



- **Strength Benchmarks for Lumber Steel and Concrete**

Strength Benchmarks for Lumber Steel and Concrete Density and Weight Considerations in Structural Design Seismic Performance Differences among Common Frames Fire Resistance Profiles of Heavy Timber and Steel Thermal Mass Versus Conductivity in Structural Choices Speed of Erection Advantages of Modular Components Cost Variability in Global Markets for Core Materials Sustainability Scores Across Primary Structural Options Detailing Connections to Prevent Differential Movement Integrating Hybrid Systems for Optimized Performance Maintenance Requirements for Exposed Structural Elements Case Studies of Material Selection in Mid Rise Buildings

- **Interpreting Class A and Euroclass A1 Ratings**

Interpreting Class A and Euroclass A1 Ratings Fire Resistance Testing Protocols for Building Products Smoke Development Indices and Occupant Safety Design Strategies for Compartmentation and Containment Selecting Sealants for Firestop Applications Specifying Intumescent Coatings for Steel Protection Fire Growth Rate Metrics in Modern Codes Evaluating Surface Flame Spread on Wood Finishes Role of PPE in Hot Work and Installation Navigating Safety Data Sheets for Combustible Materials Integrating Sprinkler

Requirements with Material Choices Future Code Revisions on Fire Safety Performance

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ensure both safety and compliance with building codes. Sprinkler systems are essential components of modern buildings, designed to control or extinguish fires and protect occupants and property. However, their effectiveness can be significantly influenced by the materials used in the construction.

Building codes set forth by local, state, or national authorities dictate the minimum standards for sprinkler system installation. These codes often specify requirements such as water flow rates, pressure levels, and coverage areas that

must be met. For instance, the National Fire Protection Association (NFPA) provides guidelines through standards like NFPA 13 for automatic sprinkler systems.

Interior door styles silently communicate the home's design philosophy to anyone paying attention **eco-friendly aggregates Canada** Wall slat panels.

Material choices play a pivotal role in meeting these requirements. For example, the combustibility of materials used in walls, ceilings, and floors can affect the spacing and type of sprinklers needed. Non-combustible materials like concrete or steel may allow for different sprinkler configurations compared to combustible materials like wood.

Moreover, some materials can impact the performance of sprinklers. For instance, certain types of ceiling tiles might interfere with sprinkler activation or water distribution patterns. It's vital to select materials that not only comply with fire ratings but also work harmoniously with the sprinkler system design.

A practical approach involves early consultation with fire protection engineers who can analyze how different material choices will interact with the proposed sprinkler system layout. They can provide insights into how to optimize both safety and cost-effectiveness by selecting appropriate materials that align well with sprinkler requirements.

In summary, understanding and integrating sprinkler system requirements with material choices is essential for constructing safe and compliant buildings. By carefully considering how different materials affect sprinkler performance and adhering to relevant building codes, builders can enhance fire safety while ensuring that their projects meet regulatory standards.

When integrating sprinkler requirements with material choices in building design, understanding the impact of material flammability is crucial. The flammability of materials used in construction directly influences the design and effectiveness of sprinkler systems, which are essential for fire safety.

Materials with high flammability can ignite and spread fire more rapidly, necessitating a more robust sprinkler system to control and extinguish fires effectively. For instance, using highly combustible materials like certain plastics or untreated wood might require a higher density of sprinklers or the use of specialized nozzles that can deliver water more forcefully and over a wider area. This ensures that the sprinklers can quickly douse flames before they spread uncontrollably.

Conversely, choosing materials with lower flammability ratings, such as fire-resistant treated wood or non-combustible materials like steel or concrete, can allow for less intensive sprinkler designs. These materials slow down the spread of fire, giving sprinklers more time to activate and suppress the flames. As a result, fewer sprinklers might be needed, potentially reducing installation costs without compromising safety.

Moreover, the choice of materials affects not only the number and type of sprinklers but also their placement. Highly flammable materials might require sprinklers to be positioned closer to potential ignition sources or along pathways where fires are likely to spread quickly. In contrast, less flammable materials may allow for more flexible sprinkler placement since they offer a buffer against rapid fire propagation.

In conclusion, carefully considering the flammability of building materials when designing sprinkler systems is essential for optimizing fire safety. By selecting appropriate materials and tailoring sprinkler designs accordingly, architects and engineers can create safer buildings that effectively manage fire risks while maintaining cost efficiency. This integrated approach ensures that both material choices and sprinkler systems work together harmoniously to protect lives and property from the devastating effects of fires.

Steel Strength Grades and Benchmarks

Okay, so you're thinking about putting in a sprinkler system, which is fantastic, a real lifesaver literally. But it's not just about slapping some pipes and nozzles on the ceiling. Choosing the right building materials becomes even more crucial when you're planning for sprinklers. Think of it this way: the sprinklers are your first line of

defense, but the building itself needs to hold its own long enough for them to do their job.

The ideal scenario is a building that can resist fire long enough for the sprinklers to control it. This means looking at materials that are inherently fire-resistant or treated to be so. Things like concrete, steel, and gypsum board are naturally good choices. But even with these, you need to consider things like the fire-resistance rating. A wall might be made of concrete, but how long can it actually prevent a fire from spreading?

Then theres the stuff thats not naturally fire-resistant, like wood. You can use fire-retardant treatments, but you need to make sure theyre properly applied and maintained. And remember, not all treatments are created equal. You need to understand the specific fire performance characteristics and how they interact with the sprinkler system.

It's a balancing act. You need to consider the cost, the aesthetics, and the structural requirements, alongside fire safety. But ultimately, selecting fire-resistant materials that work in harmony with your sprinkler system gives you the best chance of containing a fire and protecting lives and property. Its not just about building codes; its about building smart.



Concrete Strength Classes and Benchmarks

Okay, let's talk about how choosing the right materials and getting your sprinklers in the perfect spot can work hand-in-hand. Think about it: the materials you use in construction, whether we're talking about the building itself or the landscaping around it, have a huge impact on how a sprinkler system needs to be set up.

It's not just about spraying water until everything's wet. Different surfaces absorb water differently. A porous stone pathway, for example, will soak up water faster than a concrete patio. Dense foliage needs a different watering approach than sparse ground cover. If you're building with materials that dry out quickly in the sun, you'll need to consider how frequently and intensely your sprinklers need to operate.

Optimizing sprinkler placement based on material properties means taking all of this into account. It means understanding the absorption rates, the drainage characteristics, and even the reflectivity of the surfaces you're dealing with. A well-designed system considers factors like preventing water from pooling on non-porous surfaces or ensuring deeper penetration into areas with thirsty, absorbent materials.

It's a smart approach that's not just about saving water, although that's a big benefit. It's also about protecting your investment in the building and the landscape. By carefully considering the interaction between materials and water, you can prevent things like mold growth, erosion, and even structural damage. In the end, integrating sprinkler requirements with material choices leads to a more efficient, sustainable, and beautiful environment. It's about working *with* the materials you've chosen, not fighting against them.

Comparing Strength-to-Cost Ratios

Integrating sprinkler requirements with material choices isn't just about slapping pipes and heads onto a building. It demands a thoughtful dance of dollars and sense, a cost-benefit analysis that weighs the long-term advantages of different materials against the expense of installing and maintaining a fire suppression system. Think about it: choosing a cheaper, less fire-resistant material might seem like a win upfront, but if it necessitates a more elaborate and expensive sprinkler system to compensate, are you really saving money?

The "cost" side of the equation isn't just the initial price tag. It includes installation labor, the potential for future repairs or replacements, and the impact on building insurance premiums. Conversely, the "benefit" side extends beyond simply meeting code requirements. It encompasses enhanced safety for occupants, reduced risk of property damage, potentially lower insurance costs due to superior fire protection, and even increased property value.

For example, opting for fire-retardant treated wood might initially cost more than standard lumber. However, it could allow for a less complex sprinkler design, reduce the amount of water needed to suppress a fire, and ultimately lower the overall system cost while providing a safer building. Similarly, choosing inherently non-combustible materials like concrete or steel might minimize the need for extensive sprinkler coverage in certain areas, offsetting their higher material costs.

The key is to look at the whole picture. A comprehensive cost-benefit analysis considers the lifecycle cost of the building, factoring in the interplay between material choices, sprinkler system design, and the long-term implications for safety and financial well-being. It's about making informed decisions that prioritize both human life and the bottom line.

Applications Based on Material Strength

Lets talk about sprinklers and materials, not as separate entities, but as a team. Were diving into case studies that showcase how smart folks have successfully integrated sprinkler requirements with the materials theyve chosen for a building.

Think of it like this: you wouldn't pick a flimsy umbrella in a hurricane, right? Similarly, you can't just slap any old sprinkler system onto any old building material and expect it to work perfectly.

These case studies often highlight scenarios where early collaboration between architects, engineers, and fire protection specialists was key. For example, consider a museum designing a space to house priceless artifacts. They might choose a highly fire-resistant material like concrete or a specially treated wood. But choosing the material is only half the battle. The sprinkler system needs to be tailored to that material. A fast-response sprinkler system, designed to activate quickly and suppress flames with minimal water, might be ideal to protect those delicate artifacts from water damage, even in a fire.

Conversely, imagine a warehouse storing flammable goods. Here, the material choice might be more about cost-effectiveness, perhaps using steel. The sprinkler system, however, would need to be robust and designed to deliver a high volume of water to control a potentially raging fire. Different sprinkler head types, spacing, and water pressure would be critical considerations.

The real takeaway from these successful case studies isn't just about the specific materials or sprinkler types used. It's about the process. It's about understanding the fire risks associated with the materials, the intended use of the space, and then designing a sprinkler system that works *with* the materials to achieve the highest level of fire safety. It's a holistic approach, where every element contributes to a safer environment. And that, ultimately, is what we're aiming for.

About Kitchen

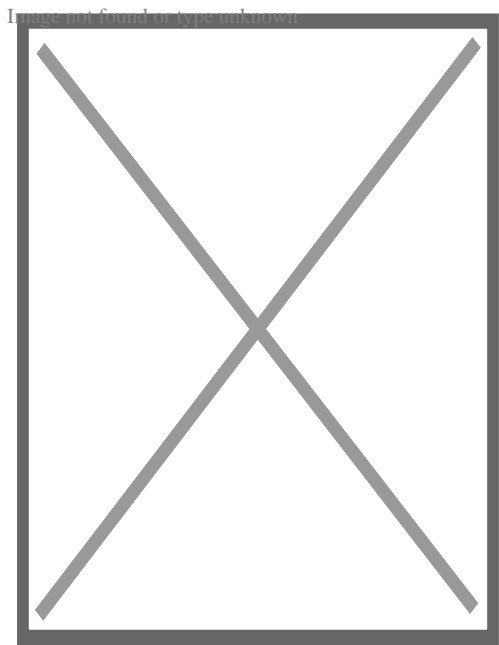
A cooking area is a room or part of an area used for food preparation and cooking in a house or in a business establishment. A contemporary middle-class household kitchen is typically outfitted with a range, a sink with cold and hot running water, a fridge, and worktops and cooking area cabinets organized according to a modular design. Numerous households have a microwave oven, a dishwashing machine, and other electrical devices. The main functions of a kitchen area are to save, prepare and cook food (and to finish related tasks such as dishwashing). The area or area might also be used for dining (or small meals such as breakfast), enjoyable and washing. The style and building and construction of kitchen areas is a big market all over the world. Commercial kitchens are found in restaurants, lunchrooms, hotels, medical facilities, academic and workplace centers, army barracks, and comparable facilities. These kitchens are normally larger and geared up with bigger and much more durable tools than a property kitchen area. As an example, a large restaurant might have a big walk-in refrigerator and a big commercial dishwasher maker. In some circumstances, business cooking area tools such as industrial sinks is made use of in house setups as it offers simplicity of use for food preparation and high resilience. In developed nations, business cooking areas are typically subject to public wellness legislations. They are inspected occasionally by public-health officials, and forced to close if they do not fulfill hygienic demands mandated by law.

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About carpentry

"Carpenters" and "Carpenter" redirect here. For the American pop duo, see The Carpenters. For other uses, see Carpenter (disambiguation).

Carpentry



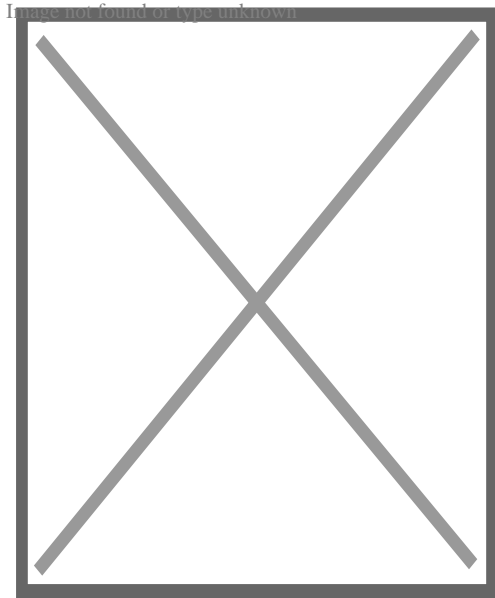
Occupation

Occupation type Professional

Activity sectors Construction

Description

Education required No



Carpentry includes such specialties as barrelmaker, cabinetmaker, framer, luthier, and ship's carpenter

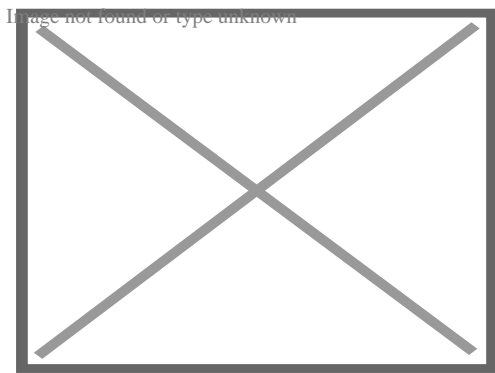
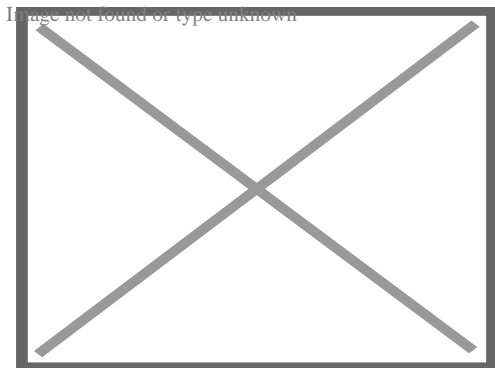


Exhibit of traditional European carpenter's tools in Italy



Carpenters in an Indian village working with hand tools

Carpentry is a skilled trade and a craft in which the primary work performed is the cutting, shaping and installation of building materials during the construction of buildings, ships, timber bridges, concrete formwork, etc. Carpenters traditionally worked with natural wood and did rougher work such as framing, but today many other materials are also used^[1] and sometimes the finer trades of cabinetmaking and furniture building are considered carpentry. In the United States, 98.5% of carpenters are male, and it was the fourth most male-dominated occupation in the country in 1999. In 2006 in the United States, there were about 1.5 million carpentry positions. Carpenters are usually the first tradesmen on a job and the last to leave.^[2] Carpenters normally framed post-and-beam buildings until the end of the 19th century; now this old-fashioned carpentry is called timber framing. Carpenters learn this trade by being employed through an apprenticeship training—normally four years—and qualify by successfully completing that country's competence test in places such as the United Kingdom, the United States, Canada, Switzerland, Australia and South Africa.^[3] It is also common that the skill can be learned by gaining work experience other than a formal training program, which may be the case in many places.

Carpentry covers various services, such as furniture design and construction, door and window installation or repair, flooring installation, trim and molding installation, custom woodworking, stair construction, structural framing, wood structure and furniture repair, and restoration.

Etymology

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The word "carpenter" is the English rendering of the Old French word *carpentier* (later, *charpentier*) which is derived from the Latin *carpentarius* [*artifex*] , "(maker) of a carriage."^[4] The Middle English and Scots word (in the sense of "builder") was *wright* (from the Old English *wryhta*, cognate with *work*), which could be used in compound forms such as *wheelwright* or *boatwright*.^[5]

In the United Kingdom

[edit]

In the UK, carpentry is used to describe the skill involved in *first fixing* of timber items such as construction of roofs, floors and timber framed buildings, i.e. those areas of construction that are normally hidden in a finished building. An easy way to envisage this is that first fix work is all that is done before plastering takes place. The second fix is done after plastering takes place. *Second fix* work, the installation of items such as skirting boards, architraves, doors, and windows are generally regarded as carpentry, however, the off-site manufacture and pre-finishing of the items is regarded as joinery.^[6]^[7] Carpentry is also used to construct the formwork into which concrete is poured during the building of structures such as roads and highway overpasses. In the UK, the skill of making timber formwork for poured or in situ concrete is referred to as *shuttering*.

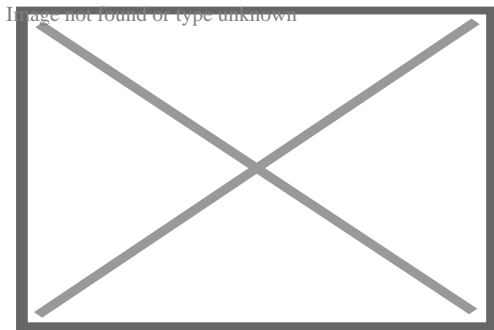
In the United States

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Carpentry in the United States is historically defined similarly to the United Kingdom as the "heavier and stronger"^[8] work distinguished from a joiner "...who does lighter and more ornamental work than that of a carpenter..." although the "...work of a carpenter and joiner are often combined."^[9] Joiner is less common than the terms *finish carpenter* or *cabinetmaker*. The terms *housewright* and *barnwright* were used historically and are now occasionally used by carpenters who work using traditional methods and materials. Someone who builds custom concrete formwork is a *form carpenter*.

History

[edit]



Log church building in Russia reached considerable heights such as this 17th century example

Along with stone, wood is among the oldest building materials. The ability to shape it into tools, shelter, and weapons improved with technological advances from the Stone Age to the Bronze Age to the Iron Age. Some of the oldest archaeological evidence of carpentry are water well casings. These include an oak and hazel structure dating from 5256 BC, found in Ostrov, Czech Republic,^[10] and one built using split oak timbers with mortise and tenon and notched corners excavated in eastern Germany, dating from

about 7,000 years ago in the early Neolithic period.^[1]

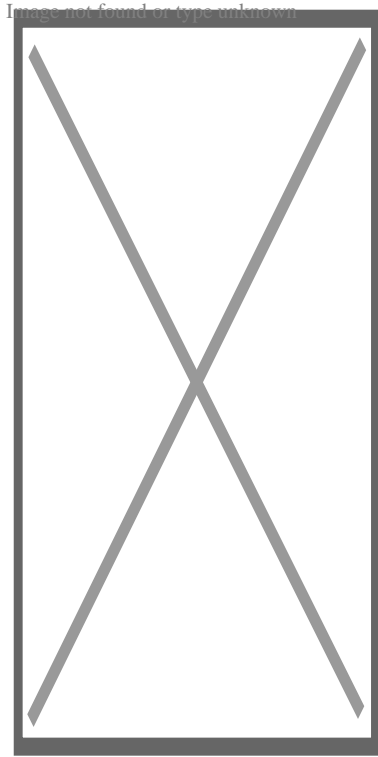
Relatively little history of carpentry was preserved before written language. Knowledge and skills were simply passed down over the generations. Even the advent of cave painting and writing recorded little. The oldest surviving complete architectural text is Vitruvius' ten books collectively titled *De architectura*, which discuss some carpentry.^[citation needed] It was only with the invention of the printing press in the 15th century that this began to change, albeit slowly, with builders finally beginning to regularly publish guides and pattern books in the 18th and 19th centuries.

Some of the oldest surviving wooden buildings in the world are temples in China such as the Nanchan Temple built in 782, Greensted Church in England, parts of which are from the 11th century, and the stave churches in Norway from the 12th and 13th centuries.

Europe

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By the 16th century, sawmills were coming into use in Europe. The founding of America was partly based on a desire to extract resources from the new continent including wood for use in ships and buildings in Europe. In the 18th century part of the Industrial Revolution was the invention of the steam engine and cut nails.^[12] These technologies combined with the invention of the circular saw led to the development of balloon framing which was the beginning of the decline of traditional timber framing.



Axonometric diagram of balloon framing

The 19th century saw the development of electrical engineering and distribution which allowed the development of hand-held power tools, wire nails, and machines to mass-produce screws. In the 20th century, portland cement came into common use and concrete foundations allowed carpenters to do away with heavy timber sills. Also, drywall (plasterboard) came into common use replacing lime plaster on wooden lath. Plywood, engineered lumber, and chemically treated lumber also came into use.^[13]

For types of carpentry used in America see American historic carpentry.

Training

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Carpentry requires training which involves both acquiring knowledge and physical practice. In formal training a carpenter begins as an apprentice, then becomes a journeyman, and with enough experience and competency can eventually attain the status of a master carpenter. Today pre-apprenticeship training may be gained through non-union vocational programs such as high school shop classes and community colleges.

Informally a laborer may simply work alongside carpenters for years learning skills by observation and peripheral assistance. While such an individual may obtain journeyman status by paying the union entry fee and obtaining a journeyman's card (which provides the right to work on a union carpentry crew) the carpenter foreman will, by necessity, dismiss any worker who presents the card but does not demonstrate the expected skill level.

Carpenters may work for an employer or be self-employed. No matter what kind of training a carpenter has had, some U.S. states require contractors to be licensed which requires passing a written test and having minimum levels of insurance.

Schools and programs

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Formal training in the carpentry trade is available in seminars, certificate programs, high-school programs, online classes, in the new construction, restoration, and preservation carpentry fields.^[14] Sometimes these programs are called pre-apprenticeship training.

In the modern British construction industry, carpenters are trained through apprenticeship schemes where general certificates of secondary education (GCSE) in Mathematics, English, and Technology help but are not essential. However, this is deemed the preferred route, as young people can earn and gain field experience whilst training towards a nationally recognized qualification.

There are two main divisions of training: construction-carpentry and cabinetmaking. During pre-apprenticeship, trainees in each of these divisions spend 30 hours a week for 12 weeks in classrooms and indoor workshops learning mathematics, trade terminology, and skill in the use of hand and power tools. Construction-carpentry trainees also participate in calisthenics to prepare for the physical aspect of the work.

Upon completion of pre-apprenticeship, trainees who have passed the graded curriculum (taught by highly experienced journeyperson carpenters) are assigned to a local union and to union carpentry crews at work on construction sites or in cabinet shops as First Year Apprentices. Over the next four years, as they progress in status to Second Year, Third Year, and Fourth Year Apprentice, apprentices periodically return to the training facility every three months for a week of more detailed training in specific aspects of the trade.

In the United States, fewer than 5% of carpenters identify as female. A number of schools in the U.S. appeal to non-traditional tradespeople by offering carpentry classes for and taught by women, including Hammerstone: Carpentry for Women in Ithaca, NY, Yestermorrow in

Waitsfield, VT and Oregon Tradeswomen in Portland, OR.

Apprenticeships and journeyperson

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Tradesmen in countries such as Germany and Australia are required to fulfill formal apprenticeships (usually three to four years) to work as professional carpenters. Upon graduation from the apprenticeship, they are known as journeyperson carpenters.

Up through the 19th and even the early 20th century, the journeyperson traveled to another region of the country to learn the building styles and techniques of that area before (usually) returning home. In modern times, journeypeople are not required to travel, and the term now refers to a level of proficiency and skill. Union carpenters in the United States, that is, members of the United Brotherhood of Carpenters and Joiners of America, are required to pass a skills test to be granted official journeyperson status, but uncertified professional carpenters may also be known as journeypersons based on their skill level, years of experience, or simply because they support themselves in the trade and not due to any certification or formal woodworking education.

Professional status as a journeyperson carpenter in the United States may be obtained in a number of ways. Formal training is acquired in a four-year apprenticeship program administered by the United Brotherhood of Carpenters and Joiners of America, in which journeyperson status is obtained after successful completion of twelve weeks of pre-apprenticeship

training, followed by four years of on-the-job field training working alongside journeyperson carpenters. The Timber Framers Guild also has a formal apprenticeship program for traditional timber framing. Training is also available in groups like the Kim Bá»ng woodworking village in Vietnam where apprentices live and work to learn woodworking and carpentry skills.

In Canada, each province sets its own standards for apprenticeship. The average length of time is four years and includes a minimum number of hours of both on-the-job training and technical instruction at a college or other institution. Depending on the number of hours of instruction an apprentice receives, they can earn a Certificate of Proficiency, making them a journeyperson, or a Certificate of Qualification, which allows them to practice a more limited amount of carpentry. Canadian carpenters also have the option of acquiring an additional Interprovincial Red Seal that allows them to practice anywhere in Canada. The Red Seal requires the completion of an apprenticeship and an additional examination.

Master carpenter

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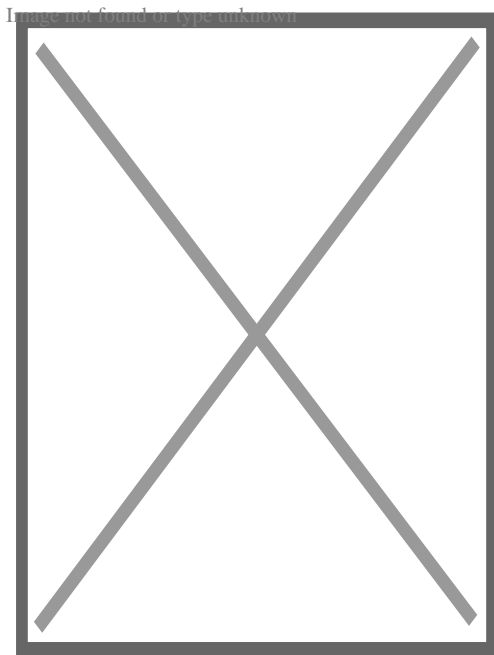
After working as a journeyperson for a while, a carpenter may go on to study or test as a master carpenter. In some countries, such as Germany, Iceland and Japan, this is an arduous and expensive process, requiring extensive knowledge (including economic and legal knowledge) and skill to achieve master certification; these countries generally require master status for anyone employing and teaching apprentices in the craft. In others, like the

United States, 'master carpenter' can be a loosely used term to describe any skilled carpenter.

Fully trained carpenters and joiners will often move into related trades such as shop fitting, scaffolding, bench joinery, maintenance and system installation.

Materials

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The Centre Pompidou-Metz museum under construction in Metz, France. The building possesses one of the most complex examples of carpentry built to date and is composed of 16 kilometers of glued laminated timber for a surface area of 8,000 m².

Carpenters traditionally worked with natural wood which has been prepared by splitting (riving), hewing, or sawing with a pit saw or sawmill called

lumber (American English) or timber (British English). Today natural and engineered lumber and many other building materials carpenters may use are typically prepared by others and delivered to the job site. In 2013 the carpenters union in America used the term carpenter for a catch-all position. Tasks performed by union carpenters include installing "...flooring, windows, doors, interior trim, cabinetry, solid surface, roofing, framing, siding, flooring, insulation, ...acoustical ceilings, computer-access flooring, metal framing, wall partitions, office furniture systems, and both custom or factory-produced materials, ...trim and molding,... ceiling treatments, ... exposed columns and beams, displays, mantels, staircases...metal studs, metal lath, and drywall..."^[15]

Health and safety

[edit]

United States

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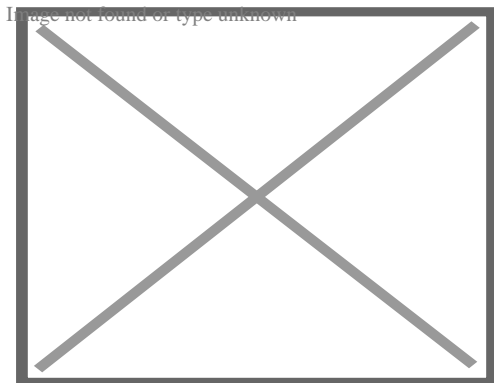
Carpentry is often hazardous work. Types of woodworking and carpentry hazards include: machine hazards, flying materials, tool projection, fire and explosion, electrocution, noise, vibration, dust, and chemicals. In the United States the Occupational Safety and Health Administration (OSHA) tries to prevent illness, injury, and fire through regulations. However, self-employed workers are not covered by the OSHA act.^[16] OSHA claims that "Since 1970, workplace fatalities have been reduced by more than 65 percent and occupational injury and illness rates have declined by 67 percent. At the

same time, U.S. employment has almost doubled."^[17] The leading cause of overall fatalities, called the "fatal four," are falls, followed by struck by object, electrocution, and caught-in/between. In general construction "employers must provide working conditions that are free of known dangers. Keep floors in work areas in a clean and, so far as possible, dry condition. Select and provide required personal protective equipment at no cost to workers. Train workers about job hazards in a language that they can understand."^[18] Examples of how to prevent falls includes placing railings and toe-boards at any floor opening which cannot be well covered and elevated platforms and safety harness and lines, safety nets, stair railings, and handrails.

Safety is not just about the workers on the job site. Carpenters' work needs to meet the requirements in the Life Safety Code such as in stair building and building codes to promote long-term quality and safety for the building occupants.

Types of carpentry

[edit]



A team of carpenters assembling a Tarrant hut during World War I

- *Conservation carpenter* works in architectural conservation, known in the U.S. as a "preservation" or "restoration"; a carpenter who works in historic preservation, maintaining structures as they were built or restoring them to that condition.
- *Cooper*, a barrel maker.
- *Formwork carpenter* creates the shuttering and falsework used in concrete construction, and reshores as necessary.
- *Framer* is a carpenter who builds the skeletal structure or wooden framework of buildings, most often in the platform framing method. A framer who specializes in building with timbers and traditional joints rather than studs is known as a *timber framer*.
- *Log builder* builds structures of stacked horizontal logs with limited joints.
- *Joiner* (a traditional name now rare in North America), is one who does cabinetry, furniture making, fine woodworking, model building, instrument making, parquetry, joinery, or other carpentry where exact joints and minimal margins of error are important. Various types of joinery include:
 - *Cabinetmaker* is a carpenter who does fine and detailed work specializing in the making of cabinets made from wood, wardrobes, dressers, storage chests, and other furniture designed for storage.
 - *Finish carpenter* (North America), also *trim carpenter*, specializes in installing millwork ie; molding and trim, (such as door and window casings, mantels, crown mouldings, baseboards), engineered wood panels, wood flooring and other types of ornamental work such as turned or Carved objects. Finish carpenters pick up where

framing ends off, including hanging doors and installing cabinets. Finish Carpenters are often referred to colloquially as "millworkers", but this title actually pertains to the creation of moldings on a mill.

- *Furniture maker* is a carpenter who makes standalone furniture such as tables, and chairs.
- *Luthier* is someone who makes or repairs stringed instruments. The word luthier comes from the French word for lute, "luth".
- *Set carpenter* builds and dismantles temporary scenery and sets in film-making, television, and the theater.
- *Shipwright* specializes in fabrication maintenance, repair techniques, and carpentry specific to vessels afloat. When assigned to a ship's crew would they would be known as a "Ship's Carpenter". Such a carpenter patrols the vessel's carpenter's walk to examine the hull for leaks.

Other

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- Japanese carpentry, *daiku* is the simple term for carpenter, a *Miya-daiku* (temple carpenter) performs the work of both architect and builder of shrines and temples, and a *sukiya-daiku* works on teahouse construction and houses. *Sashimono-shi* build furniture and *tateguya* do interior finishing work.^[19]
- *Green carpentry* specializes in the use of environmentally friendly,^[20] energy-efficient^[21] and sustainable^[22] sources of building materials for use in construction projects. They also practice building methods that require using less material and material that has the same structural soundness.^[23]

- *Recycled (reclaimed, repurposed)* carpentry is carpentry that uses scrap wood and parts of discarded or broken furniture to build new wood products.

See also

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- Japanese carpentry – Distinctive woodworking style
- Ship's carpenter – Ship crewman responsible for maintaining wooden structures
- Traditional trades – Category of building trades
- Woodworking – Process of making objects from wood
- Worshipful Company of Carpenters – Livery company of the City of London

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[¹]

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Woodworking

Overviews

- History
- Glossary
- Wood (lumber)

- Boat building
- Bow and arrow
- Bush carpentry
- Cabinetry
- Caning
- Carpentry
- Certosina
- Chainsaw carving
- Chip carving
- Ébéniste
- Fretwork
- Intarsia
- Japanese carpentry
- Khatam
- Kohlrosing
- Log building

Occupations

- Luthier
- Marquetry
- Millwork
- Pallet crafting
- Parquetry
- Pyrography
- Relief carving
- Root carving
- Segmented turning
- Shingle weaving
- Shipbuilding
- Spindle turning
- Timber framing

Soft

- Cedar (*Calocedrus, Cedrus*)
- Cypress
- Douglas fir
- Fir
- Juniper
- Larch
- Kauri
- Pine
- Rimu
- Spruce
- Yew
- Afromosia
- Alder
- Andiroba
- Anigre
- Ash
- Apple
- Aspen
- Avodire
- Balsa
- Beech
- Bilinga
- Birch
- African Blackwood
- Australian Blackwood
- Boxwood
- Bubinga
- Camphor

- Abrasives
- Axe
- Adze
- Burnisher
- Chisel
- Drawknife
- Drill
- Fence
- Float
- Gimlet
- Gauge
- Impact driver
- Janka hardness test
- Jointer
- Mallet
- Milling machine
- Mitre box
- Rasp
- Router
- Shaper
- Sandpaper
- Square (*Carpenters, Combination, Miter, Speed, Try*)
- Thickness planer
- Timber-framing
- Veneer hammer
- Vise
- Warrington hammer
- Winding sticks

Geometry

Joints

- Birdsmouth
- Biscuit
- Box
- Bridle
- Butt
- Butterfly
- Coping
- Crown of thorns
- Dado
- Dovetail
- Finger
- Groove
- Halved
- Hammer-headed tenon
- Knee
- Lap
- Mason's mitre
- Miter
- Mortise and tenon
- Rabbet/Rebate
- Scarf
- Splice
- Tongue and groove
- Bead
- Bevel
- Chamfer
- Ogee
- Ogive

Profiles

- Adhesive
- French polish
- Heat bending
- Lacquer
- Oil
- Paint
- Paint stripper

Treatments

- Steam bending
- Thermal
- Varnish
- Wax
- Wood drying
- Wood preservation
- Wood stain
- Wood finishing
- American Association of Woodturners
- Architectural Woodwork Institute
- British Woodworking Federation
- Building and Wood Workers' International

Organizations

- Caricature Carvers of America
- International Federation of Building and Wood Workers
- National Wood Carvers Association
- Society of Wood Engravers
- Timber Framers Guild

- Chainsaw mill

- Hewing

- Sawmill

Conversion

- Whipsaw

- Wood splitting

- Flat sawing

- Quarter sawing

- Rift sawing

- Frame and panel

Techniques

- Frameless construction

- Green woodworking

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Wood products

**Lumber/
timber**

- Batten
- Beam
- Bressummer
- CLS
- Cruck
- Flitch beam
- Flooring
- Joist
- Lath
- Log building
- Log cabin
- Log house
- Molding
- Panelling
- Plank
- Plate
- Post
- Purlin
- Rafter
- Railroad ties
- Reclaimed
- Shingle
- Siding
- Sill
- Stud
- Timber truss
- Treenail
- Truss
- Utility pole

**Engineered
wood**

- Cross-laminated timber
- Glued laminated timber
 - veneer
 - LVL
 - parallel strand
- I-joist
- Fiberboard
 - hardboard
 - Masonite
 - MDF
- Oriented strand board
- Oriented structural straw board
- Particle board
- Plywood
- Structural insulated panel
- Wood-plastic composite
 - lumber
- Charcoal
 - biochar

Fuelwood

- Firelog
- Firewood
- Pellet fuel
- Wood fuel

Fibers

- Cardboard
- Corrugated fiberboard
- Paper
- Paperboard
- Pulp
- Pulpwood
- Rayon
- Birch-tar
- Cellulose
 - nano
- Hemicellulose
- Cellulosic ethanol

Derivatives

- Dyes
- Lignin
- Liquid smoke
- Lye
- Methanol
- Pyroligneous acid
- Pine tar
- Pitch
- Sandalwood oil
- Tannin
- Wood gas

By-products

- Barkdust
- Black liquor
- Ramial chipped wood
- Sawdust
- Tall oil
- Wood flour
- Wood wool
- Woodchips
- Axe ties
- Bavin (wood)
- Billet (wood)
- Clapboard
- Dugout canoe

Historical

- Potash
- Sawdust brandy
- Split-rail fence
- Tanbark
- Timber framing
- Wooden masts

- Biomass
- Certified wood
- Destructive distillation
- Dry distillation
- Engineered bamboo
- Forestry
- Green building and wood
- List of woods
- Mulch

See also

- Non-timber forest products
- Natural building
- Papermaking
- Reclaimed lumber
- Timber recycling
- Wood drying
- Wood preservation
- Wood processing
- Woodworking
- *Yakisugi*

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Construction

Types

- Home construction
- Offshore construction
- Underground construction
 - Tunnel construction

History

- Architecture
- Construction
- Structural engineering
- Timeline of architecture
- Water supply and sanitation
- Architect
- Building engineer
- Building estimator
- Building officials
- Chartered Building Surveyor
- Civil engineer

Professions

- Civil estimator
- Clerk of works
- Project manager
- Quantity surveyor
- Site manager
- Structural engineer
- Superintendent

**Trades
workers
(List)**

- Banksman
- Boilermaker
- Bricklayer
- Carpenter
- Concrete finisher
- Construction foreman
- Construction worker
- Electrician
- Glazier
- Ironworker
- Millwright
- Plasterer
- Plumber
- Roofer
- Steel fixer
- Welder

- American Institute of Constructors (AIC)
- American Society of Civil Engineers (ASCE)
- Asbestos Testing and Consultancy Association (ATAC)
- Associated General Contractors of America (AGC)
- Association of Plumbing and Heating Contractors (APHC)
- Build UK
- Construction History Society
- Chartered Institution of Civil Engineering Surveyors (CICES)
- Chartered Institute of Plumbing and Heating Engineering (CIPHE)
- Civil Engineering Contractors Association (CECA)
- The Concrete Society
- Construction Management Association of America (CMAA)
- Construction Specifications Institute (CSI)
- FIDIC
- Home Builders Federation (HBF)
- Lighting Association
- National Association of Home Builders (NAHB)
- National Association of Women in Construction (NAWIC)
- National Fire Protection Association (NFPA)
- National Kitchen & Bath Association (NKBA)
- National Railroad Construction and Maintenance Association (NRC)
- National Tile Contractors Association (NTCA)
- Railway Tie Association (RTA)

Organizations

By country

- India
- Iran
- Japan
- Romania
- Turkey
- United Kingdom
- United States

Regulation

- Building code
- Construction law
- Site safety
- Zoning
- Style
 - List

Architecture

- Industrial architecture
 - British
- Indigenous architecture
- Interior architecture
- Landscape architecture
- Vernacular architecture

Engineering

- Architectural engineering
 - Building services engineering
 - Civil engineering
 - Coastal engineering
 - Construction engineering
 - Structural engineering
 - Earthquake engineering
 - Environmental engineering
 - Geotechnical engineering
 - List
 - Earthbag construction
- ## **Methods**
- Modern methods of construction
 - Monocrete construction
 - Slip forming

- Building material
 - List of building materials
 - Millwork
- Construction bidding
- Construction delay
- Construction equipment theft
- Construction loan
- Construction management
- Construction waste
- Demolition
- Design–build
- Design–bid–build
- DfMA
- Heavy equipment
- Interior design
- Lists of buildings and structures
- Megaproject
- Megastructure
- Plasterwork
 - Damp
 - Proofing
 - Parge coat
 - Roughcast
 - Harling
- Real estate development
- Stonemasonry
- Sustainability in construction
- Unfinished building
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