

BIM Infra.dk digital model naming, description and usage list

00	Survey model
	<p>Description:</p> <p>The survey model contains 3D data in form of points or/and break lines showing the existing terrain. The survey can be based on different measurement types with different levels of detail and accuracy. The survey model is the basis for the existing terrain model.</p>
	<p>Usage:</p> <p>The model is used to generate triangulated surfaces e.g.</p> <ul style="list-style-type: none"> - Existing situation - As-built situation - Understanding the limitations and possibilities within the project's area.

01	Existing terrain
	<p>Description:</p> <p>The 3D model contains triangulated or vectorised survey data defining the existing terrain.</p>
	<p>Usage:</p> <p>The model is used as basis for design, including estimating volumes.</p>

02_A	Geotechnical drilling
	<p>Description:</p> <p>The model contains the locations of the geotechnical drillings within the project area.</p>
	<p>Usage:</p> <p>The drillings shown in the model are used to generate the existing subsurface model and give an overview of the location of the drillings.</p>

02	Existing subsurface
	<p>Description:</p> <p>The model gives an overview of the critical dimension regarding geotechnical layers.</p> <p>Based on e.g. geotechnical drilling, this 3D model contains a triangulated surface of e.g. soft soil within the project area. The model indicates the bottom level of the layer encountered and is only regarded as supplementary information.</p>
	<p>Usage:</p> <p>The model is based on estimates from the geotechnical investigations and can be used for estimating volumes and costs as well as choosing solutions for the design.</p>

03	Existing utilities
	<p>Description:</p> <p>The model contains information about the existing utilities within the necessary area and is shown either as 2D or 3D.</p> <p>The placement of the existing utilities is often somewhat uncertain, and the model is meant as an extra assistance to the different parties.</p> <p>The elevation depends on information received from the utility owner and will mostly be generated from an indicative placement of the specific type of utility, unless the utility owner has more specific information.</p>
	<p>Usage:</p> <p>A model containing the existing utilities gives the possibility of respecting their placement during the construction phase and helps to get an overview of which utilities needs to be relocated. The safety distance must be respected.</p> <p>In the design phase a 3D model of the existing utilities can be used to make a clash detection in order to avoid clashes between the utilities and the designed elements within the project area.</p>

06	Existing maps
	<p>Description:</p> <p>Maps is a common term for different types of registration, such as:</p> <ul style="list-style-type: none"> • Basic (Municipal) maps • Cadastral maps • Orthophotos <p>These can be in different formats and with different uncertainty. Some are made upon data with great precision, whereas others may be based on old data.</p>
	<p>Usage:</p> <p>The existing maps are used for different purposes.</p> <ul style="list-style-type: none"> • The Basic map is used to get an overview of the existing conditions within the project area. • The Cadastral map illustrates all property boundaries and ownership data from across Denmark. It also provides information about protected forests, coastal erosion areas and cliff protection. • The Orthophoto is used to view aerial photos within the project area.

07	Ground water level
	<p>Description:</p> <p>The model of the groundwater level is based on the geotechnical investigations. The model is a triangulated surface of the registered ground water level. The models are indicative and only meant as support to the different parties because the ground water level can vary.</p>
	<p>Usage:</p> <p>The 3D model of the groundwater level is used to identify the critical areas within the project and to optimize the design and establish the necessary precautions to avoid damages to the constructions. The model is also used to determine the necessary drainage within the project.</p>

11	Alignment for roads and paths
	<p>Description:</p> <p>The model contains the alignment for roads or paths including annotation.</p>
	<p>Usage:</p> <p>The alignment is the reference line for the road or path geometry and, this is the basis for design of the corridor of roads and paths as well as the related geometry. The alignment must be designed according to the requirements in the Danish road standards.</p>

12	Alignment for tracks
	<p>Description:</p> <p>The model contains the alignment for rail or track including annotation.</p>
	<p>Usage:</p> <p>The alignment is the reference line for the track geometry and is the basis for design of the corridor of track as well as the related geometry. The alignment must be designed according to the requirements in the Banenorms.</p>

13	Corridor for roads and paths
	<p>Description:</p> <p>The model contains break lines and components of the construction and the different layers of the substructure e.g.:</p> <ul style="list-style-type: none"> • Breaklines of the road surface and different layers for construction of the road or path. • Formation level as breaklines. • Components of the road surface and different layers for construction of the road or path. • Slope signatures.
	<p>Usage:</p> <p>The model is used to build the corridor and is essential to other disciplines e.g.:</p> <ul style="list-style-type: none"> • Drainage • Expropriation • Signal systems <p>The corridor must be designed according to the requirements in the Danish road standards.</p>

14	Corridor for rail
	<p>Description:</p> <p>The model contains break lines and components of the construction and the different layers of the substructure e.g.:</p> <ul style="list-style-type: none"> • Formation level • Subballast • Ballast • Embankments and drainage ditches
	<p>Usage:</p> <p>The model is used to build the corridor and is essential to other disciplines e.g.:</p> <ul style="list-style-type: none"> • Drainage • Expropriation • Signal systems <p>The corridor must be designed according to the requirements in the Banenorms.</p>

15	Drainage
	<p>Description:</p> <p>Depending on the necessary information needed in the design phase, the drainage model may contain the following objects e.g.:</p> <ul style="list-style-type: none"> • Pipes • Manholes • Inlets • Outlets • Related constructions • Pumping stations • Culverts • Catchment areas and watersheds <p>Following the standard for drainage systems, the reference lines and points for bottom of pipes, top and bottom of the manholes, inlets and outlets must be included in the models. Annotation must be placed in the model in separate layers.</p> <p>Ditches and trough are usually a part of the corridor model.</p>
	<p>Usage:</p> <p>The model will be used to build the drainage system. The model is also used to create an overview of the necessary regulatory procedures.</p>

16	Basins
	<p>Description:</p> <p>The model indicates the shape, volume and location of the basins. Depending on the necessary information needed in the different stages the basin model may contain the following e.g.:</p> <p>Breaklines:</p> <ul style="list-style-type: none"> • Bottom • External boundaries <p>Sufaces:</p> <ul style="list-style-type: none"> • Permanent water level • Maximum stowing level • Bottom • Sides • Slope connection to the existing terrain
	<p>Usage:</p> <p>The model will be used to build the basins. The model is also used to create an overview of the necessary regulatory procedures.</p>

17	Water streams
	<p>Description:</p> <p>The model indicates the shape, volume and placement of the water streams. Depending on the necessary information needed in the different stages the water stream model may contain the following e.g.:</p> <p>Breaklines:</p> <ul style="list-style-type: none"> • Alignment • Bottom • External boundaries <p>Sufaces:</p> <ul style="list-style-type: none"> • Bottom • Sides • Slope connection to the existing terrain
	<p>Usage:</p> <p>The model will be used to build the relocated water streams. The model is used to give an overview of the necessary relocations of water streams.</p>

26	Lighting
	<p>Description:</p> <p>The model contains the placement of the lighting components as well as installations going to and from the components.</p>
	<p>Usage:</p> <p>The model will be used to place the lighting and ensure the necessary amount of lighting.</p>

27	Signal systems
	<p>Description:</p> <p>The model contains the placement of the signal components as well as installations going to and from the components.</p>
	<p>Usage:</p> <p>The model will be used to place the signal systems and ensure the sight visibility.</p>

31	Structures of bridges and tunnels
	<p>Description:</p> <p>The model defines the geometry of the structure. The structure model is the general definition for:</p> <ul style="list-style-type: none"> • Bridges • Tunnels • Green bridges • Bigger underpasses for water streams <p>For drainage around these structures, see "Drainage".</p>
	<p>Usage:</p> <p>The model is used to ensure the clearance of the rail/road/path as well as to build the structure.</p>

32	Minor structures
	<p>Description:</p> <p>This model type defines the geometry of the minor structure. The minor structure model is the general definition for:</p> <ul style="list-style-type: none"> • Fauna underpasses (Pipes) • Supporting walls • Waterproof troughs • Small underpasses for waterways • Other minor structures <p>For drainage around these structures see section "Drainage"</p>
	<p>Usage:</p> <p>The model is used to place and build the minor structure.</p>

34	Clearance for railway
	<p>Description:</p> <p>The clearance profiles must be based on the alignment and corridor and modelled through the whole alignment as 3D components, respecting the cant and curvatures. The chosen profiles for each project must be documented so all parties are informed about the requirements. Minimum infrastructure gauge is to be defined by given swept volume inside which no obstacle must be located or intrude. This volume must be determined by reference to the kinematic profile by considering the gauge of catenaries and the gauge for lower parts.</p> <p>For railways, there are 4 types of clearance profiles:</p> <ol style="list-style-type: none"> 1. Clearance profile for the train (Kinematic envelope) as defined by Danish railway norms and the publication "Fritrumsprofilen", defining the restriction area necessary for free passage of trains 2. Clearance for the structures (Minimum Infrastructure gauge) as defined by Danish railway norms and the publication "Fritrumsprofilen", which indicates minimum volume for establishing the installations and structures around the trains 3. Clearance for ballast, which defines the minimum volume of the ballast layer according to the requirements in the current Banenorms. 4. Clearance for CC3 profile, which must have a depth according to the needs of the specific project.
	<p>Usage:</p> <p>The 3D geometry of the clearance profile will be used to ensure free passage as well as the necessary clearance for belonging constructions.</p>

35	Clearance for roads and paths
	<p>Description:</p> <p>The clearance profiles must be based on the alignment and corridor and follow the final level of the road according to the requirements in the Danish road standard "Grundlag for udformning af trafikarealer" section 6.3.</p>
	<p>Usage:</p> <p>The 3D geometry of the clearance profile will be used to ensure free passage as well as the necessary clearance for related constructions.</p>

37_A	Earth works
	<p>Description:</p> <p>This model type contains all designed terrain e.g.:</p> <ul style="list-style-type: none"> • Spoil areas • Excavation • Designed terrain for structures • Borrow areas • Other permanent earth works <p>The location, shape and available volume of the areas must be calculated and designed in the 3D model as surfaces. The model will have to include the surface as mesh components and the connection to the existing terrain as breaklines.</p>
	<p>Usage:</p> <p>The model is used for planning of quantities as well as design and construction of earth works.</p>

44	Areas and boundaries
	<p>Description:</p> <p>This model type defines:</p> <ul style="list-style-type: none"> • Work site areas • Contract boundaries • Expropriation areas <p>VD specifikt: Each of these must be delivered in separate models.</p>
	<p>Usage:</p> <p>The models define the limits of the different areas within the project and is the basis for expropriations and planning.</p>