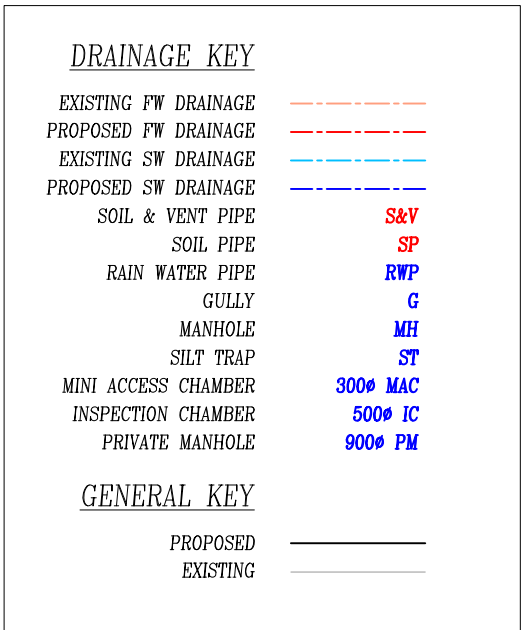
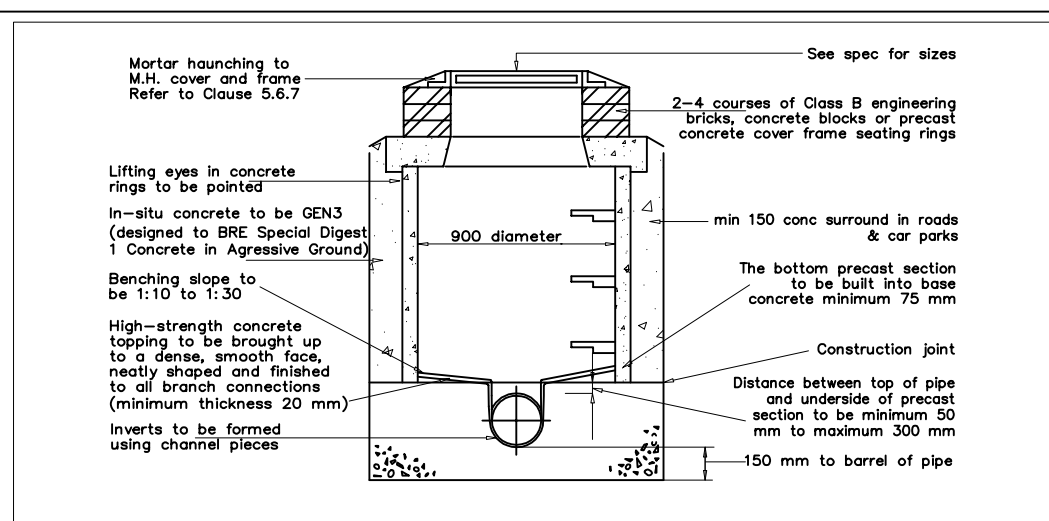




450Ø INSPECTION CHAMBER TYPICAL DETAIL - NOT TO SCALE

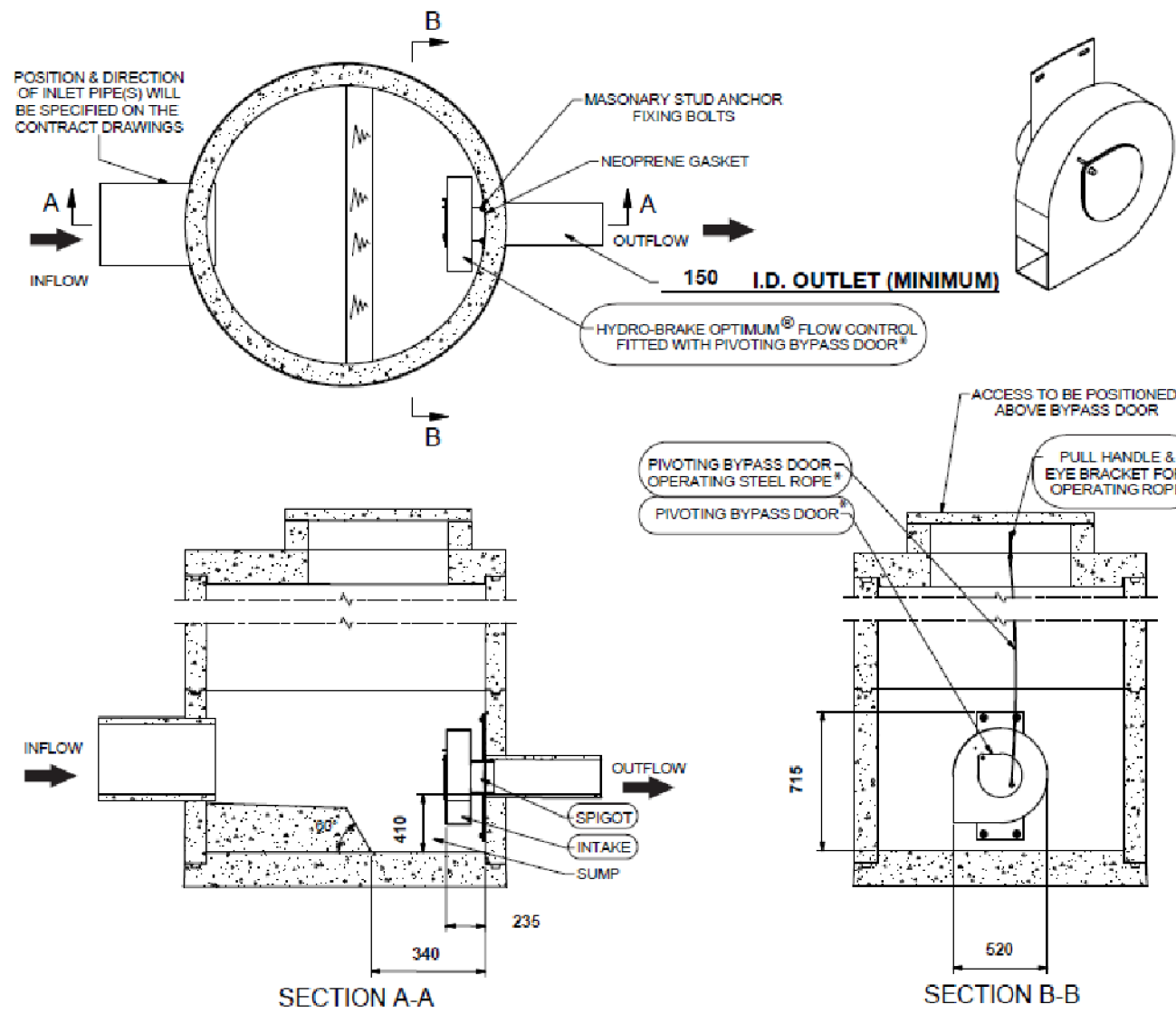
DRAINAGE PLAN 1:200



900Ø PRIVATE MH TYPICAL DETAIL - NOT TO SCALE

Control Point	Head (m)	Flow (l/s)
Primary Design	1.075	4.999
Flush-Flo™	0.318	4.990
Kick-Flo®	0.678	4.040
Mean Flow		4.352

Hydro-Brake Optimum® Flow Control including:



IMPORTANT:

THE DEVICE WILL BE HANDED TO SITE CONDITIONS.
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL.
ALL CIVIL AND INSTALLATION WORK BY OTHERS.
* WHERE SUPPLIED
HYDRO BRAKE® FLOW CONTROL & HYDRO BRAKE OPTIMUM® FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW
CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL.

The headflow characteristics of this SHE-0104-5000-1075-5000 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydro evaluates the full headflow characteristic curve. The use of any other flow control will invalidate any design and could constitute a flood risk.

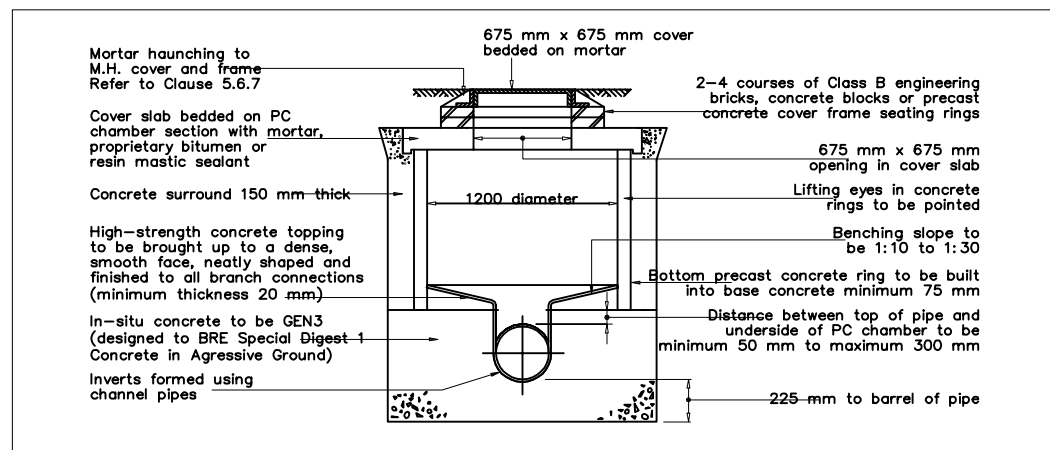
DATE	03/12/2018 14:53:32
SITE	120 Laund Rd, Hudson
DESIGNER	Daniel Slattery
REF	Site SW Control MH



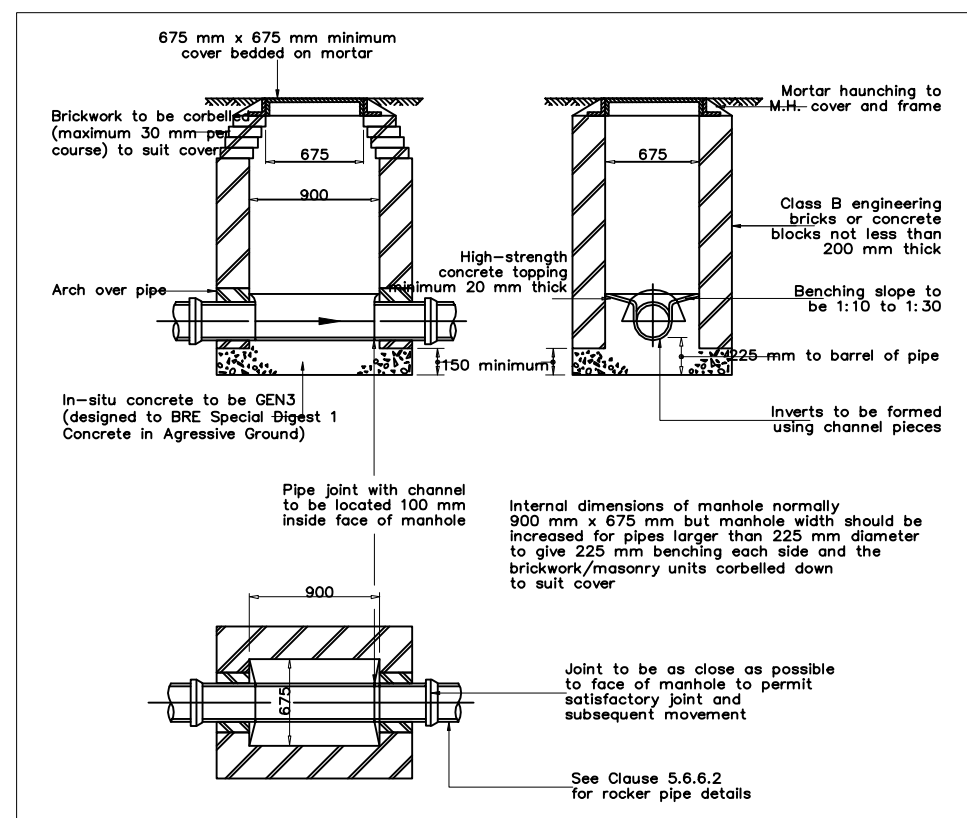
SHE-0104-5000-1075-5000

Hydro-Brake Optimum®

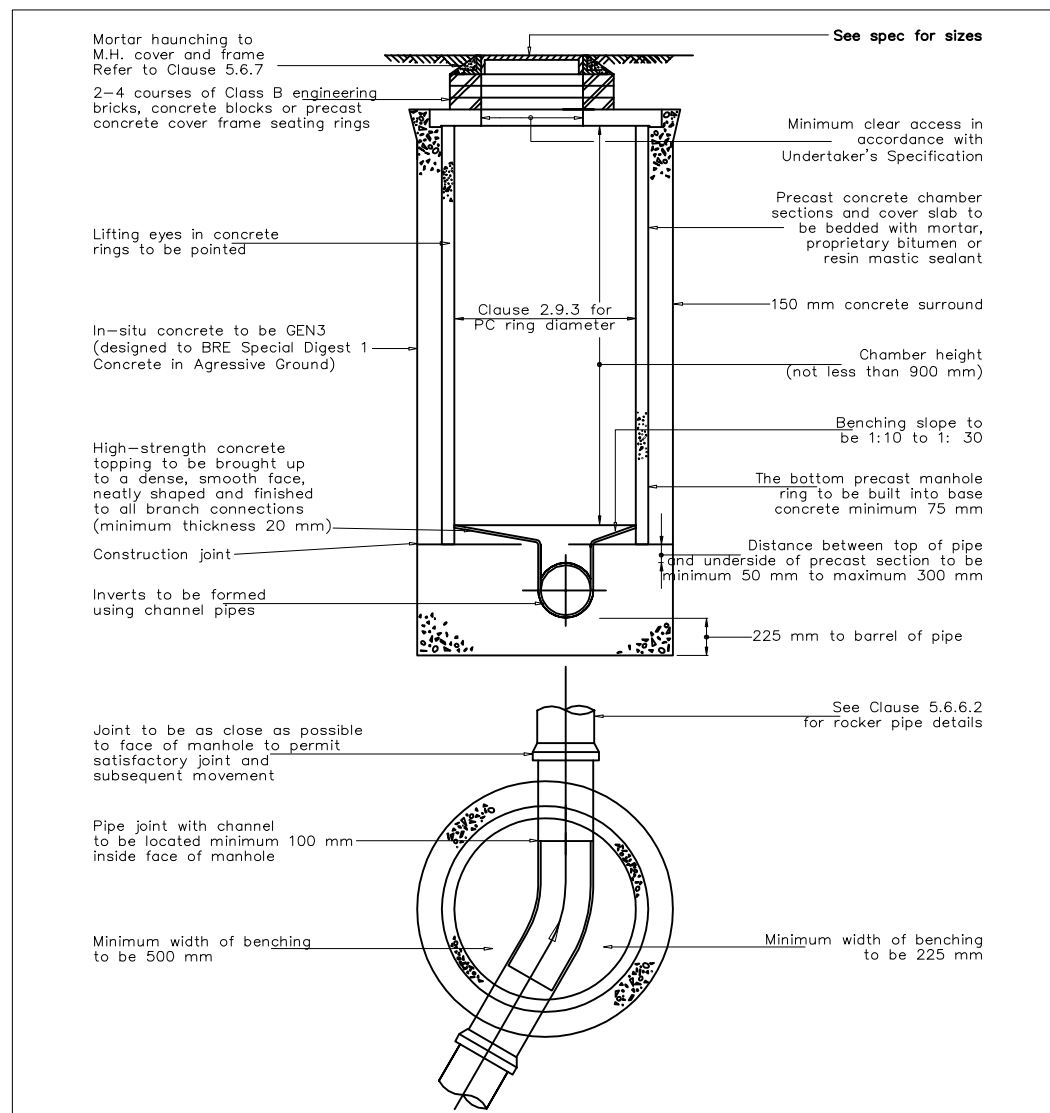
HYDRO-BRAKE OPTIMUM TYPICAL MH DETAIL - NOT TO SCALE



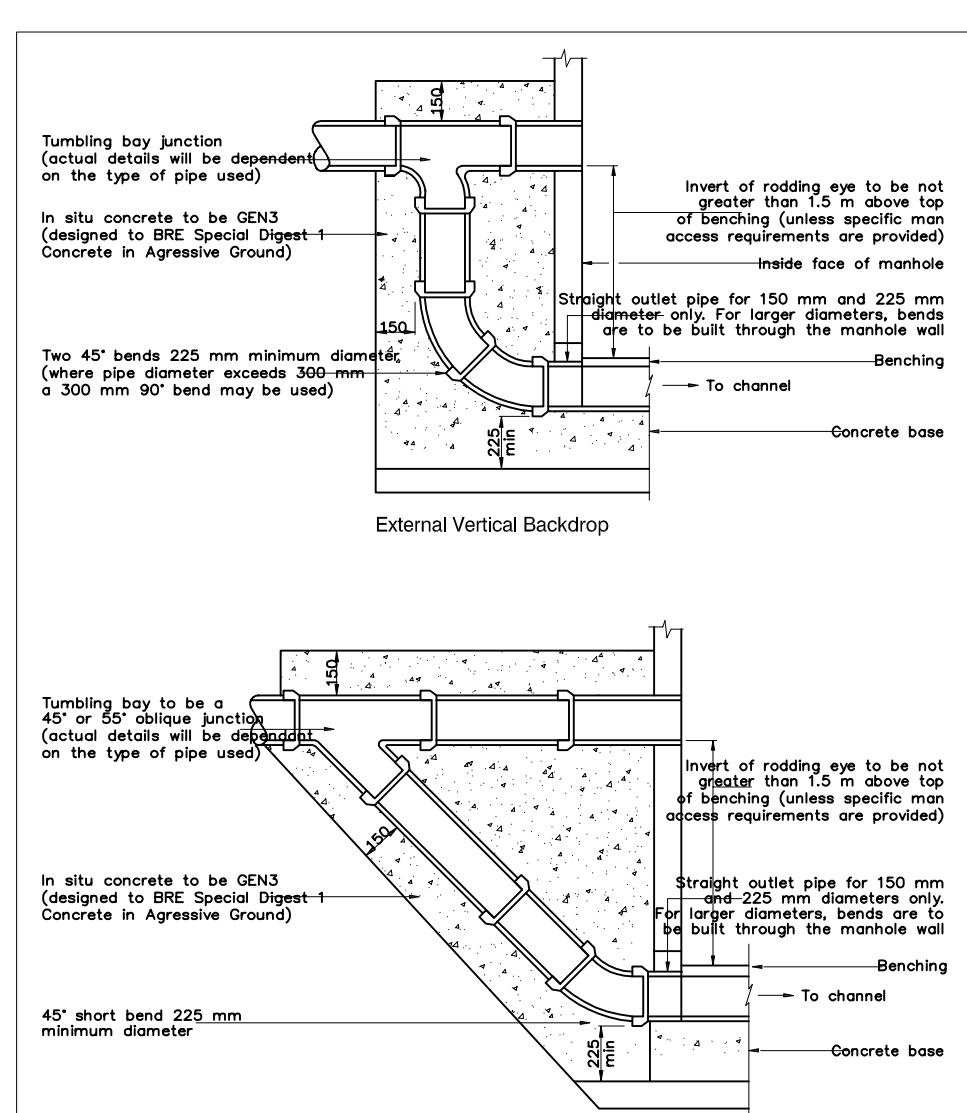
TYPE E MH TYPICAL DETAIL - NOT TO SCALE



TYPE D MH TYPICAL DETAIL - NOT TO SCALE



TYPE B MH TYPICAL DETAIL - NOT TO SCALE



BACKDROP TYPICAL DETAIL - NOT TO SCALE

GENERAL NOTES

THIS DRAWING IS COPYRIGHT & IS SENT TO YOU IN CONFIDENCE IT MUST NOT BE COPIED, USED OR DISCLOSED, IN WHOLE OR IN PART, TO THIRD PARTIES WITHOUT WRITTEN PERMISSION IT REMAINS THE PROPERTY OF TJBA AND MUST BE RETURNED ON REQUEST.

0.1 THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACTUAL DOCUMENTS.

0.2 All dims in mm unless o/w stated.

0.3 All levels in m aOD unless o/w stated.

0.4 Refer to architects details for SBM.

0.5 Contractor to confirm SOP/SOL's prior to ordering material/ construction.

0.6 Do not scale, the contractor must verify all dims prior to commencing shop drawings or work on site.

0.7 All work to be carried out in accordance with CDM 2015.

1.0 HIGHWAYS

1.1 N/A.

2.0 DRAINAGE

2.1 To be read in conjunction with T J Booth Associates drainage calculations ref: ref-tjba-CDEVS-120 (aund rd, hudds-detailed drainage design-rev2).

2.2 Manhole cover levels indicative only, to be adjusted to suit final finish site levels.

2.3 Sewers/manholes to be constructed in accordance with the water authorities sewers for adoption (edition as applicable), B. Regs. Approved Doc. H, and BS EN 752-4.

2.4 Class B granular bed and surround to all new sewers.

2.5 Any sewers or drains with less than 12m of cover under adoptable highways (either during or after construction); Or with less than 900mm of cover under private access/driveways; to be protected with min 150mm thick, conc surround unless otherwise specified. Pipes should be suitable for the depth they are to be laid. If in doubt contact manufacturer or supplier for specifications.

2.6 All conc including pipes and manholes to be sulphate resisting unless otherwise agreed in writing by eng.

3.0 FOUL WATER DRAINAGE

3.1 Foul water system laid as indicated and in line with the following: 100Ø at gradients not less than 1:80 where at least 1 WC is connected and not less than 1:40 where no WC is connected. 150Ø foul drain gradients to be not less than 1:50 with at least 5 WCs connected. Guidance in line with current b.regs and SFA 6.

3.2 Foul system to connect in to existing YW sewer network via existing FW manhole to NW side of site as indicated on plan. All disused existing drainage runs & manholes to be grubbed out.

4.0 SURFACE WATER DRAINAGE

4.1 SW drainage to attenuate up to 100lyr + 30% storm event by use of attenuation crates to access road.

4.2 Attenuation crates designed as Alderburgh Heavy Duty Pluvial Cubes for use beneath vehicular areas. Minimum depth of cover 450mm. Refer to manufacturers details for construction and sequence of works etc.

4.3 Control MH to comprise Hydro-brake Optimum vortex flow control device, capable of ngf 5l/s at 1.1m head; Unit No. SHE -0104-5000-1075-5000.

5.0 ATTENUATION MAINTENANCE

5.1 Maintenance to be undertaken by Site maintenance agreement as necessary. Should maintenance responsibility become part of a Site maintenance agreement, a copy of this plan should be included in the deed pack.

5.2 Construction Stage: Attenuation tank and manhole to be isolated from flows during the construction phase of the development. Attenuation should only be brought in to use after the drainage system has been flushed.

5.3 Habitation Phase: Sediment to be removed from pre treatment sump in control manhole annually. All attenuation inlets, outlets, and vents to be checked annually. Hydro-brake Optimum flow control unit & pivoting bypass door/steel rope control to be checked annually to ensure safe and continued working order in both normal and extreme rainfall events. Attenuation tank is offline so as to further aid in limiting siltation issues.

Inspection & maintenance MH included on upstream side of attenuation tank to aid in jetting if required.

5.0 MANHOLES

5.1 Manhole diameters to be in accordance with SFA clause 2.9.3, and according to largest manhole pipe diameter:

Pipe dia	MH dia
+375	1200;
375-700	1500;
750-900	1800.

5.2 Rocker pipes (clause 5.6.6.2) to be the following lengths:

150-600Ø 0.6m;

>600-700Ø 1.0m;

>750Ø 1.25m.

5.3 Inspection chambers/manholes to have min 150granular surround in soft landscaping areas and not less than 150 conc surround to driveways/car parks.

5.4 Manhole covers and frames shall comply with the relevant provisions of bs. en 124 and shall be of non-rocking design which does not rely on the use of cushion inserts.

5.5 Cover sizes and access in accord with SFA Table 2.3 & to be 600x600 in United Utilities & Yorkshire Water areas.

5.6 Cover strength (clause 5.7.1.1) comprising minimum strength for location as follows:

Road	D400 Vehicle Impact;
Footway/Driveway <td>B125 Occasional vehicle loading.</td>	B125 Occasional vehicle loading.
Gardens <td>A15 Pedestrian & cyclist ONLY.</td>	A15 Pedestrian & cyclist ONLY.

5.7 All manhole covers shall be the non-venting type (unless indicated otherwise) and shall have closed keyways.

5.8 Manhole frames (clause 5.6.7) to be set to level, bedded and haunched externally over the base and sides of the frame in mortar, in accordance with the manufacturers instructions. The frame shall be seated on not less than 2 courses of class B engineering brick, on precast concrete masonry units or on precast concrete cover frame seating rings to regulate the distance between the top of the cover and the top rung to no greater than 675mm. A mortar fillet shall be provided where the corners to an opening in a slab are chamfered and the brickwork is not flush with the edges of the opening.