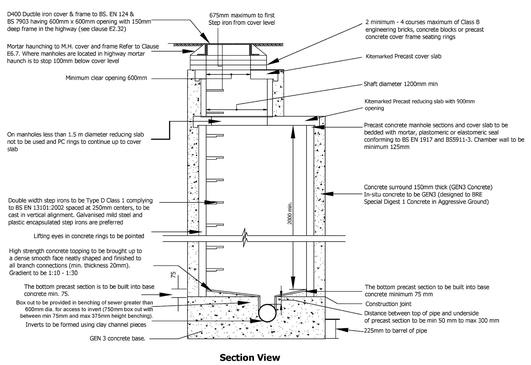
Typical Manhole Construction

Type A1 (Design and Construction Guidance)

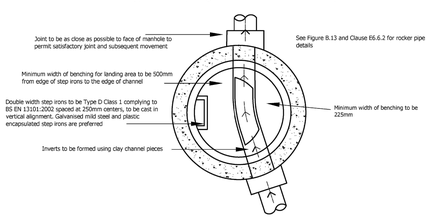
For use on manholes of depth from cover level to soffit level between 3000mm and 6000mm



Section View

Typical Manhole Plan View

Type A & B (Design and Construction Guidance)

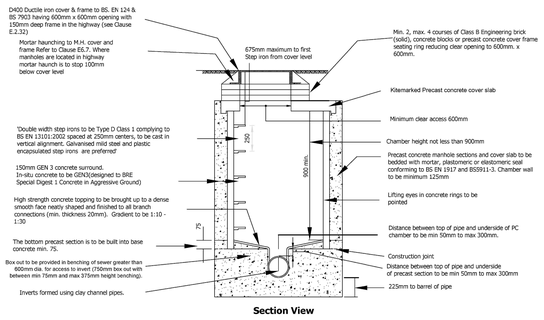


Manhole Diameters	
Nominal internal diameter of largest pipe in manhole (mm)	Minimum nominal internal dimension of manhole (mm)
Up to 300	1200
375-450	1350
500-700	1500
750-900	1800
Greater than 900	Specific detailed drawing required

Typical Manhole Construction

Type B (Design and Construction Guidance)

Maximum depth from cover level to sofit of pipe 3000mm

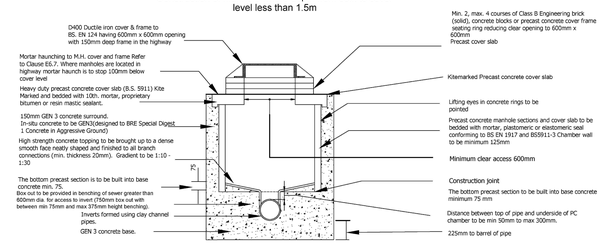


Section View

Shallow Manhole Construction

Type C (Design and Construction Guidance)

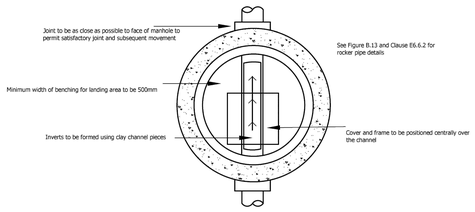
Construction of manhole where depth from sofit to cover level less than 1.5m



Where Type 81E manholes are 1500mm or greater in diameter a double twin 1220mm x 675mm cover and frame is required directly over the channel

Shallow Manhole Plan View

Type C (Design and Construction Guidance)

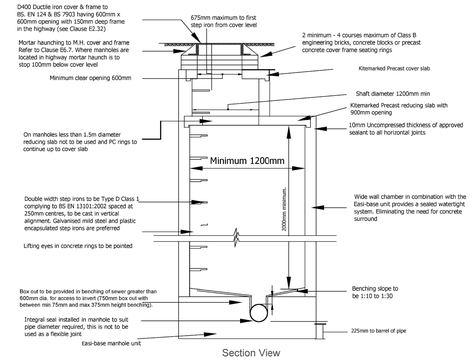


Typical Widewall Manhole Construction

Type A2 Alternative Wide Wall Manhole Construction

(Design and Construction Guidance)

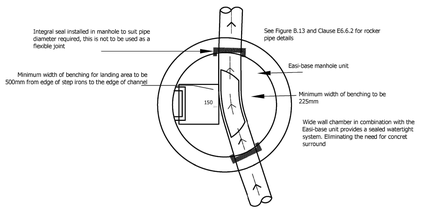
For use on manholes of depth from cover level to soffit level between 3000mm and 6000mm. Wide wall manhole ring construction



Section View

Typical Widewall Manhole Plan View

Type A & B (Design and Construction Guidance)



Manhole Diameters	
Nominal internal diameter of largest pipe in manhole (mm)	Minimum nominal internal dimension of manhole (mm)
Up to 300	1200
375-450	1350
500-700	1500
750-900	1800
Greater than 900	Specific detailed drawing required

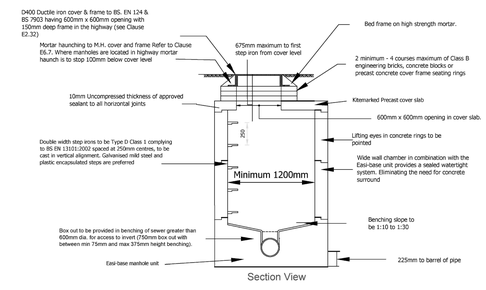
PLEASE NOTE WHERE MANHOLES HAVE BACKDROP CONNECTIONS A FULL 150MM CONCRETE SURROUND TO THE MANHOLE IS REQUIRED

Typical Widewall Manhole Construction

Type B Alternative Wide Wall Manhole Construction

(Design and Construction Guidance)

Maximum depth from cover level to sofit of pipe 3000mm. Wide wall manhole ring construction



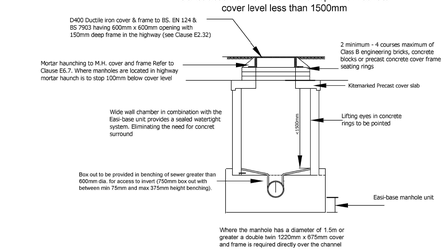
Section View

Shallow Manhole Construction

Type C Alternative Wide Wall Manhole Construction

(Design and Construction Guidance)

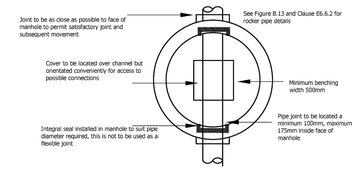
Construction of manhole where depth from sofit to cover level less than 1500mm



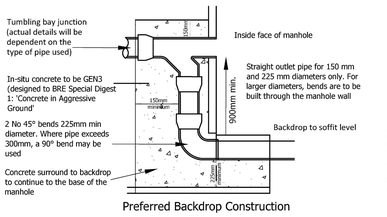
Where the manhole has a diameter of 1.5m or greater a double twin 1220mm x 675mm cover and frame is required directly over the channel

Shallow Widewall Manhole Plan View

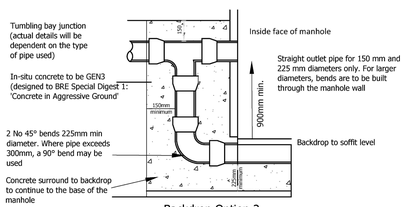
Type C (Design and Construction Guidance)



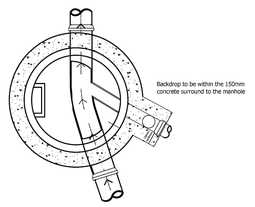
REFER TO 1st LATERAL SCHEDULE FOR DEMARCATION CHAMBER DETAILS & SPECIFICATION.



Preferred Backdrop Construction



Backdrop Option 2

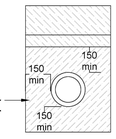


Pipe Surround Details

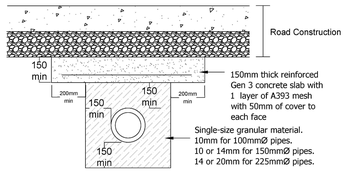
Boxing/sheeting to be removed progressively during placement of the main backfill above the pipe to prevent displacement of the granular material.

Sidefill material to be place evenly on both sides of the pipe taking care to work material under the lower quadrant of the pipe whilst ensuring the pipe is not lifted. Both sides of the trench should be filled simultaneously to avoid horizontal movement of the pipe

Trench fill under roads to conform with Highways requirements.

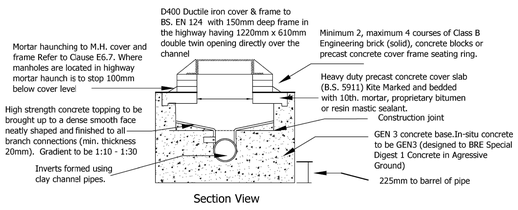


Typical detail through Class S Bed and Surround



Typical detail through Class S Bed and Surround with concrete slab protection (to be used where sewer is less than 1200mm in depth in trafficked areas and less 900mm in un-trafficked areas)

Shallow Manhole Detail



Section View

1. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH CODES FOR ADOPTION,THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED.
2. MANHOLE COVERS SHALL/MUST HAVE A CLEAR OPENING OF 600mm AND SHALL BE CLASS D400 TO BS EN 124 WITH 150mm DEEP FRAMES IN HIGHWAYS.
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT.
4. YORKSHIRE WATER IS **NOT** OBLIGED TO ACCEPT FILTER DRAIN/LAND DRAINAGE RUNOFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE DRAINAGE SYSTEM (DIRECTLY OR INDIRECTLY). AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUNOFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY, LAND DRAINAGE SECTION WITH REGARD TO THE DISPOSAL OF THE FILTER DRAIN/LAND DRAINAGE RUNOFF.
5. COVER SLABS MUST CARRY THE BSI KITEMARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LOADING BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 600x600mm FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEASE REFER TO CONCRETE PIPE SYSTEMS ASSOCIATION (CPSA), "TECHNICAL BULLETIN' ISSUED AUTUMN 2004 FOR KITEMARKED COVER SLAB OPENING SIZES.
6. SULPHATE RESISTANT CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
7. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 0.5m FROM KERB FACES AND MARGINS.
8. SEWERS MUST HAVE 5m CLEARANCE FROM TREES AND HEDGES (PLEASE ALSO REFER TO CODES FOR ADOPTION FOR RESTRICTION ON TREE PLANTING ADJACENT TO SEWERS).
9. SEWERS TO BE LAID IN CLASS "S" BEDDING (150mm GRANULAR BED AND SURROUND). WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THAN 1.2m IN HIGHWAYS AND VERGES (OR LESS THAN 900mm IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB OVER SEWER SHALL BE PROVIDED ABOVE GRANULAR BED AND SURROUND.
10. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
11. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED OT BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.
13. ADOPTABLE PLASTIC SEWER PIPES TO BE BSI KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS/EN13476). ADOPTABLE PLASTIC SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND YORKSHIRE WATER WOULD PREFER CLAYWARE CHANNELS IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISHED CANNOT BE OBTAINED ON THE BENCHING.
14. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100mm DIA. 40kN/m, 150mm DIA. 40kN/m, 225mm DIA. 45kN/m AND 300mm DIA. 72kN/m.THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - CLASS 120 TO EN 1916/BS5911-1 2002. PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476.
15. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED, THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUITABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.
16. ALL HIGHWAY WORKS AND MATERIAL TO CONFORM WITH BMBC HIGHWAY DESIGN GUIDE SPECIFICATION.
17. GULLY COVER AND FRAMES SHALL BE D400 DUCTILE IRON AND COMPLY WITH EUROPEAN STANDARD BS EN 124. THOSE SIGHTED IN ACCESSWAYS AND MEWS COURTS MUST BE SUITABLE FOR USE IN PEDESTRIAN AREAS.

ALL PIPEWORK 300mm DIAM OR LESS TO BE VITRIFIED CLAY CONFORMING WITH BS 65. MINIMUM CRUSHING STRENGTHS TO BE AS FOLLOWS: 100mm DIA. 40kN/m, 150mm DIA 40kN/m, 225mm DIA 45kN/m, 300mm DIA 72kN/m.
ALL PIPEWORK 375mm DIAM OR GREATER TO BE CONCRETE CLASS 120 TO EN 1916 / BS 5911-1:2002.
ADOPTABLE SEWERS TO BE LAID IN CLASS 'S' GRANULAR BED & SURROUND.

Note
All Drainage works and materials to conform with 'Codes for Adoption'.

Chambers
For type 'C' chambers less than 1.5m from top of benching to the underside of the cover slab, shall have the cover fixed in the centre of the slab and the channels intersecting beneath the cover.

Covers
The minimum size for manhole covers is 600mm by 600mm. Manhole covers to be class D400 and have 150mm deep frames where located in the highway.

Step Irons / Ladders
All step irons shall be double rung and complying clause 4.2.31.
Step irons are required for all manholes, up to 6 metres deep.

Brickwork
All brickwork to be constructed using class B engineering solids.

Haigh Huddleston & Associates

Civil Structural Engineering Consultants

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e martin@haighhuddleston.co.uk

Client
AVANT HOMES

Project
HEY GREEN LANE, BIRDWELL

Detail
STANDARD MANHOLE DETAILS

Dwn	Chkd	Date	Scale	Dwg No.
HH		MAR-23	NTS@A0	E23/8034/006