



Civil and Structural Engineering Group

October 2020

Drainage Maintenance Schedule Report

Chorlton High School South, Manchester

Project No: P2008475

Doc No: 8475-BDP-RPT-C-001

Issue: For Information Rev: A

BDP.

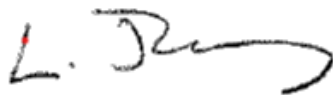
Document Control

Revision	Description	Issued by	Date	Reviewed
-	First	LJ	25.11.2020	DN
A	Updated as-built drawings	LJ	05.03.2021	DN

Author

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Signature



Date 25.11.2020

Approved

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Date 25.11.2020

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1.0 Introduction and Overview

1.1 Appointment and Brief

This report has been developed to describe the maintenance requirements for each drainage component involved in the proposed new Chorlton High School South located off Mauldeth Road West.

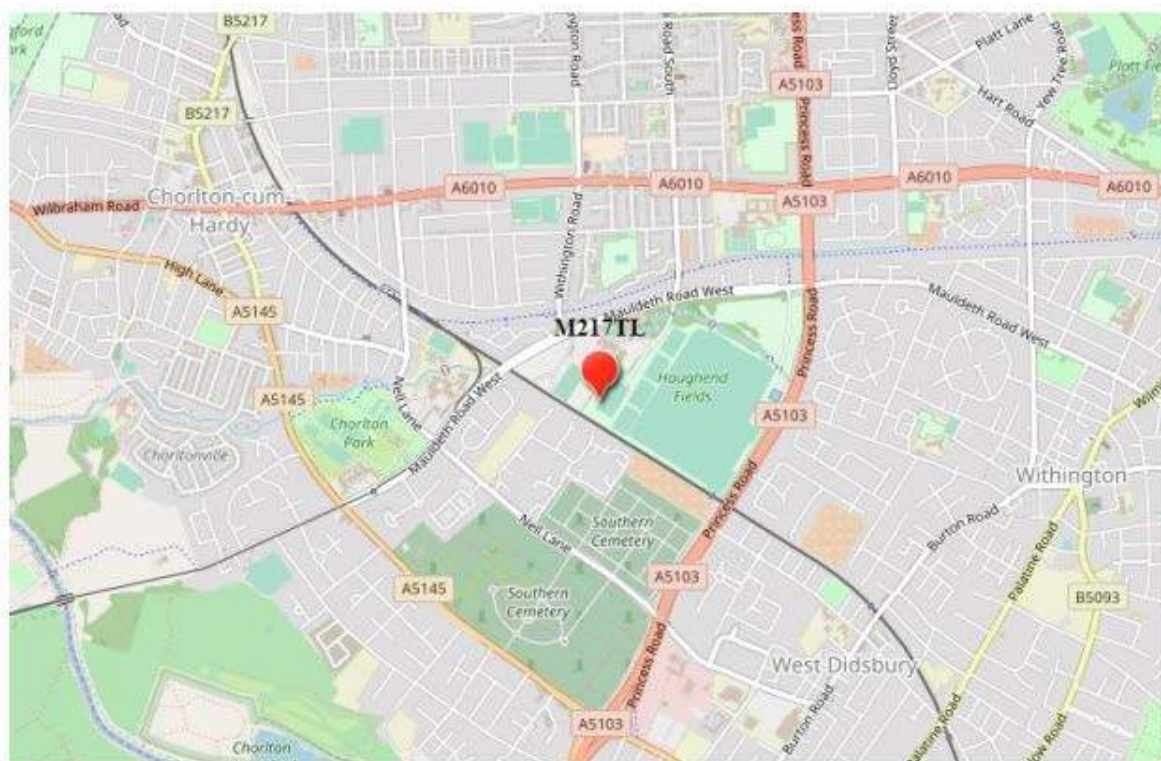
1.2 Proposed Development

The proposed development comprises the construction of a new school building, sports hall, sports pitches, outdoor social space, service yard and car parks off Mauldeth Road West, Chorlton.

The site is located south east of Mauldeth Road West, Chorlton, Manchester. The postcode for the North West boundary is M21 7TL. The National Grid reference (NGR) of the approximate centre of the site is 382950, 393370. The site is in an area identified as have a medium probability of flooding on the Environment Agency Flood Map and is located in Flood Zone 2. The proposed development will be served using a separate system of foul and surface water drainage.

The site is currently a grassed area adjacent to a sporting facility and is approximately 4.56ha. The site is comparatively flat with levels on the sports fields varying between 29.50m AOD and 29.0m AOD. The local area generally falls to the south towards the Chorlton Brook at the southern boundary. The site is bounded by Mauldeth Road West to the north and west, Mauldeth tramline to the south and an outdoor sports facilities to the east.

Figure 1.1: Site Location



1.3 Objective of Strategy

The objective of the strategy is to provide information and present maintenance schedules relating to the maintainable drainage assets. This includes:

- Private drainage: General below ground drainage including pipework, manholes, channels, road gullies, inspection chambers etc.
- Attenuation tank
- Permeable pavements
- Inlets, outlets, controls and inspection chambers
- Drainage channels and gullies

These components have been incorporated into the wider drainage strategy, which has been designed in accordance with the National Planning Policy Framework and current best practice guidance.

2.0 Outline Drainage Strategy

2.1 Existing Drainage

United Utilities sewer records identify a number of public sewers located in Mauldeth Road West immediately adjacent to the site. These generally comprise combined sewers which are a range of sizes including 225, 450 and 675mm diameter alongside a 1220 x 1050 brick sewer. In addition, a 225 diameter surface water sewer is also shown which flows southward along Withington Road directly opposite the site before connecting into a culverted watercourse.

The culverted watercourse is understood to be Chorlton Platt Gore which is classified as a Main River and therefore falls under the jurisdictions of the Environment Agency. United Utilities records suggest that the watercourse comprises twin 2440 x 2400 circular culverts which originate to the east adjacent to the Hough End Centre. The feature flows in a westerly direction cutting across Mauldeth Road West in the vicinity of the proposed access junction.

A drainage CCTV survey was also available for review which was undertaken by Midland Survey Ltd in March 2018 and commissioned by RPS Planning & Development. The survey focused on an existing pipe draining through the proposed site which is understood to be serving Broughton Park Rugby club and the Hough End Centre. This pipe is a 150mm diameter clay combined water drain which is understood to have been adopted by United Utilities as a public lateral drain following the transfer of private sewers in 2011. This will need to be maintained with a 6m easement through the development.

United Utilities are responsible for the management and maintenance of their assets, which include the surrounding public sewers and existing sewer crossing the site.

2.2 Proposed Surface and Foul Water Drainage

It is proposed to install new surface and foul water drainage systems to serve the proposed new development. It was initially proposed to connect the new foul water drainage into the existing combined sewer network in Mauldeth Road West however, following confirmation from United Utilities that the existing combined sewer crossing site is their asset, a connection into this sewer via an existing manhole was made. The new surface water drainage discharges into the surface water culvert (Chorlton Platt Gore watercourse).

This report is to be read in conjunction with the Flood Risk Assessment conducted by HSP Consulting in May 2018. In addition, as-built drainage drawings (FS0765-BDP-XX-XX-DR-C-10001 and FS0765-BDP-XX-XX-DR-C-10002) can be found in Appendix B.

3.0 Policy and Guidance

In carrying out our assessment and preparing this report, regard has been taken of the provisions of the development plan and a range of other material considerations.

3.1 Flood and Water Management Act 2010

This strategy has been prepared using information provided by the regulatory bodies and third parties for the development. The regulatory bodies and third parties will be contacted to obtain their views and recommendations. The design and drainage strategy, if required, will then be updated with any updated information received from the regulatory bodies or third parties.

The Flood and Water Management Act 2010 received Royal Assent on 8th April 2010. This Act provides duties on the Environment Agency, Local Authorities, Developers and other bodies to manage flood risks. The Act has significant planning and design implications for Developers.

The main areas affecting Developers are:

- Lead Local Flood Authority (LLFA) may adopt sustainable urban drainage systems (SUDS). The LLFA may be either a Unitary or County Council;
- Approval fees and non-performance bonds to be standardised;
- National Standard for SUDS designing, constructing, operating and maintaining drainage for surface run off 2011. This guidance emphasises the preference for surface SUDS features and the need to incorporate green corridors into the masterplan.
- Changes to the rights to connect to sewers will restrict automatic connection rights to only Section 104 sewer schemes or approved SUDS schemes constructed to a new national sewer or new SUDS standard respectively;

Two options for the SUDS approval process. Either directly to the SUDS Approval Body or as a combined application to the Planning Authority as part of the Planning Application.

3.2 The Building Regulations 2010: Drainage and Waste Disposal Approved Document H

The Building Regulations 2010 are government approved legislation documents that cover the construction and extension of buildings. Approved Document H offers guidance on drainage including foul and surface water and rainwater, and sanitary waste disposal, including sewage structures and their maintenance. Appendix H2 discusses the maintenance of wastewater treatment systems and cesspools.

3.3 CIRIA Guidance

CIRIA offers a series of guidance documents including The SuDS Manual (C753) which covers the design, construction and maintenance of Sustainable Drainage Systems (SuDS) to assist with their effective implementation within both new and existing developments.

4.0 Maintainable Regimes

The proposed development includes a variety of assets that require specific maintenance regimes. The drainage system should undergo regular inspection and maintenance to ensure performance to the design standard is continued. Asset specific maintenance regimes are found below.

4.1 Maintenance of Private Drainage

It is understood that the proposed drainage will be under private ownership i.e. not be adopted by United Utilities and form part of the public sewer network. Inspection and maintenance would therefore be undertaken by the school's maintenance provider. Private drainage will be maintained by the developer and therefore, it is the developer's responsibility for ensuring that the private drainage maintenance regime is implemented at the site.

Surface water and foul water drainage pipework will be designed to be self-cleansing, in accordance with BS EN 752 and as such maintenance should only be required if a fault or a blockage occurs. Private drainage will be maintained by the developer and public sewerage by the sewerage undertaker (United Utilities).

The drainage network, including above ground drainage features, chambers and associated pipework, should be inspected and cleaned every 5 years as a minimum as outlined in the tables below. Drains should be inspected via CCTV survey which will identify any defects or damage to the pipe. Defects may include pipe deformation, root ingress, joint displacement, cracking and/or pipe collapse and a number of remedial options are available including jetting, pipe rodding, pipe flailing, lining, patch repairs and or full pipe / manhole replacement.

General Below Ground Drainage

The below ground drainage network has been designed in accordance with the requirements of Part H of the Building Regulations. All main runs have either rodding eyes, manholes or inspection chambers at the head of the run and at all changes of direction to provide access to rod or jet the main pipework.

Where possible, connections from stacks or channels have been made directly to these manholes or inspection chambers to allow the connection to be rodded or jetted from the downstream end. Where this is not possible, each stack has been detailed to have access provided just above floor to allow the connection to be rodded or jetted from the upstream end. Similarly, the channels have a rodding access provided within their body allowing the pipework to be rodded or jetted from the channel outlet downstream. Channels have also been specified with silt buckets.

Silt trap/catchpit manholes have been provided upstream of all attenuation structures to prevent the ingress of silts into the drainage network and impairing the performance of the system.

The table below summaries the essential maintenance regime for the below ground drainage pipework, manholes and channels.

Maintenance schedule	Required action	Recorded frequency
Regular maintenance	Inspect and identify areas that are not operating correctly. If required, take remedial action. Remove sediment from pre-treatment structures (e. g. gullies, channels, silt traps).	Monthly for the first three months then six-monthly Six-monthly or as required
Occasional maintenance	Debris removal from catchment surface where this may cause risks to performance.	Monthly
Remedial actions	Repair / rehabilitation of inlets, outlets, overflows and vents.	As required
Monitoring	Inspect all manholes, inspection chambers, inlets, outlets, overflows and vents to ensure they are in good condition and operating as designed.	Annually and after large storms. CCTV surveys of the pipework may be required to ascertain conditions.

4.2 Maintenance of SUDS

SUDS systems require a separate approach to maintenance from conventional drainage systems. Unlike conventional drainage systems, when problems occur with SUDS features most can generally be remedied using standard landscaping practice. In accordance with CIRIA 697 'The SUDS Manual', owners of developments with SUDS should be provided with an owner's manual which should include the following:

- Location of all SUDS techniques in a site
- Brief summary of how the techniques work, their purpose and how they can be damaged
- Maintenance requirements (a maintenance plan) and a maintenance record
- Explanation of the consequences of not carrying out the maintenance that is specified
- Identification of areas where certain activities are prohibited (for example stockpiling materials on pervious surfaces)
- An action plan for dealing with accidental spillages
- Advice on what to do if alterations are to be made to a development, if service companies undertake excavations or other similar works carried out that could affect the SUDS.

The SUDS manual separates maintenance activities into three categories:

- Regular maintenance consisting of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal and inspections
- Occasional maintenance comprising tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routing tasks.
- Remedial maintenance comprising intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics of unforeseen events, and as such timings are difficult to predict. Remedial maintenance items can comprise items such as inlet / outlet repairs, erosion repairs, reinstatement of edgings, barriers or other erosion control measures, infiltration surface rehabilitation, replacement of blocked filter fabrics, construction stage sediment removal and system rehabilitation immediately following a pollution event.

Once the system is operational inspections are generally required at monthly site visits. During the first year of operation inspections should ideally be carried out after every significant storm event to ensure proper functioning.

Table 4.1 summarises the maintenance activities associated with each SUDS component. Those highlighted in orange in the table are the SUDS activities proposed for this scheme. A detailed maintenance plan of each SUDS component can be seen in the following sub-sections.

Table 4.1 SUDs components operation and maintenance activities – Proposed SUDs highlighted in orange

O & M Activity	SUDS Component												
	Pond	Wetland	Detention Basin	Infiltration Basin	Soakaway	Infiltration Trench	Filter Trench	Modular Storage	Pervious Pavement	Swale / Bio-retention / Green Roofs	Filter Strip	Sand Filter	Pre-treatment Systems
Regular Maintenance													
Inspection	●	●	●	●	●	●	●	●	●	●	●	●	●
Litter / Debris Removal	●	●	●	●	○	●	●	○	●	●	●	●	●
Grass Cutting	●	●	●	●	○	●	●	○	○	●	●	○	○
Weed / Invasive Plant Control	○	○	○	○		○	○		○	○	○	○	○
Shrub Management	○	○	○	○					○	○	○		○
Shoreline Vegetation Management	●	●	○										○
Aquatic Vegetation Management	●	●	○										○
Occasional Maintenance													
Sediment Management	●	●	●	●	●	●	●	●	●	●	●	●	●
Vegetation / Plant Replacement	○	○	○	○						○	○		○
Vacuum Sweeping and Brushing									●				
Remedial Maintenance													
Structure Rehabilitation / Repair	○	○	○	○	○	○	○	○	○	○	○	○	○
Infiltration Surface Reconditioning				○	○	○	○		○	○	○	○	
● Will be required ○ May be required													

4.3 Attenuation Tank

Preliminary calculations undertaken estimate that the total storage volume required for storm events up to and included the 100 year plus an allowance for climate change would be in the region of 650m³. However, with a surcharge applied at the outfall to replicate the flood conditions within the culverted watercourse, this increases on-site storage requirements by circa 250m³ to 900m³.

Please refer to Appendix E which includes the manufacturer specific information for essential maintenance of GRAF EcoBloc.

4.4 Permeable Pavements

Permeable pavements have been proposed for the MUGA pitches. A Permavoid rainwater diffuser unit has been specified with connection to a catchpit chamber. The specific manufacturer maintenance information for Permavoid can be found in Appendix E. The table below summaries the essential maintenance regime for permeable pavements.

Maintenance schedule	Required action	Recorded frequency
Regular maintenance	Brush regularly and remove sweepings from all hard surfaces. Cleaning of surfaces.	Monthly or as required.
Occasional maintenance	Brush and vacuum surface to prevent silt blockage and enhance design life.	Annually, as required or as per manufacturer recommendations.
Remedial actions	Monitor effectiveness of permeable pavement. When water does not infiltrate immediately advise Client of possible need for reinstatement of top layers or specialist cleaning. Remedial work to any depressions, rutting and cracked / broken surfaces considered detrimental to the structural performance or hazard to users. Recent experience suggests jet washing and suction cleaning will substantially reinstate pavement to 90% efficiency.	As required As required As required
Monitoring	Initial inspection Inspect silt accumulation rates and establish appropriate brushing frequencies Monitor inspection chambers	Every 3 months or after large storms. Annually Annually

4.5 Inlets, Outlets, Controls and Inspection Chambers

Hauraton access and trash boxes have been specified within the drainage system. Manufacturer specific information for Hauraton products can be found in Appendix E.

The table below summaries the essential maintenance regime for inlets, outlets, controls and inspection chambers.

Maintenance schedule	Required action	Recorded frequency
Regular maintenance	Inlets, outlets and surface control structures: Inspect surface structures removing obstructions and silt as necessary. Check there is no physical damage.	Monthly or as required Monthly

Maintenance schedule	Required action	Recorded frequency
	Trim vegetation 1m min. surround to structures and keep hard aprons free from silt and debris. Inspection chambers and below ground control chambers: Remove cover and inspect ensuring water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in autumn.	Annually
Occasional maintenance	Check topsoil levels are 20mm above edges of baskets and chambers to avoid mower damage.	As necessary.
Remedial actions	Unpack stone in basket features and unblock or repair and repack stone as design detail as necessary. Repair physical damage if necessary.	As required As required
Monitoring	Initial inspection Monitor inspection chambers	Every 3 months or after large storms. Annually

4.6 Drainage Channels

Hauraton Recyfix Paverslot channels are to be used in the proposed development. Manufacturer specific information regarding the maintenance of these can be found in Appendix E.

4.7 X-ceptor Device

Imbrium system's X-ceptor is a device that captures pollutants from runoff water. The X-ceptor is to be used in the proposed development. Manufacturer specific information regarding the maintenance of this can be found in Appendix E.

4.8 ACO Q Brake Vortex

ACO Q-Brake Vortex is a horizontal vortex flow control designed to prevent downstream flooding by controlling the release of storm water before it discharges into a watercourse or sewer. This device is to be used in the proposed development. Manufacturer specific information regarding the maintenance of this can be found in Appendix E.

4.9 Spillage – Emergency Action

Most spillages on development sites are of compounds that do not pose a serious risk to the environment if they enter the drainage in a slow and controlled manner with time available for natural breakdown in a treatment system. Small spillages of contaminants can be removed using soak mats as recommended by the Environment Agency with the residuals spillages allowed to bio-remediate into the drainage system.

In the event of a serious spillage of either volume, unknown or toxic substances then the spillage should be isolated with soil, turf or fabric and all outlet pipes blocked from chambers downstream of the spillage with a bung. In this scenario the Environment Agency should be contacted immediately.

4.10 Maintenance of Public Sewers

The surrounding public sewers and the sewer crossing the site are the responsibility of United Utilities and they will be responsible for the management and maintenance of their assets.

The culverted watercourse is the responsibility of the Environment Agency/Local Authority and they are responsible for the management and maintenance of their assets.

5.0 Conclusion

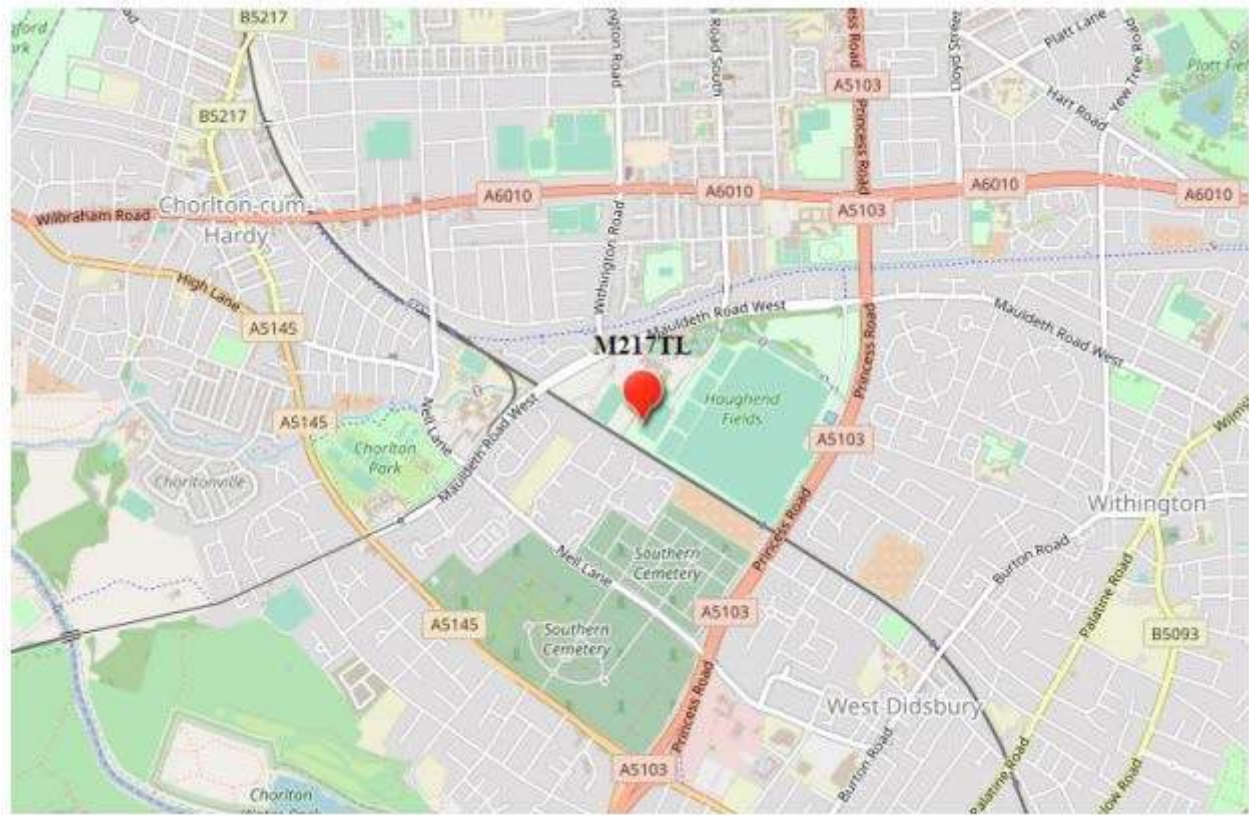
The proposed development comprises the construction of a new school building, sports hall, sports pitches, outdoor social space, service yard and car parks off Mauldeth Road West, Chorlton.

The existing sewer which runs through the proposed site is the responsibility of United Utilities, as well as the surround public sewers. UU will be responsible for the management and maintenance of these assets. The culverted watercourse is the responsibility of the Environment Agency/Local Authority and they are responsible for the management and maintenance of this.

The proposed private drainage outlined in this report is the responsibility of the school's maintenance provider and they are responsible for the management and maintenance of these assets in accordance with the guidance provided within this document.

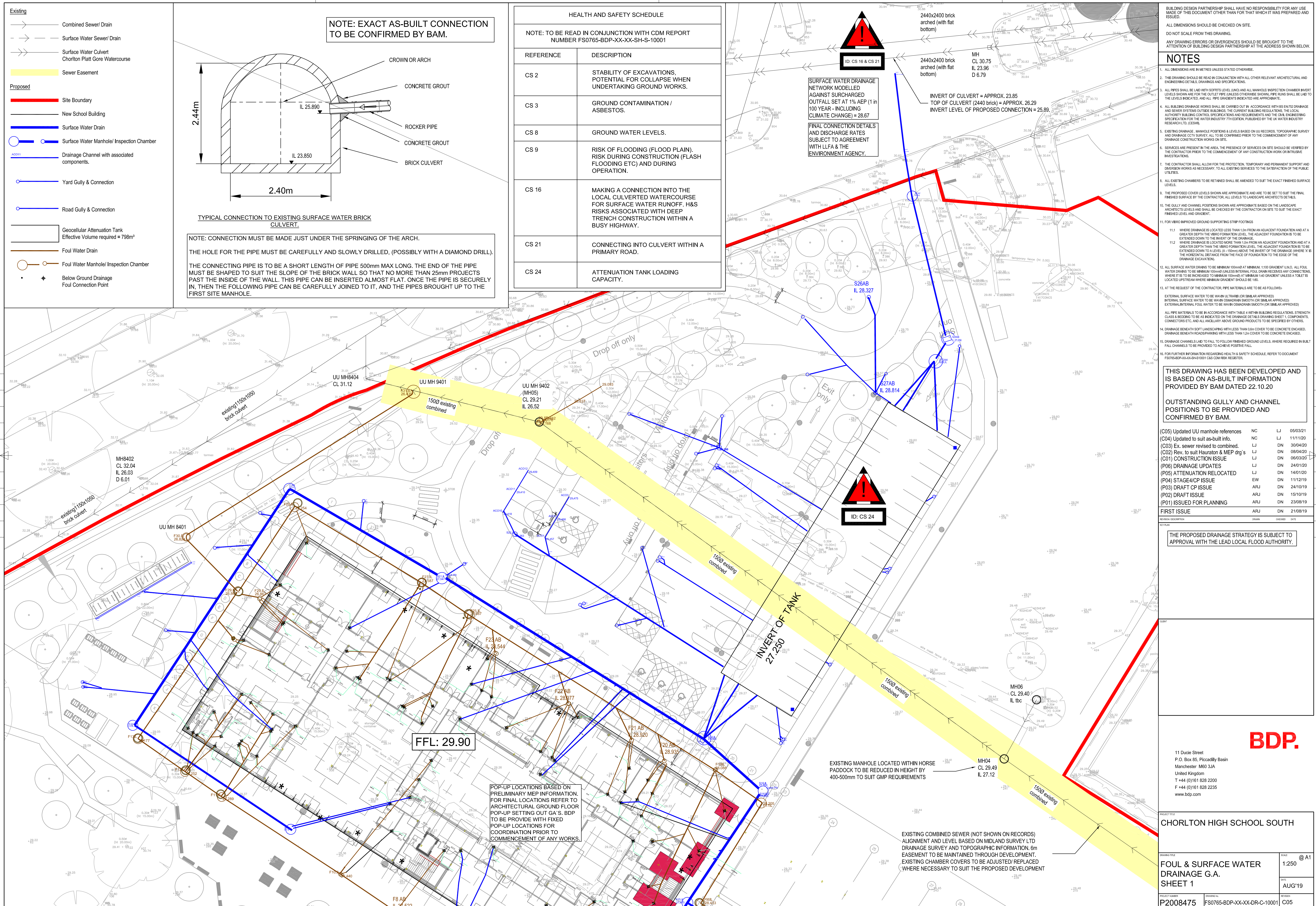
Appendix A

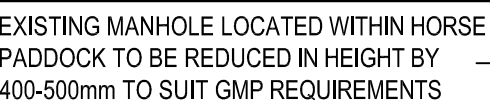
Site Location Plan



Appendix B

Drainage General Arrangement Plans





EXISTING COMBINED SEWER (NOT SHOWN ON RECORDS)
ALIGNMENT AND LEVEL BASED ON MIDLAND SURVEY LTD
DRAINAGE SURVEY AND TOPOGRAPHIC INFORMATION. 6m
EASEMENT TO BE MAINTAINED THROUGH DEVELOPMENT.
EXISTING CHAMBER COVERS TO BE ADJUSTED/ REPLACED
WHERE NECESSARY TO SUIT THE PROPOSED DEVELOPMENT

FOUNDATIONS
ADJACENT INTERNAL /
EXTERNAL DRAINAGE
RUNS (INDICATED WITH
RED HATCH) TO BE
EXTENDED DOWN IN
MASS CONCRETE TO
INVERT LEVEL OF
ADJACENT DRAINAGE
TRENCH(S). REFER TO
FOUNDATION GA PLANS

POP-UP LOCATIONS BASED ON PRELIMINARY MEP INFORMATION. FOR FINAL LOCATIONS REFER TO ARCHITECTURAL GROUND FLOOR POP-UP SETTING OUT GA'S. BDP TO BE PROVIDE WITH FIXED POP-UP LOCATIONS FOR COORDINATION PRIOR TO COMMENCEMENT OF ANY WORKS.

FFL: 29.90

FOUNDATION
(INDICATED WITH
RED HATCH) TO BE
EXTENDED DOWN IN
MASS CONCRETE
TO INVERT LEVEL
OF ADJACENT
DRAINAGE TRENCH

PROPOSED PERMEABLE
PAVEMENT CONSTRUCTION
(ATTENUATED SYSTEM).

PROPOSED PERMEABLE PAVEMENT OUTLET
CONSISTING OF PERMAVOID RAINWATER
DIFFUSER UNIT (3No. PAIRS) WITH 110Ø
CONNECTION TO CATCHPIT CHAMBER

PROPOSED PERMEABLE PAVEMENT OUTLET
CONSISTING OF PERMAVOID RAINWATER
DIFFUSER UNIT (3No. PAIRS) WITH 110Ø
CONNECTION TO CATCHPIT CHAMBER

PROPOSED PERMEABLE
PAVEMENT CONSTRUCT
(ATTENUATED SYSTEM).

BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE
MADE OF THIS DOCUMENT OTHER THAN FOR THAT WHICH IT WAS PREPARED AND
ISSUED.

NOTES

- ALL DIMENSIONS ARE IN METERS UNLESS STATE OTHERWISE.
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
- ALL PIPES SHALL BE Laid WITH SLOPES UPWARDS (U) AND ALL MANHOLE INVERTS/CHAMBER INVERTS SHALL BE SHOWN AS THE OUTLET PIPE (LESS OVERLAP) SURFACE. PIPE RUNS SHALL BE Laid TO THE LEVELS INDICATED, AND ALL PIPE GRADINGS INDICATED ARE APPROPRIATE.
- ALL BUILDING DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH EN12452 DRAINAGE AND OTHER SYSTEMS OF DRAIN BUILDINGS, THE CURRENT BUILDING REGULATIONS, THE LOCAL AUTHORITY'S DRAINAGE BYELAWS AND THE DRAINAGE DESIGN SPECIFICATION (THE DRAINAGE DESIGN SPECIFICATION FOR THE WATERINDUSTRY 7TH EDITION, PUBLISHED BY THE WATER INDUSTRY RESEARCH ASSOCIATION).
- EXISTING DRAINAGE, MANHOLE POSITIONS AND LEVELS BASED ON SURVEY RECORDS, TOPOGRAPHIC SURVEY AND DRAINAGE CCTV SURVEY ARE TO BE CONFORMED TO FOR THE COMPLETION OF ANY DRAINAGE CONSTRUCTION WORKS ON THESE SPECIFICATIONS.
- SERVICES ARE PRESENT IN THE AREA. THE PRESENCE OF SERVICES ON SITE SHOULD BE VERIFIED BY THE CONTRACTOR PRIOR TO THE COMPLETION OF ANY CONSTRUCTION WORK ON UTILITY INVESTIGATIONS.
- THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DRAINAGE WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC AUTHORITIES.
- ALL EXISTING CHAMBERS TO BE RETAINED SHALL BE AMENDED TO SUIT THE EXACT FINISHED SURFACE LEVELS.
- THE PROPOSED COVER LEVELS SURFACE ARE APPROXIMATE AND ARE TO BE SET TO SUIT THE FINAL FINISHED SURFACE BY THE CONTRACTOR. ALL LEVELS TO LANDSCAPE ARCHITECTS DETAILS.
- THE GULLY AND CHANNEL POSITIONS ARE APPROXIMATE BASED ON THE LANDSCAPE ARCHITECTS DETAILS. THE EXACT POSITIONS SHALL BE CHECKED BY THE CONTRACTOR ON SITE TO SUIT THE EXACT FINISHED LEVEL AND GRADIENT.
- FOR IMPROVED GROUND COVER SUPPORTING STRIP FOOTINGS
- 11.1 WHERE DRAINAGE IS LOCATED LESS THAN 1.0m FROM AN ADJACENT FOUNDATION AND TO A GREATER DEPTH THE VIBRO FOUNDATION LEVEL, THE ADJACENT FOUNDATION IS TO BE PROTECTED BY A CONCRETE STRIP FOOTING TO BE Laid TO THE SAME LEVEL AS THE DRAINAGE. WHERE DRAINAGE IS LOCATED MORE THAN 1.0m FROM AN ADJACENT FOUNDATION AND TO A GREATER DEPTH THE VIBRO FOUNDATION IS TO BE Laid TO THE SAME LEVEL AS THE DRAINAGE. WHERE DRAINAGE IS EXTENDED DOWN TO A DEPTH OF 1.50m ABOVE THE INVERT OF THE DRAINAGE (WHERE A STRIP FOOTING IS NOT REQUIRED) THE STRIP FOOTING IS TO BE Laid TO THE SAME LEVEL AS THE DRAINAGE EXTERIOR SURFACE TO THE FACE OF FOUNDATION TO THE EDGE OF THE DRAINAGE EXCAVATION.
- ALL SURFACE WATER DRAINS TO BE MINIMUM 100mm x 100mm, 1:150 GRADIENT (U). ALL FLOOR WATER DRAINS TO BE MINIMUM 100mm x 100mm (UNLESS FLOOR DRAIN RECEIVES ANY CONNECTIONS TO OTHER DRAINAGE). ALL DRAINAGE TO BE Laid TO THE SAME LEVEL AS THE DRAINAGE EXTERIOR SURFACE TO THE FACE OF FOUNDATION TO THE EDGE OF THE DRAINAGE EXCAVATION.

THIS DRAWING HAS BEEN DEVELOPED AND
IS BASED ON AS-BUILT INFORMATION
PROVIDED BY BAM DATED 22.10.20

OUTSTANDING GULLY AND CHANNEL
POSITIONS TO BE PROVIDED AND
CONFIRMED BY BAM.

C005	Updated UU manhole references.	NC	LJ	05/03/21
C004	Updated to suit as-built info.	NC	LJ	11/11/20
C003	Ex. sewer revised to combined.	LJ	DN	09/04/20
C002	Rev. to suit Hauraton & MEP drg's	LJ	DN	30/04/20
C001	CONSTRUCTION ISSUE	LJ	DN	06/03/20
P006	DRAINAGE UPDATES	LJ	DN	24/01/20
P005	ATTENUATION RELOCATED	LJ	DN	14/01/20
P004	STAGE 4/CP ISSUE	EW	DN	11/12/19
P003	DRIFT CP ISSUE	ARJ	DN	24/10/19
P002	DRAFT ISSUE	ARJ	DN	15/09/19
P001	ISSUED FOR PLANNING	ARJ	DN	23/08/19

FIRST ISSUE	ARJ	DN	21/08/19
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THE PROPOSED DRAINAGE STRATEGY IS SUBJECT TO APPROVAL WITH THE LEAD LOCAL FLOOD AUTHORITY.

HEALTH AND SAFETY SCHEDULE	
NOTE: TO BE READ IN CONJUNCTION WITH CDM REPORT NUMBER FS0765-BDP-XX-XX-SH-S-10001	
REFERENCE	DESCRIPTION
CS 2	STABILITY OF EXCAVATIONS; POTENTIAL FOR COLLAPSE WHEN UNDERTAKING GROUND WORKS.
CS 3	GROUND CONTAMINATION / ASBESTOS.
CS 8	GROUND WATER LEVELS.
CS 9	RISK OF FLOODING (FLOOD PLAIN). RISK DURING CONSTRUCTION (FLASH FLOODING ETC) AND DURING OPERATION.
CS 16	MAKING A CONNECTION INTO THE LOCAL CULVERTED WATERCOURSE FOR SURFACE WATER RUNOFF. H&S RISKS ASSOCIATED WITH DEEP TRENCH CONSTRUCTION WITHIN A BUSY HIGHWAY.
CS 21	CONNECTING INTO CULVERT WITHIN A PRIMARY ROAD.
CS 24	ATTENUATION TANK LOADING CAPACITY.

BDP.

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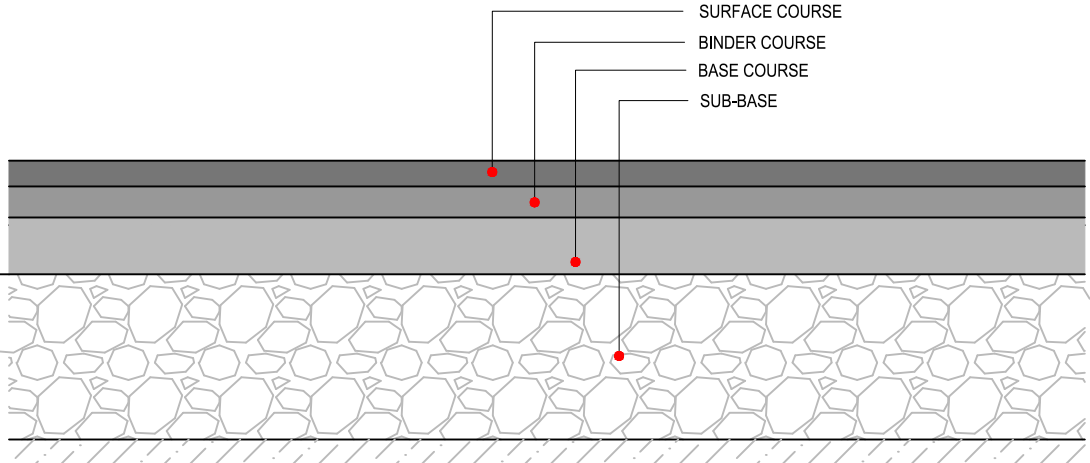
PROJECT TITLE
CHORLTON HIGH SCHOOL SOUTH

FOUL & SURFACE WATER
DRAINAGE G.A.
SHEET 2

PROJECT NUMBER	DRAWING No.	REVISION
P2008475	FS0765-BDP-XX-XX-DR-C-10002	C05

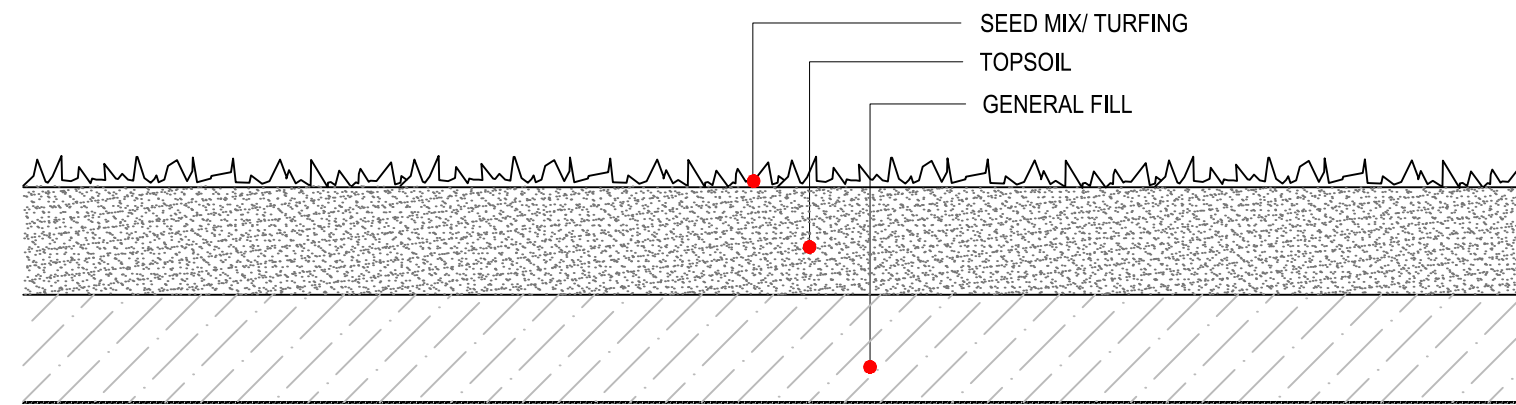
Appendix C

Surface Finishes General Arrangement and Build-Ups



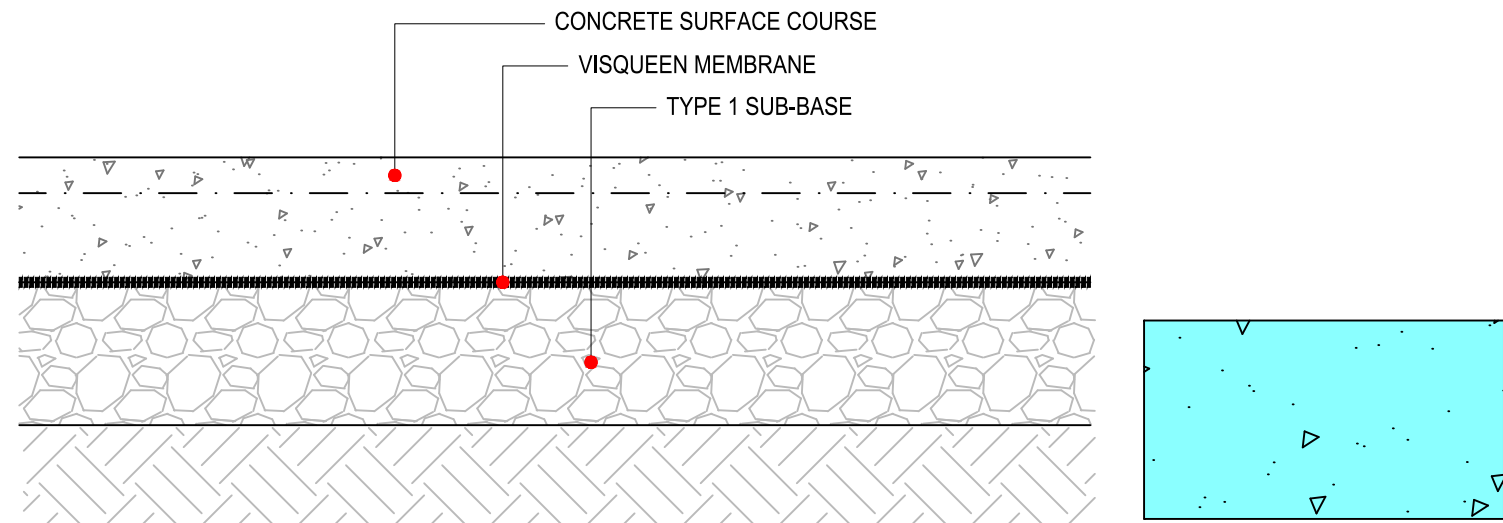
STONE MASTIC ASPHALT

LAYER	CLAUSE	MATERIAL	BINDER	THICKNESS	SPECIAL REQUIREMENTS
SURFACE COURSE	937	STONE MASTIC ASPHALT SMA 14 SURF	40/60	50mm	BS EN 13108, PD 6691 PSV=50, AAV=16
BINDER COURSE	906	DENSE MACADAM BINDER COURSE AC 20 DENSE BIN	100/150	60mm	BS EN 13108, PD 6691
BASE	903	DENSE MACADAM BASE AC 32 DENSE BASE	100/150	110mm	BS EN 13108, PD 6691
SUB-BASE	803	GRANULAR SUB-BASE TYPE 1	N/A	325mm	ASSUMED 5% CBR
GEOTEXTILE MEMBRANE		TERRAM 1000 OR SIMILAR APPROVED	N/A		WHERE POOR GROUND IS ENCOUNTERED TO BE INSTRUCTED BY ENGINEER



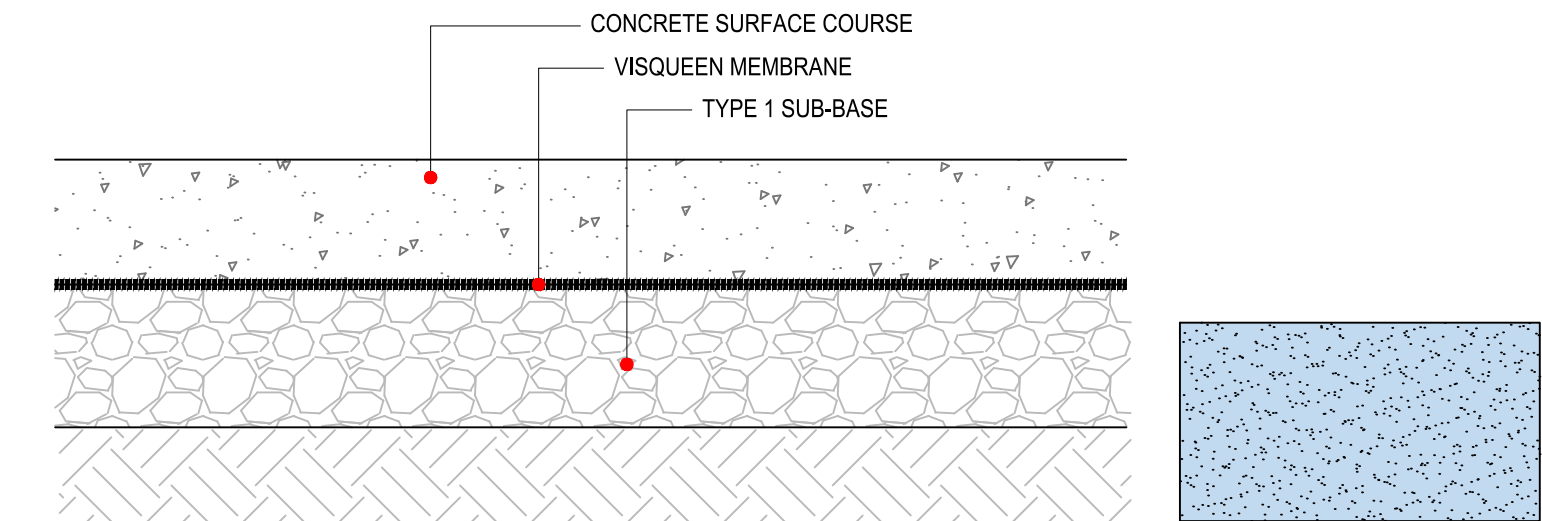
SOFT LANDSCAPING

LAYER	CLAUSE	MATERIAL	BINDER	THICKNESS	SPECIAL REQUIREMENTS
SURFACE		SEED MIX/ TURFING	N/A		TO LANDSCAPE ARCHITECTS SPECIFICATION
TOPSOIL		CLASS 5A OR 5B	N/A	150mm	
FILL		GENERAL FILL MATERIAL	N/A	300mm	FREE FROM CONTAMINATION



SERVICE YARD (CONCRETE)

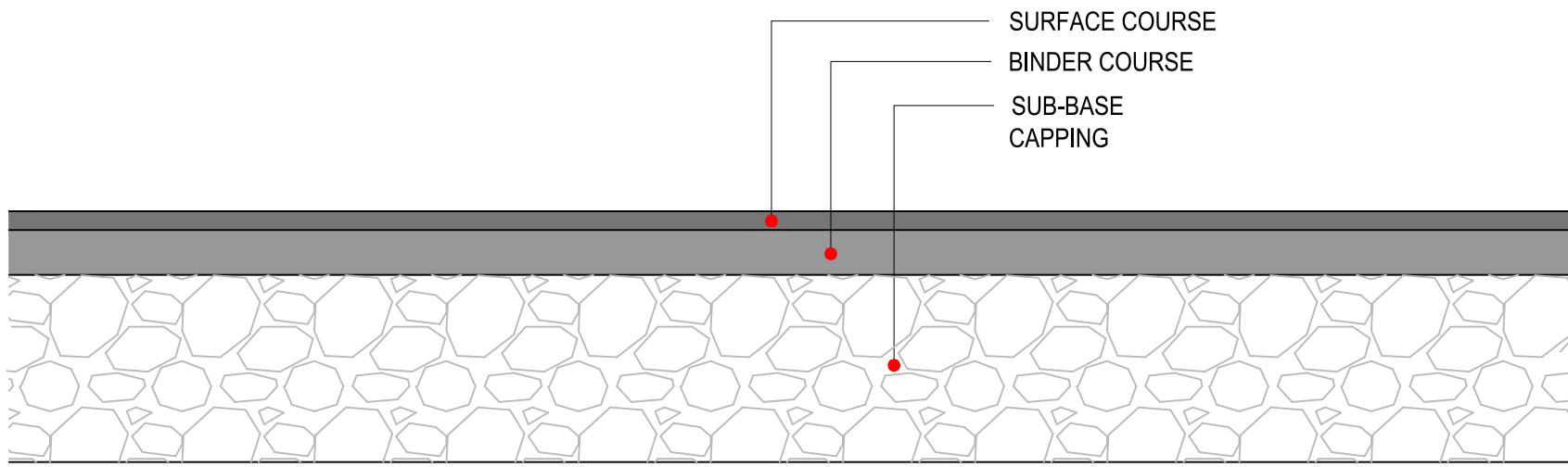
LAYER	CLAUSE	MATERIAL	THICKNESS	SPECIAL REQUIREMENTS
SURFACE COURSE	1001, 1008, 1009 & 1010	CONCRETE SLAB PAV 2 (WITH A252 MESH 50mm COVER) SURFACE COURSE	175mm	TO BS 8500 WITH BRUSHED FINISH INDUCED CONTRACTION JOINT AT 8.0m c/c LOCATIONS TBC BY LANDSCAPE ARCHITECT.
MEMBRANE		POLYTHENE SLIP MEMBRANE, VISQUEEN OR SIMILAR APPROVED		
SUB-BASE	803	GRANULAR SUB BASE TYPE 1	200mm	ASSUMED 5% CBR



CYCLE STORAGE (CONCRETE BASE)

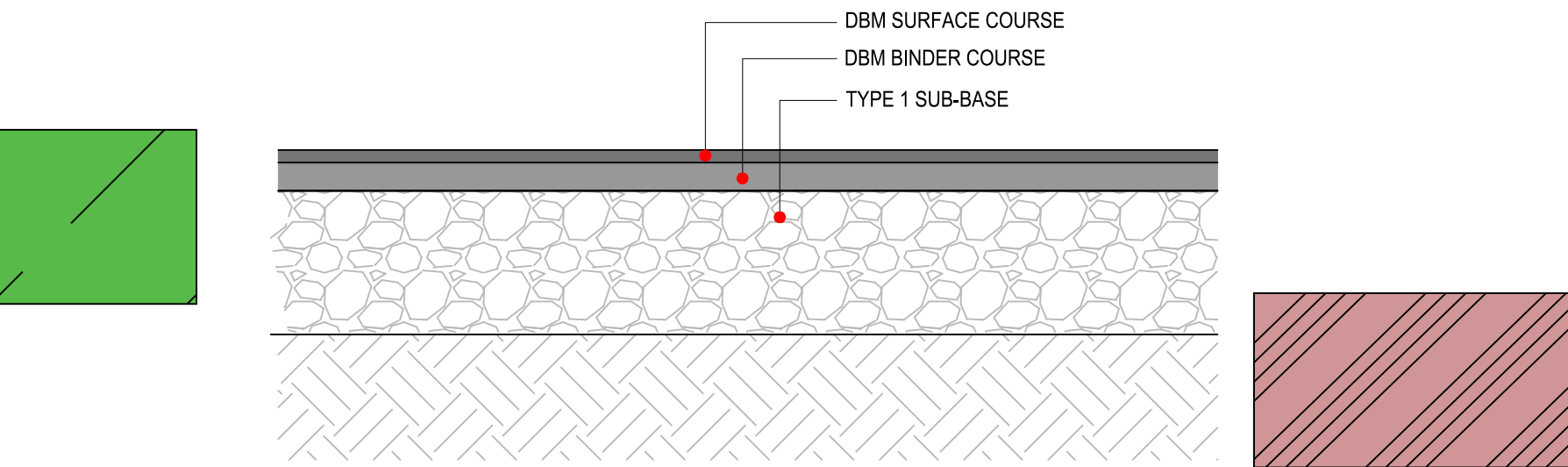
	CLAUSE	MATERIAL	THICKNESS	SPECIAL REQUIREMENTS
SURFACE COURSE	1001	CONCRETE SLAB ST4	100mm	TO BS 8500 INDUCED CONTRACTION JOINT AT 8.0m c/c LOCATIONS TBC BY LANDSCAPE ARCHITECT.
MEMBRANE		POLYTHENE SLIP MEMBRANE, VISQUEEN OR SIMILAR APPROVED		
SUB-BASE	803	GRANULAR SUB BASE TYPE 1	100mm	ASSUMED 5% CBR

NOTE: CONTRACTION JOINTS CENTRES TO BE A MAXIMUM OF 8.0m. POSITION TO BE AGREED WITH LANDSCAPE ARCHITECT.



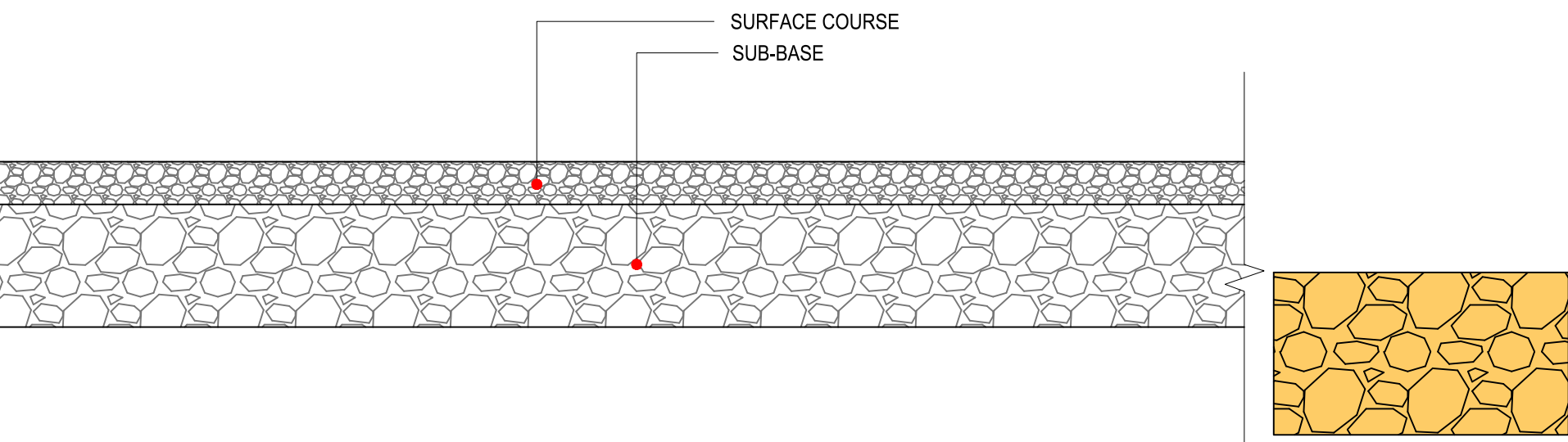
STONE MASTIC ASPHALT (PARKING BAYS)

LAYER	CLAUSE	MATERIAL	BINDER	THICKNESS	SPECIAL REQUIREMENTS
SURFACE COURSE	937	STONE MASTIC ASPHALT SMA 14 SURF	40/60	50mm	COLOURED ASPHALT TO LANDSCAPE ARCHITECTS SPECIFICATION
BINDER COURSE	906	DENSE MACADAM BINDER COURSE AC 20 DENSE BIN	100/150	60mm	BS EN 13108-1
SUB-BASE	803	GRANULAR SUB-BASE TYPE 1	N/A	325mm	ASSUMED 5% CBR



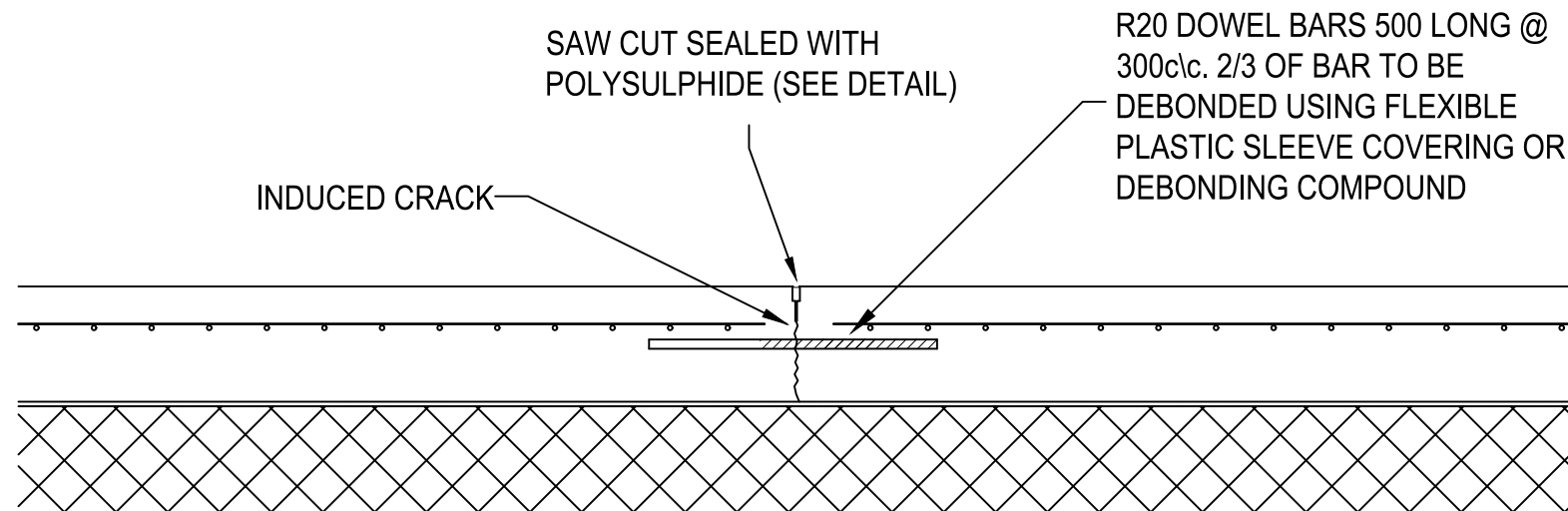
HARD SURFACING (MACADAM PAVEMENT)

LAYER	CLAUSE	MATERIAL	BINDER	THICKNESS	SPECIAL REQUIREMENTS
SURFACE COURSE	1105	DENSE MACADAM SURFACE COURSE AC 6 MED SURF	160/220 PEN	20mm	PD 6691 TABLE B.16
BINDER COURSE	1105	DENSE MACADAM BINDER COURSE AC 20 DENSE BIN	160/220 PEN	45mm	PD 6691 TABLE B.11
SUB-BASE	803	GRANULAR SUB BASE TYPE 1	N/A	325mm	ASSUMED 5% CBR



SELF BINDING GRAVEL

LAYER	CLAUSE	MATERIAL	BINDER	THICKNESS	SPECIAL REQUIREMENTS
SURFACE COURSE		14mm SIZE OPEN GRADED BOUND PROPRIETARY GRAVEL	N/A	70mm	
SUB-BASE	803	TYPE 3 OPEN GRADED GRANULAR SUBBASE	N/A	150mm	

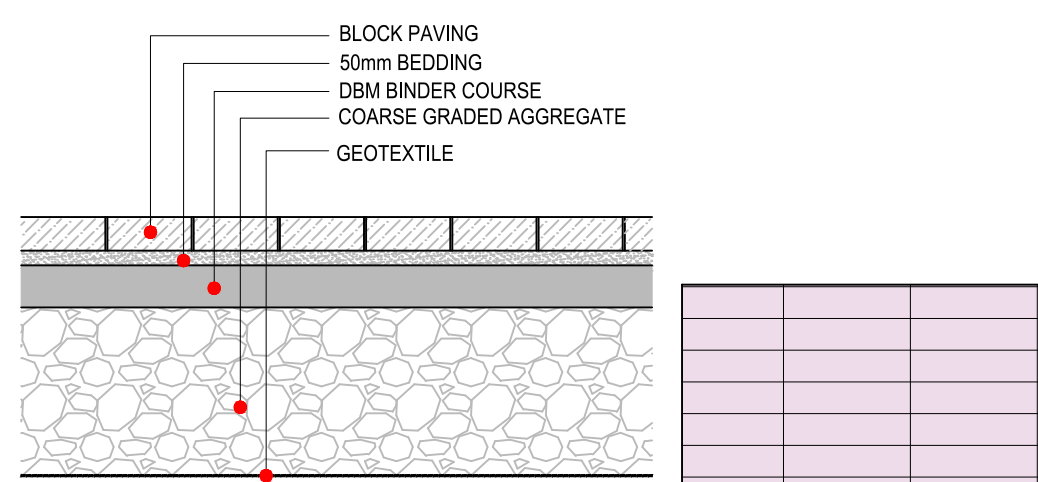


TYPICAL CONTRACTION JOINT (CJ)

SCALE - 1:20

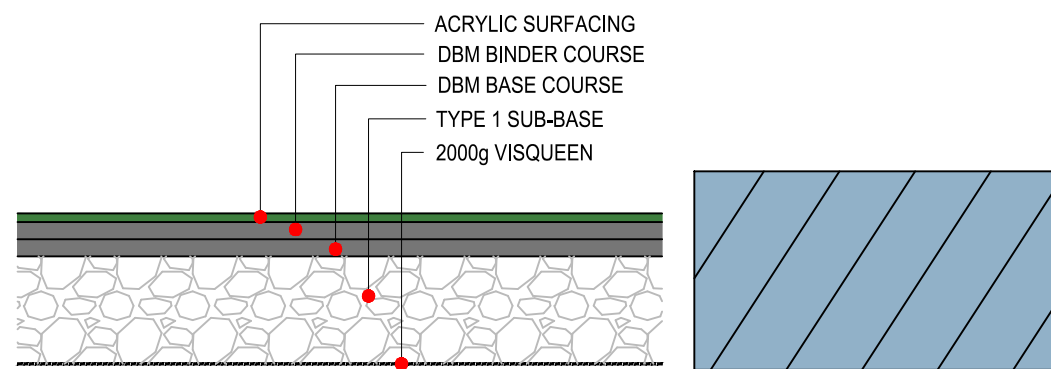
SAW CUT DETAIL

SCALE - 1:5



BLOCK PAVING (PAVEMENT)

	MATERIAL	BINDER	THICKNESS	SPECIAL REQUIREMENTS
SURFACE COURSE	BLOCK PAVING TO LANDSCAPE ARCHITECTS SPECIFICATION	N/A	80mm	TYPE, DIMENSIONS AND LAYING PATTERN TO BE IN ACCORDANCE WITH THE LANDSCAPE ARCHITECTS DETAILS
BEDDING AND JOINTS	6.3-2.0mm LAYING COURSE TO BS EN 13242:2003	N/A	50mm	JOINT WIDTH TO BE 8mm
ROAD BASE	DENSE MACADAM BINDER COURSE AC 20 DENSE BIN	N/A	100mm	
SUB BASE	COARSE GRADED AGGREGATE TO BS EN 13242:2003	N/A	325mm	ASSUMED 5% CBR
GEOTEXTILE LAYER	TERRAM 1000 OR EQUIVALENT APPROVED	N/A	-	WHERE POOR GROUND IS ENCOUNTERED TO BE INSTRUCTED BY ENGINEER

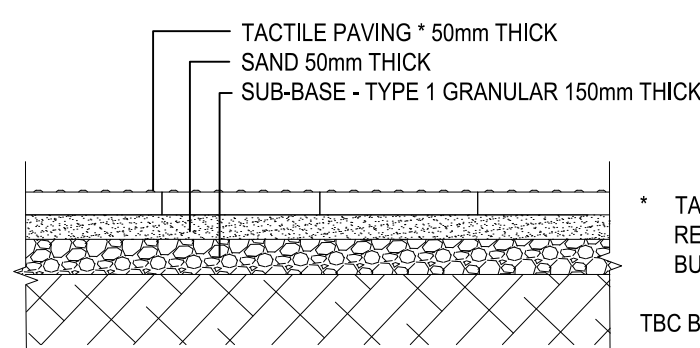
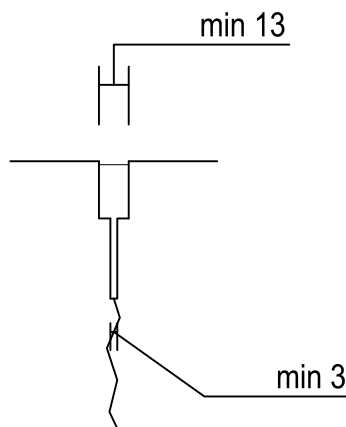


POROUS MACADAM

LAYER	MATERIAL	BINDER	THICKNESS	SPECIAL REQUIREMENTS
SURFACE COURSE	OPEN TEXTURED DENSE MACADAM BINDER COURSE AC 6 DENSE SURF	100/150	25mm	BS EN 13108, PD 6691
BINDER COURSE	OPEN TEXTURED DENSE MACADAM BASE COURSE AC 20 DENSE BIN	N/A	50mm	
SUB-BASE	TYPE 3 OPEN GRADED GRANULAR SUBBASE	N/A	Min 350mm	ASSUMED 5% CBR
MEMBRANE LAYER	IMPERMEABLE MEMBRANE 2000g VISQUEEN	N/A	-	TO BE LAPPED, TAPED AND SEALED ACCORDINGLY

TABLE A- FOUNDATION THICKNESS			
CBR VALUE	SUB-BASE ONLY (mm)	SUB-BASE ON CAPPING	
		SUB-BASE (mm)	CAPPING (mm)
2.50%	450	350	250
3	415	325	240
4	365	275	225
5	325	245	210
6	310	230	205
7	290	215	190
8	270	200	185
9	255	185	180
10	245	175	175
11	235	170	165
12	225	165	160
13	220	160	155
14	210	155	150
>15%	200	150	145

CBR VALUES TO BE CONFIRMED THROUGH INSITU TESTING IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS.



TYPICAL TACTILE PAVING CONSTRUCTION

SCALE 1:20

- TACTILE PAVING COLOUR
 - RED - CONTROLLED CROSSINGS
 - BUFF - UNCONTROLLED CROSSINGS
- TBC BY LANDSCAPE ARCHITECT

BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE MADE OF THIS DOCUMENT OTHER THAN FOR THAT WHICH IT WAS PREPARED AND ISSUED.

ALL DIMENSIONS SHOULD BE CHECKED ON SITE.

DO NOT SCALE FROM THIS DRAWING

ANY DRAWING ERRORS OR DIVERGENCIES SHOULD BE BROUGHT TO THE ATTENTION OF BUILDING DESIGN PARTNERSHIP AT THE ADDRESS SHOWN BELOW.

DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING BEFORE WORK COMMENCES

- THE CDM DESIGN ISSUES REGISTER
- THE BDP RISK SERIES OF DRAWINGS
- THE PROJECT CDM RISK REGISTER

NOTES

- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
- ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- ALL LEVELS ARE IN METRES RELATIVE TO ORDNANCE DATUM.
- WHEN PREPARING FORMATIONS, ALL SOFT SPOTS SHALL BE REMOVED. THE FINAL SURFACE OF ALL FORMATIONS SHALL BE WELL ROLLED, SMOOTH, FREE FROM MOVEMENT UNDER COMPACTION PLANT AND FREE FROM RIDGES, CRACKS, LOOSE MATERIALS, RUTS OR OTHER DEFECTS. TO BE APPROVED BY CLERK OF WORKS
- THE LANDSCAPE ARCHITECT IS TO SPECIFY THE LEVELS AND FALLS REQUIRED.
- THE LANDSCAPE ARCHITECT IS TO CONFIRM FINISHED SURFACE MATERIAL AND JOINTING
- PAVING AND KERB TYPES ARE TO LANDSCAPE ARCHITECT SPECIFICATION.
- THESE DETAILS ARE BASED UPON A CBR VALUE OF 5%. PLEASE REFER TO ADJACENT MATERIAL THICKNESS TABLES SHOULD RECORDED CBR VALUES DIFFER.
- MIN. 450mm THICKNESS FOR FROST SUSCEPTIBILITY I.E. TOTAL BUILD-UP.
- FOR ROUTINE CASES, ALL MATERIAL WITHIN 450MM OF THE ROAD SURFACE SHOULD BE NON FROST SUSCEPTIBLE.
- CBR'S TO BE TAKEN AT REGULAR INTERVALS ACROSS THE SITE. TO BE AGREED WITH SITE MANAGER.

C01 CONSTRUCTION ISSUE	EW	LJ	06/03/20
P04 STAGE 4/CP ISSUE	LJ	DN	09/12/19
P03 DRAFT CP ISSUE	EW	DN	23/10/19
P02 LANDSCAPE BUILDUP AMENDED	OC	DN	13/06/19
P01 CLIENT COMMENTS	OC	DN	10/06/19
FIRST	EW	OC	06/06/19

REVISION	DESCRIPTION	DRAWN	CHECKED	DATE
KEYPLAN				

CLIENT	
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PROJECT TITLE

BDP JOB NUMBER	NO 1001 CLASSIFICATION
P2008475	Commercial In Confidence
DRAWING TITLE	SCALE
SURFACE BUILD UPS	@ A1
GENERAL ARRANGEMENT	1:100
SHEET 2 of 2	DATE FIRST ISSUED
	03/06/19
DRAWING NO.	REVISION
FS0765-BDP-XX-XX-DR-C-60010	C01