

-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

HIGHER NATIONAL UNIT SPECIFICATION

GENERAL INFORMATION

-Unit number-	D2Y3 04
-Unit title-	CONSTRUCTION PRACTICE: SERVICES
-Superclass category-	TH
-Date of publication- (month and year)	1 AUGUST 2000
-Originating centre for unit-	SQA

-DESCRIPTION-

GENERAL COMPETENCE FOR UNIT: On completion of this unit the candidate will be competent in providing descriptive examples of good construction practice in the provision of water, electricity, gas and drainage to low to medium rise buildings.

OUTCOMES:

1. describe the principles, layouts and testing of drainage systems;
2. describe the principles and layouts of water supplies;
3. describe the principles and distribution of electrical supply;
4. describe the principles and layout of gas supply;
5. outline constructional methods of accommodating the distribution of services.

CREDIT VALUE: 1 HN Credit.

ACCESS STATEMENT: This unit forms part of both the Advanced Certificate in Construction Practice and the Higher National Certificate in Construction Practice, details of which are given in the Support Notes under Progression. Access to this unit is at the discretion of the centre although the candidate would normally be receiving complementary industrial experience in an area of construction and have successfully completed an Advanced Certificate in one of the following:

Brickwork
Carpentry and Joinery
Painting and Decorating
Plasterwork
Roof Slating, Tiling and Cement Work
Stonemasonry.

Additional copies of this unit can be obtained from:

The Committee and Administration Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ, (Tel: 0141-242 2168).

At the time of publication the cost is £1.50 per unit (minimum order £5.00).

HIGHER NATIONAL UNIT SPECIFICATION

STATEMENT OF STANDARDS

Unit number: D2Y3 04

Unit title: CONSTRUCTION PRACTICE: SERVICES

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME

1. DESCRIBE THE PRINCIPLES, LAYOUTS AND TESTING OF DRAINAGE SYSTEMS

PERFORMANCE CRITERIA

- (a) The general principles of drainage systems are correctly described.
- (b) The purpose and construction of manholes and inspection chambers are described fully and accurately.
- (c) The laying and jointing of pipes are correctly described.
- (d) Methods of testing systems are correctly described.

RANGE STATEMENT

Systems: below ground; above ground.

Components: manholes; inspection chambers; rigid pipes; plastic pipes; rigid fittings; plastic fittings.

Tests: air; water.

EVIDENCE REQUIREMENTS

Oral or written evidence is needed to show the candidate can describe, the general principles of combined drainage systems; the general principles of separate drainage systems; the purpose and construction of manholes and inspection chambers; the methods of laying and jointing pipes; the methods of testing systems.

Assessment will be in the form of closed book.

All working practices must be in line with current and relevant health and safety legislation and regulations.

All performance criteria must be met and all items in the range statement covered.

OUTCOME

- 2. DESCRIBE THE PRINCIPLES AND LAYOUTS OF WATER SUPPLIES**

PERFORMANCE CRITERIA

- (a) The principles of cold water supply are correctly described.
- (b) The principles of hot water supply are correctly described.
- (c) Layouts of cold and hot water distribution are correctly illustrated.
- (d) Potable and non-potable supplies are clearly illustrated.
- (e) Layouts are fully and correctly annotated.

RANGE STATEMENT

Systems: direct and indirect cold water; direct and indirect hot water; central heating radiators.

Materials: copper; steel; polythene; PVC.

Locations: domestic buildings; industrial and commercial buildings.

EVIDENCE REQUIREMENTS

Oral or written evidence is needed to show the candidate can describe, the principles of cold water supply, principles of hot water supply and illustrate the, distribution of cold water, distribution of hot water to appliances, distribution of hot water to radiators.

Assessment will be in the form of open book.

All working practices must be in line with current and relevant health and safety legislation and regulations.

All performance criteria must be met and all items in the range statement covered.

OUTCOME

- 3. DESCRIBE THE PRINCIPLES AND DISTRIBUTION OF ELECTRICAL SUPPLY**

PERFORMANCE CRITERIA

- (a) The principles of electrical supply are correctly described.
- (b) The distribution of electricity is correctly illustrated.
- (c) The diagrammatic arrangement for lighting is technically correct.
- (d) The diagrammatic arrangement for a ring main is technically correct.
- (e) Layouts are fully and correctly annotated.

RANGE STATEMENT

Circuits: 5 amp; 15 amp; 30 amp.

Cable distribution: rubber covered; PVC covered; conduit.

EVIDENCE REQUIREMENTS

Oral or written evidence is needed to show the candidate can describe electrical supply and illustrate its distribution including provision for lighting, ring main, earthing arrangements, supply voltages, cable sizes and statutory requirements.

Assessment will be in the form of open book.

All working practices must be in line with current and relevant health and safety legislation and regulations.

All performance criteria must be met and all items in the range statement covered.

OUTCOME**4. DESCRIBE THE PRINCIPLES AND LAYOUT OF GAS SUPPLY****PERFORMANCE CRITERIA**

- (a) The principles of gas supply are correctly described.
- (b) Layout of gas supply is correctly illustrated
- (c) Layout of gas supply is fully annotated.

RANGE STATEMENT

Pipework: steel; copper.

Components: meter; CH boiler.

Ventilation: flues; balanced flues.

EVIDENCE REQUIREMENTS

Oral or written evidence is needed to show the candidate can describe the principles of gas supply and the layout of gas installation including ventilation requirements and statutory requirements.

All working practices must be in line with current and relevant health and safety legislation and regulations.

All performance criteria must be met and all items in the range statement covered.

OUTCOME**5. OUTLINE CONSTRUCTIONAL METHODS OF ACCOMMODATING THE DISTRIBUTION OF SERVICES****PERFORMANCE CRITERIA**

- (a) The construction of ducts is correctly illustrated.
- (b) Methods of supporting services are correctly illustrated.
- (c) The positioning of access through the structure is correctly illustrated.
- (d) The detailing of services entry to the building is technically correct.
- (e) The separation and distancing of services are in accordance with relevant legislation.

RANGE STATEMENT

Services: drainage; water; electricity; gas; telephone.

Methods of support: hangers; saddle clips; staples.

EVIDENCE REQUIREMENTS

Evidence of actual performance is needed to show the candidate can graphically illustrate the construction of service ducts, positioning services within service ducts, detailing services entry to a building, positioning access through the structure including provision for firestopping, exclusion of vermin, ground cover.

Assessment will be in the form of closed book.

All working practices must be in line with current and relevant health and safety legislation and regulations.

All performance criteria must be met and all items in the range statement covered.

MERIT STATEMENT: To gain a pass in this unit, a candidate must meet the standards set out in the outcomes, performance criteria, range statements and evidence requirements.

A pass with merit may be awarded to a candidate who substantially exceeds the minimum requirements of the unit for competence in some or all of the following:

- (a) level of accuracy;
- (b) clarity and depth of descriptive responses;
- (c) analytical skills;
- (d) quality of graphical works;
- (e) the degree of acceptability of accommodating distributions through the structure;
- (f) clearly defined safety referencing.

ASSESSMENT

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the Scottish Qualifications Authority (SQA) assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of the assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

SPECIAL NEEDS

Proposals to modify outcomes, range statements or agreed assessment arrangements should be discussed in the first place with the external verifier.

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HIGHER NATIONAL UNIT SPECIFICATION**SUPPORT NOTES**

Unit number: D2Y3 04

Unit title: CONSTRUCTION PRACTICE: SERVICES

SUPPORT NOTES: This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

NOTIONAL DESIGN LENGTH: SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE

CONTENT/CONTEXT The candidate should achieve a level of competence of someone in a position of responsibility on a construction site charged with the effective organisation of work activities. The content of the unit is not intended for the candidate wishing to specialise in any branch of services installation, and is designed to provide an appreciation of services installations which provide the candidate with sufficient knowledge to coordinate multi-trade projects.

Corresponding to outcomes:

1. This outcome could be covered by the use of audio visual materials and hands-on demonstration/use of testing apparatus. The content of this outcome, likely to be under the direct control of a site supervisor, should be favourably weighted with respect to Outcomes 2, 3 and 4. The following topics could be included:

related terminology;
methods of bedding;
sizes of pipework;
types and uses of fittings;
self-cleansing velocity;
sewer connection;
the smoke test;
statutory requirements.

- 2, 3, 4 The context of these outcomes should be from a position of coordinating specialists in each area. A general appreciation of the principles and layouts of services should be given by means of technical literature, audio visual materials and from examination of residential installations. The experiences of candidates should be developed in open discussions where appropriate.

5. This outcome should provide the candidate with a clear understanding of the importance of distributing services in an orderly and a structurally acceptable manner. The content of this outcome, likely to warrant supervision and inspection by a site supervisor should be favourably weighted.

APPROACHES TO GENERATING EVIDENCE Most of this unit will be completed in a situation with candidates carrying out the procedures outlined in the outcomes. The teaching should be structured to the needs of a construction site supervisor with assessment taking place during the staged development of the content.

ASSESSMENT PROCEDURES Centres may use the Instruments of Assessment which are considered by tutors/trainers to be the most appropriate. Examples of Instruments of Assessment which could be used are as follows:

Outcomes 1, 2, 3, 4.	The candidate will complete an assignment for each outcome. To generate evidence to cover all of the performance criteria the design of the assignment should include: <ul style="list-style-type: none"> (a) one restricted response question for each performance criterion requiring a descriptive response; (b) one partly completed layout for each required distribution; (c) guidance on the completion of layouts; (d) a checklist to determine satisfactory performance.
Outcome 5	The candidate will complete an assignment which will generate evidence for all of the performance criteria.

EXEMPLARS

PROGRESSION This unit forms part of the framework for both the Advanced Certificate in Construction Practice and the Higher National Certificate in Construction Practice. Candidates successfully completing the Advanced Certificate will be able to progress to stage II of the Higher National Certificate.

Each unit is a separate part of the framework of units for the award of the Advanced Certificate and units are not necessarily taken in a prescribed order although there is a logical sequence to the acquisition of the skills and knowledge concerned.

To gain the award of the Advanced Certificate in Construction Practice the candidate must successfully complete all of the following units:

D2XJ 04	Construction Practice: Site Preparation and External Works (x 0.5)
D2XK 04	Construction Practice: Substructure (x 0.5)
D2Y1 04	Construction Practice: Superstructure (x 2.0)
D2Y2 04	Construction Practice: Materials, Components and Finishes
D2Y3 04	Construction Practice: Services
D2Y4 04	Construction Practice: Measurement and Taking Off (x 0.5)
D2Y5 04	Construction Practice: Supervision
D606 04	Construction Site Safety

RECOGNITION

REFERENCES

1. Guide to unit writing, SQA, 1993 (Code: A018).
2. Guide to assessment, SQA, 1993 (Code: B005).
3. Guide to certification, SQA, 1996 (Code: F025).
4. Notes for unit writers, SQA, 1995 (Code: A041).

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