

## SECTION E — FIXED CONSTRUCTIONS

### E04 BUILDING

#### E04B GENERAL BUILDING CONSTRUCTIONS; WALLS, e.g. PARTITIONS; ROOFS; FLOORS; CEILINGS; INSULATION OR OTHER PROTECTION OF BUILDINGS (border constructions of openings in walls, floors, or ceilings E06B 1/00)

##### Note(s)

1. This subclass covers working methods used in constructing new buildings and analogous working methods on existing buildings. Other working methods on existing buildings, except those for insulating, are classified in group E04G 23/00.
2. In this subclass, the following term is used with the meaning indicated:
  - "ceiling" includes all the finishing material concealing the underside of the load-carrying ceiling structure or roof structure.

**1/00** **Constructions in general; Structures which are not restricted either to walls, e.g. partitions, or floors or ceilings or roofs** (scaffolds, shutterings E04G; structures specially adapted for buildings for special purposes, general layout of buildings, e.g. modular co-ordination, E04H; the particular parts of buildings, see the relevant groups for those parts)

1/02 • Structures consisting primarily of load-supporting, block-shaped or slab-shaped elements (E04B 1/32-E04B 1/36 take precedence)

1/04 • • the elements consisting of concrete, e.g. reinforced concrete, or other stone-like material

1/06 • • • the elements being prestressed

1/08 • • the elements consisting of metal

1/10 • • the elements consisting of wood

1/12 • • the elements consisting of other material

1/14 • • the elements being composed of two or more materials (of reinforced concrete E04B 1/04)

1/16 • Structures made from masses, e.g. concrete, cast or similarly formed in situ with or without making use of additional elements, such as permanent forms, sub-structures to be coated with load-bearing material (E04B 1/32-E04B 1/36 take precedence)

1/18 • Structures comprising elongated load-supporting parts, e.g. columns, girders, skeletons (E04B 1/32-E04B 1/36 take precedence; elongated load-supporting parts as elements, trusses, truss-like structures E04C 3/00)

1/19 • • Three-dimensional framework structures [2]

##### Note(s)

Group E04B 1/19 takes precedence over groups E04B 1/20-E04B 1/30.

1/20 • • the supporting parts consisting of concrete, e.g. reinforced concrete, or other stone-like material

1/21 • • • Connections specially adapted therefor [2]

1/22 • • • with parts being prestressed

1/24 • • the supporting parts consisting of metal

1/26 • • the supporting parts consisting of wood

1/28 • • the supporting parts consisting of other material

1/30 • • the supporting parts being composed of two or more materials; Composite steel and concrete constructions (of reinforced concrete E04B 1/20)

1/32 • Arched structures; Vaulted structures; Folded structures (vaulted roofs E04B 7/08)

1/34 • Extraordinary structures, e.g. with suspended or cantilever parts supported by masts or tower-like structures enclosing elevators or stairs; Features relating to the elastic stability (E04B 1/342, E04B 1/343, E04B 1/348 take precedence; for floors E04B 5/43; buildings for special purposes, e.g. withstanding earthquake, E04H)

1/342 • Structures covering a large free area, whether open-sided or not, e.g. hangars, halls (roof trusses E04C 3/00; non-structural features for specified purposes, see the relevant groups of E04H)

1/343 • Structures characterised by movable, separable, or collapsible parts, e.g. for transport (movable roof parts E04B 7/16; floatable buildings B63B; small prefabricated buildings, transportable as a whole, E04H 1/12; small garages E04H 6/02; tents or canopies, in general E04H 15/00)

1/344 • • with hinged parts

1/346 • • Rotary buildings; Buildings with rotary units, e.g. rooms

1/348 • Structures composed of units comprising at least considerable parts of two sides of a room, e.g. box-like or cell-like units closed or in skeleton form (wall units locating conduits or the like E04C 2/52)

1/35 • Extraordinary methods of construction, e.g. lift-slab, jack-block (E04B 1/34 takes precedence; falsework, shuttering for shaping walls, floors, ceilings or roofs for structures of particular shape in situ E04G 11/04; conveying or assembling of building materials E04G 21/00; working measures on existing buildings E04G 23/00)

1/36 • Bearings or like supports allowing movement (for bridges E01D 19/04; buildings withstanding earthquake E04H 9/02)

1/38 • Connections for building structures in general

##### Note(s)

Connections specially adapted for particular building parts or for particular building structures are classified in the groups for those parts or structures, e.g. in groups E04B 1/21, E04B 2/00, E04B 5/00, E04B 7/00 or E04B 9/00. Joints not specially adapted for building construction, or of more general application, are classified in the appropriate subclasses, e.g. F16B.

## E04B

- 1/41 • • Connecting devices specially adapted for embedding in concrete or masonry (spacers for cavity walls E04B 2/30, E04B 2/44; connectors for reinforcing elements E04C 5/16; fastening frames to the border of openings E06B 1/56)
- 1/48 • • Dowels, i.e. members adapted to penetrate the surfaces of two parts and to take the shear stresses
- 1/49 • • • with self-penetrating parts, e.g. claw dowels
- 1/58 • • of bar-shaped building elements
- 1/61 • • of slab-shaped building elements with each other [5]
- 1/62 • Insulation or other protection; Elements or use of specified material therefor (chemical compositions C01-C11; implements for applying insulation or sealings E04F 21/00; buildings to withstand, or to provide protection against, external undesired influences E04H 9/00; sealing pipes in walls or partitions F16L 5/02; shielding against dangerous radiation G21F; constructions of particular parts of buildings, see the relevant groups for those parts)
- 1/64 • • for making damp-proof; Protection against corrosion (sealings E04B 1/66)
- 1/66 • • Sealings (additions of anti-leak properties to plaster C04B; bituminous sealing masses C08L 95/00; sealings for hydraulic engineering work in general E02B 3/16; against ground humidity or ground water E02D 31/02; coverings against rain or other precipitations of the atmosphere E04D; composition of material or manufacture of sealing foils, see the relevant classes for these foils)
- 1/68 • • • of joints, e.g. expansion joints (packing for joints in roads or airfields E01C 11/02; expansion joints for bridges E01D 19/06; sealing joints between foundation piles E02D 5/14; joints in foundation structures E02D 29/16; devices for sealing the spaces or joints between roof-covering elements E04D 1/36; sealing joints between roof-covering elements E04D 3/38; construction of joints for flooring or floor layers made of masses in situ E04F 15/14)
- 1/682 • • • • formed in situ [5]
- 1/684 • • • • using preformed elastomeric elements [5]
- 1/686 • • • • comprising a plurality of hollow, deformable internal cells [5]
- 1/70 • • Drying or keeping dry, e.g. by air vents (by sealings E04B 1/66; during erection E04G 21/28)
- 1/72 • • Pest control (by keeping dry E04B 1/70; impregnation of wood or like materials B27K)
- 1/74 • • Heat, sound or noise insulation, absorption, or reflection (forms of, or arrangements in, rooms for influencing or directing sound E04B 1/99); Other building methods affording favourable thermal or acoustical conditions, e.g. accumulating of heat within walls (fire protection E04B 1/94; elements chiefly adapted for structural purposes E04C 1/00-E04C 3/00; chiefly adapted for surface coverings E04F 13/00; as underlayers for floor coverings E04F 15/18; closures for wall or like openings E06B)
- 1/76 • • • specifically with respect to heat only (heat insulation in general F16L 59/00)
- 1/78 • • • • Heat insulating elements
- 1/80 • • • • slab-shaped
- 1/82 • • • specifically with respect to sound only (noise damping in ducts or channels E04F 17/00; noise damping in general G10K 11/16)
- 1/84 • • • • Sound-absorbing elements
- 1/86 • • • • slab-shaped
- 1/88 • • • Insulating elements for both heat and sound
- 1/90 • • • • slab-shaped
- 1/92 • • Protection against other undesired influences or dangers (buildings providing protection against external dangers E04H 9/00; shielding against dangerous radiation G21F)
- 1/94 • • • against fire (fire-fighting A62C; impregnation of wood or similar materials B27K; fireproof doors E06B 5/16)
- 1/98 • • • against vibrations or shocks (on foundations E02D 31/08); against mechanical destruction, e.g. by air-raids (against incendiary damage only E04B 1/94; finishing work therefor E04F; buildings withstanding earthquake or the like, shelters, arrangements of splinter-catching walls E04H 9/00)
- 1/99 • Room acoustics, i.e. forms of, or arrangements in, rooms for influencing or directing sound (E04B 1/82 takes precedence; acoustics in general G10K 11/00; electric signal processing for producing a reverberation or echo sound G10K 15/08)
- 2/00 **Walls, e.g. partitions, for buildings; Wall construction with regard to insulation; Connections specially adapted to walls** (connections for building structures in general E04B 1/38; insulation for building in general E04B 1/62; building elements of relatively thin form for parts of buildings E04C 2/00)
- 2/02 • built-up from layers of building elements
- 2/04 • • Walls having neither cavities between, nor in, the solid elements
- 2/06 • • • using elements having specially-designed means for stabilising the position
- 2/08 • • • • by interlocking of projections or inserts with indentations, e.g. of tongues, grooves, dovetails
- 2/10 • • • • by filling material with or without reinforcements in small channels in, or in grooves between, the elements
- 2/12 • • • using elements having a general shape differing from that of a parallelepiped
- 2/14 • • Walls having cavities in, but not between, the elements, i.e. each cavity being enclosed by at least four sides forming part of one single element
- 2/16 • • • using elements having specially designed means for stabilising the position
- 2/18 • • • • by interlocking of projections or inserts with indentations, e.g. of tongues, grooves, dovetails
- 2/20 • • • • by filling material with or without reinforcements in small channels in, or in grooves between, the elements
- 2/22 • • • using elements having a general shape differing from that of a parallelepiped
- 2/24 • • • the walls being characterised by fillings in some of the cavities forming load-bearing pillars or beams
- 2/26 • • • the walls being characterised by fillings in all cavities in order to form a wall construction
- 2/28 • • Walls having cavities between, but not in, the elements; Walls of elements each consisting of two or more parts kept in distance by means of spacers, all parts being solid
- 2/30 • • • using elements having specially designed means for stabilising the position; Spacers for cavity walls

- 2/32 • • • • by interlocking of projections or inserts with indentations, e.g. of tongues, grooves, dovetails
- 2/34 • • • • by filling material with or without reinforcements in small channels in, or in grooves between, the elements
- 2/36 • • • using elements having a general shape differing from that of a parallelepiped
- 2/38 • • • the walls being characterised by fillings in some of the cavities forming load-bearing pillars or beams
- 2/40 • • • the walls being characterised by fillings in all cavities in order to form a wall construction
- 2/42 • • Walls having cavities between, as well as in, the elements; Walls of elements each consisting of two or more parts, kept in distance by means of spacers, at least one of the parts having cavities
- 2/44 • • • using elements having specially designed means for stabilising the position; Spacers for cavity walls
- 2/46 • • • • by interlocking of projections or inserts with indentations, e.g. of tongues, grooves, dovetails
- 2/48 • • • • by filling material with or without reinforcements in small channels in, or in grooves between, the elements
- 2/50 • • • using elements having a general shape differing from that of a parallelepiped
- 2/52 • • • the walls being characterised by fillings in some of the cavities forming load-bearing pillars or beams
- 2/54 • • • the walls being characterised by fillings in all cavities in order to form a wall construction
- 2/56 • Walls of framework or pillarwork; Walls incorporating load-bearing elongated members (E04B 2/74, E04B 2/88 take precedence; pillars E04C 3/30)
- 2/58 • • with elongated members of metal
- 2/60 • • • characterised by special cross-section of the elongated members
- 2/62 • • • the members being formed of two or more elements in side-by-side relationship
- 2/64 • • with elongated members of concrete
- 2/66 • • • characterised by special cross-section of the elongated members
- 2/68 • • • made by filling-up wall cavities (E04B 2/24, E04B 2/38, E04B 2/52 take precedence)
- 2/70 • • with elongated members of wood
- 2/72 • Walls of elements of relatively thin form (E04B 2/56, E04B 2/74, E04B 2/88 take precedence; with joint fillings acting as framework or pillars E04B 2/68; elements E04C 2/00)
- 2/74 • Removable non-load-bearing partitions; Partitions with a free upper edge (framed panels E04C 2/38)
- 2/76 • • with framework or posts of metal
- 2/78 • • • characterised by special cross-section of the frame members
- 2/80 • • with framework or posts of wood
- 2/82 • • characterised by the manner in which edges are connected to the building; Means therefor; Special details of easily-removable partitions
- 2/84 • Walls made by casting, pouring, or tamping in situ (E04B 2/02, E04B 2/56 take precedence; forms therefor E04G 11/06; working of concrete or similar masses able to be cast or poured in situ E04G 21/02)
- 2/86 • • made in permanent forms
- 2/88 • Curtain walls
- 2/90 • • comprising panels directly attached to the structure [4]
- 2/92 • • • Sandwich-type panels [4]
- 2/94 • • • Concrete panels (E04B 2/92 takes precedence) [4]
- 2/96 • • comprising panels attached to the structure through mullions or transoms [4]
- 5/00 **Floors; Floor construction with regard to insulation; Connections specially adapted therefor** (elements for floors, e.g. bricks, stones, filling bodies, girders, E04C; flooring as finishing work, insulation of flooring, sectional false floors, e.g. for computers, E04F 15/00) [5]
- 5/02 • Load-carrying floor structures formed substantially of prefabricated units (E04B 5/43-E04B 5/48 take precedence)
- 5/04 • • with beams of concrete or other stone-like material, e.g. asbestos cement (E04B 5/08, E04B 5/14 take precedence)
- 5/06 • • • placed against one another
- 5/08 • • assembled of block-shaped elements, e.g. hollow stones (E04B 5/14 takes precedence; floors composed of reinforced brickwork E04B 5/44)
- 5/10 • • with metal beams or girders, e.g. with steel lattice girders (E04B 5/14 takes precedence)
- 5/12 • • with wooden beams (E04B 5/14 takes precedence)
- 5/14 • • • with beams or girders laid in two directions
- 5/16 • Load-carrying floor structures wholly or partly cast or similarly formed in situ (E04B 5/43-E04B 5/48 take precedence; floors merely characterised by the prefabricated elements E04C)
- 5/17 • • Floor structures partly formed in situ
- 5/18 • • • with stiffening ribs or other beam-like formations wholly cast between filling members
- 5/19 • • • • the filling members acting as self-supporting permanent forms (E04B 5/21 takes precedence)
- 5/21 • • • • Cross-ribbed floors
- 5/23 • • • with stiffening ribs or other beam-like formations wholly or partly prefabricated (with all load-carrying parts substantially consisting of prefabricated units E04B 5/02)
- 5/26 • • • • with filling members between the beams (E04B 5/28 takes precedence)
- 5/28 • • • • Cross-ribbed floors
- 5/29 • • • • the prefabricated parts of the beams consisting wholly of metal (E04B 5/28 takes precedence)
- 5/32 • • Floor structures wholly cast in situ with or without form units or reinforcements
- 5/36 • • • with form units as part of the floor
- 5/38 • • • • with slab-shaped form units acting simultaneously as reinforcement; Form slabs with reinforcements extending laterally outside the element
- 5/40 • • • • • with metal form slabs
- 5/43 • Floor structures of extraordinary design; Features relating to the elastic stability; Floor structures specially designed for resting on columns only, e.g. mushroom floors (extraordinary constructions in general E04B 1/34)
- 5/44 • Floors composed of stones, mortar, and reinforcing elements (with inserts of glass E04B 5/46)

## E04B

- 5/46 • Special adaptation of floors for transmission of light, e.g. by inserts of glass (of ceilings E04B 9/32; block-shaped elements E04C 1/42; slab- or sheet-shaped elements E04C 2/54; for roof covering E04D 3/06) [5]
- 5/48 • Special adaptations of floors for incorporating ducts, e.g. for heating or ventilating (in block-shaped elements E04C 1/39; in slab- or sheet-shaped elements E04C 2/52)
- 7/00 Roofs; Roof construction with regard to insulation** (structures for roofs as well as for floors E04B 5/00; ceilings E04B 9/00; greenhouses A01G 9/14; large containers having floating covers B65D 88/34; roof trusses, truss-like structures, joists E04C 3/02; roof coverings E04D) [5]
  - 7/02 • with plane sloping surfaces, e.g. saddle roofs (E04B 7/12 takes precedence)
  - 7/04 • • supported by horizontal beams or the equivalent resting on the walls (E04B 7/06 takes precedence)
  - 7/06 • • Constructions of roof intersections or hopped ends
  - 7/08 • Vaulted roofs (E04B 7/14 takes precedence; vaulted structures in general E04B 1/32; inflatable tents or canopies, in general E04H 15/20; inflatable forms for shaping in situ E04G 11/04)
  - 7/10 • • Shell structures, e.g. of hyperbolic-parabolic shape; Grid-like formations acting as shell structures; Folded structures
  - 7/12 • formed in bays, e.g. sawtooth roofs (E04B 7/10 takes precedence)
  - 7/14 • Suspended roofs (suspended tents or canopies, in general E04H 15/04)
  - 7/16 • Roof structures with movable roof parts (buildings for special purposes E04H)
  - 7/18 • Special structures in or on roofs, e.g. dormer windows (in connection with roof coverings E04D 13/00, especially domes E04D 13/03)
  - 7/20 • Roofs consisting of self-supporting slabs, e.g. able to be loaded [5]
  - 7/22 • • the slabs having insulating properties, e.g. being laminated with layers of insulating material (E04B 7/24 takes precedence) [6]
  - 7/24 • • the slabs being collapsible, e.g. for transport [6]

- 9/00 Ceilings; Construction of ceilings, e.g. false ceilings; Ceiling construction with regard to insulation** (ceilings used as forms for making floors E04B 5/00; coverings or linings for ceilings E04F 13/00) [5]
  - 9/02 • having means for ventilation or vapour discharge [5]
  - 9/04 • comprising slabs, sheets or the like (E04B 9/06-E04B 9/34 take precedence; slabs, sheets or the like per se E04C 2/00) [5]
  - 9/06 • characterised by constructional features of the supporting construction [5]
  - 9/08 • • having the capability of expansion [5]
  - 9/10 • • Connections between parallel members of the supporting construction (E04B 9/08 takes precedence) [5]
  - 9/12 • • Connections between non-parallel members of the supporting construction (E04B 9/08 takes precedence) [5]
  - 9/14 • • • all the members being discontinuous and lying at least partly in the same plane [5]
  - 9/16 • • • the members lying in different planes [5]
  - 9/18 • Means for suspending the supporting construction [5]
  - 9/20 • • adjustable [5]
  - 9/22 • Connection of slabs, sheets or the like to the supporting construction [5]
  - 9/24 • • with the slabs, sheets or the like positioned on, or held against, horizontal flanges of the supporting construction [5]
  - 9/26 • • • by means of snap action of elastically deformable elements [5]
  - 9/28 • • with the slabs, sheets or the like having grooves engaging with horizontal flanges of the supporting construction or accessory means connected thereto [5]
  - 9/30 • characterised by edge details of the ceiling, e.g. securing to an adjacent wall [5]
  - 9/32 • Translucent ceilings, i.e. permitting both the transmission and diffusion of light (E04B 9/34 takes precedence; lighting F21) [5]
  - 9/34 • Open-work ceilings, e.g. lattice type (E04B 9/30 takes precedence) [5]
  - 9/36 • • consisting of parallel slats [5]