

Joinery Structures building custom and prefab buildings and furniture with reclaimed wood using traditional Japanese building techniques.

Etymology[edit] 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. An easy way to envisage this is that first fix work is all that is done before plastering takes place. Second fix is done after plastering takes place. Second fix work, the construction of items such as skirting boards, architraves, and doors also comes under carpentry. 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. Use of terms in the United States[edit] Carpentry in the United States is historically defined similarly to the United Kingdom as the "heavier and stronger" [7] work distinguished from a joiner " The terms housewright and barnwright were used historically, now occasionally used by carpenters who work using traditional methods and materials. Someone who builds custom concrete formwork is a form carpenter. The ability to shape wood 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 built using split oak timbers with mortise and tenon and notched corners excavated in eastern Germany dating from about 7, years ago in the early neolithic period. Some of the oldest surviving wooden buildings in the world are temples in China such as the Nanchan Temple built in , the Greensted Church , parts of which are from the 11th century, and the stave churches in Norway from the 12th and 13th centuries. By the 16th century sawmills were coming into use in Europe. In the 18th century part of the Industrial Revolution was the invention of the steam engine and cut nails. 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. 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. Carpenters may work for an employer or be self-employed. No matter what kind of training a carpenter has had, some U. Carpentry schools and programs[edit] 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. 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: 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 successfully passed the graded curriculum taught by highly experienced journeyman 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. Apprenticeships and Journeymen carpenters[edit] Tradesmen in countries

such as Germany and Australia are required to fulfill a formal apprenticeship usually three to four years to work as a professional carpenter. Upon graduation from the apprenticeship, he or she is known as a journeyman carpenter. Up through the 19th and even the early 20th century, the journeyman traveled to another region of the country to learn the building styles and techniques of that area before usually returning home. In modern times, journeymen 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 journeyman status, but uncertified professional carpenters may also be known as journeymen 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 journeyman 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 journeyman 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 journeyman carpenters. The Timber Framers Guild also has a formal apprenticeship program for traditional timber framing. 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, he or she can earn a Certificate of Proficiency, making him or her a journeyman, or a Certificate of Qualification, which allows him or her 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[edit] After working as a journeyman for a while, a carpenter may go on to study or test as a master carpenter. In some countries, such as Germany 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. Fully trained carpenters and joiners will often move into related trades such as shop fitting, scaffolding, bench joinery, maintenance and system installation. Materials used[edit] 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 the carpenters union in America used the term carpenter for a catch-all position. Tasks performed by union carpenters include installing " Types of woodworking and carpentry hazards include Machine hazards, flying materials, tool projection, fire and explosion, electrocution, noise, vibration, dust and chemicals. However, self-employed workers are not covered by the OSHA act. At the same time, U. 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, a 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. 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 and occupations[edit] A finish carpenter North America, also called a joiner a traditional name now rare in North America, is one who does finish carpentry, that is, cabinetry, furniture making, fine woodworking, model building, instrument making, parquetry, joinery, or other carpentry where exact joints and minimal margins of error are important. Some large-scale construction may be of an exactitude and artistry that it is classed as finish carpentry. A carpenter and joiner is one who has a much broader skill ranging from joinery, finishing carpentry, building construction and form work. A trim carpenter specializes in molding and trim, such as door and window casings, mantels, baseboards, and other types of ornamental work. Cabinet installers may also be referred to as trim carpenters. A 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. A shipwright builds wooden ships on land.

A cooper is someone who makes barrels: A scenic carpenter builds and dismantles temporary scenery and sets in film-making, television, and the theater. A framer is a carpenter who builds the skeletal structure or wooden framework of buildings, most often in the platform framing method. Historically, balloon framing was used until the s when fire safety concerns made platform framing inherently better. A carpenter who specializes in building with timbers rather than studs is known as a timber framer and does traditional timber framing with wooden joints, including mortise-and-tenon joinery, post and beam work with metal connectors, or pole building framing. A luthier is someone who makes or repairs stringed instruments. The word luthier comes from the French word for lute, "luth". A log builder builds structures of stacked, horizontal logs including houses , barns , churches , fortifications , and more. A formwork carpenter creates the shuttering and falsework used in concrete construction. In 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. A conservation carpenter works in architectural conservation , known in the U. Green carpentry is the specialization in the use of environmentally friendly, [19] energy-efficient [20] and sustainable [21] 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.

Chapter 2 : Woodworking joints - Wikipedia

All manner of joinery works, including repairing, replacing and building structures.. Complete shop fitout (all aspects).

Wood panels stitched together, usually with copper wire, and glued together with epoxy resin. Traditional ways of improving joints[edit] A doweled joint Dowel: A small rod is used internal to a joint both to help align and to strengthen the joint. Traditional joints are used with natural timbers as they do not need any other materials other than the timber itself. Dowel joints are also useful for pegging together weaker, cheaper composite materials such as laminate-faced chipboard, and where limited woodworking tools are available since only simple drilled holes are needed to take the dowels. Nontraditional ways of improving joints[edit] Biscuit joints: A trademarked tool similar to a biscuit joiner, where a piece larger than a biscuit has some of the advantages of dowels, and some of the advantages of biscuits. Properties of wood[edit] Many wood joinery techniques either depend upon or compensate for the fact that wood is anisotropic: This must be taken into account when joining wood parts together, otherwise the joint is destined to fail. Gluing boards with the grain running perpendicular to each other is often the reason for split boards, or broken joints. Furniture from the 18th century, while made by master craftsmen, did not take this into account. The result is this masterful work suffers from broken bracket feet, which was often attached with a glue block which ran perpendicular to the base pieces. The glue blocks were fastened with both glue and nails, resulting in unequal expansion and contraction between the pieces. This was also the cause of splitting of wide boards, which were commonly used during that period. In modern woodworking it is even more critical, as heating and air conditioning cause major changes in the moisture content of the wood. All woodworking joints must take these changes into account, and allow for the resulting movement. Wood is a natural composite material; parallel strands of cellulose fibers are held together by a lignin binder. These long chains of fibers make the wood exceptionally strong by resisting stress and spreading the load over the length of the board. Furthermore, cellulose is tougher than lignin, a fact demonstrated by the relative ease with which wood can be split along the grain compared to across it. Different species of wood have different strength levels, and the exact strength may vary from sample to sample. Dimensional stability[edit] Timber expands and contracts in response to humidity , usually much less so longitudinally than in the radial and tangential directions. As tracheophytes , trees have lignified tissues which transport resources such as water, minerals and photosynthetic products up and down the plant. While lumber from a harvested tree is no longer alive, these tissues still absorb and expel water causing swelling and shrinkage of the wood in kind with change in humidity. Materials used for joining[edit] Metal plates are often incorporated into the design where the timber alone would not be strong enough for a given load. Pin-connected post and beam house framing Joints can be designed to hold without the use of glue or fasteners; a pinned mortise and tenon is an example of this. Glue is highly effective for joining timber when both surfaces of the joint are edge grain. A properly glued joint may be as strong or stronger than a single piece of wood. However, glue is notably less effective on end-grain surfaces. Animal glue is soluble in water, producing joints that can be disassembled using steam to soften the glue. Various mechanical fasteners may be used, the simplest being nails and screws. Glue and fasteners can be used together. Traditional joinery[edit] Many traditional wood joinery techniques use the distinctive material properties of wood , often without resorting to mechanical fasteners or adhesives. While every culture in which pieces of wood are joined together to make furniture or structures has a joinery tradition, wood joinery techniques have been especially well documented and is celebrated in the Indian, Chinese , European, and Japanese traditions. Because of the physical existence of Indian and Egyptian examples, we know that furniture from the first several dynasties show the use of complex joints, like the Dovetail, over 5, years ago. This tradition continued to other later Western styles. The 18th century writer Diderot included over 90 detailed illustrations of wood joints in his comprehensive encyclopedia. The Japanese and Chinese traditions in particular required the use of hundreds of types of joints. The reason was that nails and glues used did not stand up well to the vastly fluctuating temperatures and humid weather conditions in most of Central and South-East Asia. Nontraditional joinery[edit] Methods that are not considered traditional joinery have come about in modern times, largely to attempt

to simplify the job of the woodworker for various reasons. These include biscuit joints and pocket hole joinery.

Chapter 3 : Sample Shop Drawings for Timber Construction

DE FRAMES located in Ernakulam, Kerala, specializes in interior fit out and renovation work along with select stand-alone structures with manufacturing of high quality bespoke furniture, joinery and shop fittings for national and international renowned retail stores, corporate offices, banks, hospitality, prime residential, commercial sectors, technology, education and healthcare sectors.

Chapter 4 : Joinery â€“ KTS BUILDING GROUP

How well you sharpen a Japanese planer blade with your whetstone depends on how you hold your mouth. So goes the legend-and Paul Discoe, who has delicately hand-sharpened many a blade in his Japanese timber-framing shop, has found it to be true.

Chapter 5 : Joinery | Page 3 | WOOD Magazine

Traditional joinery is the classic way to connect timbers in post & beam and timber frame structures. It is an elegant and beautiful style of construction. Beams are cut to have mortises and tenons, which are secured with hardwood pegs.

Chapter 6 : best Steel & Wood Joinery images on Pinterest | Carpentry, Woodworking and Rooftops

Parts are built in the shop, then shipped and assembled on site. His latest design is an economical modular house that comes in a kit and can be arranged in any shape based on an 8-foot grid, making his high-end craftsmanship now affordable for folks like you and me.

Chapter 7 : Traditional Post & Beam Joinery | Handcrafted Timber Connections

Bench 5' feet long, 14" wide, " height Custom made by Paul Discoe of Joinery Structures Made with Deodar Cedar \$ Excellent condition Made in Paul's work is featured internationally, in the architecture of SF Moma, at Apple HQ, Academy of Sciences, the Brower Center, an.

Chapter 8 : DA Construction - Joinery

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Chapter 9 : Joinery Structures |

Build With A Custom Shop. Vermont Timber Works custom designs and fabricates beautiful timber frames. We are not automated, so we have the flexibility to create structures to our clients exacting details.