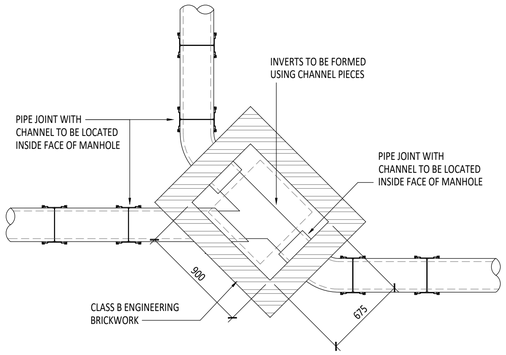
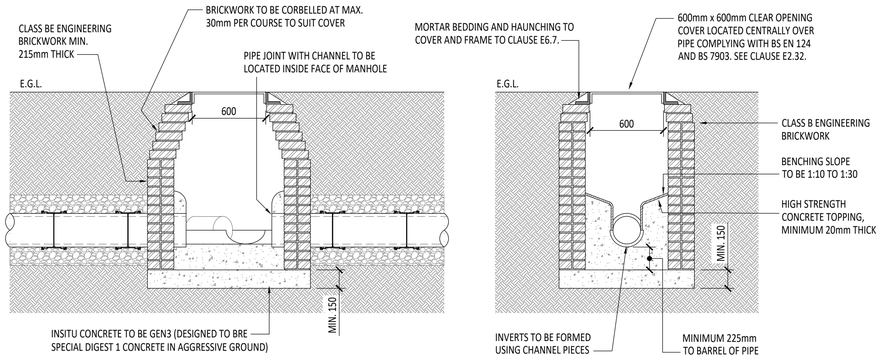
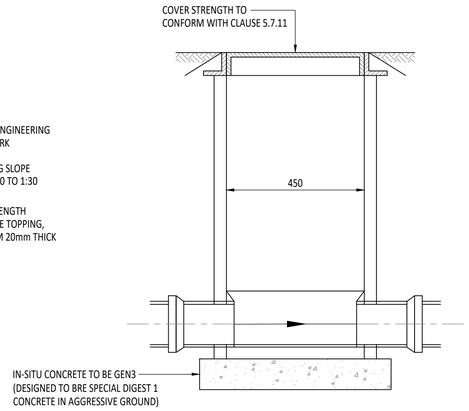


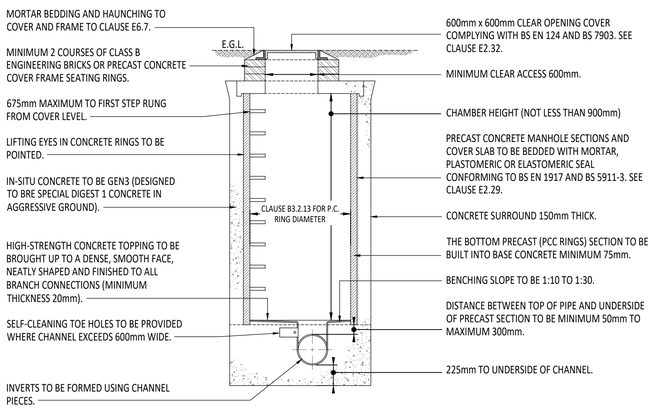


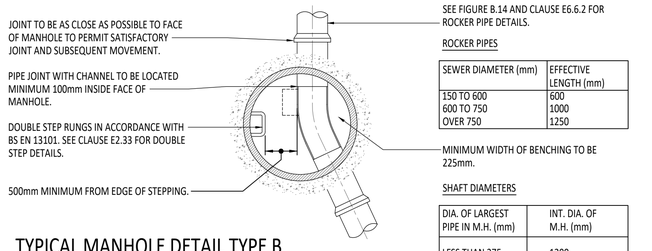


TYPICAL MANHOLE DETAIL TYPE D

MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE LESS THAN 1M

ALL MANHOLE COVERS WITHIN ADOPTABLE HIGHWAY ARE TO BE TREATED WITH ANTI-SKID PAINT SUBJECT TO THE APPROVAL OF LOCAL HIGHWAYS AUTHORITY





ROCKER PIPES

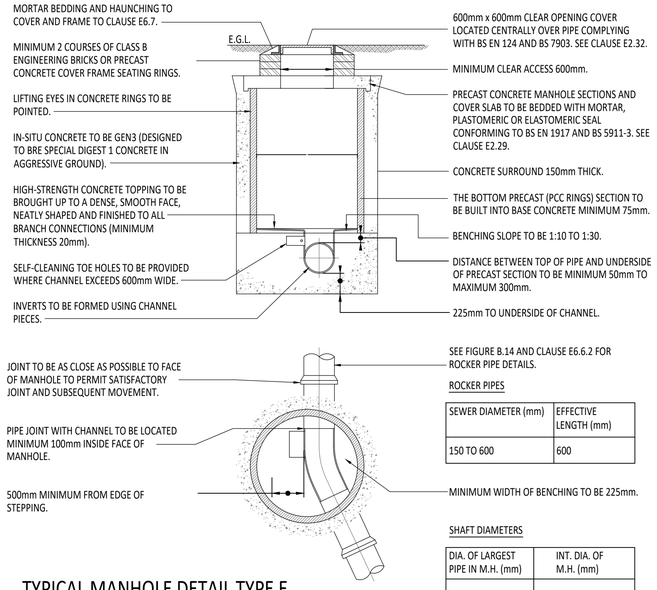
SEWER DIAMETER (mm)	EFFECTIVE LENGTH (mm)
150 TO 600	600
600 TO 750	1000
OVER 750	1250

SHAFT DIAMETERS

DIA. OF LARGEST PIPE IN M.H. (mm)	INT. DIA. OF M.H. (mm)
LESS THAN 375	1200
375 TO 700	1500
750 TO 900	1800
MORE THAN 900	PIPE DIA. + 900

TYPICAL MANHOLE DETAIL TYPE B

MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3m.



ROCKER PIPES

SEWER DIAMETER (mm)	EFFECTIVE LENGTH (mm)
150 TO 600	600

SHAFT DIAMETERS

DIA. OF LARGEST PIPE IN M.H. (mm)	INT. DIA. OF M.H. (mm)
LESS THAN 375 375	1200 1500

TYPICAL MANHOLE DETAIL TYPE E

MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.0m - 1.5m.

TYPICAL DEMARCATION CHAMBER DETAIL

DEPTH FROM COVER LEVEL TO INVERT OF PIPE CHAMBER LESS THAN 1.2m - 450x450 ACCESS
DEPTH FROM COVER LEVEL TO INVERT OF PIPE CHAMBER GREATER THAN 1.2m - 350x350 ACCESS
MAXIMUM LATERAL DRAIN DIAMERTER 150mm
APPROVAL OF THE UNDERTAKER MUST BE GIVEN FOR INSTALLATION OF THIS TYPE OF CHAMBER

1) "THE SPECIFICATION IN ALL RESPECTS SHALL BE IN ACCORDANCE WITH THE CURRENT DEVELOPMENT ROAD AND SUSTAINABLE DRAINAGE SPECIFICATION AND CONSTRUCTION PUBLICATION IN FORCE IN THE COUNTY AT THE TIME OF CONSTRUCTION."
2) "THE MINIMUM LONGITUDINAL FALL FOR HIGHWAYS, WITHOUT CHANNEL BLOCKS SHALL BE 1 IN 150, AND WITH CHANNEL BLOCKS 1 IN 250."
SEE CLAUSE 10.1 OF THE DEVELOPMENT ROAD AND SUSTAINABLE DRAINAGE SPECIFICATION AND CONSTRUCTION. IN ADDITION, ENSURE THAT THE FIRST SECTION OF ANY SIDE ROAD FALLS AWAY FROM THE ROAD FROM THE ROAD TO WHICH IT IS CONNECTING. IF GENERAL TOPOGRAPHY REQUIRES IT TO RISE, THIS CHANGE OF DIRECTION SHOULD TAKE PLACE AFTER THE FIRST SET OF GULLIES. THIS IS TO ENSURE A 'FALSE CHANNEL' WITH ASSOCIATED DRAINAGE PROBLEMS IS NOT CREATED IN THE BELLMOUTH OF JUNCTIONS.
3) "GENERAL DETERIORATION OF THE EXISTING HIGHWAY/FOOTWAY/VERGES CREATED THROUGH CONSTRUCTION OF THE NEW SECTION 38 DEVELOPMENT WILL BE REINSTATED TO THE DEVELOPMENT ROAD AND SUSTAINABLE DRAINAGE SPECIFICATION AND CONSTRUCTION AT THE DEVELOPERS' OWN COST AT THE AGREEMENT OF THE INSPECTING HIGHWAY AND FLOOD AUTHORITY OFFICER."
4) "NO PRIVATE SURFACE WATER SHALL DISCHARGE ONTO THE ADOPTABLE HIGHWAY."
5) "NO PRIVATE STRUCTURAL FEATURES SHALL OVERHANG THE ADOPTABLE HIGHWAY."
6) "NO PRIVATE RETAINING WALLS EXCEEDING 1.37 METRES SHALL BE WITHIN 3.66 METRES OF THE HIGHWAY BOUNDARY."

LINCOLNSHIRE COUNTY COUNCIL HIGHWAY AND FLOOD AUTHORITY NOTES

1) "THE SPECIFICATION IN ALL RESPECTS SHALL BE IN ACCORDANCE WITH THE CURRENT LINCOLNSHIRE DEVELOPMENT ROAD AND SUSTAINABLE DRAINAGE DESIGN GUIDE" AND "DEVELOPMENT ROAD AND SUSTAINABLE DRAINAGE SPECIFICATION AND CONSTRUCTION" PUBLICATIONS IN FORCE IN THE COUNTY AT THE TIME OF CONSTRUCTION.

2) THE MINIMUM LONGITUDINAL FALL FOR HIGHWAYS, WITHOUT CHANNEL BLOCKS SHALL BE 1 IN 150, AND WITH CHANNEL BLOCKS 1 IN 250 (SEE CLAUSE 10.1).

3) IN ADDITION, ENSURE THAT THE FIRST SECTION OF ANY SIDE ROAD FALLS AWAY FROM THE ROAD TO WHICH IT IS CONNECTING. IF GENERAL TOPOGRAPHY REQUIRES IT TO RISE, THIS CHANGE OF DIRECTION SHOULD TAKE PLACE AFTER THE FIRST SET OF GULLIES. THIS IS TO ENSURE A 'FALSE CHANNEL' WITH ASSOCIATED DRAINAGE PROBLEMS IS NOT CREATED IN THE BELL MOUTH OF JUNCTIONS.

4) "GENERAL DETERIORATION OF THE EXISTING HIGHWAY/FOOTWAY/VERGES CREATED THROUGH CONSTRUCTION OF THE NEW SECTION 38 DEVELOPMENT WILL BE REINSTATED TO THE CURRENT DEVELOPMENT ROAD SPECIFICATION AT THE DEVELOPERS' OWN COST AT THE AGREEMENT OF THE INSPECTING HIGHWAY AND FLOOD AUTHORITY OFFICER".

5) "NO PRIVATE SURFACE WATER SHALL DISCHARGE ONTO THE ADOPTABLE HIGHWAY"

6)"NO PRIVATE, STRUCTURAL FEATURES SHALL OVERHANG THE ADOPTABLE HIGHWAY".

7) "NO PRIVATE RETAINING WALLS EXCEEDING 1.37m SHALL BE WITHIN 3.66m OF THE HIGHWAY BOUNDARY".

GENERAL DRAINAGE NOTES

1) THE DRAINAGE SHOWN ON THIS DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH SfA 6TH EDITION

2) RECESSED INFILL TYPE MANHOLE COVERS AND FRAME ARE NOT PERMITTED FOR USE WITHIN THE ADOPTABLE DRAINAGE SYSTEM

3) EASEMENTS TO ADOPTABLE PIPES ARE TO BE 2.5m TO EACH SIDE OF THE PIPE CENTRE LINE FOR UP TO 300mm DIAMETER AND 5.0m TO EACH SIDE OF THE PIPE CENTRE LINE FOR 300mm DIAMETER AND GREATER

4) WHERE PIPES CROSS PLASTIC MEMBRANE TO BE INSTALLED WITHIN PIPE TRENCH TO ELIMINATE ANY CHANCE OF CROSS CONTAMINATION

5) BACK DROPS ARE NOT TO BE USED. STEEPER GRADIENTS ARE PREFERRED

6) PRECAST CONCRETE MANHOLE RINGS ARE NOT TO BE CUT UNDER ANY CIRCUMSTANCES. MANHOLE TO BE BUILT UP WITH BRICKWORK OR CONCRETE TO THE TOP OF THE PIPE

7) PROTECTIVE COVER SLABS TO BE USED OVER PIPES IN NON-TRAFFICKED AREAS WHERE 0.900m COVER IS NOT ACHIEVED AND TRAFFICKED AREAS WHERE 1.200m IS NOT ACHIEVED

8) MANHOLE COVER AND FRAMES SHOULD BE KITEMARKED

9) PIPES OF DIFFERENT DIAMETERS ENTERING MANHOLES ARE TO BE INSTALLED WITH THEIR SOFFITS AT THE SAME LEVEL

10) MANHOLE COVER OVER TYPE E MANHOLE SHOULD BE POSITIONED CENTRALLY OVER THE PIPE. SEE SFA 6TH EDITION FIGURE 2.8

11) THE OUTSIDE OF THE SEWER SHOULD BE IN VEHICLE CARRIAGEWAY (NOT FOOTPATH) AND BE AT LEAST 1.0m FROM THE KERB LINE. THE OUTSIDE OF MANHOLES SHOULD BE POSITIONED AT LEAST 0.5m FROM THE KERB LINE

12) ALL PROPOSED MANHOLE COVERS AND FRAMES TO BE MINIMUM 600mm x 600mm TO MAINTAIN A CLEAR OPENING AND TO COMPLY WITH ANGLIAN WATER CURRENT HEALTH AND SAFETY STANDARDS

13) THE MATERIALS SPECIFIED ARE SUITABLE FOR THE GROUND CONDITIONS

14) IN SITUATIONS WHERE TRAFFIC LOADING IS ANTICIPATED TO BE HEAVIER THAN WOULD OCCUR ON A TYPICAL RESIDENTIAL ESTATE DISTRIBUTOR ROAD (I.E. BRAKING OR TURNING NEAR A JUNCTION) A HIGHER SPECIFICATION COVER (E600) SHOULD BE USED

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GENERAL NOTES

1. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERING & ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. ANY CONFLICTS BETWEEN THIS DRAWING AND INFORMATION ELSEWHERE TO BE REPORTED TO THE ENGINEER AS SOON AS POSSIBLE.
2. DO NOT SCALE FROM THIS DRAWING. IF THIS DRAWING HAS BEEN RECEIVED ELECTRONICALLY IT IS THE RESPONSIBILITY OF THE RECIPIENT TO PRINT THE DRAWING TO THE CORRECT SCALE.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE. CONTRACTOR TO CHECK ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION.
4. TEMPORARY WORKS INDICATED OR IMPLIED AS PART OF THE PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, UNLESS NOTED OTHERWISE.

CONCRETE SPECIFICATION FOR EXTERNAL WORKS

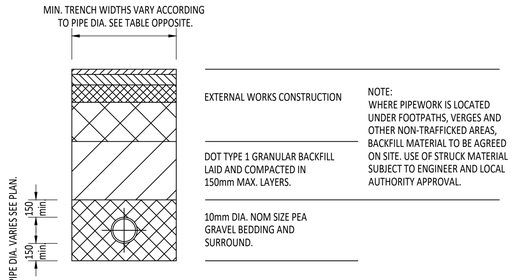
APPLICATION	GRADE	SULPHATE CONDITIONS – CLASS 1	
		MIN. CEMENT CONTENT	MAX. FREE WATER/CEMENT RATIO
Gully Surround Saddle Surround General Pipe Surround	C10/20	130	0.8
Benching	GRANOLITHIC SCREED	300	0.55
Manhole Foundation & Surround Rodding Eye Surround Strip Drain Surround	C20/20	180	0.8

TRENCH WIDTHS:

PIPE DIA. (mm)	MIN. TRENCH WIDTH (mm)
100	550
150	600
225	700
300	750
375	1050
450	1150
Over 1200	Pipe Dia. + 1000

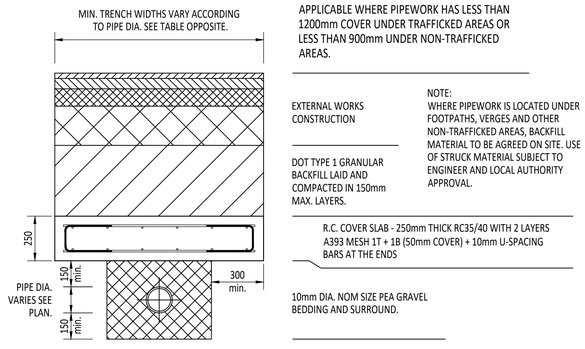
NOTE:
NO MECHANICAL COMPACTION TECHNIQUES TO BE USED WITHIN 300mm OF THE CROWN OF ALL PIPEWORK.

SEE STRUCTURAL ENGINEERS DETAILS FOR PIPEWORK LAID UNDER BUILDINGS / THROUGH FOUNDATIONS ETC.



PIPE BEDDING DETAIL TYPE S

NOTE:
APPLICABLE WHERE PIPEWORK HAS MORE THAN 1200mm COVER UNDER TRAFFICKED AREAS OR MORE THAN 900mm UNDER NON-TRAFFICKED AREAS.



NOTE:
APPLICABLE WHERE PIPEWORK HAS LESS THAN 1200mm COVER UNDER TRAFFICKED AREAS OR LESS THAN 900mm UNDER NON-TRAFFICKED AREAS.

TYPICAL REINFORCED CONCRETE COVER SLAB DETAIL TYPE 1

Rev	Drawn	Checked	Description	Date
P05	AB	AB	TYPE D MANHOLE ADDED	30.04.20
P04	MF		ISSUED FOR APPROVAL	17.03.20
P03	MF	MF	UPDATED TO SUIT COMMENTS	13.02.20
P02	TR	MF	UPDATED TO SUIT COMMENTS	27.11.19
P01	MF	AB	ISSUED FOR APPROVAL	03.05.19

Client: LINDUM GROUP LTD

Project: WELLAND HOSPITAL REDEVELOPMENT, SPALDING

Title: DRAINAGE DETAILS

HWA CONSULTING ENGINEERS
Howard Ward Associates
Brewery House, Walkers Yard
Nottingham NG12 2FF
Tel: 0115 933 2838

Scale	Size	Drawn	Checked
1:200	A1	MF	AB

Drawing Status: APPROVAL

Drawing No.: P19062-HWA-ZZ-XX-DR-C-6009

Revision: P05