

Procedure definition and practice

Most companies have control systems and procedures for creating, maintaining and controlling the drawing and issuing of technical drawings.

Control

Control refers to a document control system that is implemented to increase productivity, efficiency and accuracy of technical drawings and the whole drawing process.

The way it is implemented can vary from company to company, but these are the basic outlines of a document control system when referring to technical drawings :

- The owning organization, which is ultimately responsible for the document content.
- Document identification through the use of a document numbering system
- Title or description
- Document revision or other indication of a specific design iteration
- Author(s), reviewer(s) and/or others who created the information
- And, of course, the appropriate technical information necessary to fulfill their purpose

A document control process consists of a set of procedures for creating and maintaining the attributes of engineering drawings. Engineering drawing management processes include business rules that define:

- Which engineering drawing types are supported, and the contents and format of each type
- How engineering drawings are identified (e.g., owner, number, revision, title)
- Who is responsible for creating, reviewing and approving engineering drawings
- When engineering drawings may be released to interested parties
- The conditions under which existing engineering drawings are revised, replaced or canceled
- How obsolete engineering drawings are controlled, recalled or destroyed

Approval

Approval refers to who does the final sign off on a technical drawing. This person ultimately carries the responsibility of the consequences of the drawing being published or circulated. In our workshop, the final approval will be the teacher signing off your drawing as being satisfactory, but in other industries there might be more than one signature required.

For an aerospace structural part drawing, you should have the following signatures:

- Design engineer
- Drawing checker
- Design lead
- Stress engineer
- Stress lead
- M&P engineer
- Manufacturing engineer

And for certain crucial parts:

- Lightning safety engineer
- Fire safety engineer

Once all these people have looked at the technical drawing and given their consent to its accuracy, the drawing can be published.

Variation

Variation refers to there being multiple copies or iterations of a drawing in circulation. This can lead to added confusion when producing or manufacturing a part. For our workshop, a version number for the drawing is normally printed in the titleblock of a drawing, and any preceding version of that drawing will be considered invalid.

In larger companies, variation are announced and a variation and version control sheet is used to keep track of what version of a drawing is the most recent. These control sheets are kept up to date and accessible for all personnel that are considered critical to the technical drawing process.

Distribution

Distribution refers to the printing and issuing of a completed drawing that has been signed off by the necessary parties. Distribution is in charge of recording the version of the component drawing and making sure that other versions are not in circulation. In our workshop, each year new drawings are printed and any older drawings are not used.

Storage

Storage refers to how the drawings are stored when not used or if they are no longer needed. This can either be done electronically or with a filing system. A catalogue is kept that records which drawings, with their dates and versions are stored in the system. They tend to be filed either by customer or part numbers. In our workshop all drawings are stored digitally and sorted by year issued and the year level the drawing pertains to.

Selection of an older drawing is done by using the catalogue or searching for the desired year a drawing was issued. To validate that a drawing was the most recent the catalogue can be used to check and confirm the version number on the drawing, or the date of an electronic drawing can be used.

Below is the control system for NASA, just to give you an idea of what a bigger corporation does for technical drawing control.

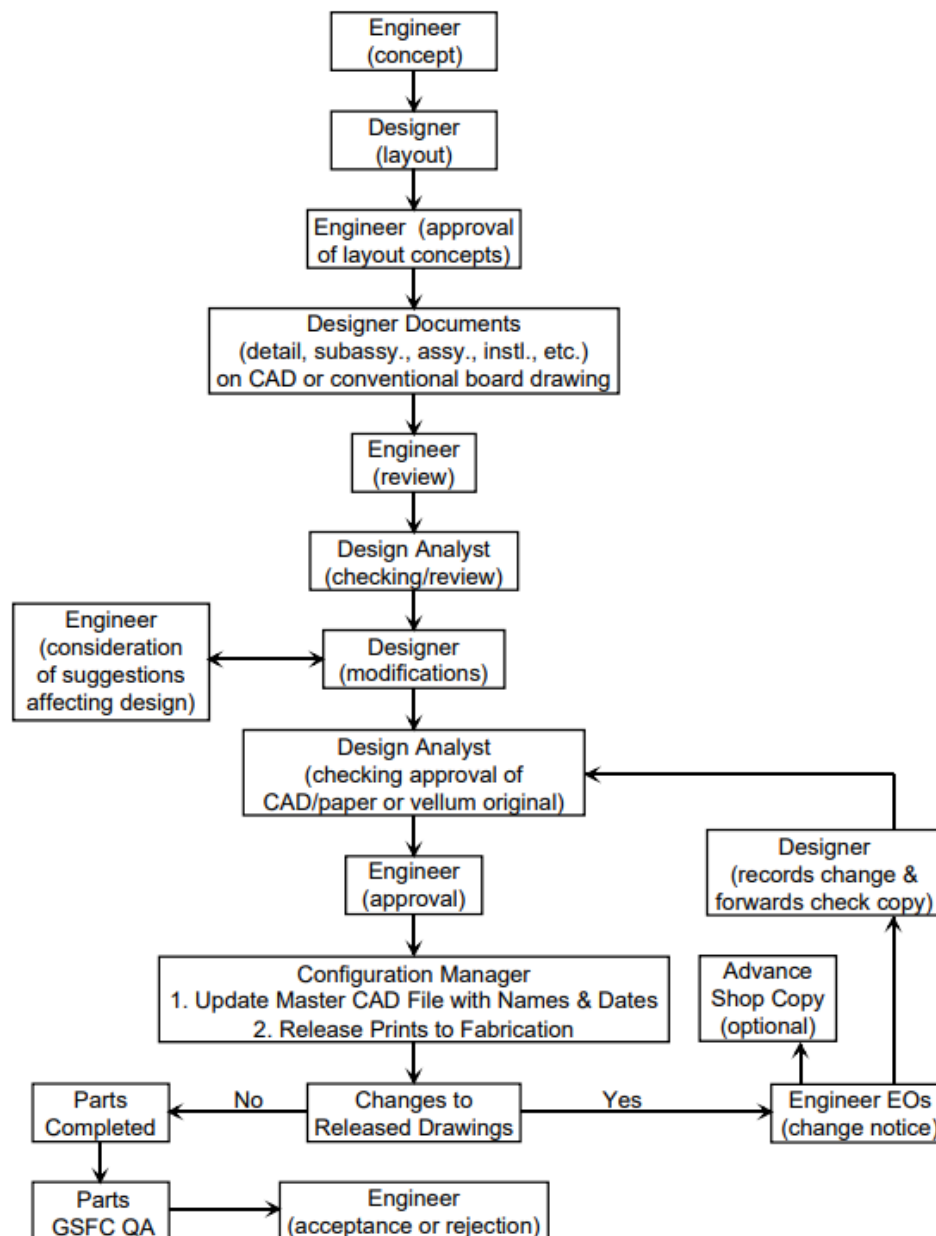


Figure 35: Typical Drawing Flow for Flight Projects