Symbol	Typ	Titel
E	**Sektion**	**SECTION E — FIXED CONSTRUCTIONS**
E02	**Klasse**	**HYDRAULIC ENGINEERING; FOUNDATIONS; SOIL-SHIFTING**
E02D	**Unterklasse**	**FOUNDATIONS; EXCAVATIONS; EMBANKMENTS (specially adapted for hydraulic engineering E02B); UNDERGROUND OR UNDERWATER STRUCTURES [6]**
E02D 1/00	**Hauptgruppe**	**Investigation of foundation soil in situ (investigation involving boring or specially adapted to earth drilling E21B 25/00, E21B 49/00; investigating or analysing materials by determining their chemical or physical properties, in general G01N, e.g. sampling G01N 1/00)**
E02D 1/02	1-Punkt Untergruppe	. before construction work
E02D 1/04	2-Punkt Untergruppe	. . Sampling of soil
E02D 1/06	2-Punkt Untergruppe	. . Sampling of ground water
E02D 1/08	1-Punkt Untergruppe	. after finishing the foundation structure
E02D 3/00	**Hauptgruppe**	**Improving or preserving soil or rock, e.g. preserving permafrost soil (securing of slopes or inclines E02D 17/20; damming or interrupting passage of underground water E02D 19/12; improving soil for agricultural purposes A01; soil stabilisation for road building or like purposes E01C 21/00, E01C 23/10; setting rock anchoring bolts E21D)**
E02D 3/02	1-Punkt Untergruppe	. Improving by compacting (E02D 3/11 takes precedence; compacting soil locally before or while forming foundations E02D 27/26, E02D 27/28) [3]
E02D 3/026	2-Punkt Untergruppe	. . by rolling with rollers usable only for or specially adapted for soil compaction, e.g. sheepsfoot rollers (rollers for soil working in agriculture A01B 29/00; rollers for road paving, such rollers usable also for compacting soil E01C 19/23) [3]
E02D 3/032	3-Punkt Untergruppe	. . . Trench rollers [3]
E02D 3/039	3-Punkt Untergruppe	. . . Slope rollers [3]
E02D 3/046	2-Punkt Untergruppe	. . by tamping or vibrating, e.g. with auxiliary watering of the soil (E02D 3/026, E02D 3/08 take precedence; tamping or vibrating apparatus for working ballast on railways E01B 27/00, for consolidating paving materials E01C 19/30, for consolidating concrete in general E04G 21/06) [3]
E02D 3/054	3-Punkt Untergruppe	. . . involving penetration of the soil, e.g. vibroflotation [3]
E02D 3/061	3-Punkt Untergruppe	. . . Tampers with directly acting explosion chambers (pile drivers with explosion chambers E02D 7/12) [3]
E02D 3/068	3-Punkt Untergruppe	. . . Vibrating apparatus operating with systems involving reciprocating masses (E02D 3/054, E02D 3/061 take precedence) [3]
E02D 3/074	3-Punkt Untergruppe	. . . Vibrating apparatus operating with systems involving rotary unbalanced masses (E02D 3/054 takes precedence) [3]
E02D 3/08	2-Punkt Untergruppe	. . by inserting stones or lost bodies, e.g. compaction piles (sand drains for soil compaction E02D 3/10; stressing soil while forming foundations E02D 27/28)
E02D 3/10	2-Punkt Untergruppe	. . by watering, draining, de-aerating or blasting, e.g. by installing sand or wick drains (E02D 3/11 takes precedence; soil-penetrating vibrators with auxiliary watering E02D 3/054; drainage of soil in general E02B 11/00) [3]
E02D 3/11	1-Punkt Untergruppe	. by thermal, electrical or electro-chemical means (freezing soil for interrupting passage of underground water E02D 19/14) [3]
E02D 3/115	2-Punkt Untergruppe	. . by freezing [3]
E02D 3/12	1-Punkt Untergruppe	. Consolidating by placing solidifying or pore-filling substances in the soil (making piles E02D 5/46; soil-conditioning or soil-stabilising materials C09K 17/00)

Symbol	Typ	Titel
E02D 5/00	**Hauptgruppe**	**Bulkheads, piles, or other structural elements specially adapted to foundation engineering (engineering elements in general F16)**
E02D 5/02	1-Punkt Untergruppe	. Sheet piles or sheet pile bulkheads
E02D 5/03	2-Punkt Untergruppe	. . Prefabricated parts
E02D 5/04	3-Punkt Untergruppe	. . . made of steel
E02D 5/06	4-Punkt Untergruppe	. . . . Fitted piles or other elements specially adapted for closing gaps between two sheet piles or between two walls of sheet piles
E02D 5/08	4-Punkt Untergruppe	. . . . Locking forms; Edge joints; Pile crossings; Branch pieces
E02D 5/10	3-Punkt Untergruppe	. . . made of concrete or reinforced concrete
E02D 5/12	4-Punkt Untergruppe	. . . . Locking forms; Edge joints; Pile crossings; Branch pieces
E02D 5/14	2-Punkt Untergruppe	. . Sealing joints between adjacent piles (sealing joints not restricted to foundation piles E04B 1/68)
E02D 5/16	2-Punkt Untergruppe	. . Auxiliary devices rigidly or detachably arranged on sheet piles for facilitating assembly
E02D 5/18	1-Punkt Untergruppe	. Bulkheads or similar walls made solely of concrete in situ
E02D 5/20	1-Punkt Untergruppe	. Bulkheads or similar walls made of prefabricated parts and concrete, including reinforced concrete, in situ
E02D 5/22	1-Punkt Untergruppe	. Piles (sheet piles E02D 5/02)
E02D 5/24	2-Punkt Untergruppe	. . Prefabricated piles
E02D 5/26	3-Punkt Untergruppe	. . . made of timber with or without reinforcement; Means affording protection against spoiling of the wood (cases E02D 5/60; impregnating agents B27K 3/16); Self-cleaning of piles placed in water
E02D 5/28	3-Punkt Untergruppe	. . . made of steel
E02D 5/30	3-Punkt Untergruppe	. . . made of concrete or reinforced concrete or made of steel and concrete
E02D 5/32	3-Punkt Untergruppe	. . . with arrangements for setting in position by fluid jets
E02D 5/34	2-Punkt Untergruppe	. . Concrete or concrete-like piles cast in position
E02D 5/36	3-Punkt Untergruppe	. . . making without use of mould-pipes or other moulds
E02D 5/38	3-Punkt Untergruppe	. . . making by use of mould-pipes or other moulds
E02D 5/40	4-Punkt Untergruppe	. . . . in open water
E02D 5/42	4-Punkt Untergruppe	. . . . by making use of pressure liquid or pressure gas for compacting the concrete
E02D 5/44	4-Punkt Untergruppe	. . . . with enlarged footing or enlargements at the bottom of the pile
E02D 5/46	3-Punkt Untergruppe	. . . making in situ by forcing bonding agents into gravel fillings or the soil (consolidating soil in general E02D 3/12)
E02D 5/48	2-Punkt Untergruppe	. . Piles varying in construction along their length
E02D 5/50	2-Punkt Untergruppe	. . Piles comprising both precast concrete portions and concrete portions cast in situ
E02D 5/52	2-Punkt Untergruppe	. . Piles composed of separable parts, e.g. telescopic tubes
E02D 5/54	2-Punkt Untergruppe	. . Piles with prefabricated supports or anchoring parts; Anchoring piles

Symbol	Typ	Titel
E02D 5/56	2-Punkt Untergruppe	. . Screw piles
E02D 5/58	2-Punkt Untergruppe	. . Prestressed concrete piles
E02D 5/60	2-Punkt Untergruppe	. . Piles with protecting cases
E02D 5/62	2-Punkt Untergruppe	. . Compacting the soil at the footing or in a casing by forcing cement or like material through tubes
E02D 5/64	2-Punkt Untergruppe	. . Repairing piles
E02D 5/66	1-Punkt Untergruppe	. Mould-pipes or other moulds
E02D 5/68	2-Punkt Untergruppe	. . for making bulkheads
E02D 5/70	2-Punkt Untergruppe	. . for making sheet piles
E02D 5/72	1-Punkt Untergruppe	. Pile shoes
E02D 5/74	1-Punkt Untergruppe	. Means for anchoring structural elements or bulkheads (anchoring piles E02D 5/54)
E02D 5/76	2-Punkt Untergruppe	. . Anchorings for bulkheads or sections thereof
E02D 5/80	2-Punkt Untergruppe	. . Ground anchors
E02D 7/00	**Hauptgruppe**	**Methods or apparatus for placing sheet pile bulkheads, piles, mould-pipes, or other moulds (for both placing and removing E02D 11/00)**
E02D 7/02	1-Punkt Untergruppe	. Placing by driving
E02D 7/04	2-Punkt Untergruppe	. . Hand pile-drivers
E02D 7/06	2-Punkt Untergruppe	. . Power-driven drivers
E02D 7/08	3-Punkt Untergruppe	. . . Drop drivers with free-falling hammer
E02D 7/10	3-Punkt Untergruppe	. . . with pressure-operated hammer
E02D 7/12	3-Punkt Untergruppe	. . . Drivers with explosion chambers
E02D 7/14	3-Punkt Untergruppe	. . . Components for drivers
E02D 7/16	4-Punkt Untergruppe	. . . . Scaffolds for drivers
E02D 7/18	1-Punkt Untergruppe	. Placing by vibrating
E02D 7/20	1-Punkt Untergruppe	. Placing by pressure or pulling power
E02D 7/22	1-Punkt Untergruppe	. Placing by screwing down
E02D 7/24	1-Punkt Untergruppe	. Placing by using fluid jets
E02D 7/26	1-Punkt Untergruppe	. Placing by using several means simultaneously
E02D 7/28	1-Punkt Untergruppe	. Placing of hollow piles or mould-pipes by means arranged inside the piles or pipes
E02D 7/30	2-Punkt Untergruppe	. . by driving cores
E02D 9/00	**Hauptgruppe**	**Removing sheet pile bulkheads, piles, mould-pipes, or other moulds (for both placing and removing E02D 11/00)**
E02D 9/02	1-Punkt Untergruppe	. by withdrawing
E02D 9/04	1-Punkt Untergruppe	. by cutting-off under water
E02D 11/00	**Hauptgruppe**	**Methods or apparatus for both placing and removing sheet pile bulkheads, piles, or mould-pipes (**

Symbol	Typ	Titel
		features relating to placing only E02D 7/00, to removing only E02D 9/00)
E02D 13/00	**Hauptgruppe**	**Accessories for placing or removing piles or bulkheads**
E02D 13/02	1-Punkt Untergruppe	. specially adapted for placing or removing bulkheads
E02D 13/04	1-Punkt Untergruppe	. Guide devices; Guide frames
E02D 13/06	1-Punkt Untergruppe	. for observation while placing
E02D 13/08	1-Punkt Untergruppe	. Removing obstacles
E02D 13/10	1-Punkt Untergruppe	. Follow-blocks of pile-drivers or like devices
E02D 15/00	**Hauptgruppe**	**Handling building or like materials for hydraulic engineering or foundations (conveying or working-up concrete or similar masses in general E04G 21/02)**
E02D 15/02	1-Punkt Untergruppe	. Handling of bulk concrete specially for foundation purposes
E02D 15/04	2-Punkt Untergruppe	. . Placing concrete in mould-pipes, pile tubes, boreholes, or narrow shafts
E02D 15/06	2-Punkt Untergruppe	. . Placing concrete under water
E02D 15/08	1-Punkt Untergruppe	. Sinking workpieces into water or soil
E02D 15/10	1-Punkt Untergruppe	. Placing gravel or like material under water
E02D 17/00	**Hauptgruppe**	**Excavations; Bordering of excavations; Making embankments (soil shifting apparatus E02F; earth drilling E21)**
E02D 17/02	1-Punkt Untergruppe	. Foundation pits
E02D 17/04	2-Punkt Untergruppe	. . Bordering or stiffening the sides of foundation pits
E02D 17/06	1-Punkt Untergruppe	. Foundation ditches or narrow shafts
E02D 17/08	2-Punkt Untergruppe	. . Bordering or stiffening the sides of ditches or narrow shafts for foundations
E02D 17/10	2-Punkt Untergruppe	. . Covering trenches for foundations
E02D 17/12	2-Punkt Untergruppe	. . Back-filling of foundation trenches or ditches
E02D 17/13	1-Punkt Untergruppe	. Foundation slots; Implements for making these slots
E02D 17/16	1-Punkt Untergruppe	. Loosening of soil or rock, under water (for correcting streams E02B 3/02; by dredgers or excavators E02F)
E02D 17/18	1-Punkt Untergruppe	. Making embankments (E02D 17/20 takes precedence)
E02D 17/20	1-Punkt Untergruppe	. Securing of slopes or inclines
E02D 19/00	**Hauptgruppe**	**Keeping dry foundation sites or other areas in the ground (sheet piles or bulkheads E02D 5/02)**
E02D 19/02	1-Punkt Untergruppe	. Restraining of open water
E02D 19/04	2-Punkt Untergruppe	. . by coffer-dams
E02D 19/06	1-Punkt Untergruppe	. Restraining of underground water
E02D 19/08	2-Punkt Untergruppe	. . by employing open ditches arranged below the level of the water
E02D 19/10	2-Punkt Untergruppe	. . by lowering level of ground water
E02D 19/12	2-Punkt Untergruppe	. . by damming or interrupting the passage of underground water
E02D 19/14	3-Punkt Untergruppe	. . . by freezing the soil (in connection with sinking shafts E21D 1/12)

Symbol	Typ	Titel
E02D 19/16	3-Punkt Untergruppe	. . . by placing or applying sealing substances (consolidating by placing solidifying or pore-filling substances in the soil E02D 3/12)
E02D 19/18	3-Punkt Untergruppe	. . . by making use of sealing aprons (sealings or joints for engineering work E02B 3/16)
E02D 19/20	3-Punkt Untergruppe	. . . by displacing the water, e.g. by compressed air
E02D 19/22	1-Punkt Untergruppe	. Lining sumps in trenches
E02D 23/00	**Hauptgruppe**	**Caissons; Construction or placing of caissons (tunnels submerged into or built in open water E02D 29/063) [6]**
E02D 23/02	1-Punkt Untergruppe	. Caissons able to be floated on water and to be lowered into water in situ
E02D 23/04	1-Punkt Untergruppe	. Pneumatic caissons
E02D 23/06	2-Punkt Untergruppe	. . Bringing persons or material into, or out of, compressed air caissons
E02D 23/08	1-Punkt Untergruppe	. Lowering or sinking caissons
E02D 23/10	2-Punkt Untergruppe	. . Caissons filled with compressed air
E02D 23/12	2-Punkt Untergruppe	. . Inclined lowering
E02D 23/14	2-Punkt Untergruppe	. . Decreasing the skin friction while lowering
E02D 23/16	1-Punkt Untergruppe	. Jointing caissons to the foundation soil, specially to uneven foundation soil
E02D 25/00	**Hauptgruppe**	**Joining caissons or like sunk units to each other under water**
E02D 27/00	**Hauptgruppe**	**Foundations as substructures**
E02D 27/01	1-Punkt Untergruppe	. Flat foundations
E02D 27/02	2-Punkt Untergruppe	. . Flat foundations without substantial excavation (E02D 27/04, E02D 27/08 take precedence)
E02D 27/04	2-Punkt Untergruppe	. . in water or on quicksand
E02D 27/06	3-Punkt Untergruppe	. . . Floating caisson foundations
E02D 27/08	2-Punkt Untergruppe	. . Reinforcements for flat foundations
E02D 27/10	1-Punkt Untergruppe	. Deep foundations
E02D 27/12	2-Punkt Untergruppe	. . Pile foundations
E02D 27/14	3-Punkt Untergruppe	. . . Pile framings
E02D 27/16	3-Punkt Untergruppe	. . . Foundations formed of separate piles
E02D 27/18	2-Punkt Untergruppe	. . Foundations formed by making use of caissons
E02D 27/20	2-Punkt Untergruppe	. . Caisson foundations combined with pile foundations
E02D 27/22	2-Punkt Untergruppe	. . Caisson foundations made by starting from fixed or floating artificial islands by using protective bulkheads
E02D 27/24	1-Punkt Untergruppe	. Foundations constructed by making use of diving-bells (equipment for dwelling or working under water B63C 11/00)
E02D 27/26	1-Punkt Untergruppe	. Compacting soil locally before forming foundations; Construction of foundation structures by forcing binding substances into gravel fillings (consolidating foundation soil in general E02D 3/02-E02D 3/12)
E02D 27/28	1-Punkt Untergruppe	. Stressing the soil or the foundation structure while forming foundations
E02D 27/30	1-Punkt Untergruppe	. Foundations made with permanent use of sheet pile bulkheads, walls of planks, or sheet piling boxes

Symbol	Typ	Titel
E02D 27/32	1-Punkt Untergruppe	. Foundations for special purposes
E02D 27/34	2-Punkt Untergruppe	. . Foundations for sinking or earthquake territories (building constructions with protection arrangements against earthquakes E04H 9/02)
E02D 27/35	2-Punkt Untergruppe	. . Foundations formed in frozen ground, e.g. in permafrost soil [3]
E02D 27/36	2-Punkt Untergruppe	. . Foundations formed in moors or bogs
E02D 27/38	2-Punkt Untergruppe	. . Foundations for large tanks, e.g. oil tanks
E02D 27/40	2-Punkt Untergruppe	. . Foundations for dams across valleys or for dam constructions
E02D 27/42	2-Punkt Untergruppe	. . Foundations for poles, masts, or chimneys
E02D 27/44	2-Punkt Untergruppe	. . Foundations for machines, engines, or ordnance (special layout of foundations with respect to machinery to be supported F16M 9/00)
E02D 27/46	2-Punkt Untergruppe	. . Foundations for supply conduits or other canals
E02D 27/48	2-Punkt Untergruppe	. . Foundations inserted underneath existing buildings or constructions
E02D 27/50	2-Punkt Untergruppe	. . Anchored foundations
E02D 27/52	2-Punkt Untergruppe	. . Submerged foundations
E02D 29/00	**Hauptgruppe**	**Underground or underwater structures (underground tanks B65D 88/76; hydraulic engineering, e.g. sealings or joints, E02B; underground garages E04H 6/00; underground air-raid shelters E04H 9/12; burial vaults E04H 13/00); Retaining walls [6]**
E02D 29/02	1-Punkt Untergruppe	. Retaining or protecting walls (piers or quay walls E02B 3/06)
E02D 29/045	1-Punkt Untergruppe	. Underground structures, e.g. tunnels or galleries, built in the open air or by methods involving disturbance of the ground surface all along the location line; Methods of making them [6]
E02D 29/05	2-Punkt Untergruppe	. . at least part of the cross-section being constructed in an open excavation or from the ground surface, e.g. assembled in a trench [6]
E02D 29/055	3-Punkt Untergruppe	. . . further excavation of the cross-section proceeding underneath an already installed part of the structure, e.g. the roof of a tunnel [6]
E02D 29/063	1-Punkt Untergruppe	. Tunnels submerged into, or built in, open water (construction or placing of caissons in general E02D 23/00; joining caissons to each other under water, in general E02D 25/00) [6]
E02D 29/067	2-Punkt Untergruppe	. . Floating tunnels; Submerged bridge-like tunnels, i.e. tunnels supported by piers or the like above the water-bed (pontoons or floating bridges E01D 15/14) [6]
E02D 29/07	2-Punkt Untergruppe	. . Tunnels or shuttering therefor preconstructed as a whole or continuously made, and moved into place on the water-bed, e.g. into a preformed trench [6]
E02D 29/073	2-Punkt Untergruppe	. . Tunnels or shuttering therefor assembled from sections individually sunk onto, or laid on, the water-bed, e.g. in a preformed trench (caisson-type sections lowered onto the water-bed E02D 29/077) [6]
E02D 29/077	2-Punkt Untergruppe	. . Tunnels at least partially built beneath the water-bed characterised by being made by methods involving disturbance thereof all along the location line, e.g. by cut-and-cover or caisson methods [6]
E02D 29/09	1-Punkt Untergruppe	. Constructions or methods of constructing, in water, not otherwise provided for [6]
E02D 29/12	1-Punkt Untergruppe	. Manhole shafts; Other inspection or access chambers; Accessories therefor (for underground tanks B65D 90/10; for sewerage E03F 5/02) [6]
E02D 29/14	2-Punkt Untergruppe	. . Covers for manholes or the like; Frames for covers [6]

Symbol	Typ	Titel
E02D 29/16	1-Punkt Untergruppe	. Arrangement or construction of joints in foundation structures (sealing joints not restricted to foundation structures E04B 1/68)
E02D 31/00	**Hauptgruppe**	**Protective arrangements for foundations or foundation structures; Ground foundation measures for protecting the soil or the subsoil water, e.g. preventing or counteracting oil pollution (spillage retaining means for tanks B65D 90/24)**
E02D 31/02	1-Punkt Untergruppe	. against ground humidity or ground water
E02D 31/04	2-Punkt Untergruppe	. . Watertight packings for use under hydraulic pressure
E02D 31/06	1-Punkt Untergruppe	. against corrosion by soil or water
E02D 31/08	1-Punkt Untergruppe	. against transmission of vibrations or movements in the foundation soil
E02D 31/10	1-Punkt Untergruppe	. against soil pressure or hydraulic pressure
E02D 31/12	2-Punkt Untergruppe	. . against upward hydraulic pressure
E02D 31/14	2-Punkt Untergruppe	. . against frost heaves in soil [3]
E02D 33/00	**Hauptgruppe**	**Testing foundations or foundation structures (testing methods or apparatus, see the relevant subclasses of class G01; testing structures or apparatus as regards function, in general, G01M; investigating or analysing materials by determining their chemical or physical properties, in general G01N)**
E02D 35/00	**Hauptgruppe**	**Straightening, lifting, or lowering of foundation structures or of constructions erected on foundations**
E02D 37/00	**Hauptgruppe**	**Repair of damaged foundations or foundation structures**