



Historic England

Technical Conservation Guidance and Research



December 2024



Summary

This brochure lists our technical conservation guidance, research reports and Technical Tuesday webinars on all aspects of the care, repair, maintenance and adaptation of the historic built environment.

All our guidance, advice and reports are free to download from the relevant sections on our website, HistoricEngland.org.uk. If you are viewing this brochure online, each publication can be opened by clicking on the listed titles, or the link at the foot of the page will take you to the relevant section of the website.

For more information about our technical advice and research, contact NationalSpecialistServices@HistoricEngland.org.uk

Front cover: Houses on east side of Capel Terrace, Southend on Sea, Essex. ©Historic England Archive

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HistoricEngland.org.uk/advice/technical-advice



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Keep up to date

Technical Conservation News

If you would like to receive news about our latest technical conservation advice and events, please join our newsletter mailing list.

To sign up, send an email to the address below with your request: NationalSpecialistServices@HistoricEngland.org.uk or fill out [this form](#)

You can unsubscribe at any time. For more information about how Historic England handles personal data, see our privacy policy: [HistoricEngland.org.uk/terms/privacy](https://historicengland.org.uk/terms/privacy)

Social media

Follow us on X (formerly Twitter): [@HistoricEngland](#) and [@HeritageAdvice](#)

See our updates on our [LinkedIn page](#) and by joining our [LinkedIn group](#)



Technical Tuesday webinars

Our Technical Tuesday webinars explore a range of technical conservation topics and take place throughout the year. See the [Technical Tuesdays webpage](#) for details of forthcoming webinars.

Recordings and transcripts of previous webinars are available to view [online](#).

Historic England is an IHBC-recognised CPD provider, and individual webinars may count towards IHBC members' CPD requirements.

Webinar topics include:

- Bats
- Buildings and dealing with damp
- Building materials: concrete, fibrous plasters, metals, mortars, stone and timber
- Decarbonisation of heating
- Embodied carbon
- Energy efficiency and retrofit
- Fire alarms and detection
- Flooding
- Graffiti
- Heritage building skills
- Installation and maintenance of building services
- Lightning and surge protection
- Paints and coatings
- Low and zero carbon energy sources
- Roofing
- Survey, assessment, inspection, and investigation
- War memorials
- Windows including glass and glazing

Energy Efficiency and Retrofit in Historic Buildings

Advice on planning energy efficiency improvements in older buildings and how to comply with regulations.

Technical guidance

Energy Efficiency

- Improving energy efficiency through mitigation
- Traditional buildings and energy efficiency

Whole building approach

- Whole building approach for historic buildings

Assessing performance

- Building performance factors
- Thermal imaging

Statutory requirements

- Building regulations, Approved Documents and historic buildings
- Energy Performance Certificates: case studies
- Energy Performance Certificates guidance



Early 17th century timber framed building in Wakefield, jettied after repair works in 2023

Climate impacts

- Improving climate resilience through adaption

Energy Efficiency and Retrofit in Historic Buildings

Advice on planning energy efficiency improvements in older buildings and how to comply with regulations.

Technical guidance

Insulation

- Open fires, chimneys and flues

Roofs

- Insulating flat roofs
- Insulating pitched roofs: ceiling level
- Insulating pitched roof: rafter level
- Insulating thatched roofs

Floors

- Insulating solid ground floors
- Insulating suspended timber floors

Walls

- Early cavity walls
- Insulating solid walls
- Insulating timber-framed walls



Insulation in timber-framed wall

Windows

- Energy efficiency and historic buildings: secondary glazing for windows
- Insulating dormer windows
- Modifying historic windows as part of retrofitting energy saving measures

Energy Efficiency and Retrofit in Historic Buildings

Webinars exploring energy performance, summertime overheating in historic buildings, and the whole house approach to retrofit.

Webinars

Whole building approach

- Retrofit fundamentals
- Whole house approach to retrofit

Assessing performance

- Energy assessment: Theory versus reality
- Lessons learnt from Building Performance Evaluation of retrofit projects: overview
- Lessons learnt from Building Performance Evaluation of retrofit projects: Session 2, moisture risk assessment and analysis
- The Demonstration of Energy Efficiency Potential (DEEP) project findings part 1
- The Demonstration of Energy Efficiency Potential (DEEP) project findings part 2
- Thermal imaging

Statutory requirements

- Achieving an EPC B rating and the implications for traditional buildings
- Energy Performance Certificates (EPCs) in the private rental sector case studies
- Updates to the Building Regulations Approved Documents Part F and Part L



Regeneration of Victorian terraced housing in Toxteth, Liverpool

Climate impacts

- Adapting to Flooding
- How climate change is increasing lightning and how to protect our built heritage
- Summertime overheating: Part 1
- Summertime overheating: Part 2

Embodied carbon

- Counting carbon
- Embodied carbon: The case against demolition
- What is embodied carbon, how it is relevant to existing buildings and what the UK needs to do about reducing it

Energy Efficiency and Retrofit in Historic Buildings

Research underpinning our technical guidance on energy efficiency and retrofit.

Research reports

- Correlating maintenance, energy efficiency and fuel poverty for traditional buildings in the UK
- Reducing energy use in traditional dwellings: Analysis of four solid wall houses in Reading
- The sustainable use of energy in traditional dwellings: Using legislation and policy to guide decision-making



Timber sash windows, The Engine House, Swindon

Assessing Performance

- A retrofit of a Victorian terrace house in New Bolsover: A whole house thermal performance assessment
- Energy efficiency and historic buildings: Assessing the thermal and hygrothermal performance of two refurbished dwellings
- Energy Performance Certificates (EPCs) and the whole house approach: A scoping study
- Research into the thermal performance of traditional brick walls
- The SPAB Performance Survey 2011-2017

Roofs

- A study of the roof environment in four domestic buildings

Walls

- External wall insulation in traditional buildings

Windows

- Improving the thermal performance of traditional windows: Metal-framed windows
- Research into the thermal performance of traditional windows: Timber sash windows
- The Engine House, Swindon, Wiltshire: Thermal performance of energy efficiency improvements to timber windows

Low and Zero Carbon Technologies

Our guidance on low and zero carbon energy sources for historic buildings, and installation and maintenance considerations.

Technical guidance

- Daylight harvesting and historic buildings
- Heat pumps in historic buildings: Air source heat pump case studies - small scale buildings
- Installing heat pumps in historic buildings
- Installing solar panels



Photovoltaic cells installed in the glass roof above King's Cross Station, London

Webinars

- Case study of Shrewsbury Flaxmill Maltings ground source heat pump project
- Hydroelectric power in historic landscapes
- Low-carbon heat sources
- Net Zero and the decarbonisation of National Grid distribution network
- Saving energy through daylight harvesting
- The Decarbonisation of heating
- The use of air source heat pumps in non-domestic historic buildings
- The use of heat pumps in historic buildings

Building Services Engineering

Our advice on installing and maintaining building services such as lighting and heating.

Technical guidance

- Electrical energy storage systems
- Emergency lighting
- External lighting of historic buildings
- Heating historic buildings
- Internal lighting in historic buildings
- Installing new services
- Lightning and surge protection



The elegant internal lighting at Saltaire United Reformed Church, Saltaire, West Yorkshire

Webinars

- Building services - Inspection and maintenance
- Building services - Principles and decision making
- Emergency lighting and exit signage
- External lighting
- Fire alarm systems in historic buildings: installation and design
- Increasing lightning and how to protect our built heritage
- Installation of building services
- Internal lighting

Emergency Planning and Fire Advice

Our guidance on emergency planning, fire prevention and protection.

Technical guidance

Emergency planning

- [Emergency planning advice](#)
- [Emergency response plans](#)
- [Lightning and surge protection](#)
- [Salvage equipment](#)

Fire advice

- [Arson risk reduction](#)
- [Fire alarms for historic buildings](#)
- [Fire detection and protection systems](#)
- [Fire fighting in thatched buildings](#)
- [Fire resistance of historic timber panel doors](#)
- [Fire safety for traditional church buildings](#)
- [Fire safety: hot work and historic buildings](#)



The old fire alarm panel at the Waterloo Mills, Bradford

Webinars

- [Fire alarm systems in historic buildings: Installation and design](#)
- [Fire in thatched buildings](#)
- [How climate change is increasing lightning and how to protect our built heritage](#)
- [Lightning and surge protection](#)

Research reports

- [Fire in thatched properties with wood-burning stoves](#)

Flooding

Our advice on dealing with floods, minimising damage and cost-efficient precautions.

Technical guidance

- [Flooding and historic buildings](#)

Webinars

- [Flooding Part 1: Preparation resistance and resilience](#)
- [Flooding Part 2: Salvage recovery and restoration](#)
- [Flood resilience of traditional buildings: Learning from practice](#)
- [Retrofit and flooding](#)

Research reports

- [A preliminary study of flood remediation in Hebden Bridge and Appleby](#)
- [An analysis of drying data from a medieval hall after flooding](#)
- [Does wall plaster retard the drying of walls after flooding?](#)
- [The health risks from contaminated flood water in the United Kingdom](#)



The River Sever overflowing its banks at Worcester

Care, Maintenance and Repair

Advice on how to maintain and repair historic buildings, including the types of materials and treatment methods to use.

Technical guidance

- Bird deterrents
- Building works and bats
- Cleaning and disinfecting historic surfaces
- Damp in historic buildings
- Maintenance and repair
- Maintenance and repair of traditional farm buildings
- Maintenance plans
- Principles of repair
- Repointing brick and stone walls
- Removing and preventing graffiti
- Sourcing traditional materials

Roofing

- Church roof replacement using terne-coated stainless steel
- Conservation of traditional thatch



Graffiti on Holy Rood Church, The Lawn, Old Town, Swindon

Insuring historic buildings, and managing vacant buildings

- Insuring historic buildings and other heritage assets
- Vacant historic buildings: Guidelines on managing risks

Research reports

- Machinery for harvesting and processing cereal straw for thatching phase one report
- Traditional thatching materials: Issues affecting a sustainable future

Care, Maintenance and Repair

Advice on how to maintain and repair historic buildings, including the types of materials and treatment methods to use.

Webinars

- Building works and bats
- Graffiti on historic buildings

Roofing

- Conservation of traditional thatch
- Terne-coated stainless steel: Its use as a replacement material after lead theft from church roofs



Re-thatching a cottage

Damp in historic buildings

- A common-sense approach to damp: The basics
- A common-sense approach to damp: The buildings
- Damp, masonry decay and sustainability conference
- Damp: survey and inspection
- Damp, timber decay and sustainability conference

Care, Maintenance and Repair

Advice on how to maintain and repair historic buildings, including the types of materials and treatment methods to use.

Technical guidance

Decorative features

- [Care and conservation of historic architectural tiles](#)
- [Historic fibrous plaster in the UK](#)
- [Metals](#)
- [Terracotta](#)
- [Wall paintings](#)

Glass and glazing

- [Stained glass windows: Managing environmental deterioration](#)
- [Traditional windows: Their care, repair and upgrading](#)

Stone

- [Coade stone](#)
- [Nanolime: A practical guide to its use for consolidating weathered limestone](#)
- [Purbeck Marble: Conservation and repair](#)
- [Sourcing stone for historic building repair](#)



Low level decay on a Purbeck Marble column at Lincoln Cathedral

Care, Maintenance and Repair

Advice on how to maintain and repair historic buildings, including the types of materials and treatment methods to use.

Webinars

Building materials: mortars, fibrous plasters and decoration

- Concealed decoration
- Earthen mortars and plasters
- Earthen mortars case studies
- Fibrous plaster
- Mortar analysis
- Mortars for conservation: History and materials

Building materials: stone, concrete, metals

- Conservation of architectural metalwork: Introduction
- Conservation of architectural metalwork: Iron gates and railings
- Conservation of reinforced concrete
- Purbeck Marble: Conservation and repair
- SPAB Fellows: Experiences of building materials
- SBAB Scholars: Repairs and materials



Concrete sound mirrors in Dungeness, Kent

- SPAB Scholars: Traditional building materials and availability
- SPAB's William Morris Craft Fellowship: The repair and conservation of timber framed buildings

Windows: glass and glazing

- Traditional windows: Care, repair and improving energy efficiency
- Glazing and the environment
- Dealing with environmental deterioration of stained glass

Care, Maintenance and Repair

Research on a range of topics relating to the conservation of historic buildings and structures.

Research reports

- A comparative evaluation of methods to monitor moisture in historic porous masonry materials
- A study of the roof environment in four domestic buildings
- Conserving stained glass using environmental protective glazing
- Conserving stained glass windows using tracery and partial environmental protective glazing
- Does wall plaster retard the drying of walls after flooding?
- Measuring moisture content in historic building materials
- Rain noise: Acoustic tests on terre-coated stainless-steel roofing
- The variability in resistance moisture meter readings obtained from medieval roofs
- Ventilation and conservation



Stained glass windows in a church

Books

- Practical Building Conservation volumes - see pages 23-24 of this brochure
- Timber decay in buildings and its treatment

Building Stones Database for England

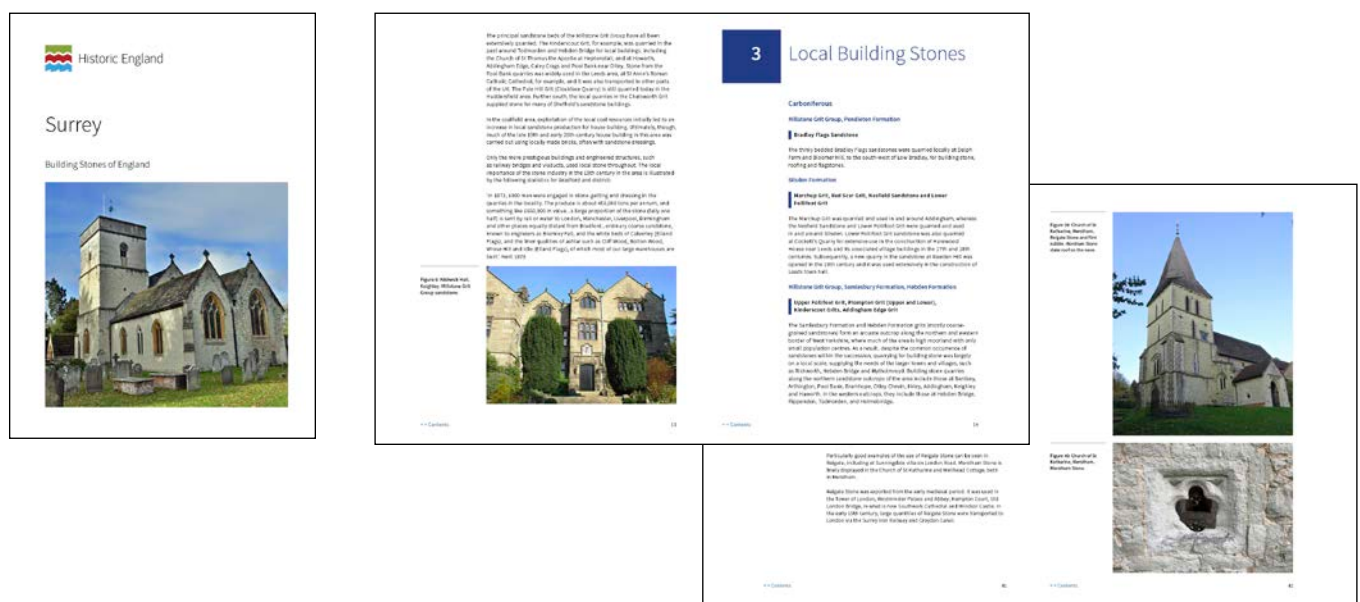
England's rich architectural heritage owes much to the great variety of stones used in buildings and other structures. The building stones commonly reflect the local geology, imparting local distinctiveness to historic towns, villages and rural landscapes.

In our [Building Stone GIS map](#), developed with the British Geological Survey and local experts, you can search for:

- a building stone type in an area
- buildings or stone sources in individual mineral planning authority area.
- details on individual mapped buildings or stone sources
- potential sources of building stone sources within a given proximity of a stone building or area

In addition to the GIS map, new editions of the illustrated county guides were published in 2023 along with companion spreadsheets that provided:

- a list of known (active and ceased) building stone sources such as quarries, mines, pits and delphs
- additional information on building stones including lithology, grain size, sedimentary structures, key identification features, and notes on failure/weathering, and use.
- more examples of buildings. Information is included on building type, date, architectural style, building stone source, and listed/scheduled status



Geospatial Survey

Our guidance on specialist survey techniques for heritage projects.

Technical guidance

- [3D laser scanning for heritage](#)
- [BIM for Heritage: Developing a historic Building Information Model](#)
- [BIM for Heritage: Developing the Asset Information Model](#)
- [Geospatial survey specifications for cultural heritage](#)
- [Multi-light imaging](#)
- [Photogrammetric applications for cultural heritage](#)
- [Sketchfab: Our collection of 3D models](#)
- [Traversing the past: The total station theodolite in archaeological landscape survey](#)

Case studies

- [A survey of the historic carvings at Carlisle Castle, Cumbria, using Structure-from-Motion photogrammetry and terrestrial laser scans](#)
- [Church of St Edward and the Market Place, Leek, Staffordshire: Geospatial survey of standing medieval cross](#)



3D cutaway of The Church of St Mary, Studley Royal, North Yorkshire

Webinars

- [BIM for heritage](#)
- [Drones for remote inspection](#)
- [Geospatial survey](#)
- [Laser scanning for remote inspection](#)
- [Reality capture for remote inspection](#)

Research reports

- [A trial of geospatial techniques to improve the legibility of stone engraving](#)
- [Examining Structure-from-Motion photogrammetry of artefacts from Rievaulx Abbey](#)

Improving Accessibility to Historic Buildings and Landscapes

Our guidelines on improving access to historic buildings and landscapes for people with disabilities explain how to make a range of positive changes to historic places, while at the same time working within the wider principles of conservation.

Technical guidance

- Easy access to historic buildings
- Easy access to historic landscapes

Case studies

- Black Barn case study: Delivering public engagement, skills and training
- Bounds Wall Ushaw case study: Delivering public engagement, skills and training
- Delivering public engagement, skills and training: Harmondsworth Barn case study



The entrance of The Treasury, London

War Memorials

Our advice and case studies on conserving, protecting and maintaining these important monuments.

Technical guidance

- Conservation and management of war memorial landscapes
- Conservation, repair and management of war memorials
- Conserving war memorials: cleaning
- Conserving war memorials: inscriptions on stone
- Conserving war memorials: structural problems and repairs
- Conserving war memorials: timber lych gates, shelters and calvary crosses



RAF war memorial plinth, Catterick

Case studies

- Cleaning
- Conservation of mortar-filled inscriptions
- Deterioration of metal fixings
- Differential movement of foundations
- The replacement of missing bronze elements
- The surface treatment of bronze statuary - 1
- The surface treatment of bronze statuary - 2

War Memorials

Our webinars on conserving, protecting and maintaining these important monuments.

Webinars

- [Conserving war memorials: part 1 - Introduction](#)
- [Conserving war memorials: part 2 - Materials and cleaning](#)

Videos

Our videos provide further guidance on how to treat and repair stone war memorials:

Conserving inscriptions

- [Condition and legibility](#)
- [Incised inscriptions](#)
- [Gilding](#)
- [Inpainting](#)
- [Recutting](#)
- [Replacement](#)



War memorial cross, The King's School, Canterbury

Cleaning

- [Biocides](#)
- [Chemical cleaning](#)
- [Reasons for cleaning](#)
- [Water washing](#)

Parks, Gardens, Landscape Management and Wildlife

Our online guidance covers a range of topics from public green spaces to trees and hedges, lakes and water features, wildlife and habitats, and managing the landscape management of archaeological monuments and other sites.

Technical guidance

- [Allotments and rented garden plots](#)
- [Garden features](#)
- [Hedges](#)
- [Lakes and water features](#)
- [Looking after monuments and sites](#)
- [Maintenance, repair and conservation management plans](#)
- [Nature recovery and heritage](#)
- [Pests and diseases](#)
- [Protecting peatlands and the historic environment](#)
- [Tree management](#)
- [Veteran trees](#)
- [Wildlife and habitats](#)

Case studies

- [Capability Brown landscapes](#)
- [Humphry Repton landscapes](#)



Campbell Park, Milton Keynes

Research reports

Capability Brown and Humphry Repton

- [Capability Brown's drawings: A reference catalogue of drawings by Brown or his office \(c1740s-1783\), including architectural drawings and landscape scenes](#)
- [Capability Brown's plans reference catalogue for researchers](#)
- [Hardy plants and planting for Repton and late Georgian gardens \(1780-1820\)](#)
- [Lancelot 'Capability' Brown: A research impact review prepared for English Heritage by the Landscape Group, University of East Anglia](#)

Parks, Gardens, Landscape Management and Wildlife

Research underpinning our technical guidance on parks, gardens, landscape management and wildlife

Urban green spaces

- Commons, heaths and greens in Greater London
- History of public park funding and management (1820-2010)
- National review of research priorities for urban parks, designed landscapes and open spaces
- Public Parks, cemeteries, and urban green spaces



Detail of ivy on a wall

Historic significance

- A delicious retreat: The marine villa and its setting in England, c. 1760 to c. 1840. A contextual study
- Golf courses as designed landscapes of historic interest
- List of registered cemeteries
- Mapping pests and diseases in historic parks and gardens
- Soft capping on ruined masonry walls

Landscape management

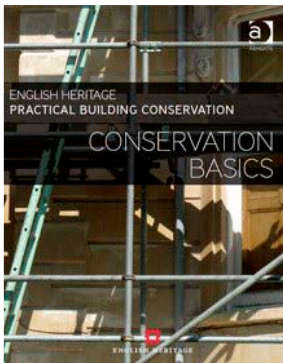
- Devon cobbled churchyard paths: Evaluating their significance, survival and adaptation
- Ivy on walls

Practical Building Conservation books

This series of books offers a comprehensive and practical reference resource for professionals involved in repairing historic buildings.

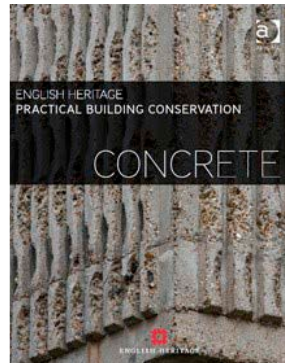
Published by [Routledge](#) on our behalf, the books are available to purchase from their website.

A new paperback edition of the Conservation Basics volume was published in July 2024.



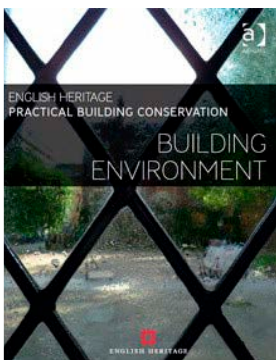
Conservation Basics (2013)

The history and evolution of building conservation in England, and current best practice for planning conservation projects



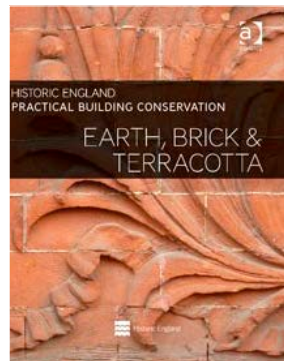
Concrete (2013)

The history of concrete, and best-practice conservation



Building Environment (2014)

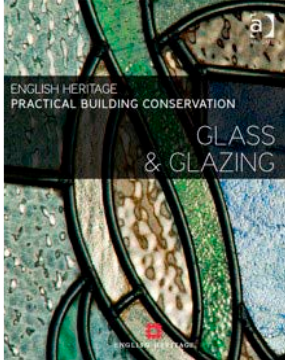
What the building environment is, how it works, why it fails, and how problems can best be remedied



Earth, Brick and Terracotta (2015)

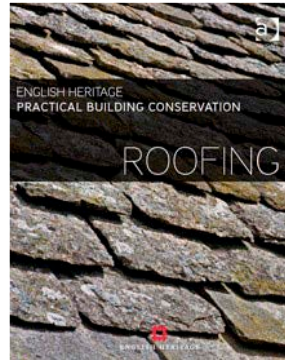
The history and conservation of fired and unfired clay materials, including earth, brick, terracotta, and tiles

Practical Building Conservation books



Glass and Glazing (2012)

The history, deterioration and conservation of glass used in windows, roofing and walling



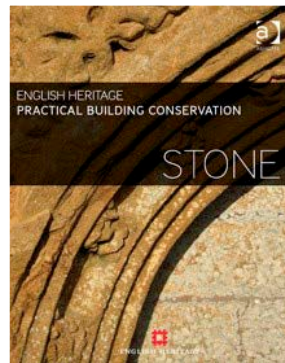
Roofing (2013)

The history and conservation of traditional roof coverings, including thatch, slates, tiles, shingles, lead and other metals



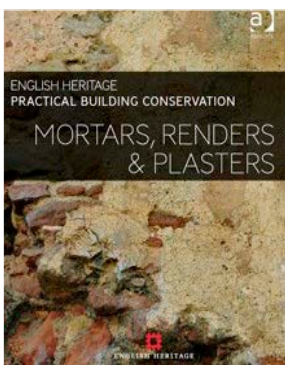
Metals (2012)

The history and conservation of ferrous and non-ferrous architectural metalwork, including railings, fittings, and statuary



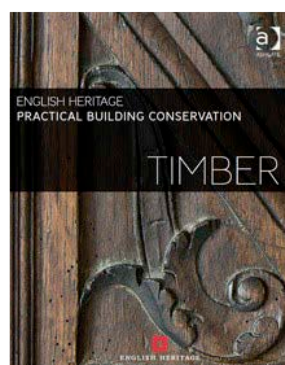
Stone (2012)

The history and conservation of architectural stonework, including carved decoration, and ruins



Mortars, Renders and Plasters (2012)

The history and conservation of mortars, including the design and preparation of new mortars for repair and construction



Timber (2012)

The history and conservation of timber in historic buildings, from timber frames through to joinery and fixings



Historic England

Historic England is the public body that helps people care for, enjoy and celebrate England's spectacular historic environment.

All our guidance is available online to view or download for free. You can also buy printed versions of our guidance publications.

HistoricEngland.org.uk

If you have any questions about this brochure, email:
NationalSpecialistServices@HistoricEngland.org.uk

To sign up to our Technical Conservation newsletter, email:
NationalSpecialistServices@HistoricEngland.org.uk

Historic England's Technical Tuesday webinars and recordings:
HistoricEngland.org.uk/services-skills/training-skills/training/webinars

If you would like this document in a different format, please contact our customer services department:
tel: 0370 333 0607
email: customers@HistoricEngland.org.uk

The digital brochure includes hyperlinks to all our technical conservation guidance, research and webinars.



All information and weblinks accurate at the time of publication. Please consider the environment before printing this document.

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