



Development &
Planning Authority

Guernsey Technical Standard

Roads

The Building (Guernsey) Regulations, 2012

P

P1 Layout, design and construction
P2 Drainage.

2015 edition
With May 2016 amendments

MAIN CHANGES MADE BY THE MAY 2016 AMENDMENTS

1. Text changes made to reflect the new structure of government post May 1st 2016. All references to Departments have been removed.

MAIN CHANGES IN THE 2015 EDITION

2. This Guernsey Technical Standard which takes effect on 16th March 2015 is issued under the Building (Guernsey) Regulations, 2012. From this date the previous edition of this document approved under the Building Regulations, 1992 i.e. Guernsey Technical Standard P 2012 will no longer be valid except in relation to building work carried out in accordance with full plans deposited with States of Guernsey Building Control before that date.
3. This edition provides complete guidance on the design of private roads and no longer relies on the 'Design Bulletin 32 Residential Roads and Footpaths'
4. This is a completely new document with no basis on any previous guidance and must therefore be read in its entirety.

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Introduction

What is a Guernsey Technical Standard?

This document has been approved and issued to provide practical guidance on ways of complying with requirements P1 and P2 and regulation 11 of the Building (Guernsey) Regulations, 2012 (GSI, 2012 No.11). The Building (Guernsey) Regulations, 2012 are referred to throughout the remainder of this document as 'the Building Regulations'.

The intention of issuing Guernsey Technical Standards is to provide guidance about compliance with specific aspects of the Building Regulations in some of the more common building situations. They include examples of what, in ordinary circumstances, may be reasonable provision for compliance with the relevant requirement(s) of the Building Regulations to which they refer.

If guidance in a Guernsey Technical Standard is followed this may be relied upon as tending to show compliance with the requirement(s) covered by the guidance. Similarly a contravention of the standard may be relied upon as tending to establish a breach of the requirements. However, this is not conclusive, so simply following guidance does not guarantee compliance in an individual case or a failure to follow it meaning that there is necessarily a breach. It is also important to note that there may well be other ways of achieving compliance with the requirements. There is therefore no obligation to adopt any particular solution contained in this Guernsey Technical Standard if you would prefer to meet the relevant requirement in some other way. However, persons intending to carry out building work should always check with Building Control, that their proposals comply with Building Regulations.

The guidance contained in this Guernsey Technical Standard relates only to the particular requirements of the Building Regulations that the document addresses, (see 'Requirements' below). However, building work may be subject to more than one requirement of the Building Regulations and there may be an obligation to carry out work on a material change of use. In such cases the works will also have to comply with any other applicable requirements of the Building Regulations and work may need to be carried out which applies where a material change of use occurs.

This document is one of a series that has been approved and issued for the purpose of providing practical guidance with respect to the requirements of the Building Regulations in particular of regulations 6, 8 and 11 and Schedule 1.

At the back of this document is a list of all the documents that have been approved and issued for this purpose.

How to use this Guernsey Technical Standard

In this document the following conventions have been adopted to assist understanding and interpretation:

- a. Texts shown against a yellow background are extracts from the Building Regulations, and set out the legal requirements that relate to compliance with the **roads** requirements of the Building Regulations. It should be remembered however that, as noted above, building works must comply with all the other applicable provisions of the Building Regulations.
- b. Details of technical publications referred to in the text of this document will be presented in *italics* and repeated in standards referred to as an annex at the rear of this document. A reference to a publication is likely to be made for one of two main reasons. The publication may contain additional or more comprehensive technical detail, which it would be impractical to include in full in this Document but which is needed to fully explain ways of meeting the requirements; or it is a source of more general information. The reason for the reference will be indicated in each case. The reference will be to a specified edition of the document. The Guernsey Technical Standard may be amended from time to time to include new references or to refer to revised editions where this aids compliance.

Where you can get further help

If you require clarification on any of the technical guidance or other information set out in this Guernsey Technical Standard and the additional detailed technical references to which it directs you, there are a number of routes through which you can seek further assistance:

- The States of Guernsey website:
www.gov.gg/planning
- If you are the person undertaking the building work you can seek advice from Building Control Surveyors to help ensure that, when carried out, your work will meet the requirements of the Building Regulations.
- Businesses registered with a competent person self-certification scheme may be able to get technical advice from their scheme operator. A full list of competent persons schemes are included as Schedule 3 of the Building Regulations.
- If your query is of a highly technical nature you may wish to seek the advice of a specialist, or industry technical body, in the area of concern.

Responsibility for compliance

It is important to remember that if you are the person (e.g. designer, builder, installer) carrying out building work to which any requirement of Building Regulations applies you have a responsibility to ensure that the work complies with any such requirement. The building owner or occupier will also have a responsibility for ensuring compliance with Building Regulation requirements and could be served with a compliance notice in cases of non-compliance or with a challenge notice in cases of suspected non-compliance.

General Guidance

Types of work covered by this Guernsey Technical Standard

Building work

Building work, as defined in regulation 5 of the Building (Guernsey) Regulations, 2012, includes the erection or extension of a building, the provision or extension of a controlled service or fitting, and the material alteration of a building or a controlled service or fitting. In addition, the Building Regulations may apply in cases where the purposes for which, or the manner or circumstances in which, a building or part of a building is used change in a way that constitutes a material change of use.

Under regulation 6 of the Building Regulations 2012, building work must be carried out in such a way that, on completion of work,

- i. the work complies with the applicable Parts of Schedule 1 of the Building Regulations,
- ii. in the case of an extension or material alteration of a building, or the provision, extension or material alteration of a controlled service or fitting, it complies with the applicable Parts of Schedule 1 to the Building Regulations and also does so as satisfactorily as it did before the work was carried out.

Work described in Part P concerns roads. Work associated with roads covered in these sections may be subject to other relevant Parts of the Building Regulations.

Material change of use

A material change of use occurs in specified circumstances in which a building, or part of a building that was previously used for one purpose will be used in future for another, or is converted to a building of another kind. Where there is a material change of use, the Building Regulations set requirements that must be met before the building can be used for its new purpose.

Regulation 7 of the Building (Guernsey) Regulations, 2012 specifies the following circumstances as material changes of use:

- a building is used as a dwelling where previously it was not,
- a building contains a flat where previously it did not,
- a building is used as an institution where previously it was not,
- a building is used as a public building where previously it was not,
- a building is not described in Classes I to V or VI of Schedule 2, where previously it was,
- a building contains a room for residential purposes where previously it did not,
- a building contains an office where previously it did not,
- a building is used as an hotel or guest house, where previously it was not,
- a building is an industrial building, where previously it was not,
- a building contains a shop, where previously it did not,
- a building is used for the sale of food or drink, to the public in the course of a business and for consumption in that building and where there is a maximum capacity of 15 or more persons seated or standing, where previously it was not so used,
- the building, which contains at least one room for residential purposes, contains a greater or lesser number of such rooms than it did previously

- the building, which contains at least one dwelling, contains a greater or lesser number of dwellings than it did previously.

Part P will apply to a building to be used as a dwelling or contains a flat or as an institution or as a public building or as an hotel/guest house or if the building contains a greater number of dwellings than it previously did. This means that whenever such changes occur the building must be brought up to the standards required by Part P.

Protected Buildings and Monuments

The types of building works covered by this Guernsey Technical Standard may include work on historic buildings. Historic buildings include:

- a building appearing on the protected buildings listing
- a building or other structure appearing on the protected monument listing

When exercising its functions under The Land Planning and Development Law, the States has duties under s30(1), 34, 35 and 38(1) of that Law, to secure so far as possible that monuments are protected and preserved, that the special characteristics of protected buildings are preserved and to pay special attention to the desirability of preserving and enhancing the character and appearance of a conservation area. Building Control will need to comply with these duties when considering any decisions in relation to such buildings or buildings in such areas.

Special considerations may apply if the building on which the work is to be carried out has special historic, architectural, traditional or other interest, and compliance with the **roads** requirements would unacceptably alter the fabric, character or appearance of the building or parts of it.

When undertaking work on or in connection with buildings with special historic, architectural, traditional or other interest, the aim should be to improve the **roads** where and to the extent that it is possible provided that the work does not prejudice the fabric, character or appearance of the host building or increase the long-term deterioration to the building's fabric or fittings.

In arriving at a balance between historic building conservation and the **roads** requirements advice should be sought from the historic building adviser.

Note: Any building which is a protected monument listed under Section 29 of The Land Planning and Development (Guernsey) Law 2005 is exempt from most Building Regulations requirements including those in Part P, (See regulation 13 and class V of Schedule 2 to the Building Regulations) unless the proposed works constitute a material change of use.

Notification of work

In almost all cases of new building work it will be necessary to notify Building Control in advance of any work starting. The exception to this: where work is carried out under a self-certification scheme listed in Schedule 3 or where works consist of emergency repairs.

Competent person self-certification schemes under Schedule 3

Under regulations 14(4), 17(4) and 19 of the Building Regulations it is not necessary to deposit plans or notify Building Control in advance of work which is covered by this Guernsey Technical Standard if that work is of a type set out in column 1 of Schedule 3 to the Regulations and is carried out by a person registered with a relevant self-certification (competent persons) scheme as set out in column 2 of that Schedule. In order to join such a scheme a person must demonstrate competence to carry out the type of work the scheme covers, and also the ability to comply with all relevant requirements in the Building Regulations. These schemes may change from time to time, or schemes may change name, or new schemes may be authorised under Schedule 3; the current list on the States website should always be consulted. Full details of the schemes can be found on the individual scheme websites.

Where work is carried out by a person registered with a competent person scheme, regulation 19 of the Building Regulations requires that the occupier of the building be given, within 30 days of the completion of the work, a certificate confirming that the work complies with all applicable Building Regulation requirements. There is also a requirement that Building Control be given a notice that this has been done, or the certificate, again within 30 days of the completion of the work. These certificates and notices are usually made available through the scheme operator.

Building Control is authorised to accept these certificates as evidence of compliance with the requirements of the Building Regulations. However, inspection and enforcement powers remain unaffected, although they are normally used only in response to a complaint that work may not comply.

Exemptions

Schedule 2 to the Building Regulations sets out a number of classes of buildings which are exempt from majority of Building Regulations requirements. Part P requirements are not affected by the exemptions.

Materials and workmanship

Any building work within the meaning of the Building Regulations should, in accordance with regulation 11, be carried out with proper materials and in a workmanlike manner.

You may show that you have complied with regulation 11 in a number of ways. These include the appropriate use of a product bearing CE marking in accordance with the Construction Products Regulation (305/2011/EU-CPR) as or a product complying with an appropriate technical specification (as defined in those Regulations), a British Standard or an alternative national technical specification of any state which is a contracting party to the European Economic Area which in use is equivalent, or a product covered by a national or European certificate issued by a European Technical Approval issuing body, and the conditions of use are in accordance with the terms of the certificate.

You will find further guidance in the Guernsey Technical Standard supporting regulation 11 on materials and workmanship.

Supplementary guidance

Building Control occasionally issues additional material to aid interpretation of the guidance in Guernsey Technical Standards. This material may be conveyed in official letters to relevant agents and/or posted on the States website accessed through: www.gov.gg/planning

Technical specifications

When a Guernsey Technical Standard makes reference to specific standards or documents, the relevant version of the standard is the one listed at the end of the publication. However, if this version of the standard has been revised or updated by the issuing standards body, the new version may be used as a source of guidance provided that it continues to address the relevant requirements of the Building Regulations.

Where it is proposed to work to an updated version of the standard instead of the version listed at the end of the publication, this should be discussed with Building Control in advance of any work starting on site.

The appropriate use of any product, which complies with a European Technical Approval as defined in the Construction Products Regulation, (305/2011/EU-CPR) as amended, repealed or replaced will meet the relevant requirements.

Independent schemes of certification and accreditation

Much of the guidance throughout this document is given in terms of performance.

Since the performance of a system, product, component or structure is dependent upon satisfactory site installation, testing and maintenance, independent schemes of certification and accreditation of installers and maintenance firms will provide confidence in the appropriate standard of workmanship being provided.

Confidence that the required level of performance can be achieved will be demonstrated by the use of a system, material, product or structure which is provided under the arrangements of a product conformity certification scheme and an accreditation of installer scheme.

Third party accredited product conformity certification schemes not only provide a means of identifying materials and designs of systems, products and structures which have demonstrated that they reach the requisite performance, but additionally provide confidence that the systems, materials, products and structures are actually provided to the same specification or design as that tested or assessed.

Third party accreditation of installers of systems, materials, products and structures provides a means of ensuring that installations have been conducted by knowledgeable contractors to appropriate standards, thereby increasing the reliability of the anticipated performance.

Many certification bodies that approve such schemes are accredited by the **United Kingdom Accreditation Service**.

Certification of products, components, materials or structures under such schemes may be accepted as evidence of compliance with the relevant standard. Similarly the certification of installation or maintenance of products, components, materials and structures under such schemes as evidence of compliance with the relevant standard may be acceptable. Nonetheless Building Control will wish to establish in advance of the work, that any such scheme is adequate for the purpose of the Building Regulations.

Interaction with other legislation

This Guernsey Technical Standard makes reference to other legislation, including those listed below, the requirements of which may be applicable when carrying out building work. All references are to legislation as amended or repealed and replaced.

Note: All Laws, Ordinances and Statutory instruments can be accessed at;

www.guernseylegalresources.gg/

The Health and Safety at Work (General)

(Guernsey) Ordinance, 1987 made under the Health and Safety at Work etc. (Guernsey) Law, 1979 and the Health, Safety and Welfare of Employees Law, 1950 applies to any workplace or part of a workplace. They apply to the common parts of flats and similar buildings if people such as cleaners, wardens and caretakers are employed to work in these common parts.

Mixed use development

In mixed use developments part of a site may be used for dwellings while another part has a non-domestic use. In such cases, if the requirements of this Part of the Regulations for dwellings and non-domestic use differ, the requirements for non-domestic use should apply in any shared parts of the site.

Traffic Engineering Guidelines for Guernsey

For consistency the design guidance in relation to the interface of private roads with the public highway reflects that set out in the 'Traffic Engineering Guidelines For Guernsey' - Road Hierarchy, Traffic Management Regimes. In addition other sections refer to categories of public highway described in the Hierarchy document.

The map of Guernsey appended to this document has been included as Annex A.

The Requirements

This Guernsey Technical Standard deals with the following requirements from Part P of Schedule 1 to the Building Regulations.

<i>Requirement</i>	<i>Limits on application</i>
Layout design and construction	
<p>P1. Roads must be of a suitable layout, including arrangement for the safety of pedestrians and provision for turning, and must be of an adequate width and gradient, provided with a suitable surface and adequately constructed.</p>	
Regulation 2 definition	
<p>“road” includes any path or way, not maintained at public expense, which is laid out or constructed to provide access or improved access -</p>	
<p>(a) to two or more dwelling-houses, or</p>	
<p>(b) to any building where that path or way is constructed as part of the same development project as that building,</p>	

Note: For clarification the above requirements only apply to those paths or ways that are communal serving two or more dwellings and not the individual access arrangements that are solely in relation to individual dwellings within a property's recognised boundaries.

In addition, where necessary, reference should be made to **Guernsey Technical Standard B: Fire Safety, Volume 1 - Dwellinghouses and Volume 2 - Buildings other than dwellinghouses**, in particular B5 Access and facilities for the fire service.

An Individual building's access arrangements must be provided in accordance with **Guernsey Technical Standard M: Access to and use of buildings**.

Guidance

Performance

Requirement P1

The requirement P1 will be met if;

- a. The road is laid out so as to provide adequate width and turning facilities, to enable vehicles to safely negotiate the road and to enter and leave the road.
- b. The road is constructed and provided with a suitably bound surface that will safely sustain the load of vehicles using the road and limits the requirements for regular maintenance.
- c. The road is either provided with footpaths or shall be designed so that pedestrians may safely reach their intended destination.
- d. The road is provided with sufficient longitudinal and cross falls to facilitate the dispersal of surface water.

Outside of the scope of P1

For the purposes of accommodating the future development of enhanced locally available infrastructure, consideration should be given to;

- a. Providing a duct network under the structure of the new road from the road entrance onto the domestic curtilage of each individual dwelling or onto the site of each new non-domestic building.
- b. Laying sufficient pipework in accordance with Part H of Schedule 1 of the Building Regulations, to enable the future gravity connection of the proposed development onto an extended public foul sewer network.

These matters are for consideration only, outside of the requirements of P1 therefore no guidance has been provided in this document.

Introduction to provisions

P1.1 This document describes some ways of meeting the requirement.

It gives guidance on aspects of road geometry with regard to proposed use and intensity of use.

P1.2 The guidance also seeks to determine provision for the interface with the public highway relative to the type and location of that highway.

P1.3 The guidance should be read in conjunction with the document 'Traffic Engineering Guidelines for Guernsey' - Road Hierarchy.

P1.4 The physical characteristics of a road will be dependent on the volume of vehicle traffic and the types of vehicles that could reasonably be expected to use the road. In order to ensure an acceptable level of design flexibility, this guidance has been produced using four different sizes of road type.

In order of hierarchy, for types 1 to 3, where the number of dwelling units exceed the maximum stated, or there is scope for future development that may exceed the maximum stated, then the next road type up the scale, must be used.

- a) **Type 1** - Shared driveways
- b) **Type 2** - Clos
- c) **Type 3** - Estate
- d) **Type 4** - Service

Having first determined the road type that most suits a proposed development, users of this guide should then use this road type when referencing this document for the detailed design guidance in relation to the P1 requirements.

Vehicle access Strategy

P1.5 Much of the guidance in this Guernsey Technical Standard is based on various British Standards - codes of practice and studies undertaken for other UK based design guidance. As such, it may appear to be more prescriptive than other Guernsey Technical Standards in the Building Regulations series. It must always be borne in mind however that the guidance contained in this GTS is designed to indicate **one way** in which the Requirements may be met. There may be other, equally satisfactory, ways of meeting the Requirements. Appropriate solutions to vehicle access problems may vary depending on the size, scale and nature of the development and in particular any peculiarities of the location and characteristics of the adjacent public highway.

P1.6 Wherever **technically feasible** it must always be the aim of an application involving Part P requirements to demonstrate that the minimum requirements of the Regulations have been met by following the 'deemed to satisfy' guidance contained within this document. Where this is not the case a 'Vehicle access strategy' needs to be developed.

P1.7 Applicants should therefore seek to engage with Building Control at the earliest possible stage to identify key issues and risks, and to discuss the best way to demonstrate the vehicle access strategy for the development. To ensure satisfactory outcomes, communication between applicants and Building Control should focus on areas where proposals diverge from the guidance in this Guernsey Technical Standard rather than providing an exhaustive explanation where features are in accordance with the guidance.

P1.8 Provision of a written Vehicle access strategy is not required to accompany a building control application though it may be useful in some circumstances. The key focus should be on ensuring that applicants and Building Control are agreed as to the appropriate level of provision in the completed development.

P1.9 In smaller or simpler works this could be achieved by having a conversation to review the proposals and recording the outcome of discussions by correspondence. In large, complex works or where there are significant constraints imposed by an existing location, this might involve a written document setting out key aspects of the vehicle access approach, supported by annotated drawings as well as face to face meetings to resolve key issues. It is for Building Control and applicant to agree which, if any of these proposed approaches should be used on a case by case basis to ensure that the functional requirements of Part P of the Building Regulations are satisfied. Whichever approach is adopted, the agreed level of provision should be clearly recorded.

Section 1 - Layout and design

Road Categories

1.1 This section gives guidance on the 4 different road types, 3 for domestic developments and one for non-domestic developments. The minimum road widths are to provide vehicular access to buildings and make no allowance for parking. If on-street parking is to be allowed, then additional road width, over and above the minimum widths stated, is to be provided.

For the avoidance of doubt, all road width measurements stated are taken between the kerbs.

Type 1 - Shared driveways

1.2 Serving up to a maximum of 5 dwellings. This road must be a minimum of 2.7m wide increased to 3m if contained between walls. In addition to the required visibility splays (see paragraph **1.7**) the first 6m from the interface with the public highway must be a minimum of 4.1m wide then tapering over the next 6m. Suitable footways should be considered. This road will not generally exceed 36m in length.

Where more than five dwellings are proposed or may be proposed in the future then a **type 2** road should be designed.

Note: In accordance with requirement B5 there should be access for a Guernsey Fire and Rescue Service pump appliance to within 45m of all points within dwelling houses. The minimum road width will need to increase to 3.2m and 3.5m if contained between walls, in the sections of the road that exceed this distance.

Diagram 1 shows an example shared driveway with some key dimensions, alternative arrangements using these principals can be considered.

Table 1 summarises the minimum requirements for the different road types.

Type 2 - Clos

1.3 This road type is further subdivided into separate provisions for a dead end or cul-de-sac situation and for a through road or loop arrangement.

- a. **Clos - Cul-de-sac** can serve up to a maximum of 12 dwellings. If cars are generally to be parked/garaged separately, for example in a designated parking area adjacent to the site entrance, the number of dwellings may be increased to 25 units. Access to the dwellings is then restricted to short term dropping off etc.

The road must be a minimum of 3m wide with the addition of a 1m wide foot path. It will not generally exceed 75m in length. For details on a shared surface option refer to paragraph **1.21**

In addition to the required visibility splays (see paragraph **1.7**) the first 6m from the interface with the public highway must be a minimum of 4.1m wide then tapering over the next 6m.

- b. **Clos - Loop** arranged as a single direction with in and out junctions, the dimensions set out in **1.3a**. may serve up to 25 dwellings. With cars that are generally to be parked/garaged separately, for example in a designated parking area adjacent to the site entrance, this number may be increased to 50 units.

With this arrangement there is no requirement to increase the width of the road where it interfaces with the public highway other than for the required visibility splays see paragraph **1.7**. This road will not generally exceed 150m in length.

Where the number of dwellings proposed exceed the maximum numbers stated for a **clos road** or where scope exists to undertake future development that may exceed these numbers then a **type 3** road should be designed.

Note: In accordance with requirement B5 there should be access for a Guernsey Fire and Rescue Service pump appliance to within 45m of all points within dwelling houses. The minimum road width will need to increase to 3.2m and 3.5m if contained between walls, in the sections of the road that exceed this distance.

Diagram 1 shows a examples of **close** roads with some key dimensions, alternative arrangements using these principals can be considered.

Table 1 summarises the minimum requirements for the different road types.

Type 3 - Estate

1.4 As with the type 2 road, **estate** roads are sub-divided with separate provisions for a dead end or cul-de-sac situation and for a through road or loop arrangement.

- a. **Estate - Cul-de-sac** can serve up to a maximum of 25 dwellings. With a minimum width 4.5m there is no maximum length set for this road type.

There must be separate 1m wide footpaths on one or both sides of the road dependent on the layout of the dwellings.

Generally shared surfaces will not be permitted for **estate** roads without further more in-depth consideration outside of the scope of this document. However the general principals of shared spaces can be considered on a case by case basis and included within a 'Vehicle access strategy'. See paragraph **P1.5**

Similarly more than 25 dwellings could be accommodated but may require additional provisions outside the scope of this document.

With this arrangement there is no requirement to increase the width of the road where it interfaces with the public highway other than for the required visibility splays see paragraph **1.7**.

- b. **Estate - Loop** can be a two direction road that incorporates two interfaces with the public highway. Using the dimensions set out in **1.4a** this road can serve more than 25 dwellings up to a maximum of 50.

As with the **estate - cul-de-sac** there is no limit on the length of this road and there must be separate 1m wide footpaths on one or both sides of the road dependent on dwelling layout.

Shared surfaces will not generally be permitted for **estate** roads without further more in-depth consideration outside of the scope of this document. However the general principals of shared spaces can be considered on a case by case basis and included within a 'Vehicle access statement'. See paragraph **P1.5**

More than 50 dwellings could be accommodated but may require additional provisions outside the scope of this document.

With this arrangement there is no requirement to increase the width of the road where it interfaces with the public highway other than for the required visibility splays see paragraph **1.7**.

Diagram 1 shows examples of **estate** roads with some key dimensions, alternative arrangements using these principals can be considered.

Table 1 summarises the minimum requirements for the different road types.

Type 4 - Service Roads

1.5 This road type is specifically for any road serving buildings other than dwellings.

The dimensions of these roads will be dependent on the size of the development being proposed and the types of business being accessed. In all cases it will be necessary to provide access and facilities for the fire service as already set out in Guernsey Technical Standard B 'Fire Safety – Volume 2- Buildings other than dwelling houses', under section B5. In addition it will be necessary to consider Part M requirements in relation to 'Access to and use of Buildings'

There must be separate 1m wide footpaths on one or both sides of the road dependent on the layout of the buildings served by the road.

Table 1 summarises the minimum requirements for the different road types.

Diagram 1 Road Categories

See paras 1.2 - 1.4

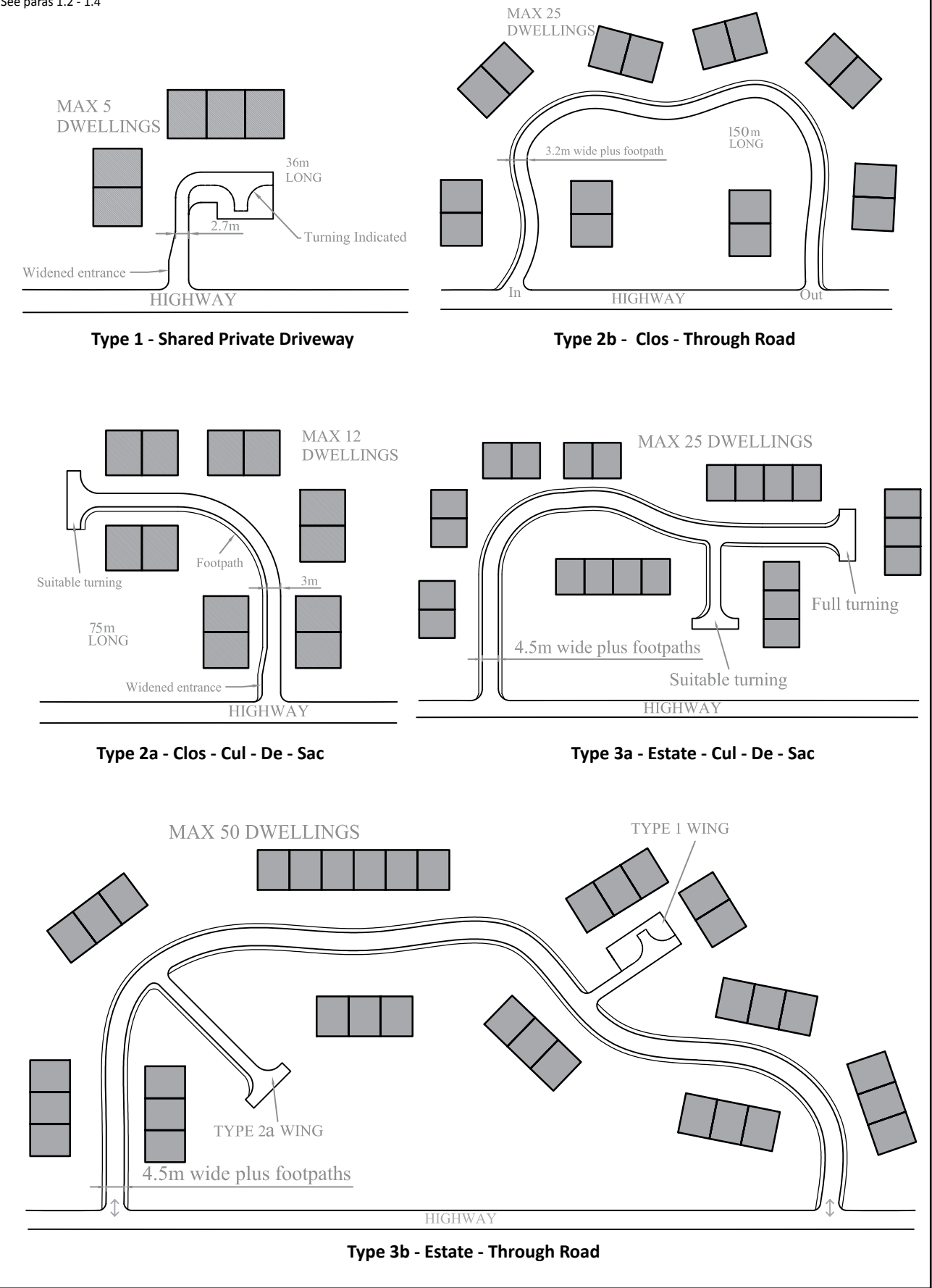


Table 1 Road types - summary information

Road Type	Width	Length	Capacity	Widening	Pedestrian safety
Type 1 Shared private drive	2.7m but increased to 3m where contained between walls ⁽¹⁾	Will not generally exceed 36m	Up to a maximum of 5 dwellings	First 6m from the public highway interface to be 4.5m wide tapering	Suitable footways should be considered
Type 2a Clos Cul-de-sac	3m wide, to be increased to 4m if a shared surface is to be considered ⁽¹⁾	Will not generally exceed 75m	Up to a maximum of 12 dwellings increased to 25 if cars are parked remotely	First 6m from the public highway interface to be 4.5m wide tapering	1no 1m wide footpath to be provided
Type 2b Clos Loop (single direction)	3m wide, to be increased to 4m if a shared surface is to be considered ⁽¹⁾	Will not generally exceed 150m	Up to a maximum of 25 dwellings, increased to 50 if cars are parked remotely	Not required	1no 1m wide footpath to be provided
Type 3a Estate Cul-de-sac	4.5m wide. A shared surface will not normally be accepted	No limit	Up to a maximum of 25 dwellings	Not required	1m wide footpath on one or both sides dependent on dwelling layout
Type 3b Estate Loop	4.5m wide. A shared surface will not normally be accepted	No limit	Up to a maximum of 50 dwellings	Not required	1m wide footpath on one or both sides dependent on dwelling layout
Type 4 Service	Subject to type and size of business Part B5 requirements apply		Variable	Subject to type and size of business	Footpaths to one or both sides dependent on layout. Part M requirements apply

Note 1. Where Part B5 of the Regulations impose a requirement for fire appliance access, the minimum road width will need to increase to 3.2m (3.5m if contained between walls), in those situations where the limits set for access in **Guernsey Technical Standards B 'Fire Safety', volumes 1 and 2** are exceeded.

Entrance

1.6 Also referred to as the interface with the public highway. The guidance in this section is primarily in relation to the safe exiting from the private road. Visibility at these junctions should be sufficient to enable drivers exiting onto the public highway to do so safely and to be seen by other approaching vehicles.

1.7 Visibility splays must be provided but vary dependent on the type of public highway being interfaced and the anticipated speed of traffic expected. The '*Traffic Engineering Guidelines For Guernsey*' - Road Hierarchy document identifies four types of public road;

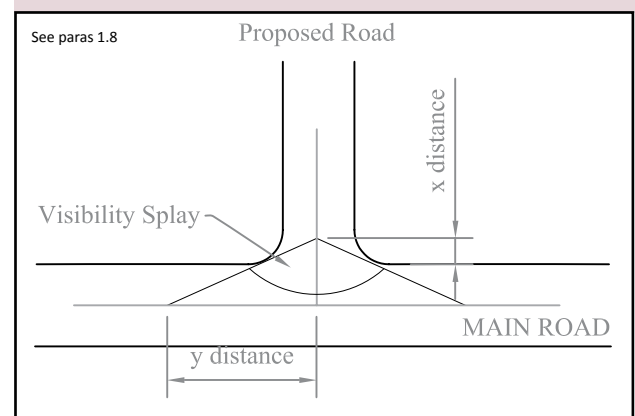
- Inter Harbour Route
- Traffic Priority Route
- Local Circulation Route
- Neighbourhood Road

See the official map included in this document as Annex A.

1.8 The suitability of the junction is assessed by the States of Guernsey Traffic and Highway Services. However for completeness, this document includes guidance for determining suitable visibility, measured by determining the 'X' and 'Y' distances.

Diagram 2 below is a representation on how to measure the 'X' and 'Y' distances.

Diagram 2 Measuring 'X' and 'Y' distances



1.9 The general guidance given in this document sets out the 'X' and 'Y' dimensions required by the different combinations of private and public road types. Other dimensions may be permitted in some specific situations but will be subject the preparation of a '**Vehicle access strategy**' see paragraph **P1.5**. Refer to Table 2 below.

Note: In some situations it may be necessary to alter the Public Highway and to introduce more formal vehicle control measures, for example light control or formal filtering. In these instances the States of Guernsey Traffic and Highway Services will make recommendations during the formal consultations with the States of Guernsey Planning Service.

Entrance gradient

1.10 The entrance surface gradient for the first 6m of the road must be no steeper than 7.7% or 1 in 13 slope down to the public highway or no steeper than 6.25% or 1 in 16 slope up to the public highway.

Passing Places

1.11 Vehicle passing bays that allow sufficient space for vehicles moving in opposite directions to pass each other, must be provided. At these points the width of the road must increase to 6m over a length of 10m.

1.12 The position of these passing bays vary between road types;

- On the narrower single width road types of **Shared Private Drives** and **Clos - Cul-de-sacs**, passing bays must be provided at a point no further than 15m from the inner taper point of the widened entrance and every 15m thereafter.
- On the two direction Estate and Service roads where they exceed 50m in length, passing bays must be provided at a point no further than 50m from the entrance and every 50m thereafter.

Table 2 Visibility provision - 'X' and 'Y' dimensions

Traffic Management Road Hierarchy ⁽¹⁾			
Road Type	Inter Harbour Route & Traffic Priority Route	Local Circulation Route	Neighbourhood Road
Type 1 Shared private drive	X =2.4m, Y = 33m	X =2.4m, Y = 20 - 33m⁽³⁾	X =2.0m, Y = 20 - 33m⁽³⁾
Type 2a Clos Cul-de-sac		X =2.4m, Y = 33m	X =2.4m, Y = 20 - 33m⁽³⁾
Type 2b Clos Loop (single direction)			
Type 3a Estate Cul-de-sac			X =2.4m, Y = 33m
Type 3b Estate Loop			
Type 4 Service	X =4.5m⁽²⁾, Y = 33m	X =4.5m⁽²⁾, Y = 33m	X =4.5m⁽²⁾, Y = 33m

Notes

- The X/Y dimensions stated above reflect best practice guidance included in the States of Guernsey Traffic and Highway Services Road Hierarchy document. Because of existing features, these dimensions may not always be possible to achieve. In these instances a case by case safety assessment will need to be undertaken to determine to what degree these requirements can be relaxed. The emphasis must be on ensuring life safety but balanced with the requirement of not precluding development. For the approved map of Guernsey that identifies the public road types refer to Annex A
- Where serving commercial development of a limited nature, a reduced entrance 'X' distance may be acceptable. Applicants should therefore seek to engage with Building Control at the planning stage to discuss site specific requirements.
- The Y dimension will be dependent of the speed limit of the public road for 25 and 35mph 'Y' = 33, for 20mph 'Y' = 20.

1.13 For type 4 - non domestic **Service Roads**, vehicle passing bays are to provided at the same intervals as in **1.12**. The dimensions of the bays will be dependent of the size of development served and the type of business being accessed.

It is advisable to make early contact with the Building Control at the planning stage to determine the level of provision that will be acceptable.

Provisions for turning

1.14 For all road types that result in a dead end situation, it will be necessary to provide sufficient space to allow for vehicle turning. The scale of this provision will depend on the following factors;

- The type of public road being interfaced
- The length of the road being proposed
- The anticipated requirement for service vehicles to enter the private road

1.15 For domestic road types 1, 2a and 3a two optional turning standards can be applied, **Car turning** and **Service vehicle turning**.

Note: It is not necessary for the road to physically de mark the turning provision with kerbs etc. It is sufficient for it to be demonstrated on the application drawings that the necessary amount of surfaced space has been provided. This must be in addition to any parking provision for the site.

Table 3 defines which turning standard is to be applied in various situations.

Diagram 3 sets out three general layout patterns and the relevant dimensions that need to be applied for turning space.

1.16 Turning fire fighting appliances. For road types 3a and 4 where the road length is 50m or greater the 'R' value must be increased to 7m and the 'X' distance increased to 12m

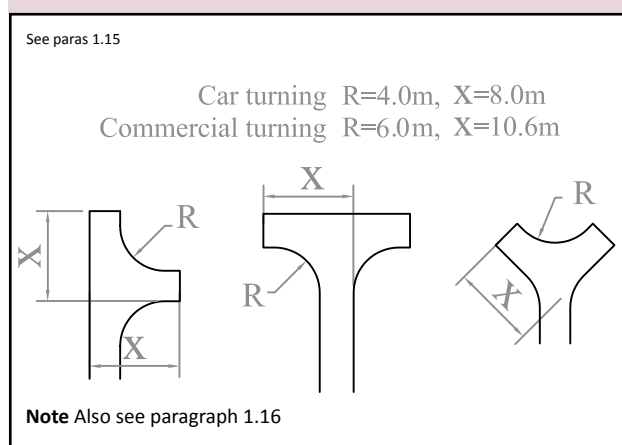
Table 3 Provision for turning vehicles

	Traffic Management Road Hierarchy			
Road Type	Inter Harbour Route	Traffic Priority Route	Local Circulation Route	Neighbourhood Road
Type 1 Shared private drive	Car standard only ⁽¹⁾			Car standard only
Type 2a Clos Cul-de-sac	Service vehicle standard		Generally will be of ⁽¹⁾ Service vehicle standard See paragraphs P1.5 - P1.9	
Type 2b Clos Loop (single direction)	No provision required			
Type 3a Estate Cul-de-sac	Service vehicle standard ⁽³⁾			
Type 3b Estate Loop	No provision required			
Type 4	To be a minimum of Service vehicle standard with a case by case assessment ⁽³⁾			

Notes

- Where serving properties with foul drainage provided by cesspits, turning to a service vehicle standard must be provided.
- Where the public highway at the interface with the private road is in anyway restricted in width to the extent that commercial vehicles cannot be reversed into or out of road types 1 and 2a, then service vehicle standard must be provided.
- Where road types 3a and 4 exceed 50m in length then R must increase to 7m and X must increase to 12m see paragraph **1.16**.

Diagram 3 Vehicle turning standards



Note: For all road types attention must be given to the guidance set out in Guernsey Technical Standard B volumes 1 and 2 for determining emergency vehicle access requirements or, where appropriate, consider alternative approaches.

1.20 In all cases where access is a requirement, a clear head height of 3.5m must be maintained over a width of 3m and for the entire length of the obstruction.

Refer to Diagram 4 below.

Shared Surfaces

1.21 An alternative layout approach to that described for **Type 1 - Shared private driveways** and **Type 2 - Clos roads** is to consider a shared surface for vehicles and pedestrians. Whilst such an arrangement does not generally reduce the requirement for land use in relation to roads, it can be desirable from a planning perspective. In considering this alternative approach, the main issue to consider is one of pedestrian safety. The following additional measures must be provided.

General design

1.22 The surface must not give the impression of being divided into a carriageway and footpath. There should be no height difference in the cross section of the road. The surfacing material must be suitable for both pedestrians and vehicles and the **shared surface** must be wide enough for a pedestrian and a vehicle to pass, see Table 1. Ensuring good visibility at all times and limiting traffic speeds are key to ensuring the safe use of **shared surface** roads.

Limitation on headroom

1.17 Overhead obstructions must be considered where access beyond the obstruction is likely to be required by emergency and service vehicles. When considering this issue the requirements of *Part H6 'Solid waste storage'* and *Part B5 'Access and facilities for the fire service'* will apply.

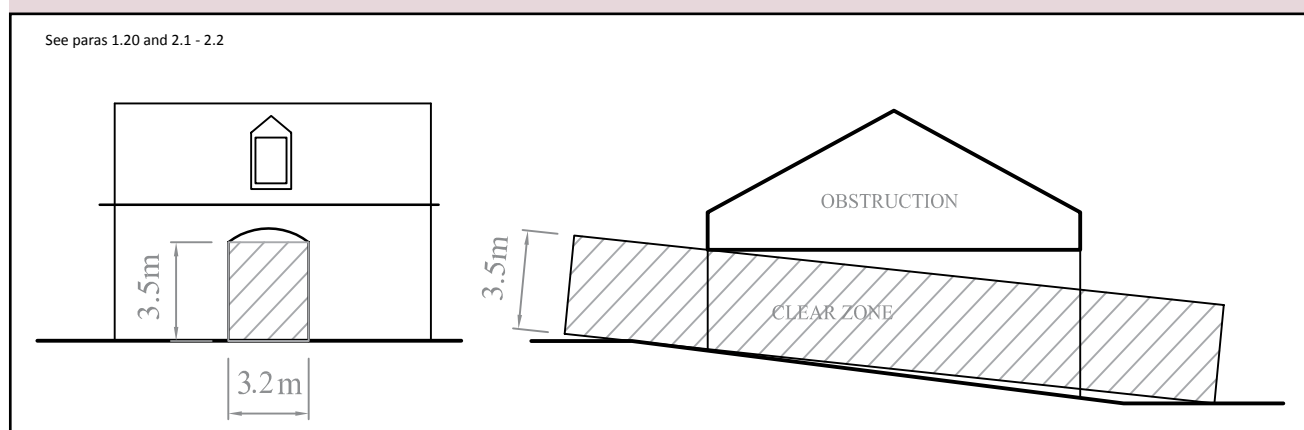
H6 guidance on siting

1.18 Storage areas for waste containers and chutes should be sited so that the distance householders are required to carry refuse does not usually exceed 30m (excluding any vertical distance). Containers should be within 25m of the waste collection point.

B5 guidance on vehicle access

1.19 There should be vehicle access for a pump appliance to within 45m of all points with the dwelling house.

Diagram 4 Minimum headroom for access



Specific measures

1.23 In addition to the design measures outlined in the previous paragraphs, the following guidance will apply for **shared surface** roads and cover the following areas;

- Interface with the public highway.
- Lighting.
- Gradient.
- Demarcation.

Entrance identification

1.24 When entering a private road - **shared surface**, from a public highway, it is important that drivers are made aware of this change in standard and are therefore encouraged to drive more cautiously and consider the right of way of pedestrians. Ideally the road should be surfaced in a different material from the public highway. Alternatively a 1m wide 'rumble strip' must be installed across the entrance that clearly alerts drivers and checks speed.

Lighting

1.25 For pedestrian safety it is important that visibility is maintained at all appropriate times. Street lighting must therefore be provided along any private road with a **shared surface**. Full detailed guidance on the lighting of roads and associated areas is given in *BS 5489-1:2013 Code of practice for the design of road lighting* and *BS EN 13201-2:2003 Road lighting*.

Specifically from table A.6 of *BS 5489-1:2013* lighting class S6 or P6 must be provided for **shared surface** roads.

1.26 When providing road lighting reasonable provision should be made to enable effective control and/or the use of efficient lamps. A way of showing compliance when providing external lighting would be to install systems that:

- allow lighting levels to vary or to be automatically extinguished based on timing or ambient lighting levels; and
- have sockets that can only be used with lamps having an efficacy as fluorescent or LED lamp types, and not GLS tungsten lamps with bayonet cap or Edison screw bases.

Table 4 BS EN 13201-2:2013 table 3 reproduction

Table 3 - S-series of lighting classes

Class	Horizontal illuminance	
	\bar{E} in lx ^a (minimum maintained)	E_{min} in lx (maintained)
S1	15	5
S2	10	3
S3	7.5	1.5
S4	5	1
S5	3	0.6
S6	2	0.6
S7	performance not determined	performance not determined

^a To provide for uniformity, the actual value of the maintained average illuminance may not exceed 1.5 times the minimum E value indicated for the class.

Where \bar{E} is the average illuminance over the road and E_{min} is the minimum illuminance

1.27 Table 4 above is a reproduction of the *BS EN 13201-2:2003* table 3 for the specific illuminance levels that need to be achieved for 'S' series lighting classes. These values should be used by the lighting designer when determining the lighting provision for **shared surface** roads.

Gradient

1.28 The entrance gradient provisions in **1.10** apply equally for **shared surfaces**. However, in contrast with the general guidance in **2.2**, at all other points along a private road with a **shared surface**, the maximum longitudinal gradient must not exceed 11% or 1 in 9.

Parking

1.29 Vehicles should not be encouraged to park on a road with a **shared surface** just because it looks wider. Layout designs must therefore provide sufficient parking for the dwellings. These parking areas must be clearly de marked from the road way as must any dedicated pedestrian only walkways.

Section 2 - Construction

General

Gradients

2.1 All roads must be laid out with a minimum **longitudinal gradient** of 1% or 1 in 100 falling towards the drainage gullies as detailed in paragraphs **3.13** to **3.17**.

2.2 Generally, with the exception of the entrance provision in paragraph **1.10**, there is no maximum longitudinal gradient. However, detailed consideration should be given to ensuring that service vehicles can negotiate sharp changes in gradient.

Note: For roads with ‘**shared surfaces**’ the longitudinal gradient restriction detailed in paragraph **1.28** applies.

2.3 **Cross falls** must be provided within the range of 2.5% - 2.8% or 1 in 40 - 1 in 35 This may be achieved in a single direction or by camber, directing surface water towards the drainage gullies as detailed in paragraphs **3.13** to **3.17**.

Alternative approach

2.4 Where a sustainable urban drainage system (SUDS) is to be installed, see paragraph **3.45**, surface gradients are not required to ensure free drainage. The requirement may be met by independent specialist design and is outside the scope of this document.

Surfacing

2.5 A ‘suitably surfaced’ road, requiring little ongoing maintenance can be achieved with three types of surfacing.

- a) Flexible bitumen macadam surfacing laid by specialist,
- b) Rigid cement bound (concrete) surface
- c) Concrete pavers, natural stone sets and cobbles.

2.6 **Bitumen Macadam.** Also commonly referred to as tarmac. The following Table 5 below details the base course and surface course specifications for the various road types and stone dressing layer that must be provided prior to the laying of the asphalt material.

Table 5 Bitmac specification by road type		
Road type	Base Course	Surface Course
Shared private driveway	50mm	30mm
Clos road		
Estate road	60mm	40mm
Non-domestic service road		

All of these base courses are laid on a stone dressing of ‘20mm down aggregate’ at a minimum depth of 50mm, on top of the hardcore foundation, see paragraph **2.11**. This stone dressing is to be laid just prior to the asphalt being laid.

2.7 **Rigid cement bound (concrete)** surface is suitable for all road types. Given the rigid nature of a cement bound road surface this is deemed to be an engineered road. A design specification will need to be prepared by a suitably qualified Structural Engineer and submitted to Building Control under the recognised structural engineering submission procedures. No further design guidance is given in this document, to do so is beyond the scope of this document.

2.8 **Concrete pavers, natural stone sets and cobbles** offer an alternative to the common asphalt surface and may be the preferred option from a visual appearance perspective. For road types 1, 2 and 3, the minimum thickness of concrete paver is 60mm, this may be reduced to 50mm for pedestrian only footpaths. **Type 4** roads should be designed in accordance with *BS 7533-1:2001*

2.9 For any chosen surfacing material the requirements of Regulation 11 'Materials and Workmanship' must be taken into account in particular the products conformity to the Construction Products Regulation (305/2011/EU-CPR). For further guidance into product suitability refer to Guernsey Technical Standard 'Materials and Workmanship'.

Note: Where a sustainable urban drainage system (SUDS) is to be installed, see paragraph **3.45**, the specification of the surface product is to be by independent specialist design and is outside the scope of this document.

Road Base Construction

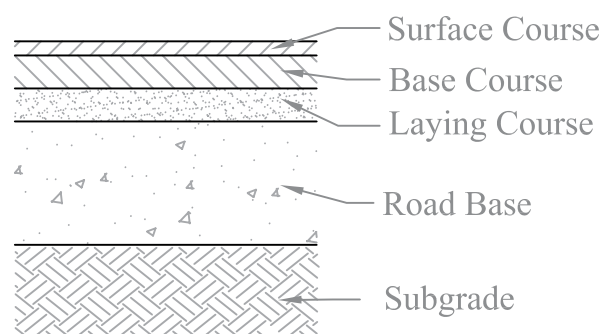
2.10 The road base, or foundation depends on the surfacing option being proposed, the strength of the natural material or subgrade, known as the CBR value, and the normal height of the water table. Diagram 5 below illustrates the different foundation makeup for the bitmac, concrete and paver surfaced roads including the key terms mentioned in the following paragraphs.

2.11 For **Bitumen macadam** surfaced roads of all types a road base constructed of 250mm well compacted type 2 hardcore material should be provided. If required, a 150mm base layer may be laid for access purposes during the construction phase of a development with a further 100mm added during the formal road construction. For footpaths solely used by pedestrians the road base layer can be reduced to 150mm.

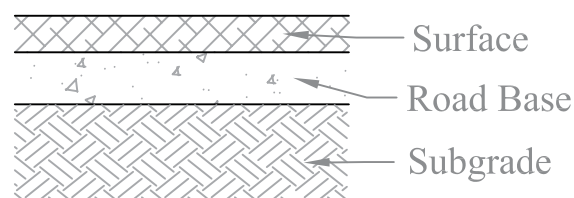
2.12 For **cement bound (concrete)** surfaced roads. The strength of this road type is reliant on the reinforced road surface and is subject to a Structural Engineers design, see paragraph **2.7**. Generally a road base layer of 200mm well compacted type 2 hardcore material should be provided. If required, the road base can be laid for access purposes during the construction phase of a development. For footpaths solely used by pedestrians the road base layer can be reduced to 100mm.

Diagram 5 Road construction cross-section

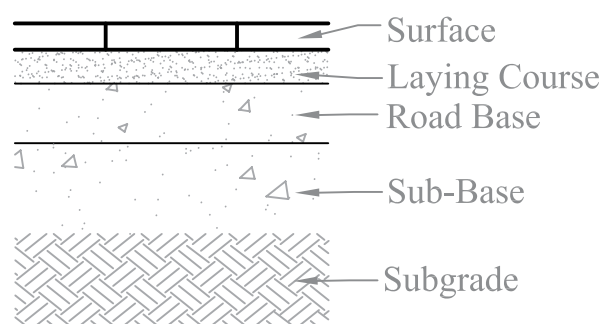
See paras 2.10



Road surfaced with bitumen macadam



Road surfaced with a cement bound product i.e. concrete



Road surfaced with concrete pavers and natural stone sets and cobbles

2.13 For concrete pavers and natural stone sets and cobbles, the foundation requirements will vary. The following Table 6 details the required thicknesses of the sub-base, road base and laying course. The sub-base layer may be laid for access purposed during the construction phase of the development with the road base and laying course added during the formal road construction.

Type 4 roads should be designed in accordance with *BS 7533-1:2001*

Note: Where a sustainable urban drainage system (SUDS) is to be installed, see paragraph **3.45**, the road foundation will be specified by independent specialist design and is outside the scope of this document.

Poor ground conditions

2.14 For all surfacing types where the subgrade material is identified as being of a poor quality or of loose fill material, or for any situation where a very high water table exists, i.e it is assumed as having a 'CBR' value of less than 1, it will be necessary to undertake some form of ground improvement and/or reinforce the road base structure through the use of geotextile materials. All of which will be subject to a Structural Engineers design and submission.

Table 6 Road foundation requirements for concrete pavers and natural stone sets and cobbles

Subgrade	Assumed CBR ⁽¹⁾	Traficked surface ⁽³⁾			Pedestrian footpath		
		Sub-base	Road base	Lay course	Sub-base	Road Base	Lay course
Silt	1	400mm	125mm	30mm	300mm	Nil	50mm
Heavy Clay	2						
Silty Clay	4	250mm			175mm		
Sandy Clay	5	150mm			100mm		
Sand	20 (7) ⁽²⁾	150mm					
Gravel	60 (15) ⁽²⁾						

Notes

1. The CBR value is indicative measure of the strength of the natural material or subgrade.
2. The bracketed figures should be considered if these materials are likely to become saturated or where there is a high water table present.
3. Type 4 roads should be designed in accordance with *BS 7533-1:2001*

Footpath Construction

2.15 Generally footpaths are to be constructed 1m wide and as noted in paragraphs **2.11** and **2.12**. Where footpaths exist at the interface with the public highway or at the location of any junctions formed within the development;

- The kerbs at the crossing points must be lowered to such an extent as to allow the ease of navigation by those persons with physical and sensory impairment.
- The surface of the foot path at the crossing points must be suitably surfaced to give early warning of the possible danger for those with visual impairment.

Diagram 6 below shows an example of a lowered kerb together with tactile paving at an uncontrolled crossing point.

Note: For further information refer to Guernsey Technical Standard Part M, section 1.

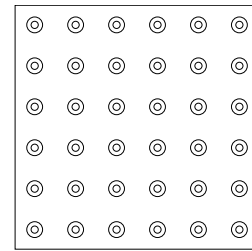
Alternative Approach

2.15 For design guidance in situations that fall outside of the scope of this document, reference should be made to the relevant British Standards referenced throughout this document and repeated as **Annex A**

For further design flexibility refer to paragraph **P1.5** for guidance in relation to 'Vehicle access strategies'.

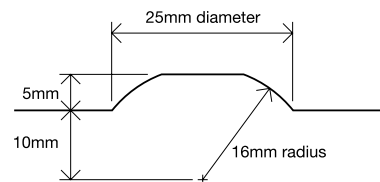
Diagram 6 Tactile paving and an example of its use at an uncontrolled crossing

See paras 2.15

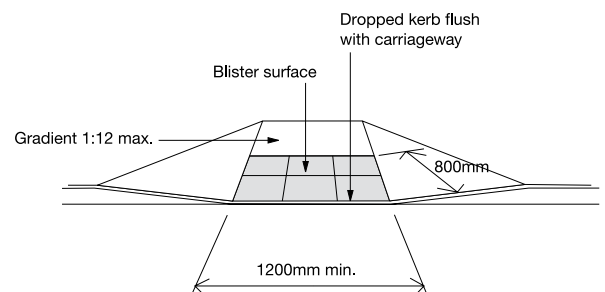


Blister surface (with 36 domes)

Note: Full details of tactile paving are in "Guidance on the use of Tactile Paving Surfaces."



Dome profile



Dropped kerb at an uncontrolled crossing

The Requirements

This Guernsey Technical Standard deals with the following requirements from Part P of Schedule 1 to the Building Regulations.

<i>Requirement</i>	<i>Limits on application</i>
Drainage	
P2. Roads must be provided with adequate drainage.	
Regulation 2 definition	
“road” includes any path or way, not maintained at public expense, which is laid out or constructed to provide access or improved access -	
(a) to two or more dwelling-houses, or	
(b) to any building where that path or way is constructed as part of the same development project as that building.	

Note: For clarification the above requirements only apply to those paths or ways that are communal serving two or more dwellings and not the individual access arrangements that are solely in relation to individual dwellings within a property’s recognised boundaries.

In addition, where necessary, reference should be made to **Guernsey Technical Standard B: Fire Safety**, in particular B5 Access and facilities for the fire service.

An Individual building’s access arrangements must be provided in accordance with **Guernsey Technical Standard M: Access to and use of buildings**.

Guidance

Performance

Requirement P2

The requirement P2 will be met if the road is provided with a surface water drainage system that carries the surface water from the road to an outfall in accordance with the requirements of H3

Outside of the scope of P1

For the purposes of accommodating the future development of enhanced locally available infrastructure, consideration should be given to;

- a. Providing a duct network under the structure of the new road from the road entrance onto the domestic curtilage of each individual dwelling or onto the site of each new non-domestic building.
- b. Laying sufficient pipework in accordance with Part H of Schedule 1 of the Building Regulations, to enable the future gravity connection of the proposed development onto an extended public foul sewer network.

These matters are for consideration only, outside of the requirements of P1 therefore no guidance has been provided in this document.

Introduction to provisions

P2.1 The provisions in this document are in relation to the drainage of roads that are privately owned and are communal serving two or more dwellings. This does not include the individual access arrangements that are solely in relation to individual dwellings within a property's recognised boundaries.

P2.2 Methods of drainage other than connection to a public surface water sewer are encouraged where they are technically feasible.

P2.3 The capacity of the drainage system should be large enough to carry the expected flow at any point in the system.

P2.4 The flow depends on the area to be drained and the intensity of the rainfall.

P2.5 The capacity depends on the size and gradient of the channels and pipes. Capacities and minimum sizes are given in the text.

P2.6 Rainwater or surface water should not be discharged into a cesspool or septic tank or public foul sewer, or be sited such as to affect them.

Section 3 - Drainage

General

3.1 The requirements of P2 will be met if the guidelines given in the *Construction Industry Research and Information Association (CIRIA) Report 124 Scope of control of urban runoff: Volume 3: Guidelines* and the recommendations given in *BS EN 752:2008 Drain and sewer systems outside buildings* are followed.

3.2 In general the guidance for surface water drainage is found in Guernsey Technical Standard 'H' Drainage and waste disposal. Relevant sections of this guidance has been tailored for road drainage and reproduced in the following paragraphs.

Drainage of paved areas

3.3 The following paragraphs give guidance on the design of paved areas for rainwater drainage systems. It is applicable to the drainage of paved areas i.e. private roads and small car parks up to 4,000m². For the design of systems serving larger catchments, reference should be made to *BS EN 752-4* (see paragraph **3.18**).

3.4 Where roads are up against buildings, surface gradients should direct water draining from the road away from those buildings. Where the levels would otherwise cause water to concentrate along the wall of a building, a reverse gradient should be created, for at least 500mm from the wall of the building, to divert the water away from the wall.

3.5 Gradients on impervious surfaces should be designed to permit the water to drain quickly from the surface. A gradient of at least 1 in 60 is recommended. The gradient across a footpath or **shared surface** road should not exceed 1 in 40. Also refer to paragraphs **1.28**, and **2.1 - 2.3**

Design rainfall intensities

3.6 Design rainfall intensities of 0.014 litres/second/m² may be assumed for normal situations. Where ponding of rainfall is undesirable locally defined rainfall intensities should be obtained.

3.7 For very high risk areas, where ponding would lead to flooding of buildings, the drainage should be designed in accordance with *BS EN 752-4* (see paragraph **3.18**).

Pervious surfaces

3.8 Pervious surfaces consist of a porous or permeable surface overlying a granular layer which acts as a storage reservoir, retaining peak flows while the water soaks into the underlying subsoil. They should be considered for larger paved areas where it is not possible to drain the rainwater to an adjacent pervious area. The design of the storage layer is undertaken on a similar basis to the design of the storage volume in soakaways (see paragraphs **3.31–3.36**). Where infiltration is not possible (see paragraph **3.32**), they may also be used with an impermeable barrier below the storage layer as a detention tank prior to flows discharging to a drainage system (see paragraph **3.43**).

3.9 For steeply sloping surfaces, a check should be made to ensure that the water level can rise sufficiently in the granular storage layer to allow the storage capacity to be mobilised. A check should also be made to ensure that the stored water will not accumulate around the foundations of the building. Where infiltration is not possible (see paragraph **3.32**), they may also be used with an impermeable barrier below the storage layer as a detention tank prior to flows discharging to a drainage system (see paragraph **3.43**).

3.10 Pervious paving should not be used where excessive amounts of sediment are likely to enter the pavement and block the pores.

3.11 Pervious paving should not be used in oil storage areas, or where runoff may be contaminated with pollutants. Surface water should not be allowed to soak into the ground where ground conditions are not suitable (see paragraph **3.32**).

3.12 Further information on pervious paving can be obtained from *CIRIA report C522 – Sustainable urban drainage systems – design manual for England and Wales*.

Drainage systems

3.13 Where it is not possible for surfaces to be free draining, or to use pervious paving, impervious paving should be used with gullies or channels discharging to a drainage system.

3.14 Gullies should be provided at low points where water would otherwise pond. Intermediate gullies should be provided at intervals to ensure that gullies are not overloaded and the depth of flow in channels is not excessive.

3.15 Gully gratings should be set approximately 5mm below the level of the surrounding paved area in order to allow for settlement.

3.16 Provision should be made to prevent silt and grit entering the system, either by provision of gully pots of suitable size or by catchpits.

3.17 Drainage from large paved areas should be designed in accordance with *BS EN 752-4* (see **3.18**).

Alternative approach

3.18 The performance can also be met by following the relevant recommendations of *BS EN 752-4:1998 Drain and sewer systems outside buildings, Part 4 Hydraulic design and environmental aspects*. The relevant clauses are Clause 11 and National Annexes ND and NE.

Drainage systems

3.19 The following paragraphs give guidance on the design of surface water drainage systems. It is applicable to the drainage of small private roads, reference *BS EN 752-4* (see paragraph **3.44**).

Outlets

3.20 Surface water drainage should discharge to a soakaway or other infiltration system where practicable.

3.21 Discharge to a watercourse may require a consent from Guernsey Water, who may limit the rate of discharge. Maximum flow rates can be limited by provision of detention basins (see paragraph **3.43**).

3.22 Where other forms of outlet are not practicable, discharge should be made to a sewer. This will require the prior consent from Guernsey Waste Water, who may limit the rate of discharge.

Combined systems

3.23 No surface water should be discharged into a foul sewer unless Guernsey Waste Water agree. In some instances they can allow rainwater to discharge into the system if the sewer has enough capacity to take the added flow. Some private sewers also carry both foul and rainwater. If a sewer operated as a combined system does not have enough capacity, the rainwater should be run in a separate system with its own outfall.

3.24 In some circumstances, where a sewer is operated as a combined system and has sufficient capacity, separate drainage should still be provided up to the point of connection with the sewer.

3.25 Surface water drainage connected to combined sewers should have traps on all inlets and be provided with a reverse arm gas interceptor just prior to the connection with the sewer.

Design rainfall intensities

3.26 Design rainfall intensities of 0.014 litres/second/m² may be assumed for normal situations. Alternatively the local rainfall intensity may be obtained.

3.27 Where low levels of surface flooding could cause flooding of buildings the rainfall intensities should be obtained from *BS EN 752-4* (see paragraph **3.44**).

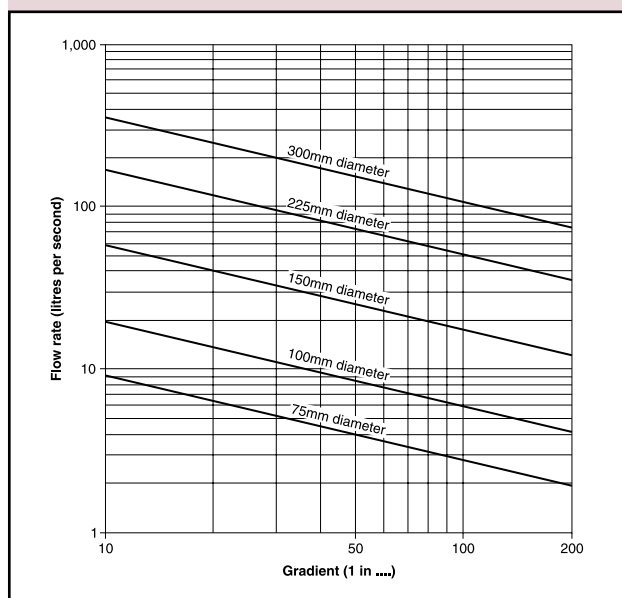
Pipe gradients and sizes

3.28 Drains should have enough capacity to carry the flow. The capacity depends on the size and gradients of the pipes.

3.29 Surface water drains for private roads should have a minimum size of 100mm. Diagram 7 shows the capacities of drains of various sizes at different gradients. However the capacity can be increased by increasing the gradient, or by using larger pipes.

3.30 Drains should be laid at not less than 1:100. 150mm drains and sewers should be laid

Diagram 7 Discharge capacities of rainwater drains running full



at gradients not less than 1:150, and 225mm drains should be laid at gradients not less than 1:225. For minimum gradients for larger pipes see *BS EN 752-4* (see paragraph 3.44).

Soakaways and other infiltration drainage systems

3.31 Further information on the design of infiltration drainage systems can be found in *CIRIA Report 156 – Infiltration drainage – Manual of good practice*.

3.32 Infiltration drainage systems for the drainage of private roads where they are located beneath the road surface or closer than 5m to a building must only be considered if they have been specifically designed by a Structural Engineer with settlement taken into consideration.

3.33 Soakaways for areas less than 100m² are generally formed from square or circular pits, filled with rubble or lined with dry-jointed masonry or perforated ring units. Soakaways serving larger areas are generally lined pits or trench type soakaways.

3.34 Soakaways should be designed to a return period of once in ten years. The design should be

carried out with storms of differing durations to determine the duration which gives the largest storage volume. For small soakaways serving 25m² or less a design rainfall of 10mm in 5 minutes may be assumed to give the worst case. For soakaways serving larger areas reference should be made to the sources listed in paragraph 3.37.

3.35 Percolation tests should be carried out to determine the capacity of the soil (see paragraphs 3.38). Where the test is carried out in accordance with Guernsey Technical Standard H, (H2), the soil infiltration rate (*f*) is related to the value *V_p* derived from the test by the equation:

3.36 The storage volume should be calculated so that, over the duration of the storm, it is sufficient to contain the difference between the inflow volume and the outflow volume. The inflow volume is calculated from the rainfall depth (see paragraph 3.33) and the area drained. The outflow volume (*O*) is calculated from the equation:

Where *a₅₅₀* is the area of the side of the storage volume when filled to 50% of its effective depth, and *D* is the duration of the storm in minutes.

3.37 Soakaways serving larger areas should be designed in accordance with *BS EN 752-4* (see paragraph 3.44), or *BRE Digest 365 Soakaway design*.

3.38 **Percolation test method** – Refer to Guernsey Technical Standard Part H 'Drainage and waste disposal, paragraphs 4.65 - 4.68

Other types of infiltration system

3.39 **Swales** are grass-lined channels which transport rainwater from a site as well as controlling flow and quality of surface runoff. Some of the flow infiltrates into the ground. There may be an overflow at the end into another form of infiltration device or a watercourse. They are particularly suitable for treatment of runoff from small residential developments, parking areas, and roads.

3.40 **Infiltration basins** are dry grass-lined basins designed to promote infiltration of surface water

to the ground.

3.41 Filter drains or french drains consist of the trench, lined with a geotextile membrane and filled with gravel. Much of the flow infiltrates into the ground. A perforated pipe is often laid through the gravel to assist drainage.

3.42 Flow enters the top of the filter drain directly from runoff, or is discharged into it through drains.

Detention ponds

3.43 Detention ponds are used to attenuate the flow from a drainage system and to limit the peak rate of flow into a sewer system or watercourse. Further information on design may be found in the references given in paragraph **3.45** and in *Sustainable Urban Drainage Systems – A Design Manual for England and Wales published by CIRIA*.

Alternative approach

3.44 The requirement can also be met by following the relevant recommendations of *BS EN 752-4 Drain and sewer systems outside buildings*. The relevant clauses are in Part 4 Hydraulic design and environmental considerations Clauses 3 to 12 and National Annexes NA, NB and ND to NI. *BS EN 752*, together with *BS EN 1295* and *BS EN 1610*, contains additional detailed information about design and construction.

3.45 Sustainable (urban) drainage systems (SUDS). Paragraphs **3.31** to **3.43** above give guidance on forms of infiltration systems that are acceptable for the drainage of roads. A **SUD's** system involves elements of these but they are only a part of a comprehensive package of measures for dealing with the collection, treatment and disposal of surface water runoff in a controlled and sustainable way. As an **alternative approach** to the measures described in this section of GST P, a suitable designed **SUD's** system can be used to demonstrate that the Building Regulation requirements in relation to P2 have been met. Guidance and further information can be found in *Sustainable Urban Drainage Systems – A Design*

Manual for England and Wales published by CIRIA.

Also *BS 8582:2013 Code of practice for surface water management for development sites*.

Oil Separators

3.46 Where a requirement for the provision of oil separators has been identified, usually in any situation where more than **14** vehicles may be parked up at any one time, and following the advice and or requirement from Guernsey Water, refer to the guidance set out in Guernsey Technical Standard Part H 'Drainage and waste disposal paragraph 4.75 - 4.81

3.47 Further information on provision of separators is available in *Use and design of oil separators in surface water drainage systems, Pollution Prevention Guideline No. 3*. This can be obtained from the Environment Agency.

Guernsey Water directive

Any car parking area for 14 or more vehicles must be designed to either:

- a. to be constructed of an impervious surface and all surface water drainage from those areas must flow through an approved oil interceptor prior to discharging into any surface water drainage system or ground water (detailed specification for oil interception will be part of the permit conditions); Or*
- b. to be constructed using an approved SUDS system (Hanson Formpave has been pre-approved but other paving systems will be considered based on their ability to reduce hydrocarbon discharges to the environment to no more than 1 mg/l).*

It is recommended that you seek the prior approval of Guernsey Water with respect to the chosen SUDS system ahead of installation on site.

Annex B - Standards Referred to and other documents

BS EN 752:2008

Drain and sewer systems outside buildings

BS EN 752-4:1998

Drain and sewer systems outside buildings.
Hydraulic design and environmental considerations.
AMD 15442 2005.

BS 5489-1:2013

Code of practice for the design of road lighting.
Lighting of roads and public amenity areas.

BS 7533-2:2001

Pavements constructed with clay, natural stone or concrete pavers-

Part 2: Guide for the structural design of lightly trafficked pavements constructed of clay pavers or precast concrete paving blocks.

BS 8582:2013

Code of practice for surface water management for development sites.

BS EN 1295-1:1998

Structural design of buried pipelines under various conditions of loading. General requirements.

BS EN 1610:1998

Construction and testing of drains and sewers.

BS EN 13201-2:2003

Road Lighting - performance requirements

BRE Digest 365 Soakaway design.

CIRIA Report 156 – Infiltration drainage – Manual of good practice.

CIRIA report C522 – Sustainable urban drainage systems – design manual for England and Wales.

Pollution Prevention Guideline No. 3 (PPG 3) - *Use and design of oil separators in surface drainage systems.*

Traffic Engineering Guidelines for Guernsey - Road Hierarchy traffic management regimes.

Annex C - Key Terms

The following meanings apply to terms throughout this Guernsey Technical Standard.

Average hemispherical illuminance (E) is the hemispherical illuminance averaged over a road area.

Bound surface is one that is a combination of aggregate and filler material that when cured provides a stable durable surface requiring limited maintenance.

CBR value The California bearing ratio (CBR) is a penetration test for evaluation of the mechanical strength of road subgrades and base courses. The test is performed by measuring the pressure required to penetrate a soil sample with a plunger of standard area

Interface with the public highway is the boundary line between the private road and the public road.

Minimum illuminance (E_{\min}) lowest illuminance on a road area.

“road” includes any path or way, not maintained at public expense, which is laid out or constructed to provide access or improved access -

- (a) to two or more dwelling-houses, or
- (b) to any building where that path or way is constructed as part of the same development project as that building.

Shared Surfaces is a private road layout without a separate footpath where it is intended that both pedestrians and vehicles use the surface to gain access to dwellings.

Structural Engineer is a person who holds full membership of the IStructE or ICE or similar organisation operated by other Member States of the EU, and recognised by that State's Government.

Sustainable urban drainage system (SUDS) is designed to reduce the potential impact of new and existing developments with respect to surface water drainage discharges. The idea behind SUDS is to try to replicate natural systems that use cost effective solutions with low environmental impact to drain away dirty and surface water run-off through collection, storage, and cleaning before allowing it to be released slowly back into the environment.

Type 2 hardcore generally a quarried material as available locally, however the use of suitable crushed and graded recycled inert material may be used.

Visibility Splay is a zone identified at the junction between a private road and a public road that gives an exiting driver an unobstructed view of traffic approaching the junction along the public road.

GUERNSEY TECHNICAL STANDARDS

The following documents have been approved and issued for the purpose of providing practical guidance with respect to the requirements of the Building Regulations

Guernsey Technical Standard A: Structure, 2012 edition with May 2016 amendments.

Guernsey Technical Standard B: Fire Safety - Volume 1 - Dwellinghouses, 2012 edition with May 2016 amendments.

Guernsey Technical Standard B: Fire Safety - Volume 2 - Buildings other than dwellinghouses, 2012 edition with May 2016 amendments.

Guernsey Technical Standard C: Site preparation and resistance to contaminants and moisture 2012 edition with May 2016 amendments.

Guernsey Technical Standard D: Toxic substances 2012 edition with May 2016 amendments.

Guernsey Technical Standard E: Resistance to the passage of sound, 2012 edition with May 2016 amendments.

Guernsey Technical Standard F: Ventilation, 2012 edition with May 2016 amendments.

Guernsey Technical Standard G: Health, hygiene and water efficiency, 2012 edition with May 2016 amendments.

Guernsey Technical Standard H: Drainage and waste disposal, 2012 edition with May 2016 amendments.

Guernsey Technical Standard J: Heat producing appliances and fuel storage systems, 2012 edition with May 2016 amendments.

Guernsey Technical Standard K: Safe means of access and egress, 2012 edition with May 2016 amendments.

Guernsey Technical Standard L1: Conservation of fuel and power – Dwellings, 2012 edition with May 2016 amendments.

Guernsey Technical Standard L2: Conservation of fuel and power – Buildings other than dwellings, 2012 edition with May 2016 amendments.

Guernsey Technical Standard M: Access to and use of buildings, 2012 edition with May 2016 amendments.

Guernsey Technical Standard N: Glazing - Materials and protection, 2012 edition with May 2016 amendments.

Guernsey Technical Standard P: Roads - Layout design and construction, 2012 edition with May 2016 amendments.

Guernsey Technical Standard Regulation 11: Materials and Workmanship, 2012 edition with May 2016 amendments.



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