

# CPC COOPERATIVE PATENT CLASSIFICATION

## E FIXED CONSTRUCTIONS

### BUILDING

#### E04 BUILDING

**E04C STRUCTURAL ELEMENTS; BUILDING MATERIALS** (for bridges [E01D](#); specially designed for insulation or other protection [E04B](#); elements used as building aids [E04G](#); for mining [E21](#); for tunnels [E21D](#); structural elements with broader range of application than for building engineering [F16](#), particularly [F16S](#))

#### WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

<b>1/00</b>	<b>Building elements of block or other shape for the construction of parts of buildings</b> (of relatively thin form <a href="#">E04C 2/00</a> ; structural elongated elements designed for load-supporting <a href="#">E04C 3/00</a> , e.g. columns or pillars <a href="#">E04C 3/30</a> ; manufacture or material of building bricks, stones, or the like <a href="#">B28</a> , <a href="#">C03</a> , <a href="#">C04</a> ; paving elements <a href="#">E01C</a> ; general building constructions <a href="#">E04B</a> , e.g. walls <a href="#">E04B 2/00</a> , floors <a href="#">E04B 5/00</a> , roofs <a href="#">E04B 7/00</a> , ceilings <a href="#">E04B 9/00</a> ; {roof coverings <a href="#">E04D</a> ; coverings for walls or ceilings <a href="#">E04F 13/00</a> ; floorings <a href="#">E04F 15/00</a> ;} structural elements specially designed for built-in conduit shafts <a href="#">E04F 17/00</a> ; {elements for buildings for particular purposes <a href="#">E04H 7/00</a> }; special elements for building ovens or furnaces <a href="#">F24B</a> , <a href="#">F27D</a> )	<b>2/00</b>	<b>Building elements of relatively thin form for the construction of parts of buildings, e.g. sheet materials, slabs, or panels</b> (materials or manufacture, <a href="#">see the relevant subclasses</a> , e.g. <a href="#">B27N</a> , <a href="#">D21J</a> ; made in situ <a href="#">E04B</a> ; specially designed for insulation or other protection <a href="#">E04B 1/62</a> ; load-carrying floor structures <a href="#">E04B 5/02</a> , <a href="#">E04B 5/16</a> ; roofs consisting of self-supporting slabs <a href="#">E04B 7/20</a> ; roof or like covering elements <a href="#">E04D 3/00</a> ; for lining or finishing <a href="#">E04F 13/00</a> )
1/24	. {Elements for building-up floors, ceilings, roofs, arches, or beams ( <a href="#">E04C 1/39</a> - <a href="#">E04C 1/42</a> take precedence; flooring <a href="#">E04F 15/00</a> )}	2002/001	. {Mechanical features of panels}
1/34	. . {designed for use as filling elements}	2002/002	. . {Panels with integrated lifting means, e.g. with hoisting lugs}
1/36	. . . {between joists or girders}	2002/004	. . {Panels with profiled edges, e.g. stepped, serrated}
1/38	. . . {in ribbed or cross-ribbed floors, ceilings, or roofs consisting of reinforced concrete}	2002/005	. {Appearance of panels}
1/39	. characterised by special adaptations, e.g. serving for locating conduits, for forming soffits, cornices, or shelves, for fixing wall-plates or door-frames, for claustra	2002/007	. . {Panels with the appearance of a brick wall}
1/392	. . {for ventilating, heating or cooling}	2002/008	. . {Panels with the appearance of a natural stone wall}
1/395	. . {for claustra, fences, planting walls, e.g. sound-absorbing (pots for vertical horticulture <a href="#">A01G 9/022</a> )}	2/02	. characterised by specified materials ( <a href="#">translucent E04C 2/54</a> )
1/397	. . {serving for locating conduits ( <a href="#">E04C 1/392</a> takes precedence)}	2/04	. . of concrete or other stone-like material; of asbestos cement; {of cement and other mineral fibres} ( <a href="#">E04C 2/26</a> takes precedence; material or manufacture <a href="#">B28</a> , <a href="#">C04</a> )
1/40	. built-up from parts of different materials, e.g. composed of layers of different materials or stones with filling material or with insulating inserts	2/041	. . . {composed of a number of smaller elements, e.g. bricks, also combined with a slab of hardenable material}
1/41	. . composed of insulating material and load-bearing concrete, stone or stone-like material	2/042	. . . . {Apparatus for handling the smaller elements or the hardenable material; bricklaying machines for prefabricated panels (bricklaying machines in general <a href="#">E04G 21/22</a> )}
1/42	. of glass or other transparent material {(panels made of glass bricks <a href="#">E04C 2/546</a> )}	2/043	. . . . {of plaster ( <a href="#">E04C 2/049</a> takes precedence)}
		2/044	. . . . {of concrete ( <a href="#">E04C 2/049</a> takes precedence)}
		2002/045	. . . . {with two parallel leaves connected by tie anchors}
		2002/046	. . . . . {Flat anchors}
		2002/047	. . . . . {Pin or rod shaped anchors}
		2002/048	. . . . . {Bent wire anchors}
		2/049	. . . . {completely or partially of insulating material, e.g. cellular concrete or foamed plaster}
		2/06	. . . reinforced

2/08	. . of metal, e.g. sheet metal ( <a href="#">E04C 2/26 takes precedence</a> )	2002/3438	. . . . . {with saddle-shaped dimples, e.g. eggcrate type spacer sheets}
2/10	. . of wood, fibres, chips, vegetable stems, or the like; of plastics; of foamed products ( <a href="#">E04C 2/049</a> , <a href="#">E04C 2/26 take precedence</a> ; {hydraulic cement and mineral fibres <a href="#">E04C 2/04</a> })	2002/3444	. . . . . {Corrugated sheets}
2/12	. . . of solid wood	2002/345	. . . . . {with triangular corrugations}
2/14	. . . . reinforced	2002/3455	. . . . . {with trapezoidal corrugations}
2/16	. . . of fibres, chips, vegetable stems, or the like	2002/3461	. . . . . {with rectangular corrugations}
2/18	. . . . with binding wires, reinforcing bars, or the like	2002/3466	. . . . . {with sinusoidal corrugations}
2/20	. . . of plastics	2002/3472	. . . . . {with multiple layers of profiled spacer sheets}
2/205	. . . . {of foamed plastics, or of plastics and foamed plastics, optionally reinforced}	2002/3477	. . . {spaced apart by tubular elements parallel to the sheets}
2/22	. . . . reinforced ( <a href="#">E04C 2/205 takes precedence</a> )	2002/3483	. . . {spaced apart by spacers stamped from the sheets}
2/24	. . . laminated and composed of materials covered by two or more of groups <a href="#">E04C 2/12</a> , <a href="#">E04C 2/16</a> , <a href="#">E04C 2/20</a>	2002/3488	. . . {spaced apart by frame like structures}
2/243	. . . . {one at least of the material being insulating}	2002/3494	. . . {Apparatus for making profiled spacer sheets}
2/246	. . . . {combinations of materials fully covered by <a href="#">E04C 2/16</a> and <a href="#">E04C 2/20</a> }	2/36	. . . spaced apart by transversely-placed strip material, e.g. honeycomb panels ( <a href="#">honeycomb or other core members for layered products B32B</a> )
2/26	. . composed of materials covered by two or more of groups <a href="#">E04C 2/04</a> , <a href="#">E04C 2/08</a> , <a href="#">E04C 2/10</a> or of materials covered by one of these groups with a material not specified in one of the groups {(of cement and mineral fibres <a href="#">E04C 2/04</a> )}	2/365	. . . . {by honeycomb structures}
2/28	. . . combinations of materials fully covered by groups <a href="#">E04C 2/04</a> and <a href="#">E04C 2/08</a>	2/38	. . with attached ribs, flanges, or the like, e.g. framed panels ( <a href="#">concerned with attaching to other panels or elements to form a structure, see the places for the relevant structure, e.g. E04B 2/00</a> )
2/284	. . . at least one of the materials being insulating	2/382	. . . {with a frame of concrete or other stone-like substance}
2/288	. . . . composed of insulating material and concrete, stone or stone-like material	2/384	. . . {with a metal frame}
2/2885	. . . . . {with the insulating material being completely surrounded by, or embedded in, a stone-like material, e.g. the insulating material being discontinuous}	2/386	. . . {with a frame of unreconstituted or laminated wood}
2/292	. . . . composed of insulating material and sheet metal	2/388	. . . {with a frame of other materials, e.g. fibres, plastics}
2/296	. . . . composed of insulating material and non-metallic or unspecified sheet-material ( <a href="#">E04C 2/288 takes precedence</a> )	2/40	. . composed of a number of smaller components rigidly or movably connected together, e.g. interlocking, hingedly connected {of particular shape, e.g. not rectangular of variable shape or size, e.g. flexible or telescopic panels ( <a href="#">E04C 2/041 takes precedence</a> )}
2/30	. characterised by the shape or structure ( <a href="#">translucent E04C 2/54</a> )	2/405	. . . {composed of two or more hingedly connected parts}
2/32	. . formed of corrugated or otherwise indented sheet-like material; composed of such layers with or without layers of flat sheet-like material	2/42	. . Gratings; Grid-like panels ( <a href="#">reinforcing elements E04C 5/00</a> ; <a href="#">built-in gratings E04F 19/10</a> ; <a href="#">gratings in general F16S 3/00</a> )
2/322	. . . {with parallel corrugations}	2/421	. . . {made of bar-like elements, e.g. bars discontinuous in one direction}
2/324	. . . {with incisions or reliefs in the surface ( <a href="#">E04C 2/326 takes precedence</a> )}	2/422	. . . . {with continuous bars connecting at crossing points of the grid pattern}
2/326	. . . {with corrugations, incisions or reliefs in more than one direction of the element}	2/423	. . . . . {with notches}
2/328	. . . {slightly bowed or folded panels not otherwise provided for}	2/425	. . . . . {made of perforated bars}
2/34	. . composed of two or more spaced sheet-like parts ( <a href="#">E04C 2/32 takes precedence</a> ; <a href="#">spacers for cavity walls E04B 2/44</a> )	2/426	. . . . . {with continuous bars that remain unconnected at crossing points of the grid pattern, e.g. with undulating bars}
2/3405	. . . {spaced apart by profiled spacer sheets}	2/427	. . . {Expanded metal or other monolithic gratings}
2002/3411	. . . . {Dimpled spacer sheets}	2/428	. . . {Separate connecting means, e.g. connecting gratings to underlying structure}
2002/3416	. . . . . {with cylindrical dimples}	2/44	. {characterised by the purpose}
2002/3422	. . . . . {with polygonal dimples}	2/46	. . {specially adapted for making walls ( <a href="#">E04C 2/52</a> , <a href="#">E04C 2/54 take precedence</a> ; <a href="#">structure of slab-shaped elements E04B 1/02</a> ; <a href="#">walls of elements of relatively thin form E04B 2/72</a> )}
2002/3427	. . . . . {with conical dimples}	2/48	. . {as high as or higher than the room, i.e. having provisions concerning the connection with at least two floors ( <a href="#">E04C 2/52</a> and <a href="#">E04C 2/54 take precedence</a> )}
2002/3433	. . . . . {with dimples extending from both sides of the spacer sheet}		

- 2/50 . . {Self-supporting slabs specially adapted for making floors ceilings, or roofs, e.g. able to be loaded ([E04C 2/52](#), [E04C 2/54](#) take precedence; structures of slab-shaped elements [E04B 1/02](#); floor structures [E04B 5/00](#); roofs consisting of self-supporting slabs [E04B 7/20](#); ceilings [E04B 9/00](#); roof coverings [E04D](#); floor coverings [E04F 15/00](#))}
- 2/52 . . with special adaptations for auxiliary purposes, e.g. serving for locating conduits ([E04C 2/54](#) takes precedence; block-shaped elements therefor [E04C 1/39](#); floor structures incorporating ducts [E04B 5/48](#))
- 2/521 . . . {serving for locating conduits; for ventilating, heating or cooling}
- 2/523 . . . . {for ventilating}
- 2/525 . . . . {for heating or cooling (solar heat collectors [F24S 10/00](#); heat storage [F28D 20/00](#))}
- 2/526 . . . {with adaptations not otherwise provided for, for connecting, transport; for making impervious or hermetic, e.g. sealings}
- 2/528 . . . . {Impervious or hermetic panels not otherwise provided for}
- 2/54 . Slab-like translucent elements (floors for transmitting light [E04B 5/46](#); translucent or open-work ceilings [E04B 9/32](#), [E04B 9/34](#); translucent roof coverings [E04D 3/06](#), [E04D 3/28](#))
- 2/543 . . {Hollow multi-walled panels with integrated webs}
- 2/546 . . {made of glass bricks}
- 3/00 Structural elongated elements designed for load-supporting (as building aids [E04G](#))**
- 3/005 . {Girders or columns that are rollable, collapsible or otherwise adjustable in length or height (girders as supporting members for forms [E04G 11/54](#))}
- 3/02 . Joists; Girders, trusses, or trusslike structures, e.g. prefabricated; Lintels; Transoms; {Braces} ([E04C 3/38](#) takes precedence; for structures characterised by movable, separable, or collapsible parts [E04B 1/343](#); {braced purlins [E04B 7/024](#)})
- 2003/023 . . {Lintels}
- 2003/026 . . {Braces}
- 3/04 . . of metal ([E04C 3/29](#) takes precedence; as reinforcing elements [E04C 5/06](#); manufacture [B21](#))
- 2003/0404 . . . {beams, girders, or joists characterised by cross-sectional aspects}
- 2003/0408 . . . . {characterised by assembly or the cross-section}
- 2003/0413 . . . . . {being built up from several parts}
- 2003/0417 . . . . . {demountable}
- 2003/0421 . . . . . {comprising one single unitary part}
- 2003/0426 . . . . {characterised by material distribution in cross section}
- 2003/043 . . . . . {the hollow cross-section comprising at least one enclosed cavity}
- 2003/0434 . . . . . {the open cross-section free of enclosed cavities}
- 2003/0439 . . . . . {the cross-section comprising open parts and hollow parts}
- 2003/0443 . . . . {characterised by substantial shape of the cross-section}
- 2003/0447 . . . . . {circular- or oval-shaped}
- 2003/0452 . . . . . {H- or I-shaped}
- 2003/0456 . . . . . {hollow flanged, i.e. "dogbone" metal beams}
- 2003/046 . . . . . {L- or T-shaped}
- 2003/0465 . . . . . {square- or rectangular-shaped}
- 2003/0469 . . . . . {triangular-shaped}
- 2003/0473 . . . . . {U- or C-shaped}
- 2003/0478 . . . . . {X-shaped}
- 2003/0482 . . . . . {Z- or S-shaped}
- 2003/0486 . . . {Truss like structures composed of separate truss elements}
- 2003/0491 . . . . {the truss elements being located in one single surface or in several parallel surfaces}
- 2003/0495 . . . . {the truss elements being located in several non-parallel surfaces}
- 3/06 . . . with substantially solid, i.e. unapertured, web ([E04C 3/10](#), [E04C 3/11](#) take precedence {honeycomb girders [E04C 3/083](#)})
- 3/065 . . . . {with special adaptations for the passage of cables or conduits through the web}
- 3/07 . . . . at least partly of bent or otherwise deformed strip- or sheet-like material
- 3/08 . . . with apertured web, e.g. with a web consisting of bar-like components; Honeycomb girders ([E04C 3/10](#), [E04C 3/11](#) take precedence)
- 3/083 . . . . {Honeycomb girders; Girders with apertured solid web}
- 3/086 . . . . . {of the castellated type}
- 3/09 . . . . at least partly of bent or otherwise deformed strip- or sheet-like material
- 3/10 . . . prestressed
- 3/11 . . . with non-parallel upper and lower edges, e.g. roof trusses (arched girders, portal frames [E04C 3/38](#))
- 3/12 . . of wood, e.g. with reinforcements, with tensioning members ([E04C 3/292](#) takes precedence)
- 3/122 . . . {Laminated}
- 3/125 . . . {End caps therefor}
- 3/127 . . . {with hollow cross section}
- 3/14 . . . with substantially solid, i.e. unapertured, web (([E04C 3/127](#)), [E04C 3/17](#), [E04C 3/18](#) take precedence)
- 3/145 . . . . {with special adaptations for the passage of cables or conduits through the web, e.g. reinforcements}
- 3/16 . . . with apertured web, e.g. trusses ([E04C 3/17](#), [E04C 3/18](#) take precedence)
- 3/17 . . . with non-parallel upper and lower edges, e.g. roof trusses
- 3/18 . . . with metal {or other} reinforcements or tensioning members
- 3/185 . . . . {Synthetic reinforcements}
- 3/20 . . of concrete or other stone-like material, e.g. with reinforcements or tensioning members (reinforcing elements [E04C 5/00](#))
- 3/205 . . . {with apertured web, e.g. frameworks, trusses ([E04C 3/26](#) takes precedence)}
- 3/22 . . . built-up by elements jointed in line
- 3/26 . . . prestressed ([E04C 3/22](#), [E04C 3/29](#) take precedence; prestressing members [E04C 5/08](#))
- 3/28 . . of materials not covered by groups [E04C 3/04](#) - [E04C 3/20](#)
- 3/285 . . . {of glass}

- 3/29 . . built-up from parts of different material, {i.e. composite structures}
- 3/291 . . . {with apertured web}
- 3/292 . . . the materials being wood and metal
- 3/293 . . . the materials being steel and concrete (concrete with internal reinforcements or tensioning members [E04C 3/20](#))
- 3/294 . . . . of concrete combined with a girder-like structure extending laterally outside the element (light weight girders used as reinforcement [E04C 5/065](#); as part of a floor structure [E04B 5/23](#))
- 3/30 . Columns; Pillars; Struts (not designed for end loading [E04C 3/02](#); posts, masts, as independent structures [E04H 12/00](#))
- 3/32 . . of metal ([E04C 3/36](#) takes precedence)
- 3/34 . . of concrete other stone-like material, with or without permanent form elements, with or without internal or external reinforcement, e.g. metal coverings ([E04C 3/36](#) takes precedence)
- 3/36 . . of materials not covered by groups [E04C 3/32](#) or [E04C 3/34](#); of a combination of two or more materials
- 3/38 . Arched girders or portal frames (straight girders able to be bent [E04C 3/02](#); inflatable [E04H 15/20](#))
- 3/40 . . of metal ([E04C 3/46](#) takes precedence)
- 3/42 . . of wood, e.g. units for rafter roofs ([E04C 3/46](#) takes precedence)
- 3/44 . . of concrete or other stone-like material, e.g. with reinforcements or tensioning members ([E04C 3/46](#) takes precedence)
- 3/46 . . of materials not covered by groups [E04C 3/40](#) - [E04C 3/44](#); of a combination of two or more materials
- 5/00 Reinforcing elements, e.g. for concrete; Auxiliary elements therefor** ({methods or devices for making reinforcing materials [B21D](#)}; material composition {[C04B](#)}, [C21](#), [C22](#); arrangements of reinforcing elements, see the relevant subclasses)
- NOTES**
- 1. In this group, the following terms or expressions are used with the meanings indicated:
  - "reinforcing" means increasing any physical strength characteristic of the end product, e.g. compressive or flexural strength;
  - "elements" includes relatively large bodies, e.g. steel bars, as well as relatively small discrete bodies of any form, e.g. glass fibres.
- 2. Discrete reinforcing elements, which are small compared with the reinforced building element, only characterised by their composition are classified in [C04B](#), e.g. steel fibres [C04B 14/48](#), plastic elements with a shape other than granular or fibrous [C04B 16/12](#)
- 5/01 . Reinforcing elements of metal, e.g. with non-structural coatings ({[E04C 5/08](#) takes precedence})
- 5/012 . . {Discrete reinforcing elements, e.g. fibres}
- 5/015 . . {Anti-corrosion coatings or treating compositions, e.g. containing waterglass or based on another metal (coating of discrete reinforcing elements [C04B 20/10](#))}
- 5/017 . . . {Anti-corrosion coatings or treating compositions containing cement}
- 5/02 . . of low bending resistance
- 5/03 . . . with indentations, projections, ribs, or the like, for augmenting the adherence to the concrete
- 5/04 . . . Mats ({combined with reinforcing elements protruding out of the plane of the mat [E04C 5/0627](#); three-dimensional mats [E04C 5/0636](#)}; bases for plaster [E04F 13/04](#))
- 5/06 . . of high bending resistance, i.e. of essentially three-dimensional extent, e.g. lattice girders ({anchorage devices specially adapted for balconies [E04B 1/0038](#); supporting devices for connector reinforcing rods for concrete walls [E04G 21/125](#))}
- 5/0604 . . . {Prismatic or cylindrical reinforcement cages composed of longitudinal bars and open or closed stirrup rods ([E04C 5/0631](#) takes precedence)}
- 5/0609 . . . . {Closed cages composed of two or more coacting cage parts, e.g. transversally hinged or nested parts}
- 5/0613 . . . . {Closed cages made of one single bent reinforcement mat}
- 5/0618 . . . . {Closed cages with spiral- or coil-shaped stirrup rod}
- 5/0622 . . . . {Open cages, e.g. connecting stirrup baskets ([E04C 5/0609](#) takes precedence)}
- 5/0627 . . . {Three-dimensional reinforcements composed of a prefabricated reinforcing mat combined with reinforcing elements protruding out of the plane of the mat ([E04C 5/0645](#) takes precedence)}
- 5/0631 . . . . {Reinforcing mats combined with separate prefabricated reinforcement cages or girders ([E04C 5/064](#) takes precedence)}
- 5/0636 . . . {Three-dimensional reinforcing mats composed of reinforcing elements laying in two or more parallel planes and connected by separate reinforcing parts ([E04C 5/0645](#) takes precedence)}
- 5/064 . . . . {the reinforcing elements in each plane being formed by, or forming a, mat of longitudinal and transverse bars}
- 5/0645 . . . {Shear reinforcements, e.g. shearheads for floor slabs}
- 5/065 . . . Light-weight girders, e.g. with precast parts (light-weight girders in general [E04C 3/08](#), [E04C 3/294](#))
- 5/0653 . . . . {with precast parts}
- 5/0656 . . . . {with lost formwork}
- 5/07 . Reinforcing elements of material other than metal, e.g. of glass, of plastics, or not exclusively made of metal (metal elements with non-structural coatings [E04C 5/01](#))
- 5/073 . . {Discrete reinforcing elements, e.g. fibres}
- 5/076 . . . {Specially adapted packagings therefor, e.g. for dosing}
- 5/08 . Members specially adapted to be used in prestressed constructions ({production of reinforced objects in general [B28B 23/00](#); prestressed structures produced in situ [E04G 21/12](#))}
- 5/085 . . {Tensile members made of fiber reinforced plastics}
- 5/10 . . Ducts
- 5/12 . . Anchoring devices (tools or methods for tensioning {in situ} [E04G 21/12](#))

- 5/122 . . . {the tensile members are anchored by wedge-action}
- 5/125 . . . {the tensile members are profiled to ensure the anchorage, e.g. when provided with screw-thread, bulges, corrugations}
- 5/127 . . . {The tensile members being made of fiber reinforced plastics}
- 5/16 . Auxiliary parts for reinforcements, e.g. connectors, spacers, stirrups ([\(E04C 5/06 takes precedence;\)](#) [tools connecting reinforcing elements E04G 21/12](#))
- 5/161 . . {Protective caps for the ends of reinforcing bars}
- 5/162 . . {Connectors or means for connecting parts for reinforcements [\(E04C 5/168 takes precedence\)](#)}
- 5/163 . . . {the reinforcements running in one single direction}
- 5/165 . . . . {Coaxial connection by means of sleeves}
- 5/166 . . . {the reinforcements running in different directions}
- 5/167 . . . . {Connection by means of clips or other resilient elements}
- 5/168 . . {Spacers connecting parts for reinforcements and spacing the reinforcements from the form}
- 5/18 . . {Spacers} of metal or substantially of metal [{\(E04C 5/168 takes precedence\)}](#)
- 5/20 . . of material other than metal or with only additional metal parts, e.g. concrete or plastics spacers with metal binding wires [{\(E04C 5/168 takes precedence\)}](#)
- 5/201 . . . {Spacer blocks with embedded separate holding wire or clips}
- 5/203 . . . {Circular and spherical spacers}
- 5/205 . . . {Ladder or strip spacers}
- 5/206 . . . {Spacers having means to adapt the spacing distance}
- 5/208 . . . {Spacers especially adapted for cylindrical reinforcing cages}