

D20**EXCAVATING AND FILLING**

To be read with Preliminaries/ General conditions.

CLEARANCE/ EXCAVATING

170

REMOVING TREES, SHRUBS AND HEDGES

- Identification: Clearly mark trees to be removed.
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group

Safety Guides.

- Felling: Cut down and grub up roots of shrubs and smaller trees. Fell larger trees as close to the ground as possible and grind stumps to below ground level.

- Work near retained trees: Take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained, where tree canopies overlap and in confined spaces generally.

- Stumps: Obtain approval before removing stumps by winching and do not use other trees as supports or anchors.

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SITE CLEARANCE

- Timing: Before topsoil stripping, if any.
- General: Clear site of rubbish, debris and vegetation. Do not compact

topsoil.

adjacent areas.

- Large roots: Grub up and dispose of without undue disturbance of soil and

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STRIPPING TOPSOIL

- General: Before beginning general excavation or filling, strip topsoil from areas where there will be re-grading, buildings, pavings/ roads and other areas shown on drawings.

- Depth:

- Remove to an average depth of _____ mm and keep separate from excavated subsoil.

- Give notice where the depth of topsoil is difficult to determine.

- Handling: Handle topsoil for reuse or sale in accordance with clause 225.

retained.

- Around trees: Do not remove topsoil from below the spread of trees to be

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TREATING TOPSOIL

- Treatment: Apply a suitable trans-located non-residual herbicide.
- Timing: Not less than two weeks before excavating topsoil.

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HANDLING TOPSOIL

- Aggressive weeds:

- Species: Included in the Weeds Act, section 2 or the Wildlife and Countryside Act, Schedule 9, part II.

- Give notice: Obtain instructions before moving topsoil.

- Earthmoving equipment: Select and use to minimize disturbance, trafficking and compaction.

- Contamination: Do not mix topsoil with:

work.

- Subsoil, stone, hardcore, rubbish or material from demolition

- Oil, fuel, cement or other substances harmful to plant growth.

- Other grades of topsoil.

- Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.

- Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit as defined by BS 3882, Annex N2.

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ADJACENT EXCAVATIONS

- Proximity: Where an excavation encroaches below a line drawn at an angle from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto must be completed before the higher excavation is made.
- Angle of line from horizontal: 45 degrees.

250 PERMISSIBLE DEVIATIONS FROM FORMATION LEVELS

- Beneath mass concrete foundations: ± 25 mm.
- Beneath ground bearing slabs and r.c. foundations: ± 15 mm.
- Embankments and cuttings: ± 50 mm.
- Ground abutting external walls: ± 50 mm, but such as to ensure that finished level is not less than 150 mm below dpc.

260 INSPECTING FORMATIONS

- Give notice: Make advance arrangements for inspection of formations for foundations.
- Preparation: Just before inspection remove the last 150 mm of excavation. Trim to required profiles and levels, and remove loose material.
- Seal: Within 4 hours of inspection, seal formations with _____.

270 FOUNDATIONS GENERALLY

- Give notice if:
 - A natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawings.
 - The formation contains soft or hard spots or highly variable material.

280 TRENCH FILL FOUNDATIONS

- Excavation: Form trench down to formation in one operation.
- Safety: Prepare formation from ground level.
- Inspection of formations: Give notice 48 hours before commencing excavation.
- Shoring: Where inspection of formation is required, provide localised shoring to suit ground conditions.
- Concrete fill: Place concrete immediately after inspection and no more than four hours after exposing the formation.

290 FOUNDATIONS IN MADE UP GROUND

- Depth: Excavate down to a natural formation of undisturbed subsoil.
- Discrepancy: Give notice if this is greater or less than depth given.

310 UNSTABLE GROUND

- Generally: Ensure that the excavation remains stable at all times.
- Give notice: Without delay if any newly excavated faces are too unstable to allow earthwork support to be inserted.
- Take action: If instability is likely to affect adjacent structures or roadways, take appropriate emergency action.

320 RECORDED FEATURES

- Recorded foundations, beds, drains, manholes, etc: Break out and seal drain ends.
- Contaminated earth: Remove and disinfect as required by local authority.

330 UNRECORDED FEATURES

- Give notice: If unrecorded foundations, beds, voids, basements, filling, tanks, pipes, cables, drains, manholes, watercourses, ditches, etc. not shown on the drawings are encountered.

360 EXCESS EXCAVATION

- Excavation taken wider than required: Backfill with as dug material.

- Excavation taken deeper than required: Backfill with lean mix concrete.

DISPOSAL OF MATERIALS

410 EXCAVATED TOPSOIL STORAGE

- Storage: Stockpile in temporary storage heaps.

415 EXCAVATED TOPSOIL REMOVAL

- General: Remove from site.

441 SURPLUS SUBSOIL

- Excavated material: Stockpile in temporary storage heaps.
- Retained material: Spread and level surplus subsoil on site.
 - Locations: _____.
 - Protected areas: Do not raise soil level within root spread of trees that are to be retained.
- Remaining material: Remove from site.

450 WATER

- Generally: Keep all excavations free from water until:
 - Formations are covered.
 - Below ground construction is completed.
 - Basement structures and retaining walls are able to resist leakage, water pressure and flotation.
- Drainage: Form surfaces of excavations and fill to provide adequate falls.
- Removal of water: Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses with silt laden water.

454 GROUND WATER LEVEL/ RUNNING WATER

- Give notice: If it is considered that the excavations are below the water table.
- Springs/ Running water: Give notice immediately if encountered.

457 PUMPING

- General: Do not disturb excavated faces or stability of adjacent ground or structures.
- Pumped water: Discharge without flooding the site, or adjoining property.
- Sumps: Construct clear of excavations. Fill on completion.
 - Locations: _____.

FILLING

500 PROPOSED FILL MATERIALS

- Details: Submit full details of proposed fill materials to demonstrate compliance with specification, including:
 - Type and source of imported fill.
 - Proposals for processing and reuse of material excavated on site.
 - Test reports as required elsewhere.
- Timing: _____.

510 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS

- General: Do not use fill materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling, including material that is:
 - Frozen or containing ice.
 - Organic.
 - Contaminated or noxious.
 - Susceptible to spontaneous combustion.

- Likely to erode or decay and cause voids.
- With excessive moisture content, slurry, mud or from marshes or bogs.
- Clay of liquid limit exceeding 80 and/ or plasticity index exceeding 55.
- Unacceptable, class U2 as defined in the Highways Agency 'Specification for highway works', clause 601.

520 FROST SUSCEPTIBILITY

- General: Except as allowed below, fill must be non frost-susceptible as defined in Highways Agency 'Specification for Highway Works', clause 801.17.
- Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are non frost- susceptible:
 - Fine grained soil with a plasticity index less than 20%.
 - Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
 - Crushed chalk.
 - Crushed limestone fill with average saturation moisture content in excess of 3%.
 - Burnt colliery shale.
- Frost-susceptible fill: May only be used within the external walls of buildings below spaces that will be heated. Protect from frost during construction.

530 PLACING FILL

- Excavations and areas to be filled: Free from loose soil, rubbish and standing water.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and re-compact if not damaged after thawing.
- Adjacent structures, membranes and buried services:
 - Do not overload, destabilise or damage.
 - Submit proposals for temporary support necessary to ensure stability during filling.
 - Allow 14 days (minimum) before backfilling against in situ concrete structures.
- Layers: Place so that only one type of material occurs in each layer.
- Earthmoving equipment: Vary route to avoid rutting.

610 COMPACTED FILLING FOR LANDSCAPE AREAS

- Fill: Materials, capable of compaction by light earthmoving plant.
- Filling: Layers not more than 200 mm thick. Lightly compact each layer to produce a stable soil structure.

617 HIGHWAYS AGENCY TYPE 1 GRANULAR FILLING

- Fill: To Highways Agency 'Specification for highway works', clause 803:
 - Crushed rock (other than argillaceous rock).
 - Crushed concrete.
 - Recycled aggregates.
 - Crushed non-expansive slag to clause 801.2.
 - Well-burned non-plastic colliery shale.
- Filling: To Highways Agency 'Specification for highway works', clauses 801.3 and 802.

618 HIGHWAYS AGENCY TYPE 2 GRANULAR FILLING

- Fill: To Highways Agency 'Specification for highway works', clause 804:
 - Crushed rock (other than argillaceous rock).
 - Crushed concrete.
 - Crushed non-expansive slag to clause 801.2.
 - Well-burned non-plastic colliery shale.
 - Natural gravel.
 - Natural sand.

801.3 and 802.

- Filling: To Highways Agency 'Specification for highway works', clauses

626 COMPACTED GENERAL FILLING

- Fill: _____ .
- Excavated material: Select suitable material and keep separate.
- Filling: Spread and level material in layers. As soon as possible thoroughly compact each layer.
- Proposals: Well in advance of starting work submit details of proposed:
 - Materials to be used, including quantities of each type.
 - Type of plant.
 - Maximum depth of each compacted layer.
 - Minimum number of passes per layer.

700 BACKFILLING AROUND FOUNDATIONS

- Under over-site concrete and pavings: Hardcore as clause 710.
- Under grassed or soil areas: Material excavated from the trench, laid and compacted in 300 mm maximum layers.

710 HARDCORE FILLING

- Fill: Granular material, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111, and in any one layer only one of the following:
 - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
 - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
 - Crushed non-expansive slag.
 - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
 - Well-burned non-plastic colliery shale.
 - Natural gravel.
 - Natural sand.
- Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer.

HIGHWAYS AGENCY EARTHWORKS SPECIFICATION APPENDICES

900 APPENDIX 6/1 - REQUIREMENTS FOR ACCEPTABILITY AND TESTING ETC. OF EARTHWORKS MATERIALS

- _____ .

905 APPENDIX 6/2 - REQUIREMENTS FOR DEALING WITH CLASS U2 UNACCEPTABLE MATERIAL

- _____ .

910 APPENDIX 6/3 - REQUIREMENTS FOR EXCAVATION, DEPOSITION, COMPACTION (OTHER THAN DYNAMIC COMPACTION)

- _____ .

915 APPENDIX 6/4 - REQUIREMENTS FOR CLASS 3 MATERIAL

- _____ .

920 APPENDIX 6/5 - GEOTEXTILES USED TO SEPARATE EARTHWORKS MATERIALS

- _____ .

925 APPENDIX 6/6 - FILL TO STRUCTURES AND FILL ABOVE STRUCTURAL FOUNDATIONS

	- _____ .
930	APPENDIX 6/7 - SUB-FORMATION AND CAPPING AND PREPARATION AND SURFACE TREATMENT OF FORMATION
	- _____ .
935	APPENDIX 6/8 - TOPSOILING, GRASS SEEDING AND TURFING
	- _____ .
940	APPENDIX 6/9 - EARTHWORK ENVIRONMENTAL BUNDS, LANDSCAPE AREAS, STRENGTHENED EMBANKMENTS
	- _____ .
945	APPENDIX 6/10 - GROUND ANCHORAGES, CRIB WALLING AND GABIONS
	- _____ .
950	APPENDIX 6/11 - SWALLOW HOLES AND OTHER NATURALLY OCCURRING CAVITIES AND DISUSED MINE WORKINGS
955	APPENDIX 6/12 - INSTRUMENTATION AND MONITORING:
	- _____ .
960	APPENDIX 6/13 - GROUND IMPROVEMENT:
	- _____ .