Unit 215: Erect structural carcassing components

# Delivery guide

Unit information

This unit is about setting out and fixing structural carcassing components for roofs and floors.

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

* What is structural carcassing?
* What does stress grading mean?
* What is a dynamic load?
* Why is a honeycomb wall full of holes?
* What PPE do I need when working at height?

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

* BS 8000-5:1990. *Workmanship on building sites. Part 5: Code of practice for carpentry, joinery and general fixings.*
* BS 8000-0:2014. *Workmanship on construction sites. Part 0: Introduction and general principles.*
* BS EN 13647:2021. *Wood flooring and wood panelling and cladding. Determination of geometrical characteristics.*
* ISO 19049:2016. *Timber structures. Test method. Static load tests for horizontal diaphragms including floors and roofs.*
* BS 8233:2014. *Guidance on sound insulation and noise reduction for buildings.*

Websites

* [Cadw (gov.wales) | Homepage](https://cadw.gov.wales/)
* [TRADA | Timber Research and Development Association](https://www.trada.co.uk/)
* [NHBC Standards 2021 | House-Building Standards](https://nhbc-standards.co.uk/)
* [BWF | Homepage](https://www.bwf.org.uk/)

Legislation

* Approved Codes of Practice (ACOPs)
* [GOV.UK (www.gov.uk) | Structure: Approved Document A](http://Structure:%20Approved%20Document%20A%20-%20GOV.UK%20(www.gov.uk))
* [GOV.UK (www.gov.uk) | Fire safety: Approved Document B](https://www.gov.uk/government/publications/fire-safety-approved-document-b)
* [GOV.UK (www.gov.uk) | Protection from falling collision and impact: Approved Document K](https://www.gov.uk/government/publications/protection-from-falling-collision-and-impact-approved-document-k)
* [GOV.UK (www.gov.uk) | Conservation of fuel and power: Approved Document L](https://www.gov.uk/government/publications/conservation-of-fuel-and-power-approved-document-l)

Suggested resources (continued)

Legislation (continued)

* GOV.UK (www.gov.uk) | Access to and use of buildings: Approved Document M
* [GOV.UK (www.gov.uk) | Material and workmanship: Approved Document 7](https://www.gov.uk/government/publications/material-and-workmanship-approved-document-7)
* [GOV.UK (www.gov.uk) | Building regulations approval](https://www.gov.uk/building-regulations-approval)
* [GOV.UK (www.gov.uk) | The Personal Protective Equipment at Work Regulations 1992](https://www.legislation.gov.uk/uksi/1992/2966/contents/made#:~:text=The%20Personal%20Protective%20Equipment%20at%20Work%20Regulations%201992,9%20Information%2C%20instruction%20and%20training%20More%20items...%20)
* [GOV.UK (www.gov.uk) | The Manual Handling Operations Regulations 1992](https://www.legislation.gov.uk/uksi/1992/2793/made)
* [GOV.UK (www.gov.uk) | The Control of Noise at Work Regulations 2005](https://www.legislation.gov.uk/uksi/2005/1643/made)
* [HSE | Working at height: A brief guide](https://www.hse.gov.uk/pubns/indg401.pdf)
* [HSE | Health and Safety at Work Act 1974 explained](https://www.hse-network.com/health-and-safety-at-work-act-1974-explained)
* [HSE | PUWER](https://www.hse.gov.uk/work-equipment-machinery/puwer.htm)
* [HSE | RIDDOR](https://www.hse.gov.uk/riddor/)
* [HSE | COSHH](https://www.hse.gov.uk/coshh/)
* [HSE | LOLER](https://www.hse.gov.uk/work-equipment-machinery/loler.htm)

Suggested resources (continued)

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.

ISBN 978-1-5104-5813-0

* 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.

ISBN 978-1-5104-5815-4

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
| --- | --- | --- |
| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners to understand the characteristics and suitability of materials when selecting resources for the installation of structural carcassing components, including: * pitched roofs with gables stress: graded timber, timber sizes, roof loadings (imposed, dead, live, dynamic) * load bearing partitions: stress graded timber, timber sizes, loads imposed * joists (ground, upper or flat roof), including coverings (flat roofs, decks or floors), stress graded timber, timber sizes, loads imposed, durability of decking materials. * Learners to know how to identify defects that can affect the structural integrity e.g., knots splits, shakes, grain direction (sloping grain) and those that only affect the aesthetics e.g., blue stain, Ultraviolet (UV) bleaching. * Learners to understand the uses and limitations of resources and sustainable alternatives, including Metsec and other similar metal framing systems. |
| * 1. Use of resources | * Learners to know which materials to use in specific locations, including: * components that make up traditional cut roofs: common, hip, valley, Jack, cripple, crown rafters, wall plate, restraint straps, ridge board, purlins, binders, bracings. * truss rafters: fink, fan, attic, howe, king post, queen post, diminishing, mono and dual pitch, truss clips, restraint straps, bracings. * components that make up a load bearing partition: head, soleplate, studs, noggings, puncheon studs, Jack studs, cripple studs, lintels. * components that make up ground and upper floors and flat roofs, bridging joist, trimmer, trimming, trimmed joists, strutting (solid, herringbone and metal), bracings, straps, dwarf walls (honeycomb), firrings and fillets. * Learners to know the procedures for reporting problems with selected resources, including defective materials found at point of delivery and during the construction process. |
| * 1. Organisational procedures to select resources | * Learners to know the process for selecting materials using technical information sources, including drawings, specifications, schedules and manufacturers’ information. * Learners to know how to requisition/order resources to complete a specific task using organisational procedures, including: * completing a requisition order form * compiling a material list for a range of structural carcassing carpentry tasks. |
| * 1. Hazards | * Learners to know the hazards and risks associated with the installation of structural carcassing carpentry components and the correct method of work required to complete tasks safely. * Learners to understand the hazards and risks, including falls from heights, muscular/skeletal injuries from lifting, carrying and poor working posture, impact from incorrect use of tools, entrapment, repetitive strain, cuts, bruising, lacerations, vibration white finger/Von Willebrand Factor (VWF) (Raynaud’s syndrome) from using vibrating handheld machinery, irritants affecting the eyes, nose and throat, hearing impairment from machine noise. |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners to know how to write a method statement for the installation of structural carpentry components and the procedure to follow in order to report a problem found, ensuring all relevant parties are informed. |
| * 1. Tools and equipment | * Learners to know how to safely sharpen, maintain and store hand and power tools and how to check, store and maintain equipment required to install structural carpentry components, including scaffolding and fall arrest systems, and record any faults found. * Tools and equipment include: * measuring equipment * levels * saws (hand and power tools) * chisels * planes * squares * bevels * hammers * framing nailer * string lines. |
| 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, fit, finish, position and secure materials | * Learners to know how to set out, cut and pitch an inclined roof with gables. * Learners to know how to set out, cut and erect load bearing partitions, load bearing timber and metal stud partitions. * Learners to know how to cut and fit floor joists, including timber suspended ground floors, upper floors with trimmed openings and flat roofs with firrings and fillets. * Learners to know how to select, safely setting up, use and maintain the different types of hand tools, power tools and associated equipment as listed above. * Learners to know how to select, safely handle, stack and store resources using correct manual handling techniques. * Learners to know how to work in an environment where mechanical lifting equipment is used, such as cranes and telehandlers. |
| * 1. Select, use and maintain hand and power tools to erect at least one of the following to given working instructions: * inclined roofs with gables * load bearing partitions * joists (ground, upper or flat roof), including coverings (flat roofs, decks or floors) |