

GULLIES AND CONNECTIONS

Double gullies must always be provided at low points and each must have its individual connection to the main sewer. (CONTRACTOR TO ENSURE ON SITE)
All gullies shall be trapped.
Gully laterals shall not exceed 12m in length and shall be protected.
Where gullies are to be installed at road junctions they should be sited upstream of the tangent point at road junctions so that surface water in the channel line does not flow across the junction. Care shall be taken to avoid ponding near the midpoint of radius kerbs. Where the road super-elevates, a gully should be sited just before the point where the adverse camber is removed to prevent water in the upstream channel flowing across the carriageway. (CONTRACTOR TO ENSURE ON SITE)
Care should be taken to avoid ponding in the transition length, when the longitudinal gradient is flat or where there are traffic islands, central reserves or traffic-calming measures. Gullies shall not be sited within pedestrian crossing points. They should be located directly upstream of the crossing point. (CONTRACTOR TO ENSURE ON SITE)
Gullies should be sited carefully and not where traffic would be prevented from passing the maintenance gully tanker whilst they are being emptied, for example within a carriageway width restriction. (CONTRACTOR TO ENSURE ON SITE)
Gullies shall be precast concrete and shall be unreinforced and comply with the requirements of BS5911-2.
Salt glazed ware gullies shall comply with the requirements for round gullies as specified in BS65.
Gullies shall be at least 750mm deep by 450mm diameter with 150mm outlet, trapped and with stoppered rodding eye and chain.
Gullies shall be laid on and surrounded with 150mm thickness of C16/20 concrete to clause 12.1 madewith sulphate resisting cement unless agreed otherwise.
Junction pipes for gullies which are laid but not immediately connected to gullies shall be fitted with temporary plastic stoppers or seals and the position of all such junctions shall be clearly defined by means of stakes or tracing wires, properly marked and labelled.
Gully covers shall be hinged, but not removable, and shall have a nominal clear opening width of 450mm and a minimum area of waterway of at least 900cm² for carriageways, and a clear opening of at least 300mm x 300mm for footways. The upper surface of gully gratings shall be flat and slots in gratings or between gratings and frames shall not be orientated parallel to the direction of traffic except where the slots are less than 150mm long or less than 20mm wide. Where gradients are steeper than 1 in 50, storm pattern grids shall be provided.
Manhole and gully frames shall be set to level, bedded and haunched externally over the base and sides of the frame on an approved bedding material and in accordance with the manufacturer's instructions. The frame shall be entirely seated on at least two courses of Class B engineering bricks, or on precast concrete masonry units or on precast concrete cover frame seating rings to regulate the distance between the top of the cover and the top rung to no greater than 675mm. A mortar fillet shall be provided where the corners to an opening in a slab are chamfered and the brickwork is not flush with the edges of the opening.
Frames shall be bedded on a non-shrink proprietary material which shall have a workable life of 15 minutes. The compressive strength of the bedding material shall exceed 30N/mm² and its tensile strength should exceed 5N/mm². The bedding material must be appropriate for the site and weather conditions at time of mixing. The depth of bedding material shall not exceed the manufacturer's recommendations. The bedding material shall be mixed and laid in accordance with the manufacturer's instructions. Packing materials are not permitted unless approved by the bedding material manufacturer and the Highway and Flood Authority.

Material	AIR VOIDS %		
	Normal Range	1 in 10 Max ²	Absolute Max ²
Footway Dense Binder Course	2 – 10	10	12
Footway Dense Surface Course	2 – 10	10	12
Carriageway Dense Binder Course	2 – 8	8	10
Carriageway Close Graded Surface Course	2 – 10	10	12
Carriageway Hot Rolled Asphalt Surface Course	2 – 6	6	8
Notes			
¹ No results are permitted with air voids below 2%			
² Not more than 1 in 10 results permitted above this value			
³ No values permitted above this value. This includes any for cores extracted wholly within 250mm or less from a joint			

LAYER THICKNESSES FOR BITUMINOUS MATERIALS

- In no instance must the compacted thickness for each layer exceed:
30mm for 6mm Dense Surface Course materials
50mm for 10mm Close Graded Surface Course materials
110mm for 20mm Dense Binder Course materials
- The nominal size of aggregate used for any layer shall be within the following limits:
Minimum compacted thickness = 2.5 x nominal size
Maximum compacted thickness = 5 x nominal size (increased to 5.5 times for 20mm Dense Binder Course)

SUB-BASE

Sub-base shall be Type 3 or 1 as appropriate. A minimum insitu CBR value of 30% and/or a minimum stiffness of 35 MPa must be obtained. CBR and stiffness values shall be determined by Plate Bearing Tests or Lightweight Drop Tests.

Not more than one in ten field density determinations, as detailed in BS1377 Cl2.2 shall be less than 90% of the maximum dry density for that particular sub-base as determined by the vibrating hammer test in BS EN 13286-4

Sub-base must not be segregated during delivery and laying.

S38 DETAILS

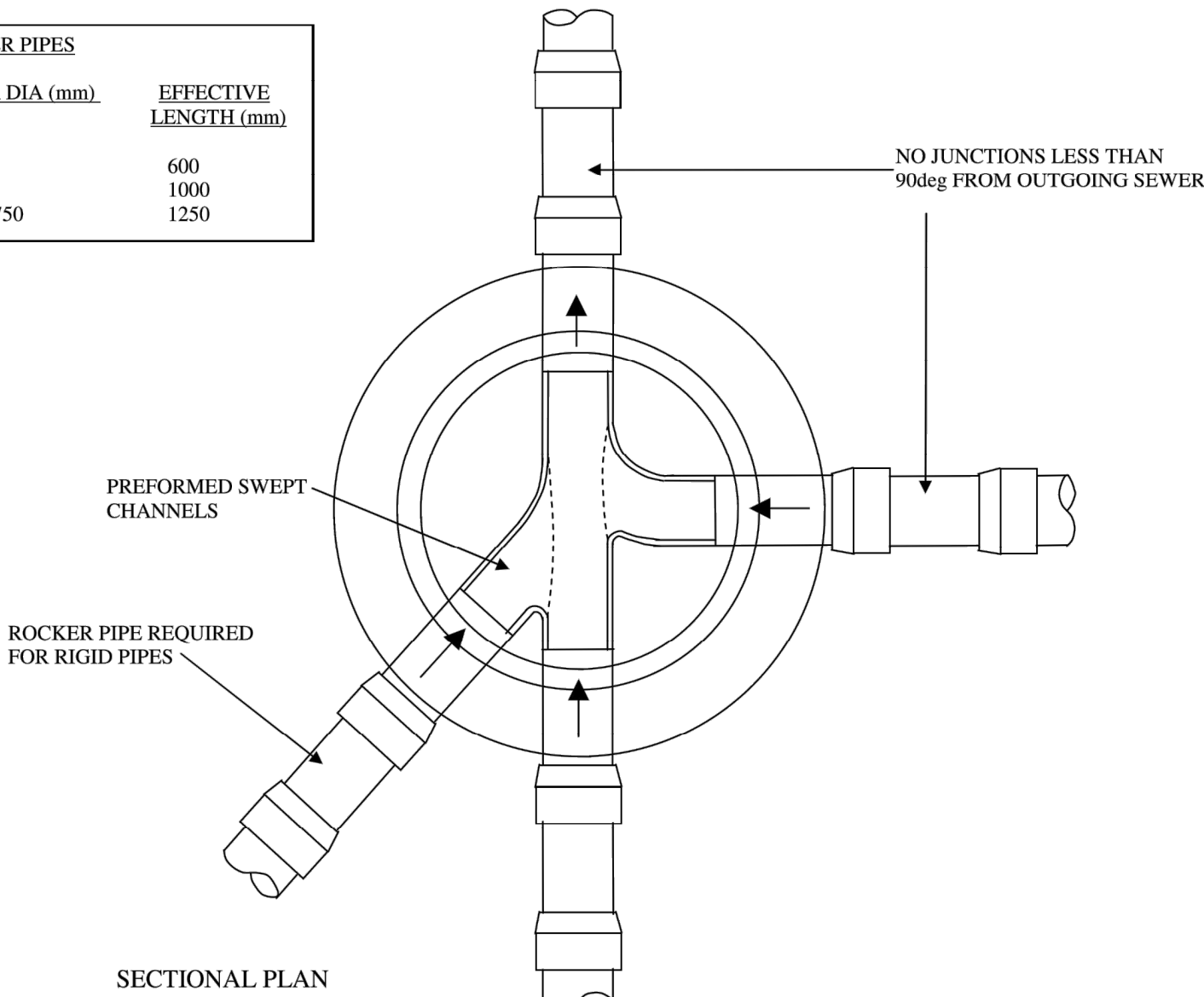
FLEXIBLE SURFACING

GENERAL

Bituminous Surface Course surfacings of carriageways and footways shall not be laid until building development is complete or at such an advanced stage that damage will not occur, notwithstanding any requirements under Section 38 of the Highways Act 1980.

- DENSE BINDER COURSE**
This material shall be AC 20 dense bin rec to BS EN 13108-1. The binder shall conform to BS EN 12591 grade 40/60 for carriageway construction. For vehicle crossings the binder shall be either 40/60, 70/100 or 100/150 grade and for footways 70/100 or 100/150 grade.
- BOND AND TACK COATS**
When required a bond coat complying with ES 594987:2015 Clause 5.5 shall be used. The bond coat shall comply with BS EN 13808:2013, Table 4, Clause 4 and shall be applied in accordance with BS 594987:2015 Clause 5.5.2. When a bond coat is not required a C40B4 (K1 -40) or Ce0B3 (K1-60) tack coat of cationic bitumen emulsion to BS EN 13508 shall be applied to accord with the target rates given in BS 594987 Annex J to the binder course surface. The surface should be thoroughly cleaned prior to the application of the tack coat and the emulsion allowed to 'break' prior to the application of a further layer of binder course or the surface course.
- CLOSE GRADED SURFACE COURSE FOR CARRIAGEWAYS**
This material shall be AC 10 close surf to BS EN 13108-1. The binder shall conform to ES EN 12591 grade 70/100 or 100/150. Unless otherwise agreed by the Highway Authority, the minimum PSV of the coarse "hardstone" aggregate shall be 55 and the aggregate shall be from a source classified as such by the Lincolnshire County Council Approved Supplier Information Booklet current at the time of the works.
- DENSE SURFACE COURSE FOR FOOTWAYS**
This material shall be BS EN 13108-1 AC 6 dense surf. The binder shall conform to BS EN 12591 grade 70/100 or 100/150.
- CLOSE GRADED SURFACE COURSE FOR TEMPORARY FOOTWAYS.**
The material shall be BS EN 13108-1 AC14 close surf. The Binder shall conform to BS EN 12591 grade 100/150
- ROLLED ASPHALT SURFACE COURSE**
Rolled Asphalt Surface Course shall be BS EN 13108-4 HRA 30/14F surf 40/60 des. The mix shall be either LCC Special Mix or LCC Standard Mix and classified as such by the Lincolnshire County Council Approved Supplier's Information Booklet.
The binder shall be grade 40/60 (50 pen) bitumen. The coarse aggregate content of the mix shall be 30%. The minimum PSV value for coarse aggregate in the mix shall be not less than 45.
- COATED CHIPPINGS**
7.1 Coated chippings shall be 14/20mm size as described in this Clause and shall comply with BS EN 13108-4. The minimum PSV shall be 60 unless a higher value is specified by the Highway and Flood Authority. The aggregate shall be from a source classified to provide the required PSV by the Lincolnshire County Council Approval Suppliers Booklet current at the time of the works.
7.2 Coated chippings must be delivered to the site at least four working days in advance of laying the surface course. The Contractor is advised to use chippings that have been tested and approved by Lincs Laboratory.
7.3 The binder to coat the chippings shall be 40/60 grade conforming to BS EN 12591. The target binder content shall not be less than 1.5%.
- Texture depth will be measured using the WDM Texture Meter 2 (TM2), to determine the average Sensor Measured Texture Depth (TM2 SMTD). Measurements will be measured over one or more sections of carriageway lane 50m in length, or the complete carriageway lane if less than 50m. The minimum length will be 10m. The average texture depth for any section of Rolled Asphalt Surface Course shall be in the range of 0.75mm to 1.30mm (TM2 SMTD) throughout the maintenance period.
- JOINTS IN BITUMINOUS CONSTRUCTION**
All joints shall be made in accordance with BS 594987 Clause 6.8 and in particular the following:-
When possible all joints shall be offset by at least 300mm from parallel joints in the layer beneath. All longitudinal and transverse joints in surface courses shall be made flush.

ROCKER PIPES	
SEWER DIA (mm)	EFFECTIVE LENGTH (mm)
150-600	600
600-750	1000
OVER 750	1250



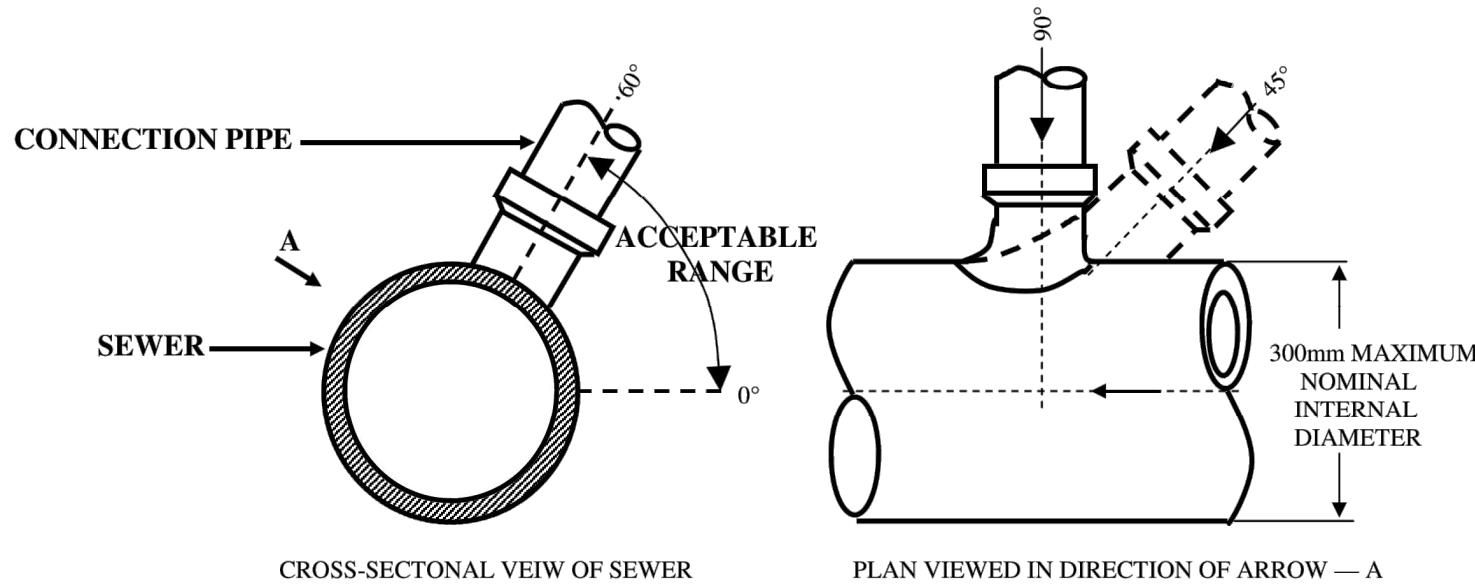
SECTIONAL PLAN

RIGID PIPES BUILT INTO MANHOLE SHOULD HAVE A FLEXIBLE JOINT AS CLOSE AS FEASIBLE TO THE EXTERNAL FACE OF THE STRUCTURE AND THE LENGTH OF ROCKER PIPE SHOULD BE AS SHOWN.
ALL PIPES ENTERING THE BOTTOM OF THE MANHOLE TO HAVE SOFFITS LEVEL.

TYPICAL ARRANGEMENT OF PIPE JUNCTIONS WITHIN MANHOLES

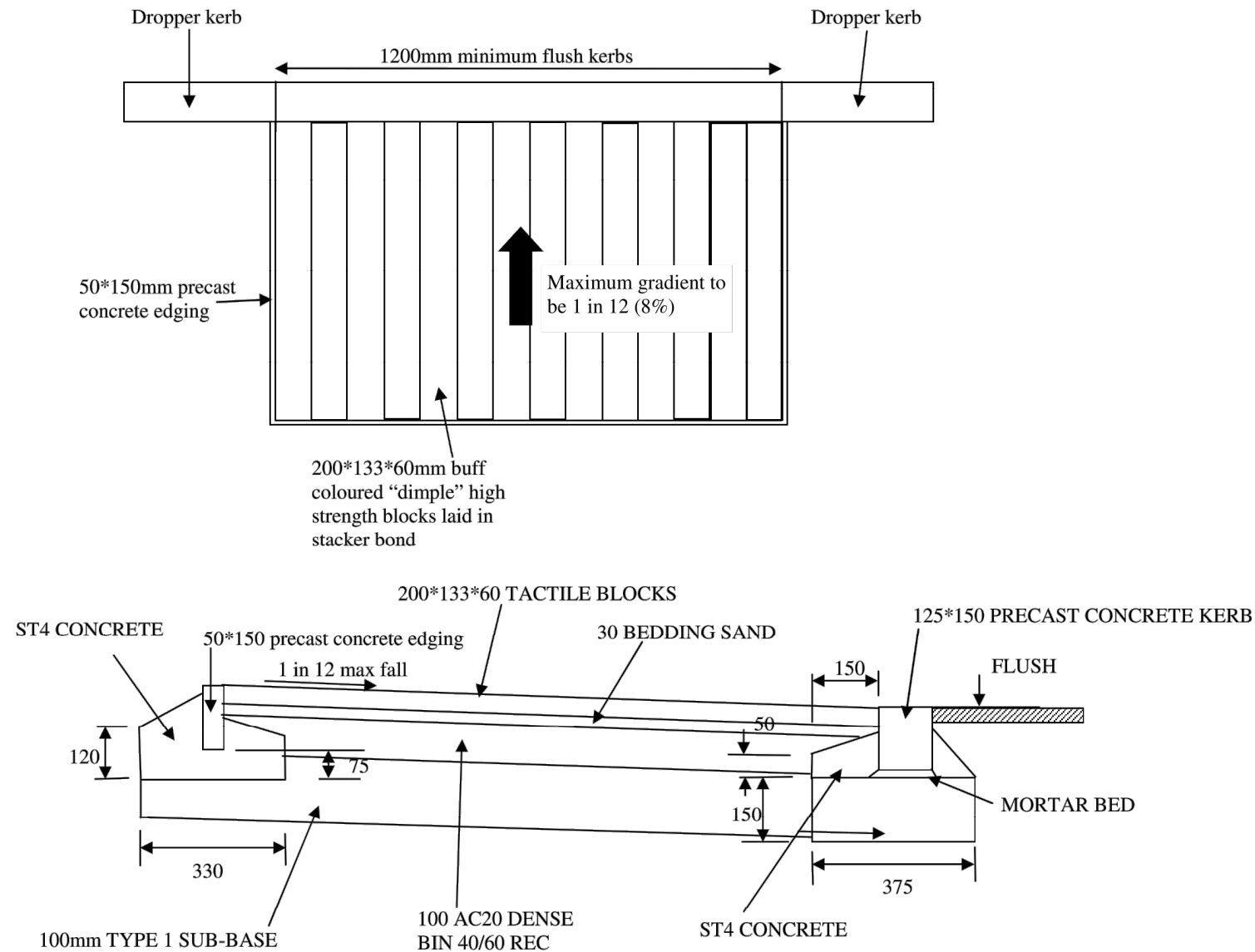
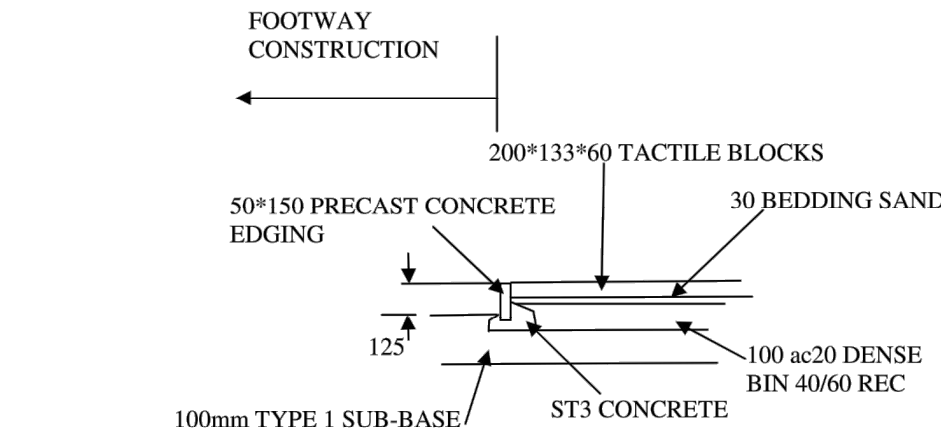
GENERAL DRAINAGE

- All drains shall be commenced at and laid from the outfalls unless agreed otherwise by the engineer.
- All drainage outfalls shall be completed sufficiently early to accommodate drainage of the works.
- All relevant Agreements, Approvals and Permissions are to be obtained for connections to public / existing sewers prior to construction of drains.
- All proposed services to be co-ordinated with proposed underground drainage.
- Manhole cover levels are indicative only and are to be adjusted to suit finished levels.
- The Contractor / Builder must check all dimensions on site.
- No responsibility can be accepted for abnormal conditions which may be discovered during construction.
- All drainage proposals subject to AW / Building Control / Highways approval.
- Existing manhole positions and invert levels to be verified on site and any discrepancies brought to the attention of the Engineer prior to construction.
- The whole of the installation to be to the approval of the Local Authority and/or the Local Water Company.
- All drains to be tested to the satisfaction of the Highway Inspector. All drains to be air tested prior to backfilling and after completion of backfilling and compaction.



CONNECTIONS TO SEWER

- LCC DRS GENERAL NOTES:
- 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.
 - 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).
 - 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 belmouth of junctions.
 - 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.
 - "No Private surface water shall discharge onto the adoptable highway"
 - "No private, structural features shall overhang the adoptable highway".
 - "No private retaining walls exceeding 1.37m shall be within 3.65m of the highway boundary".



TACTILE PAVING DETAILS nts

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rev.	date	Description	Drawn	Chk.

WARD & COLE consulting engineers ■ LINCOLN □ LONDON □ NOTTINGHAM		
Fosse House Roman Wharf Lincoln LN1 1SR tel 01522 513032 fax 01522 513559 e-mail structures@wardcole.co.uk		
client: Woodgate Developments Ltd		
project: Residential Development Land off Boston Road & High St Gosberton, Lincs.		
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