



Engineers and shop drawings

Many engineers are reluctant to handle shop or plant drawings: When is it necessary to sign and seal them? Is the contract giver's engineer always responsible for reviewing them? The answers to these questions are both easy and important to know!

ONE DOCUMENT, TWO OBJECTIVES

A shop drawing is a technical document with drawings, specifications and other data required to carry out a component of a project in accordance with the contractual terms.¹

Generally, the supplier – contractor or manufacturer – submits its shop drawings to a contract giver before the work related to these drawings begins, at some point while the project is being executed. Shop drawings fulfill one of the two following functions:

1. They complete the design shown on the plans and specifications provided by the contract giver or supply

additional information;

2. They indicate that the supplier understands what the contract giver is asking for and even the method the supplier intends to use.

In the first case, the *professional practice guide*² explains that shop drawings must be made and authenticated (signed and sealed) by an engineer because they express a work of design engineering: calculations, sizing, choice of materials, etc. In fact, as soon as the supplier changes the contract giver's plans and specifications or specifies design elements, it must call on an engineer to carefully authenticate the shop drawing after reviewing it.

In the second case, the shop drawings do not contain any new element or design engineering: That is why they do not need to be prepared or authenticated by an engineer. These include, for instance, drawings or data sheets for manufactured equipment or products.

THE PROFESSIONAL PRACTICE GUIDE MENTIONS THAT ENGINEERS MAY DRAFT THEIR OWN NOTICE OF COMPLIANCE DIRECTLY ON THE SHOP DRAWINGS OR PREPARE A SEPARATE NOTICE.

COMPLIANT OR NON-COMPLIANT?

Whether they include design engineering or not, shop drawings should all be reviewed by the contract giver's authorized engineer or an individual working under the immediate control and supervision of that engineer.

The engineers who are hired to review shop drawings are generally and most often the designers of the plans and specifications. They are then responsible for ensuring that the shop drawings are consistent with the plans and specifications:

- If the shop drawings are consistent, the engineer issues a notice of compliance;
- If the shop drawings include design engineering work, the engineer:
 - checks if they have been authenticated by an OIQ member,
 - reviews their compliance,
 - if they are compliant, issues a notice of compliance;
- If the shop drawings do not comply with the plans and specifications, the engineer asks the supplier to correct or complete them.

The *professional practice guide*³ mentions that engineers may draft their own notice of compliance directly on the shop drawings or prepare a separate notice.

Issuing a notice of compliance is a professional act reserved for engineers. It is also an important step in the quality control process because it determines whether the work can be performed or not.

As professionals, engineers have a decisive role to play in the materialization of a project according to best practices. Conversely, not executing or authenticating shop drawings that include a design and not properly reviewing a supplier's shop drawings can result in various problems, including costly and embarrassing claims. To find out more about this, see the article on page 12.

1. Translation of the definition in the Grand dictionnaire terminologique de l'Office québécois de la langue française, retrieved on September 13, 2016.
2. See gpp.oiq.qc.ca > Documents d'ingénierie > Authentification des documents d'ingénierie (6.10).
3. See gpp.oiq.qc.ca > Documents d'ingénierie > Authentification des documents d'ingénierie (9.4).

EXAMPLES OF DOCUMENTS AND HOW TO HANDLE THEM

1. A design included in the plans and specifications

An industrial equipment manufacturer signs a contract to produce a steel billet handling and storage system. The design engineer's plans and specifications detail the general arrangement of the equipment, the product's features, the quantity of material to be handled and stored as well as the codes, standards and design criteria that should be used. As for the manufacturer, it must specify the engineering required to execute the detailed plans for the equipment to be manufactured. The manufacturer submits its shop drawings to the design engineer for review. That engineer must check whether the drawings are consistent with his or her plans and specifications. Since the shop drawings contain the manufacturer's design, they must be authenticated by a member of the OIQ.

2. An isometric view of the product

The same manufacturer submits a shop drawing that consists in a product sheet with an isometric view but no sizing. Since this document does not contain engineering work, it does not have to be authenticated. The design engineer will review the document to confirm that it is consistent with the plans and specifications.

3. Testing schedule

The manufacturer submits the shop testing schedule. Since it is neither an engineering document nor a shop drawing, the schedule does not need to be reviewed and authenticated by an engineer, but rather by the project manager or contract giver.