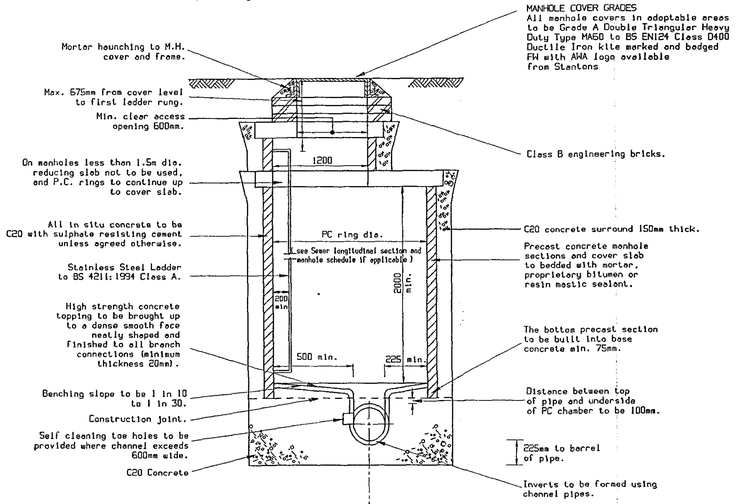
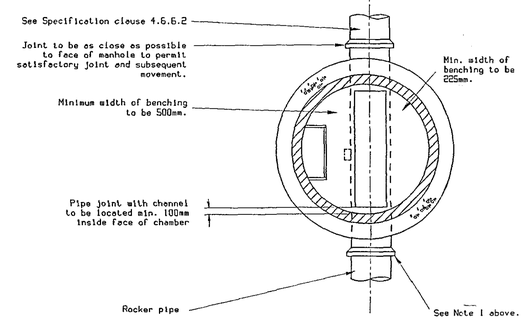
TYPE A MANHOLE

Depth from ground level to soffit of pipe 3m to 6m.





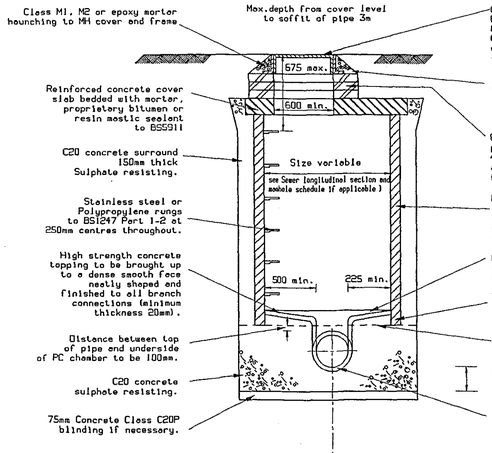
Notes.

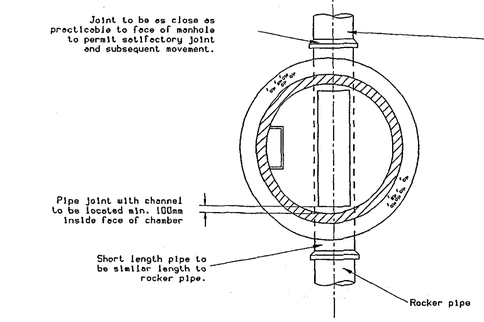
1. A joint shall be provided as close as is feasible to the outside face of any structure into which a pipe is built, compatible with the satisfactory completion and subsequent movement of the pipe.
2. The length of the next pipe (rocker pipe) away from the structure shall be shown as in the Table below.

Nominal pipe dia. (mm)	Rocker Pipe Effective Length (m)
150 - 600	0.6
675 - 750	1.0
825 and over	1.25

3. Outgoing pipes should be fitted with guard bars, safety chains or other safety devices in accordance with the Undertaker's safety policy.
4. Manholes with an incoming sewer of 900mm and over to be as approved by the Council Undertaker.

TYPE B MANHOLE





Nominal Pipe Dia (mm)	Rocker Pipe Effective Length (m)
150 - 600	0.6
675 - 750	1.0
825 and over	1.25

Notes.

Toe holes to be provided in benching of sewer greater than 450mm dia. for access to invert.

Chambers with outgoing pipes greater than 600mm dia. shall be fitted with guard bars, safety chains or other safety devices.

SPECIFICATION CLAUSES TAKEN FROM "SEWERS FOR ADOPTION" 5TH EDITION.

CLAUSE 4.2.30 MANHOLE COVERS AND FRAMES

1. Manhole covers and frames shall comply with the relevent provisions of BS EN 124 and they shall be of a non-rocking design which does not rely on the use of cushion inserts.
2. REFER TO MANHOLE DETAIL FOR COVER SPECIFICATION AND TYPE
3. Minimum frame depths for NRSHA road categories I-IV shall be as follows:

NRSHA Road Category	Description	Minimum Frame Depth (mm)
I	Trunk roads & dual carriageways	150
II	All other A roads	150
III	Bus services	150
IV	All other roads except Residential cul-de-sacs	150
	Residential cul-de-sacs	100

4. All manhole covers shall be the non-ventilating type and shall have closed keyways.

NOTE: -

TRENCH BACKFILL

1. Where the soffit of the Pipe is less then 0.5m below formation - Backfill to formation with Class E concrete.
2. Where the soffit of the Pipe is between 0.5m & 1.0m below formation - Backfill to formation with Type 1 Sub-base (allow for granular bedding material 150mm above crown of Pipe).
3. Where the soffit of the Pipe is greater than 1.0m below formation - backfill with suitable fill.

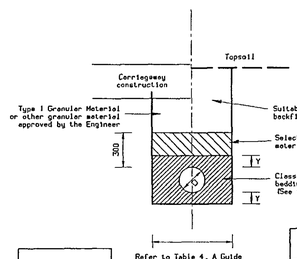
MANHOLE SCHEDULE FOR MINIMUM DIAMETER

Diameter of largest pipe	Diameter of chamber	Diameter of largest pipe	Diameter of chamber	Diameter of largest pipe	Diameter of chamber
150	1200	450	1350	750	1800
225	1200	525	1500	825	1800
300	1200	600	1500	900 - 975	1800
375	1350	675	1500	> 975	2400

GENERAL NOTE: -
The details on this drawing are to comply with the Water Authorities Association Design Guide - Sewers For Adoption. Dated July 2001, 5th Edition.

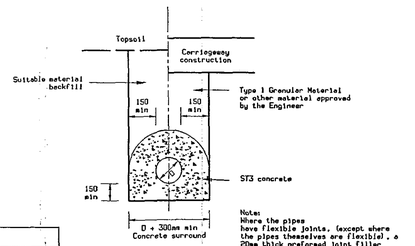
NOTES: -

1. The centre of any manhole is not necessarily co-incidental with the centre line of the main pipe.
2. Positioning of the manhole covers and step irons to be directed on site.
3. Construction joints in the concrete surround must not coincide with the joints in the precast concrete chamber rings.
4. The benching is to be formed to direct flow from side connections into the main flow.
5. Sulphate resisting cement is required in all concrete products used for Section 104 works on the site.
6. All lateral crossings to twin sewers shall be to the bedding and backfill standards described on the drawings, and protected as necessary. The high level sewer shall not be undermined by the low level lateral and connection. All end caps to laterals shall be painted 'FW' or 'SW' as appropriate.



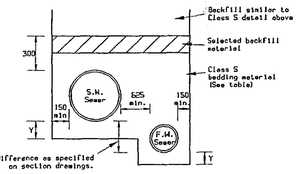
Class S Bedding
(Fm. - 2.2)

Nominal size	Pipe Bedding Requirement
EN	BS
150	10 or 14 nominal single size or 14 to 5 graded
225 to 525	10, 14 or 20 nominal single size or 14 to 5 graded or 20 to 5 graded
600 and above	10, 14, 20 or 40 nominal single size crushed rock or 14 to 5 graded or 20 to 5 graded or 40 to 5 graded



Note:
Where the pipes have flexible joints, (except where the pipes themselves are flexible), a 20mm thick preformed joint filler shall be used at each pipe joint, and shall extend through the full thickness of any concrete in contact.

Concrete Bed and Surround
Gully Connections Only



Dual Trench Detail

PIPE BEDDING DETAILS

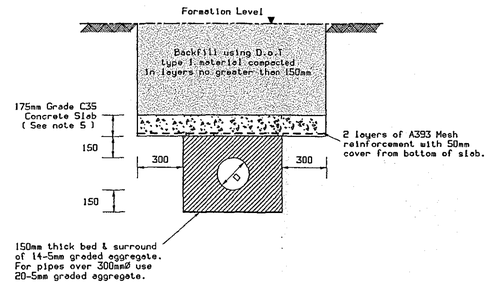
CLAUSE 4.6.6 PIPES AND JOINTS ADJACENT TO STRUCTURES

1. A flexible joint shall be provided as close as is feasible to the outside face of any structure into which a pipe is built, compatible with the satisfactory completion and subsequent movement of the joint.
2. The length of the next pipe (rocker pipe) away from the structure shall be shown as in the Table below.

Nominal pipe dia. (mm)	Rocker Pipe Effective Length (m)
150 - 600	0.6
675 - 750	1.0
825 and over	1.25

NOTE: -

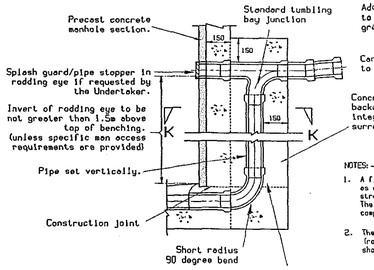
Where sewers have less than 1.2m of cover beneath Carriegeway then sewers to be protected with reinforced concrete slabs.



CONCRETE PROTECTION DETAIL

TYPICAL VERTICAL BACKDROP DETAIL

Note:- Steeper gradients are preferred to the use of backdrops



See Specification clause 4.6.6.2 for rocker pipe details.

Additional rocker pipes may be neccessary to accomodate transition of pipe gradient to vertical downpipe

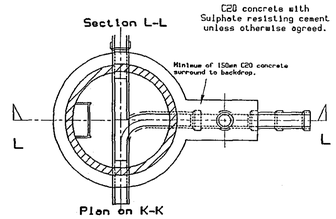
Care to be taken to maintain flexibility

Concrete surround to backdrop to be cast integral with MH surround.

NOTES: -

1. A flexible joint shall be provided as close to the outside face of any structure into which a pipe is built. The design of the joints shall be compatible with any subsequent movement
2. The recommended length of the next pipe (rocker pipe) away from the structure should be as shown in the table below:

Nominal diameter (mm)	Effective Length (m)
150 to 600	0.6
675 to 750	1.0
over 750	1.25



DETERMINED PLAN

DETERMINED PLAN

Rev. No.	REVISION	Date	Drawn By	Checked By

Written dimensions to be taken. Do not scale off the drawing.
Any discrepencies, written or scaled, should be brought to the attention of the engineer immediately.
This drawing to be read in conjunction with the relevent Bills of Quantities and Local Authority Specification.
CDM NOTE: The design has been undertaken as far as possible to avoid risks to health and safety or to reduce and control the effects of any unavoidable risks.
All relevent information identifying the unavoidable risks has been passed to the planning supervisor for inclusion in the Health & Safety plan.
The Health & Safety plan will be issued by the planning supervisor with these drawings.

WORMALD, BURROWS PARTNERSHIP
Civil Engineering Consultants
12a & 14a Hitchin Street Tel 01767 317244
Biggleswade, Beds SG18 8AX, U.K. Fax 315434

Project
Proposed Development at:-
Bridge Road, Sutton Bridge, Lincolnshire.

Drawing Description
Typical Drainage Details
Sheet 1 of 1

DETERMINED

Client
Allison Homes Eastern Ltd
Banbury Close
West Elloe Avenue
Spalding
Lincolnshire
PE11 2BS

Drawing Number
E1332/5

Drawn By AJMB
Date Aug'03

Scale NTS

Architect

Checked By WD
Date Aug'03

31 OCT 2003

EAQA REGISTERED COMPANY ISO 9001 CERT No.99

Ref 1332/03

P:\Barbara\ Thu Aug 21 14:46:22 2003