20 Queens Gate Place Mews

1001: Specification for earthworks

(MCDHW, Volume 1, Series 600: Earthworks)
<table>
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<th>Revision</th>
<th>Date of issue</th>
<th>Notes</th>
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<td>26/02/14</td>
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1.0 GENERAL

1.1 General requirements

This Specification shall be read in conjunction with the General Structural Clauses and all other contract documents.

The structural earthworks are to be constructed in accordance with this specification and the Highways Agency publication “Manual of Contract Documents for Highway Works, Volume 1 Specification for Highway Works, Series 600: Earthworks, 1998 Edition incorporating amendments up to and including November 2007” including such relevant specifications and codes referred to therein and as modified and added to within this document.

1.2 Definitions

Obstructions: Obstructions shall mean concrete, reinforced concrete, solid brickwork, sheet piles and the like met within excavations.

Formation: Formation shall be the top surface of the earthworks at the underside of:
- the blinding (below slabs),
- the sub-base (below hard-landscaping),
- The topsoil (below soft landscaping).

Sub-formation: Sub-formation shall be the top surface of earthworks after excavation is complete and before any fill has been placed.

2.0 SCOPE OF WORKS

The structural earthworks applications considered in this Specification include:

- Excavation.
- Preparation of formation below:
  - The footprint of the reinforced concrete basement structure.
  - The footprint of the outrigger.
  - Hard landscaping.
- Construction of structural fill behind retaining walls (cast in situ reinforced concrete and secant pile).
- Trial pits to confirm the foundation arrangement of 13 Alloway Road adjacent to the site boundary.

For all other earthworks requirements refer to the architects specifications.

The extent of structural fill adjacent to retaining walls is defined on the Contract drawings.

The following items require particular attention:

- Compaction methods compatible with the design compaction stresses on the retaining walls (ref. 610/5).
- Temporary propping to retaining walls and the adjacent boundary structures during excavation.

3.0 METHOD STATEMENT, DRAWINGS AND PROGRAMME

The Contractor shall provide the Contract Administrator (CA) with the information noted below.

The Contractor shall allow 10 working days within his programme for review of any documents and drawings by the Engineer each time that drawings are submitted. The Contractor shall continue to resubmit documents incorporating any comments made by the Engineer until such time as the drawings are returned without comment.
3.1 Method Statements and drawings:

Method Statements and drawings shall be submitted for the following:

- Proposed excavation and method of excavation including sequence, and plant.
- Protection of the sub-formation.
- Method of treating slopes, protection and treatment of formations, etc.
- Methods for placing and compacting fill, including details of compaction plant and numbers of passes. Special attention shall be given to placing fill adjacent to retaining walls.
- Method of treating slopes, protection and treatment of formations, etc.
- Methods for placing and compacting fill, including details of compaction plant and numbers of passes. Special attention shall be given to placing fill adjacent to retaining walls.
- Monitoring displacement of the retaining walls.
- Trial pits to confirm the foundation arrangement of 13 Alloway Road.

3.2 Programme of Works

A programme for the works shall be submitted at least 14 days before the start of the Works. If the programme is amended, a revised programme shall be submitted.

4.0 SUPPORT OF EXCAVATIONS

The Contractor shall be responsible for the design, fabrication, erection and removal of all temporary works, and the temporary stability of the Works at all stages.

Before the Works are started, the Contractor shall submit details of his proposals for supporting the sides of excavations which have slopes steeper than 1:1.5, or exceeding 1.2m in depth which will be formed during the course of the Works. The Contractor shall provide information to justify the adequacy of his proposals.

Any excavations adjacent to existing or proposed foundations, roads or services shall be carried out and supported in such a manner as to prevent damage and avoid adversely affecting the ground upon which it is intended to build. The Contractor shall submit details of his proposals and supply information to justify the adequacy of his proposals.

5.0 INSPECTIONS AND APPROVALS

The Contractor shall comply with all the requirements of the Local Authority regarding the notification, inspection and approval of all excavations, sub-formation and formation levels. The Contractor shall keep dated records of the inspections and any instructions which result in the defined limits of the excavation being exceeded.

The Contractor shall give the CA an agreed period of notice of the time each sub-formation level will be exposed so that the CA may, if he so wishes, inspect the sub-formation. This period shall be a minimum of 24 hours.

The Contractor shall maintain, and copy to the CA at times to be agreed, full records of notices, inspections, and the time of formation exposure prior to covering up.

The Contractor is required to photograph sub-formations and formations and keep the record on site.

6.0 SITE CONDITIONS

A geotechnical desk study and site investigations have been carried out. The results are presented in the Site Investigations have been completed. The results are summarised in the following reports which are included in the tender documents:

- Site Investigation undertaken by GEA, January 2014
- Interpretative geotechnical statement prepared by GEA, January 2014

The Contractor should make their own assessment of ground conditions and of the adequacy of the previous investigations.

The Contractor shall read the reports, visit the site and thoroughly familiarise himself with the surface and subsurface conditions.

The Employer, Contract Administrator and Engineer accept no responsibility for the accuracy of the reports, nor shall its accuracy affect the provisions of the Contract.

The Contractor should note the following:
Installation of a pressure relief drainage system is required to ensure no buildup of water pressure against the retaining walls to the rear of the property in the event of a collapsed or leaking sewer.

The Contractor shall immediately inform the CA if the ground condition deteriorates when tracked or worked, or varies from that indicated by the site investigation.

7.0 FORMATIONS & SUB-FORMATIONS

7.1 Protection

Construction plant and other vehicular traffic shall not be operated on the sub-formation, except for that required for preparation of the sub-formation, unless adequate protection is provided. The Contractor’s proposals for preparing the sub-formation and in particular how he intends to traffic it shall be agreed with the CA.

If any areas of sub-formation are damaged by the weather or any other cause the CA shall be immediately notified. The Contractor shall submit proposals for remedial works.

The Contractor shall not allow any sub-formation to be left exposed for more than 4 hours after being uncovered.

7.2 Excavation for trench fill foundations

Excavation for trench fill foundations shall be started only when arrangements have been made by the Contractor for:

(a) Any inspections which may be required and

(b) Subsequent placing of concrete within 4 hours of exposing the formation.
### APPENDIX 6/1: REQUIREMENTS FOR ACCEPTABILITY AND TESTING ETC. OF EARTHWORKS MATERIALS

1. Acceptable limits for the fills in Table 6/1 appropriate to the Contract [Table 6/1, 602.1 and 608.1] and including: Amendments to Table 6/1:

#### Table 6/1

<table>
<thead>
<tr>
<th>Class</th>
<th>General Material Description</th>
<th>Typical Use</th>
<th>Permitted Constituents (All Subject to Requirements of Clause 601)</th>
<th>Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631)</th>
<th>Property (See Exceptions in Previous Column)</th>
<th>Acceptable Limits Within:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(i)</td>
<td>Lower</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(ii)</td>
<td>Upper</td>
</tr>
<tr>
<td>1A</td>
<td>Well graded granular material</td>
<td>General Fill</td>
<td>(iii) mc 4% below optimum 2% above optimum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1B</td>
<td>Uniformly graded granular material</td>
<td>General Fill</td>
<td>(iii) mc 4% below optimum 2% above optimum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1C</td>
<td>Coarse granular material</td>
<td>General Fill</td>
<td>As table 6/1.</td>
<td></td>
<td>(ii)</td>
<td>As table 6/1</td>
</tr>
<tr>
<td>4</td>
<td>Various</td>
<td>Fill to landscape areas</td>
<td>Refer to the architects specification</td>
<td></td>
<td></td>
<td>As table 6/1</td>
</tr>
<tr>
<td>5A</td>
<td>Topsoil</td>
<td>Soft Landscaping</td>
<td>Refer to the architects specification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5F</td>
<td>Selected well graded granular material</td>
<td>Fill placed below water</td>
<td>As table 6/1.</td>
<td></td>
<td>(iv) MCV - -</td>
<td></td>
</tr>
<tr>
<td>6A</td>
<td>Selected granular material</td>
<td>Capping</td>
<td>As table 6/1.</td>
<td></td>
<td>(iv) MCV - -</td>
<td></td>
</tr>
<tr>
<td>6B</td>
<td>Selected granular material (fine grading)</td>
<td>Capping</td>
<td>As table 6/1.</td>
<td>Mc 4% OMC 2% OMC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6H</td>
<td>Selected granular material</td>
<td>Drainage layer below the B2 slab</td>
<td>NOT slag, chalk or colliery spoil. Otherwise as table 6/1.</td>
<td>Effective angle of friction ((\Phi^\prime)) 35° As Table 6/1</td>
<td>(v) MCV - -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Effective cohesion (c') 0 As Table 6/1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coefficient of friction N/A As Table 6/1</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coefficient of adhesion N/A As Table 6/1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6N</td>
<td>Selected well graded granular material</td>
<td>Fill to structures</td>
<td>As table 6/1.</td>
<td>(iv) undrained shear parameters (c and (\Phi)) - -</td>
<td>(vi) permeability 10° m/s As table 6/1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Effective angle of internal friction ((\Phi^\prime)) and effective cohesion (c')</td>
<td>(vii) mc 4% below optimum 2% above optimum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(\Phi^\prime = 35°) As Table 6/1</td>
<td>(viii) MCV - -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(c') - - As Table 6/1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Slope stability test is not required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6P</td>
<td>Selected granular material</td>
<td>Fill to structures</td>
<td>As table 6/1.</td>
<td>(iv) undrained shear parameters (c and (\Phi)) - -</td>
<td>(vii) permeability 10° m/s As table 6/1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Effective angle of internal friction ((\Phi^\prime)) and effective cohesion (c')</td>
<td>(viii) mc 4% below optimum 2% above optimum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(\Phi^\prime = 35°) As Table 6/1</td>
<td>(ix) slope stability test (where required in App 6/6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(c') - - As Table 6/1</td>
<td>Slope stability test is not required</td>
<td></td>
</tr>
</tbody>
</table>

(i) permitted Classes where alternatives are listed in the Specification;
(ii) those materials, which may be used for landscape fill Class 4 \(601.2(i) (b)\);  
Refer to the specification for landscaping works.

(iii) cross-references to drawings showing location of ‘zoning’ of general and selected fills;  

Drawings 200 and 201 show the extent of:  
- Fill below the Basement slab,  
- Fill to the retaining walls (excluding soft landscaping)

Drawing 211 show the extent of fill to form the drainage system.

For the location of all other fill materials refer to the architect’s drawings.

(iv) additional sub-divisions of Classes in Table 6/1 required for the Contract, e.g. to set out environmental requirements for processed Class U1B material;  
No additional sub-divisions are required.

(v) alternative and additional requirements for triaxial and shear box tests \[633 and 636\];  
No alternative or additional requirements.

(vi) Class 9D lime stabilised material \[615.5, 615.16\].  
n/a

(vii) Excluded materials:  
- Fill shall not include material which is susceptible to attack from chemicals in the ground or surface water giving rise to a health hazard or damaging the structure of the fill.  
- Materials which in combination with the ground or surface water give rise to an aggressive environment for the building or retaining wall structures will not be permitted.  
- Organic, chemically contaminated and noxious material.  
- Detritus such as slag, plaster, wood, domestic waste and industrial waste

(viii) Frost susceptibility

Any fill material to be placed within 450mm of the surface of the finished works must achieve the classification ‘non-frost susceptible’ as defined in Chapter 7 of the Transport and Road Research Laboratory Supplementary Report No. SR 829 ‘Specification for the TRRL frost-heave test’. If any of the following materials are proposed for use as fill within 450mm of the surface of the finished works, the Contractor shall submit test results showing the material to be ‘non-frost susceptible’:

- fine grained soil with a plasticity index of less than 20%  
- coarse grained soil or crushed granite with more than 10% of soil retained on the 0.63mm sieve  
- crushed chalk  
- crushed limestone fill where the average saturation moisture content is in excess of 3%  
- burnt colliery shale  
- pulverised fuel ash with more than 40% passing the 0.63mm sieve

(ix) Sources of fill materials

At least 21 days before any filling is started, the Contractor shall submit to the CA full details of the sources and types of his proposed filling materials, together with test results to demonstrate compliance with the specification.
2 Special requirements for determining acceptability, who classifies and where, and whether trial pitting is required [602.1].

i) Inspection of sub-formations

The Contractor shall allow for the CA to inspect all sub-formations.

ii) Testing and test results

Testing shall be in accordance with the requirements of Table 6/1 as modified above. The contractor shall submit test certificates to demonstrate compliance with the testing requirements specified in Table 6/1.

3 Designation (if required) of material as Class 3.

n/a.

4 Any requirement for processing to render unacceptable material (other than Class U2) acceptable, cross referring to Drawings where necessary, for each type of material to be processed and class of material to be produced.

Class U1 and U2 material shall be removed from the site.

5 Requirements for groundwater lowering or other treatment [602.17].

Following completion of the retaining wall construction, the contractor shall maintain and operate the below slab pressure relief system to maintain the ground water level below the soffit of the basement slab.

The contractor shall obtain all necessary permissions for water extraction and discharge from the Environment Agency, Local Authority, Thames Water and other necessary bodies.

6 Minimum MCV required immediately before compaction for lime stabilised Class 9D material [615.13].

n/a

7 Contract-specific (local) requirements for acceptability and testing of unburnt colliery spoil [601.15].

No additional Contract-specific requirements.

8 Any permitted use of the rapid assessment procedure for material acceptability [632.3].

No permitted use.

9 Requirements (if any) for removal off site of excavated acceptable material or unacceptable material requiring processing [602.3] or retention of surplus material on site [602.5].

Surplus material shall be removed from site. Acceptable material that is not surplus to the requirements of the Contract may be removed from site if this will be of economic benefit to the project. Material may be removed from site for processing if this will be of economic benefit to the project.

10 Permitted use (if any) of acceptable or unacceptable material required to be processed for purposes other than for general fill [602.4].

No permitted use.

11 Requirements for In Situ Resistivity Tests [637.2].

Refer to Table 6/1.

12 Requirements for In Situ Redox Potential Tests [638.2 and 5].

Refer to Table 6/1.

13 Bearing ratio requirements for class 6R and 7I material [643.6].

n/a

14 Requirements for the assessment of the effects of water soluble (WS) sulfate, oxidisable sulfides and total potential sulfate in accordance with TRL Report 447, Test Nos. 1 to 5 [644.1].
No requirements other than those specified in Table 6/1.

15 Requirements for the magnesium sulfate (MS) soundness test [635.2].

No requirements other than those specified in Table 6/1.
APPENDIX 6/2: REQUIREMENTS FOR DEALING WITH CLASS U1B AND CLASS U2 UNACCEPTABLE MATERIALS

No Environmental Condition Survey of the site has been undertaken.

It is not known whether there any Class U1B or Class U2 unacceptable materials on the site. The contractor must ascertain the extent and nature of any such materials.

1 Drawing references for excavation and disposal of known Class U1B and Class U2 material. [602.5]
   n/a

2 Pre-agreed requirements of the environmental authority for disposal including specific sites. [602.18]
   There are no pre-agreed requirements for disposal.

3 List of known hazardous materials likely to be encountered. [602.5 and 602.18]
   The contractor is to carry out a risk assessment prior to commencement of works on site.

4 Methods of excavation, precautions and requirements for handling. [602.5 and 602.18]
   n/a

5 Special requirements for dealing with leachate and contaminated water. [602.5 and 602.18]
   n/a

6 Requirements for special drainage and for sealing exposed surfaces of contaminated materials. [602.5 and 602.18]
   n/a

7 Test methods to be used for chemical analysis of hazardous materials, leachate and contaminated water should be scheduled in Appendix 1/5. [602.5 and 602.18]
   n/a
6/3: REQUIREMENTS FOR EXCAVATION, DEPOSITION, COMPACTION (OTHER THAN DYNAMIC COMPACTION)

1 The drawing numbers of all drawings which give related earthworks requirements including:

- Drawings numbers to be advised which show the extent of:
  - excavation,
  - fill,
  - fill to structures, and
  - fill forming the drainage system.

For the location of all other earthworks refer to the architect's drawings.

2 Blasting for excavation:

(i) Whether blasting is required or is a permitted alternative to normal excavation methods [607.1].

Blasting is NOT PERMITTED.

3 Cutting faces - requirements for:

There are no cutting faces in the permanent works.

(i) Undercutting restrictions - extent and limitations for sequential excavation and backfilling, where Contractor is required to undercut slopes or toes of cuttings [603.2].

Excavations adjacent to new foundations and retaining walls shall be completed and backfilled prior to construction of adjacent foundations or retaining walls.

Excavations adjacent to existing foundations and retaining walls shall be completed on a hit and miss basis with temporary works and shoring designed for the particular load arrangements.

Fill to excavations adjacent to foundations and retaining walls shall be mass concrete grade GEN 1 as defined in the Structural Concrete Specification.

Refer to the external works specifications for additional requirements.

4 Watercourses including ditches etc.

There are no known watercourses or ditches on the site.

5 Embankment Construction:

(i) Limits on over steepening or in increase in width [608.5].

Over steepening is not permitted.

(ii) Stage construction of fills - details and rates of controlled filling [608.6].

n/a

(iii) Surcharging - details including time period, type of surcharge material, and initial level of top of surcharge above designed formation or sub-formation [608.7].

n/a

(iv) Minimum thickness of capping or of sub-base as appropriate for weather protection of sub-formation or formation [608.9(i)] [cross-referring to Drawings if necessary].

150mm

(v) Description of location, class and thickness of starter layers [608.2].

n/a

6 Compaction [612]:
(i) General:

(a) Requirements if compaction not to comply with Clause 612 [612.1].

n/a

(ii) Method compaction:

(a) Locations where extra compaction in top 600 mm for Classes 1A, 1B, 2A, 2B, 2C and 2D is not required for full width of embankment or between outer extremities of verges. [List Drawing Nos. of appropriate cross-sections (612.10(ii))].

Refer to the external works specifications.

(b) Requirements for compaction of drainage materials other than Class 6H.

Refer to the drainage specifications

(c) Frequency of field dry density testing [612.9]

n/a

(d) Compaction plant

At least 14 days before starting any filling, the Contractor shall submit a method statement describing the type of plant, weight of plant and number of passes and the maximum thickness of the compaction layer proposed. The Contractor’s method must take account of the proximity and condition of adjacent structures and services and the like.

Earthmoving machines will not be accepted as compaction plant.

(e) Compaction requirements and method of compaction

Compaction shall be carried out as soon as practicable after deposition of the fill materials. Material is to be compacted in accordance with Tables 6/1 and 6/4.

(iii) End-product compaction:

(a) Whether a nuclear surface density gauge is to be used or is permitted for measuring field dry densities [612.15].

n/a

7 Limiting distance for deposition of materials referred to in sub-Clauses 601.13, 601.14 or 601.17.

No modifications to the requirements of 601.13 and 601.14. Pulverised-fuel ash shall not be used as fill material on this project.

8 Locations of excavations that are permitted to be battered and requirements for benching prior to backfilling and compaction [602.12].

Excavation above formation level may be battered to suit the Contractor’s construction methodology, where the stability of adjacent structures is not affected.

9 Locations where excavation supports are to be left in position [602.12 and 505.8].

Support to the reinforced concrete underpinning forming the basement perimeter shall be left in position in line with the temporary works design and until completion of structures enabling the permanent stability of the basement walls.

10 Requirements for benching or shaping to natural or earthworks slope faces to receive fill [608.12]. Location of and benching requirements for cutting slopes to receive topsoil, and areas of cutting slopes which do not need harrowing or harrowing depth if not 50 mm [603.7].

n/a

11 Permitted variation (if any) in the maximum difference in fill level of Class 6M material on opposite sides of corrugated steel buried structures from 250 mm [623.7].
12 Contract-specific permitted depth of any protection layer over corrugated steel buried structures [623.13].

13 Contract-specific permitted mixing of excavated materials where a combination of acceptable and unacceptable material is revealed in excavations [602.6].

As clause 602.6.

14 Fill to excavated voids or natural voids in excavation for foundations where ST1 concrete is not required or an alternative is permitted or required [604.1 and 2].

As clauses 604.1 and 2.

15 Additional requirements for corrugated steel buried structures [623.2] [cross-referring to Drawings if necessary].

16 Excess excavation

Should the Contractor excavate beyond his intended zones of excavation as shown on his temporary works drawings, or should any slips occur then the CA will require the whole of the void, including that for which granular filling has been measured, to be backfilled with mass concrete grade GEN 1 as described in the structural concrete specification, unless otherwise instructed. Any excavation below the level required to reach a suitable bearing strata, shall also be brought up to the correct level with mass concrete grade GEN 1.

17 Placing of fill in water

No fill shall be placed in water without the prior agreement of the C.A.

18 Fill placed against structures

The Contractor shall provide protection and place and compact fill against structures, membranes or buried services in a sequence and manner which will ensure stability and avoid damage. The Contractor shall design any temporary support necessary to ensure stability during filling and submit details thereof. Attention is drawn to clause 610/5.

19 Cold weather working

No frozen materials or materials containing ice shall be used for filling. Fill shall not be placed on a frozen surface.

Any material which has been affected by frost shall be removed and after thawing re-compacted as defined in this Specification.
APPENDIX 6/4: REQUIREMENTS FOR CLASS 3 MATERIAL

Appendix 6/1 does not designate that there will be Class 3 in the Contract.
APPENDIX 6/5: GEOTEXTILES USED TO SEPARATE EARTHWORKS MATERIALS

No geotextiles are specified to separate earthworks materials.

1. Drawing references for locations where geotextiles are to be used in separation layers [609.1].
2. Whether the geotextiles are to be of synthetic or other fibres [609.1].
3. Minimum life expectancy [609.2].
4. Distribution and numbers of samples for subsequent testing [609.4].
5. Testing criteria if different from those in sub-Clause 609.4.
6. Details of laying and lapping if other than as in sub-Clause 609.5.
7. Number of tests on samples [609.8].
8. Length of time samples are to be kept by Contractor [609.7].
APPENDIX 6/6: FILL TO STRUCTURES AND FILL ABOVE STRUCTURAL FOUNDATIONS

1 Drawing references for fill to structures and fill above structural foundations.

   Drawings to be advised that show the extent of:
   - fill to structures.

2 Whether Classes 6N, 6P and 7B require full scale determination of stable slope, and value of slope if not 1 to 1.5 [610.6].

   Full scale determination of stable slope is not required. Value of slope is 1 to 1.5.
APPENDIX 6/7: SUB-FORMATION AND CAPPING AND PREPARATION AND SURFACE TREATMENT OF FORMATION

1 Drawing references which show locations where capping is required and its thickness [613.1] and where capping will only be required when one of the pavement types is adopted [e.g. rigid or rigid composite where subgrade CBR > 5 and < 15].

n/a

2 Allowed surface level tolerance [616.1].

As 616.1

3 Permitted Classes of capping singly and in combination [613.3].

Permitted classes of capping are specified on the drawings.

4 In cuttings and on embankments, the procedure to be adopted for construction of capping, or which alternatives are permitted [613.11 and 613.12 respectively. This is mostly governed by material Classes in (3) above].

n/a

5 Requirements for a demonstration area or areas [613.4] including location and protection [613.5]. Requirements for removal and reinstatement of demonstration area if not forming part of the Permanent Works [613.6].

n/a

6 Drawing references [including use of appropriate Drawings, by reference, in HCD which give shaping requirements for sub-formation.[613.8)].

Requirements for shaping sub-formation to be specified on drawings where applicable.

7 Whether quicklime, hydrated lime or other form of lime should be used for lime stabilisation.

n/a

8 Locations where treatment of formation in accordance with sub-Clauses 616.4(i) or 616.4(ii) is required.

n/a

9 Details of any additional tests for rate of spread of lime [615.6].

n/a

10 Intervals for preparation and availability of chemical analysis reports if different to weekly [615.4].

n/a

11 Preparation of formation on existing sub-base material [616.6].

n/a

12 Requirements for cement type in lime and cement stabilisation [643.5].

n/a

13 Requirements for alternative thickness of layers to be stabilised [643.9].

n/a

14 Alternative treatment requirements for layers to be stabilised [643.10 & 16].

n/a
APPENDIX 6/8: TOPSOILING

Refer to the external works specifications for the requirements for topsoiling.

1. The compiler is required to designate on the Drawings, those areas of Class 5A material [602.9. The compiler should be satisfied that such material is suitable for the landscape planting proposals].
2. Drawing references which show the locations where topsoil and vegetation is to be left in place and where topsoil is to be stripped as turf [602.9].
3. Drawing references which show depths to which topsoil is to be stripped [602.9].
4. Height limits of topsoil stockpiles permitted, if other than 2 m [602.10].
5. Reference period of time for when topsoil can be stockpiled if different from sub-Clause 602.10.
6. Whether surplus topsoil is to be stored or disposed of by the Contractor. Details of topsoil storage areas such as location, height, contours and batter slopes [602.11].
7. Details of slopes of Classes 2E and 7B fill material to be immediately covered by topsoil [608.11].
8. Whether imported topsoil Class 5B is required or permitted [618.2].
9. Details of topsoil treatment in areas to be turfed. Locations as detailed in Appendix 30/5 [618.4]
10. Whether the requirements of sub-Clause 618.3 apply, stating where necessary, the cumulative rainfall if not 100 mm and location of measuring point.
11. Permitted areas (if any) of non-removal and disposal off site of stones or other debris with dimensions greater than 100 mm equivalent diameter [618.4].
12. Thickness of topsoil to be deposited and when a tracked vehicle may not be used for spreading [618.4(i)]
APPENDIX 6/9: EARTHWORK ENVIRONMENTAL BUNDS, LANDSCAPE AREAS, STRENGTHENED EMBANKMENTS

1 Earthwork Environmental Bunds

No Earthwork Environmental Bunds are included in the Contract.

(i) Reference to Drawings which show locations and which state type of construction (610.1, 2 and 3):
   (a) a normal embankment to Clause 608; if so whether method compaction to Clause 612 is required and which Method in Table 6/4 to adopt and Classes of fill permitted or required;
   (b) a strengthened embankment to Clause 621; if so requirements as listed in 3 below;
   (c) a reinforced or anchored earth structure to Clause 622; if so full details of construction.

(ii) Requirements for early construction.

(iii) (05/01) Requirements for topsoiling.

2 Landscape Areas

Refer to the architect’s drawings and specification.

(i) Reference to Drawings which show locations.

(ii) If compaction to be “method” to Clause 612 and if so which method in Table 6/4 to adopt.

(iii) Details of contouring required.

(iv) Locations where landscape areas may be constructed simultaneously with adjoining embankments.

(v) (05/01) Requirements for topsoiling.

3 Strengthened Embankments

No Strengthened Embankments are included in the Contract.

(i) Reference to Drawings which show locations, details of construction and Classes of fill.

(ii) Requirements for strengthening materials. (See NG 609.3).
APPENDIX 6/10: GROUND ANCHORAGES, CRIB WALLING AND GABIONS

The contract does not include Ground Anchorages, Crib Walling or Gabions.

1. Ground Anchorages [624]
   (i) Design requirements.
      [Where the design retained height exceeds 1.5 m, include the requirement for the design to comply with Standard BD 2 and the outline Approval in Principle form.]
   (ii) References to Drawings showing installation and construction requirements, including:
      (a) specifications for drilling, tendons, grouting and tensioning;
      (b) proof loading, monitoring and re-tensioning;
      (c) trial installations;
      (d) rock bolting.

2. Crib Walling [625]
   (i) Design requirements. [Where the design retained height exceeds 1.5 m, include the requirement for the design to comply with Standard BD 2 and the outline Approval in Principle form.]
   (ii) References to Drawings showing locations and outlines.

3. Gabions [626]
   (i) References to Drawings showing locations and details including:
      (a) additional requirements and type of mesh, [626.1 and 3];
      (b) core dia. and its BS for mesh if different from 626.3(i);
      (c) properties of plastic geomesh, if permitted [626.3(ii)];
      (d) size of mesh openings and gradings of fill [626.5].
APPENDIX 6/11: SWALLOW HOLES AND OTHER NATURALLY OCCURRING CAVITIES AND DISUSED MINE WORKINGS

There are no known swallow holes, other naturally occurring cavities or disused mine workings on the site.

1. Drawing references showing locations of voided ground or abandoned workings. [627 and 628].
2. Location methods for identifying and inspecting shallow workings or voids where required.
3. Requirements for bulk fill and methods of placement.
4. Grouting, types and procedures.
5. Details of excavation, clearance and flushing of soft infilling.
6. Details of other treatments or support requirements.
7. Requirements for concrete caps to voids or soft areas.
8. Requirements for inspecting, monitoring, clearing, flushing, filling, caps or other treatments of disused mine workings. [628.1].
APPENDIX 6/12: INSTRUMENTATION AND MONITORING

1. Monitoring boundary wall movements

   As a minimum the monitoring regime shall include the following:

<table>
<thead>
<tr>
<th>Points to be monitored</th>
<th>Type of reading</th>
<th>Frequency of readings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Horizontal position</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevation of the existing boundary walls</td>
<td>Installation and monitoring of telltales and visual inspection to identify:</td>
<td>Following completion of excavation and until completion of the ground floor slab and installation of new wall restraint structures</td>
</tr>
<tr>
<td></td>
<td>- Changes in width or length of existing cracks.</td>
<td>Following completion of the ground floor slab and installation of new wall restraint structures</td>
</tr>
<tr>
<td></td>
<td>- Appearance of new cracks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Any other signs of distress</td>
<td></td>
</tr>
<tr>
<td>Top of existing boundary walls</td>
<td>Position on plan</td>
<td>The more frequent of:</td>
</tr>
<tr>
<td>At 3m centres adjacent to the works</td>
<td></td>
<td>- Weekly</td>
</tr>
<tr>
<td></td>
<td>n/a</td>
<td>- Every metre of excavation or fill placement</td>
</tr>
<tr>
<td>Foot of existing boundary walls</td>
<td>Position on plan &amp; Level</td>
<td>Weekly</td>
</tr>
<tr>
<td>At 3m centres adjacent to the works</td>
<td></td>
<td>n/a</td>
</tr>
</tbody>
</table>

The results of the monitoring shall be processed by the Contractor and issued to the C.A. weekly in a format that clearly summarises:

- Changes in the condition of the existing boundary walls, capping beam and secant piles.
- Changes in the plumb of the existing boundary walls.
- Changes in level at the base of the existing boundary walls.
2. Monitoring movements of 13 Alloway Road

Monitoring is to be carried out for the duration of works adjacent to the boundary with neighbouring properties on Alloway Road and Litchfield Street (demolition, excavation, construction of new structures). The extent of monitoring is to be agreed with the Party Wall Surveyor, and may include:

<table>
<thead>
<tr>
<th>Points to be monitored</th>
<th>Type of reading</th>
<th>Frequency of readings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>During demolition</td>
</tr>
<tr>
<td>External elevation adjacent to the site boundary</td>
<td>Installation and monitoring of telltales and visual inspection to identify: - Changes in width or length of existing cracks. - Appearance of new cracks - Any other signs of distress</td>
<td>Weekly</td>
</tr>
<tr>
<td>Interior adjacent to the site boundary</td>
<td>Installation and monitoring of telltales and visual inspection to identify: - Changes in width or length of existing cracks. - Appearance of new cracks - Any other signs of distress</td>
<td>Monthly</td>
</tr>
<tr>
<td>Drains adjacent to the site boundary</td>
<td>Visual inspection to confirm flow. CCTV survey before works commence and on completion of the works.</td>
<td>Weekly during break out of existing foundations and construction of the piling mat</td>
</tr>
</tbody>
</table>

The results of the monitoring shall be processed by the Contractor and issued to the C.A. weekly in a format that clearly summarises:

- Changes in the condition of 13 Alloway Road and drainage.
- **Note:** Instrumentation and monitoring for blasting should be covered in Appendix 6.3 and for dynamic compaction in Appendix 6.13.
- Schedules of instruments by type and description with alternatives where possible.
- Details of housings required.
- Installation techniques.
- Calibration requirements.
- Protection to instruments, connections and housing.
- Requirements for electric power.
- Frequency of reading and method of reporting readings where the Contractor is required to carry out these tasks.