Finishing Construction Work Level II

Learning Guide-14

Unit of Competence: Use Maps, Plans, Drawings And Specifications

Module Title: Using Maps, Plans, Drawings And Specifications

LG Code: EIS FCW2 M04 LO5-LG-14

TTLM Code: EIS FCW2 M04 TTLM 0919v1

LO 5: Prepare for work

Instruction Sheet	Learning Guide 14

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying, following and using Work instructions.
- Select Engineering drawings
- Checking and validating the latest version of map, plan or drawing**.**
- Check Title panel of project documentation to verify latest amendments to drawing
- Identifying and checking Amendments to ***specifications*** of ***information***

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Identify, follow and use Work instructions to determine job requirements.
- Select Engineering drawings relevant to information required.
- Check and validate the latest version of map, plan or drawing against job requirements or equipment.
- Check Title panel of project documentation to verify latest amendments to drawing.
- Check Amendments to specifications to ensure currency of information.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheet
4. Accomplish the Self-check

Information Sheet-1	Identifying, following and using Work instructions

5.1. Identifying, following and using Work instructions

Procedure: - is more detailed than a process, but less detailed than a work instruction. It tells how a series of sequential tasks should be performed to achieve a specific outcome.

Work Instruction: - is the most detailed description of a task. Its sole purpose is to explain step by step how to do a specific task.

Work Instruction: - is a document that provides specific **i**nstructions to carry out an Activity. A Work Instruction is a step by step guide to perform a single **instruction**. A Work Instruction contains more detail than a Procedure and is only created if detailed step-by-step instruction**s** are needed.

Typically, quality system controlled documents consist of policies, manuals, plans, standard operating procedures, work instructions, forms, and templates. Any written or electronic documentation providing evidence that activities were performed and their results

5.1.1 Plan/working drawing interpretation including work instruction & specification

Purpose

This unit standard has been designed to be achieved in Install Mechanically Fixed Plasterboard Trainee credited with this unit standard is able to read and interpret plans, working drawings and specifications for projects.

Definition

Specifications refer to documented instructions (oral, written, graphic) and may include the following: specifications from a supervisor or project specific drawings or Requirements.

Abbreviations and symbols, for the purpose of this unit standard, means abbreviations and symbols that would appear on a basic single-level house plan.

Guidelines for Preparation of Plans, Specifications, and Estimates

1. Purpose
2. Definitions
3. Background

4. Plans
5. Specifications

Purpose: To set forth guidelines for the preparation of plans specifications, and estimates (including standard plans, and specifications) for physical construction projects financed with Federal-aid highway funds. It is emphasized that the provisions of this Appendix are intended to serve as guidance to be used by the States at their discretion and should not be construed as mandatory requirements.

Definitions

a) **Developmental Specifications** - a specification developed around a new process, procedure, or material with the prior knowledge that subsequent adjustments might be necessary prior to adoption for standard usage.
b) **Estimate** - the predicted project cost at the time of receipt of bids developed from a knowledge of the costs for materials, labor, and equipment required to perform the necessary items of work.
c) **Plans** - the contract drawings which show the locations, character, and dimension of the prescribed work, including layouts, profiles, cross sections, and other details.
d) **Required Contract Provisions** - those provisions required by law or regulation of the various jurisdictions involved in funding projects and administering contracts for construction projects.
e) **Special Provisions** - additions and revisions to the standard and supplemental specifications applicable to an individual project.
f) **Specifications** - the compilation of provisions and requirements for the performance of prescribed work.
g) **Standard Plans (Standard Detail Drawings)** -drawings approved for repetitive use showing details to be used where appropriate.
h) **Standard Specifications** - a book of specifications approved for general application and repetitive use.
i) **Supplemental Specifications** - approved additions and revisions to the standard specifications.

Background The preparation of plans, specifications, and estimates (PS&E) for highway and bridge construction projects is essential in order to facilitate construction, provide contract control, estimate construction costs, and provide a uniform basis for bidding purposes. To accomplish this, each highway contracting agency (HA) is encouraged to:

1. **Develop plans and specifications for highway construction projects which:**

A, are complete and clear to the maximum extent practicable, and

B, provide for uniformity of practice in contractual procedures and relations

2. use standard plans (standard detail drawings) and specifications to:

a) a, simplify and facilitate the interpretation and use of the project plans and specifications by contractors and others performing the construction operations and furnishing materials and equipment therefore, and
b) , reduce duplication of effort that would be required to produce sets of plans and specifications that involve features and provisions that are a part of the majority of construction projects.
c) Guidelines for development of plans and specifications will encourage nationwide uniformity and consistency, and facilitate review and approval of project plans and specifications.

3. Plans

A. General. Plans are, in effect, instructions using drawings containing engineering data or details pertaining to geometrics, drainage, structures, soils and pavements and other appurtenances.
B. Plans should not encompass material that is properly a part of the specifications.
C. the original drawings should be on standard sheets conforming to modern accepted drafting practices or aerial photograph base maps.
D. Abbreviated plans may be used provided they give sufficient information to properly complete the project.

E. this type of plan is particularly adaptable to special types of projects such as those for minor emergency relief, safety improvements, resurfacing, restoration, and rehabilitation and pavement marking.

F. a typical set of abbreviated plans consists of only that information necessary to describe the type of work and its limits such as:

-General plan, sketch, or line drawing,

-Cross section, if appropriate,

-Estimate of quantities,

-Tabulation of construction items, providing station, offset, and evaluation,

-General notes, and/or

-Special details.

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in

Instruction:-Write the answer for the following questions properly

1. Define work instruction means? (5point)

2 What is the purpose of work instruction*? (5point)*

Note: **Satisfactory rating - 5 and 10 points Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Select Engineering drawings

5.2. Engineering drawing

Why engineering drawing?

As a Technologist, you will inevitably be required to communicate with different people for different reasons. In some situations, communications will be sufficiently taken care of by use of plain text. However in other situations, text alone may not suffice and a more specialized form of communication (technical/engineering drawing) may prove irreplaceably useful.
Drawing (just like photography) is one of the basic forms of visual communication. Drawing is used to record objects and actions of everyday life in an easily recognizable manner. There are two major types of drawings: artistic drawings and technical drawings.

Artistic Drawings

These are a form of freehand representation that makes use of pictures to provide a general impression of the object being drawn. There are no hard rules or standards in the preparation of artistic drawings.
They are simply drawn by artists, based more or less on one's talent and skills. Although these drawings are often very attractive, they find very limited use in the world of science.

Technical Drawings

These are detailed drawings drawn accurately and precisely. They are pictures that have been prepared with the aid of mathematical instruments in order to record and transmit technical information. They provide an exact and complete description of things that are to be built or manufactured.
Technical drawings do not portray the objects the way they directly appear to the eye
They make use of many specialized symbols and conventions in order to transmit technical information clearly and exactly.
To understand and correctly interpret technical drawings, one needs to acquaint oneself with the fundamentals of technical drawing – hence the purpose of this course.
Engineering drawing is important to manufacturing engineers because they are invariably at the receiving end of a drawing. Designers come up with the overall form and layout of an

artifact that will eventually be made. This is the basic object of engineering drawing- to communicate product design and manufacturing information in a reliable and unambiguous manner.

Engineering drawing can be described as a language in its own right because it is transmitting information from the head of the designer to the head of the builder, manufacturer and indeed, the head of the assembler. This is the function of any language. The rules of a language are defined by grammar and spelling. These in turn are defined in grammar books and dictionaries. The language of engineering must be similarly defined by rules that are embodied in the publications of standards organizations. Each country has its own standards organization. For example, in the UK it is the British Standards Institution (BSI), in the USA it is the American National Standards Institute (ANSI) and in Germany it is the DeutschesInstitutftirNormung (DIN). However, the most important one is the. International Standards Organization (ISO), because it is the world's over-arching standards organization and any company wishing to operate internationally should be using international standards rather than their own domestic ones.

Engineering drawing is described as 'Graphical Communications' in various school and college books. Although both are correct, the more modern term is 'Technical Product Documentation' (TPD). This is the name given to the whole arena of design communication by the ISO. This term is used because nowadays, information sufficient for the manufacture of a product can be defined in a variety of ways, not only in traditional paper-based drawings. The full title of TPD is *'*Technical Product Specification- Methodology, Presentation and Verification'*.* This includes the methodology for design implementation, geometrical product specification, graphical representation (engineering drawings, diagrams and three-dimensional modeling), verification (metrology and precision measurement), technical documentation, electronic formats and controls and related tools and equipment.

Self-Check -4	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

PART I MULTIPLE CHOICE

Instruction:-Choose the correct answer for the following questions from the given alternatives

1. Write the deference between Artistic Drawings and Technical Drawings?

Note: **Satisfactory rating - 3 and 5 points** **Unsatisfactory - below 3 and 5 points**

You can ask you teacher for the copy of the correct answers.

Information Sheet-3	Checking and validating the latest version of map, plan or drawing

5.3. Check drawing

5.3.1. Check drawings to ensure compliance (fulfillment) with specifications

Perform engineering measurements

Straightforward measurement using devices which incorporate visual indications representing units of measurement. Manufacturing symbols, i.e. Surface finish, limit and fit, etc.

Apply quality procedures

Applying established quality procedures to an employee's own work within a manufacturing, engineering or related environment.

Apply quality systems

- Working within a quality improvement system, either individually or in a team situation.

Plan to undertake a routine task

- A person planning their own work where tasks involve one or more steps or functions and are carried out routinely on a regular basis. It includes the concepts of following routine instructions, specifications and requirements.

Plan a complete activity

- Planning activities which, whilst even as following established procedures, may require a response and modification of procedures or choice of different procedures to deal with unforeseen (unexpected) developments.

5.3.2. Check drawings to ensure that assembly/fabrication is possible

The drawing should be easy for assembly and manufacturing (fabrication) process in the workshop for manufacturer.

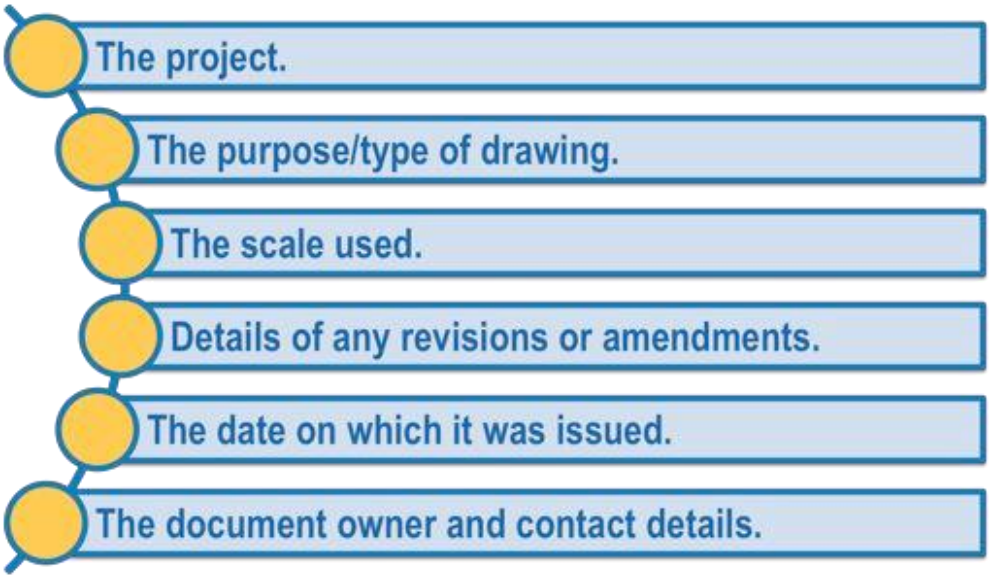
Note:

Before deciding to archive using aperture cards, the availability of retrieval equipment and the quality of reproduction should be considered. The quality of drawings, lists, and documents shall meet the legibility and contrast requirements.

Information Sheet-4	Check Title panel of project documentation to verify latest amendments to drawing

5.4. Title panel

The title panel is usually located on the front cover of a set of documents or on the bottom of the plan/specification drawing. The title panel details information such as:



The plans and specifications should never be approved for construction if they are in draft or review format.

This ensures that the most current and up to date drawings are in use for the project

5.4.1. Checking plans for amendments

It is helpful to recognize the changes between versions and understand the changes that have occurred. This will ensure you are completing tasks following the most up-to-date plans available.

Amendments to plans and specifications can include

changes to:

- Materials and quality of work.
- Quality assurance.
- Nominated sub-contractors.
- Provision of site access/facilities

Details relating to performance including:

- Standards of work.
- Tolerances.
- Material types.
- Characteristics.
- Treatments and finishes.

5.4.2. Procedure of amendments

An amendment is a change to a project that is decided after the drawings have been finalized. Amendments are sometimes called revisions. These changes could happen because the client requests them (for example, the client may want an extra window in the study) or because the builder realizes something will work better if it's done slightly differently. Either way, they need to be shown on paper so that everyone knows about them, they are constructed correctly and there are no arguments later. So obviously it is important to use the latest version of the plans.

If this means that the building will vary from the way it was shown in the original contract documents, a written instruction will be issued by the architect/client and, if necessary, the drawings will be amended (changed) and re-issued**.**

It is vital that all drawings are signed and amended according to the following procedure so that a true and accurate record is kept of the current state of construction for each project.

At completion of each project the drawings received by Structures Engineering shall be deemed to be the current and latest version. Therefore any amendment to the drawings, for any purpose, will require the Consultant to re-issue Structures Engineering with a new amended electronic and full size hardcopy.

- **SAMPLE FORMAT FOR REVISED AMENDMENT PRACTICE**

Appl. No. : XX/YYY, YYY Confirmation No. WXYZ

Applicant : James Q. Inventor

Fil1ed : April 09, 2017

TC/A.U. : 1744

Examiner : John Doe

Docket No. : 12345/JAS/R758

Customer No. : 88888

Commissioner for Patents

P.O. Box 1450

Alexandria VA 22313-1450

- **AMENDMENT**

Sir: In response to the Office action of October 16, 2003, please amend the above-identified application as follows:

Amendments to the Specification begin on page **X** of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page **X** of this paper. **Amendments to the Drawings** begin on page **X** of this paper and include both an attached replacement sheet and an annotated sheet showing changes.

Remarks/Arguments begin on page **X** of this paper.

An **Appendix** including amended drawing figures is attached following page **X** of this paper.

- **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

- **Listing of Claims:**

Claims 1-5 (canceled)

Claim 6 (previously presented): A bucket with a handle.

Claim 7 (withdrawn): A handle comprising an elongated wire.

Claim 8 (withdrawn): The handle of claim 7 further comprising a plastic grip.

Claim 9 (currently amended): A bucket with a ~~green~~ blue handle.

Claim 10 (original): The bucket of claim 9 wherein the handle is made of wood.

Claim 11 (canceled)

Claim 12 (not entered)

Claim 13 (new): A bucket with plastic sides and bott

- **Amendments of drawing**

The attached sheet of drawings includes changes to Fig. 2. This sheet, which includes Fig. 1-2, replaces the original sheet including Fig. 1-2. In Figure 2, previously omitted element 13 has been added.

Attachment: Replacement Sheet

Annotated Sheet Showing Changes

1.2. Checking of Panel

- **Standards**

BS ISO 7200 Technical Drawings- Title Blocks identifies the title block requirements to be used on engineering drawings.... The drawing sheet size should be in accordance with "BS EN ISO 5457 TD- Sizes and layout of drawing sheets".

- **Notes**

A title block is the form on which the actual drawing is a section. The title block includes the border and the various sections for providing quality, administrative and technical information. The importance of the title block cannot be minimized as it includes all the information which enables the drawing to be interpreted, identified and archived.
The title should include sufficient information to identify the type of drawing e.g. general arrangement, or detail. It should also clearly describe in a precise way what the drawing portrays The notes below relate to the title boxes included on in the title block to convey the

necessary information. The standard drawing sizes and layouts are described elsewhere.

The basic requirements for a title block located at the bottom right hand corner of a drawing are

- The registration or ID number
- The drawing title
- The Legal Owner of the Drawing

These items should be written in a rectangle which is at the most 170mm wide.
The tile block should also include boxes for the legal signatures of the originator and other persons involved production of the drawing to the required quality.
In other forms of title block, the title block contains the following information:

- the name of the company or organization
- the title of the drawing
- the drawing number, which is generally a unique filing identifier
- the scale
- the angle of projection used, either first or third, generally shown symbolically
- the signature or initials of the draftsman, checker, approving officer, and issuing officer, with the respective dates
- other information as required

The drawing should also include a symbol identifying the projection. The main scale and the linear dimension units if other than "mm"

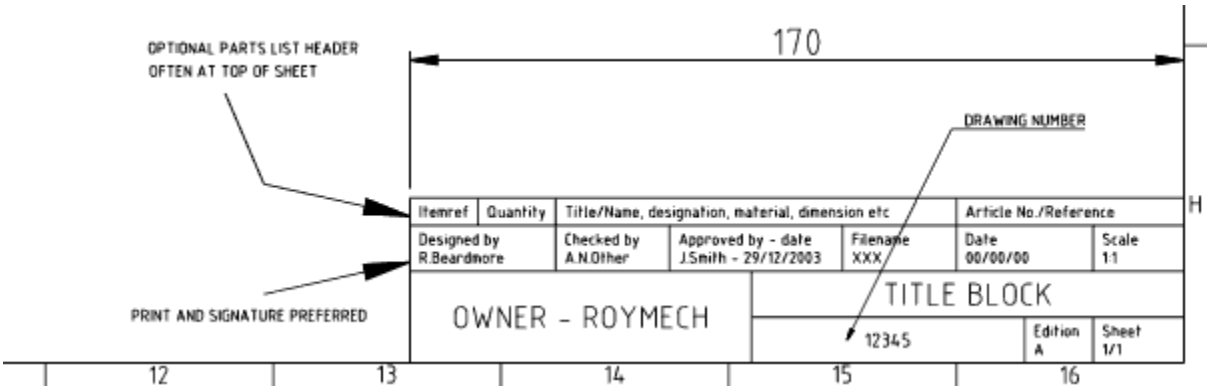
Mechanical drawings should list the standards use for: indicating the surface texture: welds: general tolerances and geometric tolerances, as notes referring directly the the relevant standards or a general note referring to the BS 8888. (BS 8888 lists all of the relevant standards.) BS 8888 should really only be referenced if the drawing is in full accordance.

The drawing title block should indicate the date of the first revision. In separate boxes to the

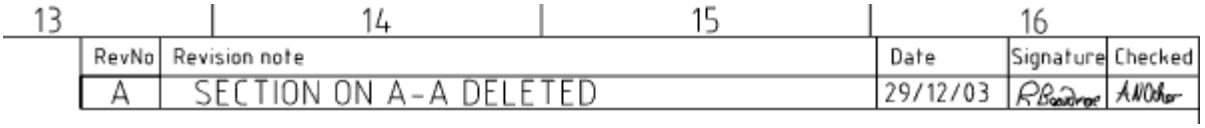
title block the current revision with an outline description of the revision should be indicated.

On completion of each drawing revision an additional revision box should be completed thus providing a detailed history of the drawing.

- **Typical Title Box**



- **Typical Revision Box**



Self-Check -4	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

PART I MULTIPLE CHOICE

Instruction:-Choose the correct answer for the following questions from the given alternatives

1. Which one of the following is not true about the basic requirements for a title block located at the bottom right hand corner of a drawing?

A. The registration or ID number

B. The drawing title

C. The Legal Owner of the Drawing

D. None

2. In other forms of title block, the title block contains one of the following information

A. the name of the company or organization

B. the title of the drawing

C. the drawing number, which is generally a unique filing identifier

D. the scale

E. All

Note: **Satisfactory rating - 3 and 5 points** **Unsatisfactory - below 3 and 5 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Information Sheet-5	Identifying and checking Amendments to ***specifications*** of ***information***.

5.1. Amendments to the specification

Should a need arise to amend the specification during the “Invitation to Offer” process; the amendment should be authorized by the project manager. The amended specification should be noted in the project files and all offerors or potential offerors must be given a reasonable opportunity to offer to the new specification.

Specifications could change throughout the duration of a project. It is important to check the required specifications for any amendments regularly. This ensures that you are working following the most current information available.

Amendment registers allow for records to be kept which show when changes have been made to the specifications or plans.

To ensure that all specifications are current, refer again to the title panel of the plans, drawings or notes.

If you have any doubt about the currency of the drawings speak with the document owner or your supervisor

Specifications and Requirement change due to:

- Design or location changes.
- Survey requirements.
- Material qualities, quantities and supply.
- Organizational requirements.
- Client or customer requirements.
- Other related factors.

Self-Check -5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Instruction:-Write the answer for the following questions properly

1. List and describe the reasons of changing specification? (10points)

Note: **Satisfactory rating - 5 and 10 points** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Module answer Self check #

Answer key

Self check #1

1. the most detailed description of a task. Its sole purpose is to explain step by step how to do a specific task

2. To set forth guidelines for the preparation of plans specifications, and estimates (including Self-check #2

Artistic Drawings:-standard plans, and specifications) for physical construction projects

Technical Drawings:-These are detailed drawings drawn accurately and precisely.

Self check #4

1. D

2. E

Self check #5

1. Design or location changes.
2. Survey requirements.
3. Material qualities, quantities and supply.
4. Organizational requirements.
5. Client or customer requirements.
6. Other related factors.