Part 4 – Materials and Construction

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Section MC1: General

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In this section:

- Introduction
- Using alternative materials
- Using alternative materials in conservation areas
- Using new materials and construction methods
- Marking the highway boundary

Introduction

4.1 This document forms part of the Leicestershire Highway Design Guide (LHDG). A glossary of terms is available as Part 8 of the LHDG. The standard construction requirements and materials set out in this Part are based on national standards and advice used in general for constructing and maintaining highways throughout the region. They should normally be applied to **all** highway works and have been chosen to make sure the highways function safely and to make sure that they can be maintained in the most cost-effective way. To achieve these ends, we have considered the principles of quality, durability, maintainability and sustainability.

4.2 This Part also provides details on our commuted sums policy, including setting out the legal background and how we calculate the sums.

4.3 This part should also be read in conjunction with relevant Standard Detail and accompanying notes and Specifications, available on the LHDG webpage.

Using alternative materials

4.4 We recognise however that applying strict standards for construction details and materials may not always be appropriate to streets in new housing layouts. Among other requirements, the aim in building new developments should be to create places and spaces (including adoptable highway areas that are attractive, of high quality and have their own distinctive identity while respecting and enhancing local character. The Manual for Streets sets out that using local materials can strengthen local character by relating a layout to neighbouring developments.

4.5 To recognise and overcome some of the inflexibility that results from using standard materials, LCC may allow the use of some alternative materials, landscaping treatment and features. Developers are advised to engage with LCC as early as possible to discuss this. If alternative materials are proposed they must be:

- to a BS/EN standard;
- cost effective to maintain and replace;
- durable;
- safe for purpose;

- sustainable; and
- appropriate to the local character.
- durable and suitable for the hierarchy of the road/ footway section and the anticipated traffic/pedestrian flows;
- provide a sustainable solution, including the ability to replace components to maximise the life of the asset;
- accord to the principles of Asset Management and proved good "Whole of Life" cost value in terms of replacement, serviceability and maintenance regimes;
- the use of recycled materials will be considered where appropriate;
- supported by a commuted sum to meet the additional costs in maintaining and replacing non-standard assets.

Any alternatives should also not place a burden on LCC's budget. So, where we agree in principle to you using alternative materials and features, we will normally require you to pay a commuted sum to cover any additional maintenance costs. (Please see Section MC18: Commuted sums for further details on our commuted sums policy).

Using alternative materials in conservation areas

4.6 If you need to use traditional or other agreed non-standard surfacing and kerbing materials in a conservation area, to comply with the requirements of the planning authority you will not normally have to pay a commuted sum. (Please see Section MC18: Commuted sums for further details on our commuted sums policy).

4.7 A characteristic of many villages is the informal appearance of highway edge which consist of grass verges without kerbs. In these areas standard pre-cast concrete kerbs may not be appropriate and you could use natural stone or riven or exposed aggregate kerbs to prevent overriding. It may be desirable to upgrade verges to include kerbs to improve pedestrian safety, drainage and to discourage parking.

Using new materials and construction methods

4.8 We will consider new or innovative materials, construction methods and solutions where this is not likely to increase future maintenance costs or detract from the quality and sustainability of the environment. Where maintenance costs would be increased, but the materials are otherwise acceptable, we will require the payment of commuted sums. Please see Section MC18: Commuted sums for further details on our commuted sums policy.

Marking the highway boundary

4.9 It is important that there is clear demarcation between public and private space. You must define the highway boundary by continuous 50mm x 150mm edging type EF to BS7263 unless we agree otherwise. Alternative approaches to demarcation will be considered on a site by site basis, for example, in conservation areas.

Section MC 2: Designing and managing the environment

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4.10 You can find guidance on environmental design and construction of road schemes in LA 117 of the Design Manual for Roads and Bridges (DMRB). You should use the guidance to help you to identify areas and issues where you need to carefully consider environmental factors. The guidance has been written for trunk road schemes but can be applied to other roads, and the expectation is that this guidance will be followed.

4.11 Some plants and animals are given special protection under UK and European law, and LA 108, 115 and 118of DMRB will give you detailed information and advice. These documents will give you information on who you need to consult, together with other advice including:

- Annex 1 - Seasonal constraints on animals including birds and fish.
- Annex 2 - List of the relevant conventions and legislation.
- Annex 3 - Species advice.
- Annex 4 - Habitat advice.

Section MC 3: Specification

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4.12 All highway works must normally be in accordance with:

- the 'Specification for Highway Works' (SHW), published by Her Majesty's Stationery Office as Volume 1 of the Highways Agency's Manual of Contract Documents for Highway Works;
- our 'Highway requirements for developments'.
- LCC Specification for Highway Works

You should use the copies of the document that are current when you design works under Section 38 or Section 278 agreements.

4.13 Some of the clauses and Appendices in our Specification contain additions and amendments to the SHW. Where the Specification clauses and Appendices in our document vary from the SHW, the ones in our document will apply.

Section MC 4: Standard drawings

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4.14 All works must normally comply with our standard details.

https://resources.leicestershire.gov.uk/environment-and-planning/planning/leicestershire-highway-design-guide

4.15 If your proposals are not covered by the standard drawings, you will need to submit scheme-specific drawings to us for approval. You should do this at the earliest opportunity in the design process.

Section MC 5: Site surveys, tests and investigations

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4.16 You must arrange and submit any site surveys, tests and investigations that we need before you submit your design to us. These must be in accordance with BS5837 and cover:

- Appropriate pavement investigation as agreed
- ditches;
- existing drainage systems and outfalls; and
- services and existing foundations;
- a survey of existing trees and other soft landscape features including;
- the condition of each tree;
- its size and form; and
- details of tree preservation orders and so on;
- nature-conservation surveys;
- details of how surface water run-off will be dispersed;
- consultation with the Environment Agency;
- the depth of the water table and perched water tables;
- the impact on adjacent developments and land;
- a risk assessment of chemical contamination;

- the presence of hazardous materials;
- the stability and acceptability of earthworks;
- an assessment of subgrade strength;
- the frost susceptibility of subgrade;
- the suitability of subgrade soils for lime or cement stabilisation (if required); and
- the possible recycling of on-site materials.

4.17 You must submit the results of the tests during technical approval to our Engineer before you begin construction. Email to road.adoptions@leics.gov.uk

Section MC 6: Sampling and testing goods and materials

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4.18 You must arrange and pay for all the sampling and testing outlined in Appendix 1/5 of our Specification. You must also submit one copy of these test results to the road adoptions team at road.adoptions@leics.gov.uk.

4.19 LCC reserves the right to carry out any sampling and testing we feel is necessary to confirm that the goods and materials meet with the Specification. They can also core through any pavement construction at any stage to check the thickness of the layers and the type and standard of construction. If we find the work does not meet the Specification, you will be required to pay for all associated costs as well as completing works in accordance with the specification. You can find a list of the samples of goods and materials which we may ask you to supply to check you are meeting the Specification in Appendix 1/6 of our Specification.

Section MC 7: Fencing and barriers

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- General
- Safety fences and barriers
- Pedestrian barriers
- Pedestrian guardrails
- Noise fencing

General

4.20 We will not adopt any fencing erected on the highway boundary unless it:

- is provided as a safety feature at the top of any structure retaining the highway;
- provides protection against a hazard existing on the adjacent land; or
- is a noise barrier (Section MC17: Noise barriers, screening and bunding).

In other circumstances it will be necessary to establish who is responsible for maintaining the fencing in the early stages of our discussions with you.

Please refer to Section MC18 “Commuted sums and how we calculate them”.

4.21 For works that we are to adopt, you can find details of fencing, including brook railings, boundary markers, gates and stiles and pedestrian guardrails in the Standard Details and Appendices 4/1 and 4/2 of LCC’s Specification.

Safety fences and barriers

4.22 Safety fences and barriers must comply with Series 400 of Section 1 of the DfT’s Manual of Contract Documents for Highway Works. should not generally be included within residential developments as the need should be designed out to provide layouts that provide places for living. Where Vehicle Restraint Systems are unavoidable or required to address existing situations where problems exist or circumstances have changed then reference should be made to the RRRAP (Road Restraint Risk Assessment Process) contained in CD 377 where flows are appropriate. In the event that flows are not sufficient to meet the thresholds in this guidance then individual risk assessment should be made in conjunction with Road Safety / Safety Audit. Care should be taken to avoid the use of Vehicle Restraint Systems to protect road users from the dangers of other objects or hazards within

the highway boundary by first determining whether the objects in question could be relocated to remove the hazard

Pedestrian barriers

4.23 Where a footpath joins a road you must provide staggered barriers to:

- prevent pedestrians running straight out into the road; and
- reduce the likelihood of misuse by cyclists.

You can find details of these barriers in the Standard Details.

Pedestrian guardrails

4.24 You must use guardrails where the number of pedestrians makes it necessary for you to channel them to the appropriate crossing point. You should take care to make sure that the guardrails do not interrupt visibility. You should use high visibility pedestrian guardrail.

Noise fencing

4.25 Unless we agree otherwise, you should treat noise fencing as a highway structure. As such, it must meet the design requirements for a structure and you must pay us design checking fees and a commuted sum for its future maintenance. You can find more information on noise fencing in Section MC17: Noise barriers, screening and bunding. Please see Section MC18: Commuted sums for further details on our commuted sums policy.

Figure MC1 Example of noise fencing

Section MC 8: Drainage

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In this section:

- General
- Land drainage
- Existing drainage systems
- Sustainable Drainage Systems (SuDS)
- The hydraulic design of adoptable highway drains
- Hydraulic design – protection against flooding
- Minimum pipe size
- Approving drainage structures
- Catchpits
- Catchpit and manhole positions
- **Positioning and alignment of highway drains**
- Gullies
- Providing sub-soil drainage
- Backfilling trenches

General

4.26 Normally the highway drainage on new developments is connected to a drainage system that is adopted by the water company and is subject to a Section 104 agreement under the Water Industry Act 1991. You must provide evidence of this agreement before we will agree to sign a Section 38 agreement. We will not adopt the roads until the water company has issued a provisional certificate of adoption for the drainage system or it is to be adopted by us as a highway drain.

4.27 All highway drains should be located within land that we are adopting. Only in exceptional circumstances will we permit them in land that is to remain private. You must cover any adoptable highway drain outside the limits of the adoptable highway

by an Easement with accompanying legal agreement. This should be in place before, or be a condition of, the Section 38 or 278 agreement.

4.28 You must provide written evidence of the right to discharge water from a highway drain into any receiving ditch or watercourse. This may require Ordinary Watercourse Consent. This may require consent from the relevant consent body (Environment Agency or Lead Local Flood Authority). You must provide written evidence that you have received any approval/consents from such bodies that you may need.

4.29 Piped system discharges should be constructed in accordance with LCC standard drawings. You must direct the end of the pipe, so it discharges at an angle less than 60 degrees to the direction of flow in the ditch or watercourse. The end of the pipe must have a headwall and apron which supports the bank above and adjacent to the pipe and prevents any scouring underneath the pipe. You must protect the banks of the ditch or watercourse from scouring.

4.30 If the outfall is to an existing highway drain, you will have to prove its capacity and condition before we can approve the connection. For all works incorporating highway drainage you will need to carry out and provide a copy of a CCTV survey and report. You must carry out any improvement works found necessary, all at your expense.

4.31 We will not normally accept drainage of other non-adopted areas into an existing or adoptable highway drain.

4.32 Where private non-adoptable drives and other surfaces fall towards the adoptable highway, you must prevent surface water run-off from reaching the highway boundary and entering the highway drainage system.

Land drainage

4.33 Where there is or is likely to be run-off from landscaped areas, open spaces and adjoining land, you must make appropriate arrangements for land drainage. This can include providing intercepting drains and ditches with satisfactory outfalls.

Existing drainage systems

4.34 You must deal with any drainage systems existing within the development site, including any land drains, ditches, watercourses, outfalls from adjacent land or drainage systems, to the satisfaction of the relevant authority (Lead Local Flood Authority or Environment Agency). You must have the consent of the Environment Agency for piping an existing ditch or watercourse, in accordance with Section 23 of the Land Drainage Act 1991.

Sustainable Drainage Systems (SuDS)

4.35 Where you are proposing SuDS for highway drainage, you must enter into discussions with all relevant parties at an early stage (and certainly before any planning application) to agree ownership and responsibility for the facility. (You may need to address this as part of a concept proposal that you are required to prepare for your proposed development. Please see Part 2, Section PDP2 for further information on concept proposals). We will not adopt your road unless we are

satisfied with the design of the system and that satisfactory arrangements are in place to cover its future maintenance.

The hydraulic design of adoptable highway drains

4.36 The hydraulic design of adoptable piped highway drains must meet the requirements of the current edition of 'Sewers for Adoption' published by Water UK/WRc plc.

4.37 You must submit microdrainage calculations using the specified method of calculation and format.

Hydraulic design – protection against flooding

4.38 The system must be designed to meet the requirements of the current edition of 'Sewers for Adoption'.

4.39 The system should be designed not to flood any part of the highway or site in a 1 in 100 year return period design storm or any other return period that is set out in any latest version of 'Sewers for Adoption'.

4.40 Your design should also show the line and extent of flow paths and the potential effects of flooding if storms are greater than those allowed for by your design.

Minimum pipe size

4.41 The minimum pipe diameter for adoptable highway drains, other than gully connections, is 225mm. The minimum size for a road gully connection is 150mm.

Use of combined kerb and drainage systems

4.42 You must consider a combined kerb and drainage system where the minimum longitudinal gradient of a carriageway is less than 1 in 100 for flexible surfaces and less than 1 in 80 for block paved surfaces. We will normally require you to pay a commuted sum to cover any additional maintenance where a combined drainage system is used.

Figure MC2 Example of a combined kerb and drainage system

Approving drainage structures

4.43 Any:

- drain, piped or boxed culvert, sewer or drainage structure that has a clear span or internal diameter of greater than 900mm; and
- headwall greater than 1.5m retained height;

will be classified as a highway structure and be subject to the specific requirements that apply to highway structures.

Catchpits

4.44 Unless otherwise specified, you must use catchpits and not manholes on adoptable highway drainage systems. SuDS structures (typically over-sized chambers and cover slabs which are greater than 1050mm in diameter), even if they are to be adopted by the relevant water company, must still be designed to the relevant loading standards for retention within the highway (Eurocodes). You will need to demonstrate to us that this has been achieved

4.45 You must provide a catchpit (an access chamber, with sump, on a drainage system) where there is any discharge into an existing ditch or watercourse.

4.46 On all drainage runs we are to adopt where the pipe diameter is 900mm or less, you must provide a catchpit at:

- every change of alignment or gradient;
- the head of all main pipelines;
- every junction of pipelines except for single-gulley connections;

- every change in pipe diameters; and
- a maximum spacing of 90 metres.

Catchpit and manhole positions

4.47 You should normally locate catchpits or manholes within the verge, and not the carriageway, on classified roads and other roads with a higher status than a residential access road or industrial access road. The outside of catchpits and manholes should be at least 500mm from the kerb line or the edge of the carriageway. Any catchpits or manholes within a carriageway must be located so that they can be accessed while providing the necessary safety zones and without preventing traffic from passing. This will generally mean that you should not site them at or near the centre of the carriageway or within a width restriction. You should also take care when locating catchpits or manholes within junctions or roundabouts, based on the same criteria.

Positioning and alignment of highway drains

4.48 Highway drains should normally be laid:

- in straight lengths;
- to straight grades between catchpits; and
- within the carriageway or verge.

You must not lay drains and sewers and their associated catchpits or manholes in footways as this space is required for other utility apparatus. As described in paragraph 4.25, all highway drainage should be located within land that we are adopting. In land outside highway you will require an easement.

Gullies

4.49 All gullies should be trapped and the maximum length of gulley connection should not be more than 15m. It will not normally be acceptable to connect one gulley connection directly into another. Gully spacing should be calculated from Table MC1 and the accompanying notes:

Table MC1: Gully spacing

Table MC1: Gully spacing				
Carriageway gradient	1/100	1/80	1/60	1/40 or steeper
Area drained (including footways and so on) (m^2)[a]	170[b][c]	180[b][c]	200[b][c]	240[b][c]

a) When calculating the areas drained, you must make allowances for all footways, footpaths, paved areas and verges that fall towards the carriageway.

b) Gullies must not be spaced more than 40m apart, irrespective of the areas drained, except at summits where the first gully should not be more than 40m from the high point.

c) Double gullies must always be provided at sag points and low points and each must have its individual connection to the main sewer or highway drain.

4.50 In footpaths, footways and cycleways separated from carriageways, you must provide gullies or channels connected to the highway drainage system where surface water would otherwise discharge onto adjacent property or cause flooding of footpaths, footways or carriageways.

4.51 You should site gullies upstream of the tangent point at road junctions so that surface water in the channel does not flow across the junction. You should take care to avoid ponding near the mid-point of radius kerbs. Where the road is super-elevated, you should site a gully just before the point where the adverse camber is removed to prevent water in the upstream channel flowing across the carriageway.

4.52 You should take care 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. You must not site gullies within pedestrian crossing points. Where possible, locate them directly upstream of the crossing point.

4.53 You should not site gullies where traffic would be prevented from passing while they are being emptied, for example within a carriageway width restriction.

4.54 You will need to provide us with a contour plan to show that gullies are located in the correct position as part of your design submission for works under Section 38 or Section 278 agreements.

Providing sub-soil drainage

4.55 You must construct a system of sub-soil drainage to a suitable agreed outfall all to our satisfaction where:

- the winter height of the water table is within 600mm of formation level; or
- the sub-soil is unstable because of being waterlogged; or
- there is a likelihood of water running from or out of adjacent ground; or
- springs, land drains or watercourses are present; or
- the finished road is below existing ground level, regardless of the water table; or
- the sub-grade is likely to be altered due to groundwater.

Backfilling trenches

4.56 You must backfill all drainage, utility and other trenches in the highway for industrial and commercial premises up to formation level with GSB type1 granular sub-base material. Backfill on residential sites should be a granular material to the approval of the highway authority (acceptable material will typically include GSB type 1 or material graded to 6F1).

Section MC 9: Earthworks

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- General

General

4.57 All earthworks must comply with Series 600 and Appendices 6/1, 6/2, 6/7 and 6/8 of our Specification.

4.58 Embankments and other areas of fill must:

- be formed of acceptable material excavated from within the site or imported on to the site;
- meet the requirements of Appendix 6/1 of our Specification for use in the permanent works; and
- have the approval of LCC to be used in that particular location.

Section MC 10: Road pavements

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- Constructing the site access and roads external to a development
- Internal development roads
- Subgrade assessment
- Carriageway sub-base and capping layer
- Frost susceptibility
- Capping materials
- Sub-base
- Surface and binder courses and bases
- Concrete-block paving
- Coloured Surfacing
- Alternative materials for carriageways and shared surface areas
- Resurfacing carriageways at junctions with existing county roads and widening existing county roads
- Speed control humps
- Speed control bends
- Entry ramps

Constructing the site access and roads external to a development

4.59 The design and construction of works on classified roads and other roads (existing or proposed) not covered by this design guide must normally comply DMRB.

Internal development roads

4.60 Listed below are the road types covered by this design guide. The construction varies according to the road type. It is essential that you mark the road category clearly on the plans you submit for approval in line with the abbreviations in Table MC2. You can find further details of the road types in Part 3, Section DG2.

Table MC2: Development road types	
Road category	**Abbreviation**
Residential access road	RAR
Residential access way	RAW
Major industrial access road	MajIAR
Minor industrial access road	MinIAR

Subgrade assessment

4.61 For design purposes, you must establish the CBR on virgin ground before you begin construction. On a site which has had a previous purpose, a methodology must be established. You should notify us in advance of site tests to establish the subgrade strength and give us the opportunity to be present at such tests. You should provide the highway authority with copies of all test results.

4.62 You should use soil-classification tests to give the types of soil an 'Equilibrium CBR' based on material type, using Table MC3referring to relevant table, unless we agree otherwise.

Table MC3: Equilibrium CBR values to be used for design purposes[(a)]		
Type of soil	**Plasticity index**	**Equilibrium CBR %**
Heavy clay	50 or greater	Less than 2
Heavy clay	40 to 49	2
Heavy clay	30 to 39	2
Silty clay	20 to 29	3
Sandy clay	10 to 19	4
Silt	Less than 10	1
Sand (poorly graded)	Non-plastic	20
Sand (well graded)	Non-plastic	40
Gravel (poorly graded)	Non-plastic	40
Sandy gravel (well graded)	Non-plastic	60

(a) Based on DMRB CD225.

Carriageway sub-base and capping layer

4.63 Use Table MC4 to find the thickness of capping and sub-base you need to use.

Table MC4: Carriageway sub-base and capping thickness[(a)]

CBR Value	Min 450mm Frost Susceptibility (see clause 4.64)					
	Access Road (250mm Bituminous layer)		Access Way (200mm Bituminous layer)		Industrial Road (300mm Bituminous layer)	
	Capping	Sub Base	Capping	Sub Base	Capping	Sub Base
Less than 2%	550	200	500	250	600	150
2%	400	200	350	250	450	150
3%	300	200	250	250	350	150
4%	250	200	200	250	300	150
5 to 15%	200	200	200	250	250	150
More than 15%		200		250		150

a) The foundation design should not vary frequently along the road. You should select an appropriate value for each significant change in the subgrade properties.

b) Where the equilibrium CBR falls between values in the above table, you should round down the value to the lower value.

c) When the subgrade CBR is sufficiently below 2% that capping with sub-base is not sufficient to support the pavement, special measures will be required. Note that the use of geo-textile will only be acceptable in certain situations. You can find advice in DMRB CD225.

Frost susceptibility

4.64 Material within 450mm of the finished road surface must not be frost susceptible.

Capping materials

4.65 You will need approval for each site for the capping layer which must comply with our SHW Table 6/1, Type 6F2 or 6F3. You must test the capping layer as necessary to demonstrate that it has an in-situ CBR of 15% (or equivalent test result). We may approve other materials as long as you have previously demonstrated to us that they will achieve an in-situ CBR of 15% (or equivalent test results).

Sub-base

4.66 Sub-base must be Type 1 to Clause 803 of the National Highways Specification.

Surface and binder courses and bases

4.67 Table MC5 gives the:

- required minimum design thicknesses; and
- options you have for the flexible and modular (block) materials you should normally use for different development road types.

Roads not covered by this table should be designed on a site-by-site basis to DMRB. Where it is necessary to alter or improve an existing road to serve a development, in all cases the minimum depth of surface course, binder course and base layer should normally not be less than that of the site access road, as given in Table MC5. For example, if you are widening a road to serve a housing development accessed by a 'residential access road', then the material depth should not be less than 250mm - equal to 40mm+60mm +150mm. It may be necessary to overlay the existing carriageway to achieve the required depth.

Table MC5: Road carriageway construction depths

Table MC5: Road carriageway construction material depths

	Residential access roads				Residential access ways				Industrial access roads		
	Bituminous			Block	Bituminous			Block	Bituminous		
			Notes				Notes				Notes
Surface course	40mm	SMA 10 surf 40/60 (PSV 55)	1.2	80mm	40mm	SMA 10 surf 40/60 (PSV 55)	1.2	80mm	50mm	HRA 35/14 F surf 40/60 des (20mm pre-coats)	1
	40mm	HRA 55/10 F surf 40/60 des	2		40mm	HRA 55/10 F surf 40/60 des	2				
	40mm	AC10 Close surf 100/150	2		40mm	AC10 Close surface 100/150 rec	2				
Binder course	60mm	AC20 dense bin 100/150 rec		30mm sand 60mm AC20 dense bin 100/150 rec	50mm	AC20 dense bin 100/150 rec		30mm sand 110mm AC20 dense bin 40/60 rec	60mm	AC20 dense bin 40/60 rec	
									60mm	AC20 dense bin 40/60 rec	
Base	150mm	AC32 base 40/60 rec		100mm AC32 base 40/60 rec	110mm	AC32 base 40/60 rec			190mm	AC32 base 40/60 rec	3
										AC32 HDM base 40/60 des	3

1	Polished Stone Values (PSV) of course aggregate in surfacing course shall be determined from Table 1.1 Polished Stone Values for Surface Treatments on Page 16 of our Skidding Resistance Procedure.
2	HRA 50/10 bin 40/60 (material ref REG1) may be used for the hand laying speed tables.
3	Subgrade assessment capping layer/sub base design are covered in Section MC10 paras 4.65-4.7
4	However for Leicestershire any binder course material laid as running surface prior to the final surface course being laid must have a minimium PSV of 55 and a AAV of 7. This includes under block paved surfaces in carriageways.

Key

HRA = Hot rolled asphalt;

CGM = Close graded macadam;

HSCA = High stone content asphalt;

AC = Asphalt Concrete

Note: We will not usually accept the use of block-paving for industrial roads.

4.68 In exceptional circumstances we may agree to you using stone mastic asphalt (SMA) as an alternative surface course material. You must make up any reduction in thickness of the surface course by increasing the thickness of the binder course by an equal amount. If you use SMA, we will require you to pay a commuted sum

for the additional maintenance cost. (Please see Section MC18 for further details on our commuted sums policy).

4.69 You can find full details of the permitted standard materials in Appendix 7/1 of our Specification.

Concrete-block paving

4.70 Where we agree that it is appropriate, you may lay concrete-block paving to carriageways, shared surfaces and other areas used by vehicles. This should be laid for the road type in question as per Table MC5 above. The concrete block paving must comply with and be laid in accordance with the requirements of Appendix 11/1 of our Specification for concrete-block paving in carriageways.

4.71 If you use block paving you may need to pay a commuted sum as indicated in Table MC6.

Skid Resistance Policy and High Resistance Surfacing

4.72 You are required to provide high friction surfacing on the approaches to signal-controlled junctions, roundabouts and pedestrian crossings unless we agree otherwise. You can find full details of the permitted standard materials in Appendix 7/1 of our Specification. This will inform the contractor of the preferred asphalt mixtures, including aggregate grading, penetration value of the binder, flakiness index, thicknesses, compaction requirements. Please refer to LCC's "Carriageway - Skidding Resistance Procedure" for guidance on required specification, which has been developed to be in accordance with DMRB CS228 and CD236.

Coloured Surfacing

4.73 This will be either hot applied (thermoplastic) or cold applied (thermosetting).

4.74 Hot applied systems can take advantage of smaller 'windows' of good weather in the winter period. They also need only a short period of time before the road can be re-opened to traffic because they cool to ambient road temperature quite quickly. This can be an advantage in traffic-sensitive situations (for example, where a prolonged closure would result in major traffic diversions and disruption). The length of time needed for a cold applied system to set can be three to six hours at a reasonable ambient air temperature (above 10°C). This makes it less suitable for applying in winter and applying in areas where closure for long periods would cause problems.

4.75 To reduce the risk of coloured surfacing systems failing too soon after application, they are best applied to surface courses that have been used by traffic for some weeks the surfacing is installed.

4.76 We will require the payment of commuted sums to cover the future maintenance of such surfacing. Please also see Section MC18 for further details on our commuted sums policy.

Alternative materials for carriageways and shared surface areas

4.77 Where for aesthetic, environmental, or other such reasons you propose to use an alternative surfacing material, we will be prepared to consider its use so long as:

- we have agreed its use at an early stage;
- the material meets the requirements of quality, durability, maintainability and sustainability; and
- in the interest of highway safety the material must meet Skid Resistance Policy in terms of polished stone value (PSV), aggregate abrasion value (AAV) and so on as specified for surfacing materials in Appendix 7/1 of our Specification unless otherwise agreed.

To ensure that the surface can be kept safe and durable, we will need you to pay a commuted sum to cover the excess maintenance costs of alternative materials and surfaces. Table MC6 gives a guide to indicate the types of materials you will have to pay a commuted sum for. Please also see Section MC18 for further details on our commuted sums policy.

Table MC6: Alternative surfaces for road and shared surface areas and commuted sums requirements

Normal alternative surfacing materials[(a)]	**Commuted sums payable?**
Surface dressing using locally-sourced granite aggregate chippings	No
Surface dressing using crushed rock aggregate from a specific non-local source	Yes
Stone mastic asphalt	Yes
Hot or cold applied coloured surfacing (resin system)	Yes
Standard surface course materials using a coloured binder and coloured aggregate or chippings	Yes
'Imprint' or other similar approved hot-applied, polymer-modified, synthetic bitumen-based compound, surface-applied block paving alternative finish	Yes
Standard 80mm concrete-block paving surface course	Yes for other than shared surface areas
'Tegula' or similar approved concrete-block paving surface course	Yes

(a) We will be prepared to consider other materials not listed above, so long as, among other things:

- you can provide evidence of where the material has been used in similar circumstances and how durable it has been;
- the safe and satisfactory operation of the highway would not be threatened;
- accessibility is not threatened, including for pedestrians, cyclists and people with disabilities; and
- you pay a commuted sum where the future maintenance costs are greater than they would be if you used the more usual surfacing instead.

Resurfacing carriageways at junctions with existing roads and widening existing roads

4.78 Where a new carriageway meets an existing county road, or an existing county road is widened and:

- the construction joint falls within the running lane of the existing county road; or
- involves any changes to the county-road carriageway, including additional areas of carriageway;

you must overlay or resurface the whole of the altered or widened carriageway unless we agree otherwise. At junctions, you must carry this out over the length from tangent point to tangent point of the junction radii. However, if the junction includes acceleration and deceleration splays (lanes) on the main carriageway, the full overlay or resurfacing of the whole carriageway must also include the full length of the splays, unless we agree otherwise.

(a) This applies to any adopted (Glossary - Part 8) road, other than those maintained by the Highways Agency.

Speed control humps

4.79 You should only use vertical speed control measures where it has been agreed that vehicle speeds cannot be controlled through the site layout. (See Part 3, Section DG5 for further details).

4.80 On bus routes speed control humps must comply with paragraph 3.96 of Part 3.

4.81 Other than on bus routes, speed control humps must be flat topped humps or junction tables with a minimum plateau length of 7m and height of 75mm. Approach ramps should normally have a gradient of 1 in 13. Where the carriageway has a longitudinal gradient approaching the maximum allowed then the “uphill” ramp gradient should be 1 in 15 and the “downhill” ramp gradient should be 1 in 13.

4.82 The humps and tables must be constructed in bituminous material (unless used on a block-paved carriageway or shared surface where they should be constructed in the same material as the carriageway), using 55%/10mm medium temperature asphalt to BS EN 13108-4:2006 unless otherwise agreed.

4.83 We will require the payment of commuted sums to cover the future maintenance of speed control humps and similar vertical traffic calming measures. Please also see Section MC18 for further details on our commuted sums policy.

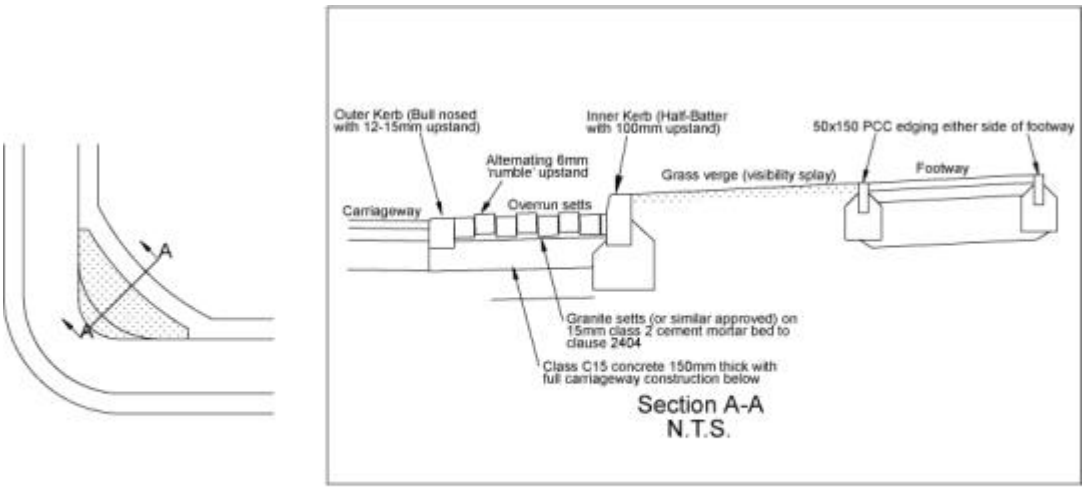
Speed control bends

4.84 An overrun area must be provided to the inside of speed-control bends (a bend with an inside radius of 8m or less). It should normally be constructed as follows.

- The outer kerbline should be formed using 125mm x 150mm bull-nosed kerbs with 12mm to 15mm upstand.

- The inner kerbline should be formed using 8m radius 125mm x 225mm half-batter kerbs.
- It should be surfaced using granite setts (or other approved material) of a colour which contrasts with the main carriageway.
- Setts are to be laid with a 6mm level difference between rows to form a rumble area.
- Setts are to be laid with Class 2 cement mortar bed to Clause 2404 of the National Highways Specification, minimum thickness 15mm, on a 150mm thick C15P concrete bed with full depth road construction below.
- It should have a crossfall of 1 in 30 towards the other kerbline.

Figure MC3 Overrun areas



Notes:
1. Change in direction to be not less than 70° or more than 100° within a distance of 32m measured along the inside kerb
2. The through view beyond the bend on to the approach should be blocked by buildings walls or dense planting etc.
3. A 15m separating straight is required after the speed control bend if the road curves in a reverse direction
4. There should be no vehicular accesses over the length of the forward visibility curve

Entry ramps

4.85 Entry ramps should normally have a gradient of 1 in 13 and a height between 75mm and 100mm.

Section MC 11: Kerbs, footways, footpaths, cycleways and other similar paved areas

{Click here to return to contents]

- General
- Concrete-block paving
- Pedestrian deterrent paving
- Strengthening footways to accommodate heavy-vehicle parking or over-running
- Footways and other hard-paved areas on industrial access roads
- Additional paved areas
- Flush dropped pedestrian and cyclist crossing points
- Tactile paving surfaces
- Alternative surfacing materials for footways and cycleways
- Widening existing footways, footpaths and cycleways

General

4.86 The construction should be in line with Table MC7. You should also refer to the standard drawings and Appendix 11/1 of our Specification.

Residential footways

Table MC7: Residential footways – construction materials and depths				
	Bituminous		**Block Paving**	
Surfacing	20mm	AC6 dense surf 100/150	90mm	60mm blocks on 30mm bedding sand (compacted)
Base course	50mm	AC20 dense bin 160/220 rec	70mm	AC20 dense bin 160/220 rec
Sub-base	160mm	GSB	150mm	GSB
	Or 225mm	GSB Vehicular crossings serving 5 or less dwellings		Includes vehicular crossings serving 5 or less dwellings

AC = Asphalt Concrete
GSB = Granular sub-base

(1) Footway crossing construction to serve developments of more than five dwellings. See Table DG15.

Concrete-block paving

4.87 Where we agree that it is appropriate, you may lay concrete-block paving to footways and other paved areas. The concrete block paving must comply with and be laid in line with the requirements of Appendix 11/1 of our Specification

4.88 If you use block paving you may need to pay a commuted sum as indicated in Table MC9.

Pedestrian deterrent paving

4.89 You should use approved pedestrian-deterrent paving in areas where pedestrians are to be discouraged.

Strengthening footways to accommodate heavy-vehicle parking or over-running

4.90 You must strengthen footways where heavy vehicles such as delivery (service) and maintenance vehicles, refuse lorries and buses are likely to park on them or overrun them. See Table MC7a for details.

Table MC7a: Strengthening residential footways

Table MC7a: Strengthening Residential Footways – construction materials and depths				
	Bituminous		Black Paving	
Surfacing	25mm	AC6 dense surf 100/150	90mm	60mm blocks on 30mm bedding sand (compacted)
Base course	90mm	AC20 dense bin 160/220 rec	90mm	AC20 dense bin 160/220 rec
Sub-base	270mm	GSB	270mm	GSB

[(a)]The sub-base is to be increased to 365mm for CBR's of 2% or less

Footways and other hard-paved areas on industrial access roads

4.91 The construction should be in line with Table MC8. Where a footway crossing is to be used to access an employment or commercial development (as allowed for in Part 3, Section DG19), the footway crossing must be constructed in line with industrial access road requirements given in Table MC5.

Table MC8: Footways and paved areas on industrial access roads

Table MC8: Footways and paved areas on industrial access roads - construction		
	Bituminous	
Surfacing	40mm	HRA 55/100 F surf 100/150 des
Base course	90mm	AC20 dense bin 160/220 rec
Sub-base	270mm	GSB

[(a)] The sub-base is to be increased to 365mm for CBRs of 2% or less

4.92 Where there is a likelihood of regular parking on hard-paved areas or areas that would otherwise be grassed, you should design to deter vehicles.

Additional paved areas

4.93 Where the overall layout of the development includes areas which exceed normal requirements for the safe and satisfactory operation of the highway but which we have agreed to include in the adoptable area, you will have to pay a commuted sum for the cost of maintaining that area. This will include the costs of using any permitted alternative surfacing materials. Please also see Section MC18 for further details on our commuted sums policy.

4.94 If you need to provide additional width for visibility at junctions, inside bends and for other reasons, you must hard pave any small 'verge' areas that result. Normally this would apply to a minimum width of 1m and a minimum area of $10m^2$ for grass and

6m^2 for shrub and ground-cover planting. However, 'verge' areas bigger than 10m^2 should not normally be hard paved, instead they should be soft landscaped (grassed or planted and so on) unless the paving forms part of the design concept and we have agreed it at an early stage.

Flush dropped pedestrian and cyclist crossing points

4.95 You must provide these at all points where pedestrians and cyclists cross or join a carriageway (including any access more than a simple vehicular footway crossing). These crossing points will normally be constructed to our normal standard drawing (SD/11/8, Flush-dropped crossings - Type B). Crossing points should be constructed to our standard drawings.

Tactile paving surfaces

4.96 You should construct tactile paving surfaces at all controlled and uncontrolled crossing points in accordance with the government publication 'Guidance on the use of Tactile Paving Surfaces' and our standard drawings.

Alternative surfacing materials for footways and cycleways

4.97 Where for aesthetic, environmental, or other such reasons you propose to use an alternative surfacing material, we will be prepared to consider its use so as long as:

- we have agreed its use at an early stage; and
- the requirements of quality, durability, maintainability and sustainability are met.

To make sure that the surfaces can be kept safe and durable, we will need you to pay a commuted sum to cover the excess maintenance costs of most alternative materials and surfaces. Table MC9 is a guide to indicate the types of materials you will have to pay a commuted sum for. Please also see Section MC18 for further details on our commuted sums policy.

Table MC9: Alternative footway, cycleway and hard-paving surfaces and commuted sums requirements	
Normal alternative surfacing materials[(a)]	**Commuted sums payable?**
Surface dressing using locally-sourced granite aggregate chippings	No
Surface dressing using crushed rock aggregate from a specific non-local source	Yes
Surface dressing using pea gravel aggregate from a local source	Yes
Surface dressing using pea gravel aggregate from a non-local source	Yes
Surface dressing using crushed gravel aggregate from a local source	Yes
Surface dressing using crushed gravel aggregate from a non-local source	Yes
Hot or cold applied coloured surfacing (resin system)	Yes
Standard surface course materials using a coloured binder and coloured aggregate or chippings	Yes
'Imprint' or other similar approved hot-applied, polymer-modified, synthetic bitumen-based compound, surface-applied block paving alternative finish	Yes
Standard 60mm concrete-block paving surface course	Yes
'Tegula' or similar approved concrete-block paving surface course	Yes

[(a)] We will be prepared to consider other materials not listed above, so long as, among other things:

- you meet the requirements listed in paragraph 4.89;
- you can provide evidence of where the material has been used in similar circumstances and how durable it has been;
- the safe and satisfactory operation of the highway would not be threatened;
- accessibility is not threatened, including for pedestrians, cyclists and people with disabilities; and
- you pay a commuted sum where the future maintenance costs are greater than they would be if you used the more usual surfacing instead.

Widening existing footways, footpaths and cycleways

4.98 You must overlay or resurface full width any existing footway, footpath or cycleway that is widened, unless we agree otherwise.

Section MC 12: Traffic signs, road markings, studs and traffic signals

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- General
- Traffic regulation orders
- Public consultation
- Traffic signs
- Changes to original road layout
- The electricity supply to illuminated traffic signs
- 'Bulk clean and lamp change' charges
- Road markings
- Street name plates
- Road studs
- Traffic signal equipment

General

4.99 All traffic signs you use (including bollards, retro-reflecting road studs and road markings), whether permanent or temporary, must be the size, shape, colour and type prescribed in The Traffic Signs Regulations and General Directions 2016 , the Pedestrian Crossings Regulations and General Directions 1997 (Statutory Instrument 1997 No. 2400) and any later amendments. Other relevant requirements are included in the above Regulations and General Directions.

Traffic regulation orders

4.100 Traffic regulation orders (TROs) are required for cycleways and may be required for footpaths, to stop motor vehicles or cyclists using them. They may also be required for certain traffic signs and road markings. The successful making of an order is not guaranteed. However, you must pay any costs we incur in making these orders or alterations to existing orders, whether or not the order is successfully made. Our information leaflet provides further details on TRO procedures.

Public consultation

4.101 Before we make a TRO, we have to carry out a public consultation. This gives members of the public the opportunity to raise objections. Because of this, the time it takes to complete the process can vary. You must pay any costs we incur carrying out these consultations. We also have to carry out public consultations for traffic-calming and other works on the existing highway. You are responsible for the cost of these consultations also. The successful outcome of consultations is not guaranteed, but you must still pay our costs even if there is not a successful outcome.

Traffic signs

4.102 You must show the details of individual traffic signs, including their posts and foundations, on the traffic sign schedule sheets included in Appendix 12/1 of our Specification. These must comply with Appendix 12/1 of our Specification and the standard drawings.

Changes to original road layout

4.103 You must provide signs to diagram 7014 of the Traffic Signs Regulations and General Directions 2016 using the appropriate permitted variant on all approaches to a permanent alteration to the original road layout as soon as it is brought into use. You must maintain these signs for three months and remove them at the end of that time.

The electricity supply to illuminated traffic signs

4.104 Most illuminated signs are to be fed by an electricity company supply. However, certain signs must be fed by a highway authority private supply, for example, a bollard on a traffic island in the middle of the road.

4.105 Your layout plan must show the location of all signs and bollards that need illumination so that we can identify the requirements for the electrical supply. We will incorporate these requirements into the street-lighting design we will provide for you.

4.106 You are responsible for:

- arranging for the electricity company to provide the electricity supply to the illuminated signs or arranging for a highway authority private supply;
- providing test certificates in accordance with BS7671; and
- paying for all aspects of the works including paying energy charges and maintenance of the illuminated signs before we issue the final certificate.

‘Bulk clean and lamp change’ charges

4.107 Before we issue the final certificate of completion, you must pay us the cost of a ‘bulk clean and lamp change’ of all illuminated signs and bollards. We will include the cost of this in the bond figure.

Road markings

4.108 You must provide road markings in accordance with the Traffic Signs Manual Chapter 5 and the Traffic Signs Regulations and General Directions 2016.

4.109 You must show the location, colour and type of permanent road markings on your drawings.

4.110 The markings must comply with Appendix 12/3 of our Specification.

Street name plates

4.111 You are required to apply to the district council as the street-naming authority for names to be given to any new lengths of road. The district council will specify the details that they require, and you may be able to submit suggested names for consideration.

4.112 The district council will advise you of the names chosen, following the necessary consultations. It is your responsibility to erect the street name plates which the district council has chosen.

4.113 Any street name plates on private drives or unadopted ‘roads’ should clearly state that drive is ‘private’ or the road ‘unadopted’.

Road studs

4.114 You must:

- provide road studs in accordance with the Traffic Signs Manual, Chapter 5;
- show the locations and positions of road studs on your drawings;
- use road studs that comply with Appendix 12/3 of our Specification; and
- use stainless steel non-reflective road studs at pedestrian, cyclist and equestrian crossings to form marks as shown in diagrams 1055.1 and 1055.2 of the Traffic Signs Regulations and General Directions 2016.

Traffic signal equipment

4.115 We will normally design the traffic signals within the highway works based on detailed road layout drawings you have supplied.

4.116 We will normally supply and install all permanent traffic-control equipment to be installed as part of the highway works. You must pay the reasonable cost to us for designing, supplying and installing the equipment.

4.117 You must normally pay us a commuted sum towards the future maintenance of the traffic-signal equipment. Please also see Section MC18 for further details on our commuted sums policy.

4.118 You must allow us access at all reasonable times to any part of the site on which cables, pipes, ducts or other apparatus associated with the traffic-signal equipment is to be installed or is located so we can carry out any works we need to do to install and maintain the cables, pipes ducts or other apparatus.

Section MC 13: Street lighting

{Click here to return to contents]

- General
- ‘Bulk clean and lamp change’ charges where adoption is delayed
- Alternative ‘heritage’ street lighting

General

4.119 After we have issued technical approval for your highways works (for Section 38 works see Part 5, Section ANR4 and for Section 278 works see Part 6, Section WEH4), a street-lighting design must be provided in accordance with:

- BS 5489; and
- the National Highways Specification for Highway Works, Series 1300 and 1400.

Please contact the relevant Highway Authority for further details on their procedures and the design service that they provide.

Leicestershire County Council's Infrastructure Planning Team will contact our street-lighting section directly, you do not need to approach them independently. As well as providing a layout plan, Leicestershire County Council's street-lighting section will provide the specification of the equipment to be installed and a designer’s risk assessment (these items together are known as the ‘data sheet’)

4.120 You are responsible for:

- ensuring that the street lighting design is undertaken;
- ensuring that the specification of equipment is in accordance with the ‘data sheet’ that we issued for the lighting scheme;
- marking the exact position of the street lights on site for the street-lighting contractor;
- arranging for the electricity company to provide the electricity supply to the street lights;
- providing test certificates in accordance with BS7671; and

- paying for all aspects of the works including paying energy charges and maintenance of the street lights before we issue the final certificate of completion.

Alternative 'heritage' street lighting

4.121 The street lighting specification we provide will use 'standard' galvanised steel columns with road-lighting lanterns of the appropriate height and wattage. However we do have a limited range of "heritage" street-lighting columns and lanterns which you can specify as long as you pay a commuted sum to cover the increased costs of maintenance and replacement associated with this type of equipment. Please also see Section MC18 for further details on our commuted sums policy.

4.122 If you want to request this option, you should tell us when you submit layout drawings for technical approval. This will allow us to establish information about commuted sums and styles of lighting columns before we design the street lighting.

Section MC 14: Street furniture and street art

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General

4.123 It is important to establish at an early stage (and certainly before any-planning application) what street furniture and so on is proposed within areas that are intended to be adopted as publicly-maintained highway, and who would be responsible for it. You may need to include this as part of a concept proposal that you are required to prepare for your proposed development. (Please see Part 2, Section PDP4 for further information on concept proposals).

4.124 Table MC10 sets out details of who would normally accept future responsibility and whether a commuted sum is payable. You must confirm that you have reached

agreement with the organisations concerned before we can agree to your proposals.

Table MC10: Future maintenance responsibilities and commuted sums requirements			
Item of street furniture and so on	**Organisation normally responsible for future maintenance**	**Commuted sums payable?**	**Formal agreement required between responsible body and us**
Safety bollards	HA	Yes	N/A
Decorative bollards	Under License	No	Yes
Knee-rail fencing	HA	Yes	N/A
Seats	TC/PC[(a)]	N/A	Yes
Cycle stands	HA	No	N/A
Bus-stop poles and flags	HA	No	N/A
Bus shelters	TC/PC[(b)];DC/BC/HA[(c)(d)]	Yes	Yes
Bus gates	HA	Yes	N/A
Planters and raised beds	TC/PC	DC/BC[(b)]/HA[(c)]	Yes
Tree grills	HA	Yes	N/A
Street art	TC/PC	N/A	Yes
Village and town features	TC/PC	N/A	Yes
Memorials and commemorative items	TC/PC	N/A	Yes
‘Heritage’ direction signs	HA	Yes	N/A
Flagpoles and similar structures	TC/PC	N/A	Yes
Information boards	Depends on information	If HA responsible	Yes
Litter bins	DC/BC	N/A	Yes
Dog-litter bins	DC/BC	N/A	Yes

Key: HA = highway authority (us); DC = district council; BC = borough council; TC = town council; PC = parish council.

a) Where no town or parish council exists, responsibility for items normally maintained by the town or parish council will generally pass to the district or borough council.

b) Organisation normally responsible.

c) Alternative organisation who may accept responsibility.

d) Please contact the relevant highway authority to discuss their requirements for undertaking responsibility for future maintenance. For example, Leicestershire County Council will generally only assume responsibility for bus shelters if they are provided on a County Council 'route development' route.

Section MC 15: Highway structures

{Click here to return to contents]

- Definition
- Design
- Supervision of the construction
- Fees
- Adopting structures

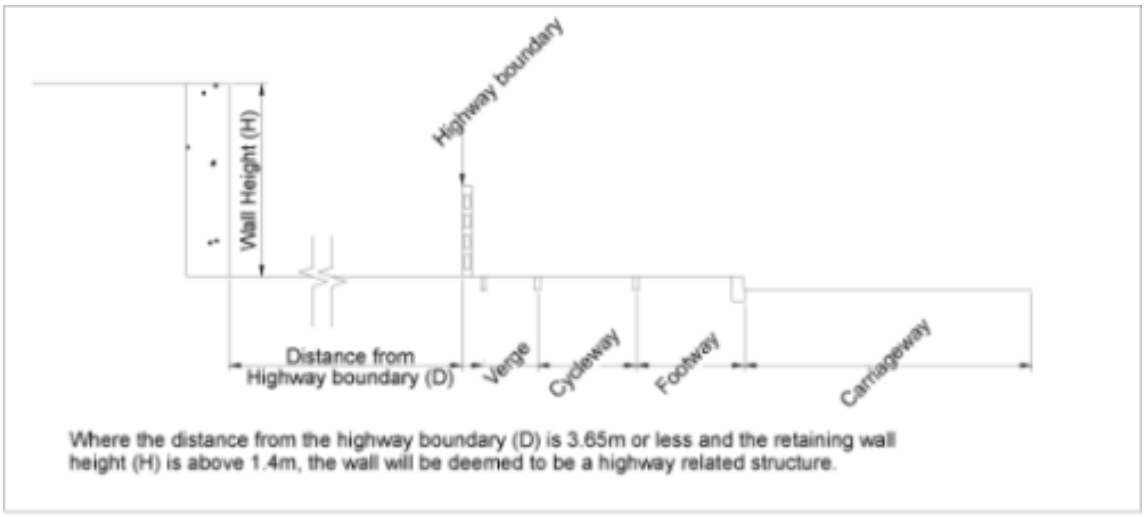
Definition

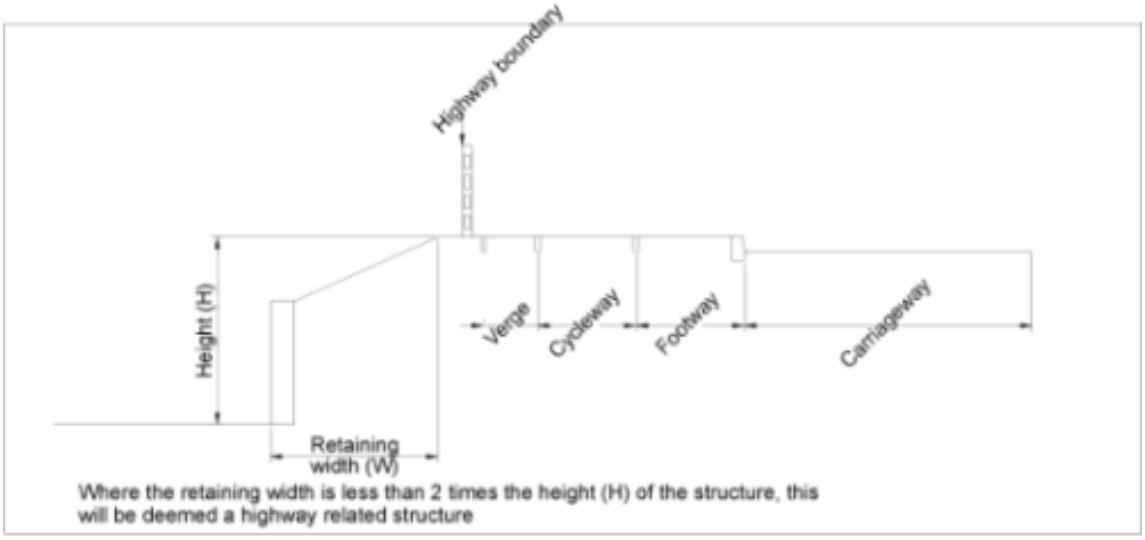
4.125 A highway-related structure can fall into one of these types, either:

- any structure built in, under, or over the highway; or
- any retaining wall built within 3.65m of the highway boundary where the retained height above the adjacent highway is 1.4m, or more.

Note: The definition of ‘highway’ used above includes the carriageway, footway and all verges.

Figure MC4 Highway related structures





4.126 Highway-related structures will include, but is not restricted to, the following:

- bridges (a structure having a span of 1.5m or more, spanning or providing passage over an obstacle);
- culverts (a drainage structure with a span of 1.5m or more, passing beneath a highway embankment, that has a proportion of the embankment between its uppermost point and the road running courses);
- retaining walls (a wall associated with the highway where the dominant function is to act as a retaining structure and with a minimum retained height of 1.35m);
- drainage assets (all drains, piped and box culverts, sewers, chambers and drainage structures that have a diameter or clear span of more than 900mm);
- reinforced soil and anchored earth structures;
- environmental barriers *(including noise barriers and fencing)*;

- sign/signal gantries (a structure spanning the highway, the primary function of which is to support traffic signs and signaling equipment);
- road tunnels (a tunnel with an enclosed length of 150m or more through which a road passes);
- ecological structures (mammal crossings and the like).

Design

4.127 All highway-related structures, whether we are to adopt them or not, must be designed and constructed in accordance with the current relevant National Highways' standards.

4.128 The design will be subject to the technical approval procedure set out in the DMRB, except that the Technical Approval Authority will be the relevant highway authority.

4.129 You must employ a chartered civil or structural engineer with experience in highway structures to carry out the design and to oversee construction.

Supervision of the construction

4.130 The construction must be carried out under the direction of an independent chartered civil or structural engineer and with substantial experience of the construction of highway structures.

4.131 Before construction begins, you must provide a programme of supervision for our approval. The programme must give details of the level and amount of supervision that will be provided so we are confident that the structure will be built in accordance with the design and specification. The programme must also contain proposals for materials testing.

4.132 At regular intervals, we will audit the supervision of a scheme to make sure that you are meeting the agreed programme of supervision. However, it is the developer's responsibility to keep us informed of the proposed programme.

4.133 Before adoption, you provide copies of approved design calculations (if not already received), inspection certificates, material-testing certificates, digital photographs on CD (*.JPG or*.BMP format), as-built drawings preferably in an electronic form, (for example AutoCAD file) on CD, maintenance manuals and a Certificate of Construction Compliance in accordance with CG300 'Technical Approval of Highway Structures' (DMRB). This information should be submitted in advance of a request for a final certificate of completion to the highway authority (full adoption certificate). Failure to accord to the approved design and insufficient collation of the required evidence will jeopardise the ability of the highway authority to adopt structures.

Fees

4.134 You will have to pay the additional design checking and inspection fees for any highway structure.

4.135 You will be charged actual costs and we will give you an indication of the likely fee at our earliest opportunity.

Adopting structures

4.136 There should be discussion at an early stage (and certainly before any-planning application) to agree which structures we are to adopt.

4.137 You must pay a commuted sum for future maintenance of any highway structure to be adopted. Please also see Section MC18 for further details on our commuted sums policy.

Section MC 16: Soft landscaping and trees

{Click here to return to contents]

- General
- Considering existing features
- New feature design considerations
- Peat
- Applying pesticides
- Controlling weeds
- Landscaping and tree maintenance issues
- Adopting the landscape and trees
- Sponsorship

General

4.138 Soft landscaping can be as important in determining the character of the development and integrating it into its surroundings as landscaping elsewhere within the site. You should not underestimate how important it is to create an attractive environment. Planning authorities are unlikely to favour developments that lack quality design and layout.

4.139 You should prepare detailed landscaping proposals at the pre-application stage so we can consider their suitability in good time and so the utility providers (for example gas, water, cable TV) can be consulted over the proposals. We must approve the landscaping proposals within the development whether or not they form part of a landscaping scheme which you have submitted to the planning authority for approval.

4.140 You should engage a chartered landscape architect to advise you and prepare landscaping proposals for the development.

4.141 While planting and trees can enhance the street scene, you must take care to make sure that building frontages and parking areas can still enjoy good natural observation from areas of potential activity such as roads and footways.

4.142 Soft landscaping must comply with Series 3000 and Appendices 30/1 to 30/10 of our Specification.

Considering existing features

4.143 **Protecting and preserving existing trees:** Requirements for protecting and preserving existing trees are contained in Appendix F, 'The Preservation of Trees in Connection with Roadworks and New Development'.

4.144 **Existing boundary hedges and fences:** You must make it clear to purchasers of individual property at the time of sale that you are transferring ownership and responsibility for existing highway boundaries to them. The lack of maintenance and cutting back of hedges is a common problem for us, particularly where the hedge had enclosed farmland or had not been regularly maintained previously. If you erect new fencing to the inside of existing hedges and fences the purchaser may mistakenly believe that the original hedge or fence is our responsibility.

4.145 **Bird nesting season:** You must not remove or carry out work to existing or planted trees, shrubs, hedges and other vegetation during the bird nesting season. This is generally considered to be from March until the end of July but can cover a longer period. You should check for the presence of active nests outside that period.

New feature design considerations

4.146 **Preparing the ground:** You must prepare the ground of all areas to be soft landscaped in accordance with clause 3004 of the National Highways Specification and Appendix 30/4 of our Specification.

4.147 **Grass seeding and turfing:** You must seed or turf grassed areas in accordance with clause 3005 of the National Highways Specification and Appendix 30/5 of our Specification.

4.148 **Minimum grass verge and planting bed sizes:** Narrow grass strips between footways and carriageways and small isolated shrub beds are often neglected and over-run by vehicles. You will normally have to use hard paving in these locations. Normally you should provide a minimum width of 1m and minimum area of 10m2 for grass and 1m and 6m2 for shrub and ground-cover planting.

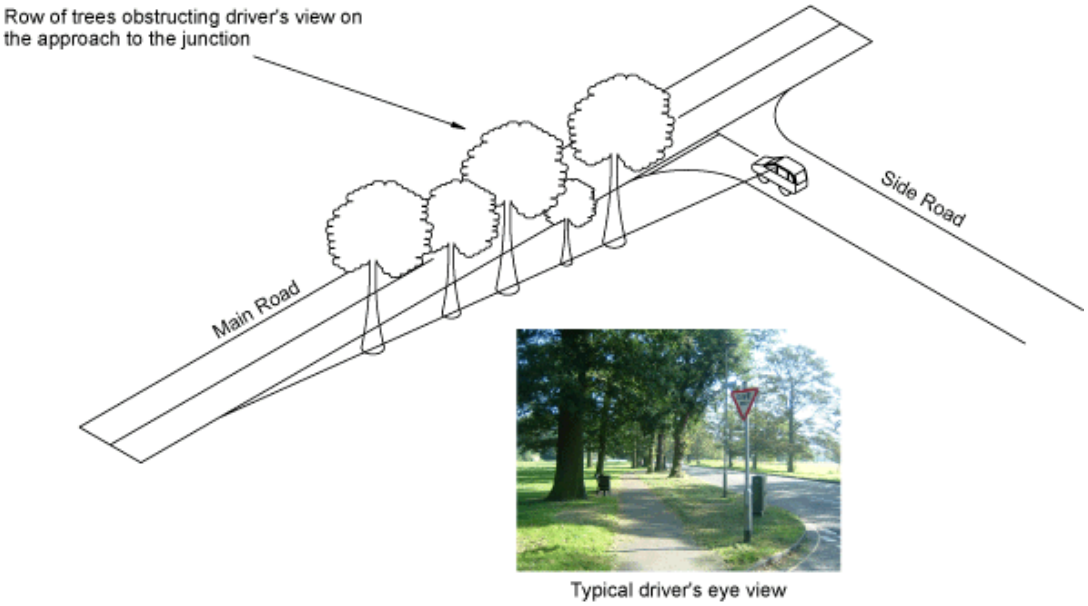
4.149 **Reinforcing verges:** Where it is necessary to reinforce verges to prevent erosion, particularly where any vehicles are likely to be parked, including maintenance vehicles, you must submit a design for approval by LCC.

4.150 **Plants and planting:** All plants and planting works must be in accordance with clause 3006 of the National Highways Specification and Appendix 30/6 of our Specification.

4.151 **Tree planting in grilles with guards within paved areas:** Trees within hard-paved areas should normally be planted in tree grilles with tree guards. These should normally be in accordance with the details included in Appendix 30/12 of our Specification.

4.152 **Planting within visibility splays:** You must not normally plant new trees within any visibility splays (including at junctions and on bends).

Figure MC5 Example of unacceptable tree planting in a visibility splay



4.153 Any landscaping (planting, shrubs and so on) within visibility splays should not normally be expected to grow to more than 600mm in height above the adjacent carriageway level where the carriageway gradient is level. We will assess planting in locations where the carriageway is on a slope or there are crests or sags in its vertical alignment, on a site-by-site basis.

4.154 **Additional information about landscape planting:** Additional information on landscaping, including choice of species, is contained in Appendix G, 'Landscaping on New Developments and in Highway Improvement Schemes'.

Peat

4.155 You must not use peat or peat-based products except where peat is excavated on the site.

Applying pesticide

4.156 All chemicals, methods of application, materials and tank mixes, methods of working, transportation, storage and records must be strictly in accordance with current legislation and codes of practice and also in accordance with clause 3001 of the National Highways Specification and Appendix 30/2 of our Specification.

Controlling weeds

4.157 You must control weeds in accordance with clause 3002 of the National Highways Specification and Appendix 30/2 of our Specification.

Landscaping and tree maintenance issues

4.158 **Maintaining existing trees, shrubs and hedges:** All existing trees, shrubs and hedges that are to be retained within the existing highway or areas to be adopted must be maintained in accordance with clause 3010 of the National Highways Specification, British Standard 3998 and Appendix 30/10 of our Specification until the issue of the final certificate. This includes any required arboricultural work including tree surgery.

4.159 **Establishing and maintaining new landscape planting:** Planted landscaping areas, trees, shrubs and so on that we are to adopt must be fully planted before we issue a provisional certificate of completion. This planting must be maintained until the issue of the final certificate, including any necessary replacements for whatever reason, to make sure that it is fully established.

4.160 Maintenance of such planting must be in accordance with clauses 3008 and 3009 of the National Highways Specification and Appendices 30/8 and 30/9 of our Specification.

4.161 **Grassed areas:** You must satisfactorily maintain any existing grass areas and satisfactorily establish any new grassed areas before we will issue you with a provisional certificate. You must maintain grassed areas throughout the maintenance period and until issue of the final certificate in accordance with clause 3007 of the National Highways Specification and Appendix 30/7 of our Specification.

Adopting the landscape and trees

4.162 Areas we are prepared to adopt as highway should preferably be concentrated into larger areas, to provide economies of scale and to avoid small or remote areas which are difficult to maintain. Small and remote areas can actually result in the very opposite of what is intended of creating an attractive and well-cared-for environment.

4.163 Generally, you should lay out verges, embankments and other areas of open space forming part of the adoptable highway as amenity grass areas unless we agree to some other form of landscaping to help enhance the quality and appearance of a development. You will have to pay us a commuted sum where we are to take on the maintenance of such landscaping where it falls within an existing or proposed area of highway. As an alternative, the district, town or parish council may agree to maintain the planting under a license granted under Section 96 of the Highways Act 1980.

4.164 In general, we will accept responsibility for new or retained trees we have approved if you pay a commuted sum towards future maintenance and inspection costs.

4.165 Public open spaces, including amenity open spaces and children’s play areas, will normally be adopted by the district, town or parish council.

4.166 We will only normally consider adopting an area of open space that:

- is next to but not an essential part of the adoptable highway;
- is not going to be adopted as public open space by the district, borough or parish council;
- cannot be designed out; and
- may not be safely and satisfactorily maintained if it becomes part of the adjacent property.

4.167 You will need to pay us a commuted sum for any such open space we adopt. Please also see Section MC18 for further details on our commuted sums policy.

Sponsorship

4.168 We may allow you to enter into a sponsorship agreement for maintaining of certain landscaped areas either direct with us or with a town, parish, borough or district council where a maintenance agreement with that council exists.

Section MC17: Noise barriers, screening and bunding

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4.169 You should design environmental barriers, including earth mounds, associated planting and noise barriers in accordance with LD 119‘Roadside environmental mitigation and enhancement’ (National Highways DMRB).

4.170 Where your proposal includes earth mounds and any associated landscape planting and noise barriers, you must clarify and agree details of ownership and arrangements for future maintenance at an early pre-application stage.

4.171 Purchasers of individual dwellings are unlikely to accept ownership and responsibility for environmental barriers. This is because maintenance liability is often beyond the means of the individual. If environmental barriers are transferred to purchasers of individual dwellings you must make this clear to purchasers at the time of sale and include such details in conveyances.

4.172 In general, the district, town or parish council will be expected to adopt and maintain earth mounds and any associated landscape planting and noise barriers. We may consider adopting these areas if you pay a commuted sum. Please also see Section MC18 for further details on our commuted sums policy.

4.173 Where we agree to environmental barriers within existing highway limits, you must pay a commuted sum.

4.174 Unless we agree otherwise, we will treat noise fencing as a highway structure and it will be subject to the design requirements, design checking and inspection fees and commuted sums for future maintenance required for highway structures. (Please see Section MC15 for further information on highway structures).

Section MC18: Commuted sums

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- Background
- Application
- Calculating commuted sums
- Maintenance unit costs (Mp)
- Discount rate (D)
- Time period (T)
- Schedules of commuted sums payable
- Calculating the actual commuted sums to be paid
- Bonding commuted sums
- Timing of payments

4.175 In this Section we set out the basis of payment and how we calculate commuted sums you must pay us towards the cost of maintaining certain adoptable highway infrastructure provided for new developments.

Background

4.176 The legal basis: National Planning Policy Framework and Guidance refers planning obligations and the payment of commuted maintenance sums where specifically provided for in legislation (the Highways Act 1980).

4.177 Section 38 of the Highways Act 1980, sub-section (6) provides for paying expenses to us for maintaining any highway, road, bridge or viaduct covered by an agreement made under that section.

4.178 Section 278 of the Highways Act 1980, sub-section (3) provides for you (the other party to the agreement) making payments to us for maintaining the works the agreement relates too.

4.179 **Regional discussions and agreement:** Because there is no national guidance at present, the Midlands Regional Service Improvement Group – Development Regulation, has sought to reach agreement on applying and calculating commuted sums to achieve a consistent approach throughout the region. There has been a high level of agreement on this between the highway authorities concerned. We have adopted the generally agreed application and method of calculation.

Application

4.180 The need for paying commuted sums can be divided into four broad categories.

a) The cost of maintaining areas and construction which, under our normal design guidance given in Part 3, are not required for the safe and satisfactory functioning of the highway. Examples are additional areas of carriageway,

such as a 'square' surrounding a turning head (see figure MC7a), hard landscaping, grass verges (see figure MC7b) and so on.

Figure MC6a Example of turning head within a 'square'

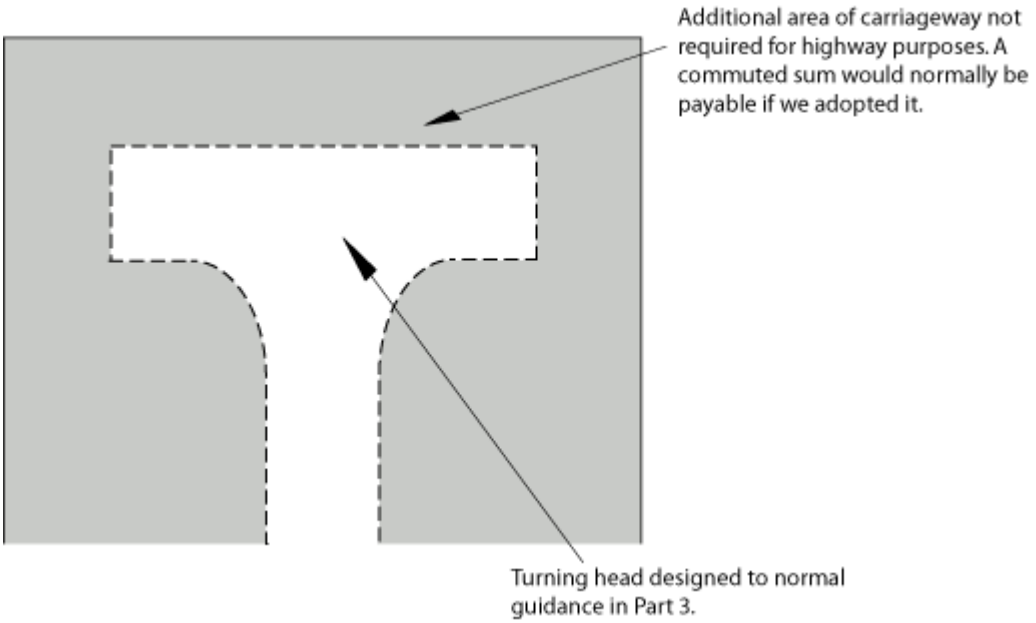
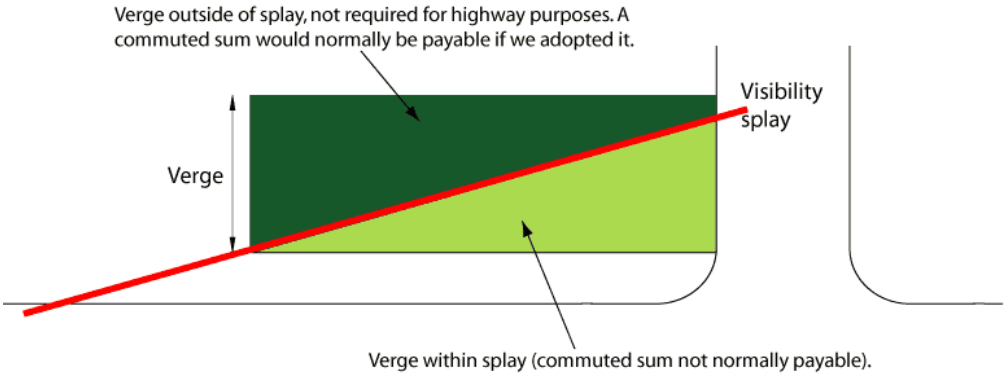


Figure MC6b Example of additional area of grass verge adopted under a commuted sum



Under this category you may need to pay commuted sums for:

- new adoptable highways generally constructed under S38 agreements, if any additional areas and construction which result from the overall development layout design, are over and above what we would normally require to satisfy safety and operational requirements; and
- alterations to existing highways, carried out under S278 agreements, which are required only to serve the development and provide no general benefits. We will consider individual cases on their merits where there is some general benefit. We will not normally require a commuted sum where the alterations have already been programmed for construction.

b) The cost of maintaining some features of the adoptable works which can be considered as extra over. Examples include highway structures, public transport infrastructure, landscaping, trees, shrubs and so on, additional or non-usual street furniture and noise fencing.

- These costs represent an increase in our future maintenance liability which will be more than the anticipated normal funding generated by the development.

c) The additional cost of maintaining permitted alternative materials and features which are extra over. Examples include surfacing materials and street lighting equipment.

- These additional costs are in excess of what we would have incurred if the materials and features used had been to the standard Specification.

d) Drainage systems, for example, flow-attenuation devices, swales and storage areas.

Note: Where you are proposing SUDS, you must hold discussions with all relevant parties at an early stage (and certainly before any planning application) to agree ownership and responsibility for the facility.

This is not an exhaustive, detailed list. It is only intended to illustrate broad principles. Cases where commuted sums will normally be required are set out in other parts of this document. You should always discuss with us where commuted sums might be required at the earliest possible opportunity and certainly before any planning application.

Calculating commuted sums

4.181 We work out the cost your maintenance obligation using this formula:

$$\text{Commuted sum} = \Sigma Mp/(1 + D/100)^T$$

Mp = Estimated periodic maintenance cost

D = Discount rate (effective annual interest rate) (%)

T = Time period before expenditure will be incurred (years)

Maintenance unit costs (Mp)

4.182 Maintenance unit costs are based on contract rates current at the time of calculation and the frequency of treatment or intervals of replacement, based on planned frequencies or historic information. A sum of 10% of the works costs will be added to cover our design and supervision costs.

Discount rate (D)

4.183 The discount rate (effective annual interest rate) is worked out as follows:

D = (1.045/1.0225) – 1

= 2.2%

where

1.045 is the interest rate (4.5% based on long-term neutral base rate)
1.0225 is the inflation rate (2.25% based on RPI-X that is RPI excluding mortgage payments)

Time period (T)

4.184 There is a case for using a time period equal to the expected life of the development in the case of development roads. However, for the time being, a time period of 60 years (maximum) will be used to calculate the commuted sums, with the exception of highway structures where a 150-year period will apply. The 60-year period reflects the recommendation of the CSS publication 'Commuted Sums for Maintaining Infrastructure Assets'.

Schedules of commuted sums payable

4.185 You can find schedules of commuted sums for various additional areas, additional features, and alternative surfaces and specifications in Section 19. We will add other commuted sums values and additional items as the need arises. The commuted sums in the schedules have been calculated at a particular date as indicated and will need to be index-linked to the date of the agreement. We will calculate some commuted sums specifically for certain sites.

Calculating the actual commuted sums to be paid

4.186 You will be required by the relevant agreement with us to pay us a commuted sum. However, we may not know the full cost implications of the site at that stage. So, we will calculate the final commuted sums value immediately before we adopt the development. This will be based on the 'provisional' commuted sums agreed when we complete the agreement. The agreement will contain provision for recalculating the 'provisional' commuted sums based on actual quantities and a price fluctuation factor specified in the agreement.

Bonding commuted sums

4.187 Any commuted sums you must pay will be included in the bond required under the Section 38 or Section 278 agreement. This will be based on the 'provisional' commuted sums that we calculate when we complete the agreement.

Timing of payments

4.188 The commuted sum will be payable before we issue the final certificate.

Section MC19: Schedules of commuted sums for maintenance of works under Section 38 and Section 278 agreements

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4.189 Where no figure is shown, we will calculate as the need arises. N.B Please be aware that the rates detailed below are based upon the existing 60-year calculation period.

4.190 For Section 278 works we will not normally apply commuted sums for the existing area of carriageway unless it is a non-standard material (in that case the commuted sum would be the difference between the commuted sum for the standard and non-standard material). A full commuted sum would be required for any additional carriageway created (e.g. right turn lane), or any new feature created (e.g. refuge/splitter island, additional lighting, bollards etc.). This is because the additional carriageway and features created above those existing are only required to provide the access for the new development, and therefore it is reasonable to require a commuted sum to maintain them in the future.

Schedule 1: Commuted sums for extra over areas and features on new adoptable highways and alterations to existing highways (Section 38 and Section 278)		
Item	**Units**	**Commuted Sum from April 2012 (£)**
Carriageway and shared-surface surfacing materials		
Carriageway (standard bituminous materials and SMA) -residential estate roads	Sq m	16.89
Carriageway (standard bituminous materials and SMA) - classified/distributor/industrial roads JUNCTIONS	Sq m	52.73
Carriageway (standard bituminous materials and SMA) - classified/distributor/industrial roads NON JUNCTIONS	Sq m	20.6
Carriageway (hot rolled asphalt) - residential	Sq m	15.63
Carriageway (hot rolled asphalt)- classified/distributor/industrial roads JUNCTIONS	Sq m	33.21

Carriageway (hot rolled asphalt) - classified/distributor/industrial roads NON JUNCTIONS	Sq m	22.07
Surface dressing using crushed gravel aggregate from local source	Sq m	32.16
Hot or cold applied coloured surfacing (resin system) and high friction surfacing (anti-skid) - residential estate roads	Sq m	63.28
Hot or cold applied coloured surfacing (resin system) and high friction surfacing (anti-skid) - classified/distributor/industrial roads JUNCTIONS AND APPROACHES TO CONTROLLED CROSSINGS	Sq m	228.03
Hot or cold applied coloured surfacing (resin system) and high friction surfacing (anti-skid) - classified/distributor/industrial roads NON JUNCTIONS	Sq m	133.83
Carriageway (200 x 100 x 80 mm concrete block paving) - residential estate roads	Sq m	13.83
Carriageway (200 x 100 x 80 mm concrete block paving) - classified/distributor/industrial roads JUNCTIONS	Sq m	44.43
Carriageway (200 x 100 x 80 mm concrete block paving) - classified/distributor/industrial roads NON JUNCTIONS	Sq m	29.25
Carriageway (Tegula blockwork or similar) - residential estate roads	Sq m	22.46
Carriageway (Tegula blockwork or similar) - classified/distributor/industrial roads JUNCTIONS	Sq m	64.8
Carriageway (Tegula blockwork or similar) - classified/distributor/industrial roads NON JUNCTIONS	Sq m	32.45
Carriageway (Permeable block paving) - residential estate roads	Sq m	27.45
Footway and hard paving surfacing materials		
Footway (standard bituminous materials) - all roads	Sq m	14.97

Footway (200 x 100 x 60mm concrete block paving) all roads	Sq m	16.1
Footway (Tegula blockwork or similar) - all roads	Sq m	25.03
Surface dressing using crushed gravel aggregate from local source	Sq m	52.73
Hot or cold applied coloured surfacing (resin system) - all roads	Sq m	63.28
Conservation Slabs 450 x 450 x 70 - residential estate roads	Sq m	33.07
Conservation Slabs (Marshalls) 450 x 450 x 70 - classified/distributor/industrial roads	Sq m	69.94
Kerbs		
Conservation'/'Charnwood' type kerbs	Linear	1.08
Fencing		
Knee rail fencing	Linear	57.64
Typical 2m high acoustic fence to HA66/95	Linear	255.11
Post and rail fence	Linear	83.38
Structures		
Retaining wall		site specific calc

Drainage		
Sustainable urban drainage systems		not calculated
Hydrobrake	item	5890.82
Non-standard drainage system elements		not calculated
Culvert debris screen	Item	not calculated
Petrol and oil interceptors	Item	not calculated
Combined kerb and drainage systems - residential	Linear	33.42
Combined kerb and drainage systems - classified/distributor/industrial	Linear	67.2
Bollards and Street Furniture		
Typical Plastic Linpac / Glasdon Bollard	Item	1289.82
Concrete Bollard	Item	740
Wooden Bollard	Item	1124.33
Cast Iron Bollard	Item	site specific calc
Cycle stand	item	805.88
Trees, planting and landscaping		
Verges & other grassed areas	Sq m	8.2
Small Tree	Item	718.23
Medium Tree	Item	938.61
Existing Large Tree	Item	1538.22
Tree grills	Item	not calculated
Planters and raised beds		not calculated
Shrub / Ground Cover Planting	Sq m	71.3

Earthwork environmental bunds		not calculated
Speed restraint features		
Overrun areas to roundabout (granite setts)	Sq m	87.35
Overrun areas to speed control bends (granite setts)	Sq m	57.51
Mini roundabouts	Item	not calculated
Bus shelters	Item	not calculated
Bus gates	Item	not calculated
Street Lighting		
Standard 5m columns	Item	2122
Standard Raise and Lower 5m column	Item	2473.77
Standard 6m columns	Item	2420.74
Standard Raise and Lower 6m column	Item	2808.22
Standard 8m columns	Item	not calculated
Standard 10m columns	Item	not calculated
Heritage 6m (Newcastle) columns	Item	not calculated
Heritage 8m (Edinburgh) columns	Item	not calculated
Illuminated traffic signs		
Not exceeding 1m^2 sign face	Item	not calculated
Illuminated more than 1m^2 and not exceeding 3m^2 sign face	Item	not calculated
Illuminated more than 3m^2 sign face	Item	not calculated
Non-illuminated traffic signs		
Not exceeding 1m^2 sign face	Item	not calculated
More than 1m^2 and not exceeding 3m^2 sign face	Item	not calculated
More than 3m^2 sign face	Item	not calculated
Illuminated bollards	Item	not calculated
Traffic signals		site specific calc

Schedule 2: Commuted sums for using alternative materials on new adoptable highways and alterations to existing highways (Section 38 and Section 278). The commuted sum is the commuted sum from Schedule 1 minus the commuted sum for standard bituminous carriageways and footways as appropriate		
Alternative material	**Unit**	
Carriageway or shared-surface surfacing materials		
Carriageway (standard bituminous materials & SMA) - all roads	Sq m	Nil for S38 - CS for additional areas for S278 works see Schedule 1
Carriageway (hot rolled asphalt) - all roads	Sq m	Nil for S38 - CS for additional areas for S278 works see Schedule 1
Carriageway (200 x 100 x 80 mm concrete block paving) - residential estate roads	Sq m	Nil for S38 - CS for additional areas for S278 works see Schedule 1
Surface dressing using crushed gravel aggregate from local source	Sq m	32.16-16.89=15.27
Hot or cold applied coloured surfacing (resin system) and high friction surfacing (anti-skid) - residential estate roads	Sq m	63.28-16.89=46.39
Hot or cold applied coloured surfacing (resin system) and high friction surfacing (anti-skid) - classified/distributor/industrial roads JUNCTIONS	Sq m	228.03-52.73=175.30

Hot or cold applied coloured surfacing (resin system) and high friction surfacing (anti-skid) - classified/distributor/industrial roads NON JUNCTIONS	Sq m	133.83-20.6=113.23
Carriageway (200 x 100 x 80 mm concrete block paving) - classified/distributor/industrial roads JUNCTIONS	Sq m	Nil for S38 - CS for additional areas for S278 works see Schedule 1
Carriageway (200 x 100 x 80 mm concrete block paving) - classified/distributor/industrial roads NON JUNCTIONS	Sq m	29.25-20.6 = 8.65
Carriageway (Tegula blockwork or similar) - residential estate roads	Sq m	22.46-16.89=5.57
Carriageway (Tegula blockwork or similar) - classified/distributor/industrial roads JUNCTIONS	Sq m	64.80-52.73=12.07
Carriageway (Tegula blockwork or similar) - classified/distributor/industrial roads NON JUNCTIONS	Sq m	32.45-20.6=11.85
Carriageway (Permeable block paving) - residential estate roads	Sq m	27.45-16.89=10.56
Surface dressing using locally-sourced granite aggregate chippings	Sq m	not calculated
Surface dressing using pea gravel aggregate from local source	Sq m	not calculated
Surface dressing using pea gravel aggregate from non-local source	Sq m	not calculated
Surface dressing using crushed gravel aggregate from local source	Sq m	not calculated
Surface dressing using crushed gravel aggregate from non-local source	Sq m	not calculated
Standard surface course materials using coloured binder and coloured aggregate or chippings	Sq m	not calculated

'Imprint' or other similar approved hot-applied, polymer-modified, synthetic bitumen-based compound, surface applied block paving alternative finish	Sq m	not calculated
Footway and hard paving surfacing materials		
Footway (200 x 100 x 60mm concrete block paving)	Sq m	Nil for S38 - CS for additional areas for S278 works see Schedule 1
'Tegula' or similar approved concrete block paving surface course	Sq m	25.03-14.97=10.06
Conservation Slabs (Marshalls) 450 x 450 x 70	Sq m	33.07-14.97=18.10 (res) 69.94-14.97=54.97 (non-res)
Surface dressing using crushed gravel aggregate from local source	Sq m	52.73-14.97=37.76
Hot or cold applied coloured surfacing (resin system)	Sq m	63.28-14.97=48.31
Surface dressing using locally-sourced granite aggregate chippings	Sq m	not calculated
Surface dressing using crushed rock aggregate from specific non-local source	Sq m	not calculated
Surface dressing using pea gravel aggregate from local source	Sq m	not calculated
Surface dressing using pea gravel aggregate from non-local source	Sq m	not calculated
Surface dressing using crushed gravel aggregate from non-local source	Sq m	not calculated
Standard surface course materials using coloured binder and or coloured aggregate or chippings	Sq m	not calculated

'Imprint' or other similar approved hot-applied, polymer modified, synthetic bitumen-based compound, surface applied block paving alternative finish	Sq m	not calculated