Smith + McHugh

Design / Access Statement

Proposed 2 no. 4 bedroom new build dwelling's (C3) Residential @ 40 Olive Lane, Wavertree, Liverpool L15 8LS

05/11/2015

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Contents

1.0 Background information

1.1 Name of the scheme

Proposed 2 no. 4 bedroom new build dwelling's (C3) Residential @ 40 Olive Lane, Wavertree, Liverpool L15 8LS

1.2 Applicant

FAS Developments Ltd
2 Guion Street
3 Liverpool
L6 9DU

3.0 Architect.

Smith + McHugh Architecture Ltd
1 Maryland Street
Liverpool
L1 9DE

1.4 Introduction

The design and Access Statement has been prepared to satisfy the requirements under PPS 1 and PPS3 as a description of the design process to accompany the proposed drawings submitted for planning consent.

Proposed 2 no. 4 bedroom new build dwelling's (C3) Residential @ 40 Olive Lane, Wavertree, Liverpool L15 8LS

2.0 Site details

2.1 Location and site plan

LOCATION PLAN @ 1:1250

2.2 Description

The site current use is vacant.

It is located within the ribbon development of Olive Lane and is bounded to the north and south by residential development that is two storey in character and to the east and west Road respectively. The site is allocated in the UDP as primarily residential.

The site is not in a conservation area or housing renewal area.

Site area: 541m2

2.4 Ownership

The current owners are FAS Developments Ltd.

3.0 Site and area appraisals

3.1 Adjacent land uses, and relevant planning proposals

The site is primarily located in a C3 residential use.

3.2 Heritage conservation - listed buildings

After research there are no current listed buildings for the development site and the site is not within a conservation area.

3.3 Focal points / Landmarks / Listed Buildings

There are no Focal, Landmark or Listed building near the site.

3.4 Topography - contours on the site

There are no significant contours on the site, which can be regarded as generally level.

3.5 Services

In reference to Public utilities, along Olive Lane foot paths and road there exists the usual services e.g. underground services, drainage systems, electric, gas and water, there are no overhead power lines near the site. There would be a need for new connections to the development site, as none presently exists.

3.7 Identity

The development site is located in a area of primarily two storey residential with a mix of semi detach dwellings and large dwellings.

3.8 Surrounding buildings

- Building lines - groupings, rhythms and plot sizes

  As indicated above, there is a established building line along both Olive Lane .

- **Scale** - height and massing is primarily two storey dwellings, there is a constant height and massing within the local context.
- **Appearance** - details and materials, is primarily facing brick and render elements and timber / UPVC windows, with concrete roof plain tiles.

3.9 Hard landscaping

The present hard landscaping to the area is concrete paving and asphalt; there is no street furniture or Public art.

3.10 Soft landscaping

The landscape character of the area is primarily grassed garden area to the front gardens of the adjacent residential properties; each varies and echoes the personalisation of the individual property owner.

3.13 Vehicular movement

Surrounding road and street layout as indicated above, the development site is access from Olive Lane . The area is very permeable; the majority of the parking is dealt with on street parking. The development site currently has off street parking and there is provision for it within this proposed scheme.

There are good road links, with the M62 and M57.

Pedestrian access

The area is very permeable. There is no specific times or huge influx of pedestrian movement for the area. What there is a steady flow of children people going and coming from their homes, usual times of 8.00 – 9.00 am and 3.00 – 3.30pm.

There are no issues where people are restricted from access due to any current aspects of design.

3.14 Public transport

There is a comprehensive range of Public services available that serves the site and the area.

3 Planning history

Research has found previous planning history for the site as follows:

13F/2569	40 Olive Lane Liverpool L15 8LS	To erect 1 pair of semi detached houses one bungalow and carry out associated hard and soft landscaping works.	FINAL DECISION	20-12-2013	Approve with Conditions
06F/0879	40 Olive Lane, Liverpool, L15 8LS	To erect one pair of semi-detached, three storey dwellings (2units) and detached garage block at rear.	APPEAL DECIDED	22-03-2006	
04F/3890	40 Olive Lane, Liverpool, L15	To convert former nursing home into 12 no. self-contained dwellings and layout associated car parking	FINAL DECISION	06-10-2004	Approve with Conditions

5.0 Consultation

Previous pre application and Outline application has been submitted on this scheme.

6.0 Programme

If and once approval has been granted it is envisaged that the project will commence in February 2016 and completed July 2016. The successful contractor would be selected only if they were a member of the Considerate Contractor Scheme.

The three main areas that the Scheme's Code covers are:

- ***The environment***
  Registered sites should do all they can to reduce any negative effect they have on the environment. They should work in an environmentally conscious, sustainable manner.
- ***The workforce***
  Registered sites should provide clean, appropriate facilities for those who work on them. Facilities should be comparable to any other working environment.
- ***The general public***
  Registered sites should do all they can to reduce any negative impact they may have on the area in which they are working. Sites should aim to leave a positive impression on those they affect

The contractor will be instructed to work within reasonable hours 8.30am – 5.00pm weekdays, any weekend work or disturbance, the contractor will have to notify residents of any disruption.

7.0 Design principles

The proposal has been design in-accordance with the following documents.

This section is to be read in conjunction with the following drawing

(15.025) - 001 Location Plan
(15.025) - 002 Existing and proposed site plan, floor plan, elevations and boundary treatments

Design guides

- Secure by Design Guidelines
  - BS 8300:2009 Design of Buildings and their Approaches to meet the needs of Disabled People
  - BS 9999 Part 8 Fire Precautions in the Design, Construction and use of Buildings, Code of Practice for means of Escape for Disabled People
  - Approved Document M to the Buildings Regulations 2004
- Approved Document B / A / L1 to the Buildings Regulations 2010

Design Objectives

Our principle Design Objectives are as follows:

- The design proposal is to create a distinctive, safe and pleasant, welcoming, adaptable, efficient and bring joy and delight to all occupants and public alike.
- The plan form will respond to the site and the character of the existing building's original layout.

- The form, scale and massing will respond and respect the geometry of the surrounding buildings.
- In elevation terms the design should respect the scale and materials of the surrounding buildings without resorting to pastiche.
- The proposal will be of significant architectural quality and individuality to match the Area's Uniqueness.
- To use new sustainable technologies

The building is to use simple basic sustainable technologies such as natural ventilation etc. can create an architecture that expresses aspirations, personality and emotion for all who occupy and the general public.

The classification of use within the scheme will be C3.

8.0 Design solution

8.1 Brief

The brief is the Erection of 2no. semi detached dwelling (C3).

The clients brief was to create a very simple, energy efficient, cost effective but modern terrace that will reflect the architecture and context of the surrounding area.

8.2 Concept

The design proposal is to create a distinctive, safe and pleasant, welcoming, adaptable, efficient design that will bring joy and delight to all occupants and public alike.

The buildings respect the surrounding area and address the site context and the sites individual nature and predominate features. It is these elements and the brief that informs the buildings form and siting. The building is to use simple basic sustainable technologies such as natural ventilation etc.

8.3 Layout, i.e. context

The building form is built to co-inside with the existing dwelling and local context, the dwellings are set back which provides off street parking on Olive Lane and visually links in terms of scale and mass of the adjoining buildings and assists linkage by the existing building lines and co insides with the urban grain.

8.4 Streetscape/Massing / Scale

The proposed building is two stories, as indicated on drawing no. 002, the proposal matches the original massing and scale of the buildings to Olive Lane.

8.5 Plan Layout

Refer to drawing no. 002 for plan layout.

8.6 Car Parking

Refer to drawing no. 002 which indicates the proposed dwellings have their own off street parking directly to the front and extensive hard and soft landscaping has also been introduced.

8.7 Details and materials

The concept of the detail and materials is to keep the detailing simple, a small palette of materials, render and facing stonework to match the sites immediate context.

8.8 Drainage

Drainage from the new dwellings will connect to the existing sewer via the existing connection on site. Refer to Drawing no. 002 for further details in regard to drainage.

9.0 Sustainability / Energy efficiency

The brief for the site is summarised as follows:

- Sustainable clean technologies in renewable energy, water re-use.
- Design and specification for low energy/super insulation, 25% higher insulation over and above the current Building regulations standards.
- Where possible the use of natural ventilation is used to the maximum, excluding kitchen / wc's /server which would require mechanical extract ventilation.
- Consideration and incorporation of sustainable construction issues and construction methods.

These will be coupled to high standards for air tightness, in comparison to the Building Regulations.

10.0 Recycling and Reclamation

As design is developed, opportunities to utilise reclaimed materials will be monitored and included where practicable. Incorporation of reclaimed materials will be market dependent, and is hence wholly subject to the successful sourcing and availability of quality and quantity within the overall budget and programme parameters. The key proposed imported materials currently under consideration are:

The key proposed direct salvaged materials under consideration are:

- Concrete and masonry for crushing and re-use as bulk-fill, back-fill and hardcore, or prescription of export for re-use with net import of similar salvaged material.
- Use of reclaimed crushed inert material as aggregate, subject to detail technical support and assurance, and to commercial support from concrete supplier.

Water Recycling

The proposed project specification includes the installation of rainwater recycling. The provision will include:

- Collection, storage, treatment and re-use of rainwater from roof areas for external taps, WC flushing.

- All WC's to have max. 6 litre flushing, to limit the amount of water use.

Waste Recycling

Provision of 4 large recycling bins for storage – paper-plastic, metal, glass and other.

11.0 Summary

In summary, the above information and drawings provided as part of this application we hope illustrates that the proposed design would greatly enhance and maintain the character and appearance of the area.

12.0 Accessibility – Access Statement

12.1 Approach

Existing Dropped Kerbs on Olive Lane .

12.2 Car Parking

Car parking is integral within the development site.

12.3 Entrances

The proposed entrance to the ground floor is directly off Olive Lane and Enfield Street, crossing the road, a level threshold is proposed to all entrances and exits from the houses.

The intention to give free access to the building for both disabled ambulant and wheelchair users. Refer to table 2 in section 2 for clear door widths.

All entrances will be clearly signed and contrasting in colour.

12.4 Internal Doors

The provision of all internal doors to all floors will be such that they will allow the passage of wheelchairs, the New Approved Document and the British Standard gives an effective clear opening width of 800mm. Table 2 of the Approved Document M is set out below.

Table 2 **Minimum effective clear widths of doors**

Direction and width of approach	New buildings (mm)	Existing buildings (mm)
Straight-on (without a turn or oblique approach)	800	750
At right angles to an access route at least 1500mm wide	800	750
At right angles to an access route at least 1200mm wide	825	775
External doors to buildings used by the general public	1000	775

Note:
The effective clear width is the width of the opening measured at right angles to the wall in which the door is situated from the outside of the door stop on the door closing side to any obstruction on the hinge side, whether this be projecting door opening furniture, a weather board, the door, or the door stop (see Diagram 9). For specific guidance on the effective clear widths of doors in sports accommodation, refer to 'Access for Disabled People'.

12.5 Internal Ramps

There is no provision for internal ramps within the scheme as these have been designed out.

12.6 Passenger Lift

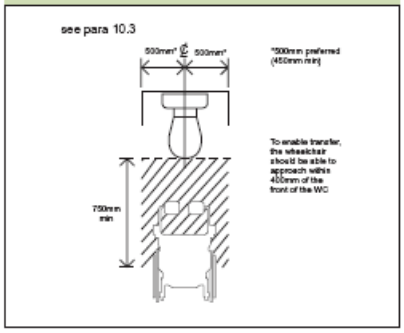
There is no provision for a passenger lift within the scheme

12.7 Platform Lifts and Stair Lifts

There is no provision for a passenger lift within the scheme.

12.8 WCs / Bathrooms - General Provision

Diagram 31 Clear space for frontal access to WC



Bathrooms are designed in-accordance with Part M and BS8300:2001 paragraph 5.17 item C and diagram 31

Consideration will be given to colour and contrast of fittings within the WC accommodation together with adequate provision of grab rails, wash hand basins and urinals.

In all cases, it must be realised that these are clear dimensions and should not be restricted by the provision of radiators, cupboards and waste and refuse bins. Consideration should be given to these items at an early stage.

12.9 Internal Surfaces

Consideration should be given to results of Project Rainbow by the University of Reading and Colour and Contrast – A design guide by ICI Paints www.duluxtrade.co.uk; due regard taken to the necessary light reflectance, colours and materials to ensure differentiation between floors, walls, ceilings, doors, equipment and potential obstacles and to assist in wayfinding.

Glare from highly polished surfaces should be avoided. Glare and reflections are confusing to the visually impaired.

12.10 Lighting

Lighting will be designed so as not to cause glare and to give an even distribution of light combined with the available natural daylight at various times of the day.

12.11 References

- BS 8300:2009 Design of Buildings and their Approaches to meet the needs of Disabled People
- BS 9999 Part 8 Fire Precautions in the Design, Construction and use of Buildings, Code of Practice for means of Escape for Disabled People
- Approved Document M to the Buildings Regulations 2004

13.0 Crime Prevention /Safety and security

13.1 Secured by Design

In relation to Secure by Design the proposed scheme has considered the following points and have / will be included within the development:

13.2 Lighting

Lighting will be carefully co-ordinated, so that potential areas of risk are adequately covered. A Good lighting scheme will help to deter intruders and reduce the fear of crime. It is a prerequisite that the following areas are included in the lighting scheme:-

- Main site access
- All footpaths and associated areas to dwelling

All lighting will be switched automatically, e.g.

- Photo electric cell
- Time Switch
- Passive infra red

13.3 Main Entrance Door

Doors shall be the same physical specification as Sections 1.1 to 1.11 for front doors, with automatic closing, fitted with an automatic deadlocking lock, and an internal thumb turn, knob, or handle. External entry shall be by latch withdrawal by use of the key, not by lever. Attention to design detail is needed to prevent unauthorised release of the lock from the outside.

There is a one common entrance per house and one of the following shall be incorporated within the development: -

- Secured by Design
- ACPO CPI June 2004 2
- Automatic door closer

13.4 Alarms

It is the intention to provide security alarms, 1 per unit.

14.0 External Landscape Spec

C10 SITE SURVEY

To be read with Preliminaries/ General conditions.

GENERAL

150 BENCH MARKS
- Unrecorded bench marks and other survey information: Give notice when found.

160 UNFORESEEN HAZARDS
- Unrecorded physical features and hazardous materials: Give notice when found. Do not disturb.

170 SURVEY INSTRUMENTS
- Equipment calibration: In accordance with manufacturer's recommendations.
- Site use calibration: To BS 7334.
- Calibration: Use only persons accredited by the United Kingdom Accreditation Service (UKAS)

- Calibration compliance: Submit evidence prior to use.

180 WORKMANSHIP
- Operatives: Appropriately skilled and experienced for the type of work.
- Evidence: Submit prior to commencement.

SURVEY WORKS

300 SERVICES SURVEY
Examine all available information, carry out "cat" scan a survey and submit a report to include the following:
- Area to be surveyed All external works prior to excavation.

C20 DEMOLITION

To be read with Preliminaries/General conditions.

GENERAL REQUIREMENTS

110 SURVEY: Before starting work, examine all available information, carry out a survey of the structure(s), site and surrounding area, and submit a survey report and method statements to the CA covering all relevant matters listed below and in the Health and Safety Executive Guidance Note GS29/1 paragraph 32:
- The form, condition and demolition methods of the structure(s).
- The form, location and removal methods of any toxic or hazardous materials.
- The type and location of adjoining or surrounding premises which may be adversely affected by noise, vibration, dust or removal of structure.
- The identification and location of services above and below ground.

120 EXTENT OF DEMOLITION: Subject to the retention of features, facades, structures, retaining walls, etc., specified elsewhere, demolish structure(s) down to foundation depth.

130 GROUNDWORKS: Break out old foundations, slabs, etc. where and to the extent stated on the drawings. Remove contaminated earth and disinfect as required by the Local Authority. Backfill as specified on drawings.

140 BENCH MARKS: Report to the CA any bench marks and other survey information found on structure(s) to be demolished. Do not remove or destroy unless instructed.

150 FEATURE(S) TO BE RETAINED: The following are to be kept in place and adequately protected:
Existing main building.

SERVICES AFFECTED BY DEMOLITION

210 SERVICES REGULATIONS: Any work carried out to or which affects new or existing services must be in accordance with the Byelaws or Regulations of the relevant Statutory Authority.

220 LOCATION OF SERVICES: Locate and mark the positions of services affected by the work. Arrange with the appropriate authorities for the location and marking of the positions of mains services.

230 DISCONNECTION OF SERVICES: Before starting demolition arrange with the appropriate authorities for the disconnection of services and removal of fittings and equipment.

240 DISCONNECTION OF DRAINS: Locate and disconnect all disused drain connections. Seal within the site to approval.

250 DRAINS IN USE: Protect drains, manholes, inspection chambers, gullies, vent pipes and fittings still in use and ensure that they are kept free of debris at all times. Make good any damage arising from demolition work and leave clean and in working order at completion.

260 BYPASS CONNECTIONS: Provide as necessary to maintain continuity of services to occupied areas of the same and adjoining properties. Give a minimum 72 hours notice to occupiers if shutdown is necessary during changeover.

270 SERVICES WHICH ARE TO REMAIN: Notify the CA and service authority or owner of any damage arising from the execution of the Works. Make all arrangements for repair to the satisfaction of the CA and service authority or owner. Bear any costs arising.

DEMOLITION WORK

310 WORKMANSHIP GENERALLY:
- Demolish structure(s) in accordance with BS 6187 and Health and Safety Executive Guidance Notes GS29/1, 3 and 4.
- Operatives must be appropriately skilled and experienced for the type of work and hold or be training to obtain relevant CITB Certificates of Competence.
- Site staff responsible for supervision and control of the work are to be experienced in the assessment of the risks involved and in the methods of demolition to be used.

320 GAS OR VAPOUR RISKS: Take adequate precautions to prevent fire or explosion caused by gas or vapour.

330 DUST: Reduce dust by periodically spraying demolition works with water.

340 HEALTH HAZARDS: Take adequate precautions to protect site operatives and the general public from health hazards associated with vibration, dangerous fumes and dust arising during the course of the Works.

350 ADJOINING PROPERTY:
- When demolishing structure(s) against adjoining property leave adequate temporary support and protection at each stage and arrange for inspection by the CA. Maintain and alter temporary supports and protection as necessary as work progresses.
- Demolish structure(s) causing a minimum of damage to adjoining property and leave no unnecessary or unstable projections.
- Do not disturb support to foundations of adjoining property unless otherwise instructed.
- Report to the CA any defects exposed or becoming apparent in adjoining property.
- Promptly repair any damage caused to adjoining property by demolition work. Make good to ensure safety, stability, weather protection and security.

360 STRUCTURE(S) TO BE RETAINED:
- Adequately protect parts of existing structure(s) which are to be kept in place.
- Cut away and strip out the minimum necessary and with care to reduce the amount of making good to a minimum.
- Prevent debris from overloading any part of the structure which is not to be demolished.

380 DANGEROUS OPENINGS: Illuminate and protect as necessary.

391 ASBESTOS BASED MATERIALS: Report immediately to the CA any suspected asbestos based materials discovered during demolition work. Avoid disturbing such materials. Agree with the CA methods for safe removal.

410 UNFORESEEN HAZARDS: Inform the CA of any unrecorded voids, tanks, chemicals, etc. discovered during demolition work. Agree with the CA, methods for safe removal, filling, etc.

441 COMPLETION:
- Clear away all debris and leave the site in a tidy condition on completion.
- Grade the site to follow the levels of adjacent areas as agreed with the CA.

MATERIALS ARISING

510 OWNERSHIP: Components and materials arising from the demolition work are to become the property of the Contractor except where otherwise provided. Remove from site as work proceeds.

520 RECYCLED MATERIALS: Materials arising from demolition work may be recycled or reused elsewhere in the project as approved by the CA, subject to compliance with the appropriate work section specification.
- Submit full details and all supporting documentation
- Allow 1 day for CA's approval.

D20 EXCAVATING AND FILLING

To be read with Preliminaries/General conditions.

GENERALLY/THE SITE

225 HANDLING TOPSOIL
- Aggressive weeds: Give notice and, obtain instructions before moving topsoil.
- Plant: Select and use plant to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - 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 _____.

230 BENCHING
- Surfaces of excavations with a gradient greater than 1:5 (20%) and which are to receive filling: Provide horizontal benches cut to match the depths of compacted layers of filling.

240 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 °.

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
- Notice: Make advance arrangements for inspection of formations for paving and tree pits.
- 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 specified sub-bases.

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.

290 FOUNDATIONS IN MADE UP GROUND
- Depth: Excavate down to a natural formation of undisturbed subsoil.
- Discrepancy: Give notice if this is greater or lesser 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.

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 specified backfill material.
- Excavation taken deeper than required: Backfill with specified backfill material.

DISPOSAL OF MATERIALS

415 EXCAVATED TOPSOIL
- Generally: Remove from site.

441 SURPLUS SUBSOIL

- Excavated material: Stockpile in temporary spoil heaps.
- Retained material: Spread and level surplus subsoil on site.
  - Locations: To be agreed.
  - 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 are 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.

454 GROUND WATER LEVEL
- Give notice: If it is considered that the excavations are below water table.

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 Transport Research Laboratory Report SR 829 'Specification for the TRRL frost-heave test'.
- 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 recompact 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.
- Layers: Place so that only one type of material occurs in each layer.

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.
  - 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.

626 COMPACTED GENERAL FILLING
- Fill: to soft landscape areas.
- 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 TO FOUNDATIONS
- Under oversite 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.

730 BLINDING

- Surfaces to receive sheet overlays or concrete:
  Blind with:
  - Concrete where shown on drawings; or
  - Sand, fine gravel, or other approved fine material applied to fill interstices. Moisten as necessary before final rolling to provide a flat, close smooth surface.
- Sand for blinding: To BS 882 table 4, type C or M.
- Permissible deviations on surface level: +0 -25 mm.

Q28 TOPSOILING

To be read with Preliminaries/General conditions.

200 GRADING SUBSOIL
- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Areas of thicker topsoil: Excavate locally.

210 LIGHT AND NONCOHESIVE SUBSOILS
- Loosening: Use a three tine ripper, drawn 300 mm deep at 600 mm centres in two directions obliquely, when ground conditions are reasonably dry.

250 SURFACE PREPARATION
- Stones: Immediately before spreading topsoil remove stones larger than 20 mm.
- Other items: Remove general building waste.

335 SURPLUS TOPSOIL TO BE REMOVED
- Generally: Remove from site to tip.

340 IMPORTED TOPSOIL FOR ALL LANDSCAPE WORKS
- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- Grade: To BS 3882, Premium.
- Source: To be agreed.
- Submit: Declaration of analysis including information detailing each of the relevant parameters given in BS 3882, clause 6 and table 2.
- Other requirements: Sample of topsoil to be provided, stating name of supplier and place of origin.

380 CONTAMINATION
- General: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
  - Corrosive, explosive or flammable.
  - Hazardous to human or animal life.
  - Detrimental to healthy plant growth.
- Subsoil: In areas to receive topsoil, do not use subsoil contaminated with the above materials.
- Give notice: If any evidence or symptoms of soil contamination are discovered on the site, or in topsoil to be imported.

410 HANDLING TOPSOIL
- Aggressive weeds: Give notice and obtain instructions before moving topsoil.
- Plant: Select and use plant to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - 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

420 SPREADING TOPSOIL
- Temporary roads/surfacing: Remove before spreading topsoil.
- Layers:
  - Depth (maximum): 150 mm.

- Gently firm each layer before spreading the next.
- Depths after firming and settlement (minimum) 150mm
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

450 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT
- Above adjoining paving or kerbs: _30 mm.
- Below dpc of adjoining buildings: Not less than 150 mm.
- Shrub areas: Higher than adjoining grass areas by 50 mm.
- Within root spread of existing trees: Unchanged.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included.

Q30 SEEDING/TURFING

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/REQUIREMENTS

115 TURFED AREAS
- Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.
- Appearance: A closely knit, continuous ground cover of even density, height and colour.

120 CLIMATIC CONDITIONS
- General: Carry out the work while soil and weather conditions are suitable.

145 WATERING
- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: As necessary to ensure the establishment and continued thriving of all turfing.

150 WATER RESTRICTIONS
- Timing: If water supply is or is likely to be restricted by emergency legislation do not carry out seeding/turfing until instructed. If seeding/turfing has been carried out, obtain instructions on watering.

160 NOTICE
- Give notice before:
  - Setting out.
  - Applying herbicide.
  - Applying fertilizer.
  - Preparing seed bed.
  - Turfing.
  - Visiting site during maintenance period.
- Period of notice: _____.

PREPARATION

250 CULTIVATION
- Compacted topsoil: Break up to full depth.
- Tilth: Reduce top 100 mm of topsoil to a tilth suitable for blade grading (10 mm down particles).
- Material brought to the surface: Remove stones and clay balls larger than 50 mm in any dimension, roots, tufts of grass, rubbish and debris.

260 GRADING
- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage. Remove minor hollows and ridges.
- Finished levels after settlement: 25 mm above adjoining paving, kerbs, manholes etc.
- Blade grading: May be used to adjust topsoil levels provided depth of topsoil is nowhere less than 150 mm.
- Give notice: If the required levels cannot be achieved by movement of the existing soil.

280 FINAL CULTIVATION
- Timing: After grading and fertilizing.
- Seed bed: Reduce to fine, firm tilth with good crumb structure.
  - Depth: 25 mm.
  - Surface preparation: Rake to a true, even surface, friable and lightly firmed but not over compacted.
  - Remove surface stones/earth clods exceeding:

  General areas: _____ mm.

  Fine lawn areas: 25 mm.
- Adjacent levels: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

TURFING

400 CULTIVATED TURF FOR _____
- Supplier: _____.
  - Product reference/Seed mixture: _____.
- Properties of soil used for turf production: _____.

405 CULTIVATED TURF FOR _____
- Supplier: Turfgrass Growers Association (TGA) member, to TGA quality standards.
- Seed mixture: _____.
- Properties of soil used for turf production: _____.

410 TURF FOR GRASS MOUNDS.
- Standard: To BS 3969, free from undesirable grasses and weeds.
  - Grade: Premium e.g. Turfland 'Sportsman' or equal approved.
- Source: Submit proposals.
- Herbicide treatment: Apply not less than four weeks and not more than three months before lifting.

420 DELIVERY AND STORAGE
- Timing: Lay turf with the minimum possible delay after lifting. If delay occurs, lay turf out on topsoil and keep moist.
- Delivery: Arrange so as to avoid need for excessive stacking.

- Stacking height (maximum): 1 m.
- Dried out or deteriorated turf: Do not use.

430 TURFING GENERALLY
- Time of year: At Contractors discretion subject to adequate watering arrangements.
- Timing of laying:
  - Spring and summer: within 18 hours of delivery.
  - Autumn and winter: within 24 hours of delivery.
- Weather conditions: Do not lay turf when persistent cold or drying winds are likely to occur or soil is frost bound, waterlogged or excessively dry.
- Working access: Planks laid on previously laid turf. Do not walk on prepared bed or newly laid turf.
- Jointing: Lay with broken joints, well butted up. Do not stretch turf.
- Edges: Use whole turfs. Trim to a true line.
- Adjusting levels: Rake out high spots and infill hollows with fine soil.
- Consolidating: Firm lightly and evenly with wooden beaters as laying proceeds to ensure full contact with the substrate. Do not use rollers.
- Dressing: Topsoil. Brush well in to completely fill all joints.
- Watering: Thoroughly water completed turf immediately after laying. Check by lifting a corner of turf that water has penetrated to the soil below.

450 NEWLY PLANTED TREES
- Surrounding turf: Neatly cut away to a diameter of 800 mm around individual trees. Leave soil exposed. Flush to tree trunk.

CUTTING/MAINTENANCE

530 FIRST CUT OF GRASSED AREAS
- Timing: When grass reaches 50 mm high and is reasonably dry.
- Preparation: Before cutting, remove debris, litter, and stones and earth clods larger than 25 mm in any dimension.
- Height of first cut: 25 mm.
- Arisings: to be removed.

605 MAINTENANCE
- Duration: Carry out the operations in clauses 610 to 685 from completion of turfing until 12 months after completion date.

610 FAILURES OF SEEDING/TURFING
- General: Grassed areas that have failed to thrive (unless due to theft or malicious damage), during the period stated in clause 605, will be regarded as defects due to materials or workmanship not in accordance with the Contract. Make good by recultivation and reseeding/returfing.
- Timing of making good: Submit proposals.

620 MAINTAINING TURFING AREAS
- Maximum height of growth at any time: 50 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 40 mm.
  - Arisings: to be removed.
- Trimming: At the time of each cut, trim all grass edges, including round the base of trees, manholes, etc. and remove arisings.

- Weed control: Keep the sward substantially free of broad leaved weeds by applying a suitable selective herbicide.
- Watering: As clause 145

680 FERTILIZER FOR GRASS MOUNDS
- March application: 15:10:10 Spring turf fertilizer at 35 g/m².
- September application: 5:10:10 Autumn turf fertilizer at 50 g/m².

Q31 EXTERNAL PLANTING

To be read with Preliminaries/ General conditions.

GENERAL INFORMATION/ REQUIREMENTS

112 SITE CLEARANCE
- General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
- Stones: Remove those with largest dimension exceeding 50 mm.
- Contamination: Substances injurious to plant growth including subsoil, rubble, fuel, and lubricants.
- Vegetation: Remove all invasive weeds.
- Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.

120 CLIMATIC CONDITIONS
- General: Carry out the work while soil and weather conditions are suitable. Do not plant during periods of frost or strong winds.

125 TIMES OF YEAR FOR PLANTING
- Deciduous trees and shrubs: Late October to late March.
- Conifers and evergreens: September/ October or April/ May.
- Herbaceous plants (including aquatic and marginal): September/ October or March/ April.
- Container grown plants: At any time if ground and weather conditions are favourable. Ensure that adequate watering and weed control is provided.
- Dried bulbs, corms and tubers: September/ October.
- Colchicum (crocus): July/ August.
- Green bulbs: After flowering in spring.
- Wildflower plugs: Late August to mid November or March/ April.

145 WATERING
- Quantity: Wet full depth of topsoil.
- Application: Even and without damaging or displacing plants or soil.
- Frequency: As necessary to ensure establishment and continued thriving of planting.

150 WATER RESTRICTIONS
- General: If water supply is or is likely to be restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.

160 NOTICE
- Give notice before:
  - Planting shrubs.
  - Planting trees into previously dug pits.
  - Watering.

- Visiting site during maintenance period.
- Period of notice: 2 working days.

200 PLANTS/ TREES - GENERAL
- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Budded or grafted plants: Bottom worked.
- Root system and condition: To requirements of and balanced with branch system.
- Species: True to name.

216 PLANTS/ TREES - SPECIFICATION CRITERIA
Name, forms, dimensions and other criteria: To the relevant part of BS 3936.

235 CONTAINER GROWN PLANTS/ TREES
- Growing medium: With adequate nutrients for plants to thrive until permanently planted.
- Plants: Centred in containers, firmed and well watered.
- Root growth: Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
- Hardiness: Grown in the open for at least two months before being supplied.
- Containers: With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

260 PLANT/ TREE SUBSTITUTION
- Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating:
  - Size
  - Root Condition.
- Further alternatives: Proposed substitutions may not be acceptable and submission of further alternatives may be required.
- Approval: Obtain before making any substitution.

265 PLANT/ TREE HANDLING STORAGE AND TRANSPORT
- Standard: To CPSE 'Handling and establishing landscape plants' (obtainable from the Horticultural Trades Association) Part I, Part II and Part III, paragraphs 1.3.3 to 1.3.6, 3.0, and 4.0.
- Frost: Protect plants/ trees from frost.
- Handling: Handle plants/ trees with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.

270 PLANTING GENERALLY
- Standard: To CPSE 'Handling and establishing landscape plants' (obtainable from the Horticultural Trades Association) Part III, paragraphs 6.2 to 6.6.
- Appearance: Plant upright or well balanced with best side to front.

280 TREATMENT OF TREE WOUNDS
- Cutting: Keep wounds as small as possible.
  - Cut cleanly back to sound wood using sharp, clean tools.
  - Leave branch collars. Do not cut flush with stem or trunk.
  - Set cuts so that water will not collect on cut area.
- Fungicide/ Sealant: Do not apply unless instructed.

290 SURPLUS MATERIAL
- General: Remove subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, prunings and other arisings/ rubbish.

PREPARATION OF PLANTING BEDS/ PLANTING MATERIALS

305 WEED CONTROL
- Locations: All top soil areas.
- General: Prevent weeds from seeding and perennial weeds from becoming established, by hand weeding.

357 SOIL AMELIORANT/ CONDITIONER
- Locations: All shrub planting areas.
- Type: Peat free, tree planting compost.
- Supplier/ Source: Contractors to specify (subject to C.A. approval).
- Coverage: Spread in 50mm and cultivate as Q31/375
- Timing: Apply prior to cultivation.

375 CULTIVATION
- Compacted topsoil: Break up to full depth.
- Cultivation: Loosen, aerate and break up soil into particles of 2 - 8 mm.
  - Depth: Top 450 mm of planting beds.
  - Timing: Within a few days before planting.
  - Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels:
  - As required in sections D20 and Q28.
  - Within 25mm of levels specified on drawings.
- Undesirable material brought to the surface: Remove, including weeds, roots, stones and clods larger than 50 mm in any dimension, tufts of grass and foreign matter.
- Soil within root spread of trees and shrubs to be retained: Do not dig or cultivate.

PLANTING SHRUBS/ HERBACEOUS PLANTS/ BULBS

405 SHRUB PLANTING PITS
- Timing: Excavate on days of planting.
- Sizes: 150mm wider than root system when fully spread.
- Additional requirements: Increase dimensions where necessary to ensure that pits are at least 75mm deeper than their root system.
- Backfilling material: As clause 475

465 CLIMBING PLANTS
- Planting: 150 mm clear of wall/ fence etc. with roots spread outward. Lightly secure branches to support. Retain canes of plants which are too small to reach supports.
- Climber supports: Reinforced mild steel mesh.

475 BACKFILLING MATERIAL
- Composition: Previously prepared mixture of topsoil excavated from pit and additional topsoil as required. 30g Enmag or equivalent slow release fertilizer to be inclusive in backfill.

480 AFTER PLANTING

- Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
- Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.
- Top dressing:

PLANTING TREES

505 TREE PITS

- Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
- Pit bottoms: With slightly raised centre. Break up to a depth of 150mm
- Pit sides: Scarify.
- Additional requirements:
- Backfilling material: Topsoil as required.
- Accessories: Underground guying where slated

535 STAKING GENERALLY
- Stakes: Softwood, peeled chestnut, larch or oak, free from projections and large or edge knots and with pointed lower end.
- Preservative treatment: to BS 4072 to minimum 150mm above ground level.

- Nails: To BS 1202-1, galvanized, minimum 25 mm long and with 10 mm diameter heads.
- Minimum stake sizes: 400mm approx.

555 SHORT SINGLE STAKING.
- Staking: Position stake close to tree on windward side and drive vertically at least 300 mm into bottom of pit before planting. Consolidate material around stake during backfilling.
- Height of stakes: Cut to approximately 400 mm above ground level.
- Ties: Alpha tree ties (Tel: 01772 601418)
- Tying: Secure tree firmly but not rigidly to stake with Alpha tree tie within 25 mm of top of stake.

585 BACKFILLING MATERIAL
- Composition: Previously prepared mixture of topsoil excavated from pit and additional topsoil as required.

PROTECTING/ MAINTAINING/ MAKING GOOD DEFECTS

710 MAINTENANCE
- Duration: Carry out the operations in the following clauses from completion of planting until 12 months.
- Frequency of maintenance visits: Monthly during growing season.

720 FAILURES OF PLANTING
- General: Plants/ trees/ shrubs that have failed to thrive (unless due to theft or malicious damage after completion) during period stated in clause 710, will be regarded as defects due to materials or workmanship not in accordance with the Contract. Replace with equivalent plants/ trees/ shrubs.

- Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
- Timing of making good: by next suitable planting season.

750 PLANTING MAINTENANCE GENERALLY

- Weed control: Maintain weed free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of original planting pit.
  - Keep planting beds clear of weeds, by hand weeding.
- Planted areas: Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
- Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
- Staking: Check condition of stakes, ties, guys and guards. Replace broken or missing items. Adjust if necessary to allow for growth and prevent rubbing of bark. Cut back any damaged bark.
  - Frequency of checks: monthly or as otherwise agreed.
- Trees: Spray crown when in leaf during warm weather. Carry out in the evening.

755 PLANTING MAINTENANCE - FERTILIZER

- Time of year: March or April.
- Fertilizer: Enmag slow release.
- Application: Evenly spread, carefully incorporating below mulch materials.
- Coverage: 50g per m^2.

760 PLANTING MAINTENANCE - PRUNING

- General: Prune at appropriate times, to remove dead or dying and diseased wood and suckers, to promote healthy growth and natural shape.
  - Prune trees to favour a single central leading shoot.

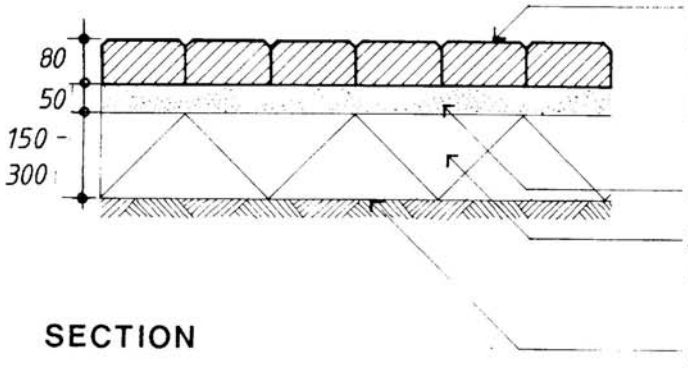
765 PLANTING MAINTENANCE - WATERING

- General: As clauses 145.

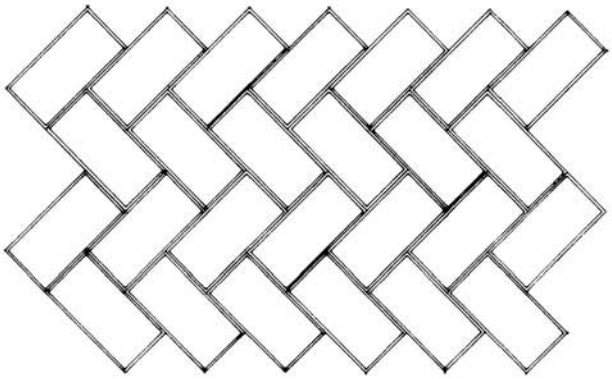
LANDSCAPE MAINTENANCE SCHEDULE

Task	MONTH											
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
CARE OF PLANTS												
Monitoring												
Pruning (if needed)												
Deadhead plants												
Fertilization				(Perennials)							(Shrubs)	
Cut back perennials & grasses												
Watering - as needed												
PLANTING BEDS												
Edging												
Weeding – as needed												
Mulching												
Soil testing												
Leaf Removal (if needed)												
PEST MANAGEMENT												
Monitoring												
LAWNS												
Fertilize/Lime												
Seeding				Warm Season					Season			
WINTER CLEAN UP												
SNOW REMOVAL PLAN												

Disclaimer: The schedule shown above is for guidance only. Scheduling of maintenance activities should be coordinated with seasonal weather conditions.

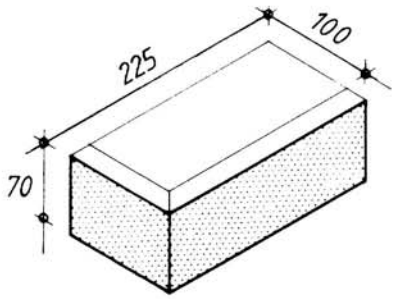


SECTION



Herringbone pattern

PLAN



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VEHICULAR PAVING
concrete block

25

15.0 Road & Paving Specification

EarthWorks

SITE CLEARANCE

Trees and vegetation, which are to remain on the site, are to be protected with barriers to minimize damage prior to Developer's plant entering the site. Works shall be carried out generally in accordance with the recommendations of the National Joint Utilities Group -Guidelines for the Planning, Installation and Maintenance of Utility services in Proximity to Trees and to the satisfaction of the Engineer. Trees that are to remain shall on no account be pruned, felled or interfered with without the Engineer's written consent.

Where it is necessary and after the Developer has obtain the relevant permissions, trees and hedges shall be removed from the site of the works, the roots shall be completely grubbed out and the resultant hole filled and compacted to the satisfaction of the Engineer.

REMOVAL OF VEGETABLE SOIL

Before depositing any filling, all turf and vegetable soil under the works shall be excavated and removed. Any material which may be required for soiling verges, cuttings and embankments shall be stacked for re-use.

GENERAL EXCAVATION

Where sub-soil has to be removed to reach the approved levels it shall be excavated in a manner that the formation undergoes the minimum possible disturbance. The formation for the road works shall be prepared for the full width of the carriageway and footways and the sub-grade shall wherever possible be compacted at its natural moisture content by eight passes of a smooth-wheeled roller having a mass per metre width of roll of 2.7 tonnes to 5.4 tonnes.

Where in the opinion of the Engineer the sub-grade is of poor quality he may require the removal of further material and its replacement by an approved general fill which shall be compacted in layers not thicker than 225mm in accordance with Table 4.6.1 of the compaction requirement for granular materials.

The Developer must ensure that the excavation is kept free from water during the progress of the Works and provide permanent land drainage if required to do so by the Engineer.

GENERAL FILL MATERIAL

Material for general filling may consist of approved broken bricks, stone, slag, gravel or sound broken concrete free from soft brick, dust, dirt, ashes, wood, metal, plaster or other extraneous matter, organic or inorganic impurities (e.g. sulphur, lime).

Unless otherwise stated general fill material shall be well graded from 100mm down and shall produce a well consolidated mass on compaction. It shall be compacted in layers not thicker than 225mm in accordance with Table 4.6.1 of the compaction requirements for granular materials.
When requested by the Engineer, the Developer shall provide a Certificate for imported general fill with details of the source and composition of the material and

confirmation that it is free from contamination.

Where any approved fill is used adjacent to concrete structures it shall be certified to have a water soluble sulphate content not exceeding 1.9g per litre when tested in accordance with BS 1377 Part 3.

MEMBRANE/GEOTEXTILE/GEOGRID BELOW PAVEMENT CONSTRUCTION

In suitable circumstances the Engineer will permit the use of membrane/geotextile/geogrid to reduce environmental impact and reduce the amount of excavation and refilling in poor ground conditions.

Separation membranes shall be provided when required by the Engineer before filling on soils of low bearing strength.

The Developer shall supply to the Engineer on request details of the proposed product together with calculations to demonstrate the adequacy of the product for the proposed application.

The Membrane/geotextile/geogrid shall be positioned below the level of ducts etc for public utilities services to avoid subsequent damage.

The membrane/geotextile/geogrid shall be installed in accordance with the recommendations of the manufacturer.

The layer of material on which the membrane/geotextile/geogrid is to be placed shall not have protrusions or sharp projections which are likely to damage the geotextile/membrane during installation or in service.

The method of installation shall ensure that the membrane/geotextile/geogrid is in continuous contact with the surface on which it is to be placed and the geotextile/membrane shall not be stretched or bridged over hollows or humps.

Operation of construction plant directly on the installed membrane/geotextile/geogrid will not be permitted and its covering with fill material shall take place immediately after its laying.

ROAD PAVEMENT

CARRIAGEWAY SHAPE AND TOLERANCES

If requested by the Engineer the Developer shall supply on site:

i) A substantial straight edge 3m long.

ii) A substantial template cut to the finished profile of the road and long enough to rest on the carriageway kerbs. Templates shall be made of sound timber and have a depth of at least 150mm and thickness of at least 40mm.

The finished levels of the various layers of road construction shall be measured from the template placed in position on the kerbs.

The acceptable tolerances for the various layers are as follows:

Subgrade	+ 20mm	-30mm
Capping Layer	+ 20mm	-30mm
Sub-base	+ 20mm	-30mm
Base	+ 10mm	-30mm
Binder Course	+ 6mm	-6mm
Surface Course	+ 6mm	-6mm

Where any tolerances are exceeded the area shall be made good as required by the Engineer.

At the request of the Engineer the surfaces of the surface course and binder course shall be tested for irregularities, with a 3m straight edge placed parallel with or at right angles to the centre line of the road. The maximum allowable deviation of the surface below the straight edge shall be:

for wearing course	3mm
for basecourse	6mm

Table 4.1.3: Maximum Surface Deviation

Where any tolerance are exceeded the area shall be made good as required by the Engineer.

FORMATION

For the avoidance of doubt in this specification "subgrade" refers to the top of existing ground prior to the laying of any pavement construction material.

Preparation and surface treatment of the formation shall be carried out only after completion of all sub-grade drainage.

Trenches formed in the construction of ducts, gully connections and public utilities shall be filled with Type 1 sub-base material. The material is to be compacted using a vibro-tamper (wacker plate) to following regime:

Vibro-TamperCategory	No of passes for layers not exceeding the following thicknesses:		
	110mm	150mm	225mm
Over 50kg – 65kg	4	8	Unsuitable
65kg – 75kg	3	6	10
Over 75kg	2	4	8

Table 4.2.3: Compaction of Trench Fill

Alternative methods should be agreed by the Engineer prior to implementation.

The prepared subgrade shall be sound, free from soft areas, water, mud and slurry. The surface should be within the approved tolerance and shall (unless otherwise agreed by the Engineer) be compacted by a minimum of eight passes of a smooth-wheeled roller having a mass per metre roll of 2700kg – 5500kg.

Construction traffic shall not run on the formation so that damage is caused. Any damage that may be caused shall be made good as directed by the Engineer. The Developer must arrange his work such that the formation is covered by a capping layer immediately following approval by the Engineer.

CAPPING LAYER

The capping layer shall be well graded granular natural sands, gravels, crushed rock, crushed concrete, well burnt shales or other material approved by the Engineer.

All material used shall pass a 125mm BS sieve but not more than 12% of the material shall pass a 63 micron BS sieve. The wet 10% fines value of the material shall not be less than 30kN when tested in accordance with BS 812: Part111.

The material shall be compacted to the requirement of Clause 4.06 at a moisture content, with the range of optimum moisture content to optimum moisture content2%, determined in accordance with BS 1377 Part 2 to give a 200mm compacted thickness.

Material used within 450mm of the surface of the road shall not be frost susceptible. Materials that have a mean heave of 15mm or less when tested in accordance with BS 812: Part 124 amended in accordance with the Department For Transport Specification for Highway Works.

SUB-BASE

Sub-base is to consist of Type 1 granular material in accordance with The Department of Transport Specification for Highway Works, see appendix.

CARRIAGEWAY CONSTRUCTION THICKNESSES

Unless otherwise specified the thicknesses given in the table below shall be the minimum compacted construction for varying widths of carriageway:

The above figures are based upon a CBR above 2%. Where this CBR is not achieved the developer will be expected to carry out measures to accommodate the poor ground conditions, these measures shall be approved by the Engineer. The developer may be requested by the Engineer to carry out CBR tests to verify the CBR on site.

When requested by the Engineer the pavement shall be designed in accordance with the Highways Agency document, Design Manual for Roads and Bridges, Vol 7 and the material thicknesses adjusted accordingly.

Carriageway Width	Capping Layer(mm)	Sub Base (mm)	Roadbase (mm)	Basecourse (mm)	Wearing Course (mm)
>5.5m	200	350	90	55	45
<5.5m	200	300	90	55	45

Table: 4.5.1: Carriageway Construction Thickness

COMPACTION REQUIREMENTS FOR GRANULAR MATERIALS

Granular Materials (including capping and sub-base layers) are to be compacted by

Type of CompactionPlant	Category:(mass per metre width of roll)	Number of passes for:		
		Not greater than 110mm thickness	Not greater than 150mm	Not greater than 225mm thickness
Smooth Wheeled roller	2700 – 5400kg	16	Unsuitable	Unsuitable
	over 5400kg	8	16	Unsuitable
Vibrating roller	700 – 1300kg	16	Unsuitable	Unsuitable
	1300 – 1800kg	6	16	Unsuitable
	1800 – 2300kg	4	6	10
	2300 – 2900kg	3	5	9
	2900 – 3600kg	3	5	8
	3600 – 4300kg	2	4	7
	4300 – 5000kg	2	4	6
	over 5000kg	2	3	5
Vibrating plate compactor	mass per unit area of base plate (kg/m2)			
	1400 -1800	8	Unsuitable	Unsuitable
	1800 -2100	5	8	Unsuitable
	over 2100	3	6	10

Table 4.6.1: Compaction Requirements of Granular Material

one of the methods detailed below:

The mass per 1.0m width of roll is the total weight on the roll divided by the total roll width. In the case of a smooth wheeled roller having more than one axle, the assessment is based on the highest value axle.

The requirements for vibratory rollers are based on the use of the lowest gear on a self propelled machine and a towing speed of 1.5 to 2.5 kph for a towed machine. If higher gears or speeds are used an increased number of passes shall be made in proportion to the increase in the speed of travel.

Vibratory rollers shall be operated with their vibration mechanism operating only at the manufacturer's recommended frequency. All such rollers shall be equipped with a means of indicating automatically the frequency at which the vibration is given. Vibratory rollers not vibrating shall be treated as smooth wheeled rollers. Vibrating-plate compactors are machines having a base plate to which is attached a source of vibration consisting of one or two eccentrically weighted shafts.

The static pressure under the plate is calculated by dividing the total working mass of machine by the area of contact with the compacted soil in m^2. Vibrating-plate compactors shall normally be operated at travelling speeds of less than 1.0 kph, if higher speeds are necessary the number of passes shall be increased in proportion to the increase in the speed of travel.

COLD WEATHER WORKING FOR GRANULAR MATERIALS

No material in a frozen condition shall be incorporated in the works but shall instead be retained on the site for use if suitable when thawed.

Materials for use in road pavements shall not be laid on any surface that is frozen or covered with ice.

SPECIFICATION FOR DENSE BITUMINOUS MACAD AM FOR ROAD CONSTRUCTION

Materials used for base, binder course and surface course are to conform to BS 4987 Part 1 with the exception that limestone aggregate shall only be used for base.

Base material to the BS 4987 Part 1 -Clause 5.2 shall be a 28mm nominal size dense base using 125-pen bitumen binder giving a compacted thickness of 90mm.

Binder course material to the BS 4987 Part 1 -Clause 6.5 shall be a 20mm nominal size dense binder course using a 125-pen bitumen binder giving a compacted thickness of 55mm. Limestone aggregate shall not be used.

Surface course material to the BS 4987 Part 1 -Clause 7.3 shall be 14mm nominal size close graded surface course using 125-pen bitumen binder giving a compacted thickness of 45mm. The material must not be fluxed and limestone aggregate shall not be used.

HOT ROLLED ASPHALT SURFACE COURSE

Hot Rolled Asphalt surface course shall be used where a harder wearing road surface is required and where requested by the Engineer.

Hot Rolled Asphalt surface course shall comply with BS 594 Part 1 (Group 2: surface course design mix), Table 3 type F. The binder shall be 50-pen bitumen complying with BSEN 12591. The course aggregate content shall be 35% by mass of total mix and shall have a PSV of not less than 45.
20mm nominal size coated chippings shall have a PSV of not less than 60 unless the Engineer requests a higher value.

Coated chippings shall be uniformly spread at a rate of 10-12kg/m^2 and rolled into the wearing course so that they are effectively held.

STONE MASTIC ASPHALT SURFACE COURSE

Stone Mastic Asphalt shall be used as an alternative to Hot Rolled Asphalt where agreed/instructed by the Engineer.

Stone Mastic Asphalt shall comply with the general requirements of BS4987 for coated macadam and the Highways Agency draft specification for Stone Mastic Asphalt.

The surface course shall comprise of 14mm aggregate stone mastic asphalt using a 50-pen binder giving a compacted thickness of 45mm. The PSV of the aggregate should be not less than 60 unless the Engineer requests a higher value.

COLOURED FLEXIBLE WE ARING COURSES

Coloured flexible wearing courses shall be provided at the approval/requirement of the Engineer and in accordance with the following sub-clauses. Other coloured flexible wearing courses shall be subject to the approval of the Engineer.

The Developer shall agree with the Engineer the materials and method of application of coloured surfacing as part of the technical approval process.

REGULATING COURSE

The material shall conform to BS 4987 -Part 1 and shall be as determined by the Engineer.

TACK COAT

Prior to laying subsequent layers of bituminous material the surface shall be thoroughly cleaned and a tack coat of bitumen emulsion Class K1-40 to BS 434 shall be applied at a rate of 0.4 to 0.6 litres per square metre to any bituminous surface that has been left uncovered for more than three days.

LAYING OF BITUMINOUS MATERIALS FOR CARRIAGEWAYS

Laying of road base material shall not proceed until the channel and/or kerb has been laid to the approved line and level and suitably haunched to the satisfaction of the Engineer. The level of the sub-base must be approved by the Engineer to the tolerance of clause 4.1.

Unless otherwise approved by the Engineer, all bituminous material shall be laid with an approved mechanical spreader capable of applying initial compaction.

Hand laying will only be permitted in confined spaces where it is impractical for a mechanical paver to operate.

Hand raking of wearing course material which has been laid by mechanical means or the addition of such material by hand spreading to the paved area for adjustment of level will only be permitted at the edge of material layers and at gullies and manholes.

All work, whether hand laid or machine laid, shall comply in all respects with the recommendations for laying contained in BS 594 Part 2 or BS 4987 Part 2. Tolerances on the finished surface shall be in accordance with Clause 4.1.

Final compaction to the wearing course shall be carried out using roller with the equivalent linear load of 2700 -5400kg/m.

JOINING INTO EXISTING CONSTRUCTION

Where any new carriageway joins an existing carriageway, the existing carriageway shall be cut back to the satisfaction of the Engineer, tack coated and the levels adjusted to the Engineer's satisfaction.

WORKING IN ADVERSE WEATHER CONDITIONS WITH BITUMINOUS MATERIAL

Laying of materials containing bitumen binders, shall cease if the temperature of the surface to be covered is at or falls below 2°C. Where however, the surface is dry, unfrozen and free from ice, laying may proceed at temperatures at or above -1°C on

a rising thermometer.

Laying of bituminous materials shall be avoided as far as practicable during wet weather and shall be suspended when free standing water is present on the surface.

Hot Rolled Asphalt wearing course shall not be laid when the air temperature is less than 5°C.

CONCRETE BLOCK PAVING

Concrete block paving may be used as a carriageway surface in cul-de-sacs and for footways or decorative areas. It may also be used for surface course of traffic management structures.

Concrete block paving shall be designed and constructed in accordance with BS7533 Parts 2 & 3 together with any additional requirements in these Clauses. In general the concrete block paving will replace the macadam binder and surface course and the overall pavement thickness shall be as determined in Table 4.5.1 for the appropriate road width.

The blocks shall be rectangular 100mm x 200mm and 80mm thick, to a colour or colours previously agreed with the Engineer and shall meet the requirements of BS 6717:2001. They shall be laid in a herringbone pattern on laying course of 30mm compacted thickness of sand. Sand shall be well graded to BS 7533 Part 3 of uniform moisture content without being saturated.

The sand shall be laid on a layer of base of 28mm nominal size dense base to specification clause 4.8.2 giving a compacted thickness of 90mm. All other construction layers shall be as Table 4.5.1.

Block paved carriageways shall be laid with a 1 in 40 cross fall unless agreed otherwise by the Engineer.

Alternative block sizes and laying pattern may be considered by the Engineer in some very lightly trafficked situations. The Developer should submit details of his proposals together with the location and loading of the proposed units to the developer for approval.

LAYING OF CONCRETE BLOCK PAVING

The acceptable tolerance for the laid surface of blocks shall be ±6mm with a maximum relative difference between adjacent blocks of 2mm. The acceptable tolerances for capping layer, sub-base and base shall be as Clause 4.1.

All block cutting shall be done using a purpose made block splitter or saw and the minimum size of laid block shall be 33% of a full block. The bond shall be broken as necessary to accommodate the minimum cut block size.

Full edge restraint must be provided prior to the laying of the blocks. The edge restraint should present a vertical face down t the level of the underside of the laying course.

Where block paving abuts a macadam surface an approved form of channel edge support shall be provided set flush into the surface of the block paving. Where the

block paving adjoins manhole frames, gully frames etc the blocks shall be neatly cut and may require to be set in coloured cement mortar. The use of in-situ concrete infill is not acceptable.
On completion of paving the surface course should be fully compacted using a plate compactor to achieve the required compaction of the laying course. Joints between blocks shall be fully filled with dried free-flowing silica sand conforming to BS7533: 3. Joints should be refilled as necessary and the paving revibrated with two or more passes.

JOINT SEALANTS

Joint seals shall consist of hot or cold applied sealants.

Hot applied sealants shall be Type N1 or Type F1 complying with BS 2499 Part 1.

Cold applied sealants shall be Type N complying with BS 5212 Part 1 or gunning grade cold applied plasticised bituminous rubber sealant or gunning grades of two part polysulphide sealants complying with BS 4254 may be used. Alternatively polyurethane based sealing compounds may be used provided their performance is not inferior to BS 4254 material.

KERBS, FOOTWAYS AND PAVED AREAS

KERBS AND CHANNELS

All kerbs and channels irrespective of type shall be laid, bedded and backed in accordance with Clauses 5.6 and 5.7 and be laid to a flowing alignment to the satisfaction of the Engineer.

PRECAST CONCRETE KERBS AND CHANNELS

Longitudinal falls less than 1 in 100 will not normally be acceptable. The Engineer should be consulted at an early stage in the design if the Developer intends to use gradients less than 1 in 100.

Precast concrete kerbs shall be 125mm x 255mm half battered and shall comply with BS7263 Part 1, and shall be hydraulically pressed. Precast concrete radius kerbs shall be used on radii not exceeding 12.0m. .

Precast concrete dropped vehicular crossing kerbs shall be 125mm x 178mm and shall comply with BS 7263 Part 1 except dimensionally and shall be hydraulically pressed. Transition kerbs shall comply with the British Standard.

Precast concrete channels shall be 150mm x 150mm and shall be hydraulically pressed and manufactured in accordance with BS 7263 Part 1 except dimensionally. Precast concrete channels shall be used where the carriageway falls towards the kerb and may be used where the carriageway falls away from the kerb.

Precast concrete channels laid to a radius not exceeding 12m shall not exceed 450mm long.

Precast units conforming to BS 5328 Part 1 should not be cut to a length of less than 300mm

PRECAST CONCRETE BLOCK KERBS AND CHANNELS

Precast concrete blocks used for kerbs and channels shall comply with BS 6717 Part 1. They shall be laid and bedded in accordance with BS 7533 Part 6 and Clause 5.7.

Units shall be of proprietary manufacture with a range of suitable profiles for dropped crossings and transitions where appropriate. Small units of stone and concrete should not be cut to less than one-third of their original length and in no case less than 50mm.

A list of ranges of concrete paving systems currently approved for use in the City of York area is included in Appendix F to this Specification. A developer wishing to use an alternative system is required to provide details of the product and range to the Engineer for approval.

STONE SETS

Stone setts for use as decorative areas, rumble strips or highway boundary definition shall be natural stone granite, whinstone or York stone. Samples shall be submitted to and approved by the Engineer prior to their use and the setts used shall be equivalent or superior to the approved sample.

Setts shall be laid and bedded in accordance with BS 7533 Part 7.

BLOCK PAVING CHANNELS

Where approved by the Engineer, approved concrete paving blocks may be used as channels only where a block paving surface is being used. They shall be laid in stretcher bond on bedding sand as specified in Clauses 4.17 and 4.18. The channel shall be laid to a level 5mm below the finished edge of carriageway level. Block channels will not be approved for longitudinal gradients less than 1 in 80.

KERB AND CHANNEL LAY ING

Typical sections giving full details of the foundation and backing are shown in Standard Details.

Where units are to be set on a race of fresh concrete, a foundation of ST2 concrete should be deposited along the line of units, onto which the units are laid directly on fresh mixed concrete and set to line and level. The backing concrete should be laid monolithically with a race of fresh concrete, dowel bars should be fixed into the base and extended into the backing haunching.

Where units are to be bedded onto a concrete edge beam, the concrete foundation shall be formed on the compacted sub-base to a minimum thickness of 150mm and wide enough to accommodate the units and backing concrete. Soundly fixed formwork or shuttering shall be used and the Class ST2 concrete to BS 5328 shall be compacted to produce a dense foundation free from honeycombing. The minimum period between concreting and the removal of the formwork or shuttering shall be 24 hours.

Kerb and channel units on the concrete foundation shall be laid butt jointed on a maximum 25mm thick bed of semi-dry 3:1 cement mortar to Clause 9.04. Any surplus

bedding material shall be thoroughly cleaned off and the foundation wetted if necessary prior to the placing of the backing concrete. The backing of ST2 concrete to BS 5328 shall be placed in a soundly fixed road form or shutter and thoroughly compacted to produce a concrete dense and free from honeycombing to the section as shown on Standard Details.

Kerb and channel units shall be laid true to line and level in a flowing alignment and shall not be backed until they have been inspected and approved by the Engineer.

Channels shall be laid in a broken joint bond with the kerbs.

PREPARATION OF SUBGR ADE TO FOOTPATHS AND OTHER PEDESTRIAN AREAS.

During the course of the works the Developer must keep the subgrades free of water.

These subgrades shall be treated in accordance with Clause 4.2. Any depressions in these subgrades shall be filled with approved sub-base material and compacted to the Engineer's satisfaction before further materials are deposited thereon. These subgrades should then be treated with an approved granular total weedkiller in accordance with Clause 10.6 to the satisfaction of the Engineer to ensure that no weed growth disturbs subsequent construction.

SUB BASE TO FOOTWAYS AND FOOTPATHS

After the formation has been inspected and approved by the Engineer the required compacted thickness of Type 1 sub-base material in accordance with Clause 4.4 shall be spread evenly and thoroughly compacted in accordance with Clause 4.6.

The compacted thickness of sub-base material to footways and footpaths on residential estate roads shall be 150mm.
The acceptable tolerances for the sub base surface under footways shall be +0mm, -30mm. Where any tolerances are exceeded the area shall be made good as required by the Engineer
Footways adjacent to industrial estate roads shall have an increased thickness of sub-base to the same depth as the road construction.

COATED MACADAM TO FOOTWAYS AND FOOTPATHS

Laying of binder course material shall not proceed until the kerbs and edgings have been laid to the approved line and level and suitably haunched to the satisfaction of the Engineer. The level of the sub-base must be approved by the Engineer to the tolerance of clause 4.1.

Binder course material to the BS 4987 Part 1 -Clause 6.5 shall be a 20mm nominal size dense binder course using a 125-pen bitumen binder giving a compacted thickness of 50mm. Limestone aggregate shall not be used.

Surface course material to the BS 4987 Part 1 Clause 7.3 shall be 6mm nominal size close graded wearing course using 125-pen bitumen binder giving a compacted thickness of 25mm. The material must not be fluxed and limestone aggregate shall not be used.

Prior to the laying of the surface course the surface of the binder course shall be

thoroughly cleaned and an approved bitumen emulsion tack coat to Clause 4.11 applied where the binder course has been left uncovered for more than three days.

Compaction shall be carried out with an approved smooth-wheeled roller of 2.0 tonnes to 3.0 tonnes mass or an approved vibratory roller of equivalent rating to give the specified compacted thicknesses.

The binder and wearing courses shall be laid to the tolerances states in Clause 4.1.

CONCRETE BLOCK PAVING TO FOOTWAYS AND FOOTPATHS.

In footways and footpaths concrete blocks shall be 80mm thick 100mm by 200mm rectangular blocks. The blocks shall be to a colour or colours previously agreed with the Engineer and shall be laid in a herringbone pattern on 30mm compacted thickness of sand as specified in BS 7533 Part 3.

Concrete block paving to footways and footpaths shall be laid in accordance with Clause 4.16.

FLAGGING TO FOOTPATHS AND FOOTWAYS

The use of pre-cast concrete flags will generally only be acceptable in conservation areas or other areas of landscape importance or adjacent to existing flagged areas.

Pre-cast concrete flags shall be hydraulically pressed and shall comply with the requirements of BS 7263 Part 1. All aggregates shall comply with BS 882. The flags shall generally be 450mm x 450mm x 70mm thick. The use of 63mm thick flags of a uniform width of 600mm, a minimum length of 450mm and a maximum length of 900mm will be permitted to tie in with existing flagged areas.

All flags shall have a foundation of 150mm compacted thickness of Type 1 Subbase material to Clause 4.4.

All 450mm x 450mm square flags shall be on a laying course of 50mm compacted thickness of sand as specified in BS 7533 Part 4.

All 600mm wide flags shall be bedded and pointed in cement mortar to Clause 9.4.

The flagging shall be laid at right angles to the kerb and joints must be broken in each course and properly radiated to the kerbing laid to radius. Where the radius is less than 12 metres the flags shall be radially cut on both edges to the required line. Care must be taken to ensure a neat fit around all surface boxes and obstructions. Flags are to be laid close jointed i.e. with a 2mm to 4mm joint. The joint shall have concreting sand or crushed rock fines compatible with grade f of BS 882 brushed into the joints. Further sand shall be brushed into the joints after the flags have compacted down into the bedding material.

Where a flagged footway is used concrete block paved vehicular crossings shall be constructed at all foreseeable crossing points and as required by the Engineer.

TACTILE PAVING

Tactile paving in accordance with Department of Environment Transport and the Regions document 'Guidance on the use of Tactile Paving Surfaces' shall be used at

pedestrian crossing points to identify the existence of a flush dropped kerb and an appropriate place to cross.

In accordance with the recommendations red tactile paving shall only be used at controlled crossing places, i.e. pelican and zebra crossings and light signalled crossings with a pedestrian phase. Elsewhere the tactile surface shall be buff or in such a colour which provides a contrast with the footway surface material.

The tactile surface itself can help some visually impaired pedestrians to align themselves in the correct direction of travel in order to locate the threshold of the crossing place. The surface should therefore be laid to ensure that the domes are in line with the direction of travel.

The width of the crossing point will need to be determined according to local circumstances, but it should never be less than 1.2m wide.

The target gradient of ramps in footways down to carriageway level is 1in 20 with a maximum gradient of 1 in 12. Where the kerb is dropped at pedestrian crossing points there should be no vertical upstand between the road channel and the kerb; a 6mm tolerance can be made but only on a bullnose kerb. The drainage of the channel at pedestrian crossing points must be considered to ensure that no water is routed across or allowed to pond at the pedestrian crossing point.

The paving units shall have a foundation of 150mm compacted thickness of Type 1 Sub-base material to Clause 4.4 and shall be bedded on 100mm compacted thickness of ST2 concrete. Where the paving units are to be laid onto a mortar laying course it shall comply with Clause 9.4 and be 25mm thick when laid.

The paving units shall be hydraulically pressed and shall comply with the requirements of BS 7263 Part 1. All aggregates shall comply with BS EN 12620:2002.

EDGINGS

Edgings shall be pre-cast hydraulically pressed concrete 50mm x 150mm flat topped, manufactured and complying in all respects to BS 7263 Part 1. Edgings shall be laid true to line and level in a smooth alignment on a foundation of Class ST2 concrete to BS 5328 as shown in Standard Detail B5. Edgings shall not be backed until inspected and approved by the Engineer.

16.0 Construction Method Statement

1.0 INTRODUCTION

1.1 The purposed of this Method Statement is directed at the need to safeguard pollution. It is not intended to be a Method Statement for Health & Safety purposes; such a statement will be the responsibility of the appointed main Contractor.

2.0 METHOD STATEMENT

2.1 Proposal of Works

Proposed 2 no. 4 bedroom new build dwelling's (C3) Residential @ 40 Olive Lane, Wavertree, Liverpool L15 8LS

2.2 Areas of Potential Risk

The following operations have been identified as potentially affecting the surround area:

1. Hazardous/excavated material being washed into the ground locally.
2. Run-off from construction operations carrying silt towards the adjacent public highway.
3. Tracking of concrete/cement-based materials entering groundwater areas.
4. Leakage of fuel, paints, liquid coatings entering groundwater areas.
5. Burning or inconsiderate disposal of materials from demolition.

2.3 Noise Control

- Employ normal working hours of 8am to 6pm Monday to Friday and 8am to 1pm Saturday (particularly noisy operations such as percussion piling may be further restricted)
- Select the quietest plant which is appropriate for the job and ensure that it is properly maintained, particularly with respect to any noise reduction measures
- Ensure that plant is operated so as to minimise noise, including shutting off plant when not in use, keeping covers in place, etc.
- Site noisy plant away from noise sensitive buildings or make use of barriers to shield such buildings.
- Ensure that mains power is available at the earliest opportunity where temporary generators are used overnight
- Take care when loading/unloading materials and plant Keep deliveries to within normal working hours
- Ensure that radios are not used unless they are kept to a low level which does not cause annoyance

2.4 Dust Control

- Any regularly used routes across the site shall be hard surfaced so that they can be kept clean by regular brushing and water spraying if necessary
- Vehicle movements and speeds across unsurfaced sites shall be minimized

- Effective wheel cleaning arrangements must be made so that mud (and subsequently dust) is not tracked out of the site. In any event road cleaning with a vacuum sweeper may still be required.
- All stockpiles of potentially dusty material shall be stored away from the boundary with existing dwellings, within enclosures and damped down using suitable water sprays during dry weather.
- Cutting or grinding of materials on site shall be done with plant equipped with an effective water suppression system.
- No burning of materials or rubbish shall take place on site.
- Static plant powered by internal combustion engines shall be sited away from dwellings, offices, etc.

2.5 On-Site Car Parking

In order to mitigate disruption to the adjacent properties temporary off street parking will be provided within the curtilage of the site for all associated construction personnel. The location of the off street parking with be contained within the proposed hard standing of the scheme as detailed on Drawing 002. Please note: that the Hardcore / sub gradual base to the access way and parking area will be installed first and will be used as a temporary surface for the contractors personnel parking. The brick paving will be installed later once house has been completed.

2.6 Measures of Prevention

The Main Contractor is to take into account the Environment Agency – PollutionPrevention Guidelines (PPG).

1. Operations will be closely supervised with any potential hazardous materials identified prior to works commencing. Any area of work considered to contain 'hazardous' materials will be ceased until agreed in writing with the Contract Administrator. NB. The new building will not contain any hazardous materials (i.e. asbestos etc.)

2. All aggregates are to be stored in large carry sacks (1-tonne) and stored in a secured covered area.

3. If in the unlikely event that dewatering of the foundations is required, the water shall be pumped into a settlement tank to prevent contamination of the groundwater areas.

4. Regular checks shall be carried out by the Site Forman and the Contract Administrator to ensure that the construction area shall be kept clean at all times and materials stored in their correct locations.

5. Excavated material shall be removed from site as soon as practically possible and disposed of in a considerate manner (i.e. registered waste disposal site).

6. Concrete shall not be poured in wet conditions to ensure that cement leaching does not affect the groundwater areas.

7. Fuel storage for construction vehicles shall not be permitted on the site.

8. All plant and construction traffic shall be properly maintained, with machinery only being used by suitably trained personnel.

9. All new construction materials will be factory finished (i.e. g steel, Upvc windows) to remove the need for the storage and application of paints, preservatives etc. on site.

10. No burning of construction materials will be permitted.

11. As identified in the 'Considerate Constructors Scheme' provision on site will be made for wheel washing facilities located on the driveway of No.26 meaning all traffic to and from the site will be forced to use the facilities on exit from the site. This will be implemented via jet wash facility

12. Due to the size and proposed layout of the site adequate off street car parking will be available to all construction personnel.

Site Induction

Before any operatives commence on site they will attend an induction briefing where the site rules together with safety and environmental issues on site are discussed. The induction will include the explanation of the various safety procedures on site, emergency escape routes and evacuation procedures in the event of a fire.

Other topics covered will be identifying the welfare facilities explaining the main areas of risk on the project where the possibility of injury is likely to occur, discussing PPE and reviewing standards of good housekeeping which are required on site. This will include specific issues raised within the H&S plan. It will be explained that there is to be no parking off site.

Operatives will also be informed of any specific tasks or restrictions on day-to-day operations. It is Kier policy that trades foremen will attend supervisor's induction and hold a supervisor's CSCS card.

Fire Precautions

The Construction Health & Safety Plan will have a dedicated section on fire prevention. We propose that the plan will include, but not be limited to, the following: The identification of potential fire risks together with risk control measures:

- Consultation with the local fire authority regarding access for emergency vehicles.
- Continual review of the fire plan and regular meetings and agree any changes to the fire plan.
- Bespoke fire training for operatives.
- Installation of fire/smoke alarms throughout the working area, offices and stores.
- Installation of fire fighting equipment.
- Fire plan strategy posted throughout the site showing escape routes and the location of fire muster points. Our logistic drawings show the location of our proposed muster points and access routes.
- The installation and maintenance of protected fire escape routes during the construction phase.
- A good housekeeping plan which will reduce the risk of fire.
- The use of LPC materials for protection and covering.
- Strict adherence to a Hot Works Permit system for all hot work anywhere on site.

- Temporary electrical supplies will be wired to 110v through a trip switch which will lessen the risk of shorting out circuits.

Site fire precautions and emergency procedures on this plan and all subsequent variations will be conveyed to the workforce during the induction meeting or at tool box talks.

Security

The main site area will be completely fenced off using a combination of timber hoardings and block and mesh fence panels.

Security warning notices will be displayed on and around the site boundary in prominent position. Site name boards will be positioned adjacent to the contractor's access point off Olive Lane. All staff will be required to be CRB checked.
All fencing will be checked daily and a record of the check will be entered into the weekly monitoring sheet.

We will liaise closely with the Community Safety Officer, local police and the School and additional measures that may be implemented will include recordings of the web cams, visiting security patrols and on-site security operatives.

We have allowed for our own security outside normal working hours for the new build duration of the project. The site will be protected by secure fencing/ hoarding and all access gates will be secure and lockable.

Deliveries

Full instructions and directions will be sent to all suppliers with strict instructions to ensure that the all protocols are adhered to. Traffic signs and fingerboards will direct delivery vehicles to the site from the surrounding approach roads.

We are aware that there are peak times for local roads and we will advise suppliers **not** to deliver during rush hour periods. A gateman will be situated at the entrance to the new site. His duties will include the constant monitoring of site traffic to ensure that any delivery vehicles appearing at peak time are directed to a holding area away from local residential areas.

Welfare Facilities

The welfare facilities will consist of toilets, mess/drying room, site offices, canteen, meeting room, washing facilities. Information and directional signage will be agreed in advance of the works commencing. Signage will be clear and concise to separate public from site traffic.

The site office will be the main point of contact and all visitors and operatives will need to sign a visitor log book each day, and be inducted prior to being allowed access to the site.

3.0 CONCLUSIONS

3.1 This Method Statement has been prepared by Smith + McHugh Architecture for use in conjunction with the works as listed in Section 1.0 only. It is not intended for use on any other construction project.

3.2 It is envisaged that adherence to this document, in conjunction with the Environment Agency guidelines (PPG), will minimise potential pollution ensuring a safe, clean construction project.

17.0 Lifetime homes