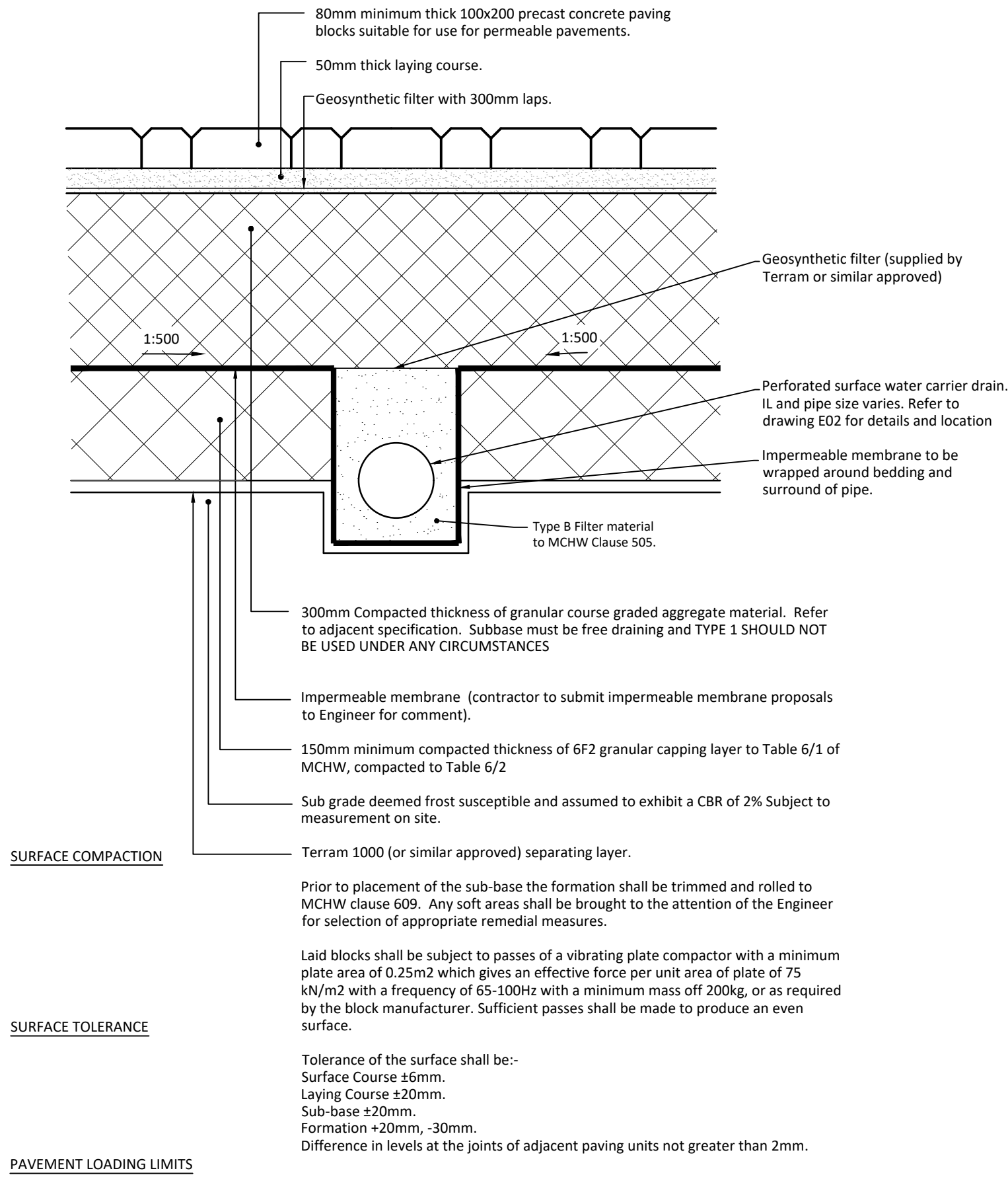
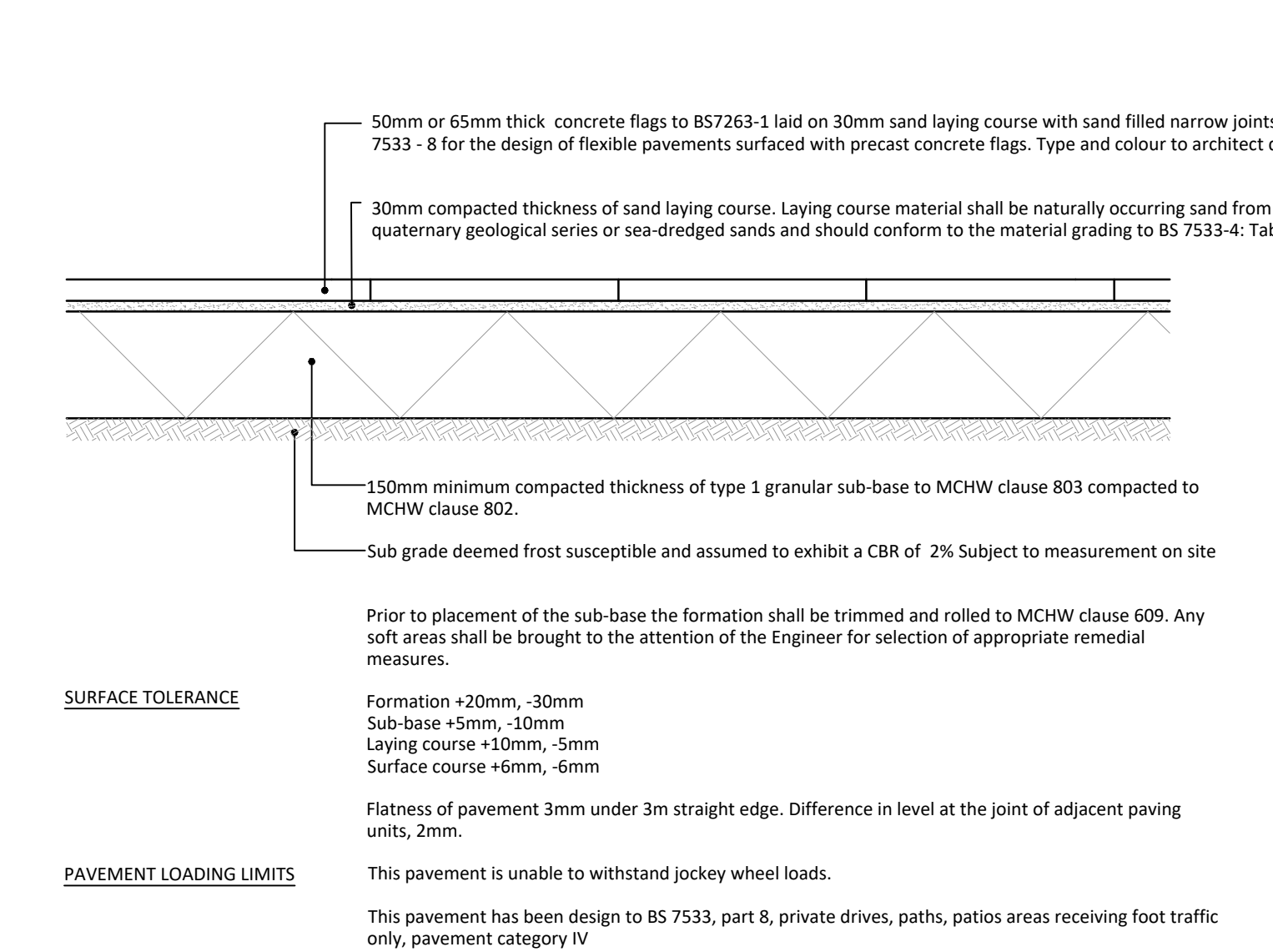
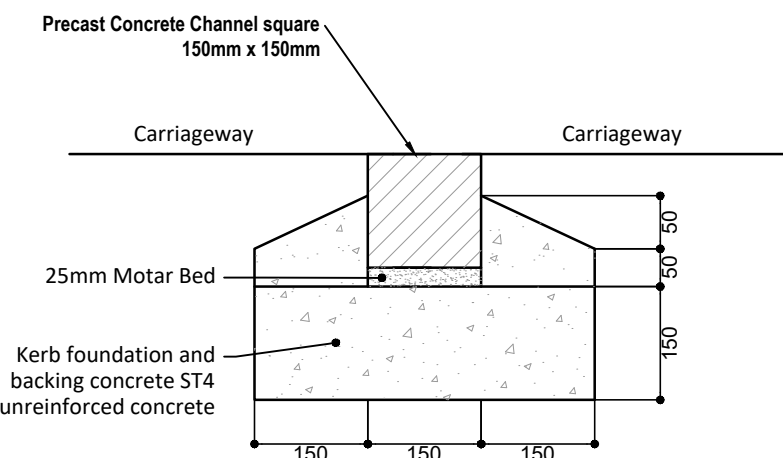




PERMEABLE BLOCK PAVING ACCESS ROAD SHOWING PERFORATED CARRIER DRAIN



FLAG PAVING CONSTRUCTION DETAIL



- NOTES.**
- Gap between kerbs shall be 1 to 2mm.
 - Radius kerbs shall be used where the radius is less than 12m.
 - Kerb face to be shuttered and mechanically vibrated to ensure proper compaction.
- LIMITATIONS OF USE.**
- For use as an edging to pavements accommodating normal traffic and manoeuvres.

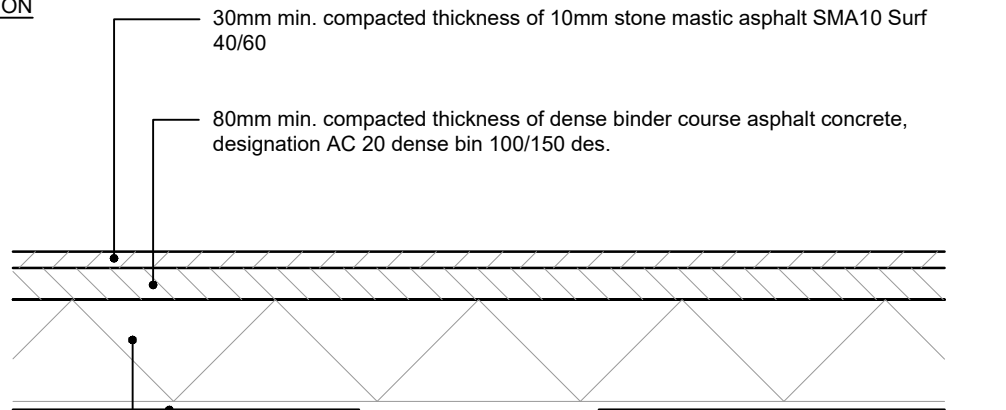
PRECAST CONCRETE CHANNEL SQUARE DETAIL

NOTES & SPECIFICATION

- Pavement construction shown below shall be generally constructed in accordance with the current Highways Agency Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works in particular the 600, 700, 800 and 900 series. Clause numbers refer to this specification
- Bituminous mixtures shall be to the current BS EN 13108 series, BS 594987 and BSI PD 6691.
- If this pavement construction does not extend to a total thickness of 450mm and thus does not penetrate soils which may be affected by frost action. There is a risk of frost heave of the sub grade occurring in prolonged severe winter events causing damage to the pavement. Thickening of the pavement towards 450mm will reduce the risk.
- Granular sub-base has not been designed to carry construction traffic. Any surface damage to the sub-base due to the construction traffic shall be repaired to the satisfaction of the Engineer prior to the placement of the bound materials.
- The sub grade CBR shall be measured and reported to the Engineer to check the pavement design prior to construction.
- Where pavements are constructed on subgrades that have volume change potential and where roots of vegetation are below the pavement formation, there is a risk that movement may occur resulting in cracking being evident in the surface course, particularly during prolonged periods of dry weather. To reduce this risk, the formation depth shall be increased.

PAVEMENT CONSTRUCTION

Bound Materials:



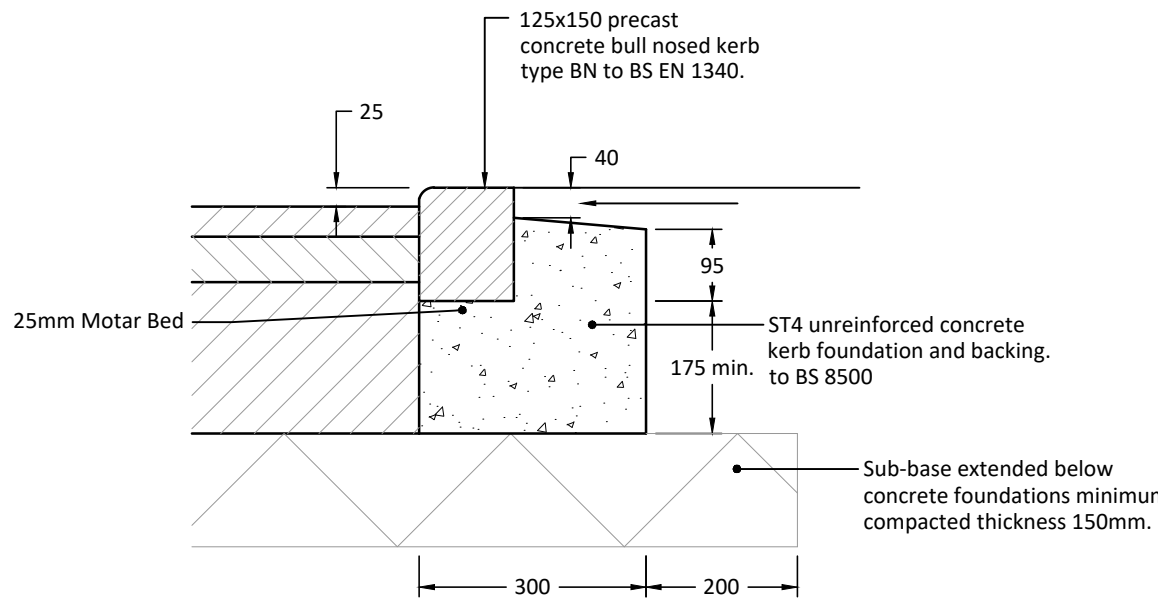
UNBOUND MATERIALS:

FORMATION/SUBGRADE

SURFACE TOLERANCE

PAVEMENT LOADING LIMITS

PRIVATE DRIVE CONSTRUCTION



NOTES.

- Kerb backing normally brought up to 40mm below top of kerb, but where final surface of adjacent foot way is flagged, kerb backing shall finish 75mm below top of kerb.
- Gap between kerbs shall be 1 to 2mm.
- Kerbs to be bedded and hanched in one operation on concrete grade as shown.
- Precast concrete kerbs shall be laid to the requirements of BS 7533:Part 6
- Radius kerbs shall be used where the radius is less than 12m.
- Kerb face to be shuttered and mechanically vibrated to ensure proper compaction.

LIMITATIONS OF USE.

- For use as an edging to pavements accommodating normal traffic loadings and manoeuvres.

PRECAST CONCRETE BULLNOSED KERB DETAIL

NOTES AND SPECIFICATION FOR PERMEABLE BLOCK PAVING

Permeable block paving construction shall generally be carried out in accordance with the current Highways Agency Specification for Highway Works (MCHW) and BS7533. Guide to the design, construction and manufacture of concrete block permeable pavements produced by Interpave.

The coarse graded aggregate subbase has not been designed to carry construction traffic. It is vital that subbase is kept free from traffic and construction debris. If the subbase is required to be used for construction traffic, the Engineer shall be consulted prior to trafficking.

Due to the nature of the coarse graded aggregate, the Contractor shall construct a trial area (min. 10mx10m) and test typical construction plant on this area to determine suitability. The Contractor shall consult with all sub-contractors to ensure they are satisfied their plant can be used on the subbase materials prior to construction.

Coarse graded aggregate shall comply with BS EN 13242 and shall be designated Type 4/20 and shall be graded as follows:- and shall meet the following physical properties:-

Sieve Size mm (nearest UK equivalent)	Coarse aggregate 40mm to 5mm	Properties	Category to BS EN 13242 or BS 12620
40	100	Grading	4/20 (preferred) or 4/40, Gc 85-15, Gtc 20/17.5
31.5	98 - 100	Fines Content	f ₄
20	90 - 99	Shape	F ₁₀₀
10	25 - 70	Resistance to Fragmentation	LA ₈₀
4	0 -15	Durability: Water absorption to BS EN 1097-6:2000, Clause 7 - for WA > 2%	WA _{3±2}
2	0 - 5	Magnesium Sulphate Soundness	MS ₁₈
		Resistance to Wear	M _{tot} ² 0
		Acid Soluble Sulphate Content: - Aggregates other than air-cooled blast-furnace slag - Air-cooled blast-furnace slag	AS _{0.2} AS _{1.0}
		Total Sulphur: - Aggregates other than air-cooled blast-furnace slag - Air-cooled blast-furnace slag	≤ 1% by mass ≤ 2% by mass
		Volume Stability of Blast-Furnace and Steel Slags: - Air-cooled blast-furnace slag - Steel slag	Free from dicalcium silicate and iron disintegration in accordance with BS EN 13242 : 2002, 6.4.2.2 V ₅
		Leaching of Contaminates	Blast furnace slag and other recycled materials should meet the requirements of the Environment Agency 'Waste Acceptance Criteria' for invert waste when tested in accordance with BS EN 12457-3.
		10% Fines	100KN
		Other Properties	Particals shall be rough and angular to provide good interlocking between particles. Sands and gravels with rounded particles shall not be used.

Bituminous materials shall be to BS EN 13108.

The laying course material shall comply with the requirements of a material of type 2/6.3 Gc 80/20 to BS EN 13242, graded as follows:-

BS Sieve Size (mm)	Percentage passing by mass (%)
14	100
10	98 - 100
6.3	80 -99
2.0	0 - 20
1.0	0 - 5
0.063	0 - 2 (BS EN 12620 fines category f ₅)

A trial area (minimum 10m x 10m) shall be laid with blocks and compacted to determine suitability of material in order to achieve the required levels.

Precast concrete blocks shall comply with BS EN 1338 and shall be suitable for use for permeable pavements. Precast concrete blocks shall have the following physical properties:-

Tensile Splitting Strengths & Failure Level	Abrasion	Skid/Slip (pendulum value)	Freeze/Thaw (kg/m ³)
No block shall have a tensile strength less than 3.6mPa for a failure load less than 250N/mm.	≤ 20	45 min	≤ 1.0

The geosynthetic filter shall be a polyethylene mono-filament with the following properties:-

Mass / unit area	(EN 965)	greater than 100g/m ²
Tensile strength	(EN ISO 10319)	Longitudinal - greater than 25kN/m Transverse - greater than 25kN/m
Elongation at break	(EN ISO 10319)	Longitudinal - less than 25% Transverse - less than 25%
Opening size	(EN ISO 12956)	Approx. 0.45mm
Water permeability	(EN ISO 11058)	greater than 200 x 10-3 m/s

The tensile properties of the material shall be measured in accordance with EN ISO 10319. All vehicles shall be prevented from trafficking directly over the material. The material shall be protected from ultra-violet light

Maintenance of the block paving systems shall be carried out as follows:-

Maintenance required	Description	Surface or subsurface	Regular	Remedial
Inspection	Inspect catchments at outlets once a year (if appropriate)	Surface	Yes	
Surface cleaning	To minimise clogging, clean dirt and other matter from the surface at least twice a year by seeping, early spring (after winter) and autumn (after leaf fall).	Surface	Yes	
Managing vegetation	Weed control between blocks (use non-toxic biodegradable weedkillers).	Surface	Yes	
Re-establish infiltration capacity	For block surfaces, lift surface and replace gravel bedding and geotextile as necessary. For continuous concrete permeable surfaces, replace gravel infill. For continuous porous surfaces, replace surface. (All likely to be after a period of about 15-20 years)	Sub-surface		Yes Yes Yes
Screen runoff from adjacent areas	Pass through screens on downpipes, filters or use gully silt traps.	Surface	Yes	
Good housekeeping	Minimise use of salt or grit for de-icing, keep landscaped areas well maintained and prevent soil being washed on to pavement.	Surface	Yes	

Where pavements are constructed on subgrades that have volume change potential and where roots vegetation penetrate below the pavement formation, there is a risk that movement may occur resulting in deformation being evident in the surface, particularly during prolonged periods of dry weather. To reduce this risk, the thickness of the subbase shall be increased.

15.09.22 WRA Permeable paving subbase note amended			
Rev.	Date	By	Description
 CONSULTING ENGINEERS [CONSULTING CIVIL & STRUCTURAL ENGINEERS] E: warren@seace.co.uk T: 07976310054			
PROJECT RESIDENTIAL DEVELOPMENT WILLIAM STREET LITTLEBOROUGH			
DRAWING PRIVATE PAVEMENT CONSTRUCTION DETAILS			
SCALE: NTS		DATE: 10.06.2022	
DRAWN BY: WRA		REV: A	
STATUS: PRELIMINARY			
DWG No: 2132/E06			A