

325 Deansgate

Excavating and Filling Specification

Document Number
Issue
Project Number:
Report Issue Date:
Report Status:
Prepared by:
Checked by:

DEA-EOC-XX-XX-SP-S-0002
P01
22244
26/07/2023
S3 – For Review and Comment
KJ
AC

Document History

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Contents

D20 Excavating and filling..... 4

D20

Excavating and filling

Generally/the site

110 Site investigation

1. Report: A copy of site investigations report is included in the tender documents.
 - GeoCon Site Investigations Ltd Ref GSI 1813 HH GI Report V1

145 Variations in ground water level

1. Give notice: If levels encountered are significantly different from levels in the site investigation report or previously measured.

Clearance/excavating

240 Adjacent excavations

1. Requirement: 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.
2. Angle of line below horizontal: 30°
3. Backfill material: Hardcore filling as clause 710

242 Excavations adjacent to existing backfilled trenches

1. General: To comply with BS 8000:Part 1, sections 3.1, 3.2 and 3.3, and BS 6031
2.
 - The contractor shall be entirely responsible for the safety and protection of the works. Excavation shall be carried out in such a way as to avoid disturbance of the surrounding ground/structures and using temporary support as required.
 - The contractor shall provide for comment full details, drawings and design calculations for temporary works proposed.
 - All excavations are to be kept free of water from whatever source, by pumping or other means. Pumped water shall not be discharged into existing watercourses or into new or existing drains without consent from the owner
3. Proximity: When width of undisturbed ground between the two excavations will be less than 900 mm or less than the depth of excavation, whichever is more onerous.
4. Action: Assume that the ground between the trenches is unstable and provide side support accordingly.

244 Excavations adjacent to existing foundations

1. Prior to commencing excavation
 - 1.1. Excavate trial pits adjacent to existing foundations to determine extent and formation levels.
 - 1.2. Allow for inspection of trial pits.
 - 1.3. Allow time for amendment of details if required.
 - 1.3.1. Time period: 5 working days
2. Backfill material to new excavation: As clause 710

248 Backfill to excavations lower than foundation formation level

1. Critical level
 - 1.1. Distance between near faces of foundation and lower excavation less than 1 m: 150 mm above foundation formation level
 - 1.2. Otherwise: 150mm above level at which line defined in clause 240 cuts near face of lower excavation
2. Backfill material
 - 2.1. Below critical level: Lean mix concrete
 - 2.2. Above critical level: Hardcore filling as clause 710

250 Permissible deviations from formation levels

1. Beneath mass concrete foundations: ± 25 mm.
2. Beneath ground bearing slabs and r.c. foundations: ± 15 mm.

255 Accuracy – linear dimensions

1. Permissible deviations from linear dimensions generally: Follow CIRIA Special Publication C709

260 Inspecting formations

1. Give notice: Make advance arrangements for inspection of formations for foundations and filling formations.
 - 1.1. Notice (minimum): 5 days
2. Preparation: Just before inspection remove the last 150 mm of excavation. Trim to required profiles and levels.
 - 2.1. Loose material: Remove
3. Seal: Within 4 hours of inspection, seal formations with blinding concrete.

265 Inspecting formations in sand and gravel

1. Notice for inspection (minimum): 5 days
2. Preparation: Just before inspection remove the last 150 mm of excavation. Trim to required profiles and levels and mechanically compact formation.
3. Seal: Within 4 hours of inspection, seal formations with lean mix concrete.

270 Foundations generally

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

275 Foundation bearing

1. Requirement: Foundations are designed to bear on: sandstone rockbed
 - 1.1. Strata: sandstone rockbed as per SI Report
 - 1.2. Safe bearing capacity (minimum): 550 kPa
2. Give notice: If the material at the design depth of the foundation does not comply with this description, or contains soft or hard spots or highly variable material.

283 Formations for pile supported structures

1. Excavate: To the design formation level.
2. Compact: As necessary to ensure formation will support weight of wet concrete without settlement.
3. Blinding to formation: Lean mix concrete 50 mm thick, and as per clause 730

285 Steps in foundation formations

1. Depth of formation below ground level (minimum)
 - 1.1. Existing ground level: 450 mm
 - 1.2. Finished ground level: 450 mm
2. Step dimensions
 - 2.1. Distance between steps (minimum): 1m
 - 2.2. Height of step (maximum): The minimum of 500mm or depth of the trench
 - 2.3. Length of overlap (minimum): Twice the height of the step or 1m, whichever is greater

290 Foundations in made up ground

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

310 Unstable ground

1. Generally: Ensure that the excavation remains stable at all times.

2. Give notice: Without delay if any newly excavated faces are too unstable to allow earthwork support to be inserted.
3. Take action: If instability is likely to affect adjacent structures or roadways, take appropriate emergency action.

320 Recorded features

1. Recorded foundations, beds, drains, manholes, etc.: Break out and seal drain ends
2. Contaminated earth: Remove and disinfect as required by Local Authority.

330 Unrecorded features

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

335 New foundations crossing old foundations or walls

1. Break out: The old foundation/wall/ground obstruction where it crosses the new foundation/ wall:
 - 1.1. Length of breaking out: Width of the new foundation/ wall plus 100 mm on either side of new foundation.
 - 1.2. Depth of breaking out: 300 mm to the underside of the new foundation
2. Disturbed/ softened soil: When the formation for the old foundation/ wall is deeper than the formation of the new foundation.
 - 2.1. Excavate: Soil that has been disturbed and/ or softened on either side of the old wall/ foundation, and for 150 mm into undisturbed ground on either side.
3. Step up: The formation for the new foundation as necessary on either side of the old foundation/ wall until the formation is at its design level.
 - 3.1. Size of steps:
4. Backfilling beneath design formation level: Fill with concrete as foundation is cast

337 Old foundations or walls beneath new ground supported slab

1. Break out: The old foundation/ wall/ground obstruction to a depth below the underside of slab level of at least 300 mm.
2. Backfill: Obtain instructions if depth of fill will be greater than 600 mm, otherwise backfill with compacted hardcore.

350 Existing watercourses

1. Diverted watercourses which are to be filled: Before filling, remove vegetable growths and soft deposits.

360 Excess excavation

1. Excavation taken wider than required
 - 1.1. Backfill: With concrete grade C25/30
2. Excavation taken deeper than required
 - 2.1. Backfill: Under foundations: Concrete grade C25/30

Disposal of materials

450 Water

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

454 Ground water level, springs or running water

1. Give notice: If it is considered that the excavations are below the water table.

2. Springs/ Running water: Give notice immediately if encountered.

457 Pumping

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

460 Permanent drainage system

1. Disposal of water from the excavations through system: Not permitted

Filling

500 Proposed fill materials

1. Details: Submit full details of proposed fill materials to demonstrate compliance with specification, including:
 - 1.1. Type and source of imported fill.
 - 1.2. Proposals for processing and reuse of material excavated on site.
 - 1.3. Test reports as required elsewhere.
2. Timing: At least 21 days before starting filling

510 Hazardous, aggressive or unstable materials

1. 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:
 - 1.1. Frozen or containing ice.
 - 1.2. Organic.
 - 1.3. Contaminated or noxious.
 - 1.4. Susceptible to spontaneous combustion.
 - 1.5. Likely to erode or decay and cause voids.
 - 1.6. With excessive moisture content, slurry, mud or from marshes or bogs.
 - 1.7. Clay of liquid limit exceeding 80 and/or plasticity index exceeding 55.
 - 1.8. Unacceptable, class U2 as defined in the 'Specification for highway works', clause 601.

512 Limitation of sulfate content in fill materials

1. Test specification: To BS 1377-3.
2. Sulfate content: Expressed as SO₃.
 - 2.1. Water soluble sulfate (maximum): 1500 mg/L in 2:1 water/ soil extract
 - 2.2. Total potential sulfate (maximum): 0.6%
 - 2.3. Oxidizable sulfides (maximum): 0.3% of total potential sulfate
3. Certificates of test result: Submit.

520 Frost susceptibility

1. General: Except as allowed below, fill must be non frost-susceptible as defined in the 'Specification for highway works', clause 801.8.
2. Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are non frost- susceptible:
 - 2.1. Fine grained soil with a plasticity index less than 20%.
 - 2.2. Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
 - 2.3. Crushed chalk.
 - 2.4. Crushed limestone fill with average saturation moisture content in excess of 3%.
 - 2.5. Burnt colliery shale.
3. Frost-susceptible fill: May only be used:

- 3.1. At depths below the finished ground surface greater than: 450 mm
- 3.2. Within the external walls of buildings below spaces that will be heated. Protect from frost during construction.
- 3.3. Where frost heave will not affect structural elements.

530 Placing fill

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

535 Compaction generally

1. General: Compact fill not specified to be left loose as soon as possible after placing.
2. After compaction: Surface of each layer must be well closed, showing no movement under compaction plant, and without cracks, holes, ridges, loose material and the like.
3. Defective areas: Remove and recompact to full thickness of layer using new material.

540 Benching in fill

1. Adjacent areas: If, during filling the difference in level between adjacent areas of filling exceeds 600 mm, cut into edge of higher filling to form benches 600 mm minimum width and height equivalent to depth of a layer of compacted filling.
2. New filling: Spread and compact to ensure maximum continuity with previous filling.

650 Protection of compacted filling

1. Temporary protective filling: Before allowing construction traffic, raise level of compacted cohesive soil filling at least 150 mm above formation level using properly compacted temporary filling.
2. Removal: Remove temporary protective filling from site before permanent construction.

700 Backfilling around foundations

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

710 Hardcore filling

1. Fill: Granular material, free from excessive dust, well graded, all pieces less than 75 mm in any direction:
 - 1.1. Test requirements
 - 1.1.1. Minimum 10% fines value tested in a soaked condition to BS 812-111 Not required.
 - 1.1.2. Impact value SZ tested to BS EN 1097-2 Not required.
2. Material
 - 2.1. Permitted materials in any one layer
 - 2.1.1. Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
 - 2.1.2. Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
 - 2.1.3. Crushed non-expansive slag.
 - 2.1.4. Gravel or hoggins with not more clay content than is required to bind the material together, and with no large lumps of clay.
 - 2.1.5. Well-burned non-plastic colliery shale.
 - 2.1.6. Natural gravel.

2.1.7. Natural sand.

3. Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer.

730 Blinding

1. Surfaces to receive sheet overlays or concrete:
2. Blind with
 - 2.1. Concrete where shown on drawings; or
3. Sand, fine gravel, or other approved fine material applied to fill interstices. Moisten as necessary before final rolling to provide a flat, closed, smooth surface.
4. Sand for blinding: To BS EN 12620, grade 0/4 or 0/2 (MP).
5. Permissible deviations on surface level: +0/-25mm

Bioremediation - Not Used

'specification for highway works: earthworks specification' appendices - Not Used