

From: Thomas Callaway
Sent: 02 September 2014 16:11
To: Planning.Responses
Subject: RE: Planning Consultation on A/116/14/DOC

MLM SuDS Operation and Maintenance Requirements – I have since received a Revision 2 for this document which should be used.

MLM drawings – I have since received a Revision B for drawing number 615823/004.

CTP drawings – I have since received a Revision P6 for drawing number A2078-550. This is an update to the drainage design showing that the 1 in 100 year storm event plus 30% is contained. This revision should be used.

Please consult West Sussex County Council regarding surface water drainage of the access road section in the middle of the site (s278/38 works). They may suggest some improvements and require confirmation of how the restricted flow rate is calculated and achieved.

Regards

Tom Callaway

Thomas Callaway | Drainage & Coastal Engineer, Engineering Services, Arun District Council | Location: Second Floor, Arun Civic Centre, Maltravers Road, Littlehampton, BN17 5LF
Internal: 37818 | External: +44 (0) 1903 737818 | Fax: +44 (0) 1903 716019 | E-mail: Thomas.Callaway@arun.gov.uk
Arun is Working in Partnership with Chichester District Council

Visit our web site at www.arun.gov.uk and www.chichester.gov.uk



Save the environment - think before you print.

From: planning.responses@arun.gov.uk [<mailto:planning.responses@arun.gov.uk>]
Sent: 21 August 2014 17:33
To: Thomas Callaway
Subject: Planning Consultation on A/116/14/DOC

To: Engineers (Fluvial Flooding)

**NOTIFICATION FROM ARUN DISTRICT COUNCIL
TOWN AND COUNTRY PLANNING ACT 1990**

APPLICATION NO: A/116/14/DOC

Registered: 06-AUG-14

Site Address: Land South of A259 & West of Mill Lane Rustington

Description of Works: Application for approval of details reserved by conditions 3, 4, 5, 6, 7 (Full) and 17, 18, 19, 20 (Outline) imposed under Hybrid Application Approval A/125/13 relating to water maintenance, foul and surface water disposal and management of SUD's.

The Council have received the above application to discharge conditions. I shall be pleased to receive any observations you may wish to make in respect of those conditions relating to your field of expertise.

[Click here to view the Discharge of Condition application](#)

[Click here to view conditions on original application - click on decision tab](#)

Should you have any comments to make, these should be sent by replying to this email by 4th September 2014.

www.arun.gov.uk/planning

Please be aware that any comments you may make will be available on our website so please do not insert personal details or signatures on your reply.

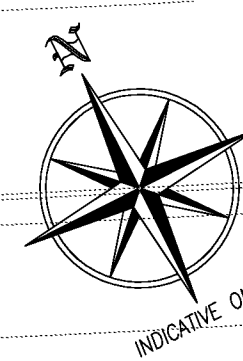
In the absence of a reply within the period stated, I shall assume that you have no observations to make.

The officer dealing with this application is Mr N Crowther who can be contacted on telephone number 01903737500 Ex 37839.

Thanking you in anticipation

Planning Case Officer
Arun District Council

post_con_email

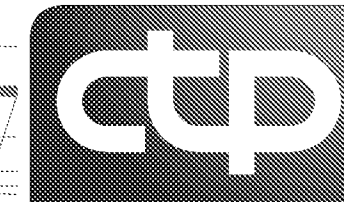


NOTES
DO NOT SCALE THIS DRAWING

1. All dimensions are in millimetres (mm) unless noted otherwise.
2. Work to figured dimensions only.
3. This drawing is to be read in conjunction with all relevant Architect's, Engineer's and Specialist's drawings and their respective Specifications.
4. All work to comply with the relevant British Standards, Codes of Practice and the Building Regulations.
5. Any discrepancies between all working drawings, specifications and schedules of all disciplines to be immediately notified to CTP for clarification/correction prior to construction of relevant structure.
6. The contractor shall be responsible for maintaining live traffic flows and implementing satisfactory traffic management in accordance with the requirements of chapter 8 of the TSM and the local Highway Authority.
7. The contractor shall be responsible for maintaining pedestrian access and implementing satisfactory pedestrian management in accordance with the requirements of chapter 8 of the TSM and the local Highway Authority.
8. The contractor shall allow for the costs and timescale required to serve notice for road openings under the NRSWA and Traffic Management Acts.
9. The contractor shall be responsible for the sequencing of the works and maintaining all live drainage flows.
10. The contractor shall allow for over pumping existing drainage flows and trench de - watering as required.
11. The contractor shall be responsible for all liaison with utility companies and complying with all requirements of the individual companies.
12. The contractor shall comply with any special requirements of the Environment Agency, Land Drainage Authority, Network Rail the Highway Authority and all other third party consultee's
13. The contractor shall comply with the recommendations and requirements of the geotechnical & geo - environmental reports.
14. All drainage shall comply with Building Regulations Approved document H and the requirements of any other third party consultee's
15. All drainage to be offered for adoption shall comply with the requirement of Sewers for Adoption 7th Edition and is subject to the approval at southern water.

PRELIMINARY

REV	AMENDMENTS	DATE	CHK
P6	Storage tank size increased	27.08.14	AJC
P5	Drawing Re-Scaled and Proposals Amended	04.07.14	DJP
P4	Background updated.	10.10.13	AJC
P3	SW Drainage amended.	27.09.13	AJC
P2	SW Drainage amended.	26.09.13	AJC
P1	Issued for Comment	24.09.13	AJC
Drawn by	Date	Rev	CHK
GRC	SEP 13		CIVIL



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Facsimile: 01732 740662
www.ctp-lp.com
Twitter: @CTPEngineers

Project Title:
**LAND WEST OF MILL LANE,
RUSTINGTON**

Drawing Title:
**DRAINAGE
LAYOUT
SHT 1 OF 2**

A2078-550

1/250
Rev
P6
@ A1

CDM 2007 RESIDUAL RISKS

1. The contractor is to locate, protect and divert as necessary all existing services on site prior to commencing work.
2. All areas of excavation are to be scanned and marked for existing services prior to any excavation.
3. Be aware of possible live drainage flows and foul effluent during construction. The Contractor shall assess and implement a safe working system and equipment (PPE) as necessary.
2. When working with live drainage their is an increased risk from water bourne diseases such as leptospirosis and Wells disease.
3. All areas of live traffic and pedestrian movements shall be subject to appropriate traffic management barriers and signs.
4. Unauthorised access to the site must be prevented at all times.
5. Support or batter back as necessary excavations in unstable ground.

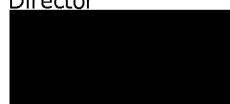
The above residual risks are for non-standard hazards. It is assumed that a competent contractor familiar with the construction of this type of work will be appointed who will be aware of the standard hazards.

- Site Boundary
- Proposed SW Sewer (Private)
- Proposed FW Sewer (Private)
- FW Rising Main (Public)
- Existing FW Sewer (Public)
- FW1/1 SW1/1 F.W./S.W. PPIC Inspection Chambers (Private)
- SA1 P.C.C. F.W. MH (Private)
- F.W. Pumping Package Pump (Private)
- Existing F.W. Pumping Station (Public)
- SA1 P.C.C. S.W. MH (Private)
- SA1 CP P.C.C. S.W. Catchpit (Private)
- SA1 P.C.C. S.W. MH with Hydrobrake (Private)
- SA1 NRV P.C.C. S.W. MH with Non-Return Valve (Private)
- Permeable Car Parking (Depth & Level varies)
- Buffer Strip (at change in Sub-Base formation level)
- Cellular Crate Storage Crates
- Bypass Petrol Interceptor. Alarmed & Connected to BMS.
- BIRCO Channel Drain Size as Stated with Sump Outlet 1500
- Proposed SW Outfall
- svp Soil & Vent Pipe (Location T.B.C.)
- rg Road Gully
- rwp Rain Water Pipe (Internal)
- 1500 @ 1/80 Pipe Diameter and Gradient
- 3.120 Proposed Formation Level

Chandlers BMW, Worthing
SuDS Operation and Maintenance Requirements

Document Ref: TC/615823
Revision: 2
Date: 14 August 2014

Prepared: Toby Crayden
Director



Checked: Toby Crayden
Director



Project Revision Sheet

Revision No	Date	Status	Changes	Author	Approved
1	04.08.14		Rainwater recycling, car wash and watercourse maintenance requirements added. Detail drawings added to Appendix.	T.Crayden	T.Crayden
2	14.08.14		Watercourse maintenance requirements amended at request of Arun DC. Orifice Plate maintenance requirements added.	T.Crayden	T.Crayden

Contents

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1 SuDS Operation and Maintenance Requirements	4

Appendices

Appendix 1: Drawings

SuDS Operation and Maintenance Requirements

The following sets out the requirements for the operation and maintenance of the private surface water sewerage system, in particular the SuDS features which are incorporated in to the design.

The private surface water system includes all pipes, tanks, flow controls etc which collect, restrict, store and outfall private surface water runoff from the Chandlers BMW development. It does not include any adoptable surface water drainage, land drainage or surface water run off from the adjacent adoptable areas.

The surface water design incorporates permeable paving with below ground storage, with flow control devices to limit the discharge to the water course to Greenfield Runoff rates.

The drainage proposals are as indicated on the MLM Consulting Engineers drawings as attached. The drawings contained in the Appendix are design drawings and may not reflect the as-built situation. Checks to be made on Site before any remedial works are undertaken.

Details for the long-term maintenance arrangements shall be in accordance with the requirements of the CIRIA report C697, the manufacturer's recommendations and as required based on operational needs, as summarised below. The recommended maintenance regime should be seen as the minimum recommended frequency and operational / site needs may dictate a greater frequency of inspection / action.

It is expected that a Pollution Incident Response Plan (PIRP) will be available, and in the event of a Pollution Incident the contents of the PIRP take precedence over the contents of this report.

It is recommended that all oil deliveries to the Site are supervised.

Should any spillage / contamination etc occur to the Watercourse then the Environment Agency and the Local Environmental Health Officer should be informed without delay.

5

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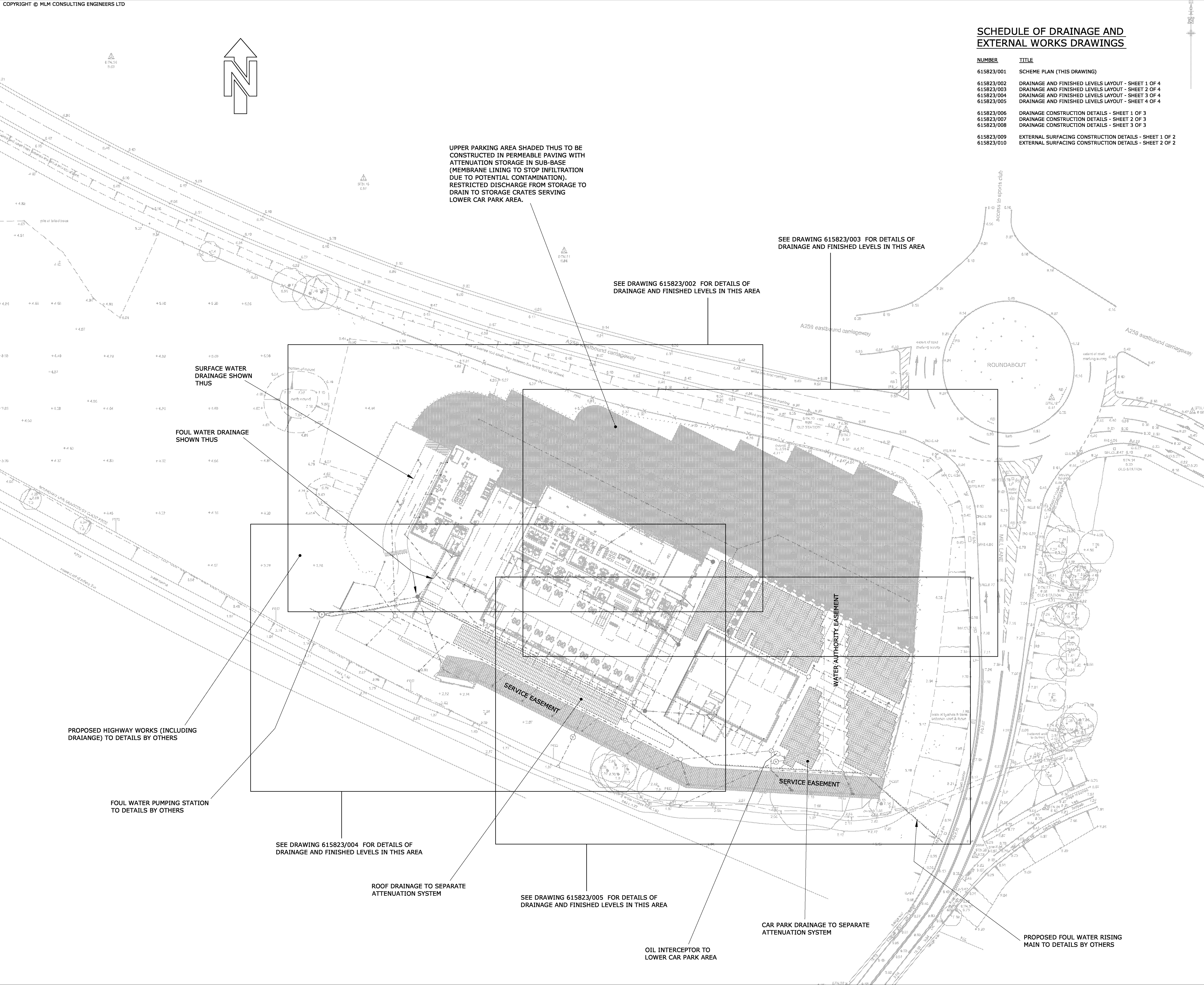
Gutters and downpipes are to be inspected annually to ensure they are free of leaves, silt and debris etc that water flows freely throughout the gutter and downpipe system.	Annually
The storage tank will be made from maintenance free materials (GRP or Polyethylene, depending on model). The water in the tank may build some visual sediment over time and this should be removed if excessive, but generally this is entirely normal and does not compromise the system's safe operation.	As required
The pump unit within the rainwater harvesting system is a maintenance free, sealed unit. It does not require any maintenance, apart from the filter which is to be inspected and cleaned annually.	Annually
The primary filter that requires maintenance is the leaf filter. This is located in the top of the tank 'turret'. The filter is lifted out and cleaned under a hose or tap and then slotted back into place. This is to be done every three months.	3 months
If an in line filter is installed this should be inspected and cleaned annually.	Annually
Car Wash: The Car Wash (water recovery) system is as provided by Bywater Ltd.	
The car wash equipment is to be maintained as per Bywater's recommendations.	As per suppliers recommendations
The drain down gully/surplus water is to be directed to the foul drainage system. No runoff or overspill shall be directed to the surface water system or the watercourse. Sufficient measures are to be put in place to prevent any wash down water entering the surface water drainage system.	
Watercourse Maintenance: The existing headwall at the head of the watercourse (South East corner of the Site) is to be visually checked to ensure it is clear from debris and appears structurally sound.	Annually and after intense storms
The existing watercourse is to be visually checked where it runs adjacent to the development to ensure it remains free flowing and clear of debris. The watercourse should flow without impediment and the banks should be free of signs of localised collapse or change of direction. With the permission of the landowner foreign objects are to be removed and disposed of as appropriate, and the watercourse bed is to be de-silted and vegetation cleared if this starts to significantly affect the flow and direction of the watercourse. The topographical survey of the watercourse should be used as a reference for the watercourse extents and the watercourse should be de-silted and re-profiled if significant loss of flow is noted. Note that mammals may	Annual visual inspection of the watercourse generally and visual inspection after intense storms. Remedial works as necessary following visual inspection

well be present in the Banks and watercourse and they are not to be disturbed or the burrows etc mistaken for structural issues with the watercourse. A qualified Ecologist and Arun DC are to be consulted prior to any works being carried out. The natural bed levels are to be taken as a straight grade from headwall to headwall along the line of the ditch. Orifice Plate The orifice plate manhole is to be checked annually for visual damage and the chamber and trash screen cleaned of silt and debris. Should significant amounts of silt and debris be noted on the trash screen blocked then the Engineer is to be notified.	Annually
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Appendices

Appendix 1

Drawings



SCHEDULE OF DRAINAGE AND EXTERNAL WORKS DRAWINGS

NUMBER	TITLE
615823/001	SCHEME PLAN (THIS DRAWING)
615823/002	DRAINAGE AND FINISHED LEVELS LAYOUT - SHEET 1 OF 4
615823/003	DRAINAGE AND FINISHED LEVELS LAYOUT - SHEET 2 OF 4
615823/004	DRAINAGE AND FINISHED LEVELS LAYOUT - SHEET 3 OF 4
615823/005	DRAINAGE AND FINISHED LEVELS LAYOUT - SHEET 4 OF 4
615823/006	DRAINAGE CONSTRUCTION DETAILS - SHEET 1 OF 3
615823/007	DRAINAGE CONSTRUCTION DETAILS - SHEET 2 OF 3
615823/008	DRAINAGE CONSTRUCTION DETAILS - SHEET 3 OF 3
615823/009	EXTERNAL SURFACING CONSTRUCTION DETAILS - SHEET 1 OF 2
615823/010	EXTERNAL SURFACING CONSTRUCTION DETAILS - SHEET 2 OF 2

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS, ARCHITECTS AND SPECIALISTS DRAWINGS AND THE SPECIFICATION.
2. **DO NOT SCALE** FROM THIS DRAWING MANUALLY OR ELECTRONICALLY. WRITTEN PERMISSION MUST BE OBTAINED FROM MLM PRIOR TO SCALING ELECTRONICALLY OR USING THIS ELECTRONIC FILE.
3. SURVEY BASED ON DRAWING 5431_SLOO_EXTG.DWG. REFER TO SITE SURVEY FOR LOCATIONS AND VALUES OF GROUND CONTROL STATIONS.
4. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL DRAWINGS LISTED IN THE SCHEDULE.
5. PRIOR TO COMMENCEMENT OF ANY WORKS, THE CONTRACTOR SHALL LIAISE WITH ALL RELEVANT AUTHORITIES TO ENSURE THAT ALL EXISTING SERVICES THAT MAY BE AFFECTED BY THE WORKS ARE LOCATED, PROTECTED AND WHERE NECESSARY DIVERTED.
6. ALL PRIVATE PAVED AREAS SHALL BE CONSTRUCTED USING GULLIES OR OTHER SUITABLE MEANS TO ENSURE THAT NO SURFACE WATER DRAINS ONTO THE EXISTING OR PROPOSED PUBLIC HIGHWAY.

CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2007

DESIGNERS HAZARD INFORMATION FOR CONSTRUCTION

1. IF YOU DO NOT FULLY UNDERSTAND THE RISKS INVOLVED DURING THE CONSTRUCTION OF THE ITEMS INDICATED ON THIS DRAWING ASK YOUR MANAGER, HEALTH & SAFETY ADVISOR OR A MEMBER OF THE DESIGN TEAM BEFORE PROCEEDING.
2. EXISTING SERVICES ON SITE. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE COMPANIES AND ARRANGE FOR ALL SERVICES TO BE LOCATED, MARKED AND PROTECTED.
3. DRAINAGE AND HIGHWAY WORKS INVOLVE DEEP EXCAVATION, HOT MATERIALS AND/OR HEAVY PLANT/MATERIALS.
4. THE CONTRACTOR SHALL READ AND UNDERSTAND THE SOILS REPORT. BE AWARE OF POTENTIAL VARIATIONS IN SOIL CONDITIONS OVER THE SITE.
5. WORKS WITHIN THE PUBLIC HIGHWAY MUST ENSURE THE SAFETY OF ALL PARTIES.
6. PROTECTION FOR DISEASE REQUIRED FOR WORKS WITHIN EXISTING SEWERS.

THE ABOVE NOTES REFER SPECIFICALLY TO THE INFORMATION SHOWN ON THIS DRAWING.
REFER TO THE HEALTH AND SAFETY PLAN FOR FURTHER INFORMATION.

Issue	Date	Description	Made	Checked
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Drawing Status:

APPROVAL

MLM

Multidisciplinary Consulting

190 Eureka Park, Upper Pemberton, Ashford, Kent TN25 4AZ
Tel: 01233 610530 Fax: 01233 618299
Website: www.mlm.uk.com

Client

GROUP 1 AUTOMOTIVE

Project

CHANDLERS BMW WORTHING

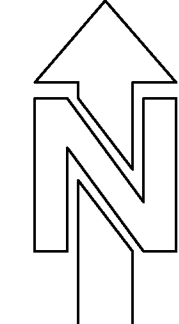
Drawing Title

SCHEME PLAN

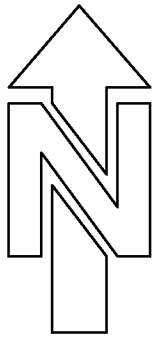
Drawn/Design kwl/kwl	Checked ...	Approved ...	Date 07.07.2014
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Scales 1:500 @ A1 1:1000 @ A3	Drawing No. 615823/001	Rev .
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12. All cover levels shown on this drawing are approximate. Exact levels of new covers and frames to be determined on site to match level and profile of finished surface.
13. The construction of all existing chambers, gullies etc. and their covers, gratings and frames to be improved, repaired or replaced as necessary to suit their location within the finished development.
14. All covers, gratings and frames to chambers, gullies, channels etc. shall be of the correct load class to suit their location.
 - Load Class A15 Pedestrian areas (not accessible by vehicles)
 - Load Class B125 Private drives
 - Load Class C250 Lightly trafficked roads
 - Load Class D400 Main Roads.
- Gratings in pedestrian areas to be designed for pedestrian use.
15. All existing chambers, gullies channels, pipes and other drainage apparatus shall be protected from damage during the works. The Contractor shall take all necessary precautions to ensure that no material enters the drains (other than that which they are designed to carry).
16. Refer to Site Investigation Report for existing ground conditions and all special requirements for buried concrete (special requirements for buried concrete shall include all pre-cast and in-situ concrete and mortars). Where appropriate refer to contamination reports for details of chemicals affecting choice of materials and other additional requirements.
17. All pre-cast and in-situ concrete and mortars used in the construction of foul drains and sewers shall be made from sulphate resisting cement.
18. Unless noted otherwise all pipework shall be 100mm diameter laid to a fall of 1 in 80 or steeper for surface water and 1 in 40 or steeper for foul water. Foul drains within one or more W.C. connected may be laid at 1 in 80 or steeper. Where appropriate road gully connections shall be 150mm dia at 1 in 150 or steeper.
19. Unless noted otherwise all pipework shall be constructed from 'super strength' vitrified clay to BS 65, BS EN 295 or uPVC to BS EN 1201 bedded and backfilled as per the manufacturers recommendations and the above listed publications.

30. All Aquacell storage crates (or similar) shall be installed strictly in accordance with the manufacturers instructions (including vent), crates to be suitable for use in areas subject to vehicular loading.
31. All catchpits are to be regularly cleaned out during the construction period (especially after heavy rainfall) to ensure no silt passes the traps to be deposited in the aquacell storage/attenuation/soakaway tanks. Before final hand over of the site, inlet to the aquacell tanks is to be plugged, all sw pipework is to be jetted, catchpits cleaned, then plug to be removed and aquacell tanks inspected to ensure no silt has been deposited in them.
- 
- NOTE: PRIOR TO COMMENCEMENT TO THE WORKS THE CONTRACTOR SHALL ACCURATELY ESTABLISH THE LINE AND LEVEL OF ALL EXISTING SERVICES AND ENSURE HIMSELF THAT ALL DRAINAGE CAN BE INSTALLED AS SHOWN ON THE DRAWINGS. ANY CLASHING SHALL BE REPORTED TO THE ENGINEER FOR REDESIGN**

 Private Catchpit

[illegible]

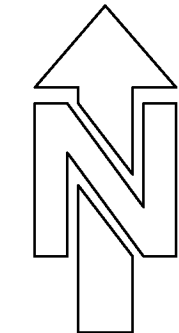
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19. Unless noted otherwise all pipework shall be constructed from 'super strength' vitrified clay to BS 65, BS EN 295 or uPVC to BS EN 1201 bedded and backfilled as per the manufacturers recommendations and the above listed publications.

20. The Contractors attention is drawn to Diagrams 7 and 8 of The Building Regulations Approved Document H' showing details of drains laid below and near to buildings. Where ground beams are used, their level shall be set to avoid clashing with drain connections.
21. Exact location of gullies to be determined on site to suit low points. The Contractor shall ensure that all finished surfaces are laid to fallings that are sufficient for all surface water to drain without surface ponding.
22. For the exact location of soil pipes, substacks, W.C.'s and other drainage connections refer to the large scale architectural building plans.
23. Rainwater downpipes that do not connect directly to an access point, shall be fitted with a rodding access.
24. All drainage channels to be laid by ACO or similar and to be of a type size and capacity suitable for their location.
25. Access fittings, inspection chambers and manholes shall be constructed to the dimensions shown in Tables 11 and 12 of 'The Building Regulations Approved Document H' and the materials listed in Table 14. Access points, inspection chambers and manholes shall be constructed from products designed/rated for the location in which they are to be used. They shall be installed in accordance with the manufacturers/suppliers recommendations.
26. Prior to commencement of any works the existing drainage must be traced to ensure that no 'live' connections remain. Any such connections must be reported to the Contract Administrator, prior to diversion into the new drains.
27. Unless noted otherwise all drains and sewers to connect with soffits level. Chamber invert levels shown on this drawing are to outgoing pipe.
28. Small areas of block paving around the adoptable 'Mews' areas that have no positive drainage, shall be constructed in porous block paving to ensure no surface water from private areas drains on to the public highway. Alternatively careful profiling of finished surfaces together with additional gullies/drainage channels may be utilized.
29. Unless noted otherwise invert level shown at catchpits (silt traps) are the invert level of the outgoing pipework, as with other chambers, unless noted otherwise, all pipes shall be laid with soffits level.

30. All Aquacell storage crates (or similar) shall be installed strictly in accordance with the manufacturers instructions (including vent), crates to be suitable for use in areas subject to vehicular loading.

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1500 1/125

Shows approximate gradient eg. 1 in 125

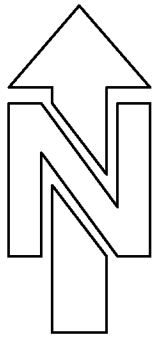
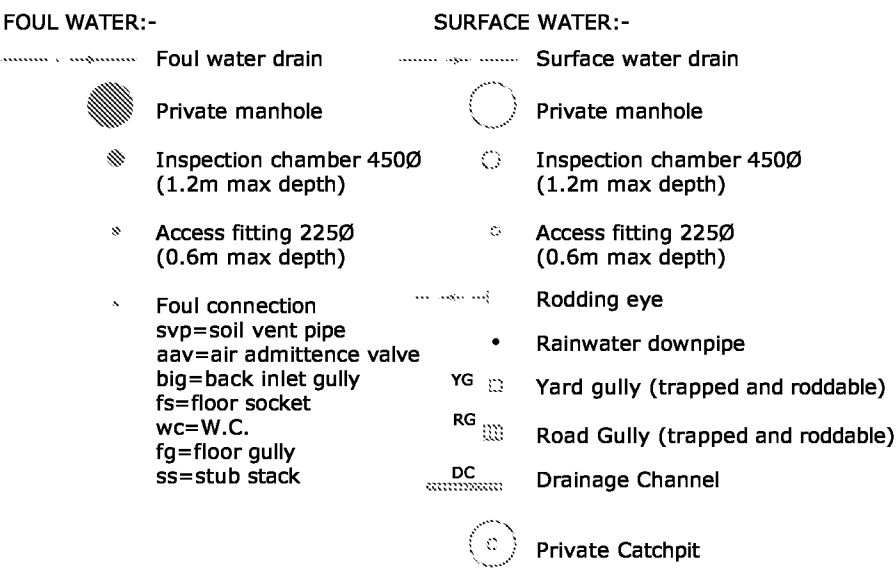
Shows internal diameter of pipe in mm

At manholes and inspection chambers:

CL = Cover Level

IL = Invert Level (of outgoing pipe)

BD = Backdrop, UIL = Upper Invert Level



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A	02.08.2014	FURTHER DETAIL ADDED	kwl	.
Issue	Date	Description	Made	Checked

Drawing Status:

APPROVAL

MLM

Multidisciplinary Consulting

190 Eureka Park, Upper Pemberton, Ashford, Kent TN25 4AZ
Tel: 01233 610530 Fax: 01233 618299
Website: www.mlm.uk.com

Client

GROUP 1 AUTOMOTIVE

Project

CHANDLERS BMW WORTHING

Drawing Title

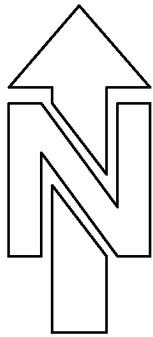
DRAINAGE AND FINISHED
LEVELS LAYOUT
SHEET 2 OF 4

Drawn/Design kwl/kwl	Checked ...	Approved ...	Date July 2014
Scales 1:200 @ A1 1:400 @ A3	Drawing No. 615823/003		Rev A

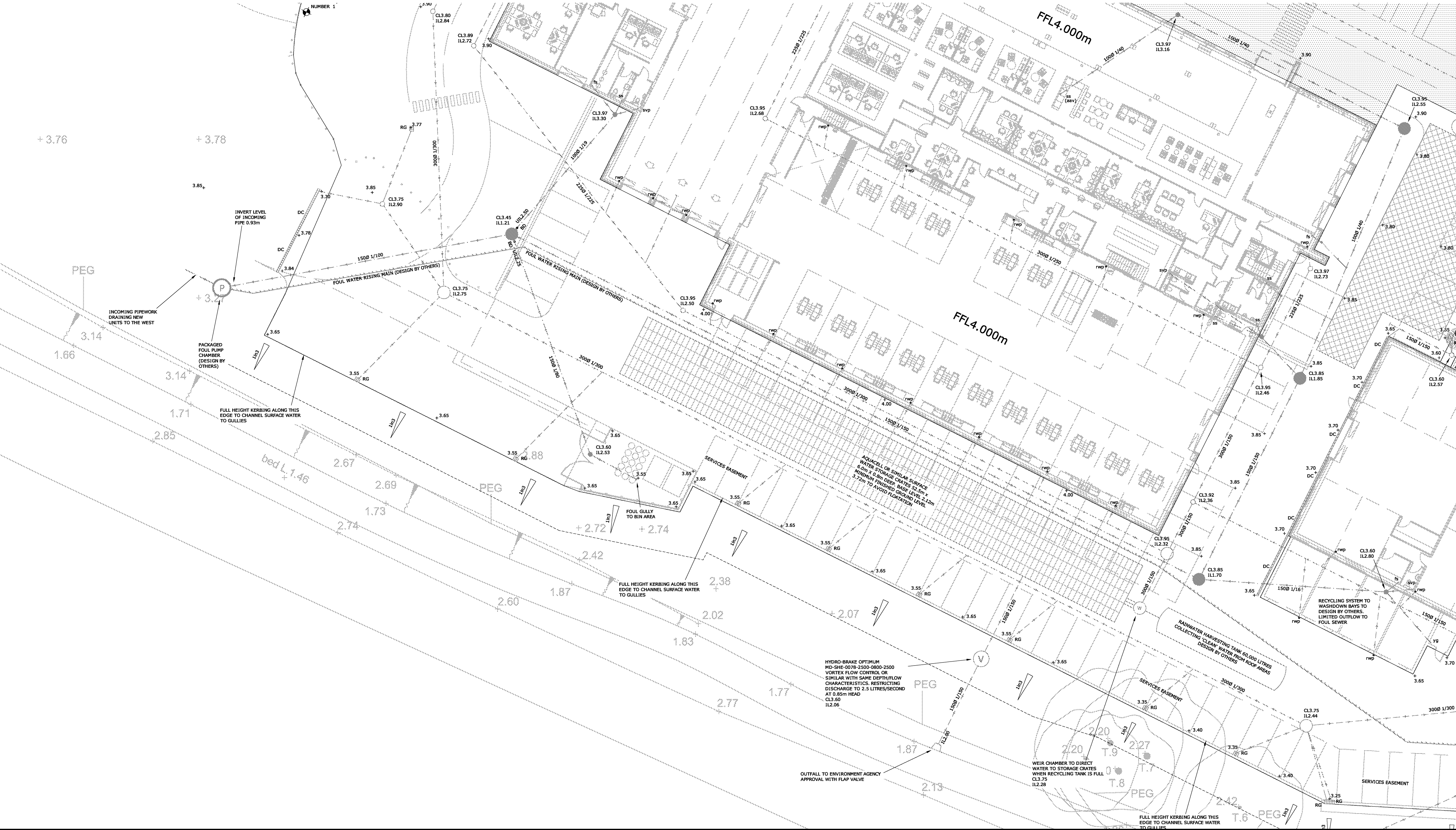
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 - Load Class D400 Main Roads.
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15. All existing chambers, gullies channels, pipes and other drainage apparatus shall be protected from damage during the works. The Contractor shall take all necessary precautions to ensure that no material enters the drains (other than that which they are designed to carry).
16. Refer to Site Investigation Report for existing ground conditions and all special requirements for buried concrete (special requirements for buried concrete shall include all pre-cast and in-situ concrete and mortars). Where appropriate refer to contamination reports for details of chemicals affecting choice of materials and other additional requirements.
17. All pre-cast and in-situ concrete and mortars used in the construction of foul drains and sewers shall be made from sulphate resisting cement.
18. Unless noted otherwise all pipework shall be 100mm diameter laid to a fall of 1 in 80 or steeper for surface water and 1 in 40 or steeper for foul water. Foul drains with one or more W.C. connected may be laid at 1 in 80 or steeper. Where appropriate road gully connections shall be 150mm dia at 1 in 150 or steeper.
19. Unless noted otherwise all pipework shall be constructed from 'super strength' vitrified clay to BS 65, BS EN 295 or uPVC to BS EN 1201 bedded and backfilled as per the manufacturers recommendations and the above listed publications.

30. All Aquacell storage crates (or similar) shall be installed strictly in accordance with the manufacturers instructions (including vent), crates to be suitable for use in areas subject to vehicular loading.
31. All catchpits are to be regularly cleaned out during the construction period (especially after heavy rainfall) to ensure no silt passes the traps to be deposited in the aquacell storage/attenuation/soakaway tanks. Before final hand over of the site, inlet to the aquacell tanks is to be plugged, all sw pipework is to be jetted, catchpits cleaned, then plug to be removed and aquacell tanks inspected to ensure no silt has been deposited in them.
- 
- NOTE: PRIOR TO COMMENCEMENT TO THE WORKS THE CONTRACTOR SHALL ACCURATELY ESTABLISH THE LINE AND LEVEL OF ALL EXISTING SERVICES AND ENSURE HIMSELF THAT ALL DRAINAGE CAN BE INSTALLED AS SHOWN ON THE DRAWINGS. ANY CLASHING SHALL BE REPORTED TO THE ENGINEER FOR REDESIGN**

PRIVATE DRAINAGE LEGEND

[illegible]

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A	02.08.2014	FURTHER DETAIL ADDED	kwl	.
Issue	Date	Description	Made	Checked

Drawing Status: **APPROVAL**

MLM

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Tel: 01233 610530 Fax: 01233 618299
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Client

GROUP 1 AUTOMOTIVE

Project

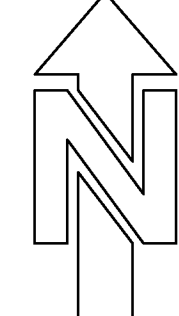
CHANDLERS BMW WORTHING

Drawing Title

DRAINAGE AND FINISHED
LEVELS LAYOUT
SHEET 3 OF 4

Drawn/Design kwl/kwl	Checked ...	Approved ...	Date July 2014
Scales 1:200 @ A1 1:400 @ A3	Drawing No. 615823/004		Rev A

12. All cover levels shown on this drawing are approximate. Exact levels of new covers and frames to be determined on site to match level and profile of finished surface.
13. The construction of all existing chambers, gullies etc. and their covers, gratings and frames to be improved, repaired or replaced as necessary to suit their location within the finished development.
14. All covers, gratings and frames to chambers, gullies, channels etc. shall be of the correct load class to suit their location.
 - Load Class A15 Pedestrian areas (not accessible by vehicles)
 - Load Class B125 Private drives
 - Load Class C250 Lightly trafficked roads
 - Load Class D400 Main Roads.
- Gratings in pedestrian areas to be designed for pedestrian use.
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PRIVATE DRAINAGE LEGEND

1500 1/125

Shows approximate gradient eg. 1 in 125

Shows internal diameter of pipe in mm

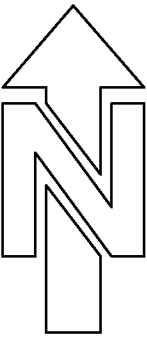
At manholes and inspection chambers:

CL = Cover Level

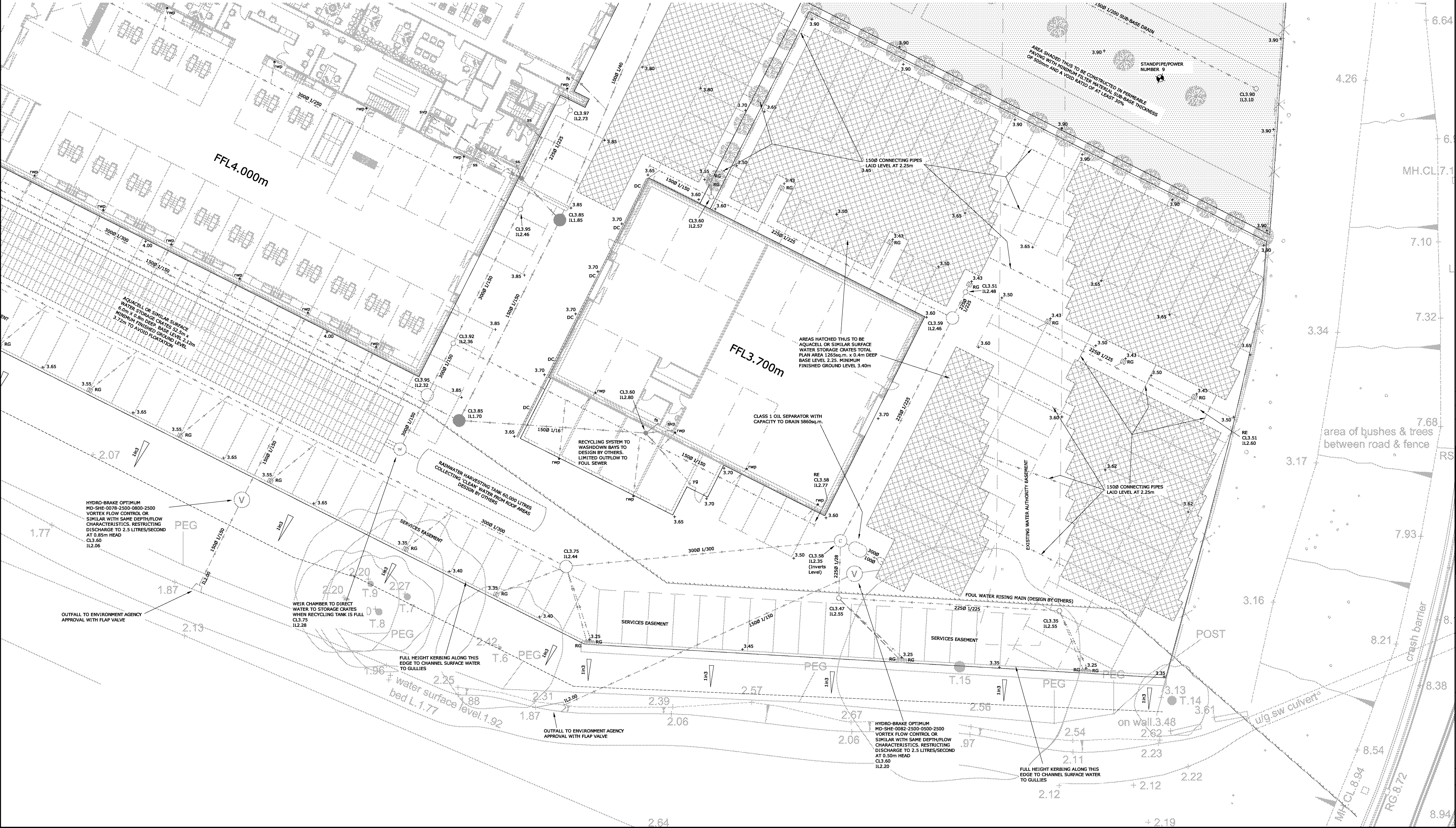
IL = Invert Level (of outgoing pipe)

BD = Backdrop, UIL = Upper Invert Level

- | FOUL WATER:- | | SURFACE WATER:- | |
|--|--|-----------------|--|
| 
Foul water drain | 
Surface water drain | | |
| 
Private manhole | 
Private manhole | | |
| 
Inspection chamber 450Ø
(1.2m max depth) | 
Inspection chamber 450Ø
(1.2m max depth) | | |
| 
Access fitting 225Ø
(0.6m max depth) | 
Access fitting 225Ø
(0.6m max depth) | | |
| 
Foul connection
svp=soil vent pipe
aav=air admittance valve
big=big inlet gully
fs=floor socket
wc=W.C.
fg=floor gully
ss=stub stack | 
Roding eye | | |
| | 
Rainwater downpipe | | |
| | 
Yard gully (trapped and roddable) | | |
| | 
Gully (trapped and roddable) | | |
| | 
Drainage Channel | | |
| | 
Private Catchpit | | |



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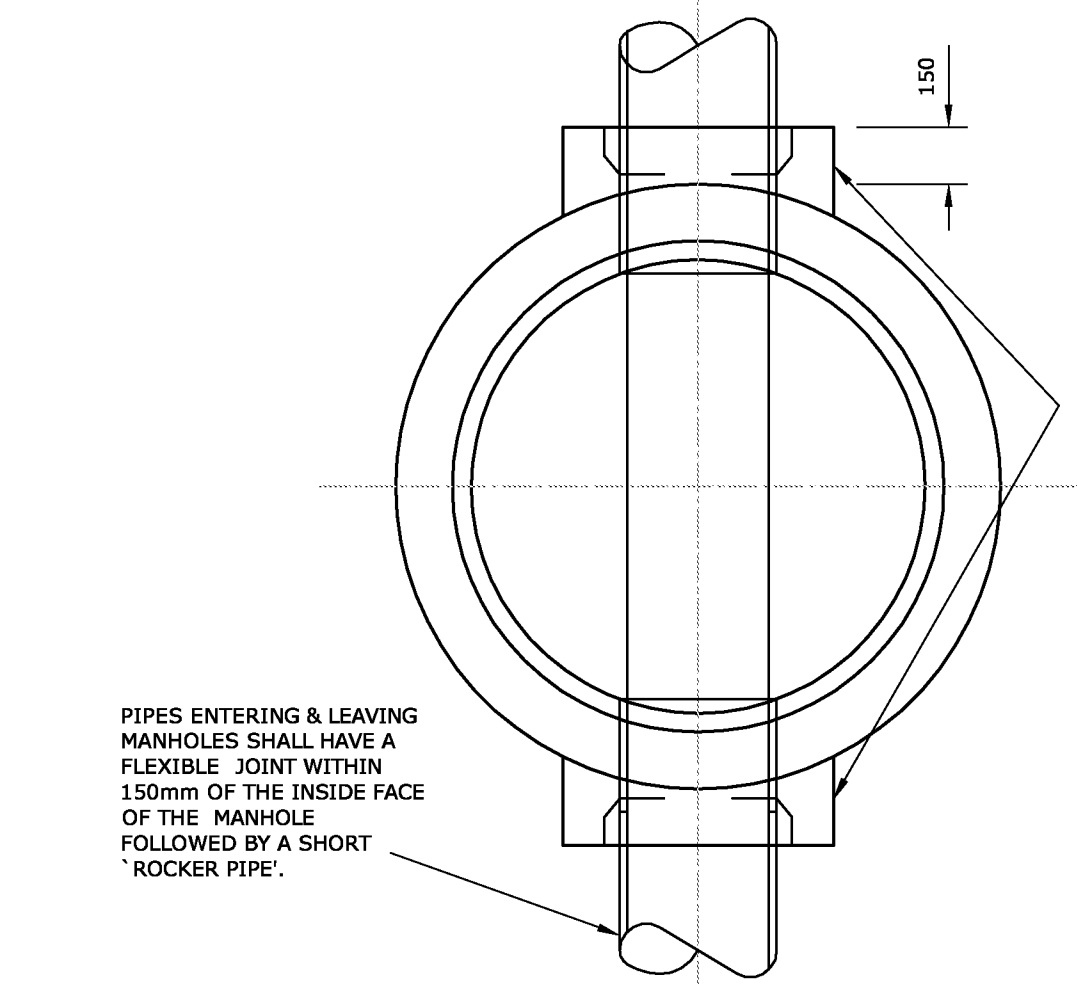
Project

CHANDLERS BMW WORTHING

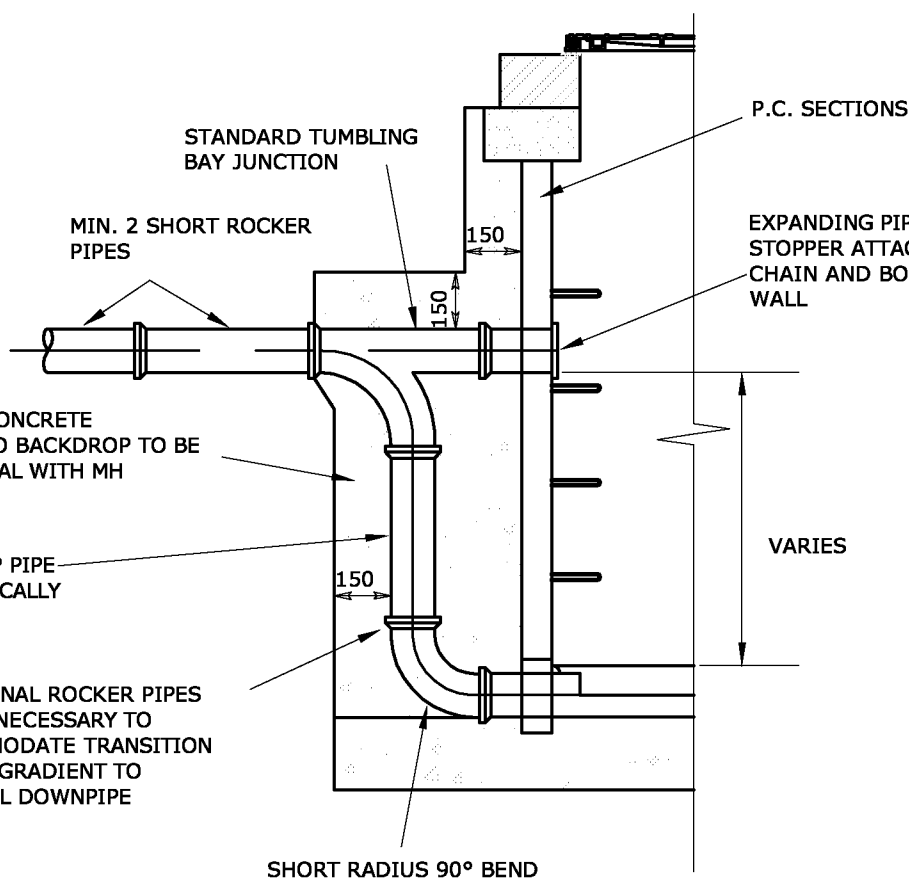
Drawing Title

DRAINAGE AND FINISHED
LEVELS LAYOUT
SHEET 4 OF 4

Drawn/Design kwl/kwl	Checked ...	Approved ...	Date July 2014
Scales 1:200 @ A1 1:400 @ A3	Drawing No. 615823/005		Rev A



ROCKER PIPE LENGTHS	
SEWER DIAMETER (mm)	EFFECTIVE LENGTH (mm)
150 TO 600	600



		MANHOLE SIZES				
		OUTGOING PIPE DIAMETER (mm)	MINIMUM INTERNAL DIMENSIONS		MINIMUM CLEAR OPENING	
			RECTANGULAR (mm)	OR DIAMETER (mm)	RECTANGULAR (mm)	OR DIAMETER (mm)
<1.5m DEPTH TO SOFFIT	100-150	750x675	1000	750x675	N/A	
	225	1200x675	1350	1200x675	N/A	
	300	1200x750	1350	1200x675	N/A	
	375-600	1800x(DN+450)	1800	1200x675	N/A	
>1.5m DEPTH TO SOFFIT	100-225	1200x1000	1200	600x600	600	
	300	1200x1075	1200	600x600	600	
	375-450	1350x1225	1200	600x600	600	
	450-600	1800x(DN+775)	1800	600x600	600	

750X675* PRECAST CONCRETE CHAMBER SECTIONS.

150mm THICK ST2 CONCRETE SURROUND

NEATLY CUT HOLES FOR PIPEWORK TO BE MADE GOOD WITH MORTAR

150mm THICK CONCRETE BASE TO CHAMBER, CLASS S14.

2-4 COURSES OF CLASS 9 ENGINEERING BRICKWORK TO BS 3921, BEDDED AND JOINTED WITH 1:3 CEMENT MORTAR.

765 max.

250

250

300

5 JUMP

GALVANISED STEEL STEP IRONS.

ROCKER PIPE WITH JOINT AS CLOSE AS POSSIBLE TO FACE OF CHAMBER TO PERMIT ANY SUBSEQUENT MOVEMENT.

SECTION (REFER TO DRAWING FOR DETAILS)

RECESSED COVER AND FRAME TO BS EN 124 CLASS B125, INFLUENTIAL TO MATCH SURROUNDING PAVING BLOCKS/SLABS TO BE NEATLY CUT AND SHAPED TO SUIT. WHERE CHAMBER PLACED IN TARMAC A SOLID COVER AND FRAME TO BE USED.

225mm DEEP ST4 CONCRETE PLINTH TO SUPPORT FINISH IN AREAS ACCESSIBLE TO MOTOR VEHICLES.

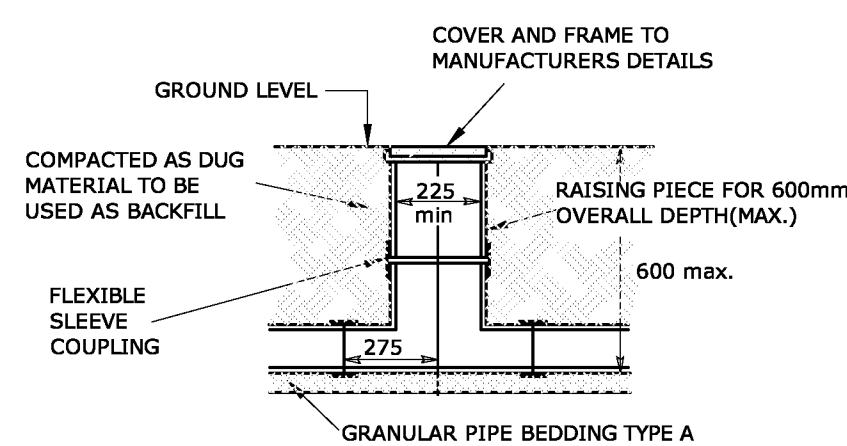
WELL COMPACTED BEDDING MATERIAL USED AS BACKFILL. COMPACTED IN 225mm LAYERS

450

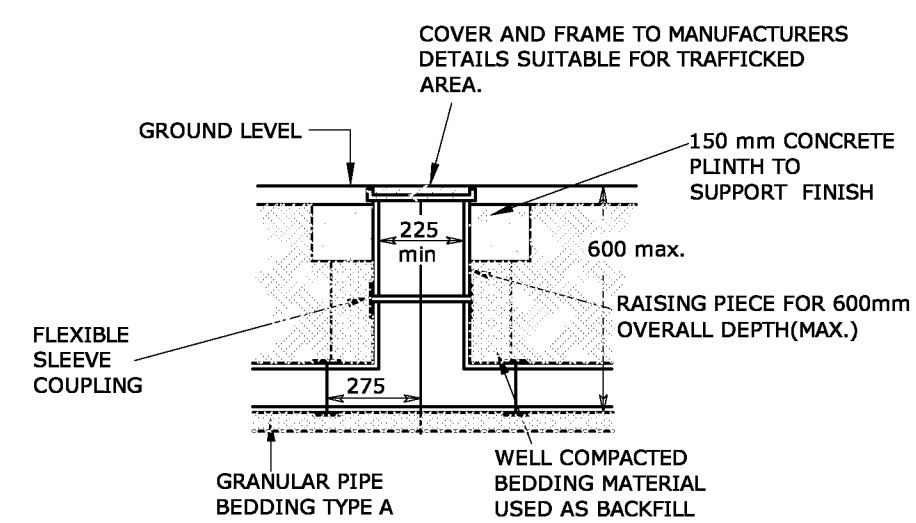
CIRCULAR CHAMBER

REFERENCE BED

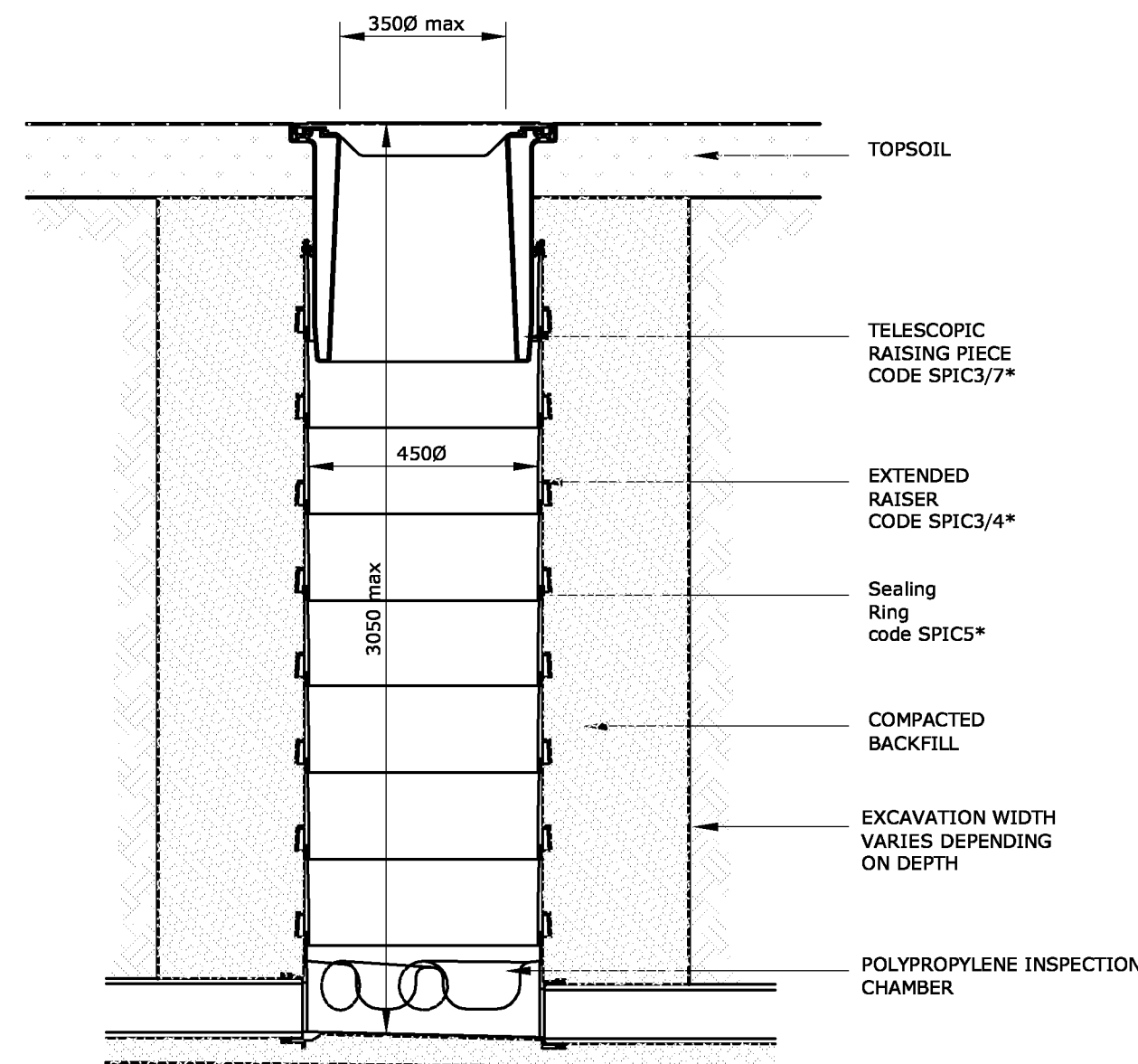
(LOCATED WITHIN LANDSCAPE AREAS FOR
DEPTH TO INVERT NOT GREATER THAN 1200mm)



FOR COVERS SITED IN LANDSCAPED
AREAS WITH NO VEHICLE LOADING.

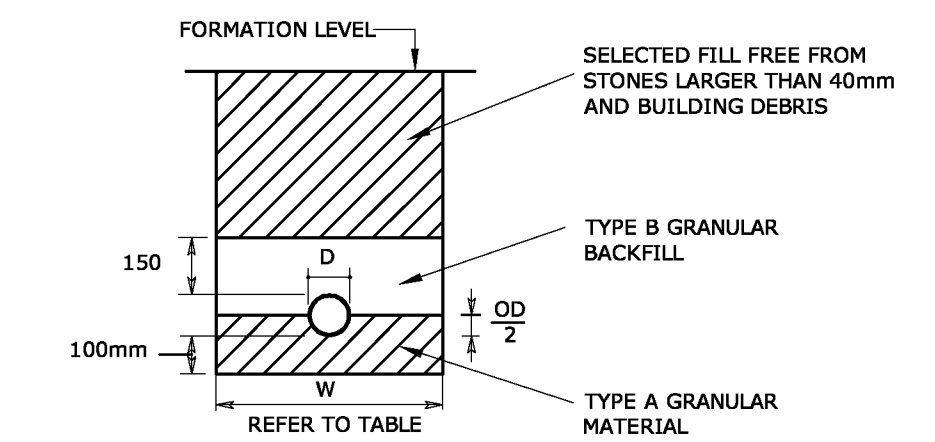


FOR COVERS SITED IN DRIVEWAYS, PAVED
AREAS AND LANDSCAPED AREAS WHICH MAY BE
OVERRUN BY MAINTENANCE VEHICLES.



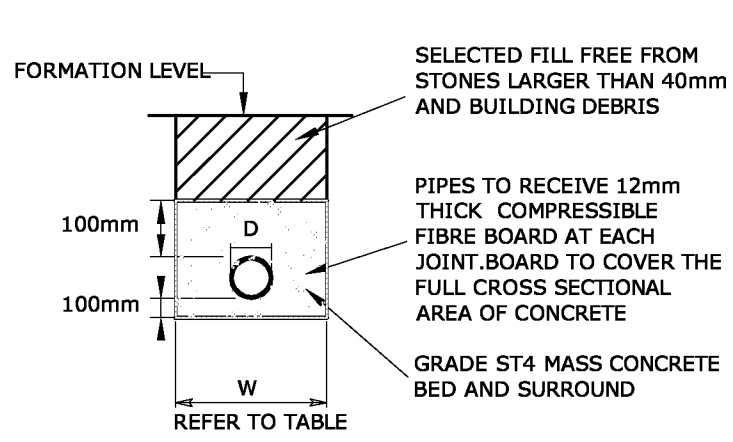
(sited in soft landscaped areas)

Drawing No.
615823/006



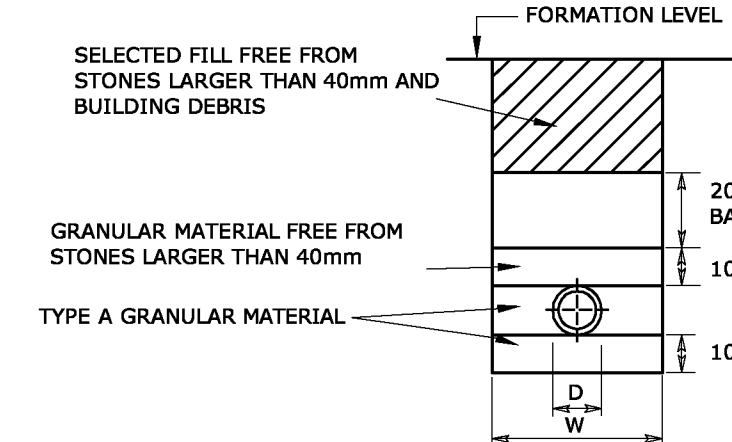
TYPE 1 (CLAY PIPE) CLASS B

LOCATION: PEDESTRIAN AREAS UP TO 5.0m DEPTH,
VEHICLE AREAS 0.6m - 5.0m



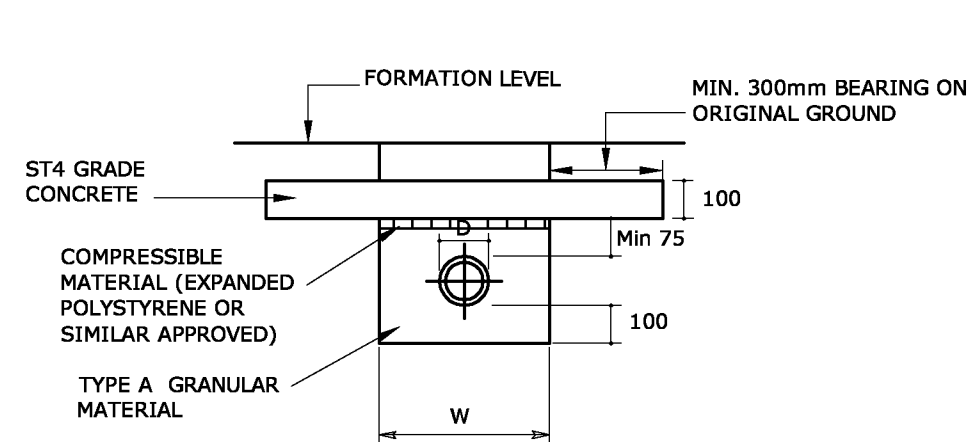
TYPE 2 (CLAY PIPES) CLASS X

LOCATION: VEHICLE AREAS - UP TO 0.6m



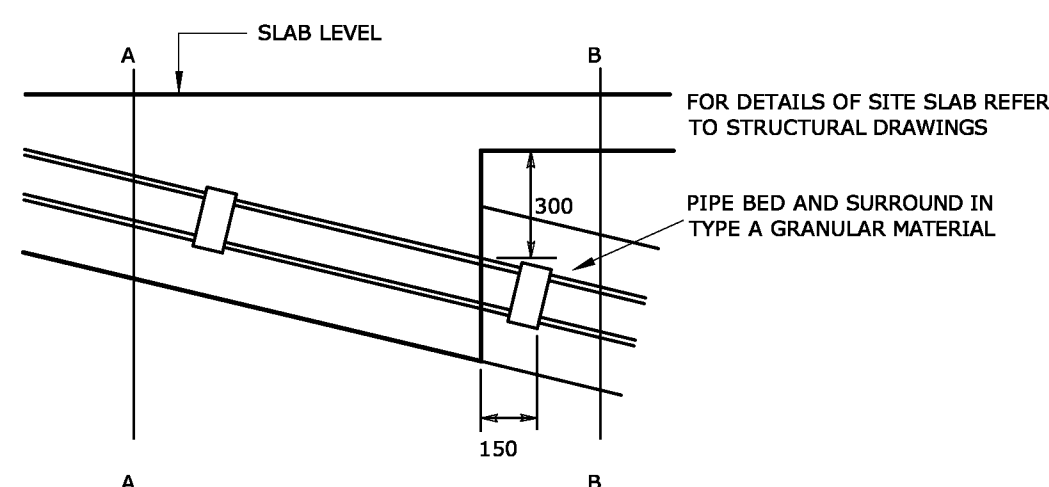
TYPE 3 (UPVC PIPES) CLASS S1

LOCATION: PEDESTRIAN AREAS, 0.6m - 7.0m VEHICLE
AREAS, 0.9m - 7.0m UNDER BUILDINGS



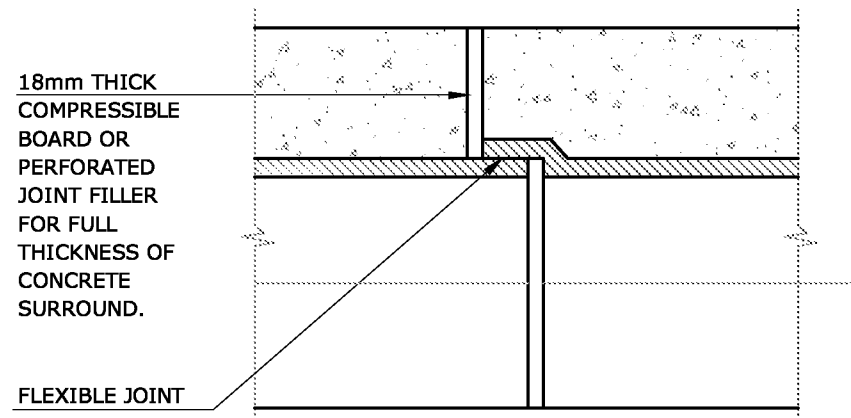
TYPE 4 (UPVC PIPES)

LOCATION: PEDESTRIAN AREAS UP TO 0.6m, PRIVATE VEHICLE PARKING
AND AREAS SUBJECT TO CONSTRUCTION TRAFFIC UP TO 0.9m.
WHEN LAID IN LANDSCAPE AREAS SUBJECT TO NO LOADING (INCL.
CONSTRUCTION TRAFFIC) ST4 CONCRETE CAN BE OMITTED.



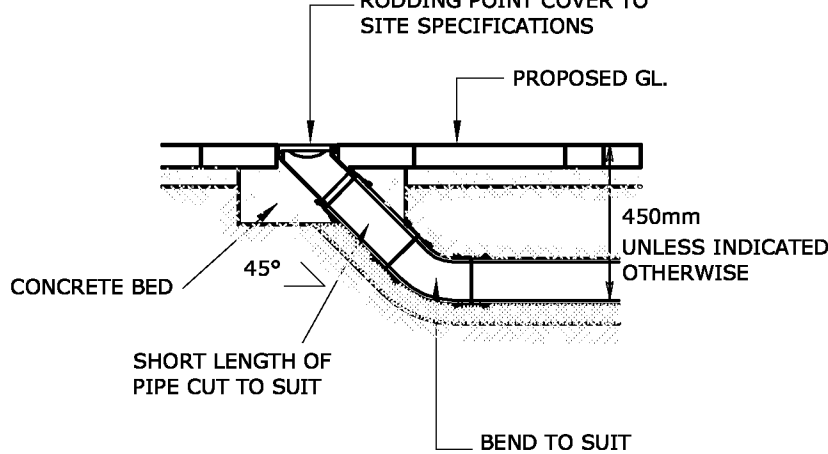
PIPE DETAIL UNDER BUILDING (CLAY PIPES ONLY)

TYPICAL PIPE BEDDING DETAILS



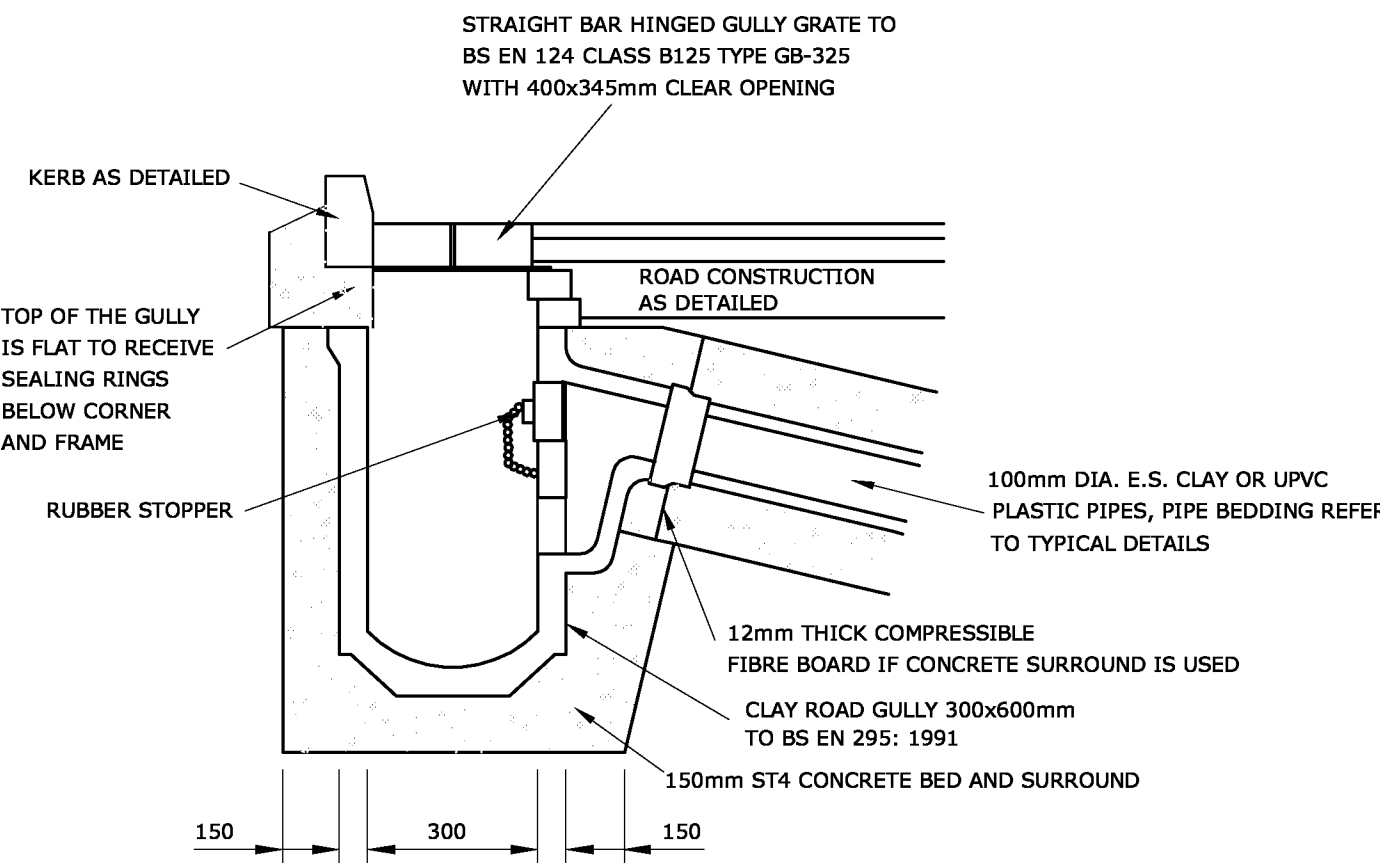
DETAIL OF MOVEMENT JOINT FOR PIPES WITH CONCRETE BED AND SURROUND

(TO BE PROVIDED AT ALL PIPE JOINTS)

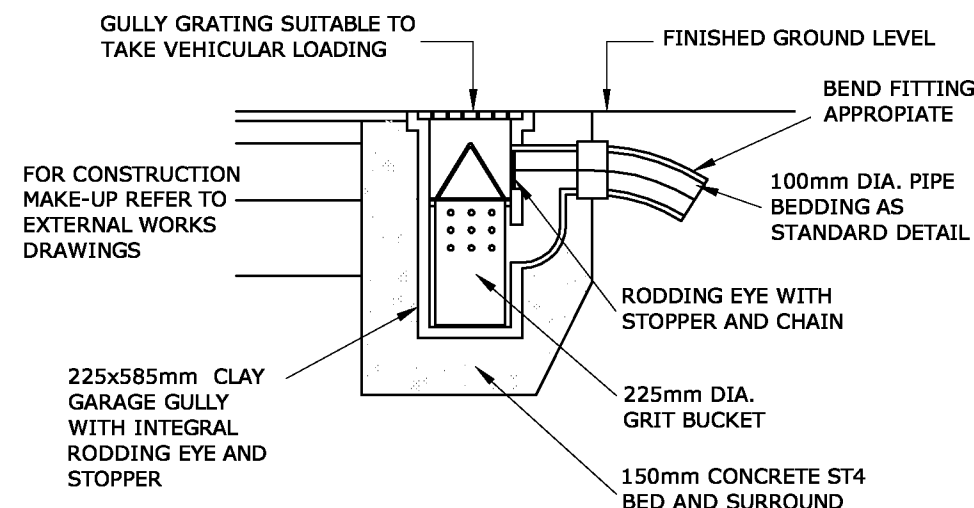


RODDING EYE DETAIL

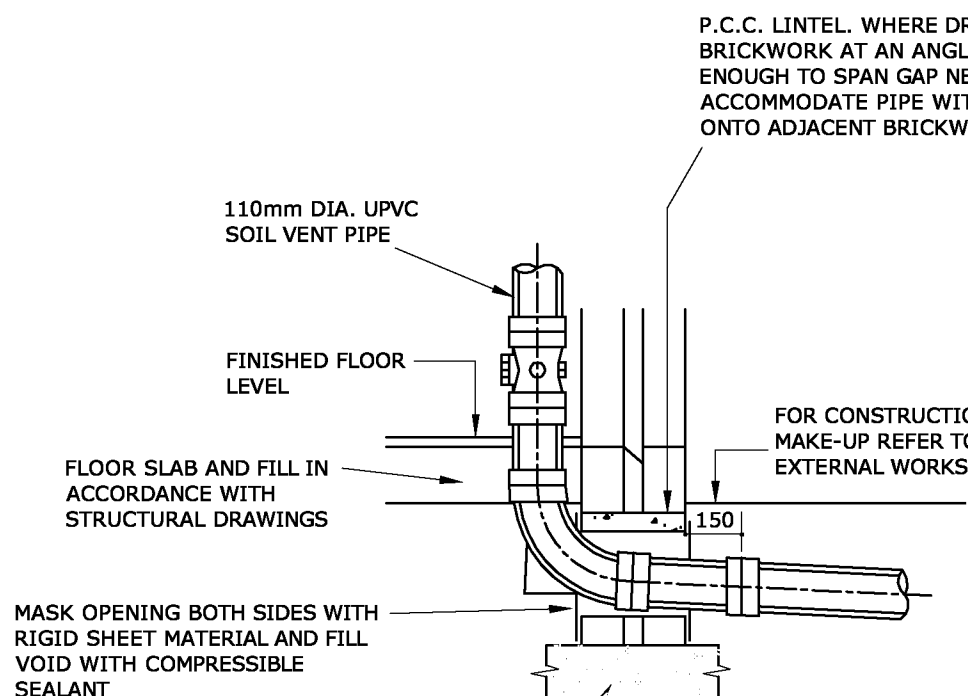
(CONCRETE COLLAR MAY BE OMITTED IF RODDING EYE IN AREA NOT SUBJECT TO VEHICULAR LOADING. MAXIMUM DEPTH TO INVERT 600mm).



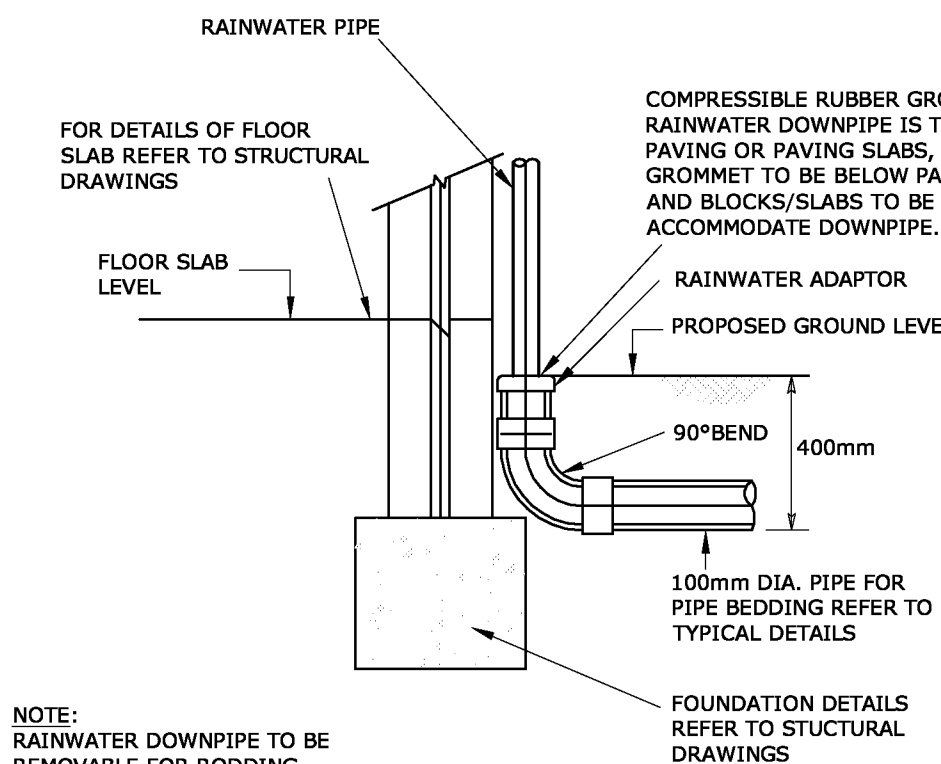
PRIVATE ROAD GULLY POT DETAIL



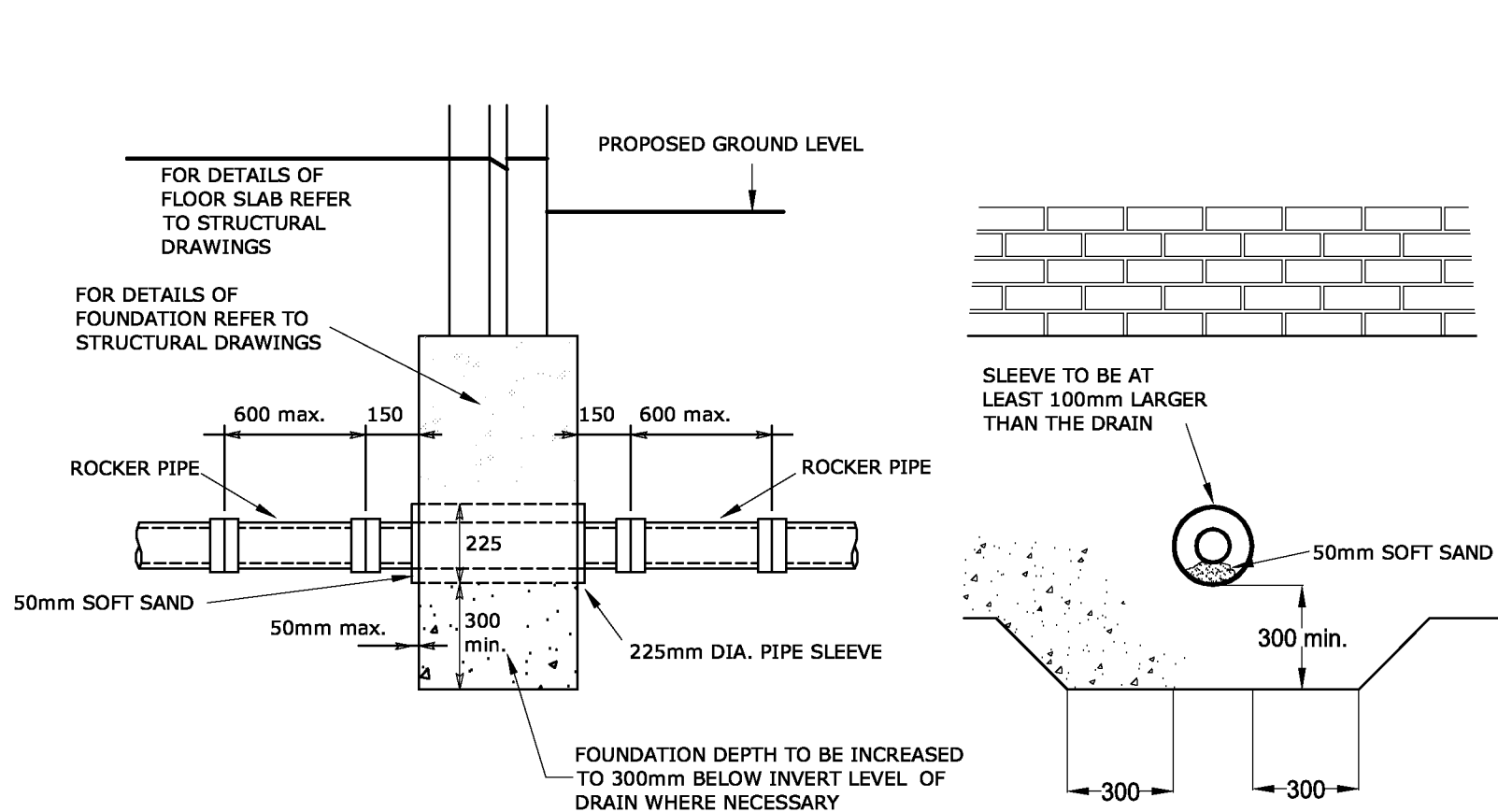
TRAPPED YARD GULLY TO DRIVES, FOOTPATHS & BINSTORE



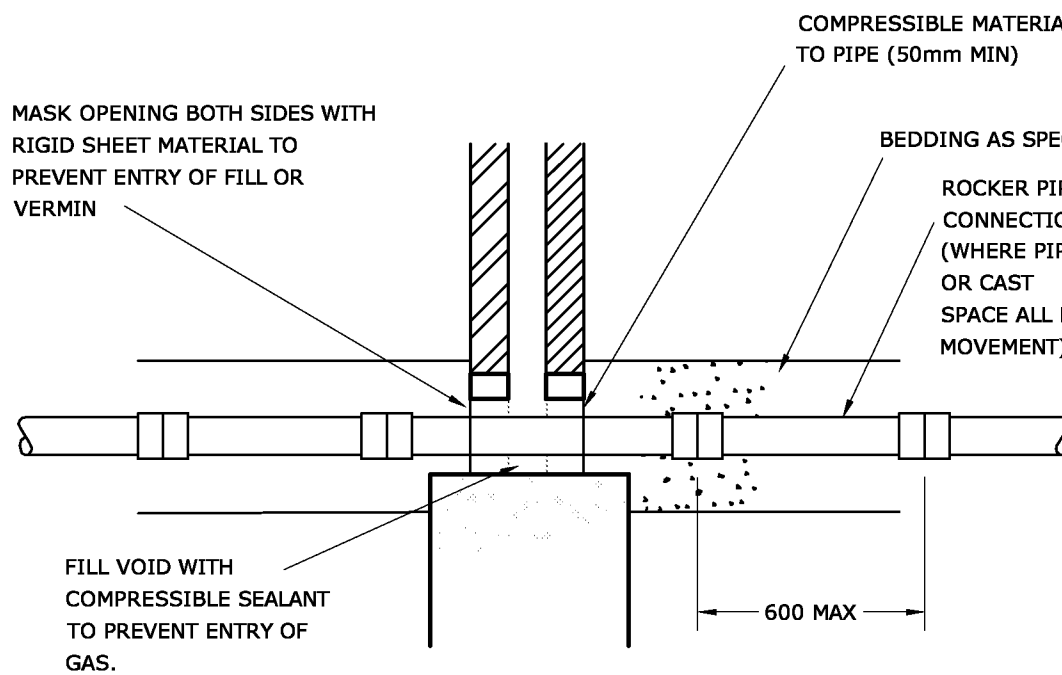
SOIL VENT PIPE CONNECTION



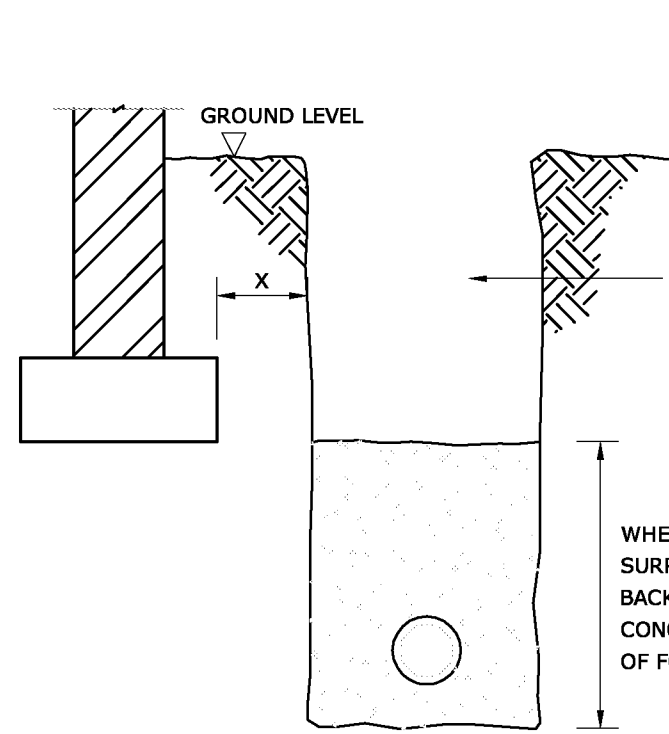
RAINWATER PIPE CONNECTION



DRAIN PENETRATION OF STRIP FOOTING



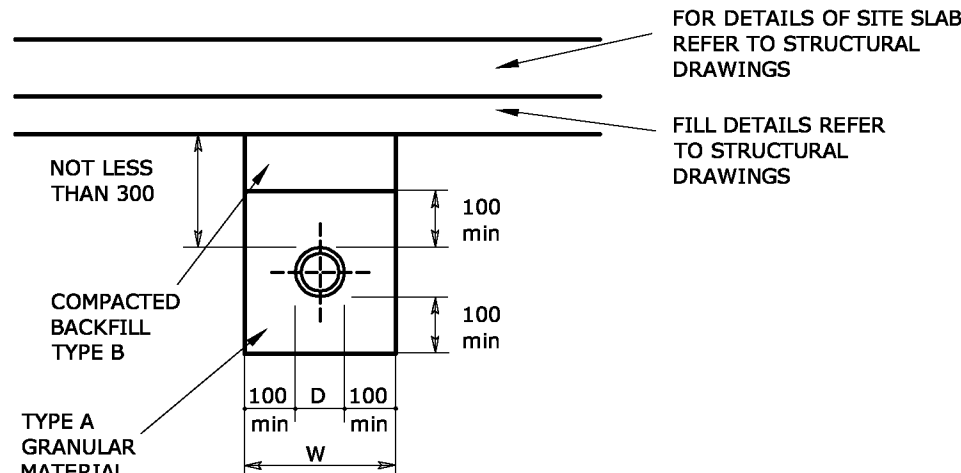
TYPICAL PIPE OVER FOUNDATION



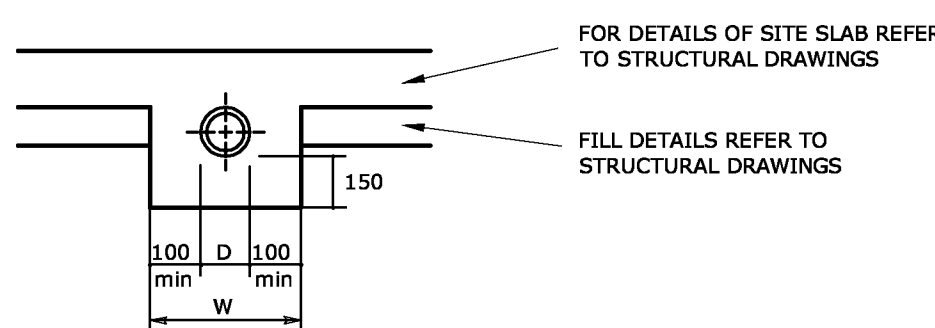
NOTES:

1.FND 4 CONCRETE SURROUND, Min. 150mm ABOVE
PIPE CROWN & 150mm BELOW PIPE INVERT.

PIPE RUNS NEAR BUILDINGS & BELOW FOUNDATIONS



SECTION B-B



SECTION A-A

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4. CONCRETE MIX DESIGNATIONS SHOWN ON THIS DRAWING ARE TO BS 8500.

5. TYPE A BEDDING MATERIAL TO BE 10mm SINGLE SIZED AGGREGATE TO BS EN 12620 TABLE B15 FOR 1000 PIPES AND 14mm FOR 1500 PIPES.

6. TYPE B TO BE UNIFORM READILY COMPACTABLE MATERIAL FREE FROM ANY TREE ROOTS, VEGETATION MATTER, BUILDING DEBRIS, FROZEN SOIL, CLAY LUMPS RETAINED ON A 100mm SIEVE OR STONES RETAINED ON A 40mm SIEVE.

7. MINIMUM TRENCH WIDTHS FOR VARIOUS SIZE PIPES;

D	100	150	225	300	375
W	450	600	700	800	1100

8. WHERE A FOUNDATION PASSES CLOSE TO A DRAIN OR SEWER TRENCH OR TRIAL PIT THE FOUNDATION DEPTH IS TO BE SUCH THAT ITS UNDERSIDE IS BELOW A LINE PROJECTED UP AT 45° FROM THE NEAREST BOTTOM CORNER OF THE DRAIN TRENCH, SEWER TRENCH OR TRIAL PIT. ALTERNATIVELY CONCRETE BACKFILL TO TRENCHES TO BE USED (AS DETAILS).

9. ANY SOFT SPOT FOUND IN TRENCH LINE TO BE REPORTED TO SITE STAFF PRIOR TO PLACING OF PIPE BEDDING.

10. JOINT FILLER TO CONCRETE PIPE SURROUND SHALL CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS 1142 Part 3. THICKNESS OF BOARD 12mm.

11. CLAY PIPES TO BS EN295 AND SLEEVE JOINTED uPVC PIPES, JOINTS AND FITTINGS TO BS4660 AND BS5481.

12. PRECAST CONCRETE PIPES AND CHAMBERS TO BE TO BS 5911.

13. ALL PRECAST AND INSITU CONCRETE AND MORTAR USED IN THE CONSTRUCTION OF FOUL SEWERS/DRAINS MUST COMPLY WITH THE REQUIREMENTS OF BRE SPECIAL DIGEST 1, DESIGN SULPHATE CLASS DS-3 AND AGGRESSIVE CHEMICAL ENVIRONMENT FOR CONCRETE CLASS AC-3.FOR ALL OTHER CONCRETE/MORTAR THE REQUIREMENTS FOR BURIED CONCRETE SHALL BE AS SPECIFIED IN THE GEOTECHNICAL INVESTIGATION.

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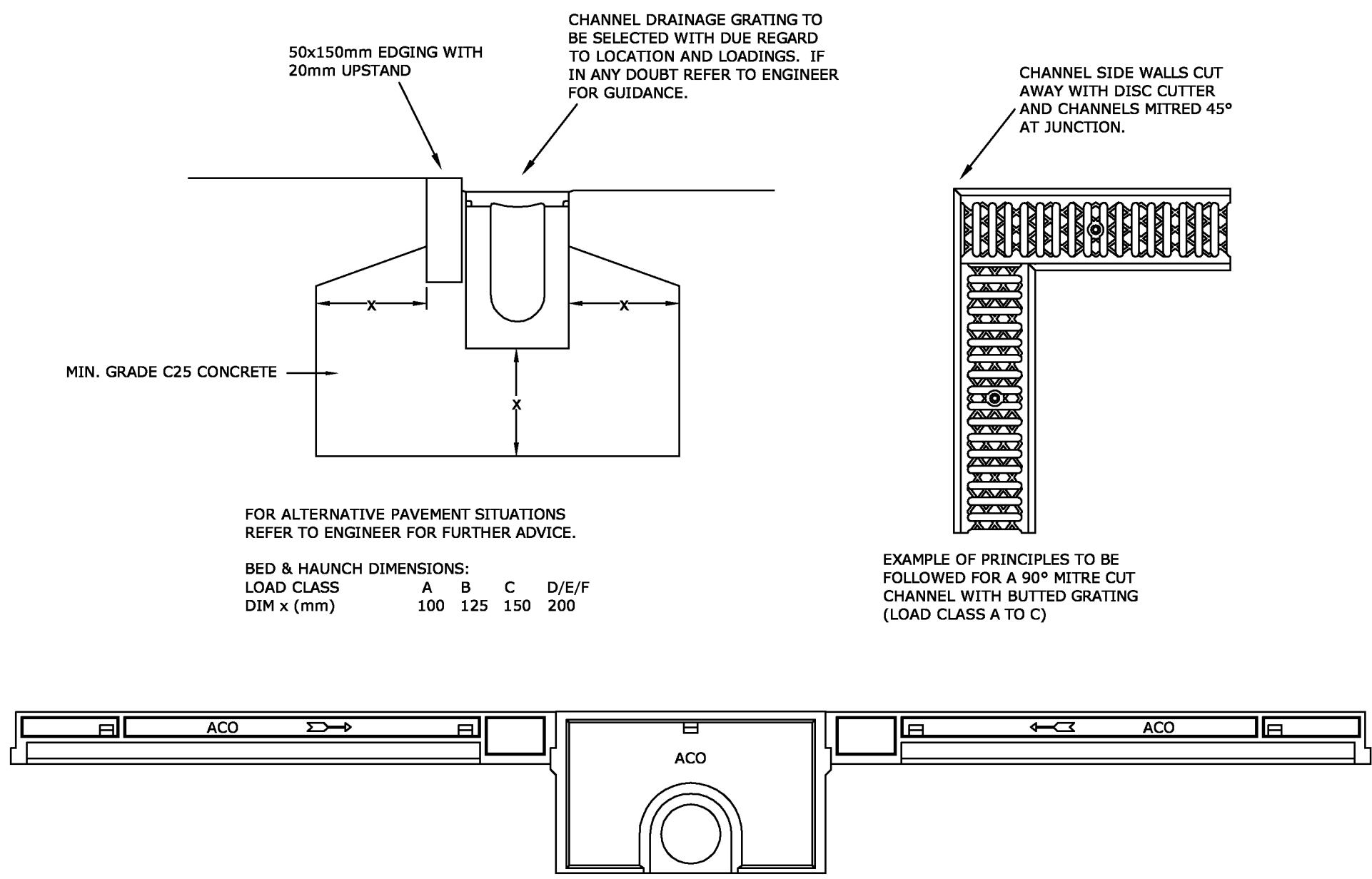
Project

CHANDLERS BMW WORTHING

Drawing Title

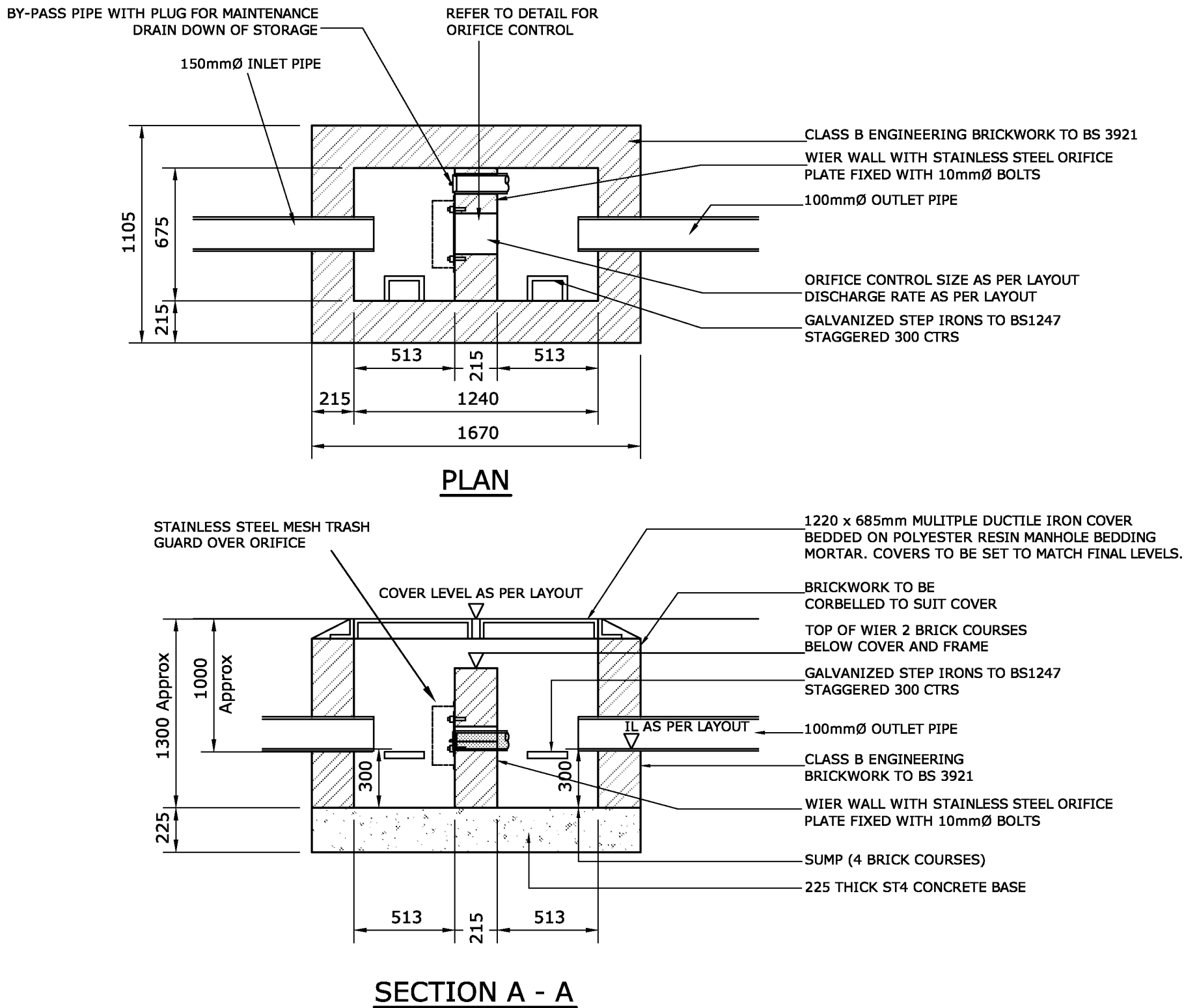
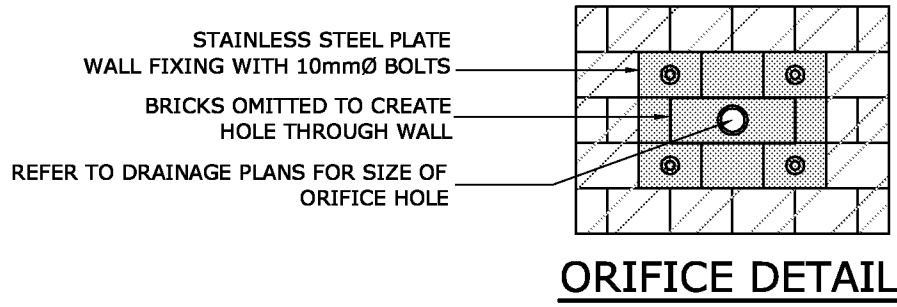
DRAINAGE CONSTRUCTION
DETAILS - SHEET 2 OF 3

Drawn/Design kwl	Checked ...	Approved ...	Date July 2014
Scales N.T.S. @ A1 N.T.S. @ A3	Drawing No. 615823/007	Rev	



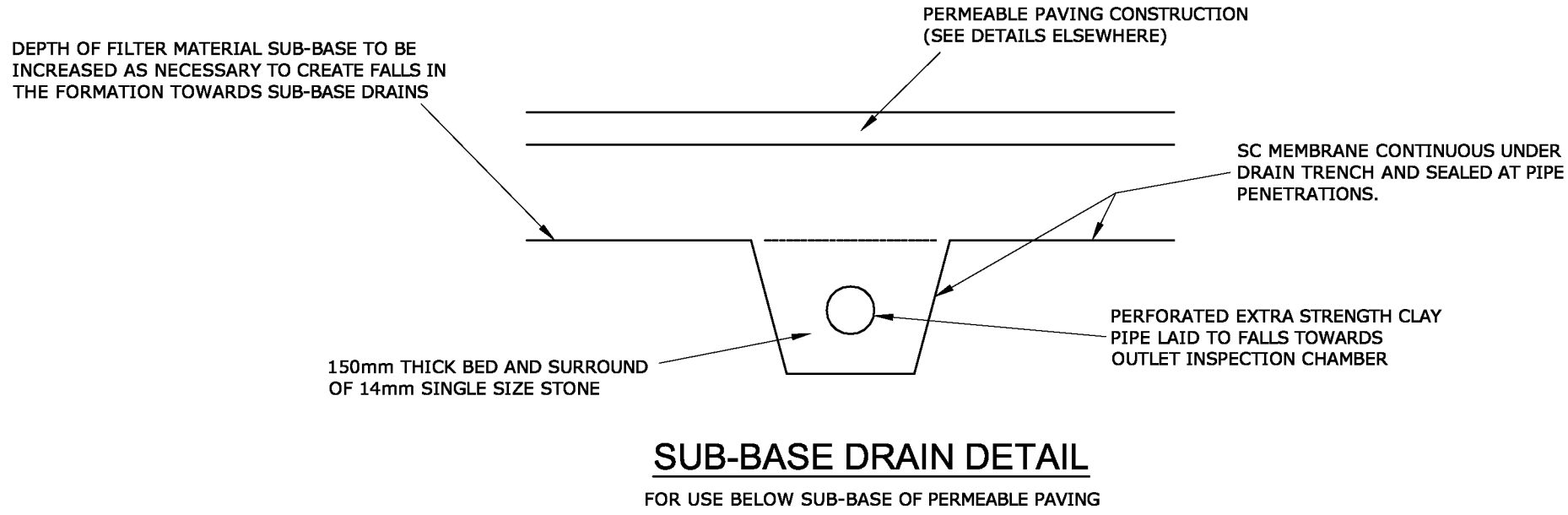
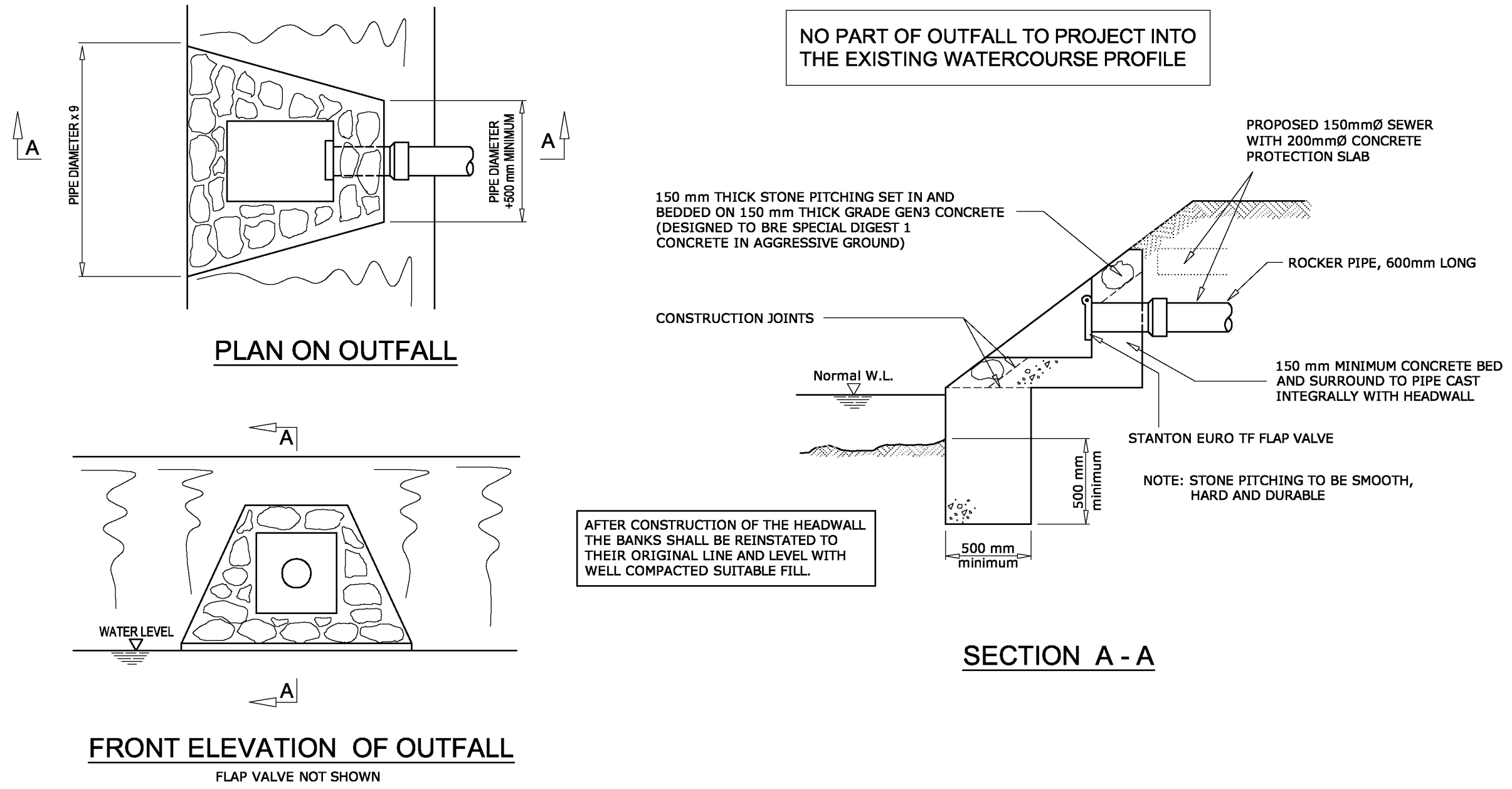
SUMP TO BE USED AT EACH ACO CONNECTION POINT. ADVICE AND DESIGN TO BE SOUGHT FROM ACO ON USE OF SUITABLE CHANNEL SECTION AND PRODUCT IN EACH CASE.

ACO DRAIN INSTALLATION DETAIL



TYPICAL ORIFICE CHAMBER DETAIL

REFER TO DRAINAGE PLANS FOR SIZE OF ORIFICE

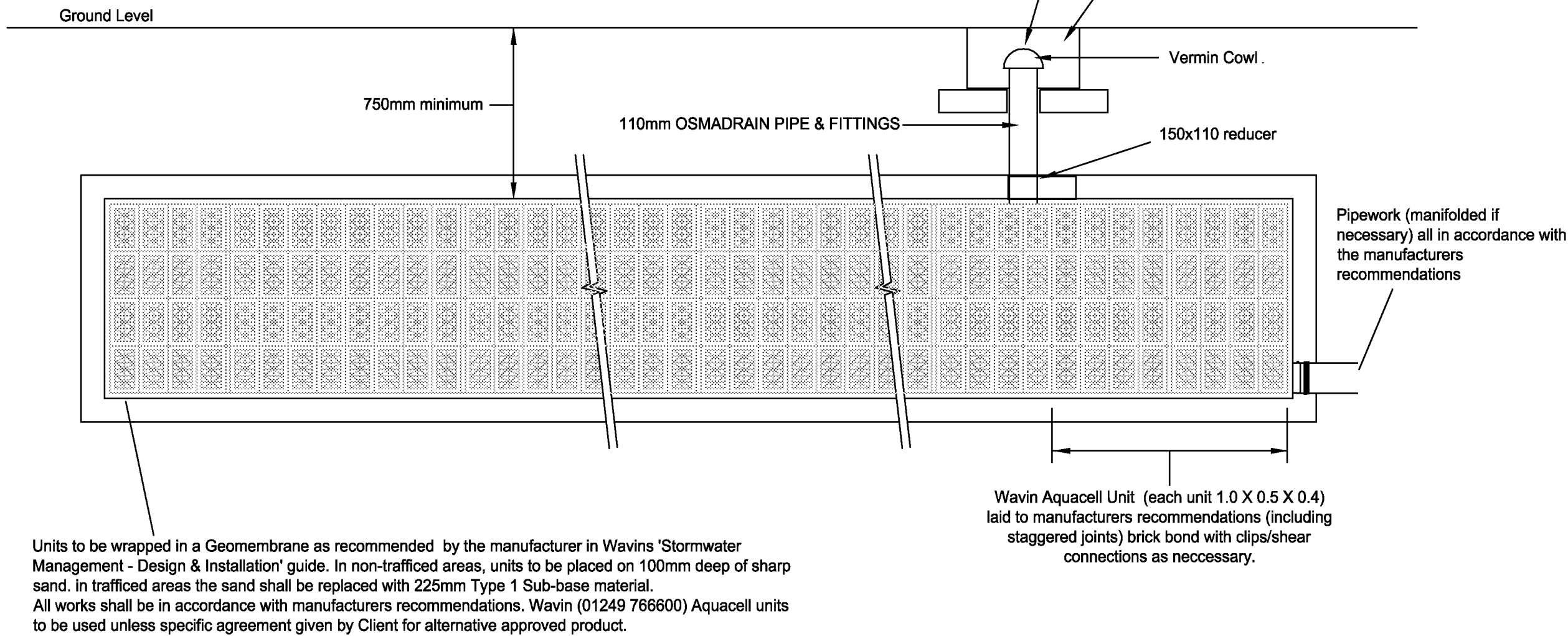


ALL CATCHPITS ARE TO BE REGULARLY CLEANED OUT DURING THE CONSTRUCTION PERIOD (ESPECIALLY AFTER HEAVY RAINFALL) TO ENSURE NO SILT PASSES THE TRAPS TO BE DEPOSITED IN THE AQUACELL STORAGE/ATTENUATION/SOAKAWAY TANKS.

BEFORE FINAL HAND OVER OF THE SITE, INLET TO THE AQUACELL TANKS IS TO BE PLUGGED, ALL SW PIPEWORK IS TO BE JETTED, CATCHPITS CLEANED, THEN PLUG TO BE REMOVED AND AQUACELL TANKS INSPECTED TO ENSURE NO SILT HAS BEEN DEPOSITED IN THEM.

Aquacells to have Type 1 or Type 2 sub-base backfill to the sides and over the cells. Material to be compacted in accordance with table 6/1 or 8/1 of the Specification for Highway Works and taking into account maximum roller weights as advised by Wavin.

Construction plant **NOT** to traffic near or over Aquacell locations unless specifically authorised by the Engineer.



AQUACELL SURFACE WATER STORAGE DETAILS

(FOR TRAFFICKED AREAS - WITH STORAGE WRAPPING)
Pipework shown indicatively only. See Drainage Layouts for locations and levels of pipework.

NOTES

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- CONCRETE MIX DESIGNATIONS SHOWN ON THIS DRAWING ARE TO BS 8500.
- TYPE A BEDDING MATERIAL TO BE 10mm SINGLE SIZED AGGREGATE TO BS EN 1610 ANNEX B TABLE B15 FOR 100Ø PIPES AND 14mm FOR 150Ø PIPES.
- TYPE B TO BE UNIFORM READILY COMPACTABLE MATERIAL FREE FROM ANY TREE ROOTS, VEGETATION MATTER, BUILDING DEBRIS, FROZEN SOIL, CLAY LUMPS RETAINED ON A 100mm SIEVE OR STONES RETAINED ON A 40mm SIEVE.
- MINIMUM TRENCH WIDTHS FOR VARIOUS SIZE PIPES;

D	100	150	225	300	375
W	450	600	700	800	1100
- WHERE A FOUNDATION PASSES CLOSE TO A DRAIN OR SEWER TRENCH OR TRIAL PIT THE FOUNDATION DEPTH IS TO BE SUCH THAT ITS UNDERSIDE IS BELOW A LINE PROJECTED UP AT 45° FROM THE NEAREST BOTTOM CORNER OF THE DRAIN TRENCH, SEWER TRENCH OR TRIAL PIT. ALTERNATIVELY CONCRETE BACKFILL TO TRENCHES TO BE USED (AS DETAILS).
- ANY SOFT SPOT FOUND IN TRENCH LINE TO BE REPORTED TO SITE STAFF PRIOR TO PLACING OF PIPE BEDDING.
- JOINT FILLER TO CONCRETE PIPE SURROUND SHALL CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS 1142 Part 3. THICKNESS OF BOARD 12mm.
- CLAY PIPES TO BS EN295 AND SLEEVE JOINTED uPVC PIPES, JOINTS AND FITTINGS TO BS4660 AND BS5481.
- PRECAST CONCRETE PIPES AND CHAMBERS TO BE TO BS 5911.
- ALL PRECAST AND INSITU CONCRETE AND MORTAR USED IN THE CONSTRUCTION OF FOUL SEWERS/DRAINS MUST COMPLY WITH THE REQUIREMENTS OF BRE SPECIAL DIGEST 1, DESIGN SULPHATE CLASS DS-3 AND AGGRESSIVE CHEMICAL ENVIRONMENT FOR CONCRETE CLASS AC-3.FOR ALL OTHER CONCRETE/MORTAR THE REQUIREMENTS FOR BURIED CONCRETE SHALL BE AS SPECIFIED IN THE GEOTECHNICAL INVESTIGATION.

CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2007

DESIGNERS HAZARD INFORMATION FOR CONSTRUCTION

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- DRAINAGE AND HIGHWAY WORKS INVOLVE DEEP EXCAVATION, HOT MATERIALS AND/OR HEAVY PLANT/MATERIALS.
- THE CONTRACTOR SHALL READ AND UNDERSTAND THE SOILS REPORT. BE AWARE OF POTENTIAL VARIATIONS IN SOIL CONDITIONS OVER THE SITE.
- WORKS WITHIN THE PUBLIC HIGHWAY MUST ENSURE THE SAFETY OF ALL PARTIES.
- PROTECTION FOR DISEASE REQUIRED FOR WORKS WITHIN EXISTING SEWERS.

THE ABOVE NOTES REFER SPECIFICALLY TO THE INFORMATION SHOWN ON THIS DRAWING.

REFER TO THE HEALTH AND SAFETY PLAN FOR FURTHER INFORMATION.

Issue	Date	Description	Made	Checked
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Drawing Status:

APPROVAL

MLM

Multidisciplinary Consulting

190 Eureka Park, Upper Pemberton, Ashford, Kent TN25 4AZ
Tel: 01233 610530 Fax: 01233 618299
Website: www.mlm.uk.com

Client

GROUP 1 AUTOMOTIVE

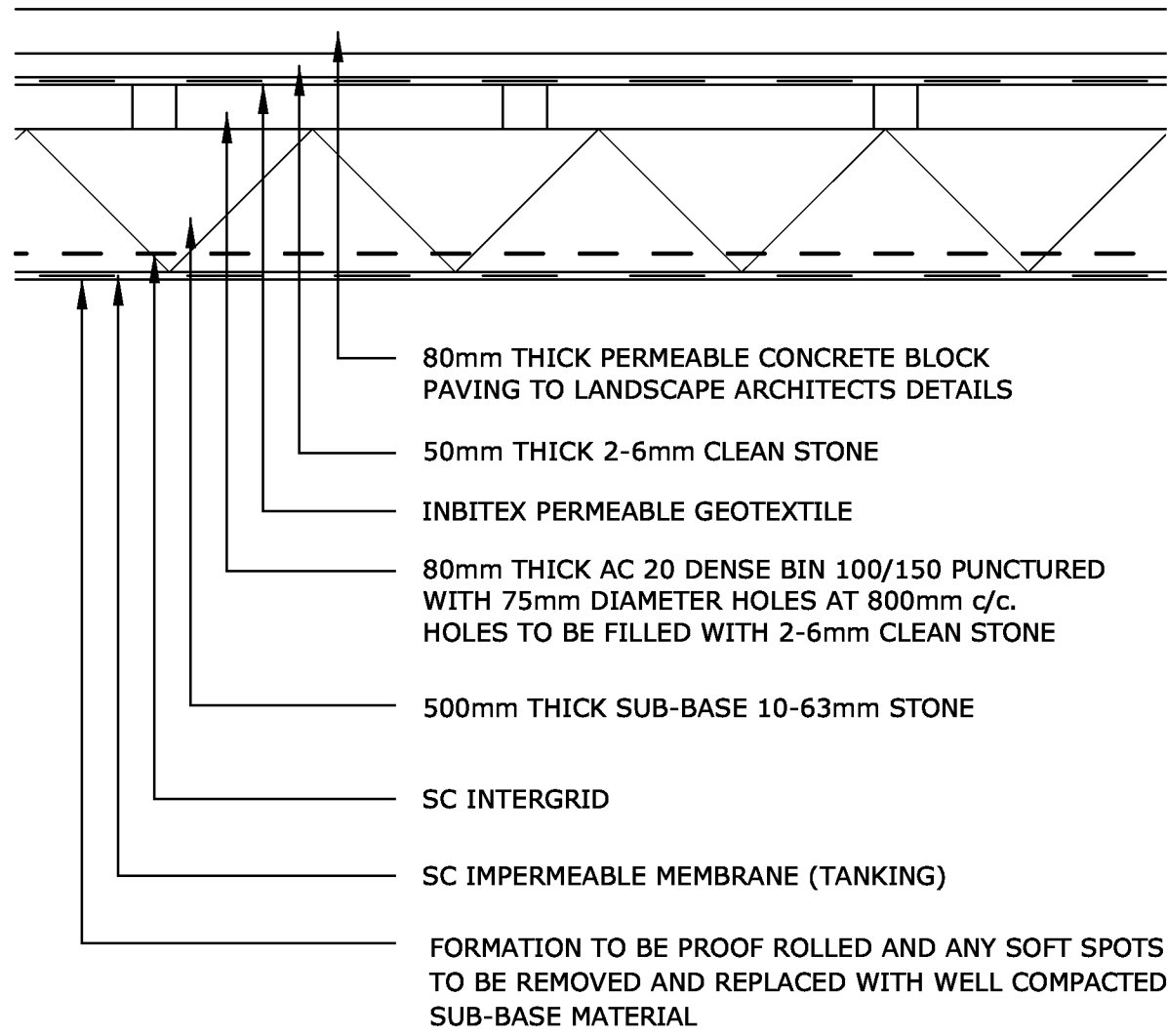
Project

CHANDLERS BMW WORTHING

Drawing Title

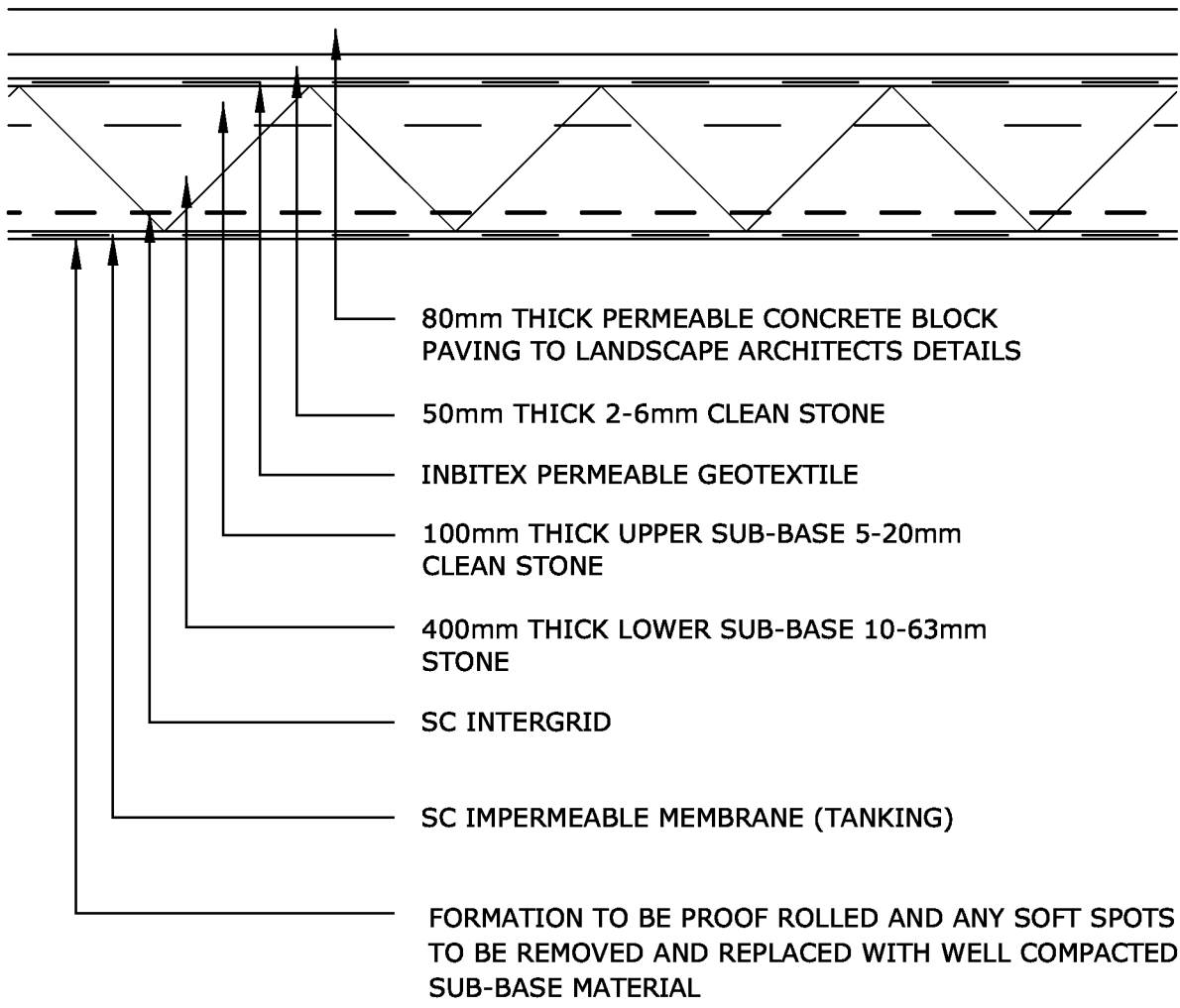
**DRAINAGE CONSTRUCTION
DETAILS - SHEET 3 OF 3**

Drawn/Design	Checked	Approved	Date
kwl	...	...	July 2014
Revisions	Drawing No.	Rev	
N.T.S. @ A1 N.T.S. @ A3	615823/008		



**POROUS BLOCK PAVING CONSTRUCTION
AREAS SUBJECT TO OCCASIONAL HGV TRAFFIC**

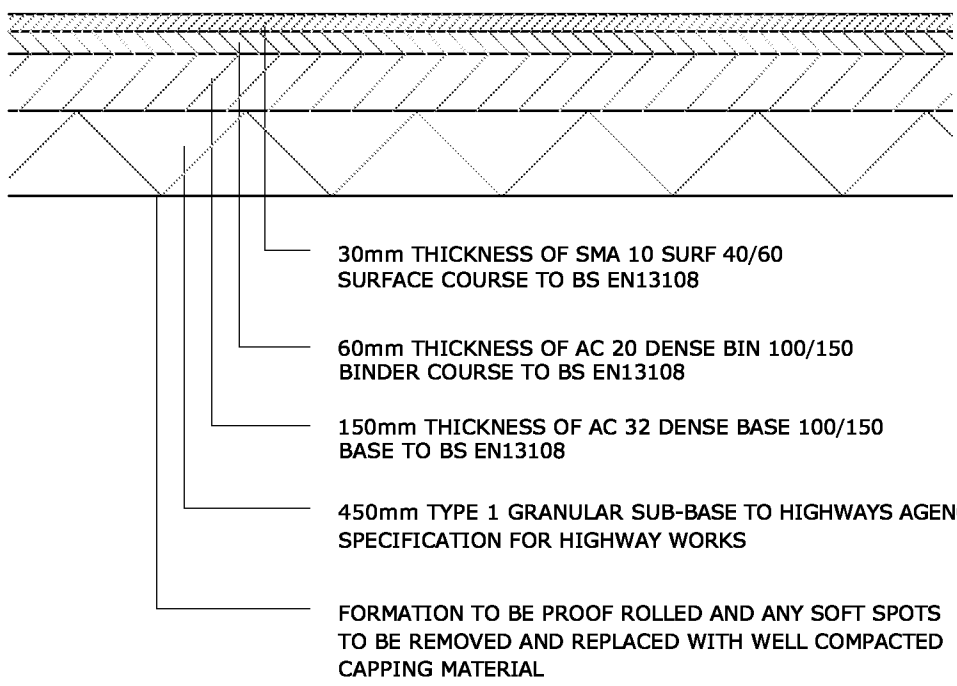
DETAILS SHOWN ARE BASED ON STORM WATER SOURCE CONTROL SYSTEM BY FORMPAVE LIMITED. REFER TO FORMPAVE FOR DETAILED DESIGN, FULL SPECIFICATION AND LAYING REQUIREMENTS. THE POROUS PAVEMENT MUST BE PROTECTED FROM SILT, SAND AND OTHER FINE MATERIALS DURING CONSTRUCTION. THE FINAL SURFACE MUST NOT BE SAND JOINTED.



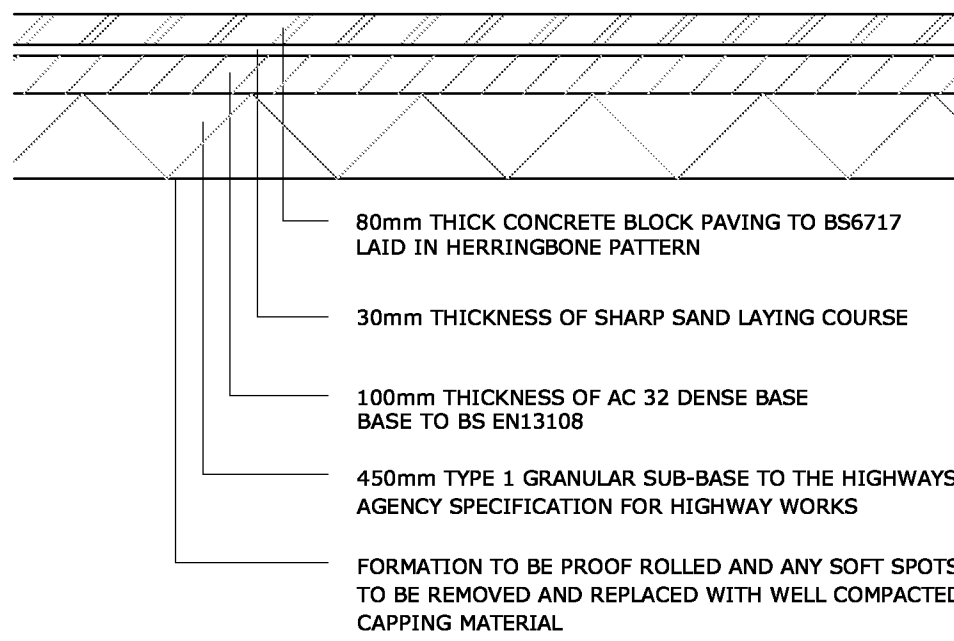
**POROUS BLOCK PAVING CAR PARKING
CONSTRUCTION**

DETAILS SHOWN ARE BASED ON STORM WATER SOURCE CONTROL SYSTEM BY FORMPAVE LIMITED. REFER TO FORMPAVE FOR DETAILED DESIGN, FULL SPECIFICATION AND LAYING REQUIREMENTS. THE POROUS PAVEMENT MUST BE PROTECTED FROM SILT, SAND AND OTHER FINE MATERIALS DURING CONSTRUCTION. THE FINAL SURFACE MUST NOT BE SAND JOINTED.

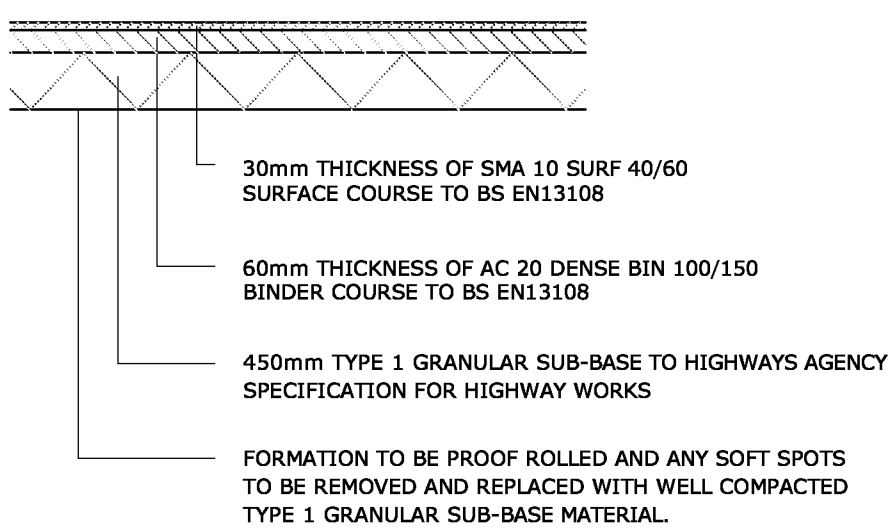
SUITABLE FOR USE BY OCCASIONAL STRAY HGV



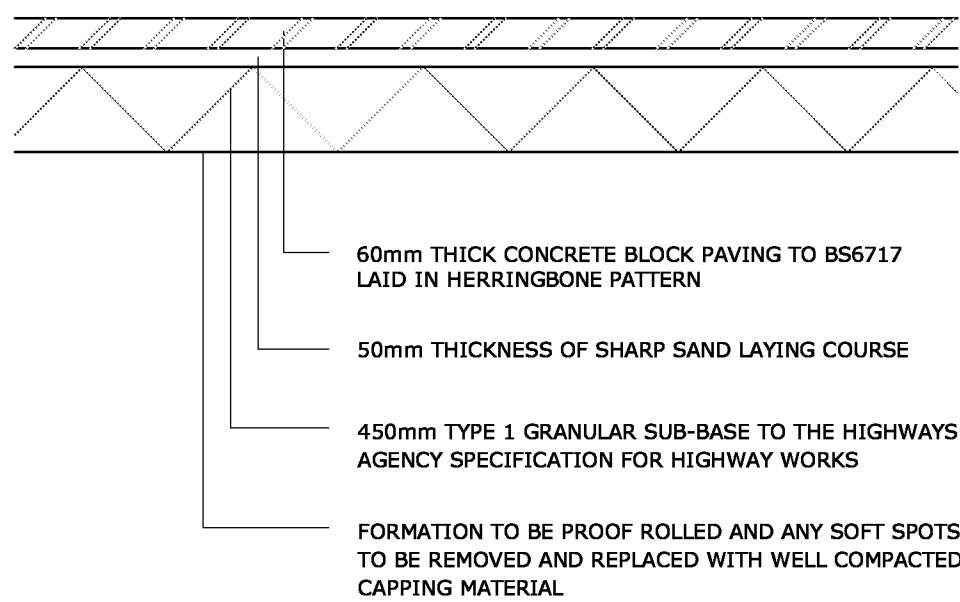
**TYPICAL SECTION THROUGH BITUMINOUS
ROAD CONSTRUCTION**



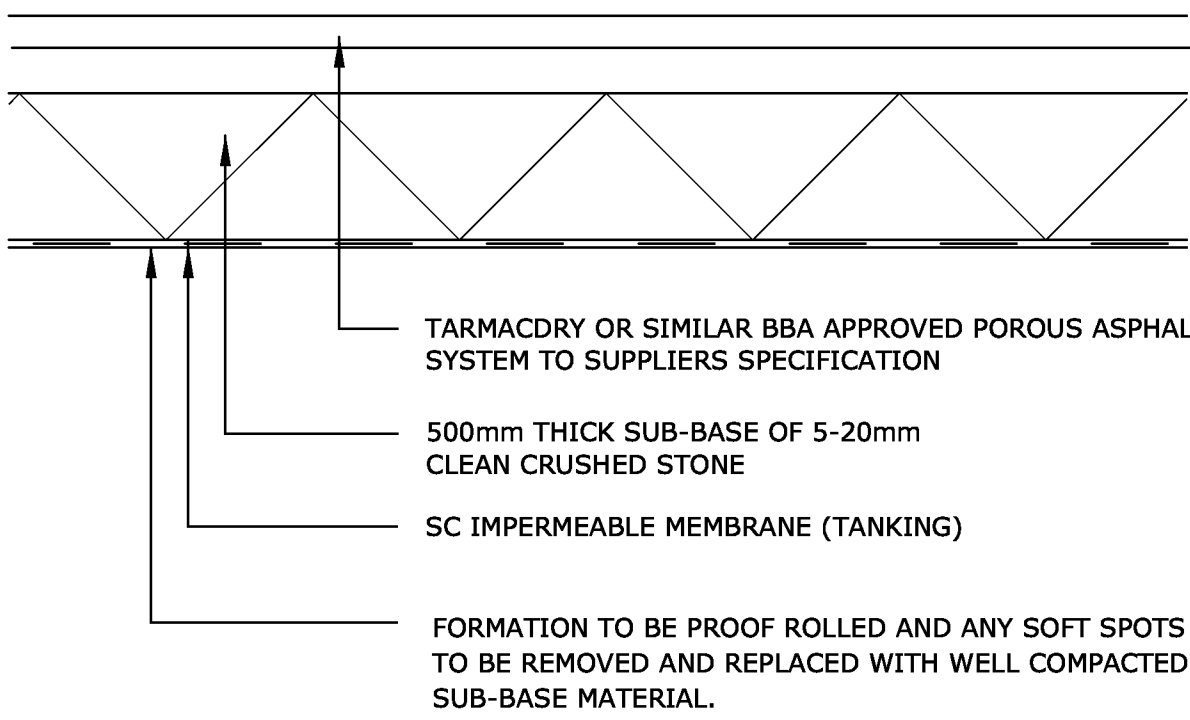
**TYPICAL SECTION THROUGH BLOCK PAVED
CARRIAGEWAY CONSTRUCTION**



**BITUMINOUS PARKING AREA CONSTRUCTION
(ONLY ACCESSIBLE BY OCCASIONAL STRAY HGV'S)**



**TYPICAL SECTION THROUGH BLOCK PAVED
PARKING AREA CONSTRUCTION
(ONLY ACCESSIBLE BY OCCASIONAL STRAY HGV'S)**



POROUS BLACKTOP CAR PARK CONSTRUCTION

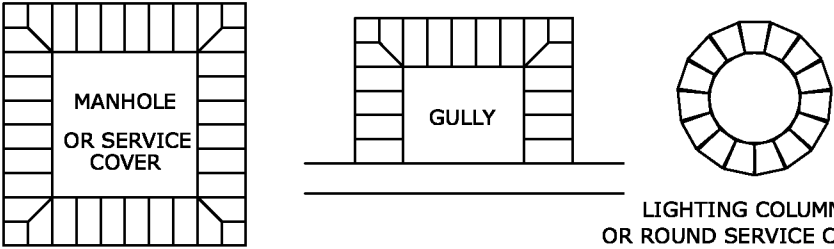
DETAILS SHOWN ARE FOR GUIDANCE. REFER TO SYSTEM MANUFACTURER FOR FULL SPECIFICATION AND LAYING REQUIREMENTS. THE POROUS PAVEMENT MUST BE PROTECTED FROM SILT, SAND AND OTHER FINE MATERIALS DURING CONSTRUCTION.

(NOT FOR USE IN AREAS SUBJECT TO
REGULAR USE BY COMMERCIAL VEHICLES)

CONSTRUCTION MAKEUPS ARE BASED ON
A CBR VALUE OF 2% AND ARE SUBJECT
TO CONFIRMATION FOLLOWING ON SITE
TESTING BY THE CONTRACTOR.

NOTE: THE FORMATION OF ALL EXTERNAL PAVING TO BE PROOF ROLLED AND ANY SOFT SPOTS AND MAKE GROUND TO BE REMOVED AND REPLACED WITH WELL COMPACTED TYPE 1 GRANULAR SUB-BASE MATERIAL. (REFER TO ENGINEER FOR ALTERNATIVE SOLUTION IF LARGE AREAS ARE ENCOUNTERED). CLAY/SILT SUB-GRADE BENEATH AREAS TO BE SUBJECTED TO VEHICULAR TRAFFIC SHALL BE COVERED WITH TERRAM 1000 OR SIMILAR GEOTEXTILE

BLOCKWORK NOTE
TREATMENT AND JOINTING MATERIALS TO BE USED AROUND MANHOLE COVERS AND ROAD GULLIES SHALL BE AGREED ON SITE WITH THE ARCHITECT.
(IDEALLY A SINGLE COURSE OF SOLDIER BLOCKS IS REQUIRED AROUND MANHOLE COVERS AND ROAD GULLIES. WEBS SHALL NOT BE CUT OFF. MANHOLE COVERS MAY ALSO REQUIRE SETTING WITH OR AT 90° TO THE RUN OF BLOCKWORK.)



NOTES

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5. CONCRETE MIX DESIGNATIONS SHOWN ON THIS DRAWING ARE TO BS 8500.
6. ALL EXTERNAL MATERIALS AND HARD LANDSCAPING FURNITURE TO BE INSTALLED IN ACCORDANCE WITH THE RELEVANT BRITISH STANDARD AND THE MANUFACTURERS RECOMMENDATIONS.

**CONSTRUCTION (DESIGN AND
MANAGEMENT) REGULATIONS 2007**

**DESIGNERS HAZARD INFORMATION FOR
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THE ABOVE NOTES REFER SPECIFICALLY TO THE INFORMATION SHOWN ON THIS DRAWING.
REFER TO THE HEALTH AND SAFETY PLAN FOR FURTHER INFORMATION.

Issue	Date	Description	Made	Checked
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Drawing Status:

APPROVAL

MLM

Multidisciplinary Consulting

190 Eureka Park, Upper Pemberton, Ashford, Kent TN25 4AZ
Tel: 01233 610530 Fax: 01233 618299
Website: www.mlm.uk.com

Client

GROUP 1 AUTOMOTIVE

Project

CHANDLERS BMW WORTHING

Drawing Title

**EXTERNAL WORKS
CONSTRUCTION DETAILS
SHEET 1 OF 2**

Drawn/Design kwl Checked ... Approved ... Date July 2014

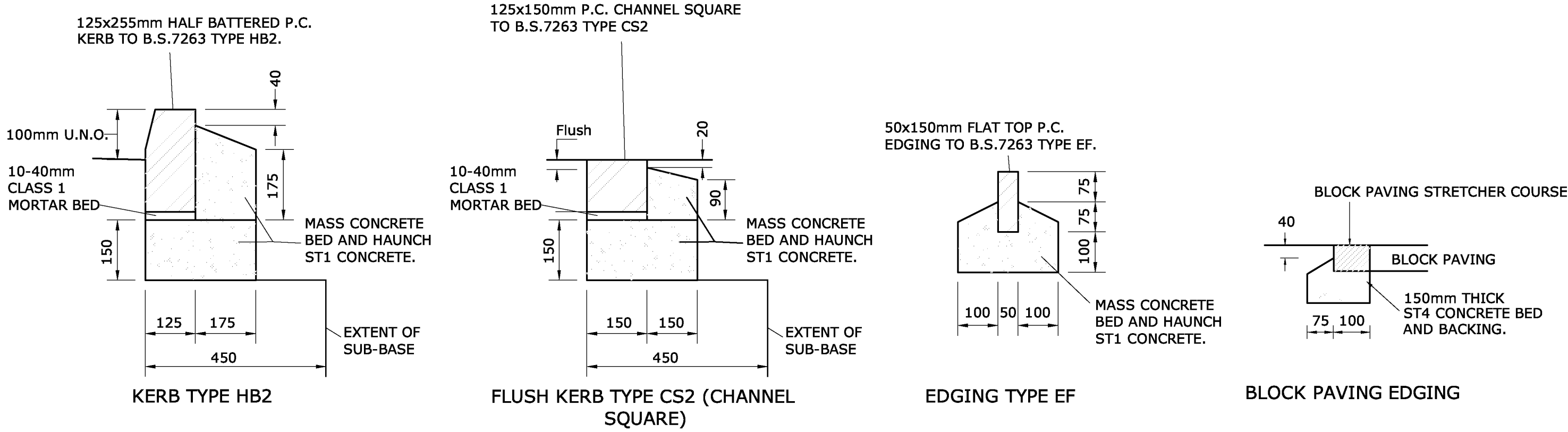
Scales N.T.S. @ A1 N.T.S. @ A3 Drawing No. 615823/009 Rev

CONSTRUCTION MAKEUPS ARE BASED ON A CBR VALUE OF 2% AND ARE SUBJECT TO CONFIRMATION FOLLOWING ON SITE TESTING BY THE CONTRACTOR.

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CONCRETE TO BE CURED BY APPLICATION OF A RESIN CURING COMPOUND SPRAYED ON TO SLABS AS SOON AS EXCESS MOISTURE HAS EVAPORATED.

SURFACE TO BE TEXTURED BY DRAWING A STIFF BRISTLE BROOM ACROSS THE SURFACE BEFORE THE CONCRETE HARDENS (WHILE IT IS 'GREEN') TO GIVE A LIGHT SKID-RESISTANT TEXTURE. EDGES OF SLABS TO BE VERY LIGHTLY TROWELLED WITH A ROUNDED ARRISING TOOL.

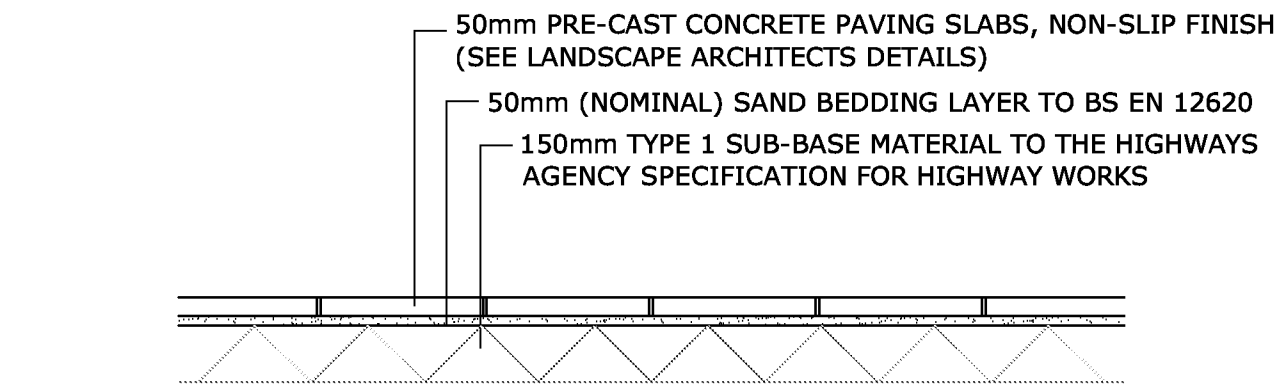
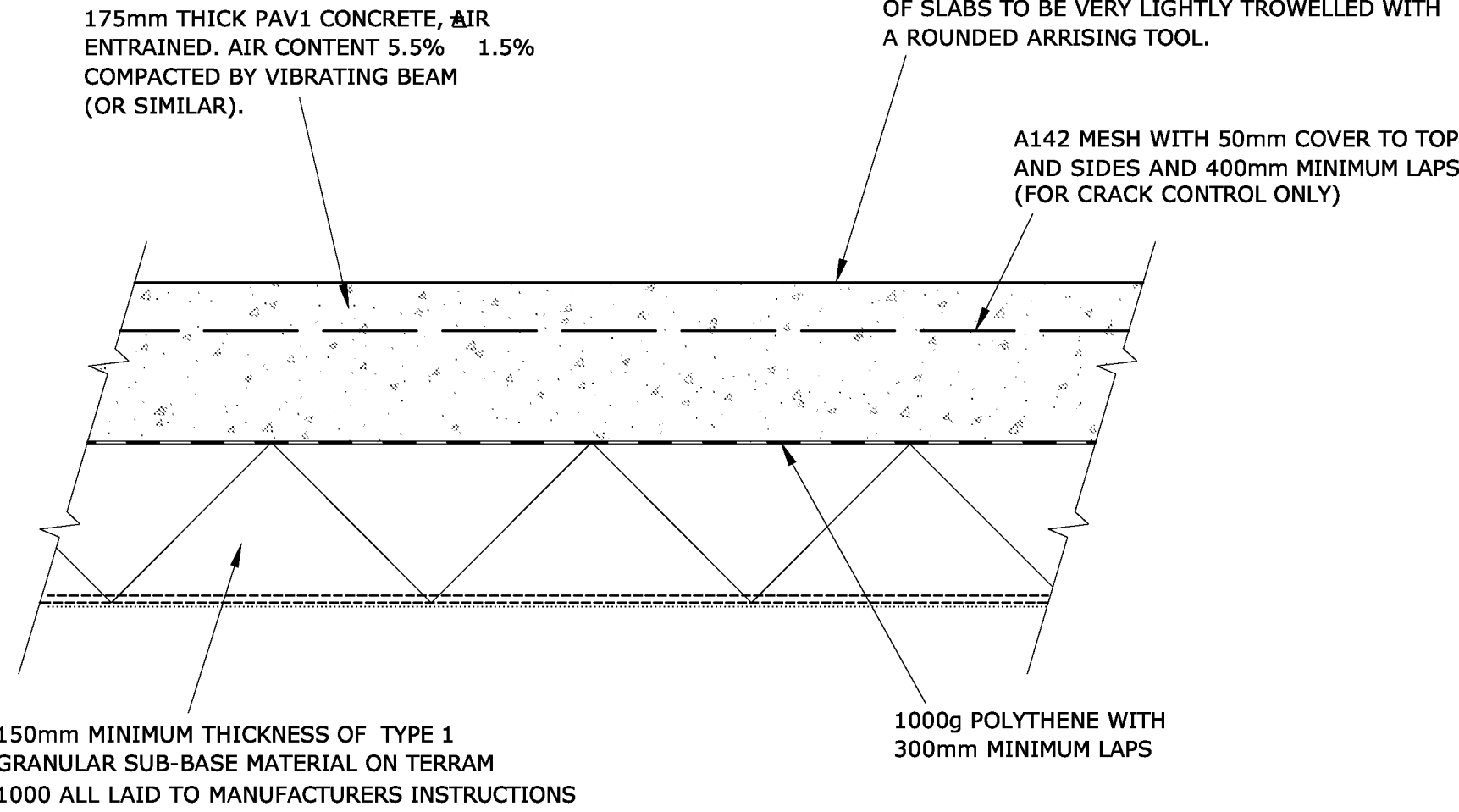


NOTE: FULL HEIGHT KERBING ONLY TO BE USED WHERE SHOWN ON THE PLANS AS A WATER CHECK

NOTE: JUNCTION BETWEEN KERBING TYPES TO BE MADE USING PURPOSE MADE TRANSITION KERBS TO BS 7263

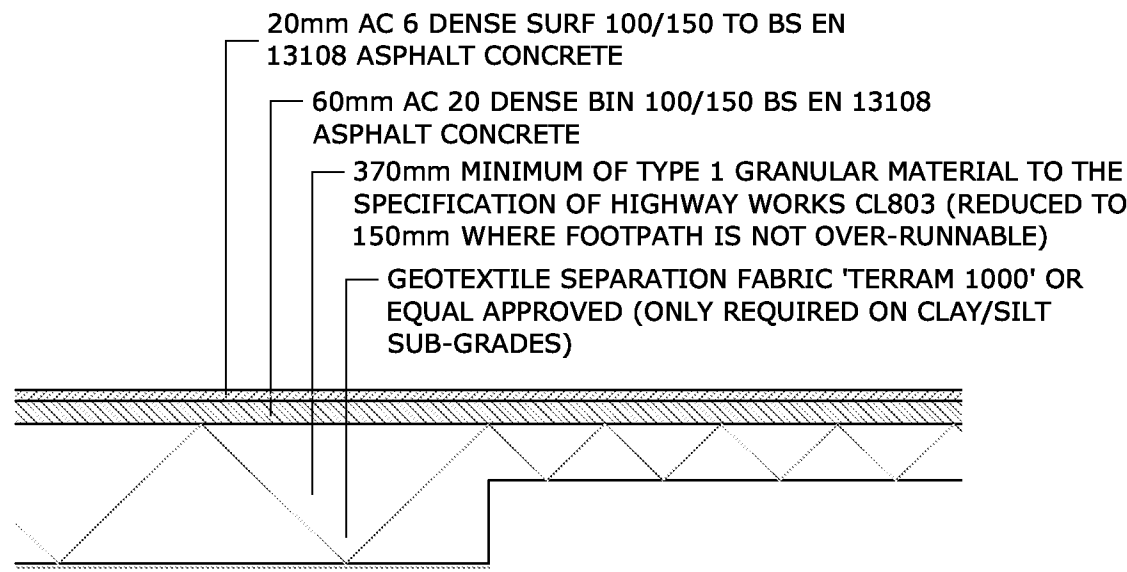
KERB DETAILS

TYPICAL SECTION THROUGH CONCRETE SLABWORK

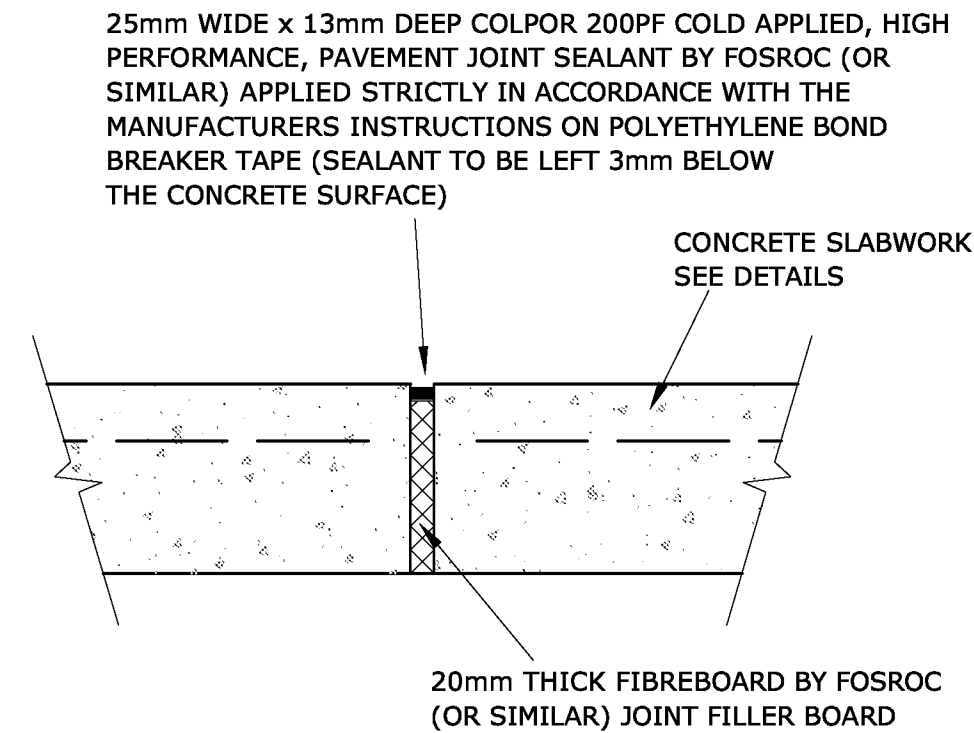


TYPICAL PRE-CAST CONCRETE FLAG PAVING CONSTRUCTION (FOOT TRAFFIC ONLY)

ANY PAVING CUT TO EXCEPT DRAINAGE COVERS SHALL BE MADE GOOD WITH COLOURED CONCRETE TO MATCH PAVING SLABS.



BITUMINOUS FOOTPATH CONSTRUCTION



CONCRETE SLABWORK CONSTRUCTION JOINT

NOTES

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Issue	Date	Description	Made	Checked
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Drawing Status: APPROVAL

MLM

Multidisciplinary Consulting

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Tel: 01233 610530 Fax: 01233 618299
Website: www.mlm.uk.com

Client

GROUP 1 AUTOMOTIVE

Project

CHANDLERS BMW WORTHING

Drawing Title

EXTERNAL WORKS
CONSTRUCTION DETAILS
SHEET 2 OF 2

Drawn/Design	Checked	Approved	Date
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Scales	Drawing No.	Rev
N.T.S. @ A1 N.T.S. @ A3	615823/010	

NOTE: THESE DETAILS ARE FOR USE IN PRIVATE AREAS ONLY

REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR ALL OTHER EXTERNAL WORKS DETAILS

PRIVATE DRAINAGE NOTES

1. All private drainage works shall be in accordance with 'The Building Regulations Approved Document H' and British Standard EN 752.

2. Prior to commencement of the works the Contractor shall liaise with all relevant authorities to obtain their requirements and to obtain approval for his method of working and where appropriate his intended choice of materials.

3. Refer to site survey for details of existing site conditions and bench marks.

4. Prior to commencement of the works the Contractor shall liaise with all relevant authorities to locate, protect and where necessary divert all existing services affected by the works.

5. All excavations shall be kept free of standing water.

6. The Contractor shall ensure the stability of all excavations is maintained at all times.

7. NOT USED

8. NOT USED

9. Any works within 9m of a watercourse shall be to the approval of the Environment Agency. Contractor to obtain the necessary Flood Defence Consent.

10. Prior to commencement of the works all drainage outfall points, whether existing sewer, drain or watercourse, shall be verified on site by the Contractor. If the outfall point is found to be higher or significantly lower than shown on the drawings then the Contract Administrator shall be notified immediately. (Significant redesign of drainage and levels may be necessary). Prior to commencement of construction on-site the Contractor shall install all off-site drainage connections, or satisfy himself that there are no obstructions or other reasons why, the drain connections can not be made.

11. All private chambers in block paved / paving slab areas to have recessed covers. All covers, whether recessed or not, are to be placed entirely within paved or landscaped areas.

12. All cover levels shown on this drawing are approximate. Exact levels of new covers and frames to be determined on site to match level and profile of finished surface.

13. The construction of all existing chambers, gullies etc. and their covers, gratings and frames to be improved, repaired or replaced as necessary to suit their location within the finished development.

14. All covers, gratings and frames to chambers, gullies, channels etc. shall be of the correct load class to suit their location.

Load Class A15 Pedestrian areas (not accessible by vehicles)

Load Class D125 Private drives

Load Class C250 Lightly-trafficked roads

Load Class D400 Trafficked Roads.

Gratings in pedestrian areas to be designed for pedestrian use.

15. All existing chambers, gullies channels, pipes and other drainage apparatus shall be protected from damage during the works. The Contractor shall take all necessary measures to ensure that no material enters the drains (other than that which they are designed to carry).

16. Refer to Site Investigation Report for existing ground conditions and any special requirements for buried concrete (special requirements for buried concrete shall include all pre-cast and in-situ concrete and mortars). Where appropriate refer to contamination reports for details of chemicals affecting choice of materials and other additional requirements.

17. All pre-cast and in-situ concrete and mortars used in the construction of foul drains and sewers shall be made from sulphate resisting cement.

18. Unless noted otherwise all pipework shall be 100mm diameter laid to a fall of 1 in 80 or steeper for surface water and 1 in 40 or steeper for foul water. Foul drains with one or more W.C. connected may be laid at 1 in 80 or steeper. Where appropriate road gully connections shall be 150mm dia at 1 in 150 or steeper.

19. Unless noted otherwise all pipework shall be constructed from 'super strength' vitrified clay to BS 65, BS EN 285 or uPVC to BS EN 1201 bedded and backfilled as per the manufacturers recommendations and the above listed publications.

20. The Contractors attention is drawn to Diagrams 7 and 8 of 'The Building Regulations Approved Document H' showing details of drains laid below and near to buildings. Where ground beams are used, their level shall be set to avoid clashing with drain connections.

21. Exact location of gullies to be determined on site to suit low points. The Contractor shall ensure that all finished surfaces are laid to falls that are sufficient for all surface water to drain without surface ponding.

22. For the exact location of soil pipes, stubstacks, W.C.'s and other drainage connections refer to the large scale architectural building plans.

23. Rainwater downpipes that do not connect directly to an access point, shall be fitted with a rodding access.

24. All drainage channels to be by ACO or Gatic as shown and to be of a type size and capacity suitable for their location.

25. Access fittings, inspection chambers and manholes shall be constructed to the dimensions shown in Tables 11 and 12 of 'The Building Regulations Approved Document H' and from the materials listed in Table 14. Access points, inspection chambers and manholes shall be constructed from products designed/rated for the location in which they are to be used. They shall be installed in accordance with the manufacturers/suppliers recommendations.

26. NOT USED.

27. Unless noted otherwise all drains and sewers to connect with soffits level. Chamber Invert levels shown on this drawing are to outgoing pipe.

28. NOT USED.

29. Unless noted otherwise invert levels shown at catchpits (silt traps) are the invert level of the outgoing pipework, as with other chambers, unless noted otherwise, all pipes shall be laid with soffits level.

30. All Aquacell storage crates (or similar) shall be installed strictly in accordance with the manufacturers instructions (including vent), crates to be suitable for use in areas subject to vehicular loading.

31. All catchpits are to be regularly cleaned out during the construction period (especially after heavy rainfall) to ensure no silt passes the traps to be deposited in the aquacell storage/attenuation/soakaway tanks. Before final hand over of the site, inlet to the aquacell tanks is to be plugged, all sw pipework is to be jetted, catchpits cleaned, then plug to be removed and aquacell tanks inspected to ensure no silt has been deposited in them.

PRIVATE DRAINAGE LEGEND

Pipework other than that covered by the notes shall be identified thus:-

1500 1/125
Shows approximate gradient eg. 1 in 125
Shows internal diameter of pipe in mm
At manholes and inspection chambers:
CL = Cover Level
IL = Invert Level (of outgoing pipe)
BD = Backdrop, UIL = Upper Invert Level

FOUL WATER:-	SURFACE WATER:-
Private manhole	Private manhole
Inspection chamber 450Ø (1.2m max depth)	Inspection chamber 450Ø (1.2m max depth)
Access fitting 225Ø (0.6m max depth)	Access fitting 225Ø (0.6m max depth)
Foul connection svp=soil vent pipe avv=air admittance valve big=back inlet gully fs=floor socket wc=W.C. fg=floor gully ss=stub stack	Rodding eye Rainwater downpipe Yard gully (trapped and roddable) Road Gully (trapped and roddable) Drainage Channel
	Private Catchpit

NOTE: PRIOR TO COMMENCEMENT TO THE WORKS THE CONTRACTOR SHALL ACCURATELY ESTABLISH THE LINE AND LEVEL OF ALL EXISTING SERVICES AND ENSURE HIMSELF THAT ALL DRAINAGE CAN BE INSTALLED AS SHOWN ON THE DRAWINGS. ANY CLASHING SHALL BE REPORTED TO THE ENGINEER FOR REDESIGN

NOTES

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This drawing is based on the following information:

Topographical Survey:
Offington Land Surveys
Drawing 12400913_6 dated 20.05.2014

Architects Layout:
Taylor Design
Drawing 5431-SL00 received 14.08.2014

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2. EXISTING SERVICES ON SITE. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE COMPANIES AND ARRANGE FOR ALL SERVICES TO BE LOCATED, MARKED AND PROTECTED.

3. DRAINAGE AND HIGHWAY WORKS INVOLVE DEEP EXCAVATION, HOT MATERIALS AND/OR HEAVY PLANT/MATERIALS.

4. THE CONTRACTOR SHALL READ AND UNDERSTAND THE SOILS REPORT. BE AWARE OF POTENTIAL VARIATIONS IN SOIL CONDITIONS OVER THE SITE.

THE ABOVE NOTES REFER SPECIFICALLY TO THE INFORMATION SHOWN ON THIS DRAWING.

REFER TO THE HEALTH AND SAFETY PLAN FOR FURTHER INFORMATION.

B	26.08.2014	FURTHER DETAIL ADDED. DRAWING STATUS AMENDED TO TENDER ISSUE.	TC	TC
A	02.08.2014	FURTHER DETAIL ADDED	kwf	-
Issue	Date	Description	Made	Checked

Drawing Status:

TENDER

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Client

GROUP 1 AUTOMOTIVE

Project

CHANDLERS BMW WORTHING

Drawing Title

DRAINAGE AND FINISHED LEVELS LAYOUT SHEET 3 OF 4

Drawn/Design	Checked	Approved	Date	July 2014
kwf/kwf	...	...		
Scales	Drawing No.			Rev
1:200 @ A1 1:400 @ A3	615823/004			B