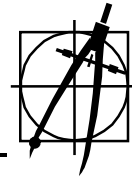# Engineering Records

Documentation of the engineering that records the work that has gone into the development of a product is a crucial component of any project. Both formal and informal records provide a basis for future reference. These records may become necessary to provide a history of the design if there is a turnover in staff, if patent applications are made, or in the case of legal action, where the demonstration of professional practices is necessary.

Project activities in which engineering records are useful:

∗ Records should be maintained by all those involved in a design project throughout the duration, and should be retained for a predetermined period.

Other tools that are useful in conjunction with engineering records:

∗ All tools that produce some form of documentation or drawing should form part of the engineering records

Introduction

In general, there are two main categories of engineering records: engineering log or notebooks that are kept by individuals, and more formal files that are maintained for the project. Depending on the size of the project, the more formal files may be kept in a binder or may require a number of filing cabinets.

Application of Engineering Logbooks

Every individual on a project should maintain a personal logbook. Ideally, this book should be a bound volume with sequentially numbered pages. If the logbook does not have numbered pages, they should be numbered before the logbook is put into use. It is useful if the pages have alternately lined and graph paper.

It may be possible that an engineer will use a number of logbooks for a single project. It is therefore important that each book be labelled with the name of the engineer, the name of the project, and the range of dates for which entries are made. Many companies require that all entries be dated and signed for legal purposes so this is a good practice to get into.

It is useful to think of the logbook as a design diary. It is not necessary that it is neat but it should contain all sketches, notes and decisions pertaining to the design. The logbook should accompany the engineer to all meetings and be available for every phone call so that a personal record can be made of these communications. These communication records can be extremely useful references in the future when it may be beneficial to say "During our conversation on December 10th, you stated that…" Work that is completed in another medium, such as computer printouts or test results, should be permanently
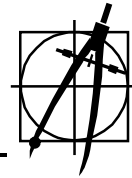
affixed to pages in the logbook. If this is not practical due to bulk or size, the logbook should make note of the contents of this material and where it is located.

Application of Design Files

Whether design files are kept in a binder or in multiple filing cabinets, one of the most important aspects of these files is that they be organized in a manner such that individual items can easily be located. The two main approaches to organizing files are alphabetical and numerical.

Alphabetical filing can follow a dictionary style, with each item filed in alphabetical sequence, or an encyclopedia style, with items grouped alphabetically under alphabetized headings. Alphabetical filing allows for expansion, is self-indexing, and material can be easily classified.

Dictionary Style

B
  Bearings
  Budget
C
  Calculations
  Communication
  Contact Information
  Cost Analysis
D
  Design Reviews
  Drawings
E
  Engineering Change Notices
F
  FMEA
M
  Material Specifications
  Meeting Agendas/Minutes
P
  Product Specification
  Progress Reports
  Purchase Orders
Q
  Quotations
T
  Trade-Off Studies
W
  Work Orders

Encyclopedia Style

Administrative
  Budget
  Meeting Agendas/Minutes
  Schedules

Communication
  Progress Reports
  Contact Information
  Correspondence
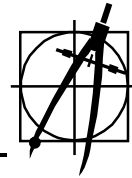
Design Reviews

Drawings

Engineering Change Notices

Procurement
  Purchase Orders
  Quotations
  Work Orders

Specifications
  Material Specifications
  Product Specification

Technical Data
  Calculations
  Cost Analysis
  FMEA
  Trade-Off Studies

Trade Catalogues
 Equipment
  Materials
  Bearings

A great deal of thought is required when first defining the categories that will be used. Alphabetical filing systems often have the problem of overlapping categories and require carefully defined rules for filing.

Numerical filing involves giving each item an index number before it is entered into the files. This number can be assigned serially, or can consist of meaningful numbers that identify a subject or topic. It is important that a master index of files and their associated numbers be carefully maintained so files can easily be located.

Numerical filing is especially advantageous when filing items, such as drawings, that may be difficult to file under the alphabetical scheme. It is also useful for identifying a file missing out of sequence. One of the drawbacks of this filing scheme is the ability to locate misfiled items. With the alphabetized scheme, documents are more easily found, as they are likely more localized. Another weakness of numerical filing is related items are not grouped together for convenience.

Back-up of Records

It is important to consider the protection of the engineering design work in the event that either engineering logbooks or files go missing or are destroyed. Any significant information contained in logbooks should promptly be transcribed into an appropriate format for inclusion in the project files. This ensures the information is contained in two locations as well as makes important information available to the entire design team. An additional copy of most work is often further backed-up given that a great deal of engineering work completed is done in electronic format. In the interest of preservation of important data, it is advisable to locate electronic files in a location different from that of hard copies. Some organizations go to the extent of backing-up electronic files once a week or as frequently as once a day, and locating these files off-site in protected storage.
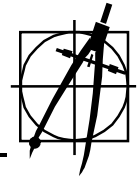
References

Burgess, John A., *Design Assurance for Engineers and Managers*, Marcel Dekker, Inc., New York, U.S.A., 1984, pp. 207-217.