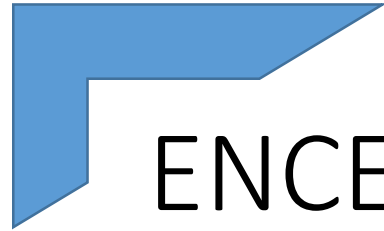
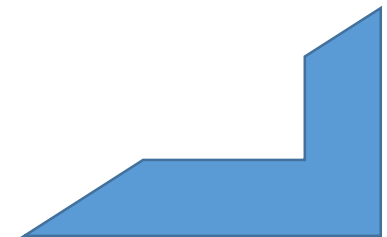


Contracts, Specifications and Quantity Surveying



ENCE421:

Specifications



Today's Presentation Outline

- Revisit previous lecture
- Specifications

Introduction

- In the construction activity, the scope of the work that is described in drawings includes such information as dimensions or details, while the specifications provide the description of the qualities of materials and workmanship necessary to complete the work.
- Thus, specifications should be used in conjunction with the drawings so that together they fully describe and define the work.
- Drawings and specifications should complement each other.
- In the events of conflicts between specifications and drawings , the specification governs.

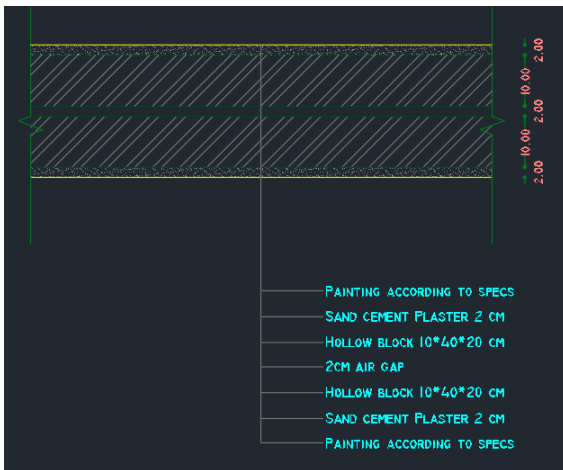
Drawings vs. Specifications

- Information that is best transmitted graphically will be addressed in drawings, such as:

1- Dimensions, shape and location

2- Schedule of finishes, windows and doors

3- Location of materials



CODE	WIDTH	HEIGHT	SPECIFICATIONS
AW01	173	173	<p>SINGLE SASH PIVOT WINDOW</p> <p>LAMINATED GLAZING WITHOUT SHUTTER</p> <p>4MM CLEAR GLASS-6MM AIR GAP-6MM CLEAR GLASS</p> <p>TRANSPARENT GLASS</p> <p>PROTECTIVE ELECTROSTATIC APPLIED POLYESTER PAINT OF 70-80MICRON FINISH</p>
SUB FRAME	NO		
FRAME FINISH	PAINT REF. TO ARCHITECTR APPROVAL		
LEAF FINISH IN/OUT	DOUBLE GLASS & ALUMINIUM FRAMES		
LEAF SIZE	AS SHOWN		
LOCK	YES		
QUANTITY/FLOOR	EASEMENT FLOOR	2	
	GROUND FLOOR	3	
	FIRST FLOOR	1	
	ROOF FLOOR	--	
	TOTAL	6	

Drawings vs. Specifications (Cont'd)

- Specifications describe the following:

1- Quality of materials

2- Tests that need to be done in order to check compliance with requirements

STRENGTH OF CONCRETE: Preliminary Test Cubes shall be taken from the trial mixes designed to select the job mix and shall be made and tested in accordance with Parts 3 and 4 of BS 1881.

Drawings vs. Specifications (Cont'd)

3- Submittals required

Samples:

Submit two sets of stone, full size units as selected by the engineer to the project site, in sufficient number to indicate the full range of color, texture and finish. One of each of the duplicate samples approved by the engineer will be retained by him at the project site, the other being returned to the stone supplier for his guidance. Color and type of the stone- dressing are as mentioned above.

1. The following physical data on proposed stone shall be submitted by the supplier:
2. Analysis of mineral composition
3. Analysis of chemical composition.
4. Thermal sufficient of expansion.
5. Absorption.
6. Specific Gravity.
7. Modulus of Rupture
8. Abrasion Resistance.
9. Samples of other materials specified here in shall be submitted upon request by the engineer.

4- Standards

QUALITY REQUIREMENTS

- a. Steel reinforcement shall be hot rolled high strength high bond, Grade 414, complying with requirements of BS 4449, BS. 4461, and BS 8110, deformed bars.
- b. Steel fabric mesh shall comply with BS 4483.

Drawings vs. Specifications (Cont'd)

5- Cost included

Description	Quantity	Unit	Rate	Amount
<u>Reinforced Concrete</u>				
<u>Substructure</u>				
Supply and construct Reinforced concrete (C35), 35N/mm² at 28 days compressive strength, including but not limited to the supply and the installation of deformed high yield steel bar reinforcement of characteristic strength FY= 420 mpa, the required additives, all necessary formwork, mixing, casting, curing, complete as shown on drawings and as per specifications.				
To Isolated Footings	25	M ³		
To Mat Foundation	115	M ³		
To Strip Footings	545	M ³		
To Ground Beams	70	M ³		

6- Erection and installation methods

The steel is to be fixed in position exactly as indicated; taking in to consideration the seismic requirements and the bars are to be securely wired together with 1.6 or 1.4mm soft iron wire or approved spring steel clips wherever necessary to prevent any displacement during concreting.

Purpose of Specification

- Guide the bidder at the time of tendering to arrive at a reasonable cost for the work
- Provide guidance for the execution of the work/installation guide
- Guide contractor for the purchase of materials/equipment
- Indicates method of testing and acceptance of final products
- Guide parameters for rejection of non conforming works

Types of Specifications

- 1- Perspective specifications
- 2- Performance specifications
- 3- Proprietary specifications
 - Closed
 - Open

Perspective specifications (Material and Workmanship)

- Detailed descriptions of the following items are included:

1- Type of materials required.

2- Physical properties such as strength

2- The execution and installation methods required.

3- General requirements relating to tests and standards.

Perspective specifications (Cont'd)

DIVISION 6 - WOOD, PLASTIC, AND COMPOSITE

Item	Description
	<u>WOOD, PLASTIC, AND COMPOSITE</u>
	<u>062000 - Finish Carpentry</u>
	<u>Interior Finish Carpentry</u>
	Wood cladding comprising 12mm thick brown color soft Oak wood panels, including all necessary wood blocking, backing and skirting, fire retardant painting and treatment system, 20 mm stainless steel strip brushed finish, fixings, fittings, accessories and decoration, complete as shown on drawings, as per specifications and to Engineer's approval.

Performance specifications

- Specifications which define products based on desired end results.
- In this type of specifications:
 - 1- The results or the performance of the finished product are specified
 - 2- The installation procedures and material types is not specified
 - 3- required tests are specified
- The product satisfies the specification as long as it does the job

Performance specifications (Cont'd)

- Example :

1- The wall shall be constructed to support vertical load of .2 ton/m

2- The system shall pump 300 gallons per minute.

“Note :There are no directions on how to make the pumping system go that fast, so it is up to the contractor to figure it out.”

- This kind of specifications fit with design-build projects

Proprietary specifications (Closed)

- This specifications call for desired type by their trade names and model numbers.
- One or two manufacturers could be specified.
- Ex. :
 - 1- Water stop by W.R. Grace company
 - 2- The bathtubs shall be E085 type by Kemlite OR A400 type Westen by Miller

Proprietary specifications (Open)

- Products of various types are used
- At least three manufacturers are used shall be specified, otherwise will be closed specifications
- Ex.: the wall shall be painted of C paints by Inland or MWV paints by Wheeling or WF paints by Lory.

Proprietary specifications (Cont'd)

- These are the least common of the three types of construction specifications, but they are for jobs involving existing equipment and already completed installations. When the owner or client wants to be consistent with their materials or just prefers a specific type of material, use proprietary specs.

Specification Language

- Capitalizing the first letter is mandatory for the following expressions :
 - 1- Parties to the contract :e.g. Employer/Client/Contractor/Engineer
 - 2- Contract documents : e.g. Bill of Quantities /Drawing

2.4. Size and Depth of Excavation

Excavation shall be cut to the size of the foundation shown on the Drawings and taken down to the foundation levels shown on the Drawings. If, without the Engineer's written instructions, the Contractor goes down below the foundation level specified, he shall fill up the part so excavated with concrete of the same type and grade as that required for the piles as defined in Concrete Works and the Bill of Quantities at his own expense.

Specification Language (Cont'd)

- Avoid the use of words which have indefinite meanings . For example : Either, Etc.
- Specify in the positive form.
- Arrange the specification in the order of the execution of the work. E.g. Formwork , concrete mixing, concrete placing, curing.