Innholdsfortegnelse

10 File formats

Bane NOR requires open international file formats, and supports the development of these. Until these formats are available for all subjects in transport, other formats can be delivered by agreement with the individual projects.

12 Drawings in addition to model

There is a need to make some drawings in addition to the model. Documentation in addition to the model will change as digital data can replace drawings and forms. The starting point is that all drawings are generated based on the plan model so that the interfaces between the drawings are taken care of.

A drawing can contain both schematic and floor plan. A schematic drawing shows functions and connections in the system, everything from track plans to electrical systems. There are separate subject-specific requirements for such schematic drawings, often with separate symbols as shown in the Symbol Library.

There will also be a need to make schematic drawings and detail drawings. (drawings not oriented in the coordinate system). These can be: tables, cable plans, connection plans, line layouts, line calculations, mast tables, yoke sketches, foundation tables and the like. These should be able to be generated as much as possible from the model.

Deliveries of documentation are in principle governed by the current contract or agreement.

The client has an expectation that the delivery covers the need for complete documentation within each subject. The delivery must contain sufficient information to be able to assess whether the content of the design meets all technical requirements and with a correct goal achievement. The accuracy must be within the framework of quality set in the given planning phase. Delivery must be checked through quality assurance before dispatch

The delivery must be made according to the project's PDP (Project-specific document handling procedure), and delivered in the coordinated formats that the project and the client can read and use in the further process.

Missing or poor delivery or documentation is considered «not delivered».

3.12.1 Rules for names of layers in drawings

Subject code should be the first part of the name of the team. Then the name must be categorized and detailed depending on the subject and object type according to the tables on the following pages. All «THEMES» must be referred to subjects Structure of team names in theme files:

* THEME_CATEGORY_DETAIL * _THEME and _CATEGORY (as indicated in the tables below) should not be changed.

If necessary, it can be supplemented with additional _CATEGORY. If more DETAILS are needed, this can be specified in each individual project.

Automatically generated teams should keep their names. This applies to objects made according to NS3451 building component table and the like Naming requirements only apply to teams that are manually named.

THEME	Description
JBT	General designation of railway technical layers in the drawing.
JBTEL	Railway technical low voltage systems (NS 3451 (ELI) and NS 8351 are used where this is natural
JBTEH	Railway technical high voltage system (50Hz high voltage system - not Catenary / current)
JBTJORD	Railway technical grounding systems
JBTKL	Overhead contact line system
JBTEF	Track power supply system
JBTOB	Superstructure
JBTTE	telecommunications systems
JBTSI	signaling system

Table shows codes for naming themes in team names

THEME	Description
JBTEL_EKS	Existing plant / object can be attached ex. by subject name. Here is an example of low voltage
JBTEL_PROSJ	Shows a projected solution for telecommunications systems
JBTEL_ALT1	Shows different options for telecommunications systems (here option 1)
JBTEL_FASE10_SPV2_SSS	Shows phase 10 for a switch 2 with a base in the log rail joint

Table showing examples of team name usage

3.12 2 Requirements for information in drawings

The mileage should be increasing from left to right.

Information in the title field:

- Scale: Include which sheet format the scale refers to (A1). Many drawings are scaled up or down when copying
- Drawing name must follow the subject code given in STY-605016 and Naming of design documents.
- Revision: The first drafts of a drawing get revision 00, 01, 02, etc. The first official edition starts the revision at 00 again, and at the same time gets the letter A (00A) added.

All previous editions are removed from the revision field. The next revision will be 01A, 02A, etc. The letter A applies to concept / solution proposals (report, master plan, detailed plan and building plan). Drawings prepared for the tender basis are given the letter B (B revision). Job description and working drawings get revision letter C (C revision). There are also separate provisions for what information must be stated on plan maps prepared in accordance with the Planning and Building Act, see Guide to the Map and Planning Regulations and National Product Specification for Area Plan and Digital Plan Register.

Other information / endorsements:

- North arrow (preferably near the title field so that it appears on the front when folding the drawing)
- Grid and / or scale ruler
- Coordinate system: - for example: «Horizontal: EUREF89 / NTM Zone 10, Vertical: NN2000»
- Source reference (name of owner / licensee for map data) - for example: «Source: Geovekst», Source «Oslo kommune»

3.12.3 Quality assurance

All subject models and drawings must be updated at the same time. Designers must review the procedures for quality assurance of the content. If no other quality assurance methods have been agreed, the underlying points must be used:

Prepare control plan afterSTY 600189 Instruks for utarbeidelse av kontrollplan.

- Use of professional checklists.
- Interdisciplinary review of model and drawing production.
- Simultaneous revision, delivery and publication of profit models and drawings.
- Review and signing of the work together with controlling and approving digital deliveries. Signature / electronic signature is applied to the version handling table.

No changes must be made to the model after the project has given it the status approved. The implementation of the quality assurance must be documented and follow the project.

Stitching data in model

Stitching data in the model with layers that have the prefix «R» will be easy to find and drag this data to the stitching directory depending on the software. Stitching data must have the same quality as input data. Input data will normally be established on the basis of measured data. Stitching should therefore be based on the same fixed marking basis from which the measurement was made.

Control of production

The model can be used for the reference of control and approval of the location and extent of various elements and objects in the facility. Based on measurement data of the built elements and objects, a geometric quality plan is created that describes different intermediate and projected elements.

Stated deviations and tolerances appear in contract documents and in technical regulations, or other related documents.

Measured data is provided by the contractor as «KOF» files where the objects are coded according to the agreed object code list.

In addition to «KOF» files, a printout of the calculated deviation will be provided in the form of a geometric control report. Differences that are outside the tolerance requirements must be marked out.

If the measurements show that an object has been built outside the tolerance requirements, the contractor must send a deviation report to the client. The client decides whether the relevant professional model is to be revised. The consultant may assume that all delivered «as built» measurements have been approved by the client.

Measurements must be sorted into the following categories:

- As built control points within tolerance requirements. Requires no revision of model. Objects automatically get «as built» status.
- Which built control points outside tolerance requirements, but which is approved by the client. Automatically leads to revision of the model.

Approved «Som Bygget» objects are checked based on the result model and collected in a new model. The model must be made available to the client and used for visualized control of «as built» status of the project.

Some deviations outside tolerance requirements can be considered by designers as «acceptable for the As Built Model». In this case, the model is not revised. The use of acceptable deviations shall not reduce the quality of which the model was built in accordance with. further use in operational phase or future redesign.

- As built measurements of new or finished objects without plan data, used by designers to create new «as built» objects in the model.
- Measurement of existing facilities. The client and designer agree on what may be modeled.

If «as built» measurements entail changes that are important for the further construction, the original model must be revised and sent out as a plan change.

Upgrade to "as built" model

After feedback from the contractor, the designer shall upgrade the following models: result, display, coordination and source model to «as built» status.

- All updates are based on the contractor's own measurements and geometric quality control. If there is a need for supplementary measurements or correction of the contractor's delivery procedures, this is ordered through the client.
- Designers shall continuously upgrade all performance models to «as built» status in accordance with the contractor's progress and delivery of measurements.

Approval of models and drawings

All models and drawings must be checked and approved before delivery as described in the project's PDP and requirements for self-inspection. This must appear in the delivery.

The delivery is accepted by the recipient before these are considered delivered.

Reporting, documentation and archiving

Updates of basic data / planning material must be documented. Everyone in the project will be informed about such updates.

Reporting from advisers must be in accordance with the contract / agreement. Documentation shall not be sent directly from the consultant to the contractor without this having been agreed with the client / project. In all cases, the client must have a copy of the shipment.

- Guidance should normally be integrated into the tool
- In cases where this is not possible or the explanation that comes with the tool is too bad, a separate document is created called Guidance
- Guidance includes a detailed description of what or how a tool such as a computer system or other type of tool should be used
- Guidance may include requirements for the tool to be used correctly or for the result to be correct
- Guidance must be linked to the activities stated in the management system

The revision field and header retrieve data from the document profile in the ProArc archive system. Fill in the document profile. These fields in the document do NOT need to be changed manually.

Professional responsibility

The BIM manager in Bane NOR has overall responsibility for the field.

The BIM manager is responsible for reporting the status of his or her areas of responsibility within set deadlines and with good quality, in accordance with regulations that apply at all times in the associated division.