

Inspection & Test Plans (ITPs)

EXECUTIVE SUMMARY

The Inspection and Test Plan (ITP) is a quality assurance tool commonly used throughout the construction industry. An effective ITP may also aid communications, assist to establish expectations and promote collaborative working in the project team.

This article thus describes the purpose and common aspects which may be attributed to the production and management of construction ITPs.

The ITP format described allows for the identification of requirements, specification of associated assurance methodologies, definition of roles and responsibilities and detailing of associated evidence.

This article should also be read in conjunction with *Inspection & Test Plans (ITPs): A Step by Step Guide to Producing an ITP*. An example template is also included (Excel format) for information purposes which may be download and utilised as appropriate.

What is an Inspection & Test Plan?

An Inspection & Test Plan (ITP) is a document which summarises how the quality of a particular element of the construction works is to be managed (e.g. below slab drainage, ductwork installation, drylining etc.). The ITP will form part of the project's Quality Management System and should be in sufficient detail to address the particular risks associated with any activity.

The terms 'inspection' and 'test' can be a little misleading and the ITP is sometimes mistaken as only being applicable to the inspection & testing of the final product. However, an ITP is much more and therefore it may be more appropriate to think of the ITP as the 'Assurance Plan'. The ITP should therefore be used to summarise all the activities which are:

- Undertaken to ensure the works are compliant (e.g. inspections of documents as well as the works, tests etc.)
- Will be completed to demonstrate compliance (e.g. third parties witnessing inspections and tests to verify satisfactory completion, documentary evidence etc.)

Any activity at any stage of the delivery that contributes to quality assurance can be specified within the ITP. For example, an ITP may include an item which specifies that only competent persons are to undertake works and therefore would also summarise how this will be checked (i.e. 'inspected') prior to works commencing such as checking and recording qualifications.

Thus, the term 'inspection' may not only be a reference to the physical construction works but could be a document, an item of equipment used for the works, a qualification etc. which should be 'inspected' etc.

Additionally, it is very important that an ITP details the evidence which will be provided to demonstrate the 'inspection' or check has been satisfactorily completed and where it will be filed for future reference or collected for inclusion in the building documentation handed over at the end of the project.

In summary, the ITP provides a summary of the what, how, why, when, and who for quality of an element of the works, i.e.:

- What are the requirements?
- How will compliance of the works be assured? (I.e. what inspection & tests are to be carried out?)
- How will compliance of the works be demonstrated? (I.e. who will witness and verify the works are compliant? What documentation will be provided to demonstrate compliance for records purposes?)
- When are inspections and testing required to be completed?
- Who is responsible for undertaking the inspections and testing?

An ITP may not be limited to the physical construction works but the principles described here could be applied to any stage of the construction life cycle including design or post occupancy facilities management.

Why produce an ITP?

The ITP is a proactive tool to help assure the quality of the works. It is therefore vital to construction projects for the following reasons:

- 1) It provides an opportunity to identify the requirements for the works to help prevent construction errors, omissions and defects which could result in significant financial cost but also, for example, programme delays and reputational damage.
- 2) It helps formulate a strategy for the testing and inspection of the works which will achieve the following:
 - a. Demonstrates compliance of the works to provide confidence to relevant parties that the works are correct
 - b. Detects errors in a timely manner which can then be corrected and appropriate preventive action taken

Ultimately, the time and effort expended to produce an ITP could be invaluable in preventing, detecting, and dealing with quality issues and incidents which could otherwise result in significant loss to the organisation. There are many examples where five minutes dedicated to including an item within the Inspection & Test Plan could have saved a great deal of money and time spent on rework or seeking information and clarifications.

Additionally, the ITP can provide a very quick visual representation of the assurance activities each party / individual will undertake.

How to produce an ITP

An ITP does not have to be a complex document. However, appropriate thought, time and effort must be dedicated to producing an ITP if it is to be effective.

Producing an ITP can at first appear to be a daunting task. However, if undertaken in a systematic manner, it is fairly straightforward and very much a practical and methodical exercise.

When producing an ITP, it is helpful to think about the following on a continual basis:

- 1) How may we be confident the works will be compliant?
- 2) What has the client requested?
- 3) How can we demonstrate compliance to a third party (both now and in the future) and provide confidence that works are correct?

It is also important to note that, although a generic template for a specific element of the works may be available, it is very likely that the ITP will need to be adapted on a case by case basis to suit the specific client / contract requirements, location etc.

The following is a 5 step approach which could be used to produce an ITP. It assumes that a template for the ITP already exists. (A generic ITP Template has been provided (Excel format) and may be downloaded as a starting point for producing an ITP.) Each of the 5 steps are explained in more detail in "*A Step by Step Guide to Producing an ITP*".

- 1) Determine the scope for the works
- 2) Determine the criteria for the works and gather relevant documents.
- 3) Work out to which stages of the delivery the works are applicable.
- 4) Systematically read through the documents collected from step 2 and pick out the items which need to be listed as item activities on the ITP
- 5) For each item, confirm how the criteria will be achieved, evidence which will be produced, responsibilities of persons / parties involved, and the type of inspection or test.

Once the ITP is produced, there may be some follow up actions such as:

- Production of supporting documentation (e.g. checklists)
- Internal approval of the ITP
- Approval of the ITP by third parties (e.g. the client)
- Formal issue of the ITP to relevant parties
- Archiving the ITP document

Evidence

The ITP should specify the evidence to be provided which demonstrates compliance to the requirements. In most cases, evidence will be some form of document that provides a written record. However, in certain cases alternative evidence may be used. For example, a CCTV survey (often with a video file provided on an electronic form of media such as a CD) might be used to demonstrate that the drainage is OK. Other examples of evidence might be:

- A design certificate may be used to demonstrate design is completed ready for commencement of construction works.
- A delivery note can demonstrate that correct materials were delivered.
- Photographs show ongoing progress of the works but also may be used to record workmanship. This is particularly useful for areas which will be inaccessible and not visible once covered (e.g. insulation within drylining).

- Briefing sheets can be used to support the case for competence by demonstrating attendance at toolbox talks or training sessions.

Who should produce an ITP?

A competent person (i.e. someone with suitable knowledge and experience) would usually be responsible for producing an ITP.

Alternatively, someone who has the relevant technical expertise may enlist the expertise of another person who is competent to help structure the ITP (e.g. a quality manager).

Another very effective way of producing an ITP is to hold a workshop attended by relevant persons who can jointly input their knowledge and experience. The ITP template could be projected on to a wall / screen and populated during the workshop to reflect the discussions / agreement of the workshop attendees. Where the activity involves more than one party this can be an invaluable means to instigate a collaborative approach to production of the ITP.

How Detailed should the ITP be?

The level of detail provided within the ITP will be judgement call of those who produce the ITP and will be dependent upon a number of factors including the type of activity. The level of detail must, though, ensure that all items relevant to the scope of the works have been included and the ITP will be effective as an assurance plan. Very often the level of detail will need to reflective of the risk involved. For example, a complex bespoke element of the works will likely require a more detailed ITP than a more simplistic task such as painting a wall.

One strategy that is often employed is to include the details of the requirements within a checklist and make reference to the checklist which summarises criteria within the ITP. For example, the ITP may specify that a steel frame should be set out to tolerances specified within the National Structural Steelwork Specification although the specific tolerances required may be detailed on the checklist. This can be advantageous as the checklist is the usually the item (rather than the ITP document) which is at the workface and this can prevent unnecessary duplication. It should be noted that a checklist can be used to supplement an ITP but is not an alternative or replacement. The purpose of a checklist is to verify that the requirements set out in the ITP have been met.

Managing Project ITPs

On projects where a number of ITPs are required, it may be necessary to implement a specific process to manage the production, review, approval and issue of ITPs. This often includes a schedule listing all the anticipated ITPs and associated information which may include, for example:

- Activity
- Reference
- Trade Contractor
- Date of start activity
- Planned issue date of ITP

The process should be aligned with the both the company and contract requirements. Targets such as the issue date for the ITP should be aligned with the construction programme and take cognisance of time periods for the review and approval of the ITP.

Close Out of the ITP

It may be stipulated that the ITP be formally closed out upon completion of the specified works and all corresponding activities. This involves checking each line item of the ITP and verifying that the requirements have been met (including collation of the required evidence). The ITP can be signed off by relevant parties, for example, at the end of the ITP document as with the generic ITP template provided.

Disclaimer: *The use of the ITP template must be tailored to contract conditions and the authors and the CQI Construction Special Interest Group bear no responsibility for any unintended consequences resulting from an inappropriate application of the principles described.*

Rev 2.0: Article written by Mike Buss (14/7/17) & reviewed by Jon Adshead (20 / 07 / 2017) and Simon Ellis (8/8/17) on behalf of the Construction Special Interest Construction Working Group (ConSIG CWG). Article peer reviewed and accepted for publication by ConSIG 09 / 08 / 2017. The ITP template provided should be treated as indicative only.