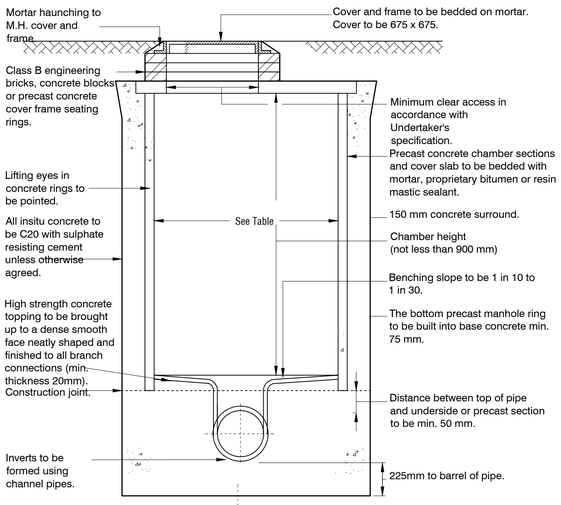
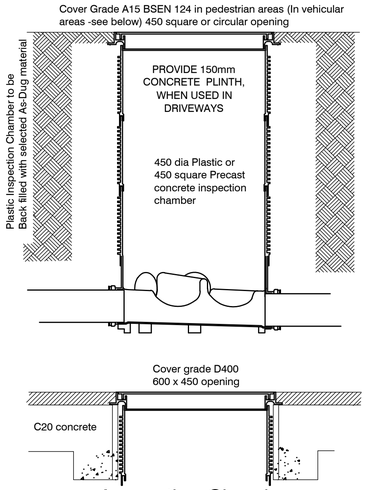
TYPICAL MANHOLE DETAIL - TYPE B

Max depth from cover level to soffit of pipe 3.0 m



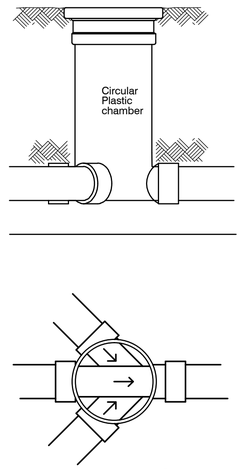
Inspection Chamber

n.e. 1200 deep 100 & 150Ø pipes only



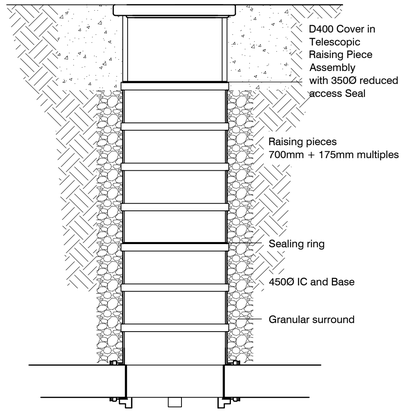
Shallow Inspection Chamber

n.e. 600 deep 100Ø pipes only

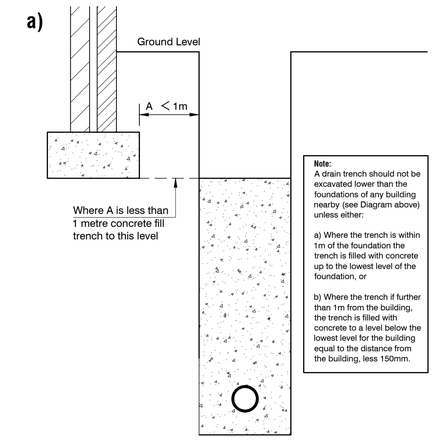


Reduced Access Telescopic Inspection Chamber

(1.200m - 3.000m deep)



Pipe runs near buildings



Note:
A drain trench should not be excavated lower than the foundations of any building nearby (see Diagram above) unless either:

a) Where the trench is within 1m of the foundation the trench is filled with concrete up to the lowest level of the foundation, or

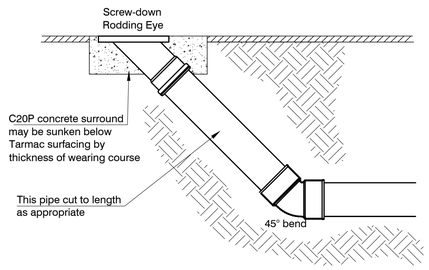
b) Where the trench if further than 1m from the building, the trench is filled with concrete to a level below the lowest level for the building equal to the distance from the building less 150mm.

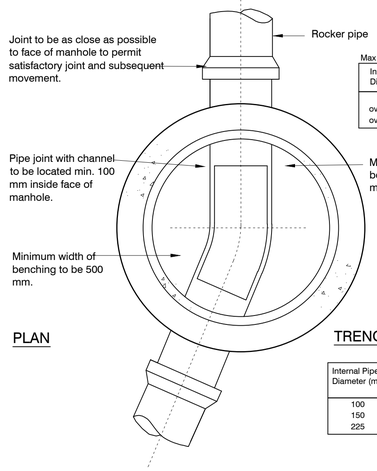
Inspection Chamber

As above in vehicular areas

Shallow Inspection Chamber Base

RODDING EYE





PLAN

Max Length of Rock Pipes

Internal Pipe Diameter (mm).	Rocker Pipe Length (m).
Upto 300	0.6
over 300 - 450	0.75
over 450 - 600	1.0

TRENCH WIDTHS

Internal Pipe Diameter (mm).	Maximum Trench Width (mm).
100	600
150	600
225	700

Minimum dimensions for access fittings and inspection chambers

Type	Depth to invert from cover level (m)	internl sizes length x width (mm x mm)	internl sizes Circular (mm)	Cover sizes Length x width (mm x mm)	Cover sizes Circular (mm)
Rodding eye		As drain but min 100			Same size as pipework (1)
Access fitting small 150 diam	0.6 or less, except where situation in a chamber	150 x 100	150	150 x 100 (1)	same size as access fitting
Large 150 x 100		225 x 100	220	225 x 100 (1)	
inspection chamber shallow	0.6 or less	225 x 100	190 (2)		190 (1)
	1.2 or less	450 x 450	450	min 430 x 430	430
deep	> 1.2	450 x 450	450	max 300 x 300 (3)	Access restricted to max 350 (3)

Notes:
1 The clear opening may be reduced by 20mm in order to provide proper support for the cover and frame.
2 Drains up to 150mm.
3 A larger clear opening cover may be used in conjunction with a restricted access. The size is restricted for health and safety reasons to deter entry.

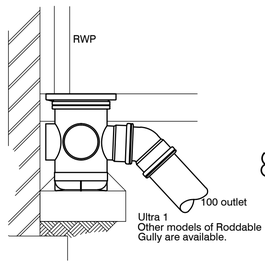
Minimum dimension for manholes

Type	Size of largest pipe (DN)	Min internal dimensions (1) Rectangular length and width	Circular diameter	Min clear opening size (1) Rectangular length and width	Circular diameter
Manhole < 1.5 deep to soffit	150 225 300 >300	750 x 675 (7) 1200 x 675 1200 x 750 1800 x (DN+450)	1050 (7) 1200 1200 The larger of 1800 OR (DN + 450)	750 x 675 (2) 1200 x 675 (2)	na (3)
> 1.5 deep to soffit	225 300 375 - 450 >450	1200 x 1000 1200 x 1075 1305 x 1225 1800 x (DN + 775)	1200 1200 1200 The larger of 1800 OR (DN + 775)	600 x 600	600
Manhole >3.0m deep to soffit of pipe	Steps (5) Ladder (5) Winch (6)	1050 x 800 1200 x 800 900 x 800	1050 1200 900	600 x 600 600 x 600	600 600

Notes

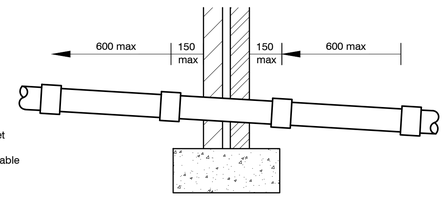
1. Large sizes may be required for manholes on bends or where there are junctions.
2. May be reduced to 600 where required by highway loadind considerations, subject to safe system of work being specified.
3. Not applicable due to working space needed.
4. Minimum height of chamber in shafted manhole 2m from benching to under side of reducing slab.
5. Min clear space between ladder or steps and the opposite face of the shaft should be approximately 900mm.
6. Winch only - no steps or ladders, permanent or removable.
7. The minimum size of any manhole serving a sewer (i.e any drain serving more than one property) should be 1200mm x 675mm rectangular or 1200mm diameter.

Roddable Gully (F or S)



Pipes penetrating walls

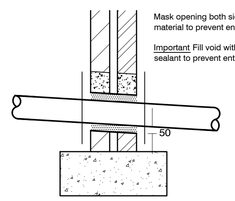
a) Short length of pipe bedded in wall, joints formed within 150mm of either wallface. Adjacent rocker pipes of max. Length 600mm with flexible joints.



Note:
At any point where pipes are built into a structure, including an inspection chamber, manhole, footing, ground beam or wall, suitable measures should be taken to prevent damage or misalignment. This may be achieved by either:

a). Building in a length of pipe (as short as possible) with its joints as close as possible to the wall faces (within at most 150mm) and connected on each side of rocker pipes by a length of at most 600mm and flexible joints (see Diagram above).

b) Arch or lintelled opening to give 50mm space all round the pipe

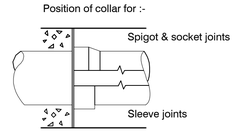


b). Forming an opening to give at least 50mm clearance all round the pipe and the opening masked with rigid sheet material to prevent ingress of fill or vermin. It is important that the void is also filled with a compressible sealant to prevent ingress of gas (see Diagram above)

Flexible jointing to clause A2

Flexibility maintained in pipeline at every joint by break in bed formed by collar of Bitumen Impregnated insulating board.
1x18 thick for pipes DN 100 to 400
2x18 thick for pipes DN 450 to 1200

Position of collar for :-

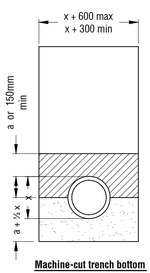


Pipe Bore & Strength (="standard strength" of BS65 as Regs)	Bedding Class	Laid in fields	Laid in light roads	Laid in main roads
100Ø 40kn/m	B, S or A2	0.6m - 8m	1.2m - 8m +	1.2m - 8m
150Ø 40kn/m	B, S or A2	0.6m - 5m	1.2m - 5m	1.2m - 4.5m
225Ø 45/kn/m	B, S or A2	0.6m - 5m	1.2m - 5m	1.2m - 4.5m

Clayware pipes to BS EN 295
Minimum cover in road set to 1.2m irrespective of pipe strength
Where cover less than minimum quoted, use Class A2 concrete bed and surround

Type B

Bedding Factor = 1.9

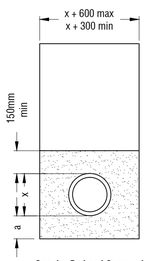


Machine-cut trench bottom

Generally suitable for all soil.

Type S

Bedding Factor = 2.2

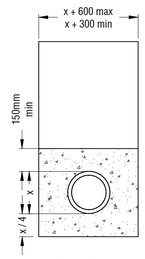


Ganular Bed and Surround

Generally suitable for all soils

Type A2

Bedding Factor = 2.6



Plain Concrete Surround

Suitable for all condition but for rock in mining areas, use granular base course
Movement joints to be provided at 2.0m centre

NOTE

MATERIAL EXCAVATED OR IMPORTED TO THE SATISFACTION OF THE ENGINEER AND SHALL BE FREE FROM VEGETATION, COMBUSTIBLE MATERIAL AND BUILDING RUBBISH.

KEY

Granular material to S.H.W. Clause 503.3 (1)

Concrete to S.H.W. Clause 503.3 (3)

Material to S.H.W. Clause 503.3 (2). e.g. sand

Class B material to S.H.W. Clause 503.3 (4)

SPECIFICATION FOR HIGHWAY WORKS

1. Types B, F and S the granular material consisting of natural and/ or recycled coarse of aggregate or recycled concrete aggregate shall have a grading in accordance with Table below.

Nominal Pipe Diameter (mm)	BS 882 Coarse Aggregate (Table 3)	
	Graded Aggregate Ranges (mm)	Single Sized Aggregate Sizes (mm)
Not exceeding 140	-	10
Exceeding 140 but not exceeding 400	20 to 5 or 14 to 5	10, 14 or 20
Exceeding 400	14 to 5, 20 to 5 or 40 to 5	10, 14, 20 or 40

2. Types N and T the granular material consisting of natural and/ or recycled coarse aggregate or recycled concrete aggregate shall comply with Table below.

Nominal Pipe Diameter (mm)	BS 882 : 1992 Sand (Table 4)	BS 882 : 1992 All-in Aggregate (Table 5)
	Limits	Nominal Sizes (mm)
Not exceeding 140	Overall Limits	10
Exceeding 140 but not exceeding 400	Overall Limits	10 or 20
Exceeding 400	Overall Limits	10, 20 or 40

a = For sleeve jointed pipes, a minimum of 50mm or 1/6 x whichever is the greater, for the socketted pipes a minimum of 100mm or 1/6 x whichever is the greater under barrels but not less than 50mm under sockets.

In rock or mixed soils containing rock bands, boulders, large flints or stones or other irregular hard spots.

a = For sleeve jointed pipes, a minimum of 150mm or 1/4 x whichever is the greater, for the socketted pipes, a minimum of 200mm or 1/4 x whichever is the greater under barrels not and 150mm minimum under sockets.

3. Types A and Z concrete shall be mix ST2 respectively. Backfilling shall not be carried out until after the concrete has cured.

4. Class B lower trench fill material as described in Table 6/1. General material class 1, 2 or 3 except there shall be no stones or lumps of clay. > 40mm nominal diameter- Recycled aggregate.

GENERAL NOTES

1.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF PATRICK PARSONS LTD.
1.2 DO NOT SCALE FROM THIS DRAWING.
1.3. LOCATIONS OF ALL EXISTING SERVICES ON-SITE TO BE CONFIRMED & PROVIDED TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORKS.
1.4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT PATRICK PARSONS LTD DRAWINGS & SPECIFICATIONS.

Building Drainage

Building drainage shall comply with BS 8301 1985 BSEN 752 which supersedes clause 4 of BS 8301, and the Building Regulations 2002 Part H.
All house drainage to be 100mmØ unless otherwise shown.
Inspection chambers located within garages to have double seal bolt down covers.
Connections to adoptable sewers to be 150mmØ . Pipes running under buildings without suspended floors shall have 100mm granular surround.

1. Pipes Penetrating Walls.
An opening is to be formed through wall to give pipes at least 50mm clearance all round. Brickwork over shall be supported by lintel.
Opening to be masked each side with rigid sheet material.
Pipes embedded in walls shall have joints formed within 150mm of either wall face. Adjacent rocker pipes of max 600mm length with flexible joints shall continue the pipework.

2. Pipe runs near Buildings.
If trench is within 1m of a building it shall be filled with concrete up to the lowest level of the adjacent foundation.
If trench is greater than 1m from a building the trench shall be filled with concrete up to a level below the building equal to the distance from the building less 150mm.

Where pathways fall towards the dwelling gullies and channels are to be provided to prevent water damaging building.

All existing drainage levels to be checked prior to commencement of works. Any discrepancy to be reported to Stewart and Harris engineers.

All paving gullies to suit low point and to be trapped.

Vertical backdrops should not be connected to public manholes without the consent of sewerage authority.

All Foul pipework to be clay.

Rev.	Amendments	Date	By
-	Preliminary Issue	19.10.17	RM

Revisions

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Client: McCarthy & Stone

Project: Portland Mills, Buxton Road, Leek

Drawing: Private Drainage Construction Details

Scales	1:20	At original size	A1
Drawn	DGW	Checked	GV
Date	03.02.17		

Status: Co-ordinated Design

Drawing No. B16332-205 Rev. -

McCarthy & Stone Drawing No. MI-2416-03-DE-005 -