

HIGHWAY INSPECTION MANUAL (2018)

Street Services



PLYMOUTH
CITY COUNCIL

RECORD OF AMENDMENTS

Version	DETAIL OF AMENDMENT	AUTHORISED	DATE
1.0	<i>Complete manual for safety inspections including regime, legislation and action for carriageway, footway, cycleway and roadside defects.</i>	tbc (A Trim)	tbc

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I. INTRODUCTION

This Highway Inspection Manual has been produced for the Plymouth Highways Term Maintenance Contract (2017) and supersedes all previous versions. It sets out the policy on how defects that may create a danger or serious inconvenience to highway users are to be dealt with through a system of inspection and referral for repair where necessary. The use of the term defect throughout this manual is to be seen in context and not in any way to be taken as an equivalent to Section 41 of the Highways Act 1980 at any point.

Defects that meet the stated investigatory criteria are to be assessed against a risk assessment matrix. This will determine the degree of risk they may pose to a highway user and the appropriate response. In addition to this the Highway Inspector (Safety) has an overarching discretion notwithstanding the particular criteria are met, to risk assess if they believe there is a particular risk.

This manual has been developed based on industry best practice and with due regard for the following documents:

- The Highways Act 1980
- Well Managed Highway Infrastructure: A Code of Practice (UK Roads Liaison Group published October 2016)
- Well Managed Highway Liability Risk (Institute of Highway Engineers published March 2017)

2. LEGISLATION

The Highways Act 1980

In addition to a general duty of care, there are a number of specific items of legislation that provide the basis for powers and duties relating to highway maintenance. The Highways Act 1980 sets out the main duties of highway authorities in England and thus Plymouth City Council. In particular, Section 41 imposes a duty to maintain all highways that are maintainable at public expense.

Key Sections Relating to Highways Inspections

The majority of claims against Local Authorities relating to highway functions arise from the alleged breach of Section 41. Section 58 of the Act provides for a defence against action relating to an alleged failure to maintain the public highway on the grounds that the authority has taken such care as in all the circumstances was reasonably required to ensure that the part of the highway in question was not a danger to the highway user.

3. SAFETY INSPECTIONS

Principle Purpose of Safety Inspections

The principle purpose of a Highway Safety Inspection is:

- To meet the statutory obligation of Plymouth City Council to maintain the highway in a safe condition;
- To identify defects that are likely to create a danger or serious inconvenience to highway users or the wider community;
- To determine the degree and timing of repairs;
- To provide condition data of the network for better application of Asset Management principles;
- To assist in the ongoing management of the highway network and future maintenance programmes;
- To provide a defence against claims relating to the highway.

4. COMPETENCY

Training & Qualifications

All Highway Inspectors (Safety) will be competent and have the appropriate level of training in Highway Safety Inspections. New starters will receive Plymouth Highways training within 8 weeks of starting and will complete a recognised Highway Safety Inspection course (such as City & Guilds 6033 Units 301 & 311, or equivalent) within a maximum period of 2 years.

All Highway Inspectors (Safety) will also be competent in traffic management design and will be qualified to a suitable level, such as National Highway Sector Scheme 12D, or equivalent.

Registration of Qualified Inspectors

It is desirable that all personnel involved in safety inspections should be included on the National Register of Highway Inspectors currently held by the Institute of Highway Engineers.

5. SAFETY INSPECTION REGIME

The safety inspection regime uses a risk assessment process as recommended in “Well Managed Highway Infrastructure: A Code of Practice” (NCoP) to determine the degree to which a highway defect will potentially impact upon highway users, measured against defined investigatory criteria.

A defect must first meet the investigatory criteria defined in Appendix I before an assessment is carried out to define an appropriate response from “immediate” to “no further action” as detailed in Table I.0 below.

Table I – Risk Matrix						
		PROBABILITY / LIKELIHOOD OF INTERACTION WITH HIGHWAY USER				
		Rare (1)	Unlikely (2)	Possible (3)	Likely (4)	Almost Certain (5)
IMPACT	None (1)	1	2	3	4	5
	Negligible (2)	2	4	6	8	10
	Minor (3)	3	6	9	12	15
	Moderate (4)	4	8	12	16	20
	Significant (5)	5	10	15	20	25
	Threat to Life	Emergency - make safe or repair within 2 hours				
Priority 4 (Low Risk) Consider an appropriate response including no further action/monitor		Priority 3 (Medium Risk) Repair within 28 calendar days		Priority 2 (Medium-High Risk) Make safe or repair within 5 working days		Priority 1 (High Risk) Make safe or repair by end of next working day

Note: “Working day(s)” is taken throughout this document to exclude weekends, public holidays and periods of specified shutdown as necessary.

6. DEFECT INVESTIGATORY CRITERIA

Establishing the Investigatory Criteria

The purpose of a safety inspection is to identify defects within the highway that are likely to endanger or cause serious inconvenience to highway users or the wider community.

In order to provide clear guidance, minimum investigatory criteria have been developed using a risk and evidence based approach and by benchmarking with other Highway Authorities and the NCoP.

Defect Descriptions

Detailed descriptions of defects and the defined investigatory criteria are provided in Appendix I.

7. SAFETY INSPECTION ROUTES & FREQUENCIES

Safety inspections will be undertaken on the following asset groups based upon the maintenance hierarchies as defined in Table 2, 3 & 4.

Carriageway:

Table 2 - Carriageway Hierarchy		
Category	Hierarchy Description	Type of Road General Description
1	Motorway	Limited access motorway regulations apply Note: PCC hold no responsibility for any category 1 Carriageways which are maintained by Highways England
2	Strategic Route	Trunk and some Principal "A" roads between Primary destinations, including Major Road Network
3a	Main Distributor	Major Urban Network and inter-primary Links. Short-medium distance traffic
3b	Secondary Distributor	Classified Roads (B and C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions
4a	Link Road	Roads linking between the main and secondary distributor Network with frontage access and frequent junctions
4b	Local Access Road	Roads serving limited numbers of properties carrying only access traffic

Footway:

Table 3 - Footway Hierarchy		
Category	Category Name	Brief Description
1a	Prestige Walking Zone	Prestige Areas in towns and cities
1	Primary Walking Route	Busy urban shopping and business areas, main pedestrian routes linking interchanges between different modes of transport, railways, bus termini, main bus routes etc.

2	Secondary Walking Route	Medium usage routes through local areas feeding into primary routes, local shopping centres, large schools and industrial and commercial centres etc.
3	Link Footway	Linking local access footways through urban areas and busy rural footways
4	Local Access Footway	Footways associated with low usage, short estate roads to the main routes and cul-de-sac.

Cycleway

Table 4 - Cycle Route Hierarchy	
Category	Description
A	Cycle lane-forming part of the carriageway, commonly 1.5 metre strip adjacent to the nearside kerb. Cycle gaps at road closure point (exemptions for cycle access).
B	Cycle track, a route for cyclists not part of, or adjacent to, the public footway, or carriageway, but within the highway boundary. Shared cycle/pedestrian paths, either segregated by a white line or other physical segregation, or un-segregated
C	Cycle trails, leisure routes through open spaces eg parks. Those forming part of the public highway, but not on or adjacent to the metalled highway.

Inspection Frequencies

The frequency of safety inspection assigned to each maintenance category is detailed in Table 5 below.

Table 5 - Safety Inspection Frequency			
Feature	Description	Category	Frequency
Carriageways	Strategic Route	2	1 month
	Main Distributor	3a	1 month
	Secondary Distributor	3b	1 month
	Link Road	4a	3 months
	Local Access & Service Lanes	4b	1 year

Footways	Prestige Area	1a	1 month
	Primary Walking Route	1	1 month
	Secondary Walking Route	2	3 months
	Link Footway	3	6 months
	Local Access Footway	4	1 year
Cycle routes	Part of Carriageway	A	As for carriageways
	Remote from Carriageway	B	As for footways
	Cycle Trails	C	1 year

Inspection Frequency Tolerances

Inspection frequency tolerances are required in order to deal with delivery constraints such as periods of extreme weather or low resource availability. The tolerance on the period between inspections is detailed in Table 6 below (days are listed as working days). Following an inspection at a time other than the intended start date, subsequent inspections will be carried out with the target dates extrapolated from the original timeline.

Table 6 - Safety Inspection Frequency Tolerance	
Inspection Frequency	Tolerance (Working Days)
Monthly & 3 monthly	+/-7 days
6 monthly	+/-15 days
Annually	+/-30 days

8. SAFETY INSPECTION DELIVERY

Safety Inspection Constraints

Highway safety inspections will not be carried out during the hours of darkness/dusk or under conditions of poor weather e.g. snow, fog, heavy rain. In the event the planned inspection shifts, we will endeavour to resume the normal schedule within 2 months. Periods of peak traffic flows should be avoided where possible.

Safety Inspection Methodology

Footway inspections will be walked. Shared footway/cycleway will be walked.

Carriageways, including on carriageway cycleways, will be driven. Driven inspections will be undertaken by two people with the passenger being a qualified inspector who will record identified defects. Dual carriageway inspections will be undertaken in each direction of travel. Driven inspections will be undertaken at a speed appropriate to the road usage and as not to unduly cause nuisance to other users.

Defects will only be recorded where they meet the investigatory criteria defined in Appendix I or where they result from a report made by a third party.

Third-Party Reported Defects

Defects reported to Plymouth City Council over the weekend or during bank holidays will only be actioned if they are deemed to pose a risk to life or serious injury, or the severity of which will cause major disruption to traffic, at which point the call operator will initiate the emergency defect process. All other reported defects will be assessed by a Highway Inspector (Safety) no later than the end of the third working day after the report is received, however, this will be prioritised with the aim of most defects being inspected within one working day.

Obstruction to Inspections

When a routine inspection is unable to access an area fully due to obstructions such as third party works or parked vehicles, the inspector will make a record of this obstruction and inspect the unobstructed area of the asset. They will not be expected to return to the site to undertake a second inspection of these areas due to the unpredictable nature of the obstructions they are likely to encounter.

9. RECORDING OF DEFECTS

Recording Defect Locations

Defects are recorded on electronic handheld devices which are GPS enabled to allow for a more accurate positioning of defects. The devices log evidence that an inspection has taken place on the date and time recorded as well as any obstructions on site.

Classification of Defects

When defects are identified as requiring investigation, the risk assessment process will determine the appropriate action to be taken. Where this is deemed a Priority 3 or 4 defect, a reason for the chosen action will be provided.

Records of Inspection

Defects that meet the investigatory criteria are to be recorded on a data capture device using an inspection route loaded on the device prior to the commencement of the inspection or against a third party report by a member of the public.

In the unlikely event of a catastrophic IT failure, inspections will be recorded manually at the time of inspection and the IT system updated at the earliest opportunity.

Statutory Undertaker Defects

Defects associated with a Statutory Undertaker will be recorded and the Section 81 procedure initiated by the end of the next working day. Any associated costs are to be recharged to the relevant Statutory Undertaker.

10. INVESTIGATORY ACTION & REPAIR

Repair Orders

The standards and specification of the defect repair will be as detailed in the Term Maintenance Contract and an order issued to the Contractor for repair.

Temporary Make Safe

Where a safety defect is made safe by means of temporary signing and/or guarding or repair, arrangements will be made to maintain the integrity of the signing or temporary repair until a permanent repair can be completed.

11. SPECIAL REQUIREMENTS

Pedestrian Areas

At times defects identified within an area of carriageway will require the investigatory criteria of a footway defect to be applied.

These are as follows:

- The width of a defined pedestrian crossing point identified by tapered and dropped kerb units;
- Light controlled crossings;
- Zebra crossings;
- Home Zones and shared pavements.

Metalled and Unmetalled Surfaces

For the purpose of safety inspection a metalled carriageway, footway or cycleway is one where the surface consists of a hard, bound material such as asphalt or concrete paving. An unmetalled carriageway, footway or cycleway is one where the surface material is unbound.

Verges

Verges are considered to be areas within the footway with their own separate investigatory criteria. These areas are categorised by a surface material of an unmetalled and untraversed nature.

Service Lanes

Due to many service lanes having no footway and the associated safety risk to inspectors, these service lanes will be inspected as part of the carriageway. This means that they will be inspected on a carriageway route and held to the carriageway investigatory levels. The

exception to this is service lanes that have a clearly separate footway, in which case these will be inspected as per footway or carriageway on respective routes.

Highway Trees and Trees Adjacent to the Highway

All Highway Inspectors (Safety) will have a basic training in tree inspections provided by Plymouth City Council's Tree Officers. Identification of possible hazards will be flagged to the Tree Officers for a more in-depth assessment.

Highways Structures

Highways structures will be subject to a visual inspection during the carriageway, footway or cycleway inspection. Identification of possible hazards will be flagged to the Structures Team for a more in-depth assessment.

Electrical Street Furniture

Electrical street furniture, such as illuminated bollards, illuminated signs, street lighting and traffic signals will be subject to a visual inspection during the carriageway, footway or cycleway inspection. Identification of possible hazards will be flagged to the Street Lighting & Signals Team for a more in-depth assessment.



APPENDIX I – DEFECT INVESTIGATORY CRITERIA



The following defect descriptions and intervention criteria have been developed based on the use of best practice, risk assessment and benchmarking.


The Plymouth Highways defect investigatory criteria also takes into account the policies of neighbouring highway authorities. Where possible similar parameters have been adopted to ensure consistency.

A more detailed description for each of the following common defect types together with the appropriate investigatory criteria and response action are described throughout the remainder of this appendix.

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10. Defective road markings	20
11. Defective ironwork	22
12. Defective overhead cables	23
13. Defective third party works	24
14. Missing or rocking pre-formed modules	25
15. Obstructions - materials, goods, equipment and signs	26
16. Cracks and gaps	27
17. Abrupt level differences/trip hazard	28
18. Damaged safety fencing	29
19. Defective boundary fences and walls	30
20. Streetlights, illuminated or variable message traffic signs and illuminated bollards	31
21. Defective road traffic signs and posts	32
22. Defective traffic signals	33
23. Damaged steps	34
24. Damaged handrails	35
25. Defective traffic calming features	36
26. Damaged kerb	37
27. Depressions and humps	38
28. Damaged street scene elements	39
29. Road studs (reflective and non-reflective)	40


POTHOLE	
Investigatory Criteria	
An area of material loss resulting in a vertical edge depression	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	40mm deep and 300mm in any horizontal direction
Footway & Cycleway	20mm deep and 50mm in any horizontal direction
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close road/footway/cycleway to make safe. • Repair pothole according to the pothole repair policy. 	
Notes	
<p>The footway investigatory criteria will be applied to a carriageway at defined pedestrian crossing points eg at a zebra crossing.</p>	

STANDING/RUNNING WATER	
Investigatory Criteria	
Standing or running water on carriageways or footways.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	When the road is impassable, or is forcing vehicles, cyclists or pedestrians away from the nearside of the carriageway by more than 1m, or if vehicles have to cross the centreline marking.
Footway & Cycleway	When the footway is impassable.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Attempt to clear standing water if appropriate • If unable to clear water, use flood sign or guard area or close road to make safe. • Investigate permanent solution. 	
Notes	


EMBANKMENT OR BANK SLIPS	
Investigatory Criteria	
An embankment or bank slip obstructing a highway surface or leaving the haunch exposed or unsupported	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	When the road is obstructed or it is forcing vehicles, cyclists or pedestrians away from the nearside of the carriageway by more than 1m or if vehicles have to cross the centreline marking or if cyclists have to cross a cycle lane boundary marking.
Footway & Cycleway	A slip is a safety defect when either material has deposited on the footway so that it is blocked, pedestrians are forced off from the footway, or leaving the footway foundation exposed or unsupported.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Sign and guard area or close road/footway/cycleway to make safe. • Consider other traffic management requirements until obstruction removed and any underlying problems are resolved 	
Notes	
Consultation will be required with adjacent landowner/occupier where appropriate. Where washout/slips occur frequently the procedures for powers under section 151 of the Highways Act should be followed.	


SPILLAGES	
Investigatory Criteria	
Spillages include hazardous liquid, effluent, diesel, oil, petrol & mud.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Spillages of an area greater than 0.5m ²
Footway & Cycleway	Spillages of an area greater than 0.5m ²
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close road to make safe. • Treat spillage with appropriate material and sweep surface if necessary 	
Notes	
Where a spillage is, or could be, of a hazardous nature, remedial action must be undertaken immediately.	



OBSTRUCTIONS	
Investigatory Criteria	
Debris on the carriageway is a defect. Examples include fallen trees or tree limbs, excessive surplus surface treatment chippings, debris dropped from vehicles, excessive mud, sand, soil or slurry.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Any obstruction on roads with national speed limit. On low speed roads any obstruction restricting the running lane width to less than 3m or affecting skid resistance of the surface.
Footway & Cycleway	Any obstruction on footways reducing width to less than 1.2m or cycleways less than 1.8m.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close road/footway/cycleway to make safe. • Clear obstruction and investigate a permanent solution if required. 	
Notes	
<p>Legislation on mud and slurry is included in section 148 of the Highways Act. Some items of debris will be removed by the depositor or the adjacent landowner/occupier. Plymouth City Council Street Services to be contacted in most cases as appropriate.</p>	

DAMAGED VERGE	
Investigatory Criteria	
An area of verge immediately adjacent to the footway where the surface has been disrupted.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	An area of verge with more than 150mm vertical variance from the general surface.
Footway & Cycleway	An area of verge with more than 150mm vertical variance from the general surface.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area to make safe. 	
Notes	



DEFECTIVE HIGH FRICTION SURFACING	
Investigatory Criteria	
A loss of aggregate or fatting up within a high friction surface or slippery covers within a high friction surface.	
Minimum dimension where applicable	
Carriageway & Cycleway	A consolidated areas greater than 0.5m ²
Footway	N/A
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Contact Traffic Management Team 	
Notes	

DANGEROUS OR OBSTRUCTING TREES	
Investigatory Criteria	
A tree requires investigation when it is obviously diseased, leaning precariously towards the highway, or it is damaged or has damaged or dead limbs which could fall directly onto the highway user.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	The minimum vertical clearance over the carriageway needs to take account of the traffic using the route.
Footway & Cycleway	Obstructing the clear passage of pedestrians/cyclists forcing them off the footway/cycleway, or it reduces the vertical clearance above the footway to less than 2.1m or 2.5m on a cycleway.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Remove or close road/footway/cycleway to make safe. • Refer to Plymouth City Council Tree Officers for permanent action. 	
Notes	
<p>The minimum vertical clearance over the carriageway needs to take account of the traffic using the route. It should be noted that permanent obstructions lower than 5.03m (16' 6") (such as bridges) require the appropriate warning signs (Chapter 4 Traffic Signs Manual).</p> <p>Responsibilities for landowners/occupiers with trees adjacent to the highway, and the powers of Plymouth City Council in this respect, are contained in section 154 of the Highways Act. Where possible the landowner/occupier should be given the opportunity to undertake the appropriate remedial work and retain ownership of any waste material. When a tree is deemed to be possibly dangerous by the Highways Inspector, details of the tree will be passed to Plymouth City Council's Tree Officers to undertake a full assessment of the tree.</p> <p>The inspection and any subsequent action required or completed must be recorded.</p>	


OBSCURED VISIBILITY & OVERGROWN HEDGES & BUSHES	
Investigatory Criteria	
<p>Obscured visibility due to overgrown vegetation overhanging the highway is a defect. Overgrown vegetation that obscures the end of a bridge parapet jutting into the footway is a defect. Traffic signal heads which are obscured by vegetation and therefore not visible to highway users is a defect. A street light lamp, regulatory/ warning traffic sign or bollard that is obscured by vegetation is a defect.</p>	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Overhanging in sight lines at bends, junctions or laybys is a defect. Overgrown hedges and bushes are a defect when obstructing the clear passage of the highway users e.g. forcing vehicles, cyclist or pedestrians away from the nearside of the carriageway by more than 1m or vehicles have to cross the centreline marking or cyclists have to cross cycle lane boundaries.
Footway & Cycleway	Overhanging in sight lines at locations where pedestrians/cyclists are encouraged to cross the carriageway or overhanging the highway & obstructing the clear passage of pedestrians/cyclists forcing them off the footway/cycleway, or reducing the vertical clearance above the footway to less than 2.1m (2.5m on a cycleway).
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Cut back overgrowth or if required close road/footway to make safe. • Initiate Plymouth City Council noticing procedure for overgrown vegetation if appropriate. 	
Notes	
<p>Responsibilities for landowners/occupiers with hedges, trees & bushes adjacent to the highway, and the powers of Plymouth City Council in this respect, are contained in section 154 of the Highways Act. Where possible the landowner/occupier should be given the opportunity to undertake the appropriate remedial work and retain ownership of any waste material.</p>	

DEFECTIVE ROAD MARKINGS	
Investigatory Criteria	
Any road marking detailed in the notes below requires investigation when missing/worn/obscured.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Missing/worn/obscured by more than 30% on point markings and 30% over an 18m length on longitudinal lines or the road marking is illegible.
Footway & Cycleway	Missing/worn/obscured by more than 30% on point markings and 30% over an 18m length on longitudinal lines or the marking is illegible.
Sample Photograph	
Carriageway	Footway/ Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Use road marking warning signs to make safe. • Remark lining or replace studs. 	
Notes	
<p>Traffic Signs Regulations and General Directions (2016) Diagram numbers:</p> <p>I001 STOP at signals</p> <p>I001.2 STOP with cycle lane</p> <p>I001.3 STOP & zig zags at puffin/pelican crossing</p> <p>I001.4 STOP & zig zags at zebra crossing</p> <p>I001.5 STOP & zig zags at parallel pedestrian and cycle crossing</p> <p>I002.1 STOP at junction</p> <p>I003A GIVE WAY junction</p> <p>I003B GIVE WAY junction</p> <p>I003.1 GIVE WAY roundabout</p> <p>I003.3 GIVE WAY small/mini roundabout</p> <p>I003.4 mini roundabout</p> <p>I010 Edge of carriageway at lay-by</p> <p>I012.1 Edge of Carriageway Marking (where road width is insufficient to have centre line)</p> <p>I013.1 Variations of Centreline</p> <p>I014 Solid centreline arrows</p> <p>I017 Limited waiting</p> <p>I018 No Waiting</p> <p>I022 STOP</p>	



I023A GIVE WAY triangle
I024 SLOW
I024.1 Path to be taken by high vehicles
I026 Keep clear
I027.1 zig zag at school
I029 Direction pedestrians should look for approaching traffic
I040, I040.2, I040.3, I040.4 & I040.5 lines to hatching
I041 Chevron lining systems
I042 Solid lines to hatching
I046 NO ENTRY
I049B Bus Lane/Cycle Lane boundary marking
I062 Cushion/Hump Solid Triangle
I065 Speed roundel on carriageway surface



DEFECTIVE IRONWORK	
Investigatory Criteria	
<p>A missing or broken cover to any chamber/box is a defect. A collapsed or collapsing chamber is a defect. A high or low cover or frame is a defect when the cover within the frame or the frame itself, is above or below the immediate surrounding carriageway level by 40mm or greater or footway by 20mm or greater. A rocking cover is a safety defect when the rocking is greater than 40mm in the carriageway or by 20mm or greater in the footway.</p> <p>A grating where the slots run parallel to the carriageway edge without lateral infill members is a defect. A slippery cover within an area of high friction surfacing is a defect.</p>	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	High/low or rocking cover +/- 40mm
Footway & Cycleway	High/low or rocking cover +/- 20mm
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close road/footway/cycleway to make safe. • Instigate Section 81 procedure if related to a statutory undertaker. 	
Notes	
<p>Rocking covers in urban areas that move less than 40mm but under traffic cause noise levels unacceptable to persons living in the vicinity, are not a safety defect but should be rectified as soon as possible, using the Section 81 notice if appropriate. All slippery covers within high friction surfacing should be treated with the exception of fire hydrants, which should only be treated when they are considered to be a high risk following a safety audit.</p>	

DEFECTIVE OVERHEAD CABLES	
Investigatory Criteria	
<p>Low cables across carriageways, footways and cycleways</p> <p>A supporting pole or structure that is damaged or leaning dangerously, adjacent to the highway that could fall on to it or affect the cable it is supporting across the highway.</p>	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Vertical clearance to lower than 5.03m (16' 6").
Footway & Cycleway	Footway - vertical clearance to lower than 2.1m (6' 10") Cycleway – vertical clearance to lower than 2.5m (8' 2")
Sample Photograph	
Carriageway	Footway/ Cycleway
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Contact Statutory Undertaker • If required sign and guard area or close road/footway/cycleway to make safe. 	
Notes	
<p>The height of a cable should be estimated & <u>under no circumstances</u> should it be actually measured by Highway Inspectors (Safety).</p>	

DEFECTIVE THIRD PARTY WORKS	
Investigatory Criteria	
Any roadworks signing (including Plymouth Highways or Statutory Undertakers works, or at scaffold or skips sites) that is not in accordance with Chapter 8.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	N/A
Footway & Cycleway	N/A
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Inform site manager/foreman if on site and safe to do so. 	
Notes	
<p>Highway Inspectors (Safety) should inform the Network Management Team. If appropriate, call for emergency response to make the site safe.</p>	


MISSING OR ROCKING PRE-FORMED MODULES	
Investigatory Criteria	
The void from missing or sunken preformed flags, slabs, channels or paviours.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Void is greater than 40mm deep and 300mm in a horizontal direction or rocking modules greater than 40mm.
Footway & Cycleway	Any missing modular paving or rocking modules greater than 20mm.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close road/footway/cycleway to make safe. • Repair or replace modules as appropriate. 	
Notes	



OBSTRUCTIONS – MATERIALS, GOODS, EQUIPMENT & SIGNS	
Investigatory Criteria	
Materials, goods, canopies, equipment or illegal signs that impede or obstruct pedestrians/cyclists, or restrict visibility or unhitched caravans or trailers.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Vertical clearance to permissible overhanging signs or banners of less than 5.03m.
Footway & Cycleway	Vertical clearance to overhanging signs or banners on a footway of less than 2.1m or 2.5m on a cycleway.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Inform the Network Management Team. 	
Notes	
<p>It is Plymouth City Council's policy to allow some signs & goods up to 450mm wide immediately adjacent to commercial premises, provided that it leaves a clear width of 1.5m and does not obscure visibility and this is not considered to be a defect.</p> <p>Where a notice is required a Section 148 depositing anything whatsoever on the highway notice must be issued. Banners over the highway must be authorised under the 'Conditions for Erection of a Banner over the Public Highway'.</p>	



CRACKS AND GAPS	
Investigatory Criteria	
A crack or gap meeting the dimension criteria below.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Greater than 40mm deep and 300mm in any horizontal direction.
Footway & Cycleway	Greater than 20mm deep.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close footway/cycleway to make safe. • Repair as appropriate. 	
Notes	
<p>This defect is usually caused by the loss of mortar or the movement of flags & pedestrians may catch their heel or toes in the void. This defect also applies to marked pedestrian crossing points within the carriageway e.g. pedestrian crossings & pedestrian phase signalled crossings</p>	



ABRUPT LEVEL DIFFERENCE/TRIP HAZARD	
Investigatory Criteria	
<p>An abrupt level difference in the carriageway will be classed as a defect when it has a vertical displacement of 40mm or greater with a width 300mm or greater.</p> <p>A sharp edged defect on a footway/cycleway with a vertical deviation of 20mm or greater is a defect - this defect does not apply to a kerbs which are covered separately in this manual.</p>	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Greater than 40mm over a width greater than 300mm.
Footway & Cycleway	Greater than 20mm from the adjacent surrounding area.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close road/footway/cycleway to make safe. • Repair defect. 	
Notes	
<p>Examples of this defect include uneven or broken flags, blocks, pavements, channels or edgings, damaged steps.</p> <p>The footway minimum dimensions will be applied to marked pedestrian crossing points within the carriageway e.g. pedestrian crossings & pedestrian phase signalled crossings.</p>	


DAMAGED SAFETY FENCING	
Investigatory Criteria	
A length of vehicular restraint system; safety fence; pedestrian guardrail; bridge parapet or retaining wall parapet with obvious impact damage; or missing, loose or obvious time expired components, is a defect.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	As above
Footway & Cycleway	As above
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • Sign and guard area until permanent action undertaken. • Investigate permanent repair 	
Notes	
<p>The maintenance category refers to the carriageway, footway and/or cycleway the road restraint system protects. Vehicle restraint systems at railway level crossings and railway bridges must be inspected regardless of ownership and any defects reported to Network Rail as appropriate.</p> <p>When damage has been noted to a bridge or retaining wall parapet, the inspector should contact the Structures Team for further assessment.</p>	



DEFECTIVE BOUNDARY FENCES AND WALLS	
Investigatory Criteria	
A length of boundary fence or wall with impact or other damage that would render it dangerous, or ineffective; is a defect.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	As above
Footway & Cycleway	As above
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close road/footway/cycleway to make safe. • If private fence/wall inform owner. • Repair if owned by Plymouth City Council. 	
Notes	
<p>This defect also applies to a boundary hedge where the stock is straying on to the highway. The maintenance category refers to the carriageway, footway and/or cycleway the boundary fence protects.</p> <p>Ownership of the boundary wall should be determined, and in the case of a private wall, reported to the owner.</p>	


STREETLIGHTS, ILLUMINATED OR VARIABLE MESSAGE TRAFFIC SIGNS AND ILLUMINATED BOLLARDS	
Investigatory Criteria	
Any damage to a streetlight, externally and internally illuminated sign or bollard, or variable message sign, or any other item of illuminated street furniture where the electricity supply is exposed, or the column or lamp is unstable is a defect. An externally or internally illuminated sign or bollard where the illumination does not work is a defect.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	As above
Footway & Cycleway	As above
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close road/footway/cycleway to make safe. • Inform street lighting team. 	
Notes	
Under no circumstances should the Highway Inspector (Safety) attempt to make a repair. Any damage to the road traffic sign that is part of an illuminated or non-illuminated bollard should be noted as a damaged road traffic sign.	


DEFECTIVE ROAD TRAFFIC SIGNS AND POSTS	
Investigatory Criteria	
Any regulatory/mandatory sign or hazard/warning sign that has been damaged, or is missing. Any regulatory sign or hazard/warning sign that is obscured, obviously faded, or covered in dirt or algae is a defect. Any type of sign that is damaged so as to be a danger to road users is a defect. Any damaged or obviously missing reflector on the end of a bridge parapet is a defect. Any verge marker post that is damaged, missing or not upright is a defect. Any badly corroded or obviously damaged signpost or bollard.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	As above
Footway & Cycleway	As above
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area to make safe. • Speak with the Traffic Management Team to determine appropriate action. • Clean sign or arrange permanent repair. 	
Notes	
Where numerous markers are missing a site specific audit should be undertaken to assess any future replacement.	


DEFECTIVE TRAFFIC SIGNALS	
Investigatory Criteria	
Any defect on any type of traffic signal. Traffic signal heads which are out of alignment and therefore not visible to highway users are a defect. Electrical or control boxes that are open or tampered with are a defect.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	As above
Footway & Cycleway	As above
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area to make safe. • Liaise with Street Lighting & Signals Team 	
Notes	
<p>Traffic signal types include those at road junctions and pedestrian and cycle crossings.</p> <p>Defects include signals that are not illuminated and some collision damage to signalised systems may require specialist equipment and expertise, which may lead to a longer repair time.</p>	

DAMAGED STEPS	
Investigatory Criteria	
A sharp edged defect with a vertical deviation from the adjacent surrounding area. Any damaged or loose modular paving on steps or damage to the horizontal face of a step.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	N/A
Footway & Cycleway	Greater than 20mm.
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area to make safe. • Repair as appropriate 	
Notes	
If damage to steps is excessive, an emergency closure of the steps may be required.	



DAMAGED HANDRAILS	
Investigatory Criteria	
A loose, broken or missing handrail is a defect. Sharp edges on a handrail is a defect.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	N/A
Footway & Cycleway	As above
Sample Photograph	
Carriageway	Footway/ Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area to make safe. • Repair as appropriate 	
Notes	
If damage to handrails is excessive, an emergency closure of the steps may be required.	

DEFECTIVE TRAFFIC CALMING FEATURES	
Investigatory Criteria	
Missing or loose sections or missing or proud bolts within a modular traffic calming feature is a defect. This defect also includes constructed calming features.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	In line with other carriageway defects.
Footway & Cycleway	N/A
Sample Photograph	
Carriageway	Footway/ Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close road to make safe. • Repair as appropriate 	
Notes	
Consideration may be given to constructing traffic calming feature using alternative materials.	

DAMAGED KERB	
Investigatory Criteria	
Cracks, gaps or trip hazards on all footways and cycleways.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	A kerb which forms part of the surface of the carriageway with a vertical displacement of 40mm is a defect.
Footway & Cycleway	<p>A crack, gap or trip greater than 20mm at designated crossing points on all footways and cycleways.</p> <p>A kerb that has been horizontally displaced into the carriageway by 20mm or more.</p> <p>A trip or vertical deviation of greater than 20mm at any location.</p>
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area to make safe. • Repair or replace as appropriate 	
Notes	
Permanent repair may include dealing with the causation of the defect, for example trees.	

DEPRESSIONS AND HUMPS	
Investigatory Criteria	
A rapid change of carriageway, cycleway or footway profile	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Greater than 40mm and extending in a horizontal direction of less than 1200mm in the direction of travel and more than 300mm wide
Footway & Cycleway	Greater than 50mm and extending in a horizontal direction of less than 300mm
Sample Photograph	
Carriageway	Footway/ Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area or close footway/cycleway to make safe. • Repair as appropriate. • Refer to section II “Special Requirements” for areas where pedestrians interact with the carriageway. 	
Notes	

DAMAGED STREET SCENE ELEMENTS	
Investigatory Criteria	
Damage to street scene elements such as planters, benches and grit bins.	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	N/A
Footway & Cycleway	<p>Where the damage impedes the safe function of the street scene element or poses a risk to highway users.</p> <p>Grit bins that are no longer functioning to protect the contents.</p>
Sample Photograph	
Carriageway	Footway/Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area to make safe. • Repair or remove as appropriate. • Restock grit bin as appropriate. 	
Notes	

ROAD STUDS (REFLECTIVE AND NON-REFLECTIVE)	
Investigatory Criteria	
Missing or damaged road studs (reflective and non-reflective).	
Minimum dimension where applicable	
Carriageway & Unmetalled Cycleway	Missing or damaged road studs (reflective and non-reflective).
Footway & Cycleway	N/A
Sample Photograph	
Carriageway	Footway/ Cycleway
	
Response	
<ul style="list-style-type: none"> • Undertake risk assessment to determine response. • If required sign and guard area to make safe. • Repair, remove or replace as appropriate. 	
Notes	