

NOTES:

- Do not scale from this drawing. This drawing shall be read in conjunction with all other relevant Architect's and Engineer's drawings.
- Any discrepancies, ambiguities, or anomalies in the information provided on this or any of the engineering drawings package must be reported prior to work proceeding.
- All accommodation work deemed necessary to facilitate a satisfactory link between the new works and the existing to be undertaken by the developer.
- It is the contractor's responsibility to locate all existing services and verify their level & location prior to commencing any works. Should they be affected by the works then the respective statutory undertaker should be contacted and any special protection requirements agreed.
- All highway works shall be undertaken in accordance with the Local Highway Authorities Design Guide and Specification and strictly in accordance with the Specification for Highway Works. All drainage works shall be undertaken in accordance with the Design & Construction Guidance, and any other Regional Water company requirements. All works to be supervised/inspected as required by the relevant Inspector.
- All works must comply with current Health and Safety guidance & standards. All temporary signing to comply with Traffic Signs Manual - Chapter 8.
- All products are to be installed and maintained strictly in accordance with manufacturer's recommendations & guidelines.

**Sited in landscaped area**  
Covers to suit BS EN 124 loading  
Driveways and footways - Grade B125  
Plastic chambers and rings shall comply with BS EN 13598-1:2002 and BS EN 13598-2:2009 or have equivalent independent approval  
Joints between base and shaft components to be fitted with watertight seals  
Joints to be as close as possible to the face of the chamber to permit satisfactory joint and subsequent movement

**Sited in domestic driveways / paved areas**  
Covers to suit BS EN 124 loading  
Standard up to 1.20m deep  
450mm or 450mm x 450mm  
190mm or 225mm x 100mm  
DOT Type 1 (thickness varies) or concrete surround  
Rocker pipe, ref Table 2  
Granular bed and surround  
Base unit to have all connections with soffit levels set no lower than that of the main pipe  
Joints to be as close as possible to the face of the chamber to permit satisfactory joint and subsequent movement

**Sited in road, hard shoulders, agricultural or recreational land**  
If distance from cover level to soffit of pipe is > 1m access opening shall be restricted to 350 mm diameter or 300 mm x 300 mm  
Thermoplastics manholes and inspect chambers shall comply with BS EN 13598-1 and BS EN 13598-2  
Mortar bedding & haunching to cover and frame to clause E6.7  
Class B engineering brickwork or precast concrete cover frame seating rings  
Min 50mm gap between slab and chamber unit  
Flexible seal (seal needs to be watertight and provide a suitable specification for the details and material)  
Plastic chambers and rings shall comply with BS EN 13598-1 and BS EN 13598-2  
Joints between base and shaft and between shaft components to be fitted with watertight seals  
Joints to be as close as possible to the face of the chamber to permit satisfactory joint and subsequent movement  
Base unit to have all connections with soffit levels set no lower than that of the main pipe

**Section**  
Bends of up to max 45° angle can be used on any inlet  
Inlet adaptor and 100° coupling  
Main Flow  
Main Flow  
Main Flow  
Main Flow  
Where chambers are positioned on 90° corners always use the main channel by fitting a 45° bend on inlet and outlet  
Unused inlets are to be fitted with a water tight stopper  
Heaviest flow should always be directed through main channel

**Alternative Base Layouts**  
2250 Mini Chamber with 3No. 1000 inlets.  
4500 Chamber with 5 No. 1000 inlets.  
450 Ø Chamber with 3 No. 150 Ø inlets.  
4500 Chamber with 5 No. 1500 inlets.

**Private drainage Typical Inspection Chamber Detail (Flexible material detail)**  
Max. depth 1.20m non entry  
(Scale 1:25)

**Sectional Plan**  
No junction less than 90° from outgoing sewer  
Connection pipe  
Sewer  
Acceptable range  
0°  
Preformed swept channels  
Rocker pipe required for rigid pipes  
Sectional Plan

**Plan viewed in direction of arrow - A**  
Connections to sewer  
Plan section  
Flexible inlets / outlet and / or (max angle 45°) to facilitate connection  
Straight through base  
30° Base  
90° Base  
90° Cross Tee  
Alternative Base Layouts

**Typical Inspection Chamber Detail - Type 'D'**  
(Flexible material detail)  
Max. depth from cover level to soffit of pipe 3.0m

**Under verge or garden**  
Type 'B' backfill, selected as dug material  
Granular material as used for carriageway sub-base construction  
Granular bedding material (see table 3 for details) to be lightly compacted by hand for 300mm above pipe  
a = the greatest between 150mm and b/4  
c = the greatest between 200mm and b/4  
Under carriageway or footpath  
(Bedding class 'S')  
Carriageway or footpath construction  
Granular material as used for carriageway sub-base construction  
Concrete bridge (ST2), min. 175mm thk, with 1 No. layer of A193 mesh, to extend 300mm beyond trench  
Granular bed & surround material (see table 3 for details) to be well compacted by hand  
Method 1  
Method 2  
Under carriageway or footpath when cover to crown of pipe is 1200mm or less  
(Bedding class 'S')  
Carriageway or footpath construction  
Granular material as used for carriageway sub-base construction  
Concrete bed & surround (ST2), min. 150mm thk.

**Pipe Bedding Details (Sewers)**  
(NTS)

**Sited in road, hard shoulders, agricultural or recreational land**  
Mortar bedding and haunching to cover and frame to clause E6.7  
Class D400 cover complying with BS EN 124, BS 7903 and Clause E2.32, 600x600mm clear opening  
Thermoplastics manholes and inspect chambers shall comply with BS EN 13598-1 and BS EN 13598-2  
Mortar bedding & haunching to cover and frame to clause E6.7  
Class B engineering brickwork or precast concrete cover frame seating rings  
Temporary cap shaft during construction  
Precast concrete cover slab or in-situ concrete slab to support cover and frame  
Granular type 1 sub-base material to Clause E2.43 (thickness varies)  
Minimum 150mm thick granular type 1 sub-base material to Clause E2.43 or Gen3 in-situ concrete surround complying with E4.1 and BRE Special Digest 1 in accordance with the manufacturer's instruction  
Minimum internal dimensions 450mm Ø or 450mm x 450mm  
Rocker pipe, ref Table 2  
Granular bedding material  
Base unit to have all connections with soffit levels set no lower than that of the main pipe

**Vertical section**  
Mortar bedding and haunching to cover and frame to clause E6.7  
Class B125 cover complying with BS EN 124, BS 7903 and Clause E2.32  
150 mm deep concrete collar  
Temporary cap shaft during construction  
Flexible seal  
Compacted granular bed (type 20% or single size stone max 20mm)  
Minimum internal dimensions 450 mm diameter or 450 mm x 450 mm  
If distance from cover level to soffit of pipe is > 1m access opening shall be restricted to 350 mm diameter or 300 mm x 300 mm  
Mortar bedding and haunching to cover and frame to clause E6.7  
Class A15 cover complying with BS EN 124, BS 7903 and Clause E2.32  
Topsoil  
Temporary cap shaft during construction  
Flexible seal  
Granular bed or GEN3 complying with E4.1 and BRE Special Digest 1  
Minimum internal dimensions 450 mm diameter or 450 mm x 450 mm  
If distance from cover level to soffit of pipe is > 1m access opening shall be restricted to 350 mm diameter or 300 mm x 300 mm  
Mortar bedding and haunching to cover and frame to clause E6.7  
Class D400 cover complying with BS EN 124, BS 7903 and Clause E2.32, 600x600mm clear opening  
Heavy duty precast concrete cover slab with 600x600mm clear opening to comply with Clause E2.30  
Mortar bedding and haunching to cover and frame to clause E6.7  
Minimum 1 course of Class B engineering bricks or precast concrete cover frame seating rings  
675mm maximum to first step rung from cover level  
Minimum clear access 600mm  
Precast concrete chamber sections complying with BS EN 1917, BS 5911-3 and Clause E2.29 jointed with mortar, elastomeric or polymeric seals.  
GEN3 Concrete surround 150mm thick with sulphate resisting cement unless agreed otherwise  
Chamber height (not less than 900mm)  
Type D Class 1 steps complying with BS EN 13101 at 250mm vertical centres  
Galvanized mild steel and plastic encapsulated steps are preferred  
High-strength concrete topping complying with Clauses E4.3 and E5.5 to be brought up to a dense, smooth face, neatly shaped and finished to all branch connections (minimum thickness 20mm)  
The bottom precast manhole ring to be built into base concrete minimum 75mm  
Construction Joint  
Self-cleaning toe holes to be provided where channel exceeds 600mm wide  
Inverts to be formed using channel pipes  
Distance between top of pipe and underside of precast section to be minimum 50mm to maximum 300mm  
225mm to underside of channel

**Table 1 - Manhole diameter**

Nominal Internal Diameter of largest pipe in manhole (mm)	Minimum Nominal Internal dimension of manhole (mm)
Less than 375	1200
375 to 450	1350
500 to 700	1500
750 to 900	1800
Greater than 900	Pipe diameter + 900

Sizes shown are the minimum. Where 2 or more pipes enter a manhole, the manhole size should be sufficient to accommodate adequate banching.

**Table 2 - Rocker pipe length**

Nominal diameter of pipe (mm)	Maximum effective length (m)
150 to 600	0.6
601 to 750	1.0
Over 750	1.25

**Typical Manhole Detail - Type 'B'**  
Depth from cover level to soffit of pipe 1.5m to 3.0m

**Joints for concrete encased pipes**

**Pipe joint details**  
(Scale 1:25)

**Table 3 - Pipe bedding material details**

Nominal size of pipes (mm)	Maximum particle size (mm)	Imported granular materials
100	10	10mm Nominal single-size
Over 100 to 150	14	10 or 14mm Nominal single-size or 14mm to 5mm graded
Over 150 to 300	20	10, 14 or 20mm Nominal single-size or 14mm to 5mm graded or 20mm to 5mm graded
Over 300 to 550	20	14 or 20mm Nominal single-size or 14mm to 5mm graded or 20mm to 5mm graded
OVER 550	40	14, 20 or 40mm Nominal single-size or 14mm to 5mm graded or 20mm to 5mm graded or 40mm to 5mm graded

Note: At each flexible pipe joint a joint filler (e.g. fibreboard or polystyrene) shall be used (see table below), and shall extend through the full thickness of any concrete in contact with the pipe. The concrete bed shall be cut away at each joint to give a clearance of at least 50mm, so that the joint does not bear on the bed.

**Compressible filler and packing for pipelines**

Nominal diameter of pipe (mm)	Thickness of compressible filler (mm)
Less than 450	18
450 - 1200	36
Exceeding 1200	54

**PRELIMINARY**

Rev: Date: Description:

Client:

**W E Black Ltd.**

Project: Land at Blackmore Way, Uxbridge

Drawing Title: Drainage Construction Details (Sheet 1 of 2)

Haddenham Business Centre, Chiltern House, Thame Road, Haddenham, Bucks, HP17 8BY.

**BEAL** CONSULTING ENGINEERS

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Designed: F D Drawn: S R C Checked: ----

Scale: As shown @A1 Date: Aug 2024 Approved: ----

Revision: -

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