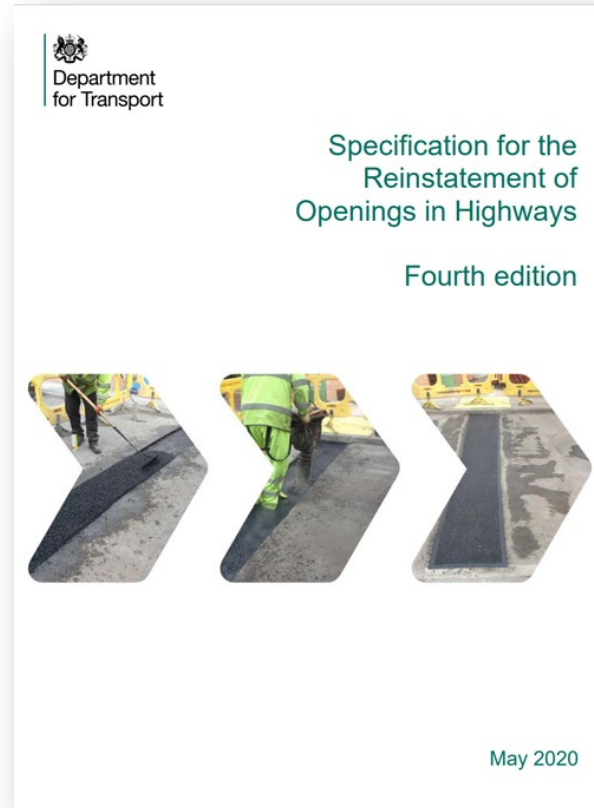


# S12 – Remedial Works



Researched, compiled and produced by



and



with support through TFL lane rental funding scheme

# Introduction- SROH S12

This advisory document is designed to assist incoming and existing Inspectors as support and refresher material. It will be provided in simple language to aid in understanding and avoiding technical or descriptive explanation.

The current edition (Ed 4) of the Specification for Reinstatement of Openings in the Highway (SROH) has clarified some of the requirements concerning remedial works.

Items such as cracking and guarantee period have been dealt with, to clarify requirements.

You will now be taken through the key items within S12 which will enable you to have a better understanding of some of the issues requiring remedial action.



**Please note:**

This presentation is simply to aid in understanding of the SROH and should not be used for any other purpose. The simplicity of language may detract from certain technical or descriptive requirements and, therefore, the SROH should be consulted for clarity.

# S12 Remedial Works

## What it says in the SROH

**S12.1.1** The Undertaker shall be responsible for ensuring that reinstatements comply with the required performance criteria throughout the interim reinstatement and guarantee periods.

**S12.1.2** When determining whether a reinstatement requires any remedial action, the quality of the reinstatement shall be assessed relative to the condition of the adjacent surfaces.



## What it means

Reinstatement has to comply with the SROH for materials used, construction layers, and performance requirements. If agreement not to undertake remedial works is made it must be recorded with the utility company. The extent of repairs should be considered according to condition of existing surface, or possible disruption caused by carrying out the repairs.



## What it says in the SROH at S12.2

Should a reinstatement fail any safety requirements of this Specification, the surface shall be restored to comply with such requirements, in accordance with section 71 (for England and Wales) or section 130 (for Scotland) of the New Roads and Street Works Act 1991.

## Please Note

This is essentially stating it is a legal requirement to ensure reinstatements are safe and have to comply with the law. Where this is not done, it may be classed as evidence that the reinstatement is causing an offence under the New Roads and Street Works Act 1991.



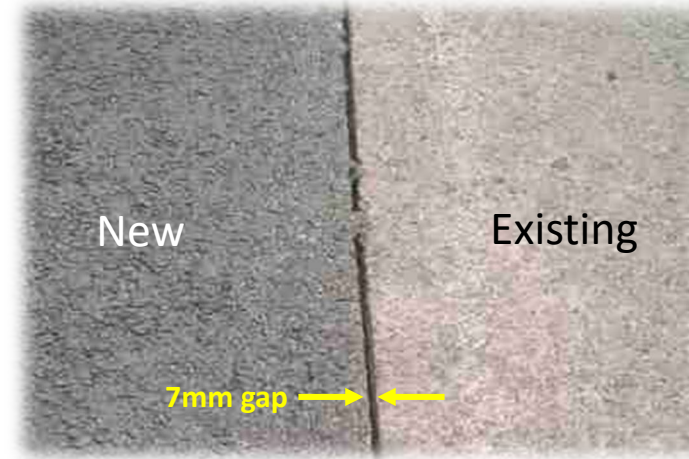
# S12 Remedial Works

## Interface Cracking

### What it says in the SROH

**S12.3.1** Cracking along the reinstatement interface greater than 2.5 mm wide at the surface for more than the maximum permitted length shown in Table S12.1 will require remedial action in accordance with S12.3.3

There should no gap between the reinstatement and the existing surface. However, if there is a crack, it should not be wider than 2.5mm. If it is, you must look at the length of the cracks(s) to see if they meet intervention requirements shown in **Table S12.1 as outlined in red.**



### Please Note

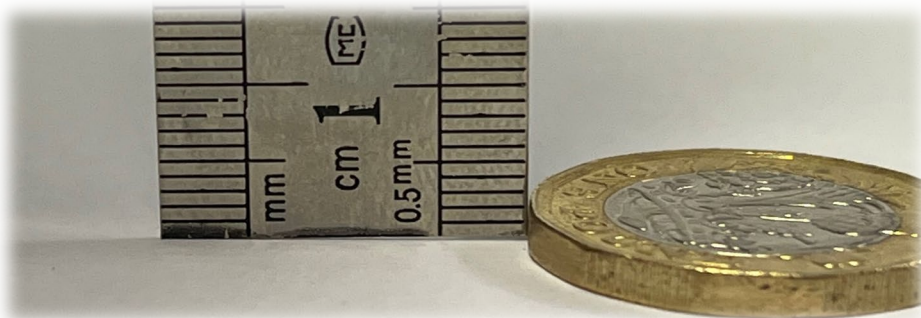
Interface cracking is simply where cracking occurs between the new reinstatement and adjacent surfaces including chamber covers

**Table S12.1** Interface cracking now allows for large diameter coring and micro trenches



Table S12.1 Interface cracking

Reinstatement	Surface	Maximum crack length
Small openings	All Surfaces	500 mm total cumulative length
Large diameter cores, micro trenches, narrow trenches, other openings and deep openings	Footway	1000 mm maximum crack length or 10% of reinstatement perimeter whichever is greater
	All carriageway Types	500 mm maximum crack length or 10% of reinstatement perimeter whichever is greater



### Handy Tip

A £1 coin is a good means to determine over 2.5mm width

# S12 Remedial Works

## Interface Cracking – helpful info



What is a perimeter?



It is the distance all the way around the outside of a shape



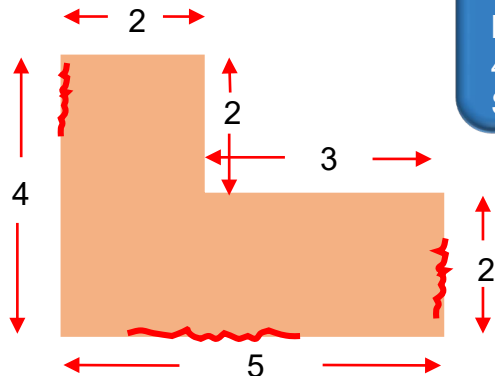
How do I measure a perimeter?

You simply add up the length of all the sides as you can see below



Can you use small numbers to keep it simple?

Of course!  
Look at the shape below and add  
 $4+2+2+3+2+5 = 18$   
So perimeter is 18



(Cracks in red)



Ok!  
Now we know the perimeter is 18, how would I find the % of cracks around it?

**Remember:**  
Only measure cracks wider than 2.5mm  
(edge of £1 coin)



I've measured all the cracks which add up to a total length of 6

Add the length of all cracks (wider than 2.5mm) and then simply divide the answer into the total length of the perimeter.  
Then multiply this answer by 100 and this will give the percentage of cracks



Oh that's easy....  
It is simply 6 divided into 18 which equals 0.33 Now multiply 0.33 by 100 which equals 33. Therefore, you have 33% cracks along the perimeter



### Calculation Example

$$6 \div 18 = 0.33 \times 100 = 33\%$$



*In other words*

### Calculation Formula

$$\text{Total cracks} \div \text{Perimeter} \times 100 = \%$$

# S12 Remedial Works

## Interface cracking intervention – Small openings only

600mm length of interface cracking

**Small Opening  
Example 1**

(The 600mm crack is longer than the 500mm allowance)  
= Fail ❌

150mm length of interface cracking

50mm length of interface cracking

100mm length of interface cracking

**Small Opening  
Example 2**

Cumulative measurement  
(150+50+100+170 = 470mm which is less than 500mm allowance) = Pass ✅

170mm length of interface cracking

**For Small Openings:**  
The width of all cracks have to exceed 2.5mm & the cumulative length of all cracks have to exceed 500mm

Cumulative length simply means adding up the individual cracks wider than 2.5mm

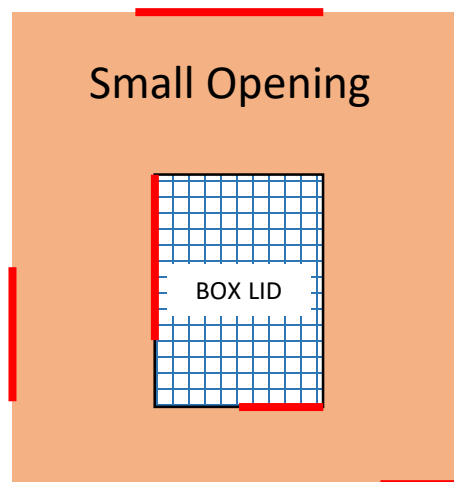
PLEASE NOTE

### Definition of Small Openings (excluding box lids)

2 m<sup>2</sup> in Road Types 0 and 1

4 m<sup>2</sup> in Road Types 3 and 4

4m<sup>2</sup> in footways, footpaths and cycle tracks.



As already mentioned, cumulative length simply means adding up the individual cracks. Don't forget to include interface cracks around box lids if present.



### Remember:

Only measure cracks wider than 2.5mm (edge of £1 coin)



# S12 Remedial Works

## Interface cracking intervention – all other openings

### Reminder

As you now know there should be no gaps at interface between new reinstatement and adjacent surfaces. We are now looking at all other reinstatement types (not small openings) such as narrow trenches, micro trenches, other openings, etc. as shown in [Table S12.1 Interface cracking](#)

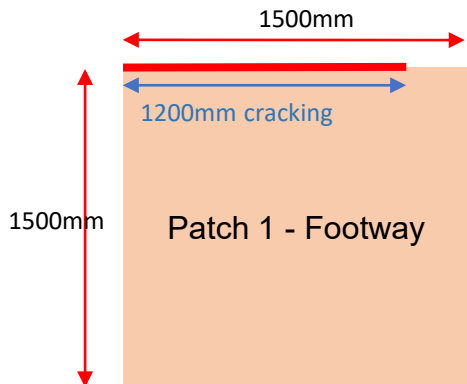
### Table S12.1 - Footways

1000mm maximum crack length or 10% of reinstatement perimeter whichever is greater

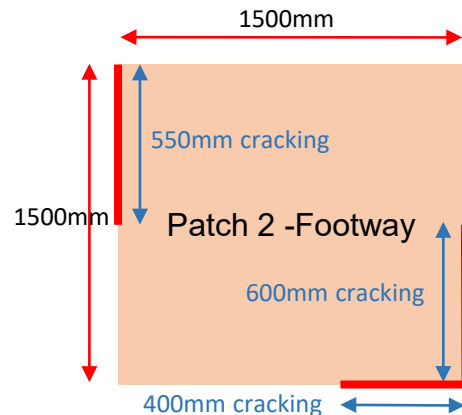
### Table S12.1 - Carriageway

500mm maximum crack length or 10% of reinstatement perimeter whichever is greater

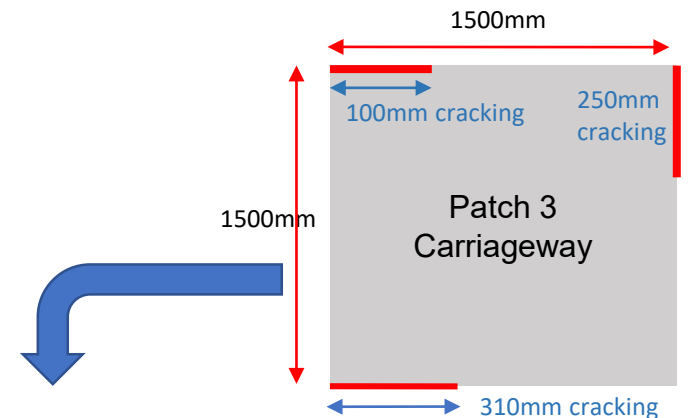
So we now know that the allowable maximum crack length in Footway is 1000mm, and the allowable maximum crack length in Carriageway is 500mm, or 10% of perimeter in both instances. Please see examples below.



1200mm crack is greater than the maximum allowable 1000mm in footway.  
= FAIL ❌



No crack over 1000mm ✓  
Total cracks = 1550mm.  
 $1550 \div 6000 \times 100 = 26\%$   
Greater than 10%  
Therefore, = FAIL ❌



None of the cracks above exceed 500mm and therefore, for this purpose is a:  
= PASS ✓

However

$\times 100 = 11\%$   
Total cracks = 660mm.  
 $660 \div 6000 \times 100 = 11\%$   
Greater than 10%  
Therefore, = FAIL ❌



# S12 Remedial Works

## Large diameter cores



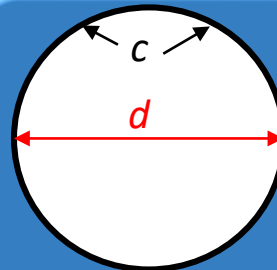
How do we work out the perimeter of a large diameter core?

As the core is a circle the outer edge is generally known as the circumference and can be easily calculated.



Oh good!  
I like things that are easy.  
Can you explain it please?

Sure, first we need to understand a couple of simple things to do with circles.



The circumference is the black outline of the circle ( $c$ ).  
The diameter is the red line across the circle ( $d$ ).  
To find the length of the circumference apply the following steps.



Step 1: Measure the length of the diameter.  
Step 2: Multiply the diameter length by 3.142 (otherwise known as  $\pi$ ).



Red dashed line is the circumference



Wow!  
I didn't realise how simple it is to calculate the perimeter of a large diameter core.



# S12 Remedial Works

## Repair of Settlement beyond Reinstatement limits

### What it says in the SROH

Where significant settlement of the surface beyond the edges of the reinstatement can reasonably be shown to have occurred as a direct result of the Undertaker's works, the effective width of the reinstatement shall be revised to include the actual width of the settled area. The relevant requirements of this Specification shall apply over the revised width of the reinstatement.

### What it means

Sometimes during excavation the ground can be disturbed or undermined which may fail long after the reinstatement was completed. This may cause depressions beside the new reinstatement and the undertaker may be required to carry out repair works to make good. The remedial works have to meet minimum requirements of the SROH and the dimensions updated



The extent of the remedial works will be upon agreement between the local authority and the undertaker.

Items to be considered may include the amount of water causing puddles after rainfall which remain around the reinstatement, or the running profile of the surface has changed from the existing surrounding area. These criteria can be found in SROH S12.4

PLEASE  
NOTE

# S12 Remedial Works

## Extent of repair in poor existing areas

### What it says in the SROH

- 1) The requirement for, and extent of, any repair shall be determined, by agreement, from a consideration of the existing and adjacent surfaces.
- 2) Where it can reasonably be shown that a repair is required, as a direct result of the Undertaker's works, the Undertaker shall carry out remedial actions, as necessary.

### What it means

If there is defect found as a result of the undertakers work it must be looked at whilst considering the condition of the existing surfaces around it. Highways and Utility representatives should have a reasonable approach in identifying the remedial action, if any. If the existing road is in a very poor condition it may be unreasonable to expect a significant remedial action.



The new reinstatement has to conform to the performance requirements of the SROH under Section 2 (edge depression, etc.) regardless of existing road condition.

The issues here are more concerned with items such as extent of cutback and trim lines where the existing surface is very poor or severely cracked.

PLEASE NOTE



The extent of remedial works will usually be based on agreement. Otherwise, the reasonable approach will apply to determine the extent of Undertakers remedial works

Does this apply where the highway is damaged by something like a broken gas or water pipe?

No! In these circumstances it would be known as consequential damage which may also include damage caused during repairs being carried out.... these must be repaired by the undertaker.

Ahh! That makes sense, so it's where the existing surface hasn't been affected but is simply in a poor condition.

Exactly... you've got it!

# S12 - Summary



What are the requirements for reinstatement?

Reinstatement has to comply with the SROH for materials used, construction layers, and performance requirements. If agreement not to undertake remedial works is made it must be recorded with the utility company. The extent of repairs should be considered according to condition of existing surface, or possible disruption caused by carrying out the repairs.

What is interface cracking?

Interface cracking is simply where cracking occurs between the new reinstatement and adjacent surfaces. There should no gap between the reinstatement and the existing surface. However, if there is a crack, it be should greater than 2.5mm wide before intervention requirements of Table S12.1 apply (lengths of allowable cracks).

What is meant by “settlement beyond reinstatement area”?

This is simply where a depression has occurred in the existing surface adjacent to the new reinstatement. For example, where you may find something like a buried kerb, rock or loose material has been excavated, and undermined the existing road surface. As it has left an empty space (void), it is likely to sink after reinstatement is completed, as it could not be backfilled and compacted properly in the first place.

How much additional reinstatement is required to be done in an existing poor area?

None.

If there are poor areas, any additional reinstatement has to be upon agreement. However, the undertaker still has to maintain all relevant performance requirements as prescribed in SROH section 2 (edge depression, surface depression, etc.)

