LEVEL 3 DIPLOMA IN SIGNMAKING TECHNOLOGY

Centre Qualification Handbook

Knowledge-based Qualifications

PAA\VQ-SET
Brooke House
24 Dam Street
Lichfield
Staffordshire
WS13 6AA

Tel: 01543 254223

www.paa-uk.org

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INTRODUCTION TO THE HANDBOOK

This qualification sits within the Regulated Qualifications Framework (RQF).

This Qualification Handbook has been developed to ensure that PAA\VQ-SET Centres understand the requirements of the qualification. The Handbook contains the following information:

- Qualification Structure
- Process of Assessment
- Glossary
- Qualification Units

This Qualification Handbook has been developed to provide support in the implementation of the qualification as well as giving information to ensure that the assessment and quality assurance is consistent, robust and reliable within each centre and nationally. The handbook also contains details of the skills and/or knowledge the learner must obtain to achieve the units and qualification.

Qualification Structure

This section of the handbook summarises the content of the qualification and the skills and/or knowledge learners that achieve it can be expected to gain. It also outlines the units required to achieve the qualification and will give the learner an idea of how long the qualification will take to achieve through the Total Qualification Time (TQT) and how much contact time they can expect through the Guided Learning Hours (GLH). It also provides information about possible progression opportunities once the qualification has been achieved.

Process of Assessment

The process of assessment outlines how the qualification will be assessed; this may be via an externally set examination, completion of a workbook or assignments, written or practical exercises, or a combination of these.

Qualification Units

The unit overview summarises the content of the unit and the skills and/or knowledge the learner will have gained on achievement of the unit. The units may also contain additional information in the assessment context which will describe the areas to be covered.

Qualification Assessment and Support Materials

Centres will be sent the following qualification assessment and support materials:

- Registration Spreadsheet
- Learner Guide
- Qualification Handbook

If the qualification is assessed by external examination and/or Internal Assessments, centres will also receive:

- Mock Examination and Answer Paper
- Internal Assessments and Scoring, if appropriate
- Internal Assessments Results Sheet, as appropriate

LEVEL 3 DIPLOMA IN SIGNMAKING TECHNOLOGY

Qualification Summary

This qualification will provide recognition of the knowledge of individuals working in the Signmaking industry. It covers the function, planning and production of signs, quality considerations and operating safely and effectively.

Total Qualification Time (TQT) and Guided Learning Hours (GLH)

Guided Learning Hours (GLH)

Guided Learning Hours are the time the learner is under the immediate supervision or guidance of a lecturer, supervisor, tutor or other appropriate provider or education or training.

The GLH for this qualification is 450

Total Qualification Time (TQT)

Total Qualification Time is comprised of 2 elements:

1. GLH
   plus
2. an estimate of the number of hours a learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by (but not under the immediate supervision of) a lecturer, supervisor, tutor or other appropriate provider or education or training

The TQT for this qualification is 550

Achieving the Qualification

To achieve the qualification learners must complete all 4 Mandatory Units and 1 Optional Unit.

Mandatory Units

Unit No.	Unit Name	Credit Value
SMT 01	Function and Production of Signs	11
SMT 02	Planning for Sign Products and Production of Signs	11
SMT 03	Operating Safely and Effectively in Signmaking	11
SMT 04	Quality Considerations for Signage	11

Optional Units

Learners must achieve one unit.

Unit No.	Unit Name	Credit Value
SMT 05	Design Requirements for Signage	11
SMT 06	Fabrication and Assembly Methods for Sign Manufacturing Processes	11
SMT 07	Decorative Application Methods for Sign Manufacturing Processes	11
SMT 08	Installation and Maintenance of Signs	11

Progression

The Diploma in Signmaking is available at Level 3 and is the knowledge qualification in the Signmaking Apprenticeship Framework.

Further information can be found on the PAA\VQ-SET website www.paa-uk.org or on the Register of Regulated Qualifications website http://register.ofqual.gov.uk

PROCESS OF ASSESSMENT

The assessment of the Level 3 Diploma in Signmaking Technology will be by an Internal Assignment undertaken by the Centre and an external examination set by PAA\VQ-SET. The Internal Assignment will be provided by PAA\VQ-SET along with marking criteria, recording materials and guidance. The Internal Assignment will be externally verified by PAA\VQ-SET. PAA\VQ-SET will also provide a mock examination paper, and answer paper, to enable learners to prepare and revise for the external examination.

The external examination will be taken by the learner at the PAA\VQ-SET approved Examination Centre and all learners must be registered with PAA\VQ-SET for the qualification.

Examinations will be conducted in accordance with PAA\VQ-SET's requirements to maintain national standards and rigorous quality assurance.

The questions have been developed by subject experts from the sector and directly relate to the Learning Outcomes and Assessment Criteria for the units contained in this Qualification Handbook. To achieve the qualification learners must pass every unit in the external examination and in the Internal Assignment. Should a learner not pass all the required units from a qualification they will receive a unit certificate for the units they have achieved and will need to register to re-sit the failed units. Once all units have been achieved a certificate for the full qualification can be issued.

The Examination for the Level 3 Diploma in Signmaking Technology will be held at predefined dates as shown on PAA\VQ-SET'S Examination timetable. Subject experts, provided by PAA\VQ-SET, will mark and moderate all examination papers returned by the Examination Centres and Centres will be notified of the results.

Centres will be externally verified by PAA\VQ-SET to ensure that examinations and the centre have been conducted at the required standard.

For learners to achieve the Level 3 Diploma in Signmaking Technology they must achieve a pass in both the Internal Assignment and the external examination.

Further information regarding PAA\VQ-SET's requirements for Externally Examined Knowledge-based qualifications can be found in the Centre Portfolio.

GLOSSARY

Term	Definition
Access Arrangements	Arrangements that are approved in advance of an examination or assessment to allow achievement to be demonstrated by learners with a disability, special learning needs (including where the learner's first language is not English, Welsh or Irish) or to avoid unlawful discrimination
Appeal	The process through which an awarding organisation may be challenged on the outcome of an enquiry about results or, where appropriate, other procedural decisions affecting a centre or an individual learner
Assessment	The process of making judgements about the extent to which a learner's work meets the requirements of a unit, or any additional assessment requirements of a qualification
Assessor	A person who assesses a learner's work
Award of Qualifications	A certificate (electronic or paper-based) issued to an individual that recognises their achievement
Award	A qualification with a TQT value between 10 and 129
Awarding Organisation	A body recognised by the qualifications regulators to award qualifications
Centre	An organisation accountable to an awarding organisation for assessment arrangements leading to the award of qualifications
Centre Recognition	A process through which a centre wishing to offer an award or awards is confirmed as being able to maintain the required quality and consistency of assessment, and comply with other requirements of the awarding organisation
Certificate (1) for a Unit or Qualification	A record of attainment of a qualification issued by an awarding organisation
Certificate (2)	A qualification with a TQT value between 130 and 369
Credit	An award that may be made to a learner in recognition of the achievement of a unit or qualification
Credit Value	The number of credits that may be awarded to a learner for the successful achievement of a unit or qualification
Diploma	A qualification with a TQT value of 370 or above
Guided Learning Hours	The number of hours of teacher-supervised or directed study time required to teach a qualification or unit of a qualification
Learning Time	The amount of time a learner at the level of the unit is expected to take, on average, to complete the unit to the standard required

Term	Definition
Level	An indication of the relative demand, complexity and/or depth of achievement, and/or the autonomy of the learner in demonstrating that achievement
Mandatory Units	Units that must be achieved for the qualification to be awarded
National Occupational Standards (NOS)	Describe what a person needs to do, know and understand in a job to carry out the role in a consistent and competent way
Optional Unit	A unit that a learner may choose to complete to achieve the required number of units for award of the qualification
Pathway	A route to the achievement of a qualification that requires particular units to be achieved and is identified by an endorsement to a qualification title
Qualification	An award made to a Learner for the achievement of the required units or other components for that qualification
Qualification Level	An indication of the relative demand, complexity and/or depth of achievement, and/or the autonomy of the learner, represented by a qualification
Qualifications Regulators	Government-designated statutory organisations required to establish national standards for qualifications and secure consistent compliance with them
Recognition of Prior Learning (RPL)	A method of assessment that considers whether a learner can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess and do not need to develop through a course of learning
Sector Skills Council	A body responsible for formulating and reviewing occupational standards for a specific sector across the UK, and for supporting the development of units and qualifications based on these standards. Each SSC is an employer-led, independent organisation and is licensed by government
Standardisation Of Assessment	A process to ensure that assessment leading to the award of qualifications is applied consistently by individuals, centres and awarding organisations
Unique Learner Number (ULN)	The unique number that is used to identify an individual learner
Unit	A component of a qualification

LEVEL 3 DIPLOMA IN SIGNMAKING TECHNOLOGY

CONTENT OF THE QUALIFICATION

MANDATORY UNITS

UNIT SMT 01	**FUNCTION AND PRODUCTION OF SIGNS**
LEVEL	**3**
CREDIT VALUE	**11**
GUIDED LEARNING HOURS	**90**

Unit Overview

This unit provides an introduction to the signmaking industry; it covers in broad terms all aspects included in the design, production and installation of signage. This unit covers the functions of signs, the types of signs, where they are used, an overview of the materials used and the types of manufacture, the size of the industry, and the different job roles within the industry.

Information on use of Assessment Context

1. How the function of the sign attracts attention:
    - Shapes
    - Colour
    - Texture
    - Light
    - Colour contrast
    - Size
    - Positioning
    - How different fonts can influence the sign

    - The importance of the 'image' in advertising
        - How and why signs can and do:
        - Sell/promote
        - Inform
        - Warn
        - Influence
        - Demand
        - Advantages and disadvantages
        - Appropriateness and layout of design

2. Key criteria and design considerations in signmaking, to include:
    - Implications of a products:
        - Size
        - Intended life
        - Environment
        - Installation
        - Maintenance
        - Location

    - The layout and format of signs

    - Materials to be considered

    - Basic cost implications to be considered

- Transportation and logistics implications
- Design, production and maintenance implications
- Design and planning legislation – an overview
- Effective communications with customers
- Quality considerations

3. The range of signs used in different environments, to include:
   - The range of signs, to include:
     - Temporary signs
     - Non illuminated and illuminated signs
     - Secret signs
     - Pavement signs e.g. swing signs, 'A' boards
     - Box signs
     - Point of purchase
     - Architectural
     - Hand painted
     - Road signs – permanent and temporary
     - Vinyl graphics
     - Floor graphics e.g. offices, shopping malls, supermarkets
   - The environment, to include:
     - Internal/external
     - Vehicle livery
     - Advertising hoardings
     - Labels
   - Photo luminescent signage (LED and Neon) , broad advantages and limitations
   - Specialist signage (Tactile, Braille and Audible) DDA Compliant

4. The range of production methods, to include:
   - Be aware of the different types of signage:
     - Formed products
     - Assembled/joined products
     - Engraved
     - Etched
     - Hand decorated
     - Sprayed signs
     - Screen printed
     - Self-adhesive signs
     - Digital priority
   - Be aware of materials used in sign production:
     - Plastics e.g. acrylic, vinyl, etc
     - Wood
     - Metals
     - Glass
     - Paper/card
     - Coatings
     - Inks
     - Paints
     - Powders
   - The implications of installation and maintenance on different types of sign with regard to:
     - Design
     - Material

- Life span

- Production/manufacturing requirements to broadly include:
  - Design costs
  - Raw material costs
  - Labour costs
  - Skills level
  - Permit to work cards (e.g. CRB checks, CSCS cards)
  - Sub-contract requirements

5. The key roles and responsibilities within the signmaking industry, to include:
   - Typical functions and structure of a sign company, to include:
     - Finance
     - Sales
     - Design
     - Manufacture/Production
     - Quality
     - Logistics
     - Installation
     - Maintenance

   - A companies responsibility, to include:
     - Health and safety
     - Quality
     - Customer care
     - Service

   - Advantages and limitations of small and large production/process specific
     - One-offs
     - Mass production
     - Stock items

   - The implication of using sub-contractors

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Understand the key functions of signs	1.1. Explain the different reasons for sign usage 1.2. Describe how signs are used, for example; to inform and direct; to attract attention; to promote and influence 1.3. Describe why different types of signs are used in different environments 1.4. State the advantages and limitations of signs in different environments
2. Know the key criteria and design considerations in signmaking	2.1. Explain how to identify the requirements of the customer 2.2. Describe the key purposes for signs 2.3. Identify different types of products that can be used, their use and life span 2.4. Describe possible limitations or restrictions when using different products 2.5. Describe how signs can be positioned and environmental issues that should be taken into account in the design process 2.6. Describe the production methods and time scales for signmaking
3. Understand the range of signs used in different environments	3.1. Explain the advantages and disadvantages of different types of signs 3.2. Describe the advantages and disadvantages of using different types of signs in different environments 3.3. Describe the viewer/users of signs that have different abilities, such as tactile, Braille, audible
4. Understand the range of production methods	4.1. Explain the range of production and manufacturing methods for the different types of signs 4.2. Compare the advantages and limitations of the different production methods 4.3. Describe the key aspects of the main production/manufacturing processes 4.4. State the key issues regarding installation and maintenance
5. Understand the key roles and responsibilities in the signmaking industry	5.1. List the key functions within a signmaking company 5.2. Describe the roles and responsibilities of the key functions within a signmaking company 5.3. List the advantages and limitations of small and large product/process specific signmakers

UNIT SMT 02	**PLANNING FOR SIGN PRODUCTS AND PRODUCTION OF SIGNS**
LEVEL	**3**
CREDIT VALUE	**11**
GUIDED LEARNING HOURS	**90**

Unit Overview

This unit provides the knowledge required to plan both the sign product and the production activities. This unit covers how to identify customer requirements by reading and interpreting drawings and specifications, comparing advantages and limitations of common materials, product design and production methods, the importance of effective planning, the different methods and tools used for planning, the importance of effectively monitoring and controlling communications, documents and records.

Information on use of Assessment Context

1. Customer requirements, to include:
   - How to collect and record information
   - The importance and key aspects of drawings and specifications:
     - Scale
     - Units of measurement
     - Tolerances
     - Finishes
     - Pictorial/orthographic
     - Colour coding
     - Treatments
     - Electrical/mechanical/chemical/environmental requirements
   - Effective communication with colleagues, customers and suppliers
   - Common terminology used within the industry
   - The range of information required to plan production:
     - Customer requirements
     - Product
     - Materials
     - Equipment resources
     - Quality
     - Timescale
     - Numbers required
     - Installation/maintenance issues
   - The importance of identifying any possible customer omissions
   - The importance and key aspects of customer service
2. Product specification and design requirements, to include:
   - The key design consideration for signage
   - Different methods of inputting, manipulating and downloading common design software
   - The importance of effective quality assurance and quality control techniques
   - Common quality issues related to particular products and manufacturing processes

- The advantages of different planning techniques and tools including critical path analysis, time/resource management

3. Assessing the different types of production methods and associated resources, to include:
   - Sign production techniques and methods of production:
     - Formed products
     - Assembled/joined products
     - Engraved signs
     - Digital Printing
     - Hand decorated
     - Sprayed signs
     - Screen printed
     - Self-adhesive signs

   - Resources to include equipment:
     - Services
     - Tools
     - People
     - Quality measuring devices
     - Packaging
     - Other departments

   - The use of sub-contractors:
     - Design
     - Manufacture
     - Transportation
     - Installation

   - The importance of health and safety issues in common production methods

   - The different methods of transporting signs internally and externally

   - Production methods, to include:
     - Design
     - Sign writing
     - Screen printing
     - Digital printing
     - Illuminated
     - Tactile
     - Self-adhesive
     - Formed products

4. Use of common materials in the production of signage, to include:
   - Materials, to include:
     - Plastics e.g. acrylic, vinyl, etc
     - Wood
     - Metals
     - Glass
     - Paper/card
     - Coatings
     - Inks
     - Paints
     - Powders

   - Material properties with regard to product design and manufacturing:
     - Colour range
     - Surface finishes available
     - Size available
     - Physical properties

- Electrical properties
- Weathering properties
- Cost
- Availability
- Ease of machinery/manufacturing

- Material health and safety and environmental issues during manufacturing:
  - Data sheets
  - Transportation
  - Installation
  - Maintenance

5. Common production planning and manufacturing methods and tools, to include:
   - The key aspects and steps of production planning
   - The importance of effective and efficient planning
   - The use of simple written production plans
   - The use of computer aided planning methods/tools (e.g. critical path analysis etc)
   - Methods of planning/monitoring designs and products (e.g. critical path, Gantt chart, bar chart etc)

6. Potential production planning problems and their possible solutions, to include:
   - Factors which could affect the planning of particular products e.g.:
     - Material/resource availability
     - Material properties
     - Safety
     - Environment
     - Production methods
     - Timescales
   - General troubleshooting techniques to cover:
     - Customer requirements
     - Planning
     - Design
     - Production
     - Transportation
     - Installation
     - Health and safety
     - Material properties and availability

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Know how to identify customer requirements	1.1. Explain how to interpret working drawings, sketches, specifications and quality requirements 1.2. Identify and extract all relevant details 1.3. Identify possible omissions to the required information and explain how to respond 1.4. Identify any problems or difficulties with meeting a customer requirement 1.5. Explain how to provide advice about sign products and the production processes to the customer 1.6. Explain how to confirm the agreed requirements with the customer and colleagues
2. Know how to plan the product's specification and design requirements	2.1. Identify the key aspects of the product design 2.2. Describe how computer aided design software can be used to design sign products 2.3. Identify the key manufacturing and installation requirements for the product design 2.4. Identify any possible implications of the design with regard to legislation, safety and the environment 2.5. Outline the quality requirements for products 2.6. Explain how quality assurance principles are used in the production planning process 2.7. Describe quality recording and monitoring techniques 2.8. Identify implications of transportation and storage
3. Understand how to assess the different types of production methods and associated resources	3.1. Explain the production methods for different sign products and designs 3.2. Explain the advantages and restrictions of the different production methods 3.3. State the basic resource requirements for common production methods 3.4. Identify health, safety and environmental issues with regard to common production methods 3.5. Identify transport and installation requirements for the sign product 3.6. Identify the costs associated with sign production
4. Understand the use of materials in the production of signage	4.1. Source information about properties, availability and appropriateness of common materials used in signs 4.2. Compare the advantages and limitations of common materials with regard to product design and manufacturing 4.3. Identify health, safety and environmental issues with common materials

5. Understand production planning and manufacturing methods and tools	5.1. Identify the different methods of planning and monitoring sign design and production 5.2. State the common planning and monitoring tools used for sign production 5.3. Compare the advantages and limitations of common production planning methods and tools 5.4. Explain how to ensure that key production activities are planned and monitored by appropriate planning methods/tools 5.5. Explain how to integrate all aspects of the production activity into the planning method to include output, quality and safety
6. Understand potential production planning problems	6.1. Describe how to recognise potential planning problems 6.2. Explain possible causes of planning problems and options available to overcome them 6.3. Describe the troubleshooting techniques that could be used to identify and overcome planning problems 6.4. Identify and recommend possible planning solutions 6.5. Describe how to include all aspects of the design, production and delivery into the possible solution 6.6. Identify common faults or difficulties in the design and production of signs

UNIT SMT 03	**OPERATING SAFELY AND EFFECTIVELY IN SIGNMAKING**
LEVEL	**3**
CREDIT VALUE	**11**
GUIDED LEARNING HOURS	**90**

Unit Overview

This unit provides an understanding of hazards and risks associated with health, welfare and safety in the workplace. This unit covers monitoring safety, identifying risks, monitoring and maintaining records, understanding legislative requirements, reacting to potentially hazardous situations, carrying out preventative measures, developing positive and effective relationships and operating safely and effectively in the workplace.

Information on use of Assessment Context

1. Health and safety legislative requirements:
   - Legislation and information, to include:
     - HASAWA
     - COSHH
     - PUWER
     - Codes of practice
     - Permits to work
     - Manual Handling
   - Organisational roles and responsibilities, to include:
     - Employers
     - Employees
     - Sub-contractors
     - HSE
     - Safety officer/safety representative/consultant
   - Environmental aspects:
     - Confined spaces
     - Working at height
     - Outside
     - Electrical
     - Chemicals, disposal of waste, hazardous and non-hazardous
     - Dangerous locations
     - Equipment/tools/materials
   - Methods of locating relevant legislation
   - Learning should take into account duties under the Health and Safety at Work regulations and other relevant statutory provisions, e.g. PPE, accident prevention, health and safety policies, health and hygiene, working at height, working with electricity, fire prevention etc
   - Work areas:
     - Offices
     - Workshops
     - Storage areas
     - Installation, maintenance areas
     - Lone working
2. The need for and carrying out risk assessments:
   - Risks associated with:
     - People-colleagues/public

- Equipment
- Use of tools
- Materials/consumables
- Electricity
- Workplace environment
- Waste materials
- Security

- Risk Management
  - Method statements
  - To ensure the workplace is safe
  - Review
  - Updating with changes in legislation

- How to identify risks
  - To carry out risk assessments
  - The recording of risk assessments

- The importance of personnel training and skill requirements

3. Identifying and protecting against workplace hazards:
   - The importance of safe systems of work

   - The consequences to self and others of not following safe systems of work

   - The importance of good housekeeping with regard to cleaning and servicing routines (e.g. service records, PAT testing)

   - The importance of the use and function of a range of PPE

   - Importance of fault indicators, to include:
     - Alarms
     - Fault diagnostics
     - Abnormal production characteristics e.g. noise, lack of output, smell
     - Be aware of the different classes/types of health and safety signs

   - The different categories of safety signs:
     - Prohibition
     - Warning
     - Mandatory
     - Safe condition
     - RIDDOR

4. Safety records and checks:
   - Safety checks, to include:
     - Typical equipment/tools
     - Processes
     - Materials
     - Safety equipment PPE
     - The workplace

   - Records, to include:
     - Monitoring
     - Risk or pre assessments
     - Incident reports

   - Consequences of failing to complete records accurately

   - The importance of effective communication and records

- Awareness of organisations who can advise on safety
- The importance of up to date maintenance records

5. Responding to incidents and hazardous situations:
   - Key aspects of:
     - Evacuation procedures
     - Incident procedures
     - Security procedures

6. Operating safe and effective working practices:
   - Defining:
     - Safe working practices
     - Safe systems of work
     - Work procedures
   - The importance of organising work areas and work routines
   - The importance of effective communication with regard to safe working practices
   - The ergonomics of manual lifting/handling techniques
   - The use of different lifting aids – mechanical
   - The need for appropriate training and licensing for mechanical lifting and transporting

7. Creating and maintaining effective working relationships:
   - Different methods of communication:
     - Verbal
     - Written
     - Body language
     - ICT
   - Behaviour at work
   - Conflict management

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Understand health and safety legislative requirements	1.1. List the workplace related health and safety legislation that is appropriate to signmaking 1.2. State the legal and local responsibilities in the work environment 1.3. List an organisations responsibilities with regard to health and safety legislation relevant to signmaking
2. Understand risk assessments	2.1. Explain the key aspects of risk management 2.2. Describe the process of risk assessment 2.3. Describe how to identify potential risks in the signmaking workplace 2.4. Describe how to carry out and record risk assessments in the workplace
3. Know how to identify workplace hazards	3.1. Explain how to identify areas for potential workplace hazards 3.2. Describe suitable safe systems of work 3.3. List suitable Personal Protective Equipment (PPE) for use in potentially hazardous situations in signmaking 3.4. Describe effective housekeeping routines for safe working practices 3.5. List the relevant maintenance and service work undertaken to minimise potential hazards, for example, service records, Portable Appliance Testing (PAT) testing etc. 3.6. Explain the importance of reporting dangerous occurrences/accidents
4. Understand the purpose of safety records and checks	4.1. List the workplace safety checks relevant to signmaking 4.2. Describe the reasons for and importance of completing health and safety records and checks 4.3. Explain why it is import to record information accurately and legibly
5. Know how to respond to incidents and hazardous situations	5.1. Describe the procedures for responding to an accident in the workplace 5.2. Describe the procedures for a workplace evacuation 5.3. Describe the procedure for responding to hazardous situations in the workplace 5.4. Describe the procedures for responding to security situations
6. Understand how to operate safe and effective working practices	6.1. Describe the need for safe and effective working practices and procedures 6.2. List the safe working practices in relation to personal hygiene 6.3. List safe lifting and handling procedures 6.4. Describe safe and effective work routines and behaviour

7. Understand how to create and maintain effective working relationships	7.1. Explain the importance of positive and effective working relationships 7.2. List job roles and responsibilities within a signmaking organisation 7.3. Describe how to establish constructive working relationships 7.4. List effective ways of communicating and sharing ideas and concerns 7.5. Describe an approach for dealing with conflict and confidentiality with colleagues and clients

UNIT SMT 04	**QUALITY CONSIDERATIONS FOR SIGNAGE**
LEVEL	**3**
CREDIT VALUE	**11**
GUIDED LEARNING HOURS	**90**

Unit Overview

This unit provides the knowledge required when considering the quality issues of producing and installing a sign product. This unit covers the importance of quality for a sign product, quality principles, quality management systems, quality methods and tools, the importance of the products specification, common quality checks and measurements, troubleshooting techniques and finding solutions to problems.

Information on use of Assessment Context

1. The importance of quality systems and procedures:
   - The definition of quality control and quality assurance
   - The importance of quality systems
   - How quality affects production efficiency
   - Personal responsibilities for quality
   - The consequences of poor quality to include the effect on:
     - Productivity
     - Company image
     - Customer retention
     - Staff morale
     - Safety
     - Financial

2. Quality concepts and principles and how they can be managed:
   - Appreciation of:
     - Total Quality Management
     - ISO 9000
     - Statistical Process Control
     - BSI standards
     - CE markings
   - Quality measuring terms:
     - Tolerances
     - Averages
     - Permissible variations
     - Calibration
   - Quality control to include the principles of:
     - Inspection
     - Sampling
     - Testing
     - Condition monitoring
   - Concepts, to include:
     - Ownership of quality
     - 'Right first time'
     - Quality improvement/circles/action terms

- The role and importance of quality auditing both internal and external

3. Specifying product quality requirements:
   - Typical quality requirements for a sign product with regard to the customer needs:
     - Expectation of costs
     - Performance
     - Appeal
     - Reliability
     - Durability
     - Maintenance
     - Safety

   - Typical product specification requirements:
     - Fitness for purpose
     - Regulation
     - Compliance to standards

   - Typical job/work specifications

   - Product development process

4. Identifying product problems, their causes and solutions:
   - Typical signmaking product and installation faults
     - Spelling
     - Measurements
     - Incorrect sizing
     - Contamination
     - Bubbles in vinyl
     - Damaged tools

   - Safe and efficient measuring of dimensions, colour, surface finish, using:
     - Equipment
     - Instruments
     - Visual checks
     - Check product specification

5. Identifying and using common quality checks and measurements:
   - The use of:
     - Rulers
     - Tapes
     - Micrometers/film gauges
     - Plotters

   - The process and techniques of site surveying

   - The range and use of:
     - Colour comparators
     - Reflectometer/light boxes
     - Swatches
     - Visual

   - The importance of carrying out finishing checks and routines
     - Checklists
     - Experience of operation
     - Procedures

6. Identifying recommendations for product and production improvements:
   - Typical product design, production and installation faults, to include:
     - Size
     - Weight

  - Transportation
  - Function

- Typical production faults with regard to:
  - The design materials
  - Equipment
  - Skill levels

- Effective use of resources, to include:
  - Tools
  - Equipment
  - Personnel
  - Materials

- Feasibility study with regard to:
  - Time
  - Cost
  - Productivity

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Understand the importance of quality systems and procedures	1.1. Define the meaning of quality with regard to the sign product and production 1.2. Describe the key role of quality within the sign production process 1.3. Identify the importance of clearly specifying quality requirements 1.4. Describe people's responsibility for quality throughout the sign production process 1.5. Explain the consequences of poor quality products and quality systems
2. Understand quality concepts and principles and how they can be managed	2.1. Describe quality assurance principles and systems 2.2. Explain quality control principles and systems 2.3. Explain the importance of nationally recognised quality management systems 2.4. List different quality systems, procedures and methods
3. Understand how to specify product quality requirements	3.1. Describe why sign product specifications should be complete and realistic 3.2. Identify the different quality requirements of a sign product 3.3. Identify the key specification requirements for sign products 3.4. Explain how to develop and use a range of product specifications
4. Understand how to identify product problems, their causes and solutions	4.1. List common faults found in sign products 4.2. Explain how to measure products for conformity using a range of methods 4.3. Identify non-conformance from product measurements 4.4. Describe how to use fault finding techniques to identify the possible cause of the problem 4.5. List possible solutions to problems and make recommendations
5. Understand how to use quality checks and measurements	5.1. Explain the importance of quality manuals and procedures 5.2. Identify dimensional measuring equipment and list their limitations 5.3. Explain how to use dimensional measuring equipment and techniques 5.4. Identify colour measuring/matching equipment and list their limitations 5.5. Explain how to use colour measuring/matching equipment and techniques 5.6. Identify surface finish tests and their limitations

6. Understand how to recommend improvements for products and production	6.1. List possible problems found with product designs and functionality 6.2. Identify problems or inefficiencies found with production and installation methods

OPTIONAL UNITS

UNIT SMT 05	**DESIGN REQUIREMENTS FOR SIGNAGE**
LEVEL	**3**
CREDIT VALUE	**11**
GUIDED LEARNING HOURS	**90**

Unit Overview

This unit provides the knowledge required to appreciate the aspects of product design with respect to commercial, manufacturing and installation requirements. This unit covers how to develop a customer need into a functional product.

Information on use of Assessment Context

1. Identifying customer requirements and design considerations:

    - Understand the customers' requirements, for a product specification
    - Design capabilities of different software packages
    - The product and production parameters of different types of signs
    - To consider the relationship between the life span and the cost of materials, production and maintenance
    - Appreciation of local and national legislation with regard to signage
    - Resource implications including the use of sub-contractors

2. Identifying a products specification and design requirements:

    - Drawing techniques to include: free hand sketches, Technical drawing, CAD and standardisation of specifications
    - Identifying the 'product cycle', the main participants and methods of communicating with them
    - Analysing material cost and availability from different sources
    - Where to obtain manufacturer product information and how to use the information effectively
    - Awareness of typical properties, to include:
        - Chemical
        - Electrical
        - Mechanical
        - Weathering

3. Identifying appropriate ICT solutions for design needs:

    - The typical software packages available for different types of sign products:
        - Road traffic signs
        - Self-adhesive
        - Large format printing
        - Engraving
    - The typical software available for image production

- Typical input devices available when designing, to include:
  - CD
  - DVD
  - Internet
  - Memory stick/Flash drive
  - External drive

- Typical output devices available when designing, to include:
  - Paper printer
  - Plotter
  - Large format printer
  - Router/Engraver

- Manipulating/merging data to produce required effect, to include:
  - Capturing
  - Creating
  - Altering
  - Transforming
  - Amending
  - Saving
  - Forwarding

- Be aware of the different file types:
  - Jpeg
  - TIFF
  - BMP
  - PLT

- Areas of confidentiality, to include:
  - Data protection
  - Copy right
  - Commercial confidentiality
  - Secure methods of using data
  - Secure methods of storing data

4. Identifying potential design planning problems and their possible solutions:

- Problems to include a lack of information about fit for purpose, unavailable material/equipment/staff, problems with transportation, installation, maintenance, unavailability of design resources

- An appreciation of:
  - Pre-modelling
  - Scale mock-ups
  - Joining devices
  - Speciality brackets
  - Production techniques
  - Samples

- Procedure for correcting potential problems

- Methods of communicating with clients e.g. letter, E-mail, telephone etc

5. Identifying the different types of production methods and associated resources:

- Different production methods including their benefits/restrictions:
  - Cutting
  - Routing
  - Engraving

- Forming/shaping
- Joining/bonding
- Assembly
- Plotting
- Etching
- Self-adhesive
- Coating/spraying
- Vinyl application
- Screen printing
- Hand decoration

- Specific resources associated with production:
  - Consumables
  - Skills
  - Specialised machinery

- In-house/contracted production advantages/limitations, taking into account:
  - Cost of labour
  - Overheads
  - Specialized equipment
  - Work area
  - Specialist skills

6. Identifying the use of typical materials in the design of signage:
   - A range of materials, to include:
     - Foams
     - Woods
     - Plastics
     - Metals
     - Glass
     - Paints
     - Inks
     - Adhesives
     - Paper

   - Capabilities/limitations, to include:
     - Strength to weight ratio
     - Cost
     - Availability
     - Practicable

   - Typical properties, to include:
     - Surface finish
     - Colour
     - Weather ability
     - Mechanical strength
     - Flammability
     - Chemical strength
     - Cost
     - Electrical installation
     - Manufacturers guides and product information

7. Identifying design proposal/presentation techniques to the customer:

   - The key aspects, to include:
     - Promoting the key design features clearly and effectively
     - Introduce possible options to the design
     - Identify any possible limitations, include cost and time frames/location/audience

- Learn how to sell the design and concept for the sign company

- The presentation time can be influenced by complexity, amount of information required by the customer when there are a number of options for the customer to consider

- Presentation methods, to include:
  - Paper based
  - ITC
  - Verbal
  - Models
  - On-site

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Know how to obtain customer requirements and understand the impact of design considerations	1.1. Describe how to identify and confirm the customer requirements 1.2. Explain how the environment, position and life span of a product impact on the design 1.3. Explain how the size, number required and time scale impact on the design of a sign 1.4. Identify any transport, installation, maintenance requirements 1.5. Identify the legislation with regard to sign design 1.6. Identify the issues which impact on the feasibility of producing the sign
2. Know how to create a product's specification and design requirements	2.1. Describe how to create and read production drawings 2.2. Describe how to liaise with internal and external customers and suppliers 2.3. Identify the relative cost and availability of materials 2.4. Explain how to use manufacturers' guides and information to influence designs 2.5. State properties of materials
3. Know the appropriate Information Computer Technology solutions for design needs	3.1. Explain the different software capabilities required for design needs 3.2. Describe different input devices used when designing 3.3. Describe different output devices used when designing 3.4. Describe methods and techniques of manipulating data used when designing 3.5. Identify how to create files of different type and size 3.6. Explain how to ensure the confidentiality of data
4. Understand potential design planning problems and solutions	4.1. Identify the importance of recognising potential problems at the design stage 4.2. Identify the need and benefit of pre-modelling/scale mock-ups 4.3. Identify methods and techniques of overcoming problems in the design stage 4.4. Explain how to communicate with clients concerning the feasibility of solutions
5. Understand the different types of production methods and associated resources	5.1. Describe the range of signmaking production methods 5.2. List the resources associated with specific production methods 5.3. Explain the benefits/restrictions of different production methods 5.4. Explain the advantages/limitations of in-house production 5.5. Explain the advantages/limitations of contracted production

6. Understand typical materials used in the design of signage	6.1. List the range of materials that may be used for the different types of sign products 6.2. List different materials and their properties 6.3. Identify the main properties of typical materials used in signmaking 6.4. Explain how the application of a wide range of materials may be used to achieve the design solution
7. Understand design presentation techniques	7.1. List the key aspects of a presentation of a design that will be made to a customer 7.2. Explain the importance of presenting a design effectively 7.3. Describe when a design can be presented to the customer 7.4. Explain the different presentation techniques and their advantages 7.5. Describe which techniques are suitable for different customers

UNIT SMT 06	**FABRICATION AND ASSEMBLY METHODS FOR SIGN MANUFACTURING PROCESSES**
LEVEL	**3**
CREDIT VALUE	**11**
GUIDED LEARNING HOURS	**90**

Unit Overview

This unit provides the knowledge required to appreciate the shaping, forming and assembly aspects of the sign manufacturing process. This unit covers the range of fabrication and assembly methods available including: measuring and marking out, different forms of cutting, routing, engraving: Forming and Shaping, Joining, Bonding and Assemble. It also deals with the materials, tools and equipment used, together with handling and protecting the finished product.

Information on use of Assessment Context

Identifying the range of fabrication methods for the signmaking processes, to include:

- Range of methods, to include:
  - Measuring
  - Marking out
  - Cutting
  - Routing
  - Engraving
  - Forming/shaping, joining/banding and assembly

- Advantages/limitations, to include:
  - Skill requirements
  - Equipment
  - Resource cost
  - Processing time
  - Specialist equipment/requirement
  - Processing flexibility
  - Safety aspects
  - Quality issues

- Production costs, to include:
  - Material cost
  - Tool/specialist equipment cost
  - Labour cost

- Human resources, to include:
  - Amount of personnel
  - Skill
  - Experience
  - Physical ability
  - Sub-contract requirements

- Time scale and feasibility, to include:
  - Working to deadlines
  - Customer needs
  - Equipment needs
  - Cost

- Sign applications, to include:
  - Road traffic signs
  - Pavement signs

- Post signs
- Illuminated and non-illuminated signs
- Point of sale signs

Identifying the resources required for fabrication methods, to include:

- Range of tools to include personal tools typically found in a tool box, hand tools and powered tools both electrical and pneumatic

- Range of support equipment, to include:
  - Routers
  - Welding gear
  - Saws
  - Compressor
  - Generator
  - Thermal benders
  - Ovens
  - Drills

- Range of services, to include:
  - Electricity
  - Bottled gas
  - Compressed air

- Safety issues, to include:
  - PPE
  - Isolators
  - Guarding
  - Visual safety checks
  - Mechanical checks

Identifying the typical range of materials used for the fabrication of signage, to include:

- A range of materials, to include:
  - Foams
  - Woods
  - Plastics
  - Metals
  - Glass
  - Adhesives

- Capabilities/limitations, to include:
  - Strength to weight ratio
  - Cost
  - Availability
  - Fit for purpose
  - Ease of processing

- Typical properties, to include:
  - Surface finish
  - Colour
  - Weather ability
  - Mechanical
  - Flammability
  - Chemical
  - Cost

- Consider and use manufacturers guides and product information

Identifying accurate methods and techniques of measuring and marking out, to include:

- Importance of measurement, to include:

  - Accuracy
  - Repeatability
  - Units of measurement
  - Tolerances
  - Variations
  - Quality
  - Datum marks
  - Calculation
  - Calibration

- Range of measuring devices, to include:
  - Squares
  - Tape measures
  - Rules
  - Jigs
  - Templates

- Templates and their importance, to include:
  - Paper
  - Metal
  - Card
  - Plastic
  - Wood

- Problems, to include:
  - Progressive error
  - Accumulative error
  - Consequence of inaccuracies
  - Defective measuring instruments
  - Material

- Adjustments personnel may make, to include:
  - Tolerances within specification/legislation

- Safe working practices to be in accordance with:
  - HASAWA 1974
  - Company Policies
  - Manufacturers/suppliers instructions/procedures
  - Legislation

Identifying accurate methods and techniques of cutting, forming and assembly, to include:

- Cutting, to include:
  - Knives
  - Saws
  - Engraving
  - Hot wire
  - Router
  - Laser
  - Water cutting

- Forming, to include:
  - Thermal bending
  - Cold bending
  - Vac forming
  - Moulding

- Fabrication/assembly, to include:
  - Welding
  - Drilling

  - Bonding
  - Riveting
  - Adhesives

- Problems, to include:
  - Excessive tool/equipment wear/excessive processing time/safety
  - Environment
  - Tools
  - Incorrect joining material
  - Material
  - Operative errors
  - Settings

Identifying the requirements for handling, storage and transportation of the sign products, to include:

- Labelling requirements, to include:
  - Identification
  - Destination
  - Content
  - Warning
  - Vulnerability

- Protection, to include:
  - Environmental damage
  - Colleagues
  - Equipment
  - Transportation
  - Damage to environment
  - Health and safety of colleagues

- Storage requirements/considerations, to include:
  - Sheet material
  - Rolls
  - Non-conforming
  - Fabrications
  - Liquids
  - Glass
  - Finished goods
  - Non finished goods
  - Temporary/long term storage
  - Vulnerability
  - Cost

- Transport issues, to include:
  - Distance to travel
  - Method of transport
  - Post, recorded despatch
  - Time
  - Destination
  - Handling
  - Size of product
  - Documentation

- Risk considerations, to include:
  - Product
  - Environment
  - People

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Understand the range of fabrication methods for signmaking processes	1.1. List the range of fabrication processes 1.2. Explain the key aspects of the main fabrication processes 1.3. Describe the signmaking applications for a range of fabrication methods 1.4. Describe the advantages and limitations of the main fabrication methods
2. Understand the resources required for fabrication methods	2.1. List the range of tools and equipment required for signmaking processes 2.2. Describe the range of equipment/services to support the fabrication processes 2.3. Describe the role of personnel with regard to fabricating processes 2.4. Describe the importance of safety and maintenance of tools and equipment 2.5. Explain the importance of safe storage and security of tools and equipment
3. Understand the typical range of materials used for the fabrication of signage	3.1. List the types of materials used in fabrication 3.2. Describe the main properties of typical materials used 3.3. Describe different materials and their properties 3.4. Explain the different application of a range of materials to achieve different sign products
4. Know accurate methods and techniques of measuring and marking out	4.1. Explain the importance and implications of accurately measuring and marking out 4.2. List the typical measuring and marking out methods used for different signmaking processes 4.3. Identify the range of measuring equipment used in the production of signage 4.4. Explain the importance and use of templates in signmaking methods 4.5. Identify potential problems when measuring and marking out 4.6. Describe possible adjustments personnel are permitted to make within their authority 4.7. Describe safe working practices that should be used
5. Know accurate methods and techniques of cutting, forming and assembly	5.1. Describe the key aspects of the cutting processes 5.2. Describe the range of cutting devices, their advantages and limitations for different materials 5.3. Identify the key aspects of the forming processes 5.4. Describe the range of forming devices, their advantages and limitations for different materials 5.5. Identify the key aspects of the fabrication assembly processes

6. Understand the requirements for handling, storage and transportation of sign products	6.1. Describe how sign products should be protected and labelled 6.2. Explain the storage requirements for different sign products 6.3. Describe the transportation methods required for different sign products 6.4. Explain the risks associated with damage and suitable protection methods

UNIT SMT 07	**DECORATIVE APPLICATION METHODS FOR SIGN MANUFACTURING PROCESSES**
LEVEL	**3**
CREDIT VALUE	**11**
GUIDED LEARNING HOURS	**90**

Unit Overview

This unit provides the knowledge required to appreciate decorative application aspects of the sign manufacturing process. This unit covers the range of decorative application methods available including: Plotting, Etching, Self-Adhesive, Coating, Spraying, Vinyl Application, Screen Printing and Hand Decoration Techniques. It also deals with materials, applications, tools, equipment, manufacturing processes used, together with handling and protecting the finished product.

Information on use of Assessment Context

Identifying the range of decorative application processes for signmaking, to include:

- Application processes, to include:
  - Plotting
  - Etching/engraving
  - Self-adhesive
  - Coating
  - Spraying
  - Vinyl application
  - Screen printing
  - Hand decorative techniques
  - Large format printing

- Processes, to include:
  - Measuring
  - Marking out
  - Cutting
  - Preparation
  - Application

- Advantages/limitations, to include:
  - Skill requirements
  - Cost
  - Equipment
  - Resource cost
  - Processing time
  - Specialist equipment
  - Processing flexibility
  - Safety aspects
  - Quality issues

- Time scale and feasibility, to include:
  - Working to deadlines
  - Customer needs
  - Equipment needs
  - Cost

- Sign applications, to include:
  - Road traffic signs
  - Pavement signs
  - Post signs

- Illuminated and non-illuminated signs
- Point of sale
- Sign writing
- Gilding
- Glass decoration
- Vehicle livery
- Large format printing

Identifying the resources required for decorative application processes for signmaking, to include:

- Range of tools, to include:
  - Personal tools e.g. typically found in tool box
  - Hand tools and powered tools i.e. electrical, pneumatic

- Range of support equipment, to include:
  - Plotters
  - Printers
  - Spray equipment
  - Compressors
  - Ovens

- Range of services, to include:
  - Electricity
  - Compressed air

- Personnel, to include:
  - Operative
  - Technician
  - Quality control
  - Sub-contractor
  - Suppliers

- Safety, to include:
  - PPE
  - Visual safety checks
  - Mechanical checks

- Maintenance, to include:
  - Within own authority
  - Outside own authority
  - Maintenance contracts

- Safe storage and security, to include:
  - Lockable cabinets
  - Containers
  - Labelled cabinets

- Production costs, to include:
  - Material cost
  - Tool/specialist equipment cost, labour/contractor costs

Identifying the typical range of materials used for the decorative application of signmaking, to include:

- A range of materials, to include:
  - Foams
  - Woods
  - Plastics
  - Metals
  - Glass
  - Adhesives
  - Inks

    - Paint

- Capabilities/limitations, to include:
    - Strength to weight ratio
    - Cost
    - Colour/size/availability
    - Ease of processing

- Typical properties, to include:
    - Surface finish
    - Colour
    - Weather ability
    - Mechanical
    - Flammability
    - Chemical
    - Cost
    - Ability for shaping
    - Forming
    - Finishing
    - The use of manufacturers guides and product information

Identifying accurate methods and techniques of measuring and marking out, to include:

- Importance of measurement, to include:
    - Accuracy
    - Repeatability
    - Units of measurement
    - Tolerances
    - Variations
    - Quality
    - Datum marks
    - Calculation
    - Calibration

- Range of measuring devices, to include:
    - Squares
    - Tape measures
    - Rules
    - Jigs
    - Templates

- Templates, to include:
    - Paper
    - Metal
    - Card
    - Plastic
    - Wood

- Problems, to include:
    - Progressive error
    - Accumulative error
    - Consequence of inaccuracies
    - Defective measuring instruments
    - Material

- Adjustments personnel may make, to include:
    - Tolerances within specification/legislation

- Safe working practices to be in accordance with:
    - HASAWA 1974

- Company Policies
- Manufacturers/suppliers instructions/procedures
- Legislation

Identifying accurate methods and techniques of decorative application, to include:

- Aspects of application, to include:
  - Vinyl
  - Screen print
  - Ink jet
  - Brush
  - Spray
  - Mechanical
  - Non-mechanical

- Decorative application methods, to include:
  - Signwriting
  - Gilding – transfer/loose
  - Vinyl Application
  - Spray
  - Airbrush
  - Powder coating
  - Etching – acid/cream
  - Screen printing
  - Large format printing
  - Engraving – hand/mechanical

- Advantages/limitations, to include:
  - Skill requirements
  - Cost
  - Equipment
  - Resource availability
  - Resource cost
  - Processing time
  - Specialist equipment
  - Processing flexibility
  - Safety aspects
  - Quality issues

- Problems, to include:
  - Environment
  - Tools
  - Material
  - Equipment
  - Settings
  - Operative errors

- Consequences, to include:
  - Excessive tool/equipment wear
  - Dimensional inaccuracy
  - Discoloured
  - Poor quality product
  - Excessive processing time
  - Safety

Identifying the requirements for handling storage and transportation of sign products, to include:

- Labelling requirements, to include:
  - Identification
  - Destination
  - Content

  - Warning
  - Vulnerability
  - Legality

- Protection, to include:
  - Environmental damage
  - Colleagues
  - Equipment
  - Transportation
  - Damage to environment
  - Health and safety of colleagues

- Storage requirements/considerations, to include:
  - Sheet material
  - Rolls
  - Non-conforming
  - Fabrications
  - Liquids
  - Glass
  - Finished goods
  - Non finished goods
  - Temporary/long term storage
  - Vulnerability
  - Cost

- Transport issues, to include:
  - Distance to travel
  - Method of transport
  - Post, recorded despatch
  - Time
  - Destination
  - Handling
  - Size of product
  - Documentation

- Risk considerations, to include:
  - Product
  - Environment
  - People

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Know the range of decorative application processes for signmaking	1.1. Describe the range of decorative application processes for signmaking 1.2. List the key aspects of the decorative application processes 1.3. Describe the signmaking applications for a range of decorative application methods 1.4. Explain the advantages/limitations of a range of decorative application methods
2. Know the resources required for decorative application processes for signmaking	2.1. List the range of tools and equipment required for particular signmaking processes 2.2. Describe the range of equipment/services to support the decorative application process 2.3. Explain the role of personnel with regard to the decorative application process 2.4. Describe the importance of safety and maintenance of tools and equipment 2.5. Explain the importance of safe storage and security of tools and equipment
3. Know the typical range of materials used for the decorative application of signmaking	3.1. List the types of materials used in decorative application 3.2. Describe the main properties of typical materials used in signmaking 3.3. Identify different materials and their properties 3.4. Explain the different applications of a wide range of materials to achieve different sign products
4. Know accurate methods and techniques of measuring and marking out	4.1. Explain the importance and implications of accurately measuring and marking out 4.2. List the typical measuring and marking out methods for different signmaking processes 4.3. Identify the range of measuring equipment used in the production of signage 4.4. Explain the importance and use of templates in signmaking methods 4.5. Identify potential problems when measuring and marking out 4.6. Describe possible adjustments that can be made 4.7. Describe safe working practices that should be used
5. Know accurate methods and techniques of decorative application	5.1. Describe the key aspects of decorative application processes 5.2. Describe the range of decorative application methods, their advantages and limitations for different materials 5.3. Identify the potential problems and consequences for a range of processes

6. Understand the requirements for handling, storage and transportation of sign products	6.1. Describe how sign products should be protected and labelled 6.2. Explain the storage requirements for different sign products 6.3. Describe the transportation methods required for different sign products 6.4. Explain the risks associated with damage and suitable protection methods

UNIT SMT 08	**INSTALLATION AND MAINTENANCE OF SIGNS**
LEVEL	**3**
CREDIT VALUE	**11**
GUIDED LEARNING HOURS	**90**

Unit Overview

This unit provides the knowledge required for installation, specialised fixings, access equipment, special requirements with regard to timing and access, active protection of high voltage circuits, mains supply wiring, high voltage installations, maintenance routines etc.

Information on use of Assessment Context

Identifying a range of installation requirements and methods, to include:

- Installation criteria:
  - Size
  - Shape
  - Location
  - Electrical power
  - Local planning
  - Types of fixing
  - Public safety
  - Access to site

- Different installation methods:
  - Fastenings
  - Hinges
  - Ground works
  - Adhesives
  - Secondary supports
  - Frameworks

- Safety issues, to include:
  - Training
  - Public protection
  - Harnesses
  - PPE
  - CSCS cards etc

- Permit requirements:
  - CSCS cards
  - Rail side
  - High security
  - MOD
  - Airports

Identifying typical maintenance routines associated with signage, to include:

- Possible safety risks, to include:
  - Working with electricity
  - Working at heights, safe condition of the sign to be maintained
  - Workplace
  - Weather conditions

- Regular maintenance to ensure:
  - Cleanliness

  - Remains functional
  - Safe condition
  - Up to date requirements

- Constant maintenance:
  - Informative – (e.g. news, cinema, prices)
  - Neon
  - Illuminated signs
  - Signs with moving parts

- Typical maintenance routines, to include:
  - Replacement of parts – electrical/mechanical
  - Cleaning
  - Greasing
  - Oiling
  - Repairing
  - Painting
  - Change of details

Identifying possible local planning implications, to include:

- Planning consent, to include:
  - Deemed consent

- Conforming to local taste and legislation

- Planning application aspects:
  - Responsibility for completing the document, time scale
  - Authority of the planning committee
  - Appeals

- Consequences of not following planning process, to include:
  - Legal implications
  - Fines
  - Removal of signs

Identifying the importance and use of different types of access equipment, to include:

- The safe operation of the following:
  - Ladders
  - Scaffolding
  - Step ladders
  - Towers
  - Powered access
  - Mobile elevated work platforms

- The advantages and limitations of the above access equipment

- Consider the implications with regard to:
  - Safety checks
  - Training, public protection
  - Harnesses
  - PPE
  - Safe systems of work

Identifying the need for special installation and maintenance requirements, to include:

- Special situations, to include:
  - Public access restrictions
  - Customer requirements
  - When adjacent work activities prohibit access

- Particular situations, to include:
  - Dangerous places
  - Highways
  - Working at height
  - Rail track side
  - Severe weather conditions
  - Airports
  - MOD land

- Locations, to include:
  - Listed buildings
  - Conservation areas
  - Severe temperature ranges
  - Dangerous environments
  - Extreme heights

- Signage, to include:
  - High voltage signs
  - Signs at height
  - In public domain
  - Large signs
  - Road traffic/rail signs

Identifying the use of electricity in signage and the safety considerations, to include:

- Basic electrical concepts, to include:
  - Voltage
  - Ampage
  - Wattage
  - Resistance
  - Insulation
  - AC/DC
  - High/low voltage

- Components, to include:
  - Protection devices
  - Switches
  - Lighting
  - Motors
  - Isolators
  - Transformers

- Safe working practices:
  - Electrical testing
  - The need for regulations
  - Licences to work

- Potential hazards, to include:
  - Electrical shock
  - Burns
  - Fumes
  - Falls

Identifying the tools used in the installation and maintenance of signs, to include:

- Hand tools, to include:
  - Spanners
  - Ratchets
  - Screwdrivers
  - Hammers/mallets
  - Squeegees

  - Electrical testers
  - Electrical crimping tools
  - Pliers

- Safety risks relating to hand tools, to include:
  - Dropping tools
  - Tools are fit for purpose
  - Storage of tools in between use

- Maintenance of tools, to include:
  - Cleaning
  - Visual checks
  - Replacing

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Understand installation requirements and methods	1.1. List the criteria which need to be considered when installing a sign 1.2. Describe different methods of installing signs 1.3. Explain the advantages and limitations of different installation methods 1.4. Identify work permit requirements 1.5. Describe the safety risks when installing signs
2. Know typical maintenance routines associated with signage	2.1. List the safety risks when maintaining signage 2.2. Explain the need for and advantages of regular maintenance 2.3. Identify which aspects of a sign may need constant maintenance 2.4. Describe typical maintenance routines undertaken for different signs
3. Understand potential local planning implications	3.1. Identify where and why planning permission may be required 3.2. List the key aspects of the planning application process 3.3. Explain the possible consequences of not following the planning process
4. Understand the importance and use of different types of access equipment	4.1. List different methods of access equipment for different situations 4.2. Explain the need for specialised equipment 4.3. Describe the safe systems of work with regard to the erection and use of access equipment
5. Understand the need for special installation and maintenance requirements	5.1. Explain the need for flexible working hours in special situations 5.2. Explain the need for special safe systems of work in particular situations 5.3. Identify locations of work which require special considerations 5.4. Identify signage which need special installation or maintenance requirements
6. Understand the use of electricity in signage and the safety considerations	6.1. Describe basic electrical concepts and their application in signage 6.2. Explain the need for different electrical components in signage 6.3. Identify the potential hazards associated with installing and maintaining electrical signage 6.4. Explain the need for safe systems of work when working with electrical signs

7. Understand the tools used in the installation and maintenance of signs	7.1. Describe the use of hand tools used for specific applications 7.2. Identify safety risks relating to the use of hand tools 7.3. Identify maintenance requirements with regard to hand tools