Unit 313: Produce setting out details for bespoke products

# Delivery guide

Unit information

This unit is about setting out details for plain and circular bespoke joinery products.

Learners may be introduced to this unit by asking themselves questions such as:

* What basic geometry is required to set out the joint lines required when setting out an elliptical headed door frame?
* What special jointing arrangements are required when setting and marking out for a pair of doors curved on plan?
* What information do I need to supply a veneering contractor to ensure the specification will be met?

Learning outcomes

1. Understand resource selection
2. Understand working to a contract specification
3. Comply with the given contract information to carry out the work safely and efficiently to the required specification

Suggested resources

Textbooks

* Jones, S., Redfern, S., Fearn, C. (2019) *The City & Guilds*

*Textbook: Site Carpentry and Architectural Joinery for the Level 2 Apprenticeship (6571), Level 2 Technical Certificate (7906) & Level 2 Diploma (6706)*. London: Hodder Education.

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* Burdfield, M., Jones, S., Redfern, S., Fearn, C. (2020) *The City & Guilds Textbook: Site Carpentry & Architectural Joinery for the Level 3 Apprenticeship (6571), Level 3 Advanced Technical Diploma (7906) & Level 3 Diploma*. London: Hodder Education.

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British Standards

* BS 459:1988 *Specification for matchboarded wooden door leaves for external use*.
* BS 476-7:1997 *Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products*.
* BS 476-31.1:1983 *Fire tests on building materials and structures. Methods for measuring smoke penetration through doorsets and shutter assemblies. Method of measurement under ambient temperature conditions*.
* BS EN ISO 585:1999 *Plastics. Unplasticized cellulose acetate. Determination of moisture content*.
* BS: 644:2012 *Timber windows and doorsets. Fully finished factory-assembled windows and doorsets of various types. Specification*.
* BS EN 942:2007 *Timber in joinery. General requirements*.
* BS 1186-3:1990 *Timber for and workmanship in joinery. Specification for wood trim and its fixing*.
* BS 1192:2000 *Doors. Classification of strength requirements*.
* BS EN ISO 9001:2000 *Quality systems. Model for quality assurance in design, development, production, installation and servicing*.

Websites

* [CADW | Conservation Principles in Action](https://cadw.gov.wales/advice-support/conservation-principles/conservation-principles-action)
* [BWF | Homepage](https://www.bwf.org.uk/)
* [TRADA | Publications](https://www.trada.co.uk/publications/)
* [TRADA | Lists of British Standards June 2021](https://www.trada.co.uk/publications/british-standards-lists/list-of-british-standards-june-2021/)
* [BRE | Certification and Listings](https://www.bregroup.com/services/certification-and-listings/)
* [HSE | Construction dust: Cutting and Sanding Wood](https://www.hse.gov.uk/construction/healthrisks/hazardous-substances/cutting-and-sanding-wood.htm)
* [James Latham | Products](https://www.lathamtimber.co.uk/products?utm_medium=organic&utm_source=bing)

Legislation

* [GOV.UK | The Building Regulations 2010 (as appropriate to joinery products)](https://www.legislation.gov.uk/uksi/2010/2214/contents/made)
* [HSE | Health and Safety at Work etc Act (HASAWA) 1974](https://www.hse.gov.uk/legislation/hswa.htm)
* [HSE | PUWER](https://www.hse.gov.uk/work-equipment-machinery/puwer.htm)
* [HSE | ACOPs](https://www.hse.gov.uk/legislation/legal-status.htm)
* [HSE | RIDDOR](https://www.hse.gov.uk/riddor/)
* [HSE | COSHH](https://www.hse.gov.uk/coshh/)
* [HSE | PPE](https://www.hse.gov.uk/toolbox/ppe.htm)
* [GOV.UK | The Manual Handling Operations Regulations 1992](https://www.legislation.gov.uk/uksi/1992/2793/made)
* [GOV.UK | The Control of Noise at Work Regulations 2005](https://www.legislation.gov.uk/uksi/2005/1643/made#:~:text=SCHEDULE%203%20Revocations%20%20%20%20Regulations%20revoked,2%20Part%20IX%20%202%20more%20rows%20)

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
| --- | --- | --- |
| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners should work in pairs and create a word-processed information sheet identifying the tools and drawing equipment required for setting out joinery products using hand drawn methods. When complete it can be compared with the work of other pairs and a compilation document produced with all tools included. * Learners to know the limits of their responsibility and with whom they need to communicate when issues are identified. * Learners can be given a number of scenarios and tasked with determining what measurements are required for accurate manufacture and where these can be obtained * Learners to know the characteristics and suitability of resources when selecting them for manufacturing bespoke products. * Learners should review (and add to it where possible) the table produced as part of unit 311 1.1 which assesses the quality of the resources including grading of timber for a particular use when appearance, strength and durability is important for the following timbers and manufactured products: * European redwoods and whitewoods * Douglas fir * Oregon pine * European and American oak * beech (steamed and unsteamed) * ash * walnut * poplar * cedar * Iroko * meranti * sapele * utile * idigbo * cherry * maple * sycamore * accoya * thermowood and other acetylated/ heat treated softwoods * plywood * fibreboard * laminated boards * glass (single, double, treble and secondary glazing) * metal (aluminium, copper, galvanized steel, and stainless steel) * fabrics (rattan) * veneers (pre-veneer manufactured boards, sapele, oak, ash, walnut, maple, beech) * laminate: decorative plastic laminate, high pressure laminates. * Learners should review the findings of the task set in Unit 311 1.1 where they were given a range of timber boards with the following defects and asked to identify them. In addition, learners should research how this fault has occurred and what can be done to mitigate the fault and state how this can be removed during the selection and machining process, particularly in respect to producing shaped joinery . * Defects to include: * knots * twist * bowing * cupping * sloping grain * heart, cup, star and thunder shakes * case hardening * end checks * waney edge. |
| * 1. Use of resources | * Learners can be given architect’s drawings of a range of joinery products (of the type listed in 3.1 below) and tasked to determine the requirements (overall (O/A), height width and depth, sections, elevations and plans where required. They should also assess whether break/add lines are appropriate, what section profiles are required, and which of the following production documents will be required, including: * cutting lists * cutting plans * ironmongery * glass and veneering schedules and order requisitions. * In groups, learners should discuss which of the above joinery products (from the previous task) will benefit from the use of break lines and how the setting out for joinery products with curved features varies from that of straight work. The findings of each group should be shared and discussed with their tutor. |
| * 1. Organisational procedures to select resources | * Learners should research the range of architectural drawings including concept drawings/sketches block plan, assembly drawings, component drawings, elevations and floor plans that may be required to set out joinery products. |
| * 1. Hazards | * Learners should complete risk assessments for setting out two of the joinery products required in the previous task (1.2). One task must include a site survey. |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners should be tasked with labelling the component parts on the architect’s drawing given for the task set in 1.2. * The above tasks should include components with the following geometrical shapes:   + gothic, true and false ellipses, segmental, circular and polygonal shapes   + surface developments of cylinders, prisms and cones   + wreathed string development   + rake to level and rake to rake handrails   + scrolls   + circle on circle. * Learners to know: * how and to whom problems should be reported and where information for queries can be sought * how to produce supporting documentation for ordering resources for the production of joinery products. |
| * 1. Tools and equipment | * Learners should in pairs review the related task set in 1.1 and amend or add to as required. They should then share with the group to produce a revised shared document which includes at least all of the following: * setting out board/rod * drawing boards parallax and tee square types * line runner/line/panel gauge * combination square * measuring tapes and rules * setting out, detail and tracing paper * pencils (automatic propelling and traditional including grades) * set squares (45, 30/60 and adjustable) * compass * dividers * trammel heads. * Learners should be tasked with maintaining setting out equipment in a workplace setting (pencils sharpened, measuring, and drawing equipment kept clean and periodically checked for accuracy) to ensure accurate setting out details are produced for joinery products. |
| 1. Comply with the given contract information to carry out the work safely and efficiently to the required specification | * 1. Demonstrate work skills to measure, mark out and draw | * Learners should set out the joinery items as given for the task set in 1.2 which will include the following: * door sets (including inward and outward opening, garage, storey, vestibule, combination, single and double action, curved in elevation, curved on plan, circle on circle (double curvature) with parallel and radiating jambs) * ledged, ledged and braced, framed ledged and braced, panelled, glazed, fire, soundproof, flush, single and double margin, curved on plan doors * traditional and high-performance casement and box frame windows * kitchen, vanity, built-in, library, ecclesiastical units and/or fitments * dado, frieze, and full height panelling (panelled and flush), radiator casings * internal and external jointing details and quantities for cladding * straight staircases and staircases with turns (landings and winders) with closed, open, and cut string * handrails and balustrading (easings, ramps, knees, swan and goose necks, horizontal and vertical scrolls). * When undertaking the above task, learners should have the opportunity over the range of tasks to: * include detailing for glass, metal, fabrics, veneers, laminates * manufacture joinery products with single and double curvature features in the above types of products as required * select, safely set up, use, and maintain the different types of hand tools, power tools and associated equipment * select, safely handle, stack and store resources using correct manual handling techniques. |
| * 1. Use and maintain hand marking and testing tools, and power tools to produce setting out details, marking out and cutting lists for bespoke products to given working instructions for at least three items from the following: * door sets * doors * windows with opening lights * units and/or fitments * panelling and/or cladding * staircases (straight and with turns) * handrails and balustrading * joinery products incorporating any of the following; glass, metal, fabrics, veneers, laminate * joinery products with single curvature features * joinery products with double curvature features |