone size Surface requirements Surface treatment Reinforcement quantity Contract	
Other attributes				Reinforcement quantity Concrete strength Environmental class Max. stone size Contract Location	Serial number Reinforcement quantity Surface treatment Contract Concrete strength Environmental class Max. stone size		
Attributes used for meassuring - when quantities are required in models*			Length (Prefab) M_ULD_13_N1 / R0 Volume (Insitu) M_ULD_15_V1 / R0	Length (Prefab) M_ULD_13_N1 / R0 Volume (Insitu) M_ULD_15_V1 / R0	Length (Prefab) M_ULD_13_N1 / R0 Volume (Insitu) M_ULD_15_V1 / R0	Length (Prefab) M_ULD_13_N1 / R0 Volume (Insitu) M_ULD_15_V1 / R0	
Comment * Quantities in models must be a	ctivated in Descrir	otion of Services	for the project				



Building element	Concrete beam		briested concrete becaus				
Description Revision date	Applies to site-0 10-09-2016	cast and prefai	bricated concrete beams				
	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Information level 6	Inf. 7
eometry							
			Beams are modelled as generic objects in max. outer contour broken down into overall types. Expected main geometry, orientation and location.	Beams are modelled in specified main dimension, orientation and location. Larger holes for main lead-throughs with specified size and location.		Beams are modelled in final dimension, production length, orientation and location. Final brackets, holes for lead-throughs, joints, reinforcement incl. supports, mounting points, bevels and insert plates.	
Mandatory attributes			Cros section Classification Type name	Cros section Classification Type name Type Construction type	Cros section Location (e.g. building number or floor) Classification Type name Type Construction type	Cros section Location (e.g. building number or floor) Classification Type name Type Serial number Construction type Concrete strength Environmental class Max. stone size Surface requirements Surface treatment Reinforcement quantity Contract	
Other attributes				Concrete strength Environmental class Max. stone size Reinforcement quantity Contract Location	Serial number Reinforcement quantity Surface treatment Contract Concrete strength Environmental class Max. stone size		
Attributes used for meassuring - vhen quantities are required in nodels*	-		Length (Prefab) M_ULE_13_N1 / R0 Volume (Insitu) M_ULE_12_V1 / R0	Length (Prefab) M_ULE_13_N1 / R0 Volume (Insitu) M_ULE_12_V1 / R0	Length (Prefab) M_ULE_13_N1 / R0 Volume (Insitu) M_ULE_12_V1 / R0	Length (Prefab) M_ULE_13_N1 / R0 Volume (Insitu) M_ULE_12_V1 / R0	
Comment * Quantities in models must be a	uctivated in Descrip	ntion of Services	for the project				



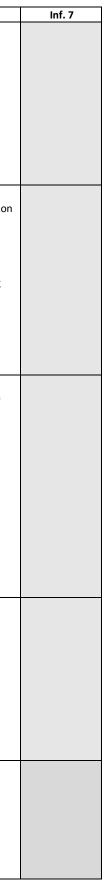
Addition date     Total Marka     Marka <th>Building element</th> <th>Concrete wall</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Building element	Concrete wall						
Image: series of a measuring of a measuring of a measure of	Description Revision date	10-09-2016	-					
Image: set in the set in th	Geometry	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Information level 6	Inf. 7
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Height Length Cassification Type name 				max. outer contour broken down into overall types. Expected main geometry, orientation and	dimension, orientation and location. Large openings and holes for main lead- throughs with specified size and location.	orientation and location. Final openings, holes for main lead- throughs with diameter or edge length over 150 mm. Final brackets, skirts, bends and corrugated pipes. Modeling of element division etc. is	orientation, location and element division for production. Final openings and holes for lead- throughs. Final brackets, joints, joint locks, reinforcement incl. supports, mounting	
Image: bit	Mandatory attributes			Height Length Classification Type name	Height Length Profile type Classification Type name Type Construction type	Height Length Profile type Location (e.g. building number or floor) Classification Type name Type	Height Length Profile type Location (e.g. building number or floor) Classification Type name Type Serial number Construction type Concrete strength Environmental class Max. stone size Surface requirements Surface treatment Reinforcement quantity	
Image: serie quired in odels*   M_ULM_11_A1 /R0   M_ULM_11_A1 /R0   M_ULM_11_A1 /R0   M_ULM_11_A1 /R0     Volume (Insitu)   Volume (Insitu)   Volume (Insitu)   Volume (Insitu)   M_ULM_13_V1 / R0   Volume (Insitu)     mment   Fig 2a   Fig 2a   Fig 2a   Fig 2a   Fig 2a   Fig 2a	Other attributes				Environmental class Max. stone size Contract Reinforcement quantity Location	Reinforcement quantity Surface treatment Contract Concrete strength Environmental class		
	Attributes used for meassuring when quantities are required ir models*			M_ULM_11_A1 /R0 Volume (Insitu)	M_ULM_11_A1 /R0 Volume (Insitu)	M_ULM_11_A1 /R0 Volume (Insitu)	M_ULM_11_A1 /R0 Volume (Insitu)	
	Comment				Fig 2a	Fig 2a	Fig 2a	



Newsion date     10409-2015       Geometry     Inf. 1     Inf. 2     Information level 3     Information level 4     Information level 5     Information level 4       Geometry     Inf. 1     Inf. 2     Information level 3     Information level 4     Information level 5     Information level 4       Information level 4     Information level 4     Information level 4     Information level 5     Information level 4       Information level 4     Information level 4     Information level 4     Information level 5     Information level 4       Information level 4     Information level 4     Information level 4     Information level 5     Information level 4       Information level 4     Information level 4     Information level 4     Information level 4     Information level 4     Information level 4       Information level 4     Information level 4     Information level 4     Information level 4     Information level 4     Information level 4     Information level 4       Information level 4     Information level 4     Information level 4     Information level 4     Information level 4     Information level 4     Information level 4       Information level 4     Information level	0	Concrete slab					
Mandetory stributes     Mail     Mail </th <th></th> <th></th> <th>ast and prefabr</th> <th>icated concrete slabs</th> <th></th> <th></th> <th></th>			ast and prefabr	icated concrete slabs			
Geometry     Jakes are modelled as generic objects in max-outer control broken down into accult type.     Salas are modelled as generic objects in max-outer control broken down into accult type.     Salas are modelled in specified main elementan, orientation and location, with stress intection and location, with stress orientation and location, with stress intection and location, with stress orientation and location, with stress intection and location, with stress intection and location, with stress intection and location, with stress orientation and location, with stress intection and location with stress intervale with stress inte	Revision date		Inf. 2	Information level 3	Information level 4	Information level 5	Information level 6
Image: bit image:	Geometry						Contraction of the second seco
Classification   Classification   Location (e.g. building number or floor)   Type name   Type   Type name   Type   Type   Type   Type   Construction type   Construc				max. outer contour broken down into overall types. Expected main geometry, orientation and	dimension, orientation and location. Large openings and holes for main lead-	orientation and location, with stress direction and large site-cast areas. Final openings, holes for main lead- throughs with diameter or edge length over 150 mm. Modeling of element division etc. is agreed on the project.	Final openings and holes for lead- throughs. Final brackets, joints, joint locks,
Environmental class   Reinforcement quantity     Max. stone size   Surface treatment     Reinforcement quantity   Contract     Contract   Concrete strength     Location   Environmental class     Max. stone size   Max. stone size	Mandatory attributes			Classification	Classification Type name Type	Location (e.g. building number or floor) Classification Type name Type Construction type	Location (e.g. building number or floor) Classification Type name Type Serial number Construction type Concrete strength Environmental class Max. stone size Surface requirements Surface treatment Reinforcement quantity
	Other attributes				Environmental class Max. stone size Reinforcement quantity Contract	Reinforcement quantity Surface treatment Contract Concrete strength Environmental class	
Attributes used for meassuring - when quantities are required in models*   Area (ground slab)   M_BC_14_A1/VB   M_BC_11_A1/VA   M_BC_11_A1/VA <td>when quantities are required in</td> <td></td> <td></td> <td>M_BC_14_A1 / VB Area (Prefab)</td> <td>M_BC_14_A1 / VB Area (Prefab)</td> <td>M_BC_14_A1 / VB Area (Prefab)</td> <td>M_BC_14_A1 / VB Area (Prefab)</td>	when quantities are required in			M_BC_14_A1 / VB Area (Prefab)	M_BC_14_A1 / VB Area (Prefab)	M_BC_14_A1 / VB Area (Prefab)	M_BC_14_A1 / VB Area (Prefab)
Comment Area (Insitu) Area (Insitu) Area (Insitu) Area (Insitu) Area (Insitu)   * Quantities in models must be activated in Description of Services for the project M_ULK_11_A1/VA M_ULK_11_A1/VA M_ULK_11_A1/VA				M_ULK_11_A1 / VA			

#### Model delivery specification



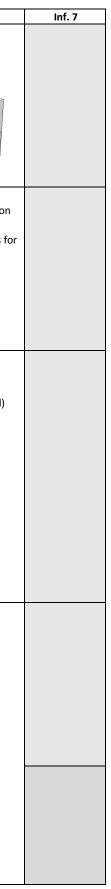


Page 16 of 23

Building element Description	Foundations Applies to linea	r and point fou	ndations			
Revision date	10-09-2016			1		1
<b>~</b>	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Information level 6
Geometry						
			Foundations are modelled as generic objects in max. outer contour broken down into overall types. Expected main geometry, orientation and location.	Foundations are modelled in specified main dimension, orientation and location. Larger holes for main lead-throughs with specified size and location.	Foundations are modelled in final dimension, orientation and location. Final steps, plinths and holes for lead- throughs.	Foundations are modelled in final dimension, element division, orientation and location. Final steps, plinths, brackets and holes for lead-throughs. Final reinforcement incl. supports, mounting points, fixings, inserts and plates.
Mandatory attributes			Cross section Length (linear foundations) Classification Type name	Cross section Length (linear foundations) Profile type Classification Type name Type Construction type	Cross section Length (linear foundations) Profile type Location (e.g. building number or level) Classification Type name Type Construction type	Cros section Length (linear foundations) Profile type Location (e.g. building number or level) Classification Type name Type Serial number Construction type Concrete strength Environmental class Max. stone size Surface requirements Surface treatment Reinforcement quantity Contract
Other attributes				Concrete strength Environmental class Max. stone size Reinforcement quantity Contract Location	Serial number Reinforcement quantity Surface treatment Contract Concrete strength Environmental class Max. stone size	
Attributes used for meassuring - when quantities are required in models*			Volume (Line) M_ULE_11_V1 / R0 Volume (Point) M_ULJ_11_V1 /R0	Volume (Line) M_ULE_11_V1 / R0 Volume (Point) M_ULJ_11_V1 /R0	Volume (Line) M_ULE_11_V1 / R0 Volume (Point) M_ULJ_11_V1 /R0	Volume (Line) M_ULE_11_V1 / R0 Volume (Point) M_ULJ_11_V1 /R0
Comment <u>* Quantities in models must be a</u>	tivated in Docori	l ntion of Services	for the project	1		1

#### Model delivery specification





Page 17 of 23

Building element Description			ers, installation channels, cable ducts e	etc.			
Revision date	10-09-2016 Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Information level 6	Inf. 7
Geometry		R v e	Routings are modelled as common generic rolume objects for all installations in expected max. outer contour.		Routings are modelled in final outer dimensions.	Routings are modelled in final dimensions based on actual choice of product. Final location and orientation of cable Routings and fittings.	
Mandatory attributes		Т	уре	Dimension Elevation Floor Classification Type	Dimension Elevation (absolute) Floor Classification Type	Dimension Elevation Floor Classification Type Product-specific type Producer	
Other attributes				Contract	Number of lines Line division Contract Material	Number of lines Line division Contract Material	
Attributes used for meassuring when quantities are required in models*			ength Λ_BH_11_L1 / RO	Length M_BH_11_L1 / RO	Length (routing) M_UBA_11_L1 / R0 Count (fittings) M_UBA_12_N1 / R0	Length (routing) M_UBA_11_L1 / R0 Count (fittings) M_UBA_12_N1 / R0	

\* Quantities in models must be activated in Description of Services for the project

#### Model delivery specification

Description		pes of compon	ents for electrical installations (boards, o	control units, rack cabinets, luminaires,	plugs, workstations etc.)	
Revision date	10-09-2016					
Coomotru	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Informat
Geometry						
						0
			Components are modelled as generic volume objects in expected max. outer contour. Expected location and orientation of components.	Components are modelled in specified max. outer dimensions. Specified location and orientation of components.	Components are modelled in final outer dimensions. Final location and orientation of components.	Components are more dimensions based or product. Final location and or components.
Mandatory attributes			Туре	Width Height Length Diameter Depth Elevation Floor Classification Type	Width Height Length Diameter Depth Elevation Floor Classification Type	Width Height Length Diameter Depth Elevation Floor Classification Type Prductspecific type Manufacturer
Other attributes				Contract	Room number Contract Data for embedded electrical ducts and boxes ID numbers (group numbers, component- IDs etc.)	Contract Data for embedded e boxes ID numbers (group n IDs etc.)
Attributes used for meassuri when quantities are required models*						

ormation level 6	Inf. 7
5	
0]	
re modelled in final	
sed on actual choice of	
nd orientation of	
туре	
Idad alactrical ducts and	
ded electrical ducts and	
a managementa a service a servi	
oup numbers, component-	

Building element Description		utings Inels and channe	el fittings			
Revision date	10-09-2016 Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Info
Geometry						00
			Conduits are modelled as common generic volume objects for all installations in expected max. outer contour. Expected location and orientation.	Conduits are modelled in specified max. outer channel dimensions plus any insulation. Specified location and orientation of channels, fittings and poss. insulation.	Conduits are modelled in specified outer channel dimensions plus any insulation. Final location and orientation of channels, fittings and poss. insulation.	Conduits are m dimensions bas product, and w Final location a fittings and pos
Mandatory attributes			Туре	Dimension Elevation Floor Classification Type Insulation thickness	Dimension Elevation Floor Classification Type Material Insulation type System	Dimension Elevation Floor Classification Type Material Insulation type System Product-specifi Producer
Other attributes				Contract	Contract Air volume Room number	Contract Air volume Room number
Attributes used for meassuring - when quantities are required in models* Comment	-		Length M_JJ_11_L1 / R0	Length M_JJ_11_L1 / RO	Length (Conduits) M_WPB_11_L2 /R0 Count (Fitting) M_XMC_12_N1 / R0	Length (Condui M_WPB_11_L2 Count (Fitting) M_XMC_12_N

\* Quantities in models must be activated in Description of Services for the project



ormation level 6	Inf. 7
nodelled in final channel sed on actual choice of vith any insulation. and orientation of channels, ss. insulation.	
e fic type	
uits) 2 /RO 11 / RO	

Building element Description	Ventilation con		ents for ventilation (ventilation units, fa	ns diffusers dampers siloncors etc.)		
Revision date		pes of compone		nis, uniusers, uampers, shencers etc.)		
Revision date	10-09-2016 Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Inform
Geometry						
<b>,</b>						
			Components are modelled as generic	Components are modelled in specified	Components are modelled in final outer	Components are m
			volume objects in expected max. outer	Components are modelled in specified max. outer dimensions.	Components are modelled in final outer dimensions.	Components are m dimensions based of
			contour.	Specified location and orientation of	Final location and orientation of	product.
			Expected location and orientation of	components.	components.	Final location and c
			components.	components.		components.
						components.
Mandatory attributes			Туре	Width	Width	Width
				Height	Height	Height
				Length	Length	Length
				Diameter	Diameter	Diameter
				Elevation	Elevation	Elevation
				Floor	Floor	Floor
				Classification	Classification	Classification
				Туре	Туре	Туре
					System	System
						Product-specific type
						Producer
Other attributes				Contract	Contract	Contract
					Unit type	Unit type
					Room number	Room number
Attributes used for meassuring	-					
when quantities are required in						
models*						
Comment						
* Quantities in models must be a	ctivated in Descrip	tion of Services f	or the project			

#### Model delivery specification

mation level 6	Inf. 7			
modelled in final d on actual choice of				
l orientation of				
уре				

Building element Description Revision date	Heating and sanitation routings Applies to pipes and pipe fittings 10-09-2016						
	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Information level 6	Inf. 7
Geometry				02	0300		
			Conduits are modelled as common gene	eric Conduits are modelled in specified max.	Conduits are modelled in final outer pipe	Conduits are modelled in final pipe	
			volume objects for all installations in	outer pipe dimensions plus any insulation.		dimensions based on actual choice of	
			expected max. outer contour. Expected location and orientation.	Specified location and orientation of pipes, fittings and poss. insulation.	Final location and orientation of pipes, fittings and poss. insulation.	product, and with any insulation. Final location and orientation of pipes, fittings and poss. insulation.	
Mandatory attributes			Туре	Cross section Length Elevation Floor Classification Type Insulation thickness	Cross section Length Elevation Floor Classification Type Material Insulation type System	Cross section Length Elevation Floor Classification Type Material Product-specific type Producer Insulation type System	
Other attributes				Contract	Contract Hole requirements Room number	Contract Hole requirements Room number	
Attributes used for meassuring when quantities are required in models*							

\* Quantities in models must be activated in Description of Services for the project

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Building element Description Revision date		a <b>nitation compo</b> ypes of compone		gers, vessels, filters, pumps, valves, radia	tors etc.)		
Revision date	Inf. 1	Inf. 2	Information level 3	Information level 4	Information level 5	Information level 6	Inf. 7
Geometry							
			Components are modelled as generic volume objects in expected max. outer contour. Expected location and orientation of components.	Components are modelled in specified max. outer dimensions incl. Specified location and orientation of components.	Components are modelled in final outer dimensions. Final location and orientation of components.	Components are modelled in final dimensions based on actual choice of product. Final location and orientation of components.	
Mandatory attributes			Туре	Width Height Length Depth Diameter Elevation Floor Classification Type	Width Height Length Depth Diameter Elevation Floor Classification Type Material System	WidthHeightLengthDepthDiameterElevationFloorClassificationTypeMaterialProduct-specific typeProducerSystem	
Other attributes				Contract	Contract Hole requirement Room number	Contract Hole requirement Room number	
Attributes used for meassuring - when quantities are required in models* Comment * Quantities in models must be a		ntion of Services f	or the project				

