

BRITISH STANDARD

Building and civil engineering – Vocabulary –

Part 3: Civil engineering – General

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Contents

Foreword *ii*

1	Scope	<i>1</i>
2	Vocabulary structure	<i>1</i>
3	Structural design and elements (03 1xxxx)	<i>2</i>
4	Earthworks (03 2xxxx)	<i>8</i>
5	Substructures and foundations (03 3xxxx)	<i>25</i>
6	Tunnels, shafts and caissons (03 4xxxx)	<i>30</i>
7	Superstructures (03 5xxxx)	<i>47</i>

Bibliography *53*

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iii, a blank page, pages 1 to 54, an inside back cover and a back cover.

Foreword

Publishing information

This part of BS 6100 is published by BSI and came into effect on 31 August 2007. It was prepared by Technical Committee B/500, *Basic data*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This part of BS 6100 supersedes BS 6100-2.1:1992, BS 6100-2.2.1:1992, BS 6100-2.2.2:1999, BS 6100-2.2.3:1990 and BS 6100-2.3:1992, which are withdrawn.

Relationship with other publications

BS 6100 consists of the following parts.

- *Part 0: Introduction and index.*
- *Part 1: General.*
- *Part 2: Spaces, building types, environment and physical planning.*
- *Part 3: Civil engineering – General.*
- *Part 4: Civil engineering – Transport.*
- *Part 5: Civil engineering – Water engineering, environmental engineering and pipelines.*
- *Part 6: Construction parts.*
- *Part 7: Services.*
- *Part 8: Work with timber and wood-based panels.*
- *Part 9: Work with concrete and plaster.*
- *Part 10: Contract terms.*
- *Part 11: Performance characteristics, measurement and joints.*
- *Part 12: Plant, equipment and persons.*

Information about this document

BS 6100 has been completely restructured and compiled on different principles than previously. Consequently, this part of BS 6100 represents a full revision of the standard.

A general introduction to and explanation of the BS 6100 vocabulary is given in BS 6100-0, which provides an alphabetical index of all the terms in all parts of BS 6100. It is intended that individual parts of BS 6100 are used in conjunction with BS 6100-0 because they do not contain indexes themselves.

BS 6100-1 reproduces verbatim ISO 6707-1 and provides a vocabulary of general terms for the building and civil engineering industry. It is essential that individual parts of BS 6100 are read in conjunction with BS 6100-1.

BS 6100 does not repeat (or provide alternatives for) terms defined in other standards or in other parts of BS 6100. However, it does refer to where definitions can be found and includes a bibliography of all referenced standards.

Presentational conventions

Details of the structure, layout and presentational conventions used in this part of BS 6100 are given in Clause 2.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This part of BS 6100 defines terms within the civil and structural engineering industry, including:

- a) structural design and structural members;
- b) earthworks;
- c) substructures, foundations and piles;
- d) tunnels and tunnelling; and
- e) superstructures, including large span structures and bridges.

2 Vocabulary structure

This part of BS 6100 does not contain its own index. Instead, a comprehensive index of terms is given in BS 6100-0. As a result, it is intended that this part of BS 6100 is used in conjunction with BS 6100-0.

The layout of this vocabulary is designed in accordance with ISO 10241 with terms arranged in a classified order and numbered in accordance with ISO 2145.

Each term has an individual number consisting of seven digits in two parts, the first of two digits, the second of five. Each number tells the following information about the term.

- a) The first two digits represent which part of BS 6100 the term belongs to.
- b) The third digit represents which group of terms it belongs to within the part.
- c) The fourth digit represents which subgroup of terms it belongs to within the group, as follows.
 - 1) Works.
 - 2) Parts.
 - 3) Materials.
 - 4) Activities.
 - 5) Processes.
 - 6) Plant, equipment and documentation.
 - 7) Properties.
 - 8) Spaces.
 - 9) Miscellaneous.
- d) The fifth to seventh digits determine the location of the term within the subgroup.

Bold words within a definition indicate terms that are defined elsewhere in this part of BS 6100, other parts of BS 6100 or other standards. Reference to where the term is defined is given in parenthesis after the bold word.

NOTE 1 References to terms defined in BS 6100-1 are shown giving only the part number, e.g. (01); references to terms defined in all other parts of BS 6100 are shown using their full reference number, e.g. (07 59005).

NOTE 2 Where more than one definition source could be referred to, the reference containing the definition of most general applicability is given.

Alternative terms are given in medium type below preferred terms which are given in bold type. All alternative terms have the status of being deprecated. Abbreviations are given in bold type below the terms to which they relate.

In the vocabulary, terms of more than one word are written in their natural word order, e.g. pedestal elbow, and the word order is not inverted, e.g. elbow, pedestal. However, inverted forms of a term are included in the index in BS 6100-0.

Terms are only given in the singular form, even when the plural form is more common (unless the term is only found in the plural form).

3 Structural design and elements (03 1xxxx)

3.1 Works (03 11xxx)

- 03 11001 half-timbered building**
timber framed building (01) in which the **spaces** (01) between the exposed **timber** (01) **components** (01) are filled with another **material** (01)

3.2 Parts (03 12xxx)

- 03 12001 slender beam**
beam (01) with a **slenderness ratio** (01) exceeding a prescribed limit
- 03 12002 rib**
continuous projection at right angles to a **flange** (01) or **slab** (01), increasing resistance to bending
- 03 12003 bearing surface**
surface that transmits direct compressive **load** (01) from one **structural member** (01) to another
- 03 12004 panel**
distinct portion of a **building element** (01) surrounded by a **frame** (01) or other **components** (01) of the same type
- 03 12005 flat**
rolled-steel section (01) of rectangular cross-section, whose **thickness** (01) exceeds one-tenth of its **width** (01)
- 03 12006 strand**
assembly of wires or fibres of considerable **length** (01) spun helically in one or more layers around a **core** (01)
- 03 12007 hollow pot floor**
in-situ **reinforced concrete** (09 33032) ribbed **floor** (01), spanning in one or more directions, where **voids** (03 28003) between the **ribs** (03 12002) are formed by cellular **blocks** (01) made of fired **clay** (BS EN 12670) or **lightweight concrete** (BS EN 206)
- 03 12008 filler joist floor**
in-situ concrete (01) **slab** (01) containing embedded steel **joists** (01)

- 03 12009 coffer slab**
concrete slab (01) spanning in two directions and containing recesses on its underside
- 03 12010 waffle slab**
coffer slab (03 12009) with recesses that are curved on **plan** (BS ISO 10209-1)
- 03 12011 hammer beam**
short horizontal **structural member** (01) at the foot of a **principal rafter** (03 12018)
- 03 12012 straining beam**
upper horizontal **structural member** (01) of a **queen post truss** (03 12047) connecting the heads of the **queen posts** (03 12035)
- 03 12013 trimmer**
structural member (01) supported by a **trimming rafter** (03 12020) or **trimming joist** (01)
- 03 12014 flitch beam**
composite **beam** (01) consisting of one or more pieces of **timber** (01) of rectangular cross-section and one or more steel **plates** (01) bolted together parallel to the major axis
- 03 12015 common rafter**
timber (01) **rafter** (01), not forming part of a **truss** (01), that extends between **eaves** (01) and **ridge board** (06 32033)
*NOTE Sometimes given intermediate support by **purlins** (01).*
- 03 12016 jack rafter**
shortened **rafter** (01) abutting a **hip rafter** (03 12017) or **valley rafter** (03 12019)
- 03 12017 hip rafter**
rafter (01) in the line of a **hip** (01)
- 03 12018 principal rafter**
inclined **structural member** (01) of a **roof truss** (01), in **compression** (01), connected to a **tie beam** (03 12030) and **posts** (01) and to which **struts** (01) are connected
- 03 12019 valley rafter**
structural member (01) in the line of a **valley** (01)
- 03 12020 trimming rafter**
rafter (01) of larger cross-section but the same **length** (01) as and parallel to **common rafters** (03 12015)
- 03 12021 trimmed rafter**
rafter (01) of the same cross-section as a **common rafter** (03 12015) supported by a **trimmer** (03 12013)
- 03 12022 trussed purlin**
purlin (01) in the form of a **lattice girder** (01)
- 03 12023 furring piece**
tapered piece of **timber** (01) fixed to the top of a **joist** (01) in a **flat roof** (01) to create a fall

- 03 12024 curb rafter**
rafter (01) to the top, flatter, **slope** (01) of a **mansard roof** (01)
- 03 12025 heel strap**
u-shaped, steel strap placed over the top of a **principal rafter** (03 12018) and bolted into the **tie beam** (03 12030) near the **wall plate** (01)
- 03 12026 sprocket piece**
short, tapered piece of **timber** (01) fixed to the lower end of a **common rafter** (03 12015) to reduce the **slope** (01) of a **roof** (01) at the **eaves** (01)
- 03 12027 dead shore**
vertical **shore** (01)
- 03 12028 flying shore**
horizontal **shore** (01) that does not bear on the **ground** (01) and provides lateral support
- 03 12029 raking shore**
inclined **shore** (01) that provides lateral support
- 03 12030 tie beam**
structural member (01) connected to, and providing lateral restraint for, **structural members** (01) that are otherwise unrestrained
- 03 12031 straining sill**
structural member (01) on the upper surface of a **tie beam** (03 12030), between **posts** (01) to take thrust from **struts** (01)
- 03 12032 tie rod**
tie (01) in the form of a steel **rod** (01)
- 03 12033 string**
horizontal **tie** (01) in a **lattice truss** (03 12048)
- 03 12034 king post**
central **post** (01) in a **king post truss** (03 12046)
- 03 12035 queen post**
one of a pair of **posts** (01) extending from the point of intersection of **principal rafters** (03 12018) and **straining beam** (03 12012) to the **tie beam** (03 12030)
- 03 12036 king rod**
king post (03 12034) in the form of a steel **rod** (01)
- 03 12037 collar**
horizontal **structural member** (01) tying a pair of **principal rafters** (03 12018) in opposite **slopes** (01)
cf. **collar** (03 44029)
- 03 12038 column head**
enlargement at the top of a **column** (01)

- 03 12040 blockwork**
masonry (01) of **blocks** (01) bonded and solidly put together with **mortar** (01)
- 03 12042 bowstring truss**
roof truss (01) in the form of a **simple arch** (01) tied between its **springings** (01) and with **bracing** (01) between the **arch** (01) and the **tie** (01)
- 03 12043 Belfast truss**
bowstring truss (03 12042) with lattice **bracing** (01)
- 03 12044 half truss**
roof truss (01) whose **shape** (11 27004) is half a normal **roof truss** (01), partly supported by a main **roof truss** (01) and at an angle, usually 90 degrees to it on **plan** (BS ISO 10209-1)
- 03 12045 hammer beam truss**
pitched **roof truss** (01) with a **collar** (03 12037) and **hammer beams** (03 12011)
- 03 12046 king post truss**
pitched **roof truss** (01) that has a single main **post** (01)
- 03 12047 queen post truss**
pitched **roof truss** (01) having two **queen posts** (03 12035)
- 03 12048 lattice truss**
lattice girder (01) for a **flat roof** (01)
- 03 12049 wind girder**
girder (01) with its major axis horizontal to resist **wind action** (01)
- 03 12050 friction grip connection**
act or state of being joined with a **high strength friction grip bolt** (03 12051)
- 03 12051 high strength friction grip bolt**
high tensile steel **bolt** (01), used with a high strength **nut** (06 72092) and hardened steel **washer** (06 72096), tightened to a predetermined shank **tension** (03 15002) so the clamping effect thus provided will transfer **loads** (01) in connected **structural members** (01) by friction
- 03 12052 shear connector**
device that transmits **shear** (01) **forces** (01) between **components** (01)
- 03 12053 stud**
small projection from the face of a **component** (01) to facilitate connection with another component

3.3 Activities (03 14xxx)

- 03 14001 plastic design**
method of structural design based on the assumption that under increased **loads** (01) a redistribution of **stress** (01) takes place across a **structural member** (01) after **yield point** (01) is reached

- 03 14002 prestress**
introduce into a **structural member** (01) internal **stresses** (01) of such magnitude and distribution that the **stresses** (01) resulting from subsequent applied **loads** (01) are modified
- 03 14003 post-tension**
prestress (03 14002) by tensioning **prestressing tendons** (01) after the **concrete** (01) has hardened
- 03 14004 shore**
erect **shore** (01)
- 03 14005 backprop**
distribute **construction loads** (03 17023) through more than one level of **construction** (01)

3.4 Processes (03 15xxx)

- 03 15001 deflection**
deformation (01) of a **structural member** (01) caused by bending
- 03 15002 tension**
state in part of a **structural member** (01) subject to **forces** (01) that extend it

3.5 Properties (03 17xxx)

- 03 17001 fatigue**
damage to a **structural member** (01) caused by repeated application of **stresses** (01) insufficient to induce **failure** (11 17012) by a single application
- 03 17002 monolithic**
formed of a single **stone** (01), or cast to form a structurally continuous mass
- 03 17003 normal stress**
stress (01) component perpendicular to the area concerned
- 03 17004 permissible stress**
stress (01) that can be sustained safely by a structural **material** (01) under a particular condition
- 03 17005 proof stress**
stress (01) applied to a **material** (01) sufficient to produce a specified permanent **strain** (01)
- 03 17006 yield stress**
stress (01) corresponding to a **yield point** (01)
- 03 17007 punching shear**
stress (01) imposed on a **structural member** (01) by a **load** (01) tending to penetrate that member

NOTE Calculated by dividing the **load** (01) by the product of the perimeter of its **bearing surface** (03 12003) area and the **thickness** (01) of the member.

- 03 17008 elastic limit**
highest **stress** (01) that can be applied without producing permanent **deformation** (01)
- 03 17009 ultimate bearing strength**
stress (01) that can be supported by **ground** (01) or by a **construction** (01) without applying a **factor of safety** (01)
- 03 17010 effective length**
length (01) of a **beam** (01), **strut** (01) or **wall** (01) assumed for calculating the **slenderness ratio** (01)
- 03 17011 effective span**
length (01) of a **beam** (01) or **concrete slab** (01) assumed for design purposes
- 03 17012 simply supported**
without, or assumed to be without, fixity at supports
- 03 17013 lever arm**
distance between the centroids of compressive and tensile **forces** (01) in a **structural member** (01) subject to bending
- 03 17014 neutral axis**
plane in a **structural member** (01) subject to bending, where longitudinal **stress** (01) is zero
- 03 17016 stress/strain curve**
diagrammatic representation of the relationship between **stress** (01) and **strain** (01) in a **material** (01)
- 03 17017 secant modulus**
slope (01) of the straight line drawn from the origin to any given point on a **stress/strain curve** (03 17016)
- 03 17018 tangent modulus**
slope (01) of a **stress** (01) / **strain** (01) function
- 03 17019 section modulus**
second moment of area of a plane section about its axis in its plane through the centroid, divided by the distance from that axis to the most remote point of that area
- 03 17020 plastic modulus**
algebraic sum of the first moments of area about an axis through the centroid of a cross-section of a **structural member** (01)
- 03 17021 modular ratio**
ratio of the **elastic modulus** (03 17022) of two **materials** (01) acting together in a **structural member** (01)
- 03 17022 elastic modulus**
quotient of **stress** (01) divided by corresponding **strain** (01) in a **material** (01) over the range for which this value is constant
- 03 17023 construction load**
load (01) specifically related to the execution of **construction works** (01)

4 Earthworks (03 2xxxx)

4.1 Parts (03 22xxx)

- 03 22001 berm**
ledge formed in the side **slope** (01) of **earthworks** (01)
- 03 22002 benching**
earthworks (01) formed in steps
- 03 22003 counterfort**
projection from the hidden face of a **retaining wall** (01) provided at intervals to increase resistance to horizontal pressure
- 03 22004 toe wall**
low **retaining wall** (01) at the foot of a **ground** (01) **slope** (01)
- 03 22005 cutting**
section of **earthworks** (01) where the **formation** (03 22043) is below original **ground level** (01)
*NOTE The **length** (01) usually greatly exceeds the **width** (01).*
- 03 22006 side cut**
berm (03 22001) wholly below original **ground level** (01)
- 03 22007 shallow trench**
trench (01) up to 1.5 m in **depth** (01)
- 03 22008 medium trench**
trench (01) greater than 1.5 m and up to 6.0 m in **depth** (01)
- 03 22009 deep trench**
trench (01) that exceeds 6.0 m in **depth** (01)
- 03 22010 narrow trench**
trench (01) that is too narrow for **operatives** (01) to enter
*NOTE Usually for **cables** (01), small **pipes** (01) and **trench fill foundations** (03 32009).*
- 03 22011 pit**
open **excavation** (01) with **characteristics** (01) that differ from those for a **trench** (01)
- 03 22012 shallow pit**
pit (03 22011) up to 1.5 m in **depth** (01)
- 03 22013 medium pit**
pit (03 22011) greater than 1.5 m and up to 6.0 m in **depth** (01)
- 03 22014 deep pit**
pit (03 22011) that exceeds 6.0 m in **depth** (01)
- 03 22015 trial pit**
trial hole
pit (03 22011) to determine the nature of the **ground** (01) or the presence of underground **structures** (01) and **services** (01)

- 03 22016 fascine**
firmly bound cylindrical bundle of **brushwood** (06 12114)
NOTE Main applications are to increase loads (01) carried by very soft or waterlogged soils (01) or to support slopes (01).
- 03 22017 mix-in-place wall**
impermeable **wall** (01) around an **excavation** (01) formed by mixing the **soil** (01) disturbed by vertical drilling with **lime** (BS EN 459-1) or **hydraulic cement** (09 13005) to stop water entering into the **excavation** (01)
- 03 22018 rock anchorage**
ground anchorage (01) with its **fixed anchor length** (BS EN 1537) in **rock** (03 23027)
- 03 22019 soil anchorage**
ground anchorage (01) with its **fixed anchor length** (BS EN 1537) in **soil** (01)
- 03 22020 ground anchorage primary reinforcement**
rock anchorage (03 22018) installed in an **excavation** (01) to maintain overall stability of the face of the **excavation** (01)
- 03 22021 ground anchorage secondary reinforcement**
rock anchorage (03 22018) installed in an **excavation** (01) to overcome local instability
NOTE Local instability may be caused when fragments separate from the surface.
- 03 22022 rock bolt**
ground anchorage (01) in which a **bar** (01) is fixed or **tensioned** (03 15002) in **rock** (03 23027)
- 03 22023 rock dowel**
ground anchorage (01) in which a **bar** (01) is fixed in **rock** (03 23027) without **tensioning** (03 15002)
- 03 22024 cut off drain**
drain (01) across a **soil** (01) or **rock** (03 23027) **slope** (01) intercepting **liquid flow** (BS EN ISO 772) down the **slope** (01) or preventing water running behind the face of an **excavation** (01)
- 03 22025 counterfort drain**
deep trench (03 22009) filled with **material** (01) that drains freely, cut parallel to the line of steepest **slope** (01) and below the **slip surface** (03 27025) to improve **slope stability** (03 27045) by reducing **pore water pressure** (03 27011)
- 03 22026 slope drain**
system of shallow **drains** (01) laid in a **soil** (01) or **rock** (03 23027) **slope** (01) to drain **surface water** (01)
- 03 22027 garland drain**
drain (01) formed within an **excavation** (01), at the level of an impervious **stratum** (03 23001) underlying permeable **strata** (03 23001), to intercept water that would otherwise flow into the **excavation** (01)

- 03 22028 sub-drain**
drain (01) below formation (03 22043) to remove **ground water** (BS ISO 6107-1)
- 03 22029 vertical drain**
bored or driven hole filled with permeable **material** (01) to accelerate **consolidation** (03 25020) of compressible **soils** (01) by improving **drainage** (01)
- 03 22030 wick drain**
vertical drain (03 22029) with perforated plastics or cardboard as the permeable **material** (01)
- 03 22031 sand drain**
vertical drain (03 22029) with **sand** (BS EN 12670) as the permeable **material** (01)
- 03 22032 drainage layer**
layer of permeable **material** (01) to disperse sub-surface water
- 03 22033 drainage blanket**
drainage layer (03 22032) near the base of an **embankment** (01)
- 03 22034 well point**
small diameter, long **tube** (01) installed vertically in the **ground** (01), with a perforated length near the foot through which **ground water** (BS ISO 6107-1) is pumped
- 03 22035 well point system**
dewatering (01) from a number of **well points** (03 22034)
NOTE Usually around the periphery of an excavation (01).
- 03 22036 shallow well system**
dewatering (01) in which **ground water** (BS ISO 6107-1) is pumped from perforated **tubes** (01) surrounded by **filter medium** (05 33003) installed in holes less than 10 m in **depth** (01)
- 03 22037 deep well system**
dewatering (01) in deep **excavations** (01) in which individual **submersible pumps** (05 12125) are installed in holes bored to the required **depth** (01)
- 03 22038 vacuum well system**
dewatering (01) in which a vacuum is induced in a **well** (05 21002) or around **well points** (03 22034) so that **pumps** (01) can remove **ground water** (BS ISO 6107-1) from less permeable **ground** (01)
- 03 22039 horizontal well system**
dewatering (01) in which a flexible perforated **pipe** (01), surrounded by a fine mesh, is installed at the bottom of a **trench** (01) and connected to a vacuum **pump** (01) at **ground level** (01)
- 03 22040 multi-stage dewatering**
dewatering (01) in which **well point systems** (03 22035) or **shallow well systems** (03 22036) are installed at **ground level** (01) and at one or more deeper **levels** (01) as **excavation** (01) proceeds
- 03 22041 eductor system**
dewatering (01) with an **eductor** (07 42291)

- 03 22042 electro-osmotic drainage**
dewatering (01) fine **soils** (01) using an **electric potential difference** (11 27112)
- 03 22043 formation**
surface of the **ground** (01) in its final **shape** (11 27004) after completion of **earthworks** (01)
- 03 22044 critical slip circle**
circular surface of the **soil** (01) on which it is assumed a **slip** (03 25009) will occur
- 03 22045 brob**
nail spike
metal **fastening** (01) with its head bent at right angles to the shaft

4.2 Materials (03 23xxx)

- 03 23001 stratum**
naturally occurring layer of a single **soil** (01) or **rock** (03 23027) type
- 03 23002 subsoil**
soil (01) immediately below **topsoil** (06 13001)
- 03 23003 peat**
dark, spongy **soil** (01) of vegetable origin and characterized by a high degree of **compressibility** (11 27020)
NOTE Usually fibrous.
- 03 23004 clay puddle**
pug
clay (BS EN 12670) remoulded with water to a consistency where it is pliable under hand pressure; used as a water **seal** (01)
- 03 23005 cohesive soil**
soil (01) that, by virtue of its **clay** (BS EN 12670) content and moisture, will form a coherent mass
- 03 23006 non-cohesive soil**
soil (01) that will not form a coherent mass
- 03 23007 overconsolidated clay**
clay (BS EN 12670) that retains some of the imposed **stress** (01) from a previous greater **overburden** (03 23019)
- 03 23008 colluvial deposit**
rock (03 23027) deposited by gravity from its place of formation
- 03 23009 drift**
soil (01) deposited as a result of glacial **action** (01)
cf. **drift** (03 41004)
- 03 23010 aeolian deposit**
wind deposit
soil (01) deposited as a result of **wind action** (01)

- 03 23011 alluvial deposit**
soil (01) deposited by a **stream** (BS EN ISO 772) or **river** (BS EN ISO 772), in its **channel** (01) or on its **flood plain** (05 28005)
- 03 23013 granular soil**
non-cohesive soil (03 23006) the particle **size** (01) of which is greater than 0.06 mm
- 03 23014 running sand**
sand (BS EN 12670) that exhibits flow **characteristics** (01) similar to liquid due to lack of confinement or water flow
- 03 23015 cobble**
rounded to sub-angular **rock** (03 23027) fragments between 60 mm and 200 mm in **size** (01)
- 03 23016 hoggin**
naturally occurring **material** (01) consisting mainly of **gravel** (03 23029) and **sand** (BS EN 12670) and containing sufficient **clay** (BS EN 12670) to bind the mixture when compacted
- 03 23017 loam**
fertile **soil** (01), mainly of **clay** (BS EN 12670), **silt** (03 23028) and **sand** (BS EN 12670)
NOTE Often contains decayed vegetable matter.
- 03 23018 non-plastic soil**
soil (01) with a **plasticity index** (BS EN ISO 14688-2) of zero or with a **plastic limit** (BS EN ISO 14688-2) that cannot be determined
- 03 23019 overburden**
soil (01) or **rock** (03 23027) that overlies other **material** (01)
- 03 23020 heavy ground**
ground (01) the excavated faces of which require support relatively quickly
- 03 23021 saturated soil**
soil (01) having all its **voids** (03 28003) filled with water
- 03 23022 stabilized soil**
soil (01) modified to improve and maintain its loadbearing capacity and resistance to **weathering** (01)
*NOTE Techniques include **compaction** (03 24008), chemical techniques, **dewatering** (01).*
- 03 23023 spoil**
excavated material that is unsuitable or surplus to requirements
- 03 23024 isotropic soil**
soil (01) that has identical **properties** (01) in all directions
*NOTE Usually applied to **permeability** (01).*
- 03 23025 overbreak**
amount of **rock** (03 23027) excavated beyond the prescribed **profile** (01)

- 03 23026 overdig**
amount of **soil** (01) excavated beyond the prescribed **profile** (01)
- 03 23027 rock**
relatively hard naturally occurring part of the earth's crust that has not been broken down into loose **material** (01) that can be readily **excavated** (01) by hand
- 03 23028 silt**
soil (01) that consists of particles between 0.002 mm and 0.06 mm in **size** (01)
- 03 23029 gravel**
non-cohesive granular **material** (01) that results from natural **disintegration** (05 39040) of **rock** (03 23027) and consists of particles between 2 mm and 60 mm in **size** (01)

4.3 Activities (03 24xxx)

- 03 24001 site investigation**
determination of physical **characteristics** (01) of **sites** (01) as they affect design and **construction** (01), and stability of neighbouring **structures** (01)
- 03 24002 ground investigation**
soil survey
exploration and recording of the location and **characteristics** (01) of **soils** (01) and **rocks** (03 23027), and **ground** (01) conditions
- 03 24003 contiguous bored piling**
retaining wall (01) construction using **bored piles** (BS EN 1536) in close proximity to, or touching, each other, in one or two rows
- 03 24004 secant piling**
retaining wall (01) construction using interlocked **bored piles** (BS EN 1536)
- 03 24005 ground improvement**
soil improvement
in situ decrease of **permeability** (01), increase of **strength** (11 27007) or decrease of **compressibility** (11 27020) of the **ground** (01) by mechanical means or **grout** (01) injection
- 03 24006 heavy tamping**
ground improvement (03 24005) to a substantial **depth** (01) by repeatedly dropping a heavy weight from a considerable **height** (01)
- 03 24007 vibroreplacement**
stone column
ground improvement (03 24005) in which a large tubular vibrator is used to form a deep hole into which **gravel** (03 23029) or **stone** (01) **backfill** (01) is introduced as the vibrator is withdrawn
- 03 24008 compaction**
process of packing particles more closely together

- 03 24009 shallow compaction**
compaction (03 24008) by ramming, rolling or tamping the **ground** (01) surface to achieve **ground improvement** (03 24005) to a shallow **depth** (01)
- 03 24010 vibrocompaction**
compaction (03 24008) of **granular soil** (03 23013) or **fill** (01) by vibrating a large tubular vibrator that is inserted deep into the **ground** (01) and withdrawn
- 03 24011 vibroflotation**
vibrocompaction (03 24010) in which jets of water are introduced to assist penetration and **compaction** (03 24008)
- 03 24012 claquage**
hydrofracture
ground improvement (03 24005) where **grout** (01) is injected under significant pressure, usually through **tube-a-manchettes** (03 26055), to form fissures so that a matrix of **grout** (01) is formed
- 03 24013 ground freeze**
stabilize **ground** (01) temporarily by local freezing of the water within it
- 03 24014 ground injection**
ground improvement (03 24005) by injection of **grout** (01)
- 03 24015 grade**
shape the finished surface of **earthworks** (01) by mechanical means
- 03 24016 trim**
shape **earthworks** (01) finally
- 03 24017 pole back**
excavate (01) behind existing **ground** (01) supports and provide support to the new face
- 03 24018 jet**
apply water under pressure to displace material in order to aid penetration of **driven piles** (BS EN 12699), **well points** (03 22034) or **caissons** (01)
- 03 24019 strip**
remove the upper layer of **soil** (01), including **topsoil** (06 13001) and vegetation, preparatory to carrying out works on or in **subsoil** (03 23002)
- 03 24020 skim**
remove the top layer of, or irregularities in, the **ground** (01) surface by mechanical means
- 03 24021 grub up**
uproot small **trees** (06 12036), **hedges** (06 12007) and **shrubs** (06 12035)
- 03 24022 blast**
excavate (01) hard **ground** (01) with **explosive** (BS 5607)

- 03 24023 lay-on blasting**
method of **blasting** (03 24022) by placing an **explosive** (BS 5607) against a **boulder** (BS EN 12670) or other object without containing it in a **shot hole** (03 28001)
- 03 24024 drill and blast**
excavate (01) hard **ground** (01) in which **explosives** (BS 5607) are placed in drilled holes and detonated
- 03 24025 popshot**
carry out secondary breakage of material employing small **explosive** (BS 5607) charges in **shot holes** (03 28001)

4.4 Processes (03 25xxx)

- 03 25001 boiling**
displacement of **soil** (01) at the base of an **excavation** (01) or adjacent to the toe of an **embankment** (01) caused by pressure of water
- 03 25002 internal erosion**
removal of **soil** (01) particles caused by **liquid flow** (BS EN ISO 772) through a **soil** (01)
- 03 25003 piping**
internal erosion (03 25002) leading to sudden collapse
cf. **piping** (03 45001)
- 03 25004 cryoturbation**
disturbance of a **soil** (01) structure by the **action** (01) of **ground** (01) ice
- 03 25005 ravelling**
failure (11 17012) of exposed **cohesive soil** (04 23005) by fracturing
- 03 25006 heave**
upward displacement of the **ground** (01) as a result of **excavation** (01), **surchage** (03 27031) or installing **displacement piles** (BS EN 12699)
- 03 25007 subsidence**
downward movement of the **ground** (01) surface that results from collapse, removal or displacement of underlying **material** (01)
- 03 25008 cambering**
downwarping of a hard **rock** (03 23027) **stratum** (03 23001) in an escarpment valley side or **excavation** (01) due to extrusion of a soft underlying **stratum** (03 23001)
- NOTE The soft underlying **stratum** (3) is typically of **clay** (BS EN 12670).*
- 03 25009 slip**
landslip
movement of a mass of **soil** (01) or **rock** (03 23027) by gravity
NOTE Often a rotational displacement.
- 03 25010 rotational slide**
rotation of a mass of **soil** (01) along a curved **slip surface** (03 27025)

- 03 25011 circular slide**
rotational slide (03 25010) on a **slip surface** (03 27025) that is approximately circular
- 03 25012 non-circular slide**
rotational slide (03 25010) on a **slip surface** (03 27025) that is not wholly circular
- 03 25013 translational slide**
movement of a shallow mass of **soil** (01) in a plane roughly parallel to the **slope** (01) due to a weakness on the plane
- 03 25014 flow slide**
mud flow
translational slide (03 25013) in **saturated soil** (03 23021), caused by a sudden increase in **pore water pressure** (03 27011), in which the **soil** (01) flows as a viscous fluid
- 03 25015 slab slide**
translational slide (03 25013) in which the sliding mass remains more or less intact
*NOTE Usually occurring in the **weathered** (01) surface of a **slope** (01).*
- 03 25016 block slide**
translational slide (03 25013) in which a block of relatively strong **rock** (03 23027) or stiff to hard **clay** (BS EN 12670) moves down a **slope** (01) as a unit
- 03 25017 debris slide**
translational slide (03 25013) of debris, forming a mantle on a **slope** (01) or the disturbed material at the toe of a **rotational slide** (03 25010), when **rainfall** (05 29004) or diverted **surface water** (01) causes downward movement of the debris
- 03 25018 compound slide**
movement of a **soil** (01) mass that combines the **characteristics** (01) of a **rotational slide** (03 25010) and a **translational slide** (03 25013)
- 03 25019 landslide**
large scale **slip** (03 25009) or **flow slide** (03 25014)
- 03 25020 consolidation**
reduction of bulk volume of **soil** (01), usually over a period of time, that results from the closer packing of particles caused by an increase in **effective stress** (03 27014)
- 03 25021 misfire**
complete or partial **failure** (11 17012) of an explosion, after action to initiate it

4.5 **Plant, equipment and documentation** **(03 26xxx)**

- 03 26001 undisturbed sample**
soil (01) **sample** (01) obtained by specialist methods so that its content and structure are not appreciably altered by the **sampling** (01)

- 03 26002 plate bearing test**
test (11 14010) to assess bearing **characteristics** (01) of **ground** (01) by loading a **plate** (01) in contact with undisturbed **ground** (01) and observing the **effect** (ISO 8930)
- 03 26003 standard penetration test**
test (11 14010) in which a **penetrometer** (03 26052) is driven into **soil** (01) a standard distance with standard blows; the number of blows required is used to estimate **soil** (01) behaviour
- 03 26004 vane test**
in situ test (11 14010) of **cohesive soil** (03 23005) using a **measuring instrument** (BS 6953) with a blade of cruciform cross-section that is rotated to **measure** (01) **shear strength** (01)
- 03 26005 triaxial compression test**
laboratory test (11 14010) in which a cylindrical **specimen** (11 12001) of **soil** (01) or **rock** (03 23027) is subjected to simultaneous axial loading and radial confining pressure to determine its **shear strength** (01)
- 03 26006 unconfined compression test**
compression (01) test (11 14010) on a cylindrical **sample** (01) of **cohesive soil** (03 23005) without lateral restraint
- 03 26007 Proctor test**
one of a number of tests (11 14010) to determine the **dry density/moisture content relationship** (03 27004)
- 03 26008 sedimentation test**
test (11 14010) to determine **sizes** (01) of fine particles by **measuring** (01) their rates of fall through a liquid at rest
- 03 26009 sheeting**
boards or steel **sheets** (01) used to support the **ground** (01) in an **excavation** (01) or retained **material** (01)
- 03 26010 close sheeting**
close timbering
pieces of **sheeting** (03 26009) placed close together to hold up the **ground** (01) in an **excavation** (01)
- 03 26011 open sheeting**
open timbering
pieces of **sheeting** (03 26009) spaced at intervals in an **excavation** (01) to support **ground** (01) that is sufficiently firm to make **close sheeting** (03 26010) unnecessary
- 03 26012 trench sheet**
section (01) used to support the sides of a **trench** (01) or an **excavation** (01)
- NOTE Generally a cold **rolled-steel section** (01) installed vertically.*
- 03 26013 timbering**
temporary works (10 61001, 10 61002) in **timber** (01)

- 03 26014 rider shore**
inclined **shore** (01) that springs from the upper surface of a **raking shore** (03 12029)
- 03 26015 back shore**
jack shore
member laid on and fixed to the top of a **raking shore** (03 12029) and supported on the **sole piece** (03 26020), from which a **rider shore** (03 26014) is wedged
- 03 26016 waling**
in **timbering** (03 26013), horizontal member supporting a **cofferdam** (01) **wall** (01) or **sheeting** (03 26009)
- 03 26017 face waling**
face piece
waling (03 26016) across the end of a **trench** (01) or **tunnel** (01)
- 03 26018 ground frame**
top frame
frame (01) of **walings** (03 26016) and **struts** (01) set at or about **ground level** (01) as a guide for the first setting of **runners** (03 26027) or **trench sheet** (03 26012)
- 03 26019 shoring headtree**
horizontal member placed immediately on the heads of **dead shores** (03 12027)
- 03 26020 sole piece**
member in contact with the **ground** (01), on which the foot of a **raking shore** (03 12029) or **dead shore** (03 12027) rests
- 03 26021 needle**
horizontal member inserted into or through a **wall** (01) and wedged up to provide support
- 03 26022 wall piece**
vertical member placed in direct contact with a **wall** (01) to distribute the thrust from one or more **shores** (01)
NOTE Usually of timber (01).
- 03 26023 lip**
lipping block
short length of **timber** (01), fixed to the top of a **strut** (01), that projects sufficiently beyond its end to rest on a **waling** (03 26016)
- 03 26024 lacing**
lacing boards
in **timbering** (03 26013), members fixed to pairs of **walings** (03 26016), **struts** (01) or **shores** (01) to provide extra rigidity
- 03 26025 puncheon**
post (01) to support a higher **waling** (03 26016) or **strut** (01) from the one below

- 03 26026 kicking piece**
length of **timber** (01) fixed to a **waling** (03 26016) to take the thrust from the end of a **strut** (01) that is not at right angles to the **waling** (03 26016)
- 03 26027 runner**
vertical member to support the sides or face of an **excavation** (01) and progressively driven or lowered as **excavation** (01) proceeds, its lower end being kept below the bottom of the **excavation** (01)
- 03 26028 guide runner**
runner (03 26027) driven ahead as a guide for driving intermediate **runners** (03 26027)
- 03 26029 poling board**
sheeting (03 26009) in contact with the **ground** (01) and supporting the face or sides of an **excavation** (01)
NOTE Usually 1 m to 5 m long.
- 03 26030 setting**
frame (01) that supports the **ground** (01) around an **excavation** (01)
- 03 26031 cross poling**
poling board (03 26029) placed horizontally across the face of a **tunnel** (01); in a **trench** (01) where **runners** (03 26027) or **sheeting** (03 26009) cannot be driven continuously and vertically, horizontally across a gap between **runners** (03 26027) or sheeting and tucked in behind them
- 03 26032 tucking frame**
frame (01) in which **walings** (03 26016) support **sheeting** (03 26009) boards at their ends
- 03 26033 tucking board**
narrow piece of **timber** (01) behind **walings** (03 26016) in **tucking frames** (03 26032)
- 03 26034 soldier**
vertical members that support **walings** (03 26016) or horizontal **poling boards** (03 26029)
- 03 26035 ground prop**
in **timbering** (03 26013), **post** (01) between the lowest **frame** (01) and a **foot block** (03 26039) on the bottom surface of an **excavation** (01)
- 03 26036 base plate**
plate (01) that distributes **load** (01) from a vertical or raking **structural member** (01)
- 03 26037 adjustable base plate**
base plate (03 26036) embodying a **screw jack** (12 56030)
- 03 26038 sole plate**
horizontal member that distributes **load** (01) from **posts** (01) or **frames** (01)
- 03 26039 foot block**
in **timbering** (03 26013), a **timber** (01) pad to spread a **load** (01)

- 03 26040 ledge**
unframed member fixed across a board or **boarding** (01) to hold it (or them) together
- 03 26041 liner**
in **timbering** (03 26013), a member driven between opposite members of a **frame** (01) to lock them in position
- 03 26042 page**
short thin **wedge** (06 32230)
- 03 26043 cleat**
block to prevent movement of a **strut** (01) or **waling** (03 26016)
- 03 26044 cutting-out piece**
short piece of **timber** (01) that may be cut out to dismantle **timbering** (03 26013)
- 03 26046 guide frame**
timber (01) **frame** (01) erected above **ground level** (01) as a guide for **runners** (03 26027) or **sheet piling** (01) or as a **staging** (01) from which they may be driven
- 03 26047 slope rail**
rail (08 32002) fixed at an angle to indicate the **slope** (01) of **earthworks** (01) under **construction** (01)
- 03 26048 stank**
small temporary **dam** (01)
- 03 26049 clay cutter**
percussive boring **tool** (01), used in **cohesive soils** (03 23005), that consists of an open-ended steel **tube** (01) to which a cutting shoe is attached
- 03 26050 shell**
percussive boring **tool** (01), used in **granular soils** (03 23013), that consists of an open-ended steel **tube** (01) to which a cutting shoe is attached and that carries a **flap valve** (01) at its lower end to prevent material falling out
- 03 26051 soil sampler**
open ended **tube** (01) driven into the **ground** (01) to obtain an **undisturbed sample** (03 26001)
- 03 26052 penetrometer**
measuring instrument (BS 6953) that establishes the resistance of **ground** (01) to penetration
- 03 26053 piezometer**
device installed below **ground** (01) surface to **measure** (01) **ground water** (BS ISO 6107-1) pressure
- 03 26054 slip indicator**
device inserted vertically into sloping **soil** (01) mass to **measure** (01) distortions due to **soil** (01) movements and to monitor **slope stability** (03 27045)

*NOTE Usually a small diameter **tube** (01).*

- 03 26055 tube-a-manchette**
steel **tube** (01) approximately 50 mm diameter with perforations at 300 mm centres over a limited **length** (01), the perforations being covered by pliable sleeves
- 03 26056 shot**
explosive (BS 5607) and **primer** (BS 5607) placed in a **shot hole** (03 28001)
- 03 26057 blasting agent**
mixture for **blasting** (03 24022) that does not contain self **explosive** (BS 5607) ingredients such as nitroglycerine or TNT
NOTE This term is not used in official British classifications.
- 03 26058 firing circuit**
circuit that connects the **exploder** (BS 5607) to one or more **detonators** (BS 5607)
- 03 26059 connecting wire**
electric (07 17002) **cable** (01), used only once, that forms part of the **firing circuit** (03 26058) within the **blast area** (BS 5607)

4.6 Properties (03 27xxx)

- 03 27001 maximum dry density**
dry density (BS EN ISO 12570) or **soil** (01) obtained by a specified amount of **compaction** (03 24008) or the **optimum moisture content** (01)
- 03 27002 relative compaction**
ratio of the **dry density** (BS EN ISO 12570) of a **soil** (01) to its **maximum dry density** (03 27001)
- 03 27003 Atterberg limits**
limits of **moisture content** (11 27033) of a **soil** (01) below which a **cohesive soil** (03 23005) is no longer plastic and above which it is liquid
- 03 27004 dry density/moisture content relationship**
relationship between **dry density** (BS EN ISO 12570) and **moisture content** (11 27033) of a **soil** (01) with a given amount of **compaction** (03 24008)
- 03 27005 clay fraction**
fraction of a **soil** (01) composed of particles smaller in **size** (01) than 0.002 mm
- 03 27006 gravel fraction**
fraction of a **soil** (01) composed of particles between 2 mm and 60 mm in **size** (01)
- 03 27007 sand fraction**
fraction of a **soil** (01) composed of particles between 0.06 mm and 2 mm in **size** (01)
- 03 27008 silt fraction**
fraction of a **soil** (01) composed of particles between 0.002 mm and 0.06 mm in **size** (01)

- 03 27009 particle size distribution**
percentage of prescribed grain **sizes** (01) present in a **soil** (01)
- 03 27010 perched water table**
water table (BS ISO 6107-3) maintained above the general standing water level of the **ground** (01) below
*NOTE It is usually maintained by an impervious **stratum** (03 23001).*
- 03 27011 pore water pressure**
pressure of water contained in **soil** (01) or **rock** (03 23027)
- 03 27012 total stress**
combination of all **stresses** (01) acting at a point in a **soil** (01) or **rock** (03 23027) mass
- 03 27013 total pressure**
pressure on a horizontal plane in a mass of **soil** (01), principally due to the **weight** (11 27002) of the **overburden** (03 23019)
- 03 27014 effective stress**
difference between **total stress** (03 27012) and **pore water pressure** (03 27011)
*NOTE For most purposes, that part of **total stress** (03 27012) borne by inter-particle contact.*
- 03 27015 pore pressure ratio**
ratio of the **pore water pressure** (03 27011) to the **total pressure** (04 27013)
- 03 27016 artesian**
condition existing in an **aquifer** (BS ISO 6107-3) in which the **head** (01) of the water is sufficient to cause the water to rise above the surface of the **ground** (01)
- 03 27017 degree of saturation**
ratio of the volume of water contained in **voids** (03 28003) to the total volume of **voids** (03 28003) in a **material** (01)
- 03 27018 percentage air voids**
volume of air **voids** (03 28003) in a **soil** (01) expressed as a percentage of the total volume of the **soil** (01)
- 03 27019 skin friction**
frictional resistance (11 27016) of surrounding **soil** (01) on the surface of **structural members** (01) below **ground level** (01)
cf. **skin friction** (03 36007)
- 03 27020 internal angle of friction**
in **granular soils** (03 23013) the angle whose tangent, when multiplied by the **force** (01) normal to the assumed sliding surface, is equal to the **shear strength** (01) of the **soil** (01)
- 03 27022 angle of repose**
steepest angle to the horizontal at which the sides of a heap of granular **material** (01) will be at rest
- 03 27025 slip surface**
surface of **soil** (01) on which a **slip** (03 25009) occurs

- 03 27026 slip circle**
circular **slip surface** (03 27025)
- 03 27027 slip plane**
slip surface (03 27025) in one plane
- 03 27028 toppling failure**
failure (11 17012) of a **rock** (03 23027) **slope** (01) where steeply inclined discontinuities cause individual **rock** (03 23027) masses to overbalance
- 03 27029 wedge failure**
failure (11 17012) by sliding of a wedge of **rock** (03 23027) or stiff **clay** (BS EN 12670) to the intersection of two or three well defined joint planes or **fissures** (BS EN 12670) behind a **slope** (01)
- 03 27030 drawdown**
distance by which **water table** (BS ISO 6107-3) in or around a **well** (05 21002) or **borehole** (01) is lowered by pumping
- 03 27031 surcharge**
material (01) or **load** (01) above **formation** (03 22043) either supported by a retaining **structure** (01) or used to increase the rate of **consolidation** (03 25020)
- 03 27032 earth pressure at rest**
value of lateral pressure in a **soil** (01) mass, with a horizontal upper surface, completely at rest and undisturbed by any external **force** (01)
- 03 27033 active earth pressure**
minimum value of lateral pressure in a **soil** (01) confined by a smooth vertical **wall** (01) as the **wall** (01) is moved away from the **soil** (01) mass allowing the **soil** (01) to expand until it reaches a state of equilibrium
- 03 27034 passive earth pressure**
maximum value of lateral pressure in a **soil** (01) confined by a smooth vertical **wall** (01) as the **wall** (01) is moved towards the **soil** (01) mass causing the **soil** (01) to **compress** (01) until it reaches a limiting state when **soil** (01) **failure** (11 17012) occurs
- 03 27035 gross loading intensity**
intensity of vertical loading on the **ground** (01) at the base of a **foundation** (01) due to all **loads** (01) above that level
- 03 27036 ultimate bearing capacity**
value of the **gross loading intensity** (03 27035) for a particular **foundation** (01) at which the resistance of the **soil** (01) to displacement of the **foundation** (01) is fully mobilized
- 03 27037 net loading intensity**
decrease or increase in intensity of vertical loading at the base of a **foundation** (01)
cf. **net loading intensity** (03 37001)

NOTE Due, typically, to the **weight** (11 27002) of a new **structure** (01) including **earthworks** (01).

- 03 27038 presumed bearing value**
net loading intensity (03 27037) considered appropriate to the particular type of **ground** (01) for preliminary design purposes
NOTE Usually obtained from a table.
- 03 27039 allowable net bearing pressure**
net loading intensity (03 27037) taking into account the **ultimate bearing capacity** (03 27036), an appropriate **factor of safety** (01), the amount and kind of **settlement** (01) expected and the ability of the **structure** (01) to accommodate the **settlement** (01)
- 03 27040 A-line**
line on a graph of **liquid limit** (BS EN ISO 14688-2) against **plasticity index** (BS EN ISO 14688-2), giving an empirical boundary between inorganic **clays** (BS EN 12670) and silty and organic **soils** (01)
- 03 27041 air voids line**
line on a graph relating **dry density** (BS EN ISO 12570) to **moisture content** (11 27033) of a **soil** (01) that has a constant percentage of air voids (03 28003)
- 03 27042 saturation line**
air voids line (03 27041) where the volume of air voids (03 28003) is zero
- 03 27043 bulb of pressure**
contour line indicating assumed points of equal pressure below a **foundation** (01)
cf. **bulb of pressure** (03 37002)
- 03 27044 California bearing ratio**
ratio of the **force** (01) required to achieve a given penetration of a prescribed piston into a **soil** (01) to the **force** (01) required to produce the same penetration into a standard **sample** (01) of **crushed rock** (09 23012)
- 03 27045 slope stability**
degree of stability of a **soil** (01) **slope** (01), represented by a **factor of safety** (01)
- 03 27046 depth of cut-off**
depth (01) reached by a **diaphragm wall** (01), **sheet piling** (01), **contiguous bored piling** (03 24003) or **cofferdam** (01) **wall** (01) below **formation** (03 22043)
- 03 27047 depth of penetration**
total **depth** (01) below external **ground level** (01) reached by a **caisson** (01) or the **sheet piling** (01) of a **cofferdam** (01)
- 03 27048 foundation level**
level (01) of the lowest part of a **foundation** (01) relative to **datum** (01)
- 03 27049 soil profile**
representation of a vertical section of **soil** (01) **strata** (03 23001) derived from a **ground investigation** (03 24002)

- 03 27050 haul**
distance through which **material** (01) is transported
- 03 27051 chargeweight**
weight of an individual **explosive** (BS 5607) charge used in a **shot** (03 26056) or **lay-on blasting** (03 24023)

4.7 Spaces (03 28xxx)

- 03 28001 shot hole**
hole drilled in **rock** (03 23027) and charged with **explosives** (BS 5607) for **excavation** (01)
- 03 28002 firing point**
place at which an explosion is initiated
- 03 28003 void**
space (01) filled with fluids between particles

5 Substructures and foundations (03 3xxxx)

5.1 Parts (03 32xxx)

- 03 32001 ground beam**
beam (01) in a **substructure** (01) transmitting **load** (01) to a **pile** (01), **pad foundation** (03 32006) or other **foundation** (01)
- 03 32002 leg**
support in an **underpinning** (01) forming part of the permanent work
cf. **leg** (03 46004)
- 03 32003 tanking**
impervious membrane that prevents infiltration of subsurface water
- 03 32004 kentledge**
material (01) used as a temporary **load** (01)
- 03 32005 grillage**
assembly (01) of layers of **beams** (01) on top of and at right angles to each other, to distribute or concentrate a **load** (01)
- 03 32006 pad foundation**
isolated **foundation** (01) that spreads a concentrated **load** (01)
- 03 32007 piled raft**
foundation (01) formed of **piles** (01) and a **raft foundation** (01) acting together
- 03 32008 widestrip foundation**
strip foundation (01) of such a **width** (01) that transverse **reinforcement** (09 33068) is necessary
- 03 32009 trench fill foundation**
foundation (01) formed by **backfilling** (01) a mechanically excavated **narrow trench** (03 22010) with loadbearing **concrete** (01)

- 03 32010 soldier pile**
vertical member that supports **walings** (03 26016) or horizontal **poling boards** (03 26029)
- 03 32011 needle pile**
small diameter **pile** (01) of cast-in-place **reinforced concrete** (2), steel **tube** (01) or **bar** (01) drilled or driven through and connected to an existing **foundation** (01) or **substructure** (01), and the surrounding **soil** (01) to improve structural stability
- 03 32012 mini pile**
small **pile** (01) installed with lightweight equipment
NOTE Usually less than 300 mm in diameter.
- 03 32013 composite pile**
pile (01) constructed to suit particular conditions using more than one method of **construction** (01)
- 03 32014 raking pile**
pile (01) installed at an inclination to the vertical
- 03 32015 totally preformed pile**
driven pile (BS EN 12699) manufactured or assembled above **ground level** (01)
- 03 32016 timber pile**
totally preformed pile (03 32015) of **timber** (01)
- 03 32017 steel pile**
totally preformed pile (03 32015) of steel
- 03 32018 H-pile**
steel pile (03 32017) of rolled steel **H-section** (01)
- 03 32019 box pile**
steel pile (03 32017) of hollow **section** (01)
- 03 32020 pipe pile**
tubular pile
cylindrical **box pile** (03 32019)
- 03 32021 small diameter bored pile**
bored pile (BS EN 1536) with a diameter of 600 mm or less
- 03 32022 large diameter bored pile**
bored pile (BS EN 1536) with a diameter greater than 600 mm
- 03 32023 percussive bored pile**
bored pile (BS EN 1536) with the hole being cut by percussive means
- 03 32024 rotary bored pile**
bored pile (BS EN 1536) with the hole being formed by an **excavation** (01) **tool** (01) mounted on a **kelly bar** (03 36017)
- 03 32025 augered pile**
bored pile (BS EN 1536) that utilizes a hole formed by **auger boring** (01)
- 03 32026 straight shafted augered pile**
augered pile (03 32025) without **enlarged base** (BS EN 1536)

- 03 32027 underreamed pile**
belled pile
large diameter bored pile (03 32022) that has an **enlarged base** (BS EN 1536) formed by undercutting
- 03 32028 jacked pile**
pile (01) forced into place by jacking it against a reaction
NOTE Usually formed in short sections; typically jacked against weight (11 27002) of structure (01).
- 03 32029 king pile**
long **pile** (01) installed prior to forming an **excavation** (01) and providing intermediate support to **struts** (01) in wide, strutted **sheet pile** (01) **excavation** (01)
- 03 32030 rock socket**
lower portion of a **pile** (01) boring, penetrating into sound **rock** (03 23027)

5.2 Materials (03 33xxx)

- 03 33001 drilling fluid**
mixture of water and other **materials** (01) used in boring, drilling, tunnelling or other **excavation** (01) to lubricate **tools** (01), stabilize excavated faces and transport **spoil** (03 23023)
- 03 33002 filter cake**
semi-stable layer of permeable **soil** (01) formed in the face of an **excavation** (01) by the infiltration of particles from a **drilling fluid** (03 33001)
- 03 33003 slip layer**
coat (01) applied to a **pile** (01) shaft to minimize **negative skin friction** (03 36008)

5.3 Activities (03 34xxx)

- 03 34001 mud-in**
stir **bentonite** (01) powder and water into **granular soil** (03 23013) with **auger boring** (01) to facilitate the installation of a temporary **casing** (BS EN 12699)
- 03 34002 direct circulation boring**
method of boring in which fluid passes down a central **pipe** (01) to lubricate the **tool** (01) and make the **spoil** (03 23023) rise
- 03 34003 reverse circulation boring**
method of boring in which the lubricating fluid is used to transport **spoil** (03 23023) by pumping it up a central **pipe** (01)
- 03 34004 air lifting**
pumping technique in which air is pumped into the base of a suction **pipe** (01) to reduce **density** (01) of **material** (01) in the **pipe** (01) and induce upward flow to evacuate solids and fluids

03 34005 blow
single application of a **force** (01) to drive a **pile** (01) into the **ground** (01)

03 34006 compressed air work
work in a chamber that has been pressurized with **compressed air** (BS EN 12110)

5.4 Processes (03 35xxx)

03 35001 blow out
sudden major escape of **compressed air** (BS EN 12110) from a **tunnel** (01) or **caisson** (01), often accompanied by an inrush of **soil** (01) and water

03 35002 blow down
reduce air pressure in a **compressed air caisson** (03 46024) to overcome resistance to sinking

5.5 Plant, equipment and documentation (03 36xxx)

03 36001 crib
temporary **frame** (01) or layers of horizontal members that transfer a vertical **load** (01) from one level to another

03 36002 allowable pile load
load (01) that may be applied to a **pile** (01), taking account of its **ultimate bearing capacity** (03 27036), **negative skin friction** (03 36008), **pile** (01) spacing, overall bearing capacity of the **ground** (01) below, allowable **settlement** (01) and appropriate **factor of safety** (01)

03 36003 pile design load
load (01) that a **pile** (01) is designed to carry

03 36004 pile working load
load (01) that a **pile** (01) carries in service

03 36005 pile proof load
load (01) greater than the **pile design load** (03 36003) applied to a selected **pile** (01) to confirm its suitability

03 36006 shaft adhesion
supportive **adhesion** (01) by which a **pile** (01) shaft transfers **load** (01) into surrounding **soil** (01) or **fill** (01)

03 36007 skin friction
support given by the combined effect of **shaft friction** (03 37003) and **shaft adhesion** (03 36006)
cf. **skin friction** (03 27019)

03 36008 negative skin friction
downdrag
downward pressure, exerted by a combination of frictional **forces** (01) and **adhesion** (01) on a **pile** (01) by surrounding **soil** (01) or **fill** (01), when the **soil** (01) or **fill** (01) settles relative to the **pile** (01) shaft

- 03 36009 decompression tables**
schedules (10 26009) of pressure changes with time, which govern the return to atmospheric pressure of persons subjected to a higher pressure
- 03 36010 single acting hammer**
impact hammer (BS EN 12699) that uses internal power to raise the **pile ram** (03 36018) and is then allowed to fall
- 03 36011 double acting hammer**
impact hammer (BS EN 12699) that uses internal power to raise the **pile ram** (03 36018) and to increase the downward **force** (01)
- 03 36012 drop hammer**
impact hammer (BS EN 12699) raised by a **winch** (12 36023) and allowed to fall
NOTE Usually a metal weight.
- 03 36014 pile frame**
movable **structure** (01) for installing **driven piles** (BS EN 12699) with an **impact hammer** (BS EN 12699) in the correct position and alignment
- 03 36015 driving cap**
cap placed temporarily on top of a **steel pile** (03 32017) to distribute the **blow** (03 34005) over the cross-section and to minimize damage to the **pile head** (BS EN 12699) during **driving** (BS EN 12699)
- 03 36016 drilling bucket**
boring tool in the form of a cylindrical container, at the bottom of a **kelly bar** (03 36017) that incorporates cutting teeth or blades and has corresponding openings in its base **plate** (01)
- 03 36017 kelly bar**
sliding shaft on a **drilling rig** (12 26045) that transmits the driving **force** (01) or torque to the **drill** (12 16005) from a driven rotary table
- 03 36018 pile ram**
rising and falling part of an **impact hammer** (BS EN 12699)
- 03 36019 air deck**
airtight **platform** (06 52012) in a **caisson** (01) or **shaft** (01) for **compressed air work** (03 34006)

5.6 Properties (03 37xxx)

- 03 37001 net loading intensity**
decrease or increase in intensity of vertical loading at the base of a **foundation** (01) due to **excavation** (01) or the **weight** (11 27002) of a new **structure** (01) including **earthworks** (01)
cf. **net loading intensity** (03 27037)
- 03 37002 bulb of pressure**
mass (11 27001) of **soil** (01) around and beneath a **pile** (01) or group of **piles** (01) that is subjected to **stress** (01) by the applied loading
cf. **bulb of pressure** (03 27043)

03 37003 shaft friction
supportive friction by which a **pile** (01) shaft transfers **load** (01) into surrounding **soil** (01) or **fill** (01)

03 37004 drop
stroke
distance which a **drop hammer** (03 36012) or **pile ram** (03 36018) falls

5.7 Miscellaneous (03 39xxx)

03 39001 decompression illness
illness that may be suffered by people who are subjected to a too rapid reduction in air pressure after they have been doing **compressed air work** (03 34006)

03 39002 pain only decompression illness
bends
decompression illness (03 39001) caused by the formation of nitrogen bubbles in limb joints

NOTE Manifested by pain in one or more of limb joints.

03 39003 serious decompression illness
decompression illness (03 39001) affecting cardiovascular, neurological, respiratory or gastro-intestinal systems

6 Tunnels, shafts and caissons (03 4xxxx)

6.1 Works (03 41xxx)

03 41001 adit
tunnel (01) driven from **ground** (01) surface to provide access to, or **drainage** (01) from, underground workings

03 41002 pilot tunnel
tunnel (01) driven ahead of, on the line of and of smaller cross-section than a main **tunnel** (01) to facilitate first stage **excavation** (01), **ground investigation** (03 24002), **ground** (01) treatment, **drainage** (01), **surveying** (BS 6953) or ventilation

03 41003 immersed tube tunnel
tunnel (01) assembled under water from preformed structural units

NOTE Usually floated into position and sunk on to prepared foundation (01).

03 41004 drift
adit (03 41001) that slopes downwards from its entrance
cf. **drift** (03 23009)

03 41005 heading
tunnel (01) of small cross-section

- 03 41006 box heading**
heading (03 41005) of straight-sided cross section where the **ground** (01) is supported at its top, sides and across the **floor** (01)
NOTE Usually supported with timber (01).
- 03 41007 poled heading**
 piled heading
heading (03 41005) in poor **ground** (01) where full support is given to the **ground** (01) using **timber** (01) boards or steel **sheets** (01) driven ahead of the **tunnel face** (03 42019)
- 03 41008 stope**
shaft (01) excavated upwards
- 03 41009 timber heading**
heading (03 41005) constructed mainly of **timber** (01)
- 03 41010 cross tunnel**
tunnel (01) connecting two **tunnels** (01) running alongside; gives access between **tunnels** (01) for operators of emergency services
- 03 41011 step plate tunnel**
 length of **tunnel** (01) consisting of **tunnel rings** (03 42014) of increasing diameter as a transition between **tunnels** (01) of significantly different diameters
- 03 41012 blind heading**
 length of **tunnel** (01) or **heading** (03 41005) beyond any access
- 03 41013 access shaft**
shaft (01) that facilitates entry of people and equipment to a **tunnel** (01)
NOTE Not necessarily part of the permanent work.

6.2 Parts (03 42xxx)

- 03 42001 tunnel eye**
 provision for a connecting **tunnel** (01) within a **tunnel lining** (03 42005)
- 03 42002 thrust pit**
pit (03 22011) or **shaft** (01) for **pipe jacking** (01) or **thrust boring** (01)
- 03 42003 jacking station**
thrust pit (03 42002) together with the **plant** (01) needed for **pipe jacking** (01) or **thrust boring** (01)
- 03 42004 intermediate jacking station**
 additional **plant** (01) for **pipe jacking** (01) or **thrust boring** (01) located along a drive
- 03 42005 tunnel lining**
 cover and support to the **rock** (03 23027) or **soil** (01) surface at the periphery of a **tunnel** (01) **excavation** (01)
- 03 42006 primary lining**
 structural **tunnel lining** (03 42005)

- 03 42007 secondary lining**
tunnel lining (03 42005) supplementing the **primary lining** (03 42006) for decoration, improved fluid flow, protection or structural enhancement
- 03 42008 expanded lining**
primary lining (03 42006) of **tunnel segments** (03 42011) that are expanded circumferentially against the surrounding **ground** (01)
- 03 42009 tunnel grommet**
tunnel grummet
compressible **washer** (06 72096) used with **bolted segments** (03 42012) to prevent leakage through **bolt** (01) holes
- 03 42010 shaft lining**
cover and support to the **rock** (03 23027) or **soil** (01) surface at the periphery of a **shaft** (01) **excavation** (01)
- 03 42011 tunnel segment**
arc shaped **component** (01) forming part of a **tunnel lining** (03 42005) or **shaft lining** (03 42010)
- 03 42012 bolted segment**
tunnel segment (03 42011) connected to adjacent **tunnel segments** (03 42011) with **bolts** (01)
- 03 42013 smooth bore segment**
tunnel segment (03 42011) that provides a smooth internal surface
NOTE Usually of concrete (01).
- 03 42014 tunnel ring**
assembly (01) of **tunnel segments** (03 42011) to form a complete circular section one **tunnel segment** (03 42011) wide
- 03 42015 grout hole**
small diameter hole in a **tunnel lining** (03 42005) for injecting **grout** (01)
- 03 42016 grout plug**
plug to **seal** (11 14007) a **grout hole** (03 42015)
- 03 42017 iron**
tunnel segment (03 42011) of cast iron or spheroidal graphite iron
- 03 42018 blanket**
layer of **material** (01) placed on a **bed** (01) to increase **cover** (01) and/or impermeability so a **tunnel** (01) may be driven underneath
NOTE Usually under water.
- 03 42019 tunnel face**
current end area of a **tunnel** (01) **excavation** (01)
- 03 42020 tunnel portal**
entrance, or **structure** (01) forming an entrance, to a **tunnel** (01)
- 03 42021 tunnel crown**
highest point of a **tunnel** (01) cross-section

- 03 42022 tunnel invert**
bottom surface of a **tunnel** (01)
- 03 42023 lining roll**
rotational displacement of a **tunnel ring** (03 42014)
- 03 42024 liner plate**
tunnel segment (04 42011) of pressed steel
- 03 42025 steel lattice rib**
steel rib in a lattice **frame** (01) used to support **fabric reinforcement** (09 33095) in the **arch** (01) of a **tunnel** (01) where the whole is embedded by being sprayed over with **concrete** (01)
- 03 42026 segmental lining**
tunnel lining (03 42005) of **tunnel segments** (03 42011)
- 03 42027 guillotine door**
vertical sliding door (BS EN 12433-1) with one guided **plate** (01)
- 03 42028 springline**
line along the side of a **tunnel** (01) indicating where the curve of the **tunnel arch** (03 47015) begins
*NOTE Horizontal diameter in a circular **tunnel** (01).*
- 03 42029 tunnel shoulder**
position around a periphery on either side of a **tunnel** (01) approximately half way between the **springline** (03 42028) and the **tunnel crown** (03 42021)
- 03 42030 tunnel knee**
position around a periphery on either side of a **tunnel** (01) approximately half way between the **springline** (03 42028) and the lowest point

6.3 Materials (03 43xxx)

- 03 43001 muck pile**
pile of shattered **rock** (03 23027) in a **tunnel** (01) after a **round** (BS 5607) is fired
- 03 43002 soil conditioner**
additive (01) injected into a **cutter head** (03 46070) to facilitate handling of excavated material by lubrication or **coagulation** (BS 6068-1.4)
- 03 43003 rebound**
portion of **sprayed concrete** (09 33035) that bounces from the surface to which it is applied because of the **velocity** (BS EN ISO 772) at the time of impact
- 03 43004 silica fume**
by-product of producing silicon metal and ferro-silicon alloys; it consists of mainly spherical particles of amorphous silicon dioxide and is highly pozzolanic

- 03 43005 tailskin grease**
grease (01) applied to **tail seal** (03 46059) to increase its impermeability

6.4 Activities (03 44xxx)

- 03 44001 box the face**
box up
cover the whole or part of a **tunnel face** (03 42019) to provide support
- 03 44002 dental treatment**
tunnel lining (03 42005) of small areas of the periphery at **faults** (01) or large **fissures** (BS EN 12670) using **concrete** (01)
- 03 44003 clay pocketing**
method of tunnelling through loose **ground** (01) by digging out small pockets around the periphery of the **excavation** (01), **backfilling** (01) them with **clay** (BS EN 12670) and embedding a **tunnel shield** (03 46032) in the **clay** (BS EN 12670) to make a watertight seal
- 03 44004 shield roll**
rotation of a **tunnel shield** (03 46032) about its axis during a drive
- 03 44005 blanket**
deposit an impermeable layer on a **tunnel face** (03 42019) to limit **compressed air** (BS EN 12110) losses
- 03 44006 pull**
advance a **tunnel** (01) or **shaft** (01) after a **round** (BS 5607)
- 03 44007 back grouting**
process of injecting **grout** (01) around a **tunnel lining** (03 42005) after initial injection of **grout** (01)
- 03 44008 blind boring**
process of drilling a hole without carrying out an exploratory **probe** (03 44011)
- 03 44009 cut and cover**
construction of a **tunnel** (01) with an open **excavation** (01) that is subsequently covered with **soil** (01)
- 03 44010 new Austrian tunnelling method**
tunnelling in firm **ground** (01) or **rock** (03 23027) using an in situ ground support system
- NOTE Rock bolts (03 22022) and shotcrete (09 33034) are commonly used.*
- 03 44011 probe**
drill a small diameter hole outside or in front of a **tunnel** (01) for **ground investigation** (03 24002)
- 03 44012 forepole**
support loose **ground** (01) by driving **poling boards** (03 26029) immediately ahead of the **tunnel face** (03 42019)
- 03 44013 muck out**
remove excavated material from a **tunnel** (01)

- 03 44014 raise boring**
method of **excavating** (01) a **shaft** (01) by boring upwards
- 03 44015 scale down**
remove from the **arch** (01) of a **tunnel** (01) **rock** (03 23027) pieces loosened but not dislodged by a **round** (BS 5607), or that become loose later
- 03 44016 shove**
incremental forward movement of a **tunnel shield** (03 46032), **tunnel boring machine** (03 46029) or **pipe** (01)
*NOTE Usually by means of **hydraulic rams** (05 12121).*
- 03 44017 directional drilling**
technique for installing a **pipe** (01) or **duct** (01) on a slightly curved line using a machine with a guided steerable drilling head to form a hole into which the **pipe** (01) or **duct** (01) is inserted
- 03 44018 impact moling**
technique for installing a **pipe** (01) or **duct** (01) using a percussive **soil** (01) displacement device to form a hole into which a **pipe** (01) or **duct** (01) is pulled or pushed
- 03 44019 wet process**
process of spraying **concrete** (01) where the **hydraulic binder** (01), **aggregate** (01) and water are mixed before being supplied to a nozzle
- 03 44020 dry process**
process of spraying **concrete** (01) where a dry **hydraulic binder** (01) and **aggregate** (01) mix is supplied to a nozzle and water added at the nozzle
- 03 44021 break out**
construct an opening in the side of a **tunnel** (01) for a junction with another **tunnel** (01)
- 03 44022 break up**
construct an opening in the roof of a **tunnel** (01) for a junction with a **shaft** (01) or an enlarged **tunnel** (01)
- 03 44023 caulk**
form a pre-formed **joint** (01) between **tunnel segments** (03 42011) to form a watertight seal
- 03 44024 lock in**
enter a **personnel lock** (BS EN 12110) and thence a **tunnel** (01) or **shaft** (01)
- 03 44025 lock out**
leave a **tunnel** (01) or **shaft** (01) through a **personnel lock** (BS EN 12110)
- 03 44026 decant**
undergo rapid decompression in a **personnel lock** (BS EN 12110) and then move to a **decant lock** (03 46095) nearby to be compressed to an appropriate pressure and then decompressed in accordance with normal practice
NOTE This procedure is now exceptional in UK.

- 03 44027 oxygen decompression**
use of oxygen for breathing during decompression
- 03 44028 chemical injection**
inject chemicals into the **ground** (01) to modify **fill** (01) and/or **soil** (01) behaviour by physiochemical processes or by cementing the **fill** (01) and **soil** (01) together
- 03 44029 collar**
ensure the correct location of a larger diameter hole by first drilling a smaller one for a short distance, then enlarging the hole to the required **size** (01) and finally inserting the full **size** (01) **rock drill** (12 26040) **rod** (01)
cf. **collar** (03 12037)
- 03 44030 spile**
stabilize a **tunnel face** (03 42019) by insertion of poles, **bars** (01) or holes filled with **grout** (01) forward of the **tunnel face** (03 42019)

6.5 Processes (03 45xxx)

- 03 45001 piping**
excess water pressure from within a **caisson** (01) causing material at the base, outside, to become unstable; the material partly removed by the flowing water is replaced by material from within the **caisson** (01) thus forming a hollow similar to a **pipe** (01)
cf. **piping** (03 25003)
- 03 45002 squat**
downward **deflection** (03 15001) from true of a **tunnel crown** (03 42021)

6.6 Plant, equipment and documentation (03 46xxx)

- 03 46001 horse head**
rectangular **frame** (01) that supports a main **tunnel** (01) during **construction** (01) of an opening in its **tunnel lining** (03 42005)
- 03 46002 Prince of Wales feathers**
frame (01) supporting the top of a main **tunnel** (01) during **construction** (01) of an opening that consists of a central **post** (01) with splayed **struts** (01) supporting a **tunnel head tree** (03 46016)
- 03 46003 side tree**
vertical or inclined support at the side of a **heading** (03 41005) or **horse head** (03 46001)
- 03 46004 leg**
vertical or nearly vertical member at the side or face of a **heading** (03 41005) to support **head boards** (03 46007) or **heading head trees** (03 46006) and to cover the exposed **ground** (01)
cf. **leg** (03 32002)
NOTE Usually of timber (01).

- 03 46005 sprag**
inclination from the vertical of a **side tree** (03 46003) or **leg** (03 46004)
- 03 46006 heading head tree**
transverse member, part of a **frame** (01), in the **soffit** (01) of a **heading** (03 41005), that supports the **ground** (01), **head boards** (03 46007) and **poling boards** (03 26029)
- 03 46007 head board**
longitudinal board that supports the **soffit** (01) of a **heading** (03 41005)
- 03 46008 face board**
board that supports a **tunnel face** (03 42019)
- 03 46009 byatt**
biatt
temporary transverse horizontal member to support a **deck** (01), **walkway** (01) or **guarding** (01) in an **excavation** (01)
- 03 46010 arch rib**
structural member (01) with the **profile** (01) of a **tunnel** (01) that supports **ground** (01) or **tunnel lining** (03 42005)
- 03 46011 benk bar**
longitudinal corrugated steel plank to support **ground** (01) or **tunnel lining** (03 42005), or to **forepole** (03 44012)
- 03 46012 kicker**
temporary horizontal member wedged across a **tunnel** (01) to distribute **load** (01) from a horizontal or raking **strut** (01) supporting **face boards** (03 46008)
- 03 46013 timber brob**
timber (01) block fixed to a **heading head tree** (03 46006) to prevent a **side tree** (03 46003) moving inwards due to **ground** (01) pressure
- 03 46014 Yankee brob**
z-shaped steel strap in **tunnel** (01) **timbering** (03 26013)
- 03 46015 thrust wall**
wall (01) that takes reaction from **hydraulic jacks** (12 56028) when **pipe jacking** (01) or **thrust boring** (01)
NOTE Usually temporary.
- 03 46016 tunnel head tree**
upper horizontal member of a **horse head** (03 46001)
- 03 46017 roof board**
length of **timber** (01) supporting the **ground** (01) above a **timber heading** (03 41009)
- 03 46018 side board**
length of **timber** (01) placed longitudinally between **side trees** (03 46003) to support the **ground** (01) at the sides of a **timber heading** (03 41009)

- 03 46019 lagging**
timber (01) or steel plank placed horizontally between **arch ribs** (03 46010) to provide temporary support to **ground** (01) or **tunnel lining** (03 42005)
- 03 46020 slurry support**
support to a **tunnel face** (03 42019) provided by **slurry** (01) under pressure in a compartment at the front of a **tunnel boring machine** (03 46029)
- 03 46021 support and transport system**
system for supporting **ground** (01) and removing excavated material using **slurry** (01)
- 03 46022 breast plate**
horizontal **timber** (01) supporting vertical **face boards** (03 460083) that is itself supported by a **tunnel shield** (03 46032) or other **structure** (01)
- 03 46023 timber heading head tree**
length of **timber** (01) supporting **roof boards** (03 46017)
- 03 46024 compressed air caisson**
pneumatic caisson **caisson** (01), with an **air deck** (03 36019) and **air lock** (01); the air in the working chamber is maintained above atmospheric pressure to exclude water
- 03 46025 wet caisson**
caisson (01), sunk in water bearing **ground** (01), that is open at the bottom allowing water to enter
- 03 46026 ring beam**
frame (01) at **ground level** (01) surrounding a **caisson** (01) and on which it is supported
- 03 46027 box caisson**
caisson (01) closed at the bottom and open to the atmosphere at the top
- 03 46028 choker ring**
bottom section of a **caisson** (01) including its cutting edge; of larger external horizontal **dimensions** (01) than the remainder of the **caisson** (01)
- 03 46029 tunnel boring machine**
machine for advancing a **tunnel** (01) by rotary cutting
- 03 46030 shaft boring machine**
boring machine operating downwards in a vertical direction
- 03 46031 earth pressure balanced tunnelling machine**
tunnel boring machine (03 46029) with a cutting head that operates in a chamber from which wet **spoil** (03 23023) is removed by an enclosed **archimedean screw** (05 12122) of sufficient **length** (01) to achieve atmospheric pressure at its discharge end

- 03 46032 tunnel shield**
mobile steel **structure** (01) supporting **ground** (01) at the **tunnel face** (03 42019) ahead of the **tunnel lining** (03 42005)
NOTE Usually cylindrical.
- 03 46033 Greathead shield**
tunnel shield (03 46032) for hand **excavation** (01)
- 03 46034 open shield**
tunnel shield (03 46032) that does not cover the **tunnel face** (03 42019)
*NOTE The **tunnel shield** (03 46032) is normally used for soft **ground** (01).*
- 03 46035 compartmental shield**
large **tunnel shield** (03 46032) divided into compartments to provide access for **excavation** (01)
- 03 46036 jacking shield**
tunnel shield (03 46032) for **pipe jacking** (01)
- 03 46037 roadheader**
self-propelled machine for cutting and loading soft to medium hard **rock** (03 23027) in sections by means of a rotating cutter mounted exactly or transversely on a boom
- 03 46038 cutting edge**
leading edge of a **tunnel shield** (03 46032) or a **caisson** (01) shoe
- 03 46039 hood**
upper part of a **tunnel shield** (03 46032) that protrudes ahead of its body to provide overhead protection
- 03 46040 front shield diaphragm**
curtain plate
diaphragm across the front of a **tunnel shield** (03 46032) or one of its compartments to control the ingress of unstable **ground** (01)
- 03 46041 rear shield diaphragm**
dam shield
diaphragm across the rear of a **tunnel shield** (03 46032) or one of its compartments used in conjunction with a **front shield diaphragm** (03 46040) to control ingress of unstable **ground** (01)
- 03 46042 tail skin**
cylindrical rear portion of a **tunnel shield** (03 46032) or **tunnel boring machine** (03 46029) in which the **tunnel segments** (03 42011) are erected
- 03 46043 plough**
steel **plate** (01) that protrudes from the external surface of a **tunnel shield** (03 46032) and is used to correct or prevent **shield roll** (03 44004)
- 03 46044 face ram**
one of a group of hydraulic cylinders mounted within a **tunnel shield** (03 46032) supporting the **tunnel face** (03 42019)

- 03 46045 drum digger**
tunnel boring machine (03 46029) with peripheral drive motors and no centre spindle
*NOTE For use in soft **ground** (01) and not currently available.*
- 03 46046 separation plant**
equipment on the **ground** (01) surface for removing solids from a **slurry** (01)
- 03 46047 desanding plant**
equipment for treating and eliminating **sand** (BS EN 12670) from a **slurry** (01)
- 03 46048 grout pan mixer**
grout (01) mixer that uses **compressed air** (BS EN 12110) to drive a paddle and pump the mixture through a **pipe** (01)
- 03 46049 unshielded tunnel boring machine**
tunnel boring machine (03 46029) without a **tunnel shield** (03 46032) for support
- 03 46050 closed mode shield**
tunnel shield (03 46032) that supports the **tunnel face** (03 42019) while advancing
- 03 46051 air pressurized shield machine**
shield machine (BS EN 12336) in which the forward part, including the **cutter head** (03 46070), is separated from the rear by a bulkhead and air pressure is applied to this part in order to support the **tunnel face** (03 42019)
- 03 46052 reaming tunnel boring machine**
tunnel boring machine (03 46029) that enlarges a **pilot tunnel** (03 41002) in one or more steps
- 03 46053 ram shoe**
fitting on the end of a hydraulic cylinder on a **tunnel shield** (03 46032) to spread the **load** (01) on the **tunnel ring** (03 42014) or similar support against which the hydraulic cylinders are pushed to advance the **tunnel shield** (03 46032)
- 03 46054 continuous miner**
self propelled machine that cuts **coal** (BS 3323) or soft materials by means of a transversely rotating drum
- 03 46055 creator arm**
swing arm on a boring machine or **tunnel shield** (03 46032) for picking up supports and setting them down in position
- 03 46056 blade shield**
tunnel shield (03 46032) of circular or D shape, whose outer skin is formed of a series of blades that are advanced by rams while the **ground** (01) is excavated by **cutter boom** (12 26039)
- 03 46057 closed shield**
tunnel shield (03 46032) modified for use in subaqueous **tunnels** (01) in which access to the **tunnel face** (03 42019) is limited to a number of openings that can be closed to prevent inrushes of mud or water

- 03 46058 part face machine**
shield machine (BS EN 12336) in which only part of the **tunnel face** (03 42019) is mechanically excavated at a time and the **cutter head** (03 46070) moves across the **tunnel face** (03 42019)
- 03 46059 tail seal**
flexible device fitted to the **tail skin** (03 46042) of a **tunnel shield** (03 46032), forming a seal between it and the assembled **tunnel** (01) preventing material from the **tunnel face** (03 42019) outside the **tunnel shield** (03 46032) or behind the **tunnel lining** (03 42005) entering the **tunnel** (01)
- 03 46060 snorer**
device for removing water from a **compressed air** (BS EN 12110) **tunnel** (01) by means of a **pipe** (01) to free air and a **valve** (01) controlled input; water is driven out by differential air pressure
- 03 46061 reaction ring**
device for securing the position of a **tunnel boring machine** (03 46029) in soft **ground** (01) using hydraulic cylinders to exert pressure on to the walls of the **tunnel** (01)
- 03 46062 gun strut**
horizontal longitudinal **strut** (01) mounted within a **tunnel shield** (03 46032) and restrained so as to provide support to **face boards** (03 46008) whilst the **tunnel shield** (03 46032) is being moved forward
- 03 46063 steering jack**
one of a set of **hydraulic jacks** (12 56028) installed in a **jacking shield** (03 46036), controlling the direction of the **tunnel** (01) drive
- 03 46064 thrust ring**
strong, steel ring bearing against the end of a **tunnel lining** (03 42005) through which the force (01) from **hydraulic jacks** (12 56028) is transmitted in **microtunnelling** (01), or in advancing a tunnelling machine or **tunnel shield** (03 46032)
- 03 46065 lead pipe**
length of **pipe** (01) modified to facilitate first length of **pipe** (01) in **pipe jacking** (01) that has been modified to facilitate connection to the tail of a **jacking shield** (03 46036)
- 03 46066 drilling carriage**
mobile **staging** (01) for **rock drills** (12 26040) in **tunnel** (01) **excavation** (01)
- 03 46067 drifter**
heavy percussive **rock drill** (12 26040) for mounting on a screw or chain feed with reversible rotation and air or water flushing
- 03 46068 rocker shovel**
powered front-loading self-propelled shovel that discharges overhead to its rear

- 03 46069 stoper**
pneumatically powered rotary percussive **rock drill** (12 26040) axially mounted on a pneumatic cylinder for **excavation** (01) of **stopes** (03 41008)
- 03 46070 cutter head**
front end of an **excavator** (12 26006) with a cutter for **rock** (03 23027) or soft **ground** (01)
- 03 46071 rock cutter**
device rolled across the face of **rock** (03 23027) with the concentration of pressure or **stress** (01) **spalling** (01) the **rock** (03 23027)
- 03 46072 roller cutter**
rock cutter (03 46071) in the form of a truncated cone that rotates around its axis; the side, reinforced by tungsten carbide **bits** (12 16006), bears against the face of the **rock** (03 23027)
- 03 46073 disc cutter**
rock cutter (03 46071) in the form of a disc whose tapered periphery bears upon the face of **rock** (03 23027) and that rotates about a central axis
- 03 46074 toothed cutter**
disc cutter (03 46073) with a toothed periphery
- 03 46075 gauge cutter**
rock cutter (03 46071) positioned so as to define the finished diameter of the **excavation** (01)
- 03 46076 variable gauge cutter**
gauge cutter (03 46075) mounted so the diameter may be varied and/or so compensation for wear may be provided
- 03 46077 bench**
mid section between a **tunnel crown** (03 42021) and a **tunnel invert** (03 42022) excavated in horizontal steps
- 03 46078 cherry picker**
hoist (12 36026) mounted on a carriage or on a **monorail** (01) fixed to the roof for lifting empty wagons over full ones in a narrow **tunnel** (01)
- 03 46079 erector**
plant (01) used to install **tunnel linings** (03 42005) situated within or immediately behind a **shield machine** (BS EN 12336)
- 03 46080 lifting finger**
short bent **bar** (01) passed through a hole in a **tunnel segment** (03 42011) to lift it
- 03 46081 roller bolt**
pulley wheel, with its axle parallel to the **tunnel** (01) axis, that is fixed to an assembled **tunnel ring** (03 42014) to facilitate **assembly** (01) by hand of the next **tunnel ring** (03 42014)

*NOTE Usually where no **tunnel shield** (03 46032) is used.*

- 03 46082 roller bracket**
bracket (01) temporarily fixed to a **tunnel lining** (03 42005) and incorporating a roller that, with others, supports a movable **gantry** (03 52007) or **staging** (01)
- 03 46083 safety curtain**
diaphragm of steel or **timber** (01), across the upper part of a pressurized **tunnel** (01) to diminish the risk to life caused by a **blow out** (03 35001) in the case of a flood
- 03 46084 pressure chamber**
compartment at the **tunnel face** (03 42019) filled with fluid pressurized to balance **ground** (01) and **ground water** (BS ISO 6107-1) pressure
- 03 46085 water curtain**
water spray from nozzles, in a pattern, to reduce the spread of dust during the **excavation** (01) of a **tunnel** (01)
- 03 46086 sand tray**
horizontal **plate** (01) in front of a **tunnel shield** (03 46032) to trap incoming soft **ground** (01) and prevent it filling the **tunnel shield** (03 46032)
- 03 46087 Manchester gate**
safety device placed across **track** (01) at the top of a **slope** (01) to halt runaway vehicles
- 03 46088 automatic guidance system**
system of lasers and **computers** (07 22031) that produces a visual display from which an operator can steer a machine or that directly controls the movements of a machine
- 03 46089 blasting curtain**
flexible material placed across a **tunnel** (01) to limit the spread of material from an explosion
- 03 46090 reek**
collection of gaseous fumes in a **tunnel** (01) after **blasting** (03 24022)
- 03 46092 muck lock**
air lock (01) for transfer of **plant** (01) or **material** (01)
- 03 46093 medical lock**
chamber for the therapeutic recompression and decompression of people suffering from **decompression illness** (03 39001)
NOTE Usually of two compartments.
- 03 46094 blister lock**
vertical **air lock** (01) that has separate chambers for **materials** (01) and people
- 03 46095 decant lock**
chamber, adjacent to but separate from **compressed air** (BS EN 12110) workings for the decompression of people leaving the **compressed air** (BS EN 12110) workings

- 03 46096 traverser**
sub-frame upon which a small length of **track** (01) of a **railway** (01) is mounted on wheels to allow wagons to be moved from one **track** (01) to an adjacent parallel **track** (01)
- 03 46097 pumping system**
pump (01) and **pipe** (01) system that carries cleaned **slurry** (01) from the **separation plant** (03 46046) to the **slurry machine** (03 46111) and return the **slurry** (01) carrying excavated material
- 03 46098 by-pass circuit**
circuit in a **pumping system** (03 46097) to maintain the flow in the **pipe** (01) while access to the **tunnel face** (03 42019) is closed or otherwise unavailable
- 03 46099 flat car**
vehicle that moves on **track** (01) and consists of a flat surface mounted on a pair of axles
- 03 46100 segment car**
flat car (03 46099) adapted to carry one or more **tunnel segments** (03 42011) securely
- 03 46101 grout car**
vehicle that moves on **track** (01) carrying a container for transporting **grout** (01)
- 03 46102 bridge cylinder**
short conveyor for transferring **spoil** (03 23023) from a machine to a main conveyor or from one conveyor to another travelling in a different direction
- 03 46103 California crossover**
prefabricated unit of four **rails** (04 22051) so spaced to provide **track** (01) through the central pair of **rails** (04 22051) as well as the outer pairs and connected by **crossovers** (04 22043) at each end; the unit is placed above existing **track** (01) and has **ramps** (01) at each end
*NOTE The unit is used to provide a passing place in tunnelling; it can be moved to another position as the **tunnel** (01) advances.*
- 03 46104 man riding skip**
bucket for handling **spoil** (03 23023), adapted, with safety devices, for carrying people in and out of **shafts** (01)
- 03 46105 scaling bar**
metal **rod** (01) used to **scale down** (03 44015)
- 03 46106 drop line**
wire suspended down a **shaft** (01) to provide a vertical line in a survey
- 03 46107 Weisbach triangle**
trigonometrical device for transferring an above-ground survey to below **ground** (01)
- 03 46108 offset table**
schedule (10 26009) of the distances of a series of reference points from a reference line

- 03 46109 drilling pattern**
representation of the arrangements, on the exposed surface of the **rock** (03 23027), of the pattern of entry of **shot holes** (03 28001), annotated to show the **size** (01) and **depth** (01) of each **shot hole** (03 28001) and the type and amount of **explosive** (BS 5607) used in each
- 03 46110 nozzle man operative** (01) in a **shotcrete** (09 33034) gang who manipulates the nozzle and controls final disposition of the material
NOTE When using the **dry process** (03 44020) also controls consistency.
- 03 46111 slurry machine shield machine** (BS EN 12336) for use in soft **ground** (01) with a bulkhead through which the excavated **material** (01) is transported from the face in a **slurry** (01)

6.7 Properties (03 47xxx)

- 03 47001 dimensional creep**
difference between actual advance of an **assembly** (01) and the theoretical advance
- 03 47002 ironbound**
condition arising from a change of alignment, where the tail of a **tunnel shield** (03 46032) binds against a preformed **tunnel lining** (03 42005)
- 03 47003 lead**
distance that one side of a **tunnel lining** (03 42005) or a **tunnel shield** (03 46032) is in front of the other
- 03 47004 look up**
distance that the bottom of a **tunnel lining** (03 42005) or **tunnel shield** (03 46032) is in front of the top
- 03 47005 overhang**
distance that the top of a **tunnel lining** (03 42005) or **tunnel shield** (03 46032) is in front of the bottom
- 03 47006 rock mass rating**
empirical geomechanical classification for quantitatively assessing **rock** (03 23027) and predicting **tunnel** (01) support requirements
- 03 47007 closed mode characteristic** (01) of a **shield machine** (BS EN 12336) that maintains support of the **tunnel face** (03 42019) while advancing
- 03 47008 gauge pressure**
air pressure measured by **gauge** (12 86029) above atmospheric pressure
- 03 47009 hydrostatic balance**
at a particular level, balance between pressure of air in a **tunnel** (01) and **ground water** (BS ISO 6107-1) pressure
- 03 47010 tunnel air pressure**
pressure of air in a **tunnel** (01)

- 03 47011 air loss**
quantity of **compressed air** (BS EN 12110) lost, measured at atmospheric pressure
- 03 47012 stand-up time**
time that the **span** (01) of the unsupported excavated roof of a **tunnel** (01) remains stable
- 03 47013 overburden pressure**
pressure in the horizontal plane at a given **depth** (01) due to the **weight** (11 27002) of **overburden** (03 23019)
- 03 47014 water head**
head (01) of water
- 03 47015 tunnel arch**
profile (01) of the upper portion of a **tunnel** (01)

6.8 Spaces (03 48xxx)

- 03 48002 relieving hole**
hole to break **rock** (03 23027) and thereby control and localize the effects of the initial blast in a **round** (BS 5607)
NOTE Usually 75 mm to 100 mm in diameter.
- 03 48003 cut**
group of **shot holes** (03 28001) surrounding a **relieving hole** (03 48002)
- 03 48004 burn cut**
cut (03 48003) in which all the **shot holes** (03 28001) are parallel
- 03 48005 confined space**
space (01) with restricted ventilation where there is a reasonably foreseeable risk to health and safety
- 03 48006 air bubble**
space formed in the upper part of the **slurry** (01) compartment of a **slurry machine** (03 46111) in which **compressed air** (BS EN 12110) is used to maintain the **slurry** (01) at a pressure appropriate to the conditions at the **tunnel face** (03 42019)
- 03 48007 wedge cut**
cut (03 48003) in which central **shot holes** (03 28001) start in a pattern of two vertical lines and converge in pairs to encompass a wedge-shaped **block** (01) of **rock** (03 23027)
- 03 48008 trimming hole**
shot hole (03 28001) on the perimeter of an **excavation** (01) to define its **profile** (01) and fired last
- 03 48009 injection point**
opening for **grout** (01) in a **tunnel shield** (03 46032) or **tunnel lining** (03 42005)

6.9 Miscellaneous (03 49xxx)

- 03 49001 deoxygenated air**
air with a reduced amount of oxygen
- 03 49002 blackdamp**
air found in **tunnels** (01) and mines; it has less oxygen than normal but more carbon dioxide
- 03 49003 firedamp**
flammable mixture of methane and other gases
- 03 49004 explosive atmosphere**
mixture of flammable substances in the form of gas, mist or dust in which, after ignition, combustion spreads rapidly throughout the unconsumed mixture
- 03 49005 potential explosive atmosphere**
atmosphere that could become an **explosive atmosphere** (03 49004)

7 Superstructures (03 5xxxx)

7.1 Works (03 51xxx)

- 03 51001 large span structure**
structure (01) with a **span** (01) in excess of 50 m
- 03 51002 cable supported structure**
structure (01) with support provided by suspended **cables** (01)
- 03 51003 cable stayed structure**
structure (01) with support provided by straight, inclined **cables** (01)
- 03 51004 framed structure**
structure (01) with a **strength** (11 27007) and stability relying mainly on its **structural skeleton** (03 52006) rather than on loadbearing **walls** (01)
- 03 51005 tower**
long, slender **structure** (01), either isolated or forming part of a **building** (01)
- 03 51006 lattice tower**
pylon
tower (03 51005) of open **structural members** (01) with intersecting diagonal **structural members** (01)
- 03 51007 mast**
long, slender, vertical support
NOTE Often held in position by **guys** (03 52011).
- 03 51008 cooling tower**
structure (01) for lowering temperature of water by evaporative cooling

- 03 51010 shelter structure** (01) that affords protection from the elements, criminal action or hostile action
- 03 51011 ski jump structure** (01) with an inclined **platform** (06 52012) to facilitate take-off by ski jumpers
*NOTE Usually a **framed structure** (03 51004).*
- 03 51012 velodrome**
arena that comprises both a banked track for cycle racing and facilities for spectators
- 03 51013 stand**
free-standing tiered **structure** (01) for spectators
- 03 51014 grandstand**
large, permanent covered **stand** (03 51013)
NOTE Often incorporates additional amenities.
- 03 51015 amusement structure**
structure (01) that accommodates facilities intended to give members of the public thrills or excitement
- 03 51016 hoarding construction** (01) providing a surface to carry advertisements
- 03 51017 box girder bridge**
bridge (01) the main **structural members** (01) of which are **box girders** (01)
- 03 51018 slab bridge**
bridge (01) composed of a single **slab** (01) of **stone** (01) or **concrete** (01)
- 03 51019 girder bridge**
bridge (01) the main **structural members** (01) of which are **girders** (01)
- 03 51020 lattice girder bridge**
bridge (01) the main **structural members** (01) of which are **lattice girders** (01)
- 03 51021 deck bridge**
bridge (01) in which the **deck** (01) is positioned at the top of the **main beam** (01)
- 03 51022 through bridge**
bridge (01) in which the **deck** (01) is positioned at or close to the bottom of the **main beam** (01)
- 03 51023 drawbridge**
movable bridge (01) in which the **deck** (01) can be rotated about a hinge at one end and the other end raised
- 03 51024 retractable bridge**
movable bridge (01) in which the **deck** (01) can be withdrawn from its normal position

- 03 51025 transporter bridge**
bridge (01) at a high level supporting a carrier from which a **platform** (06 52012) or container is suspended and transported from one **bank** (05 28001) to another
- 03 51026 Bailey bridge**
lattice girder bridge (03 51020) fabricated in small units to facilitate transportation and speedy erection
NOTE Originally designed for military purposes.
- 03 51027 cableway**
 Blondin
aerial ropeway (01) suspended between only two supports

7.2 Parts (03 52xxx)

- 03 52001 lamella roof**
roof (01) supported by a **space frame** (01) with connecting **structural members** (01) forming a diamond pattern
- 03 52002 dome**
 curved **roof** (01) **structure** (01) of a hemispherical or approximately hemispherical **shape** (11 27004)
- 03 52003 hyperbolic paraboloid roof**
shell roof (01) of hyperbolic paraboloidal **shape** (11 27004)
- 03 52004 barrel vault roof**
shell roof (01) partly cylindrical in cross-section
- 03 52005 steel frame**
frame (01) with **structural members** (01) of steel
- 03 52006 structural skeleton**
frame (01) forming the main loadbearing part of a **structure** (01)
- 03 52007 gantry**
 high level platform and its supports enabling activities to be carried out or equipment supported at that level, but also allowing passage or operations underneath
- 03 52008 crane gantry**
columns (01) and **beams** (01) supporting the ends of a moving **crane** (01)
- 03 52010 hoarding**
 temporary **structure** (01) enclosing a **site** (01) or erected as a **barrier** (01) to prevent access
- 03 52011 guy**
rope (01) fixed at one end of a **structure** (01) and at the end to an anchorage to provide restraint
- 03 52012 sway brace**
bracing (01) to resist lateral forces (01) in a **superstructure** (01)

- 03 52013 Pratt truss**
truss (01) having vertical and diagonal **structural members** (01) between the **chords** (03 52015) that together form right angled triangles
- 03 52014 Warren truss**
truss (01) that, between the upper and lower **chords** (03 52015), has only inclined **structural members** (01) forming triangles
- 03 52015 chord**
top or bottom longitudinal **structural member** (01) of a **truss** (01)
- 03 52017 standard bridge beam**
one of a range of nationally agreed **sizes** (01) of precast **prestressed concrete** (01) **beams** (01)
- 03 52018 cross head**
lateral **beam** (01) that connects the tops of **columns** (01) forming part of a **bridge pier** (01)
- 03 52019 bridge cap**
top of a **bridge pier** (01) or **bridge abutment** (01) on which **bridge bearings** (03 52028) are seated
- 03 52020 wing wall**
wall (01) that extends a **bridge abutment** (01) to retain the side **slope** (01) of **fill** (01)
- 03 52021 bank seat**
foundation (01) at the top of a **bank** (05 28001) forming an end support for a **bridge** (01)
NOTE Usually shallow.
- 03 52022 bridge parapet**
protective **fence** (01) or **wall** (01) at the edge of a **bridge** (01)
- 03 52023 suspended span**
simply supported span between **cantilevers** (01) in a **cantilever bridge** (01)
- 03 52024 catenary cable**
heavy uniform **cable** (01) hanging freely from two points in a curve
- 03 52025 bridge suspender**
one of several **hangers** (06 72050) from a **catenary cable** (03 52024) supporting a **deck** (01)
- 03 52026 cable saddle**
metal block over which **cables** (01) pass
NOTE For example at the top of a tower (03 51005) of either a suspension bridge (01) or an aerial ropeway (01).
- 03 52027 bearing**
component (01) to transfer the **load** (01), from a **structural member** (01) subject to movement, on to a fixed support
- 03 52028 bridge bearing**
bearing (03 52027) from a **bridge** (01)

- 03 52029 roller bearing**
bearing (03 52027) with one or more rollers between parallel upper and lower **plates** (01)
- 03 52030 single roller bearing**
roller bearing (03 52029) with one roller
- 03 52031 multiple roller bearing**
roller bearing (03 52029) with two or more rollers
- 03 52032 rocker bearing**
bearing (03 52027), constrained to prevent relative horizontal movement, with a cylindrical or spherical surface
- 03 52033 linear rocker bearing**
rocker bearing (03 52032) with a cylindrical surface
- 03 52034 spherical rocker bearing**
rocker bearing (03 52032) with a spherical surface
- 03 52035 knuckle bearing**
bearing (03 52027) that permits rotation by sliding of one part on another and provides two or more **structural members** (01) with mating cylindrical or spherical surfaces
- 03 52036 knuckle pin bearing**
knuckle bearing (03 52035) with a cylindrical pin
- 03 52037 cylindrical knuckle bearing**
knuckle bearing (03 52035) with cylindrical mating surfaces
- 03 52038 spherical knuckle bearing**
knuckle bearing (03 52035) with spherical mating surfaces
- 03 52039 knuckle leaf bearing**
knuckle bearing (03 52035) with a pin passing through a number of interleaved **plates** (01) fixed alternately to the upper and lower bearing **plates** (01)
- 03 52040 sliding bearing**
bearing (03 52027) that consists of two surfaces sliding one on the other
- 03 52041 pot bearing**
bearing (03 52027) with a metal piston supported by a disc of unreinforced **elastomer** (BS EN 923) confined with a metal cylinder
- 03 52042 elastomeric bearing**
bearing (03 52027) that consists of a block of **elastomer** (BS EN 923)
- 03 52043 elastomeric laminated bearing**
elastomeric bearing (03 52042) that is reinforced internally with steel **plates** (01)
- 03 52044 plain pad bearing**
elastomeric bearing (03 52042) without **reinforcement** (01)
- 03 52045 strip pad bearing**
plain pad bearing (03 52044) the **length** (01) of which is at least 10 times its **width** (01)

7.3 Activities (03 54xxx)

- 03 54001 box frame construction**
construction (01) of a long, narrow multi-storey **building** (01) with **concrete** (01) **floors** (01) carried on loadbearing **walls** (01) across the width of the **building** (01)
- 03 54002 lift slab construction**
construction (01) in which **concrete slabs** (01) are cast one on top of the other near **ground level** (01) for subsequent raising to their final positions and support by previously constructed **columns** (01)

7.4 Properties (03 57xxx)

- 03 57001 HA loading**
normal design **load** (01) for **highways** (01)
NOTE This represents the effects (ISO 8930) of normal permitted vehicles. Attention is drawn to the Road Vehicles (Construction and Use) Regulations [1].
- 03 57002 HB loading**
highway (01) **load** (01) requirements derived to cover abnormal indivisible **loads** (01) likely to use the **roads** (01) in an area
- 03 57003 RU loading**
railway (01) **load** (01) requirements derived by a Committee of the International Union of Railways to cover present and anticipated future **loads** (01) on **railways** (01) in Great Britain and in Europe
- 03 57004 RL loading**
railway (01) **load** (01) requirements derived by the London Underground Ltd to cover present and anticipated future **loads** (01) on lines that carry only rapid transit passenger stock and lift engineers' works trains

Bibliography

Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 5607, *Code of practice for the safe use of explosives in the construction industry*

BS 6068-1.4 (ISO 6107-4), *Water quality – Part 1: Glossary – An additional 18 terms*

BS 6100-0, *Building and civil engineering – Vocabulary – Part 0: Introduction and index*

BS 6100-1/ISO 6707-1, *Building and civil engineering – Vocabulary – Part 1: General terms*

BS 6100-4, *Building and civil engineering – Vocabulary – Part 4: Civil engineering – Transport*

BS 6100-5, *Building and civil engineering – Vocabulary – Part 5: Civil engineering – Water engineering, environmental engineering and pipelines*

BS 6100-6, *Building and civil engineering – Vocabulary – Part 6: Construction parts*

BS 6100-7, *Building and civil engineering – Vocabulary – Part 7: Services*

BS 6100-8, *Building and civil engineering – Vocabulary – Part 8: Work with timber and wood-based panels*

BS 6100-9, *Building and civil engineering – Vocabulary – Part 9: Work with concrete and plaster*

BS 6100-10, *Building and civil engineering – Vocabulary – Part 10: Contract terms*

BS 6100-11, *Building and civil engineering – Vocabulary – Part 11: Performance characteristics, measurement and joints*

BS 6100-12, *Building and civil engineering – Vocabulary – Part 12: Plant, equipment and persons*

BS 6953, *Glossary of terms for procedures for setting out, measurement and surveying in building construction (including guidance notes)*

BS EN 459-1, *Building Lime – Part 1: Definitions, specifications and conformity criteria*

BS EN 923, *Adhesives – Terms and definitions*

BS EN 1536, *Execution of special geotechnical work – Bored piles*

BS EN 1537, *Execution of special geotechnical work – Ground anchors*

BS EN 12110, *Tunnelling machines – Air locks – Safety requirements*

BS EN 12336, *Tunnelling machines – Shield machines, thrust boring machines, auger boring machines, lining erection equipment – Safety requirements*

BS EN 12433-1, *Industrial, commercial and garage doors and gates – Terminology – Part 1: Types of doors*

BS EN 12670, *Natural stone – Terminology*

BS EN 12699, *Execution of special geotechnical work – Displacement piles*

BS EN ISO 772, *Hydrometric determinations – Vocabulary and symbols*

BS EN ISO 12570, *Hygrothermal performance of building materials and products – Determination of moisture content by drying at elevated temperature*

BS EN ISO 14688-2, *Geotechnical investigation and testing – Identification and classification of soil – Part 2: Principles for a classification*

BS ISO 6107-1, *Water quality – Vocabulary – Part 1*

BS ISO 6107-3, *Water quality – Vocabulary – Part 3*

BS ISO 10209-1, *Technical product documentation – Vocabulary – Part 1: Terms relating to technical drawings: general and types of drawings*

ISO 2145, *Documentation – Numbering of divisions and subdivisions in written documents*

ISO 8930, *General principles on reliability of structures – List of equivalent terms*

ISO 10241, *International terminology standards – Preparation and layout*

Other references

[1] GREAT BRITAIN. The Road Vehicles (Construction and Use) Regulations 1986, No. 1078. London: HMSO.

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