

SHOP DRAWINGS AND SAMPLES

INTRODUCTION

This TECHnote addresses the need for shop drawings and samples, their management and the documentation of requirements in a construction contract.

Construction contracts commonly require shop drawings and/or samples and prototypes. However, the review process can delay the construction process, and shop drawings and samples should only be requested if there is a real need for the designer to confirm design intent. For example, the designer may not need to review shop drawings for simple joinery.

SHOP DRAWINGS AND SAMPLES IN NATSPEC

Many NATSPEC worksections require the submission of samples and/or shop drawings.

Prompts for the submission and review procedure for samples and shop drawings are included in the *0171 General requirements, SUBMISSIONS AND INSPECTIONS, SUBMISSIONS* clause where the following issues are addressed:

- To whom the submissions are to be made e.g. architect in ABIC contracts.
- The requirement to program the submissions. Specifiers may wish to include a requirement for a shop drawings/sample submission schedule co-ordinated with the general construction program.
- The form of the submissions.

Submission requirements for samples and shop drawings are set out in the **SUBMISSIONS** clause of the various technical worksection *Templates*. Detailed requirements vary depending upon the nature of the item. Edit or delete the default requirements to suit the project.

SAMPLE SUBMISSION AND APPROVAL PROCESS

Samples are commonly required for joints and sections, products and components and specified proprietary items to verify characteristics such as profile, surface finish and colour range. To achieve the required outcomes, the submission and review of samples should address the following issues.

Size of samples

If samples of materials such as natural stone are required, samples

must be of sufficient size to represent the range of the characteristics of the material e.g. a stone sample size of 150 x 150 mm may be inadequate to fully indicate the range of the stone characteristics. If the required item has a range of characteristics, multiple samples may be required.

The submission of at least two samples may be required for each item. Edit the worksection as required.

Sample approval process

NATSPEC, as a generic technical specification system, does not contain management systems to handle the approval process. If an approval is required before implementation, consider nominating a Hold point, to eliminate ambiguity. Consider documenting approval criteria and the acceptance procedure.

Storage of samples

Following review and approval of samples, each sample should be tagged for identification purposes. One sample is retained off-site by the contract administrator, and one sample is retained on-site in a secure place. Samples have an unfortunate habit of disappearing during the construction period and it may be useful to photograph samples to safeguard the selection in event of loss. Consider documenting a procedure for acceptance criteria and storage.

Incorporation of samples

The submission of samples can be costly. *0171 General requirements* makes provision for the incorporation of samples which conform to the contract into the works, to avoid wastage. NATSPEC *Preliminaries* worksections require the removal of non-incorporated samples before the date for practical completion.

DEFINITIONS

Shop drawings

A drawing required by a construction contract to be submitted to the contract administrator for review for conformance with design intent. The content is the responsibility of the contractor. Shop drawings do not form part of the contract set.

Sample

A physical example that illustrates a product's workmanship, materials, or equipment and establish standards by which the work will be judged. It includes samples and sample panels.

Prototype

A full size mock-up of components, systems or elements to demonstrate or test construction methods, junctions and finishes, and to define the level of quality.

RELEVANT WORKSECTION

0171 General requirements

SHOP DRAWINGS AND SAMPLES

SHOP DRAWING SUBMISSION AND REVIEW PROCESS

Some 65 NATSPEC worksections include requirements for shop drawings e.g. structural steelwork, fabricated metalwork, joinery, curtains walls, stone cladding.

The submission and review process should address the following issues:

Contractor's responsibility

The *0171 General requirements* worksection, PRODUCTS AND MATERIALS, **SHOP DRAWINGS** clause requires the contractor to review all shop drawings for conformance with contract requirements and for coordination with other building and service elements before submission to the contract administrator.

Shop drawing schedule and program

For some projects, submission of a detailed schedule of drawings and a program for their submission may be necessary before shop drawings are started. The schedule should be coordinated with the construction program and should be updated if modifications are made to the construction program. Document this requirement in the *0171 General requirements* worksection, SUBMISSIONS AND INSPECTIONS, **SUBMISSIONS** clause.

Format of submissions

Nominate the preferred format for submission of shop drawings e.g. the same size drawing sheets as the contract drawings.

Each submission should be accompanied by a transmittal which records the submission date and itemises the drawings and the issue number of each drawing.

With the increasing use of electronic document transfers, the submission of paper drawings has become less common. If electronic formats and transfers are used it is still important to keep transmittal records. If an electronic format is specified, request the drawings in unalterable document format. The method of marking up electronic format drawings is to be considered and agreed.

Information to be shown on shop drawings

Typical requirements are outlined in the *0171 General requirements* worksection, PRODUCTS AND MATERIALS, **SHOP DRAWINGS** clause. Detailed information requirements should be documented in the applicable technical worksections.

Review of shop drawings

Review each drawing for general conformance with the design intent. If it is necessary to have drawings reviewed by a consultant, issue a copy of the drawing to the consultant for review and return and retain a record copy of the drawing as examined by the consultant. Return reviewed shop drawings to the contractor with a transmittal.

Permission to use shop drawings

Permission implies only that the contractor's interpretation of the relevant contract is generally acceptable but does not relieve the contractor of the obligations to construct and complete the works correctly and accurately to the contract documents.

Timing of shop drawing review

Nominate the time required to review shop drawings in the *0171 General requirements* worksection, SUBMISSIONS AND INSPECTIONS, **SUBMISSIONS** clause. Consider allowing additional time if the drawings are to be reviewed by other consultants.

Resources required for shop drawing review

Consider the resources required to review the shop drawings. Delays caused by the late submission, or the submission of inadequate or incomplete shop drawings, should not be accepted as justification for variations to the contract, or extensions of time.

Archiving

At practical completion, a set of record shop drawings is required to be submitted in a specified format for archiving.