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Soffit Level of Incoming & Outgoing Pipes to be Equal

Pipe Invert

300

Manhole Invert

Typical Surface Water Manhole Detail

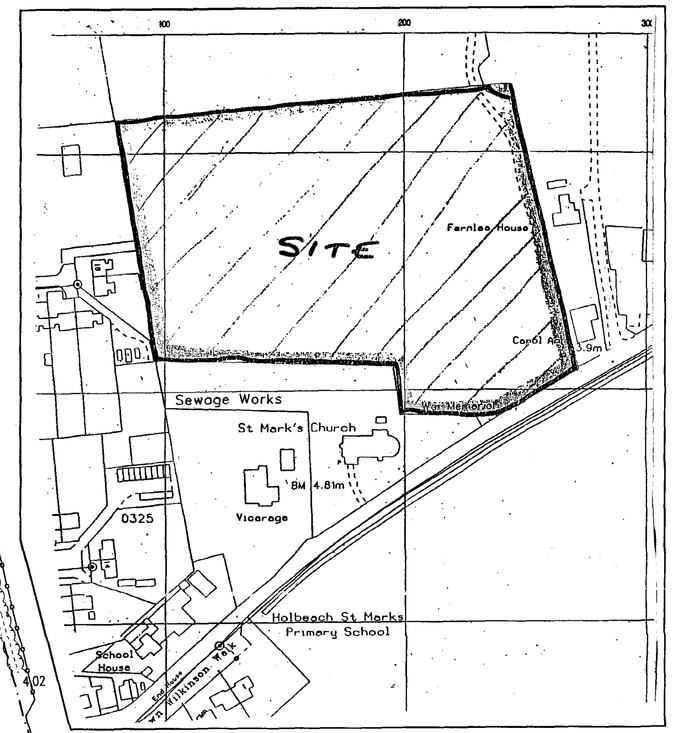
Invert Level of Incoming & Outgoing Pipes to be Equal

Typical Foul Water Manhole Detail

Manhole Schedule

Ref	Cover Level	MH Invert	E. – Inlet	MH Dia. (mm)	MH Depth (mm)	Remarks	MH Cover Size & Grade*
Outfall	-	-	2.42	-	-	Outfall / Scour Well	-
S1	4.14	2.13	2.43	1200	2010	New SW Manhole	600 □ Class D400
S2	3.86	2.13	2.49	1200	1790	New SW Manhole	600 □ Class D400
S3	4.08	2.79	2.86	1200	1790	New SW Manhole	600 □ Class D400
S4	3.82	2.50	2.86	1200	1170	New SW Manhole	600 □ Class D400
S5	3.88	2.88	3.07	2.89	1200	1190	New SW Manhole	600 □ Class D400
S6				O M I T T E D				
S7	3.84	2.48	2.86	2.76	1050	1180	New SW Manhole	600 □ Class D400
S8	4.10	2.31	2.81	2.61	1200	1790	New SW Manhole	600 □ Class D400
S9	4.07	2.45	2.75	2.75	1200	1620	New SW Manhole	600 □ Class D400
S10	4.20	2.58	2.88	2.88	1200	1610	New SW Manhole	600 □ Class D400
S11	4.00	2.66	3.04	2.86	1050	1260	New SW Manhole	600 □ Class D400
S12	3.80	2.98	3.29	3.29	1050	910	New SW Manhole	600 □ Class D400
S13	4.15	2.27	2.52	2.52	1200	1850	New SW Manhole	600 □ Class D400
S14	4.15	2.27	2.57	2.57	1200	1880	New SW Manhole	600 □ Class D400
S15	4.15	2.27	2.57	2.57	1050	1885	New SW Manhole	600 □ Class D400
S16	4.10	2.24	2.80	2.80	1200	1530	New SW Manhole	600 □ Class D400
S17	4.15	2.87	2.87	3.04	1200	1480	New SW Manhole	600 □ Class D400
S18	4.15	2.77	3.07	3.07	1050	1385	New SW Manhole	600 □ Class D400
S19				O M I T T E D				
S20	3.85	2.85	See MH S6	2.85	1050	860	New SW Manhole	600 □ Class D400
SIC1	3.80	3.34	3.34	450ø UPVC	580	New SF Inspection Chamber	450 ○ Class A15
SIC2	3.80	3.38	3.38	450ø UPVC	550	New SF Inspection Chamber	450 ○ Class A15
SIC3	3.80	3.42	3.42	450ø UPVC	490	New SF Inspection Chamber	450 ○ Class A15
SIC4	3.95	3.46	3.46	450ø UPVC	600	New SF Inspection Chamber	450 ○ Class A15
SIC5	3.80	3.28	3.34	450ø UPVC	510	New SF Inspection Chamber	450 ○ Class A15
SIC6	3.80	3.38	3.38	450ø UPVC	520	New SF Inspection Chamber	450 ○ Class A15
FIC1	4.20	3.70	3.70	3.70	450ø UPVC	500	New FW Inspection Chamber	450 ○ Class A15
FIC2	4.07	3.27	3.32	3.27	450ø UPVC	800	New FW Inspection Chamber	450 ○ Class A15
FIC3	4.25	3.61	3.61	3.61	450ø UPVC	640	New FW Inspection Chamber	450 ○ Class A15
FIC4	4.07	3.25	3.25	3.25	450ø UPVC	670	New FW Inspection Chamber	450 ○ Class A15
F1	4.12	3.15	3.15	3.15	1350	970	New FW Manhole	600 □ Class D400
F2	4.12	3.07	3.07	3.07	1350	1050	New FW Manhole	600 □ Class D400
F3	3.85	2.82	2.82	2.82	1200	830	New FW Manhole	600 □ Class D400
F4	3.70	3.33	3.33	3.33	1200	1280	New FW Manhole	600 □ Class D400
F5	4.18	3.17	3.17	3.17	1350	1010	New FW Manhole	600 □ Class D400
F6	3.87	2.82	2.82	2.82	1350	1050	New FW Manhole	600 □ Class D400
F7	3.88	2.51	2.51	2.51	1350	1370	New FW Manhole	600 □ Class D400
F8	3.80	2.20	See PS MH	2.20	1350	1400	New FW Manhole	600 □ Class D400
PS1	3.80		2.10	1.86			Wheel Treatment Tank	To Titan Details
PC1	3.60		1.820	3.60			Pump Station	To Titan Details

* to BS EN124:1994
All surface water manholes accepting road drainage to be constructed with a catch pit



Site Location Plan (1:2500)

G	30/9/02	Drainage runs S20 to S19 & S19 to S14 omitte Drainage run S20 to S7 added. Manholes S6 & S19 omitted. MH & pipe run schedules updated.
F	26/9/02	Gully outlets in private driveways re-adjusted to outlet into non-adopted surface water sewer. Position of gully in short private roadway amend Inverts to surface water manholes S6, S7 and inspection chamber SIC6 amended. Manhole & pi run schedules updated.
E	10/9/02	Sewage treatment plant amended to 'Titan Biote 'Titan' blower enclosure added. Pipe run PC1 to S20 amended to rising main. Manhole & pipe ru schedules updated.
D	5/9/02	Street lighting positions and specification added. Scour wall details moved to drawing 14202/05.
C	13/8/02	Outfall detail amended to S.H.I.D.B. details. Surfa water drainage amended to separate road/ roof systems. Pipework from S7 to S2 amended. Manhole & pipe run schedules updated.
B	1/8/02	Manhole schedule amended. Additional 2 no. sets of gullies added local to entrance and at bend Footpath from private road extended to meet footpath across site. Footpath across site amended at btm. left hand corner of site to meet footpath across adjacent land (not yet constructed). Tactile paving amended local to
A	27/6/02	Surface water system amended to include roof drainage run-off. Manhole schedule amended.
REV	DATE	REMARKS

STATUS PRELIMINARY

SIDEBOTTOM RICHARDSON CHENG LTD.
CONSULTING STRUCTURAL AND CIVIL ENGINEERS
15 HIGH STREET, SPALDING, LINCS. PE11 1TW
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PROJECT
Proposed Residential Development
Main Road, Holbeach St Marks, Lincolnshire
For Nestwood Homes

TITLE
Adoptable Road & Drainage Arrangement

DETERMINED PLAN

DATE	June 2002	SCALE	1:200, 1:50, 1:2
DRAWN	PJS	CHECKED	
DESIGN		FILENAME	14202-02-04

DRG No. 14202/02 REV G

KEY

Top of Embankment	
Bottom of Embankment	
Extg. Ground Level	+3.78
Proposed Ground Level	+4.00
Surface Water Manhole + Reference	S1
Foul Water Manhole + Reference	F1
Surface Water Sewer	
Foul Water Sewer	
Overhead Cables (Existing)	
Fence	
Kerbline – Existing	
Proposed Gully	
Telegraph Pole – Existing	
Lighting Column – Existing	
Hedge – Existing	
Kerbline – Proposed	
Extent of Private Road	
Proposed Dwellings	
Extent of Adoptable Tarmac Roads & Footpaths	
Proposed Tactile Paving	
Proposed Footpath	
Hedge – Proposed	
Plot Boundary – Proposed	
Tree – Proposed	

STREET LIGHTING

6m TYPE 3 MIO COLUMN WITH POST TOP MOUNTED LANTERN TO APPENDIX 14/2 SHEET 1 (FGS 224 OR EQUIVALENT 36W/5° TILT)

5m TYPE 3 MIO COLUMN WITH POST TOP MOUNTED LANTERN TO APPENDIX 14/2 SHEET 1 (FGS 224 OR EQUIVALENT 36W/5° TILT)

6m TYPE 3 MIO COLUMN WITH POST TOP MOUNTED LANTERN TO APPENDIX 14/2 SHEET 2 (WTRL PATHFINDER 42W OR EQUIVALENT)

CONTRACTORS SHALL BE AWARE OF SHW APPENDICES AND ALL CORRESPONDENCE ENTERED INTO WITH THE DEVELOPER.

LINCOLNSHIRE - Part of the East Midlands Region
LINCOLNSHIRE COUNTY COUNCIL
HIGHWAYS & PLANNING DIRECTORATE
P.O. BOX 373, SPITTLEGATE HOUSE, Grantham Road, Sleaford, Lincs. NG34 7TW
Witham Park House, Witham Park, Waterside South, Lincoln, LN5 7JN

STREET LIGHTING DESIGN: MAIN RD, HOLBEACH ST. MARKS
DESIGNER: J.ROBSON
SCHEME NO.: 8053-940017
DATE: 21.08.02

For street lighting column construction details refer to the street lighting specification.

Street Lighting Design Information

1) Post top lanterns shall be HP/LP/CFL* type as Appendix 14/2.

2) Columns shall be 5 & 6 metre mounting height to Appendix 13/2 setback 1.85 metres, 0.5 metres in footpath link.

3) Columns shall be galvanised Type 3 MIO as Appendix 19/3.

4) Photocells shall be SELC 1017F or equivalent.

5) Columns in the vicinity fo overhead lines require clearances governed by the Public Electricity Supplier.

6) Terminations to SD14/4A (1998)

7) Developer shall submit electrical test certificates to BS7671 and measure EFLI's at live supply points.

8) District Council to be notified where there equipment is affected.

9) Footpath raise and lower columns to be fitted with access doors.

10)A maintenance strip of 0.75m is required adjacent 3.0m cycleway/ footpath to enable column setbacks.

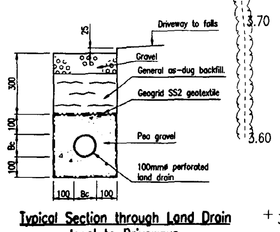
11)It is the responsibility of the Developer to ensure any approved design layout is subjected to notice under NRSWA 1991 especially when columns are affected/ required on the fronting highway. Frontagers shall be informed of intent to erect columns by the Developer.

12)The County Council accepts no liability for design alterations required due to the proximity of underground/ overhead services impeding column positions. In certain circumstances flange fixed crank rod columns may be required.

13)Certain specified equipment could take 8 weeks delivery.

14)The planting of certain tree species near columns should be avoided as future growth may inhibit lighting levels.

Typical Section through Land Drain local to Driveways (1:15)



Footpath to join up to footpath across adjacent field, by L.C.C. (not yet constructed).

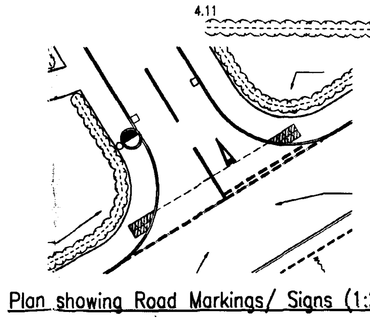
Levels based on assumed value of 5.00m taken at OBM on St. Marks Church.

Holbeach St. Marks

Pipe Run Schedule

Pipe Run (MHs-MHs)	Pipe Dia. (mm)	Gradient (1 in X)	Length (m)	Pipe Type	Pipe Bedding
Outfall – S1	375	500	13.0	Concrete	Granular Bedding
S1 – S2	375	500	38.0	Concrete	Granular Bedding
S2 – S3	375	600	59.4	Concrete	Concrete Surround
S3 – S4	300	450	63.6	Vitrified Clay	Concrete Surround
S4 – S5	225	225	26.8	Vitrified Clay	Concrete Surround
S7 – S14	225	300	62.8	Vitrified Clay	Concrete Surround
S7 – S20	225	150	20.0	Vitrified Clay	Concrete Surround
Outfall – S8	225	300	11.8	Vitrified Clay	Granular Bedding
S8 – S9	225	300	40.8	Vitrified Clay	Granular Bedding
S9 – S10	225	300	42.8	Vitrified Clay	Granular Bedding
S10- S11	225	300	21.8	Vitrified Clay	Granular Bedding
S11- S12	150	300	75.3	Vitrified Clay	Granular Bedding
S12– SIC1	150	300	14.1	Vitrified Clay	Granular Bedding
SIC1 – SIC2	150	300	13.8	Vitrified Clay	Granular Bedding
SIC2 – SIC3	150	300	13.1	Vitrified Clay	Granular Bedding
SIC3 – SIC4	150	300	12.4	Vitrified Clay	Granular Bedding
Outfall – S13	225	500	11.3	Vitrified Clay	Granular Bedding
S13– S14	225	FLAT	15.4	Vitrified Clay	Granular Bedding
S14– S15	225	FLAT	17.5	Vitrified Clay	Granular Bedding
S15– S16	225	37 Approx.	10.0	Vitrified Clay	Granular Bedding
S16– S17	225	300	39.1	Vitrified Clay	Granular Bedding
S17– S18	225	300	8.5	Vitrified Clay	Granular Bedding
S18– SIC5	150	300	10.4	Vitrified Clay	Granular Bedding
SIC5– SIC6	100	250	25.5	Vitrified Clay	Granular Bedding
FIC1 – FIC2	100	80	30.5	Vitrified Clay	Granular Bedding
FIC2 – F1	150	150	18.2	Vitrified Clay	Granular Bedding
F1 – F2	150	150	11.7	Vitrified Clay	Concrete Surround
FIC3 – FIC4	100	80	28.0	Vitrified Clay	Granular Bedding
FIC4 – F2	150	150	20.1	Vitrified Clay	Concrete Surround
F2 – F3	150	150	22.5	Vitrified Clay	Granular Bedding
F3 – F4	150	150	80.0	Vitrified Clay	Granular Bedding
F4 – F5	150	150	17.5	Vitrified Clay	Granular Bedding
F5 – F6	150	150	52.5	Vitrified Clay	Granular Bedding
F6 – F7	150	150	48.1	Vitrified Clay	Concrete Surround
F7 – F8	150	150	47.0	Vitrified Clay	Concrete Surround
F8 – PS1	150	33 Approx.	3.3	Vitrified Clay	Granular Bedding
PS1– PC1	150	62 Approx.	2.5	Vitrified Clay	Granular Bedding
PC1– S20	63	N/A	27.4	M.D.P.E.	Concrete Surround

Plan showing Road Markings/ Signs (1:200)



Proposed adoptable footpath to follow existing ground level.

Proposed outfall to be constructed in existing dyke

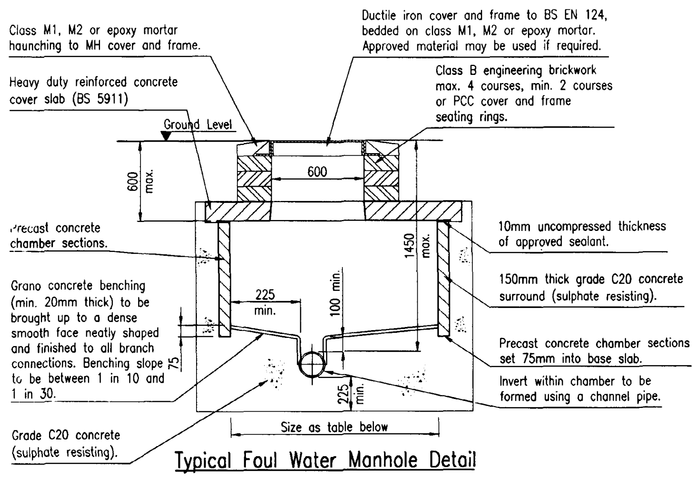
For Site Location Plan refer to drawing no. 14202/04.

For Road & Drainage Arrangement & Details refer to drg. nos. 14202/03 & 14202/05.

For Longitudinal Sections refer to drawing no. 14202/04.

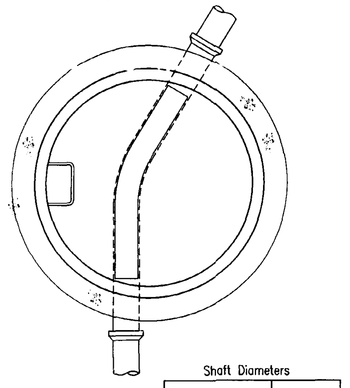
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Typical Foul Water Manhole Detail

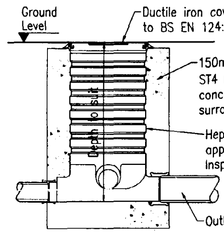
(Depth to soffit less than 1.45m)



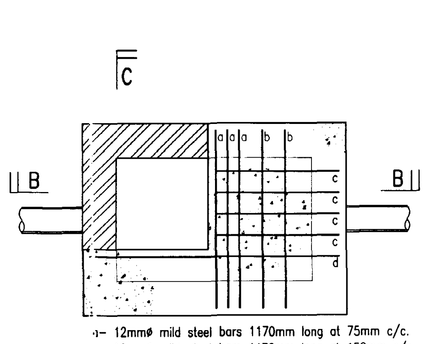
All pipes entering or leaving manholes shall have a flexible joint within 600mm of the inside face of the manhole. The next pipe shall be a short 'rocker pipe' 600mm long.

Shaft Diameters	
Dia. of largest pipe in MH (mm)	Int. dia of MH (mm)
up to 450	1350

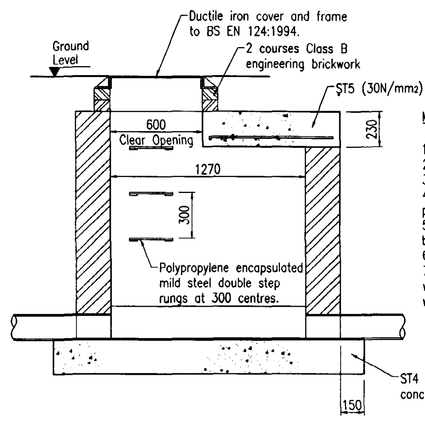
Note
If pipe diameter exceeds 450mm use type B or C.



Typical Polypropylene Inspection Chamber



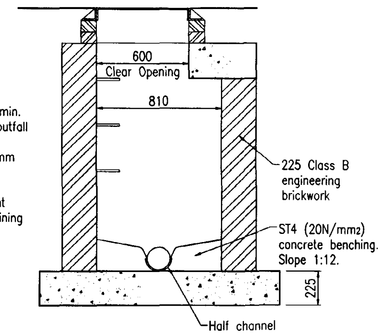
Plan at Reinforcement Level



Masonry Manhole Notes

1. Mortar to be 1:3.(cement/ sand)
2. Engineering bricks to be Class B to BS 3921.
3. Cover to steel rebar in cover slab to be 45mm min.
4. Entrance to manhole to be max. distance from outfall pipe.
5. Step irons to BS 1247 when invert exceeds 900mm below cover.
6. Cover & frame to BS EN124:1994 uncoated.
7. Pipes entering manholes shall have a flexible joint within 600mm of the inside face of the manhole joining with a short rocker pipe.

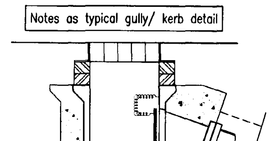
Section B-B



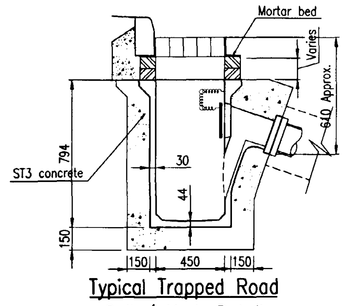
Section C-C

Typical Masonry Manhole Detail Type C

(Depth to soffit up to 1.45m)



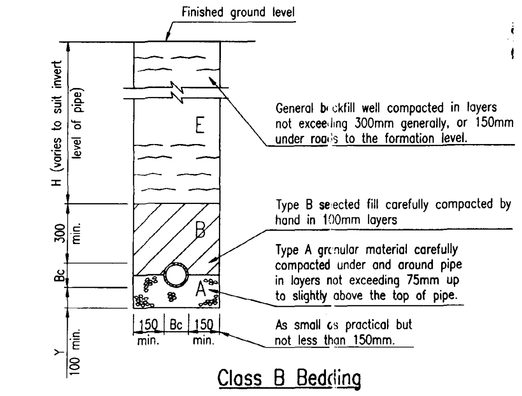
Typical Trapped Gully Detail



Typical Trapped Road Gully/ Kerb Detail

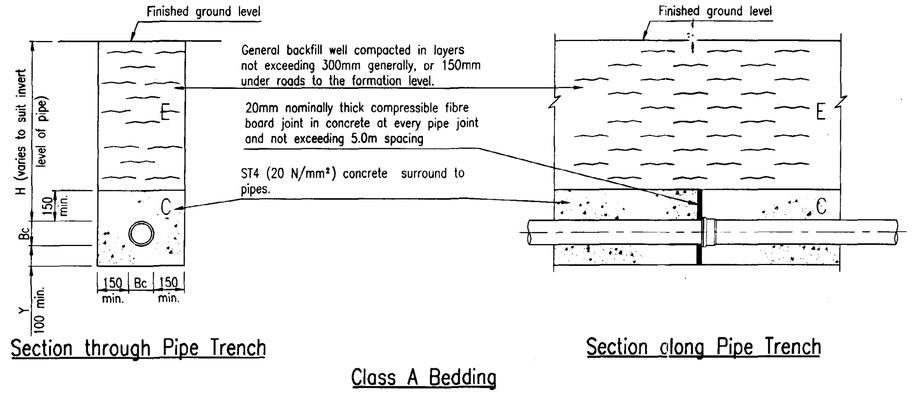
All materials, workmanship & construction for gullies shall comply with clause 5.9, of the 'Lincolnshire County Council, Development Road Specifiation and Construction Guide', current edition.

Gully Notes
1) Cover and frame, uncoated iron to clause 5.9.4.
2) Mortar bed & benching to Clause 13, 'Lincolnshire County Council, Development Road Specification and Construction Guide', current edition.
3) Bricks to be class B engineering bricks to BS 3921 (single course where necessary to obtain satisfactory fall). Corbelled if required. Frames to be bricked on four sided.
4) Insitu ST3 concrete.
5) Position of outlet pipe varies.
6) Insitu ST3 concrete 150mm thick surround to outlet pipe for first one metre under verge or total length under carriageway.
7) Where grating is to be trafficked or laid against within 24 hours of frame being placed in position, then a suitable ultra rapid hardening mortar and concrete (Monoset 241 or similar) shall be used to bed cover and frame.



Class B Bedding

(Vitrified Clay)



Section through Pipe Trench

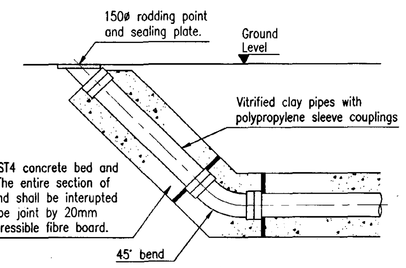
Section along Pipe Trench

Class A Bedding

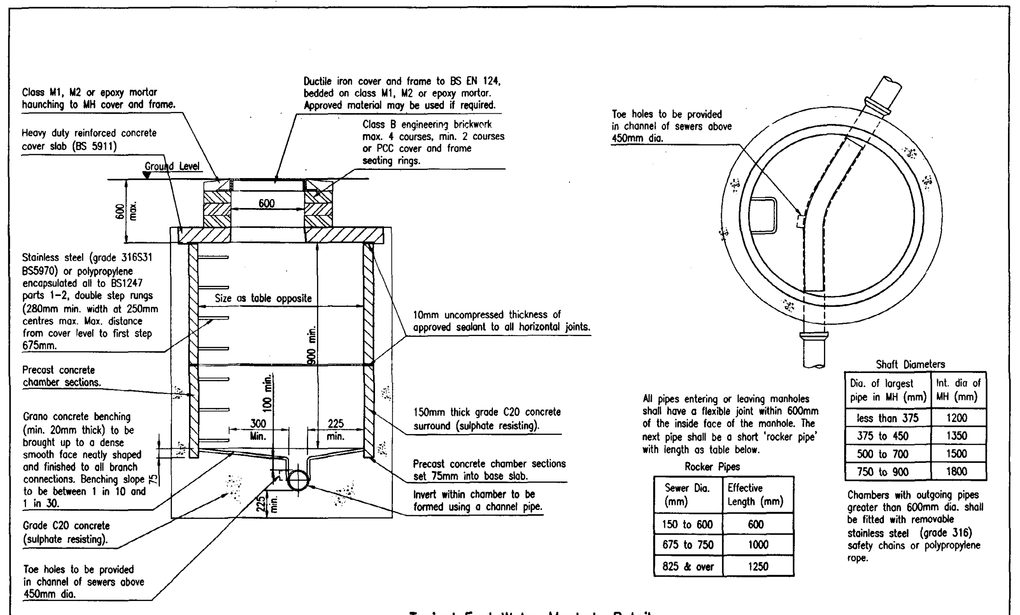
(Vitrified Clay)

Table A
Granular bedding and sidefill material for vitrified clay pipes

PIPE SIZE DN (mm)	MAX. PARTICLE SIZE (mm)	NOMINAL SINGLE SIZE (mm)	GRADED SIZE (mm)	MAXIMUM CFE VALUE FOR AS-DUG
110	10	10	NOT PERMITTED	0.15
OVER 110 to 160	15	10 or 14	14 to 5	0.15
OVER 160 to 300	20	10,14 or 20	14 or 20 to 5	0.15
OVER 300 to 600	20	14 or 20	14 or 20 to 5	0.15



Rodding Eye Detail



All pipes entering or leaving manholes shall have a flexible joint within 600mm of the inside face of the manhole. The next pipe shall be a short 'rocker pipe' with length as table below.

Rocker Pipes	
Sewer Dia. (mm)	Effective Length (mm)
150 to 600	600
675 to 750	1000
825 & over	1250

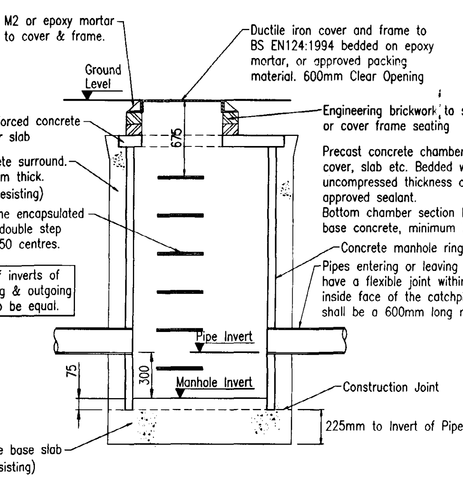
Shaft Diameters	
Dia. of largest pipe in MH (mm)	Int. dia of MH (mm)
less than 375	1200
375 to 450	1350
500 to 700	1500
750 to 900	1800

Chambers with outgoing pipes greater than 600mm dia. shall be fitted with removable stainless steel (grade 316) safety chains or polypropylene rope.

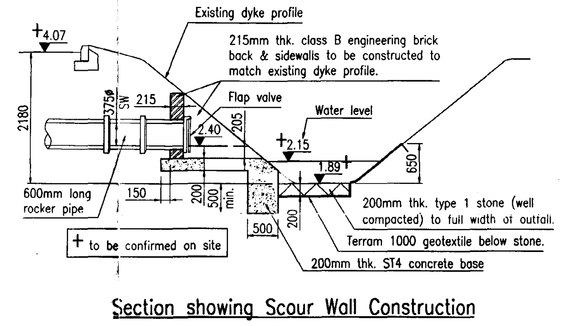
Typical Foul Water Manhole Detail

(Depth to soffit less than 3.0m)

Not to Scale

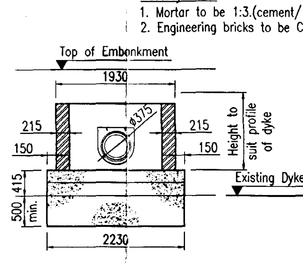


Typical Catch Pit Detail

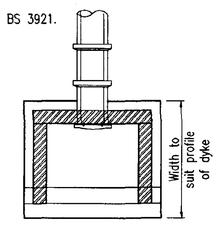


Section showing Scour Wall Construction

Masonry Notes
1. Mortar to be 1:3.(cement/ sand)
2. Engineering bricks to be Class B to BS 3921.



View on Scour Wall



Plan on Scour Wall

General Drainage Notes

1. This drawing is to be read in conjunction with all other relevant Engineers and Architects details.
2. All material & workmanship to be in accordance with 'Sewers for Adoption 4th Edition'.
3. All work is to be carried out in accordance with the current British Standards, B.S. codes of practice & Building Regulations.
4. Refer to SFA Specification for concrete grades & sand/ cement mortar grades. All precast & in-situ concrete to contain a minimum Class 3 sulphate resisting cement.
5. Pre-formed channels are to be used at manholes.
6. Granolithic concrete benching to be steel trowelled to a dense smooth face neatly shaped & finished to all branch connections & laid in accordance with the Specification.
7. All dimensions are in millimetres u.n.o.
8. Pipe bends to suit direction of flow.
9. Manhole covers and frames to be to EN 124. Use grade D400 covers in vehicular movement areas and grade A15 covers in non-vehicular areas.
10. All trenches under carriageway to be backfilled with Type 1 Sub-base, well compacted in layers not exceeding 150mm loose depth.

Notes on Bedding Details

Generally vitrified clay drainage pipework should be laid in accordance with BS 65 and BS 8301.

A-Type A granular material shall comply with WIS No. 4-08-01 and shall be:-
(a) Imported single size or graded aggregate in accordance with BS 882 as shown in the table A.
(b) Selected as-dug granular bedding and sidefill material shall be free from organic matter, combustable materials, frozen soil, clay lumps larger than 75mm and stones larger than the maximum permitted particle size specified in table A depending on pipe size. The selected material shall be evaluated using the compaction fraction test detailed in Appendix A of WIS No. 4-08-01.
Material excavated from trenches dug through land contaminated with domestic, building or industrial waste should not be used.

B-Type B selected fill shall be:
Uniform readily compactable material which is free from tree roots, vegetable matter, building rubbish, frozen soil, clay lumps and material retained on a 40mm sieve.

C-Concrete protection to pipe. For concrete grade refer to note 4 and concrete mix specification

E-General backfill shall be:
Suitable excavated material from the trench (or imported) excluding boulders, lumps of concrete, timber and vegetable matter. Do not use heavy compactors before there is 600mm cover of material over the pipes.

Bc-External diameter of pipe.

H-When 'H' (depth of cover) is less than 0.9m below the finished surface of a road or less than 0.3m elsewhere use bedding class A or Z as appropriate for the material being used, or;
Elsewhere use bedding class B or P as appropriate for the pipe being used. Provide temporary protection during construction against mechanical damage and frost.

Y-Depth of granular bedding Y shall be not less than 100mm beneath pipe barrels and shall be greater in soft or wet conditions or where the trench bottom is irregular.

Road Construction Notes

1. Do not scale from this drawing, if in doubt, ASK.
2. Highway construction materials and workmanship shall be in accordance with the current edition of 'Lincolnshire County Council Development Road Specification and Construction' guide.
3. This drawing shall be read in conjunction with all other relevant engineers and architects drawings.
4. All work is to be carried out in accordance with the current British Standards, British Standard Codes of practice and Building Regulations.

Street Lighting Notes

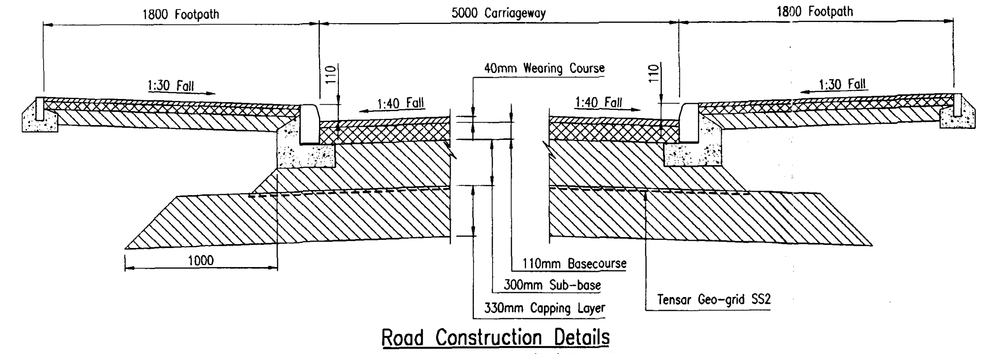
Street lighting columns to be as Lincolnshire County Council Specification 5/35/C/93, and the layout is to comply with BS 5489:Part 3.Cat.3.3. All lighting to be supplied with REC Supplies. All street lighting columns to be located within the adoptable highway and at the back of footway/ service margin.

Effluent Treatment Plant Notes

Effluent treatment plant to be Conder (or similar approved). Treatment plant system to comprise of Conder balance tank with Flolift bucket elevator, Conder primary settlement tank. 36000 litre capacity Conder Clarrello Type 'F' Sewage Treatment Plant and a Conder 2.5 MTJ Humus Tank. All to be sized to suit site flows and installed in accordance with manufacturers details. Effluent treatment plant is not to be adoptable and MUST be privatly maintained.

For Proposed Road & Drainage Arrangement refer to drawing no. 14202/02.

For Longitudinal Section refer to drawing no. 25501/04.



Road Construction Details

Sub Grade Bearing Capacity (CBR) Below 2%

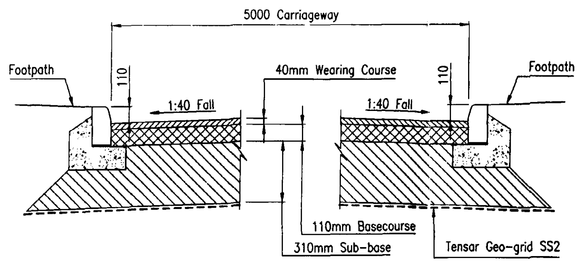
Wearing Course
Wearing course materials shall be 10mm size close graded bitumen wearing course (6mm in footpath). The wearing course shall be uniformly compacted to a void content within the range 2%-10%. The wearing course must be bonded to the basecourse.

Basecourse
Basecourse materials shall be 20mm nominal size dense bitumen basecourse and shall be laid in a single layer or combination of layers not less than 50mm in thickness nor greater than 110mm in thickness. The basecourse shall be uniformly compacted to a void content within the range 2%-8 % (2%-10% in footpath) and all layers must be bonded together.

Sub-base
Sub-base shall be Type 1.

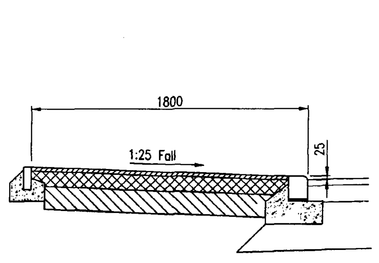
Capping Layer
The capping layer shall be 6F2 capping and should comprise crushed rock, crushed concrete, crushed slag or combinations thereof. The material shall comply with the current edition of the 'DOT Specification for Highway Works', clause 613.

No road construction/ works on site to commence on site until a full ground investigation/ CBR tests have been undertaken and approved by Lincolnshire County Council. CBR tests to determine sub-base thickness.

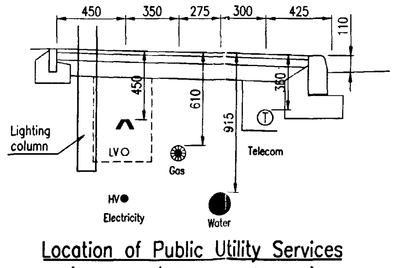


Road Construction Details

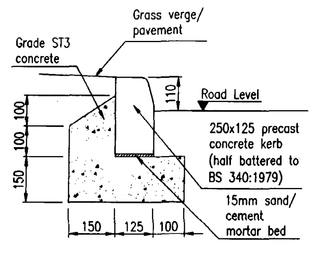
Sub Grade Bearing Capacity (CBR) >2%



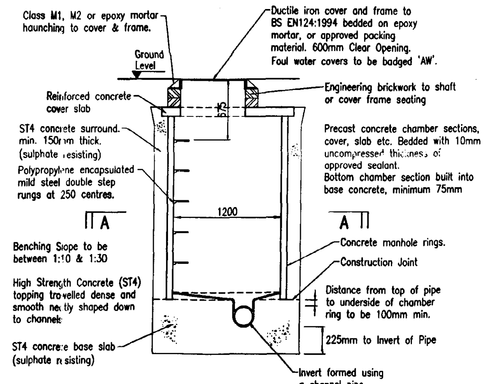
Typical Vehicle Crossing Detail



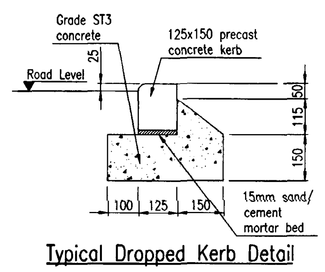
Location of Public Utility Services (Footpath/ Services Margin)



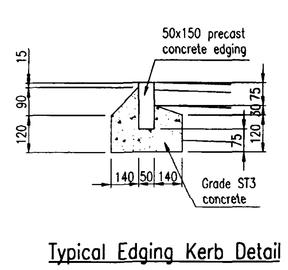
Typical Standard Kerb Detail



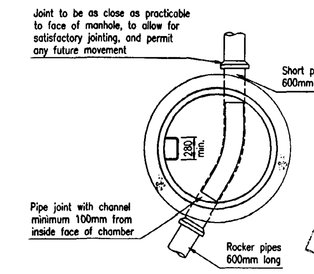
Typical Surface Water Manhole Detail



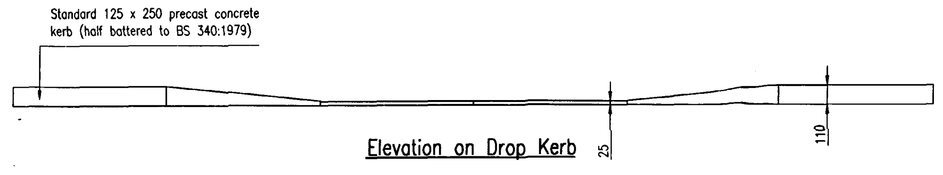
Typical Dropped Kerb Detail



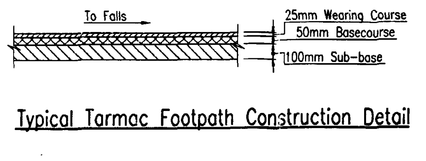
Typical Edging Kerb Detail



Section A-A



Elevation on Drop Kerb



Typical Vehicle Crossing Construction Detail

Typical Tarmac Footpath Construction Detail

REV	DATE	REMARKS
A	6/9/02	Scour wall detail added (from drawing 14202/02).

STATUS: PRELIMINARY

SIDEBOTTOM RICHARDSON CHENG LTD
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FAX: (01775) 712830
E-MAIL: src@src.co.uk

PROJECT
Proposed Residential Development, Main Road, Holbeach St. Marks, Lincolnshire
For Nestwood Homes

TITLE
Road & Drainage Sections & Details (Adoptable Roadway)

Planning Department
- 3 OCT 2002
14202/02

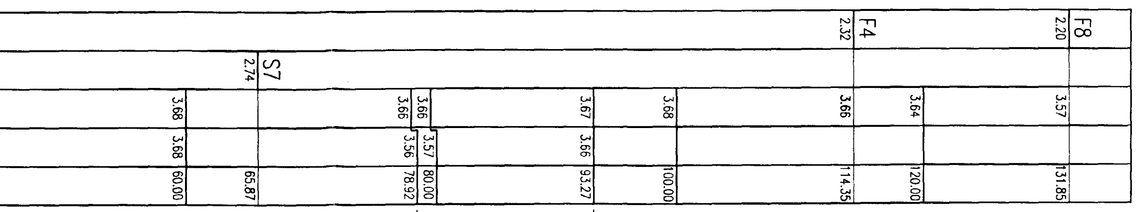
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DRAWN	PJS	CHECKED	
DESIGN		FILENAME	14202-03

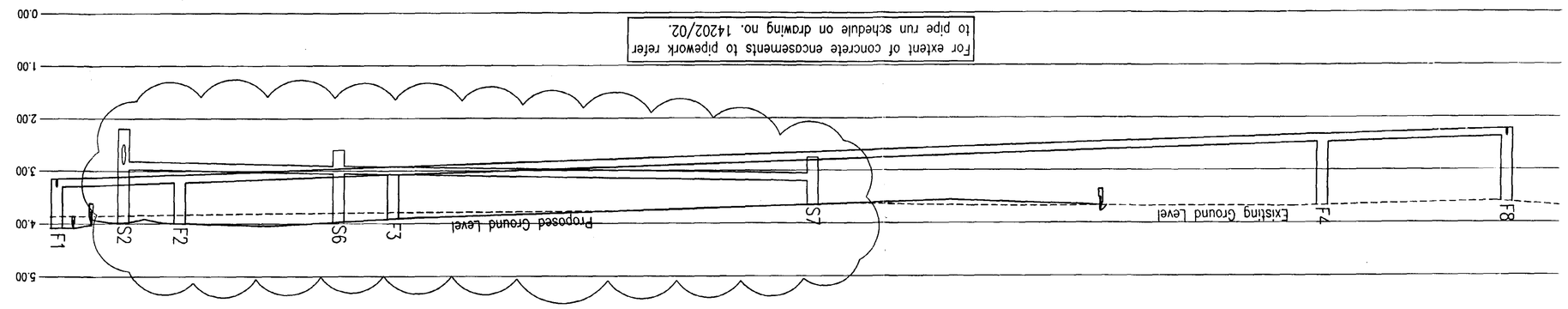
DRG No. 14202/03 REV A

DETAILED PLAN

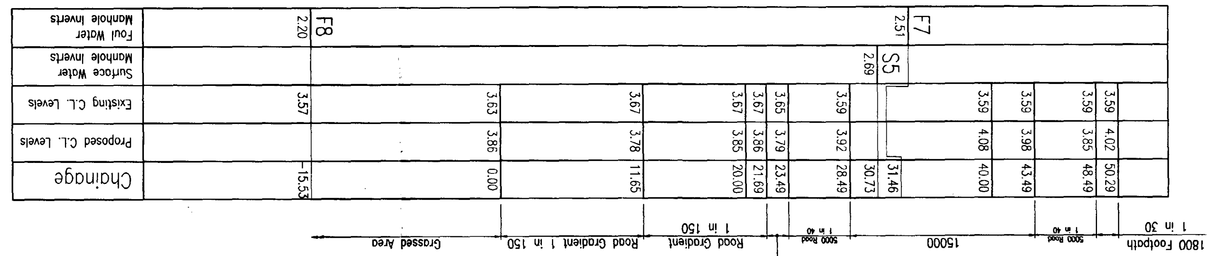
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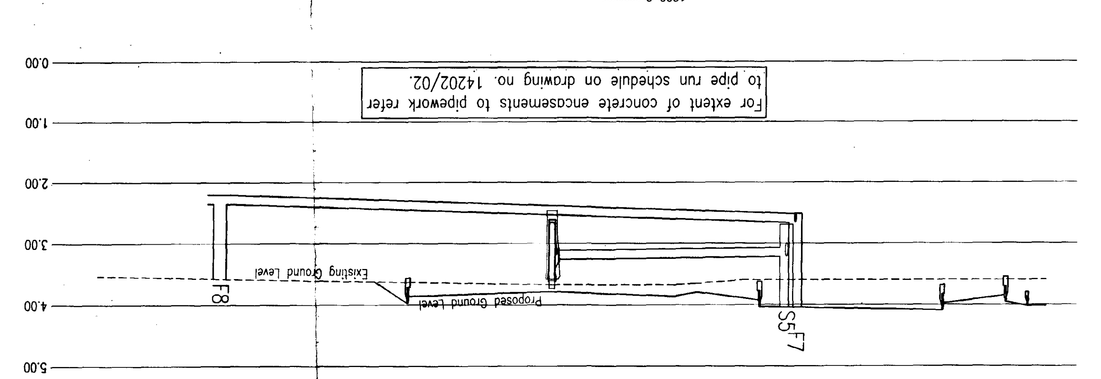
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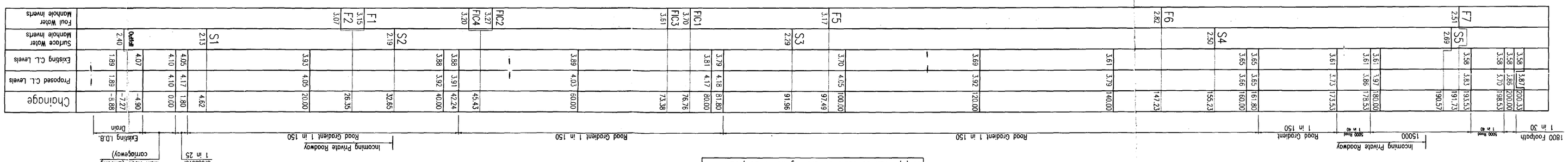


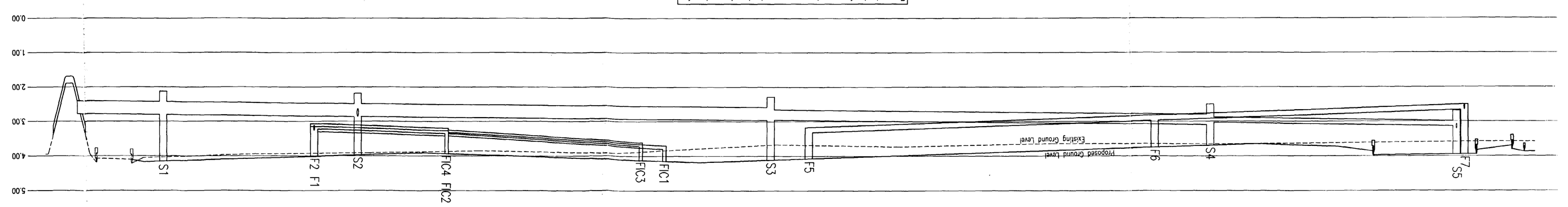
For extent of concrete encasements to pipework refer to pipe run schedule on drawing no. 1420Z/02.





For extent of concrete encasements to pipework refer to pipe run schedule on drawing no. 1420Z/02.





For Road & Drainage Arrangement & Details refer to drg. no. 1420Z/02.

For Road & Drainage Sections & Details refer to drg. nos. 1420Z/03 & 1420Z/05.

REV	DATE	REMARKS
A	15/8/02	Pipework from S7 to S2 amended.

STATUS **PRELIMINARY**

SIDEBOTTOM RICHARDSON CHENG LTD
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PROJECT
Proposed Residential Development,
Main Road, Holbeach St Marks,
Lincolnshire
For Nestwood Homes

Rel 15/8/02

Planning & Development
-2 OCT 2002
SHDC

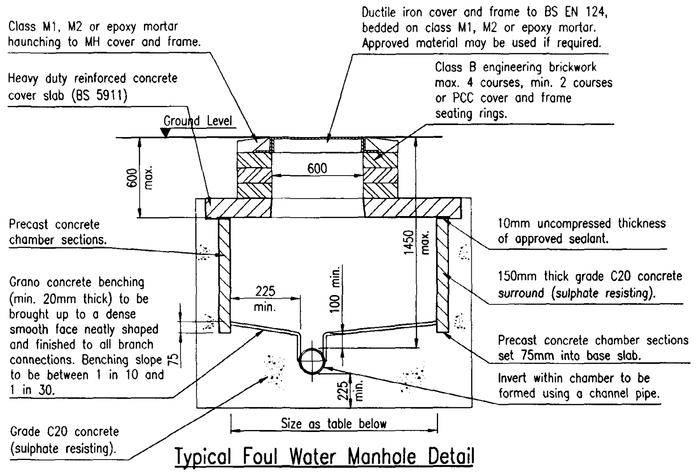
TITLE
Longitudinal Sections

DETAILED PLAN

DATE	July 2002	SCALE	1:250(H), 1:50(V)
DRAWN	PJS	CHECKED	
DESIGN		FILENAME	1420Z-02-04

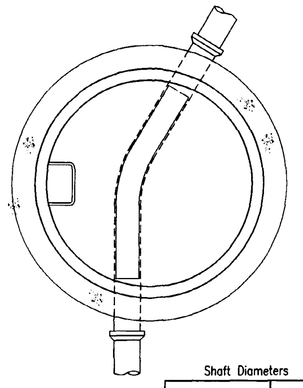
DRG No. 1420Z/04 REV A

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Typical Foul Water Manhole Detail

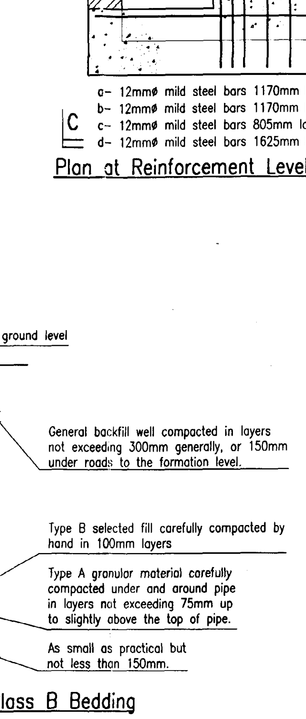
(Depth to soffit less than 1.45m)



All pipes entering or leaving manholes shall have a flexible joint within 600mm of the inside face of the manhole. The next pipe shall be a short 'rocker pipe' 600mm long.

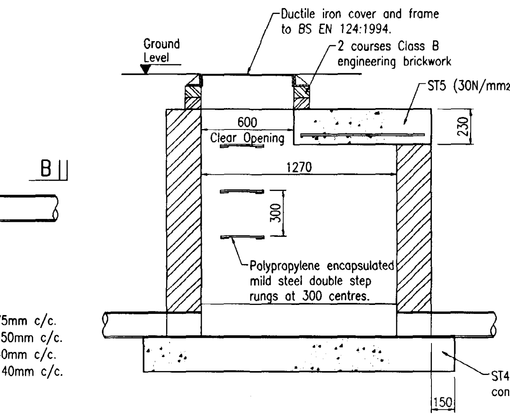
Shaft Diameters	
Dia. of largest pipe in MH (mm)	Int. dia of MH (mm)
up to 450	1350

Note
If pipe diameter exceeds 450mm use type B or C.

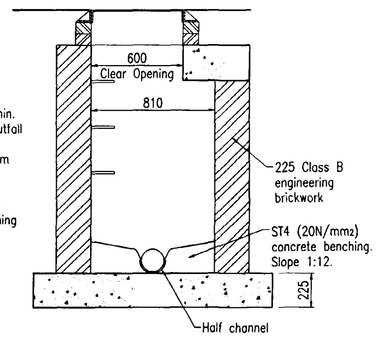


Class B Bedding

(Vitrified Clay)



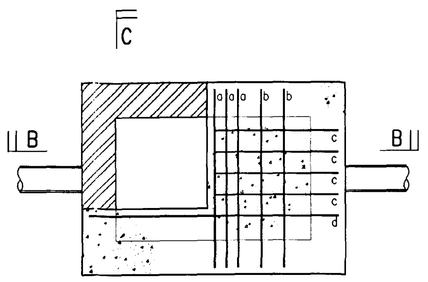
Section B-B



Section C-C

Masonry Manhole Notes

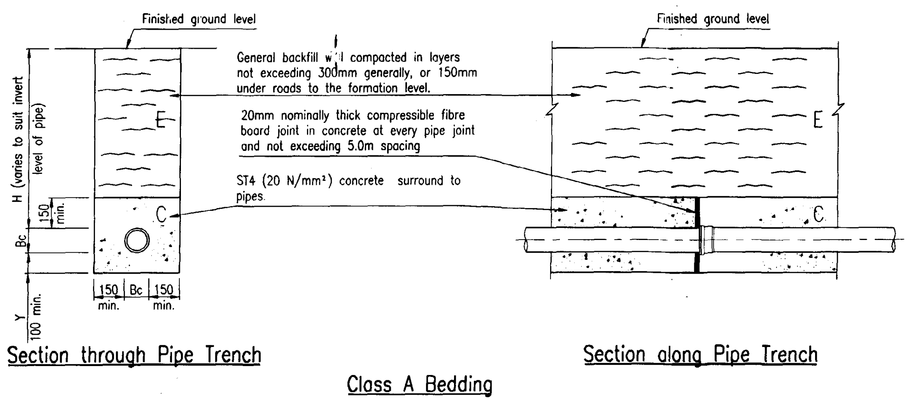
1. Mortar to be 1:3.(cement/ sand)
2. Engineering bricks to be Class B to BS 3921.
3. Cover to steel rebar in cover slab to be 45mm min.
4. Entrance to manhole to be max. distance from outfall pipe.
5. Step irons to BS 1247 when invert exceeds 900mm below cover.
6. Cover & frame to BS EN124:1994 uncoated.
7. Pipes entering manholes shall have a flexible joint within 600mm of the inside face of the manhole joining with a short rocker pipe.



Plan at Reinforcement Level

Typical Masonry Manhole Detail Type C

(Depth to soffit up to 1.45m)

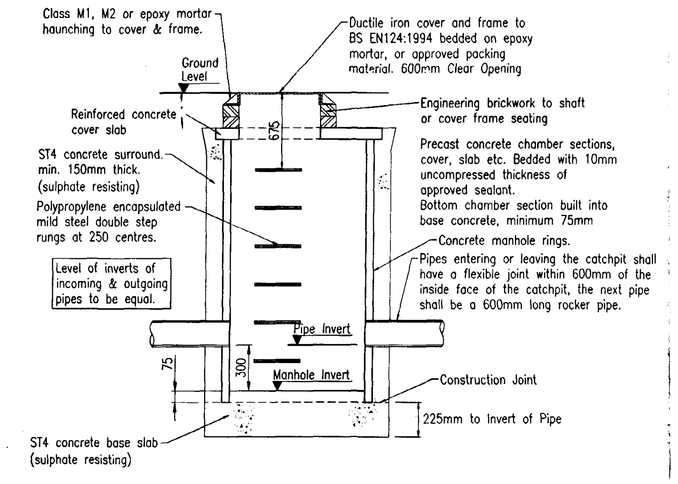


Section through Pipe Trench

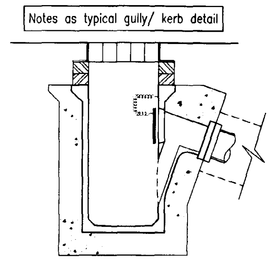
Section along Pipe Trench

Class A Bedding

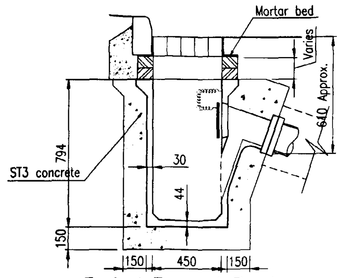
(Vitrified Clay)



Typical Catch Pit Detail



Typical Trapped Gully Detail



Typical Trapped Road Gully/ Kerb Detail

All materials, workmanship & construction for gullies shall comply with clause 5.9. of the 'Lincolnshire County Council, Development Road Specifiation and Construction Guide', current edition.

Gully Notes
1) Cover and frame, uncoated iron to clause 5.9.4.
2) Mortar bed & benching to Clause 13, 'Lincolnshire County Council, Development Road Specification and Construction Guide', current edition.
3) Bricks to be class B engineering bricks to BS 3921 (single course where necessary to obtain satisfactory fall). Corbelled if required. Frames to be bricked on four sided.
4) Insitu ST3 concrete.
5) Position of outlet pipe varies.
6) Insitu ST3 concrete 150mm thick surround to outlet pipe for first one metre under verge or total length under carriageway.
7) Where grating is to be trafficked or laid against within 24 hours of frame being placed in position, then a suitable ultra rapid hardening mortar and concrete (Monoset 241 or similar) shall be used to bed cover and frame.

General Drainage Notes

1. This drawing is to be read in conjunction with all other relevant Engineers and Architects details.
2. All material & workmanship to be in accordance with 'Sewers for Adoption 4th Edition'.
3. All work is to be carried out in accordance with the current British Standards, B.S. codes of practice & Building Regulations.
4. Refer to SFA Specification for concrete grades & sand/ cement mortar grades. All precast & in-situ concrete to contain a minimum Class 3 suphate resisting cement.
5. Pre-formed channels are to be used at manholes.
6. Granolithic concrete benching to be steel trowelled to a dense smooth face neatly shaped & finished to all branch connections & laid in accordance with the Specification.
7. All dimensions are in millimetres u.n.o.
8. Pipe bends to suit direction of flow.
9. Manhole covers and frames to be to EN 124. Use grade D400 covers in vehicular movement areas and grade A15 covers in non-vehicular areas.
10. All trenches under carriageway to be backfilled with Type 1 Sub-base, well compacted in layers not exceeding 150mm loose depth.

Notes on Bedding Details

Generally vitrified clay drainage pipework should be laid in accordance with BS 65 and BS 8301.

A-Type A granular material shall comply with WS No. 4-08-01 and shall be:-
(a) Imported single size or graded aggregate in accordance with BS 882 as shown in the table A.
(b) Selected as-dug granular bedding and sidefill material shall be free from organic matter, combustable materials, frozen soil, clay lumps larger than 75mm and stones larger than the maximum permitted particle size specified in table A depending on pipe size. The selected material shall be evaluated using the compaction fraction test detailed in Appendix A of WS No. 4-08-01.
Material excavated from trenches dug through land contaminated with domestic, building or industrial waste should not be used.

B-Type B selected fill shall be:
Uniform readily compactable material which is free from tree roots, vegetable matter, building rubbish, frozen soil, clay lumps and material retained on a 40mm sieve.

C-Concrete protection to pipe. For concrete grade refer to note 4 and concrete mix specification

E-General backfill shall be:
Suitable excavated material from the trench (or imported) excluding boulders, lumps of concrete, timber and vegetable matter. Do not use heavy compactors before there is 600mm cover of material over the pipes.

Bc-External diameter of pipe.

H-When 'H' (depth of cover) is less than 0.9m below the finished surface of a road or less than 0.3m elsewhere use bedding class A or Z as appropriate for the material being used, or;
Elsewhere use bedding class B or P as appropriate for the pipe being used. Provide temporary protection during construction against mechanical damage and frost.

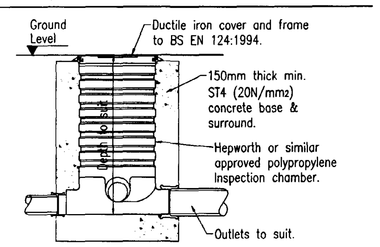
Y-Depth of granular bedding 'Y' shall be not less than 100mm beneath pipe barrels and shall be greater in soft or wet conditions or where the trench bottom is irregular.

Table A
Granular bedding and sidefill material for vitrified clay pipes

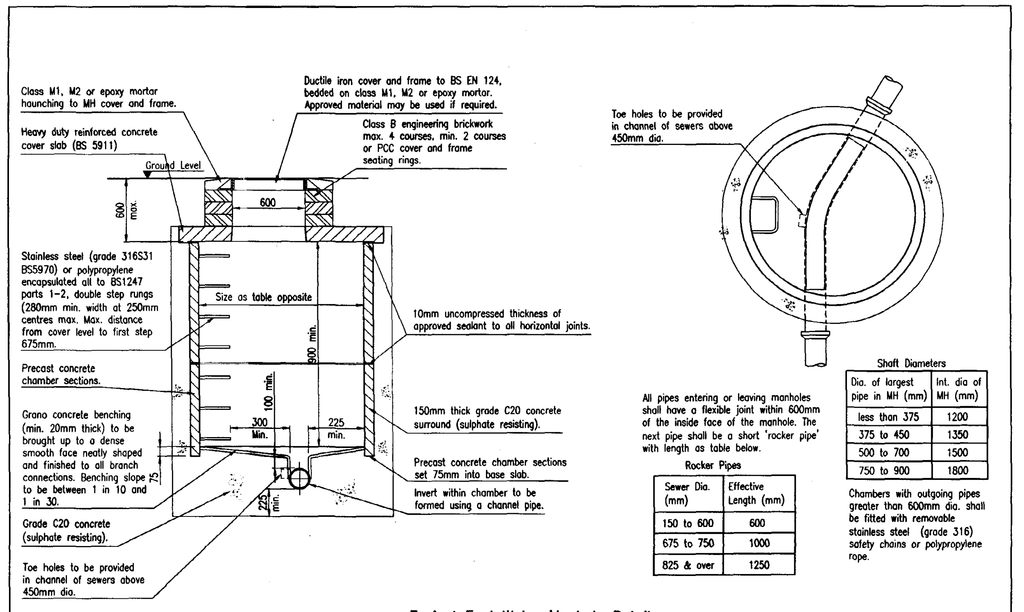
PIPE SIZE DN (mm)	MAX. PARTICLE SIZE (mm)	NOMINAL SINGLE SIZE (mm)	GRADED SIZE (mm)	MAXIMUM CFE VALUE FOR AS-DUG
110	10	10	NOT PERMITTED	0.15
OVER 110 to 160	15	10 or 14	14 to 5	0.15
OVER 160 to 300	20	10,14 or 20	14 or 20 to 5	0.15
OVER 300 to 600	20	14 or 20	14 or 20 to 5	0.15

Notes on Road Construction Notes

1. Do not scale from this drawing, if in doubt, ASK.
2. This drawing shall be read in conjunction with all other relevant engineers and architects drawings.
3. All work is to be carried out in accordance with the current British Standards, British Standard Codes of practice and Building Regulations.



Typical Polypropylene Inspection Chamber



Typical Foul Water Manhole Detail

(Depth to soffit less than 3.0m)

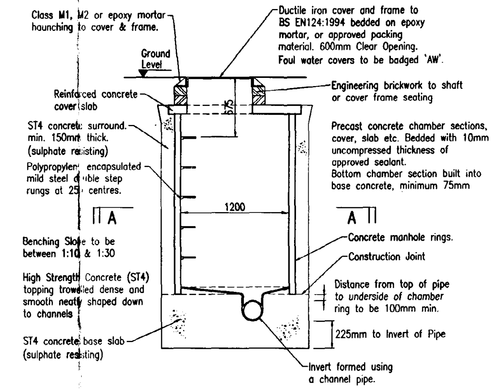
Not to Scale

Shaft Diameters	
Dia. of largest pipe in MH (mm)	Int. dia of MH (mm)
less than 375	1200
375 to 450	1350
500 to 700	1500
750 to 900	1800

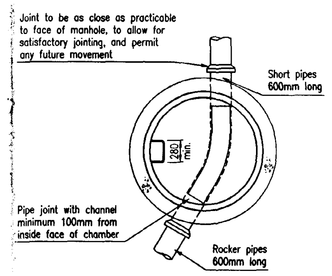
Chambers with outgoing pipes greater than 600mm dia. shall be fitted with removable stainless steel (grade 316) safety chains or polypropylene rope.

All pipes entering or leaving manholes shall have a flexible joint within 600mm of the inside face of the manhole. The next pipe shall be a short 'rocker pipe' with length as table below.

Rocker Pipes	
Sewer Dia. (mm)	Effective Length (mm)
150 to 600	600
675 to 750	1000
825 & over	1250



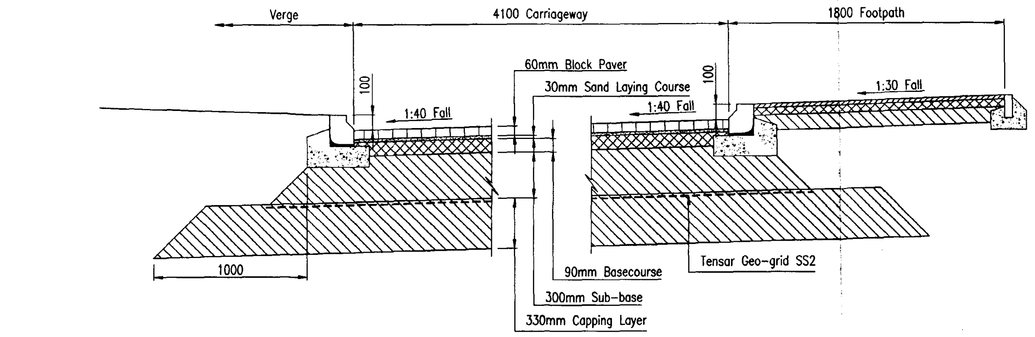
Typical Surface Water Manhole Detail



Section A-A

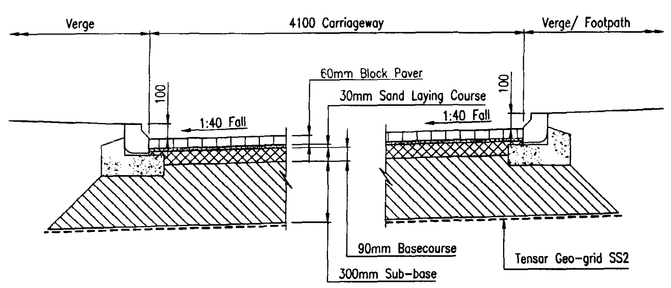
For Proposed Road & Drainage Arrangement refer to drawing no. 14202/02.

For Longitudinal Section refer to drawing no. 25501/04.



Private Road Construction Details including Vehicle Crossing

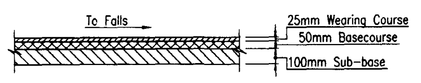
Sub Grade Bearing Capacity (CBR) Below 2%



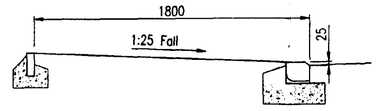
Private Road Construction Details including Vehicle Crossing

Sub Grade Bearing Capacity (CBR) >2%

No road construction/ works on site to commence on site until a full ground investigation/ CBR tests have been undertaken. CBR tests to determine sub-base thickness.



Typical Tarmac Footpath Construction Detail



Typical Vehicle Crossing Detail

Small Block Pavers: Concrete
Precast concrete blocks shall be chamfered and shall comply with BS6717 part 1 and conform to the shapes, dimensions and colours described on the drawings. Precast paving blocks shall be laid in accordance with BS7533 Part 3 except small block paver access crossings will only be permitted when the adjoining footway is of that construction type. The materials utilised and thicknesses employed in the crossings shall be the same as the adjoining carriageway.

Small Block Pavers: Bedding Sand
The sand shall be naturally occurring, be washed and conform as follows:-

BS Sieve size	Percentage by mass passing
10mm	100
5.0mm	90 - 100
2.36mm	75 - 100
1.18mm	55 - 90
0.6mm	35 - 70
0.3mm	8 -35
0.15mm	0 - 10
0.75mm	0 - 1.0

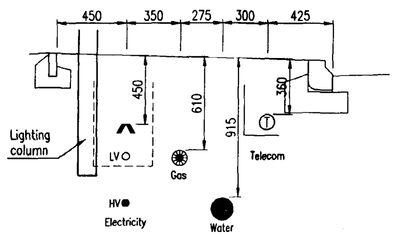
Sands containing crushed rock fines shall not be used. Sands used for bedding small unit paviours in footways shall conform with the grading requirements as shown in the table above.

Wearing Course
Wearing course materials shall be 10mm size close graded bitumen wearing course (6mm in footpath). The wearing course shall be uniformly compacted to a void content within the range 2%-10%. The wearing course must be bonded to the basecourse.

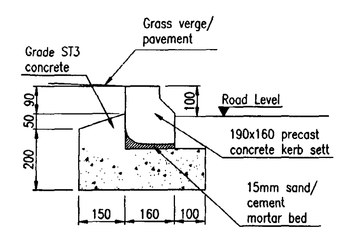
Basecourse
Basecourse materials shall be 20mm nominal size dense bitumen basecourse and shall be laid in a single layer or combination of layers not less than 50mm in thickness nor greater than 110mm in thickness. The basecourse shall be uniformly compacted to a void content within the range 2%-8 % (2%-10% in footpath) and all layers must be bonded together.

Sub-base
Sub-base shall be Type 1.

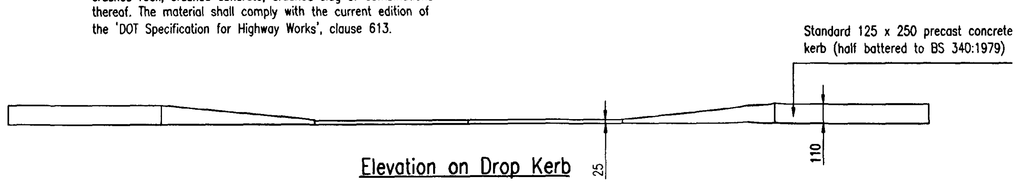
Capping Layer
The capping layer shall be 6F2 capping and should comprise crushed rock, crushed concrete, crushed slag or combinations thereof. The material shall comply with the current edition of the 'DOT Specification for Highway Works', clause 613.



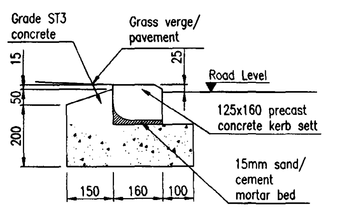
Location of Public Utility Services (Footpath/ Services Margin)



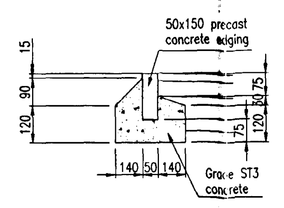
Typical Standard Kerb Sett Detail



Elevation on Drop Kerb



Typical Dropprd Kerb Sett Detail



Typical Edging Kerb Detail

DETERMINED PLAN

REV	DATE	REMARKS
STATUS		PRELIMINARY

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PROJECT
Proposed Residential Development, Main Road, Holbeach St. Marks, Lincolnshire
For Nestwood Homes

TITLE
Road & Drainage Sections & Details (Private Roadway)

SHDC Planning & Development - 2 OCT 2002 Ref 1078/02

DATE	July 2002	SCALE	1:25, 1:20, 1:10
DRAWN	PJS	CHECKED	
DESIGN		FILENAME	14202-05

DRG No. 14202/05 REV

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