

1) ALL PIPE RUNS TO BE LAID WITH FLEXIBLE JOINTS.

2) ALL PIPES ENTERING AND EXITING MANHOLES ARE TO BE CONNECTED WITH PIPE SOFFITS LEVEL UNLESS NOTED OTHERWISE.

3) BEDDING AND SURROUND TO BE AS FOLLOWS :-

| LOCATION                                | COVER TO SOFFIT | BEDDING                              |
|-----------------------------------------|-----------------|--------------------------------------|
| ROADS.                                  | >1.2m           | CLASS 'S' GRANULAR BED AND SURROUND  |
|                                         | <1.2m           | CLASS 'Z' CONCRETE SURROUND.         |
| NON-ADAPTABLE SEWERS BELOW CAR PARKING. | >0.9m           | CLASS 'S' GRANULAR BED AND SURROUND. |
|                                         | <0.9m           | CLASS 'Z' CONCRETE SURROUND.         |
| HARD AND SOFT LANDSCAPING.              | >0.6m           | CLASS 'S' GRANULAR BED AND SURROUND. |
|                                         | <0.6m           | CLASS 'Z' CONCRETE SURROUND.         |

| STANDARD MIX<br>REFERENCE.                                           | APPLICATIONS                                          |
|----------------------------------------------------------------------|-------------------------------------------------------|
| GEN 1 (10N/mm <sup>2</sup> )                                         | FILLINGS, BLINDINGS, SOFT<br>SPOTS AND DRAINAGE SUMPS |
| GEN 3 (20N/mm <sup>2</sup> )<br>SULPHATE CLASS<br>DS-2, ACEC CLASS 1 | ALL OTHER APPLICATIONS                                |

| PIPE DIAMETER | LENGTH OF ROCKER PIPE |
|---------------|-----------------------|
| 150mm-600mm   | 600mm                 |
| 675mm-750mm   | 1000mm                |
| 825mm & over  | 1250mm                |

MIN. 600 x 600 CLEAR OPENING COVER & FRAME BEDDED & HAUNCHED USING CLASS M1 MORTAR (SEE SCHEDULE FOR DUTY)

215mm THICK CLASS 'B' SOLID ENG. BRICKWORK LAID ENGLISH BOND IN CLASS M1 MORTAR MIN. 2 NO. COURSES MAX. 4 NO. COURSES

675 MAX.

GALV. M.S. STEP IRONS AT 250mm OR 300mm CENTRES THROUGHOUT

P.C.C. CHAMBER SECTIONS & COVER SLAB BEDDED WITH TOK STRIP.

MIN. 225mm GRADE ST4 MASS CONCRETE SURROUND

PIVOTING BY-PASS DOOR OPERATING STEEL ROPE

'HYDRO-BRAKE' FLOW CONTROL FITTED WITH PIVOTING BY-PASS DOOR

IN FLOW

25 THICK GRANULITHIC RENDER

OUTFLOW

SUMP

OUTLET SPIGOT

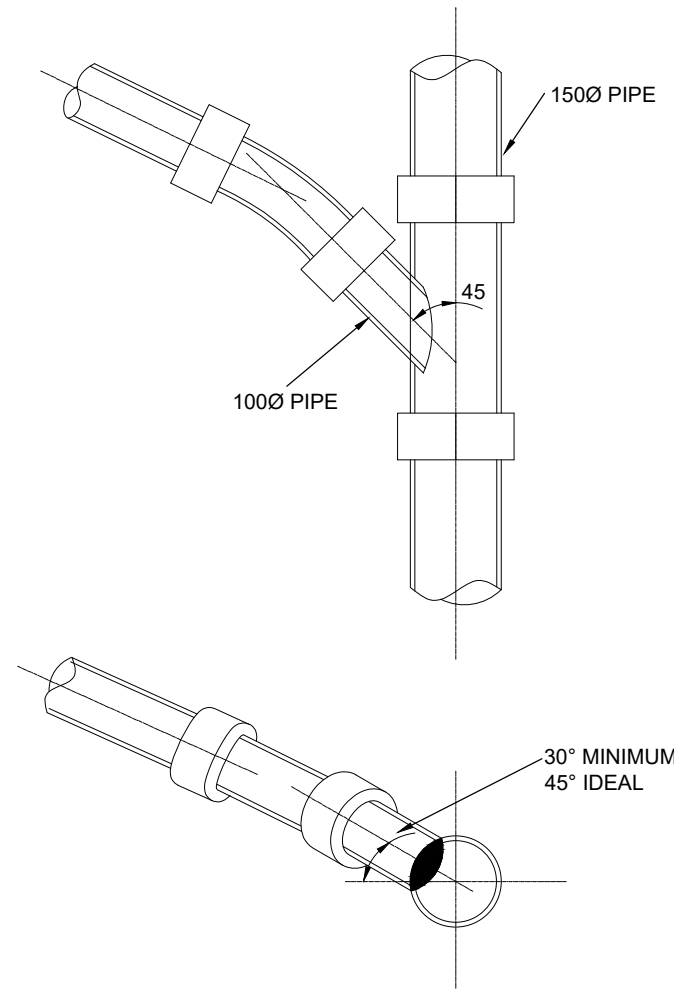
OUT FLOW

FOR MANHOLE DIAMETER, INVERT LEVELS AND PIPE SIZES REFER TO THE DRAINAGE LAYOUT AND MANHOLE SCHEDULE.

BOTTOM CHAMBER SECTION TO BE BUILT INTO MASS CONCRETE BASE 75mm MINIMUM

MIN. 225mm GRADE ST4 MASS CONCRETE BASE

**SECTIONAL ELEVATION A-A**



**MORTAR BEDDING AND HAUNCHING TO COVER AND FRAME TO CLAUSE E 6.7**

**MINIMUM 2 COURSES OF CLASS-B ENGINEERING BRICKS OR PRECAST CONCRETE COVER FRAME SEATING RINGS**

**675mm MAXIMUM TO FIRST STEP RUNG FROM COVER LEVEL**

**LIFTING EYES IN CONCRETE RINGS TO BE POINTED**

**IN-SITU CONCRETE TO BE GEN 3 (DESIGNED TO BRE SPECIAL DIGEST 1 CONCRETE IN AGGRESSIVE GROUND)**

**HIGH-STRENGTH CONCRETE TOPPING TO BE BROUGHT UP TO A DENSE, SMOOTH FACE, NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS (MINIMUM THICKNESS 20mm)**

**CONSTRUCTION JOINT**

**SELF-CLEANING TOE HOLES TO BE PROVIDED WHERE CHANNEL EXCEEDS 600mm WIDE**

**INVERTS TO BE FORMED USING CHANNEL PIPES**

**700mm**

**CLAUSE B3.2.13 FOR PC RING DIAMETER**

**150mm CONCRETE SURROUND**

**CHAMBER HEIGHT (NOT LESS THAN 900mm)**

**BENCHING SLOPE TO BE 1:10 TO 1:30**

**THE BOTTOM PRECAST MANHOLE RING TO BE BUILT INTO BASE CONCRETE MINIMUM 75mm**

**DISTANCE BETWEEN TOP OF PIPE AND UNDERSIDE OF PRECAST SECTION TO BE MINIMUM 50mm TO MAXIMUM 300mm**

**225mm TO UNDERSIDE OF CHANNEL**

**SEE FIGURE B.14 AND CLAUSE E6.8.2 FOR ROCKER PIPE DETAILS**

**JOINT TO BE AS CLOSE AS POSSIBLE TO FACE OF MANHOLE TO PERMIT SATISFACTORY JOINT AND SUBSEQUENT MOVEMENT**

**PIPE JOINT WITH CHANNEL TO BE LOCATED MINIMUM 100mm INSIDE FACE OF MANHOLE**

**DOUBLE STEP RUNGS IN ACCORDANCE WITH BS EN 13101 SEE CLAUSE E2.33 FOR DOUBLE STEP DETAILS**

**MINIMUM WIDTH OF BENCHING TO BE 225mm**

**600mm**

**MINIMUM FROM EDGE OF STEPPING**

Diagram illustrating the cross-section of a bio-retention system, showing the layers and components:

- OVERFLOW/CLEANING ACCESS PIPE: LEAF/DEBRIS TRAP TO PROTECT FROM SILTING/BLOCKAGE
- TWL 200mm ABOVE MULCH LAYER
- 50mm THICK MULCH LAYER
- OVERFLOW/CLEANING ACCESS PIPE: LEAF/DEBRIS TRAP TO PROTECT FROM SILTING/BLOCKAGE
- IMPERMEABLE GEOTEXTILE MEMBRANE TO PREVENT GROUNDWATER INGRESS
- 1100 PERFORATED PIPE
- 300mm THICK CLEAN SINGLE SIZE STONE 25mm TO GIVE A 30% VOID RATIO
- 400mm THICK ENGINEERED SOIL OR AMENDED SOIL (EG SOIL-COMPOST-SAND MIX) TO FORM 30% VOID RATIO
- PERMEABLE GEOTEXTILE MEMBRANE TO PREVENT FINES ENTERING THE STORAGE LAYER
- 150Ø OUTLET PIPE

Diagram illustrating the bedding detail for a 150mm diameter pipe under a floor slab, showing two types of bedding: Class Z (Concrete Bed and Surround) and Class S (Granular Bed and Surround).

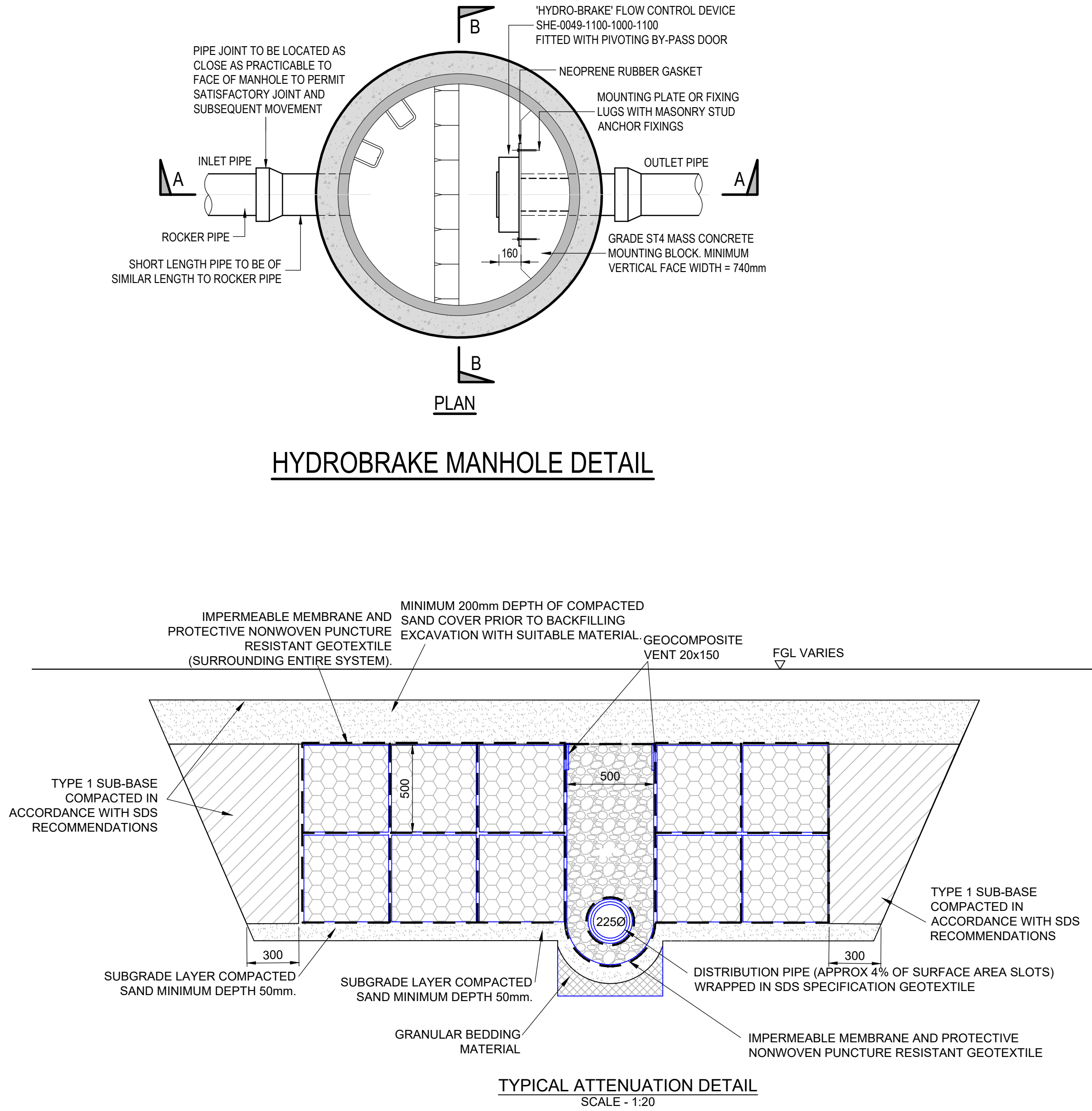
**Top View (Side Elevation):**

- PIPE:** 150mm diameter.
- CONCRETE BED AND SURROUND:** 300mm thick.
- GRANULAR BED AND SURROUND:** 150mm thick.
- FLOOR SLAB:** Shown above the bedding.
- BACKFILL TYPE 1 SUB-BASE:** Shown below the bedding.
- FLEXIBLE JOINTS:** Indicated at the ends of the pipe.

**Bottom View (Cross-sections):**

- Left Detail (Class Z):** Concrete Bed and Surround. The concrete bed and surround extend to the underside of the structural slab. The depth is specified as "NOT TO EXCEED 300MM."
- Right Detail (Class S):** Granular Bed and Surround. The granular bed and surround extend to the underside of the structural slab. The depth is specified as "NOT LESS THAN 300MM."

SECTION B-B



|      |                                                               |    |     |            |
|------|---------------------------------------------------------------|----|-----|------------|
| P03  | REMOVED INSPECTION CHAMBER FROM BIORETENTION TYPICAL SECTION. | JD | BW  | 08/11/17   |
| P02  | REVISIONS AS PER ATKINSREALIS COMMENTS.                       | PY | BW  | 09/09/2017 |
| P01  | STAGE 3 ISSUE.                                                | PY | BW  | 05/09/2017 |
| Rev. | Description                                                   | By | Chk |            |



## YSGOL RHYD Y GRUG

# DRAINAGE CONSTRUCTION DETAILS (SHEET 1 OF 2)

CC2594 CAM 77 XX DR C 110

| Project | Originator | Vol. | Level | Type | Role | Number |
|---------|------------|------|-------|------|------|--------|
|---------|------------|------|-------|------|------|--------|

|         |            |      |
|---------|------------|------|
| Status: | Scale @A1: | Rev: |
|---------|------------|------|

|                |     |    |
|----------------|-----|----|
| SS PRELIMINARY | N/A | P0 |
|----------------|-----|----|

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