
Certificate in Civil Structural Engineering (Portugal)

Timber And Masonry Structures

AASHTO stands for American Association of State Highway and Transportation Officials, which is an organization that sets standards for the design and construction of transportation infrastructure, including highway bridges and masonry structures. Related terms include ASTM, ACI, and ASCE. AASHTO standards are widely used in the United States and other countries, and they provide guidelines for the design and construction of timber and masonry structures, including bridges, buildings, and other infrastructure projects.

Abutment refers to the end of a bridge or a structure that is supported by a foundation or a pier. Related terms include pier, foundation, and superstructure. Abutments are designed to transfer the loads from the superstructure to the substructure, and they must be able to resist lateral and vertical forces.

ACI stands for American Concrete Institute, which is an organization that sets standards for the design and construction of concrete structures, including masonry and timber structures. Related terms include AASHTO, ASTM, and ASCE. ACI standards provide guidelines for the design and construction of concrete structures, including foundations, walls, and slabs.

Allowable stress refers to the maximum stress that a material can withstand without failure. Related terms include ultimate stress, yield stress, and factor of safety. The allowable stress is typically determined by dividing the ultimate stress by a factor of safety, which takes into account the variability of the material properties and the load conditions.

Anchor refers to a device that is used to attach a structure to a foundation or a support. Related terms include fastener, tie, and reinforcement. Anchors are commonly used in masonry and timber structures to provide lateral support and to resist uplift forces.

Arch refers to a curved structure that is designed to span an opening and to support loads. Related terms include vault, dome, and barrel vault. Arches are commonly used in masonry structures, such as bridges and buildings, to provide lateral support and to resist vertical forces.

ASCE stands for American Society of Civil Engineers, which is an organization that sets standards for the design and construction of civil engineering projects, including timber and masonry structures. Related terms include AASHTO, ACI, and ASTM. ASCE standards provide guidelines for the design and construction of civil engineering projects, including bridges, buildings, and other infrastructure projects.

ASTM stands for American Society for Testing and Materials, which is an organization that sets standards for the testing and evaluation of materials, including timber and masonry materials. Related terms include AASHTO, ACI, and ASCE. ASTM standards provide guidelines for the testing and evaluation of materials, including timber, masonry, and other construction materials.

Axial load refers to a load that is applied parallel to the axis of a member. Related terms include bending

load, torsional load, and shear load. Axial loads are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Beam refers to a horizontal member that is designed to span an opening and to support loads. Related terms include girder, joist, and rafter. Beams are commonly used in masonry and timber structures to provide lateral support and to resist vertical forces.

Bearing capacity refers to the maximum load that a foundation or a support can withstand without failure. Related terms include ultimate capacity, allowable capacity, and factor of safety. The bearing capacity is typically determined by dividing the ultimate capacity by a factor of safety, which takes into account the variability of the material properties and the load conditions.

Bending moment refers to a load that causes a member to bend or to deflect. Related terms include shear force, torsional moment, and axial load. Bending moments are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Bond strength refers to the strength of the bond between a material and a reinforcement or a fastener. Related terms include adhesion, cohesion, and friction. The bond strength is typically determined by testing the material and the reinforcement or fastener together.

Brick masonry refers to a type of masonry construction that uses bricks as the primary building material. Related terms include block masonry, stone masonry, and concrete masonry. Brick masonry is commonly used in buildings and other structures to provide lateral support and to resist vertical forces.

Butt joint refers to a type of joint that is used to connect two members together. Related terms include lap joint, dado joint, and dovetail joint. Butt joints are commonly used in timber and masonry structures to support vertical loads, such as dead loads and live loads.

Cast in place refers to a type of construction that involves pouring concrete into a mold or a form to create a structure. Related terms include precast, prefabricated, and modular. Cast in place construction is commonly used in buildings and other structures to provide lateral support and to resist vertical forces.

Column refers to a vertical member that is designed to support loads and to resist forces. Related terms include pillar, post, and piers. Columns are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Compression strength refers to the strength of a material in compression. Related terms include tensile strength, shear strength, and bending strength. The compression strength is typically determined by testing the material in compression.

Concrete masonry refers to a type of masonry construction that uses concrete blocks or units as the primary building material. Related terms include brick masonry, stone masonry, and block masonry. Concrete masonry is commonly used in buildings and other structures to provide lateral support and to resist vertical forces.

Connection refers to a joint or a link between two or more members or structures. Related terms include

fastener, reinforcement, and anchor. Connections are commonly used in timber and masonry structures to support vertical loads, such as dead loads and live loads.

Crack refers to a fracture or a split in a material or a structure. Related terms include defect, flaw, and failure. Cracks can occur in masonry and timber structures due to settling, shrinkage, or other forces.

Deflection refers to the bending or the deformation of a member or a structure under load. Related terms include displacement, distortion, and strain. Deflection is commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Diagonal bracing refers to a type of bracing that is used to stabilize a structure or a member. Related terms include cross bracing, x bracing, and k bracing. Diagonal bracing is commonly used in timber and masonry structures to provide lateral support and to resist vertical forces.

Dowel refers to a pin or a rod that is used to connect two or more members together. Related terms include bolt, screw, and nail. Dowels are commonly used in timber and masonry structures to support vertical loads, such as dead loads and live loads.

Drainage refers to the removal of water or moisture from a structure or a site. Related terms include gutter, downspout, and drain. Drainage is commonly used in masonry and timber structures to prevent water damage and to protect the structure from decay or rot.

Durability refers to the ability of a material or a structure to resist decay or deterioration over time. Related terms include life expectancy, maintenance, and repair. Durability is commonly used in masonry and timber structures to extend the life of the structure and to reduce the need for maintenance or repair.

Expansion joint refers to a type of joint that is used to accommodate the expansion or the contraction of a material or a structure. Related terms include contraction joint, control joint, and isolation joint. Expansion joints are commonly used in masonry and timber structures to absorb the movements of the structure and to prevent cracking or damage.

Fastener refers to a device that is used to hold or to secure two or more members together. Related terms include bolt, screw, and nail. Fasteners are commonly used in timber and masonry structures to support vertical loads, such as dead loads and live loads.

Footing refers to a foundation or a base that is used to support a structure or a member. Related terms include pad, mat, and slab. Footings are commonly used in masonry and timber structures to transfer the loads from the structure to the ground or to a foundation.

Foundation refers to a base or a support that is used to transfer the loads from a structure to the ground or to a substructure. Related terms include footing, pad, and pile. Foundations are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Frame refers to a structure that is composed of members that are connected together to form a rigid unit. Related terms include truss, beam, and column. Frames are commonly used in timber and masonry structures to support vertical loads, such as dead loads and live loads.

Girder refers to a beam or a member that is used to support loads and to span an opening. Related terms include beam, joist, and rafter. Girders are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Grout refers to a material that is used to fill the spaces or the gaps between members or units. Related terms include mortar, cement, and concrete. Grout is commonly used in masonry structures to fill the spaces between the units and to transfer the loads from the structure to the foundation or to the ground.

Header refers to a beam or a member that is used to support loads and to span an opening. Related terms include beam, joist, and rafter. Headers are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Insulation refers to a material or a system that is used to reduce the transfer of heat or sound through a structure or a member. Related terms include thermal insulation, acoustic insulation, and fire resistance. Insulation is commonly used in masonry and timber structures to reduce the energy consumption and to improve the comfort of the occupants.

Joist refers to a beam or a member that is used to support loads and to span an opening. Related terms include beam, rafter, and girder. Joists are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Lintel refers to a beam or a member that is used to support loads and to span an opening. Related terms include beam, joist, and header. Lintels are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Load refers to a force or a weight that is applied to a structure or a member. Related terms include dead load, live load, and wind load. Loads are commonly used in masonry and timber structures to determine the design requirements and to ensure the safety of the structure.

Masonry refers to a type of construction that uses units or blocks to build a structure or a wall. Related terms include brick masonry, stone masonry, and concrete masonry. Masonry is commonly used in buildings and other structures to provide lateral support and to resist vertical forces.

Mortar refers to a material that is used to hold or to bind units or blocks together. Related terms include cement, grout, and concrete. Mortar is commonly used in masonry structures to fill the spaces between the units and to transfer the loads from the structure to the foundation or to the ground.

Pier refers to a column or a member that is used to support a structure or a member. Related terms include column, post, and abutment. Piers are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Rebar refers to a reinforcing bar that is used to strengthen a structure or a member. Related terms include reinforcement, steel, and fiber. Rebar is commonly used in concrete structures to resist tensile forces and to improve the ductility of the structure.

Reinforcement refers to a material or a system that is used to strengthen a structure or a member. Related

terms include rebar, steel, and fiber. Reinforcement is commonly used in concrete structures to resist tensile forces and to improve the ductility of the structure.

Rigid frame refers to a type of frame that is designed to resist forces and to maintain its shape. Related terms include flexible frame, semi rigid frame, and braced frame. Rigid frames are commonly used in timber and masonry structures to support vertical loads, such as dead loads and live loads.

Roof refers to a covering or a structure that is used to protect a building or a structure from the elements. Related terms include ceiling, floor, and wall. Roofs are commonly used in buildings and other structures to provide shelter and to protect the occupants from the weather.

Sealant refers to a material that is used to seal or to caulk a joint or a gap. Related terms include caulk, adhesive, and coating. Sealants are commonly used in masonry and timber structures to prevent water infiltration and to reduce the transfer of heat or sound.

Shear strength refers to the strength of a material or a structure in shear. Related terms include tensile strength, compressive strength, and bending strength. The shear strength is typically determined by testing the material or the structure in shear.

Shoring refers to a system or a method that is used to support a structure or a member during construction or repair. Related terms include scaffolding, bracing, and propping. Shoring is commonly used in masonry and timber structures to support the structure or the member during construction or repair.

Slab refers to a flat or a horizontal member that is used to support loads and to span an opening. Related terms include beam, joist, and girder. Slabs are commonly used in masonry and timber structures to support vertical loads, such as dead loads and live loads.

Soffit refers to a covering or a panel that is used to enclose the space between a roof and a ceiling. Related terms include fascia, trim, and gutter. Soffits are commonly used in buildings and other structures to provide ventilation and to protect the structure from the elements.

Span refers to the distance or the length between two supports or members. Related terms include beam, joist, and girder. Spans are commonly used in masonry and timber structures to determine the design requirements and to ensure the safety of the structure.

Stair refers to a series of steps that are used to connect two or more levels or floors. Related terms include landing, stringer, and newel. Stairs are commonly used in buildings and other structures to provide access between levels or floors.

Stone masonry refers to a type of masonry construction that uses stone as the primary building material. Related terms include brick masonry, concrete masonry, and block masonry. Stone masonry is commonly used in buildings and other structures to provide lateral support and to resist vertical forces.

Structural analysis refers to the process of evaluating the behavior of a structure or a member under load. Related terms include design, testing, and inspection. Structural analysis is commonly used in masonry and timber structures to determine the design requirements and to ensure the safety of the structure.

Tensile strength refers to the strength of a material or a structure in tension. Related terms include compressive strength, shear strength, and bending strength. The tensile strength is typically determined by testing the material or the structure in tension.

Timber refers to a type of construction that uses wood as the primary building material. Related terms include masonry, steel, and concrete. Timber is commonly used in buildings and other structures to provide lateral support and to resist vertical forces.

Wall refers to a vertical member that is used to enclose or to divide a space. Related terms include panel, partition, and screen. Walls are commonly used in buildings and other structures to provide privacy, to control the climate, and to protect the occupants from the elements.

Waterproofing refers to a system or a method that is used to prevent water from penetrating a structure or a member. Related terms include sealant, coating, and membrane. Waterproofing is commonly used in masonry and timber structures to prevent water damage and to protect the structure from decay or rot.

Weathering refers to the process of exposure to the elements, such as wind, rain, and sun. Related terms include erosion, degradation, and deterioration. Weathering is commonly used in masonry and timber structures to evaluate the durability of the structure and to predict its life expectancy.

Welding refers to a process of joining two or more members