
**VOLUME 5 CONTRACT DOCUMENTS
FOR SPECIALIST
ACTIVITIES
SECTION 9 MODEL CONTRACT
DOCUMENTS FOR
DRAINAGE SURVEYS**

PART 4

METHOD OF MEASUREMENT

This is a temporary Method of Measurement issued as a result of the Design Manual for Roads and Bridges modernisation programme. SD 15/03 Parts 1, 2, 3 and 5 are withdrawn and replaced by CS 551/19. SD 15/03 Part 4 will be replaced by this document when the Manual of Contract Documents for Highway Works undergoes a similar modernisation programme. As an interim solution this document, the Method of Measurement that relates to CS 551/19, has been approved for use by the drainage Technical Projects Board and Highways England's Commercial Department and is available as a Departure from Standards approved by the Highways England Head of Drainage, Santi Santhalingam.

- Scope** **1** This Part applies to the surveying of highway drainage systems by one or more of the following methods:
- (i) validation survey
 - (ii) priority asset survey
 - (iii) filter drain condition survey by Ground Penetrating Radar (GPR)
 - (iv) all assets condition and connectivity survey
 - (v) pipework and chambers defect survey by Closed Circuit Television (CCTV)
 - (vi) pipework geometric survey by laser profiler

Validation survey, Priority asset survey, Filter drain condition survey by Ground Penetrating Radar (GPR), All assets condition and connectivity survey, Pipework and chambers defect survey by Closed Circuit Television (CCTV) and Pipework geometric survey by laser profiler of Highway Drainage Systems

- Units** **2** The units of measurement shall be:
- (i) site establishment.....item
 - (ii) provision of digital data and other reporting.....item
 - (iii) validation survey per catchment (100% survey)number
 - (iv) validation survey per catchment (20% survey + 20% spot check)number
 - (v) priority asset survey desk study per catchmentnumber
 - (vi) priority asset survey field survey per catchmentnumber
 - (vii) filter drain condition survey by GPR of roadside filter drainlinear metre
 - (viii) filter drain condition survey by GPR of filter drain remote from the carriageway requiring off-highway vehiclelinear metre
 - (ix) filter drain condition survey by GPR, locational survey of the node at each end of every filter drain, per nodenumber
 - (x) all assets condition and connectivity survey, desk study per catchmentnumber
 - (xi) all assets condition and connectivity survey, visual inspection of surface visible assets per catchmentnumber
 - (xii) all assets condition and connectivity survey, pole camera survey of chamber/gully and associated pipework, per chamber/gullynumber
 - (xiii) pipework and chambers defect survey by CCTV, setting up at survey pointsnumber
 - (xiv) pipework and chambers defect survey by CCTV, surveying of pipework or culvertslinear metre
 - (xv) pipework and chambers defect survey by CCTV, surveying of gully connectionslinear metre
 - (xvi) pipework and chambers defect survey by CCTV, surveying of gulliesnumber
 - (xvii) pipework and chambers defect survey by CCTV, surveying of chambersnumber

- (xviii) pipework and chambers defect survey by CCTV, visual inspection of gulliesnumber
- (xix) pipework and chambers defect survey by CCTV, visual inspection of chambersnumber
- (xx) pipework and chambers defect survey by CCTV, forced ventilation day
- (xxi) pipework and chambers defect survey by CCTV, pre-cleansing of pipeworklinear metre
- (xxii) pipework and chambers defect survey by CCTV, pre-cleansing of chamber or gullynumber
- (xxiii) pipework and chambers defect survey by CCTV, jetting of pipeworklinear metre
- (xxiv) pipework and chambers defect survey by CCTV, root cuttinglinear metre
- (xxv) pipework geometric survey by laser profilerlinear metre

Measurement

3 Site establishment is measured once only and includes for dismantling and removing from site on completion. Any additional site establishment to suit the contractor's method of working shall not be measured.

4 Setting up at survey points for pipework and chambers defect survey by CCTV shall be measured once only for each chamber or other node point included in the survey and includes for moving equipment to the survey point and subsequent dismantling, surveying the pipes in one or more directions from the chamber, irrespective of the number of times the camera is inserted into the pipework.

5 The length of drain to be surveyed for pipework and chambers defect survey by CCTV shall be measured as the individual lengths along the centre line between any of the following:

- (i) the internal faces of the chambers
- (ii) the external face of headwalls
- (iii) the intersection of the centre lines at pipe junctions
- (iv) the centre of gully gratings (or where no grating is provided, the centre of the gully)
- (v) the position of terminations

6 The measurement of forced ventilation for pipework and chambers defect survey by CCTV is per day or part thereof during which forced ventilation is necessary.

7 Pipework and chambers defect survey by CCTV of non-circular pipework or culverts shall be measured with a diameter equal to the major dimension.

8 For pipework geometric survey by laser profiler the profile survey with CCTV camera lights on and the second run with CCTV camera lights off shall be measured as the single length of pipework profiled.

Validation survey

Itemisation 9 Separate items shall be provided for the measurement of validation survey in accordance with MCHW Volume 4 Section 1 Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Site establishment
	2 Provision of digital data and other reporting
	3 Survey per catchment (100% survey)
	4 Survey per catchment (20% survey + 20% spot check)

Item Coverage 10 The items for validation survey shall be in accordance with the MCHW Volume 4 Section 1 Chapter III Preambles to the Bill of Quantities General Directions and include for:

- (a) provision, calibration and operation of all equipment;
- (b) moving between locations;
- (c) suspension of work due to high flows;
- (d) recording and coding;
- (e) still photographs;
- (f) maintaining communication with the Overseeing Organisation’s Representative for the duration of the survey;
- (g) the loss of, or recovery of, or damage to, any survey equipment during the course of the survey;
- (h) locating chambers and gullies.

Priority asset survey

Itemisation 11 Separate items shall be provided for the measurement of priority asset survey in accordance with MCHW Volume 4 Section 1 Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Site establishment
	2 Provision of digital data and other reporting
	3 Desk study per catchment
	4 Field survey per catchment

Item Coverage 12 The items for priority asset survey shall be in accordance with the MCHW Volume 4 Section 1 Chapter III Preambles to the Bill of Quantities General Directions and include for:

- (a) provision, calibration and operation of all equipment;
- (b) moving between locations;
- (c) lifting covers and gratings, replacement and bedding;
- (d) suspension of work due to high flows;
- (e) recording and coding;
- (f) still photographs;
- (g) maintaining communication with the Overseeing Organisation’s Representative for the duration of the survey;
- (h) the loss of, or recovery of, or damage to, any survey equipment during the course of the survey;
- (i) locating chambers.

Filter drain condition survey by GPR

Itemisation 13 Separate items shall be provided for the measurement of filter drain condition survey by GPR in accordance with MCHW Volume 4 Section 1 Chapter II paragraphs 3 and 4 and the following:

Group	Feature	
I	1	Site establishment
	2	Provision of digital data and other reporting
	3	GPR survey of roadside filter drain
	4	GPR survey of filter drain remote from the carriageway requiring off-highway vehicle
	5	Locational survey of the node at each end of every filter drain, per node

Item Coverage 14 The items for filter drain condition survey by GPR shall be in accordance with the MCHW Volume 4 Section 1 Chapter III Preambles to the Bill of Quantities General Directions and include for:

- (a) provision, calibration and operation of all equipment;
- (b) moving between locations;
- (c) lifting covers and gratings, replacement and bedding;
- (d) suspension of work due to high flows;
- (e) recording and coding;
- (f) still photographs;
- (g) maintaining communication with the Overseeing Organisation’s Representative for the duration of the survey;
- (h) protection measures in connection with existing damaged covers and gratings;
- (i) repairing or replacing items damaged during the foregoing operations;
- (j) the loss of, or recovery of, or damage to, any survey equipment during the course of the survey;
- (k) locating chambers.

All assets condition and connectivity survey

Itemisation 15 Separate items shall be provided for the measurement of all assets condition and connectivity survey in accordance with MCHW Volume 4 Section 1 Chapter II paragraphs 3 and 4 and the following:

Group	Feature	
I	1	Site establishment
	2	Provision of digital data and other reporting
	3	Desk study per catchment
	4	Visual inspection of surface visible assets per catchment
	5	Pole camera survey of chamber/gully and associated pipework, per chamber/gully

Item Coverage 16 The items for all assets condition and connectivity survey shall be in accordance with the MCHW Volume 4 Section 1 Chapter III Preambles to the Bill of Quantities General Directions and include for:

- (a) provision, calibration and operation of all equipment;
- (b) moving between locations;
- (c) lifting covers and gratings, replacement and bedding;

- (d) suspension of work due to high flows;
- (e) recording and coding;
- (f) still photographs;
- (g) maintaining communication with the Overseeing Organisation's Representative for the duration of the survey;
- (h) protection measures in connection with existing damaged covers and gratings;
- (i) repairing or replacing items damaged during the foregoing operations;
- (j) the loss of, or recovery of, or damage to, any survey equipment during the course of the survey;
- (k) locating chambers and gullies.

Pipework and chambers defect survey by CCTV

Itemisation 17 Separate items shall be provided for the measurement of pipework and chambers defect survey by CCTV in accordance with MCHW Volume 4 Section 1 Chapter II paragraphs 3 and 4 and the following:

Group	Feature	
I	1	Site establishment
	2	Provision of digital data and other reporting
	3	Setting up at survey points
	4	Surveying of pipework or culverts by CCTV
	5	Surveying of gully connections by CCTV
	6	Surveying of gullies by CCTV
	7	Surveying of gullies by visual inspection
	8	Surveying of chambers by CCTV
	9	Surveying of chambers by visual inspection
	10	Forced ventilation
	11	Pre-cleansing of pipework
	12	Pre-cleansing of chamber or gully
	13	Jetting of pipework
	14	Root cutting
II	1	Depths to pipe invert not exceeding 6 metres
	2	Depths to pipe invert exceeding 6 metres
III	1	Depths to chamber invert not exceeding 6 metres
	2	Depths to chamber invert exceeding 6 metres
IV	1	Diameters not exceeding 125mm
	2	Diameters exceeding 125mm but not exceeding 475mm
	3	Diameters exceeding 475mm but not exceeding 900mm
	4	Diameters exceeding 900mm but not exceeding 1200mm
	5	Diameters exceeding 1200mm but not exceeding 1800mm
V	1	Setting up on pavement
	2	Setting up on verge not exceeding 3m from carriageway edge
	3	Setting up on verge or earthwork exceeding 3m from carriageway edge
	4	Setting up off highway (beyond highway boundary)

Notes:

- a) Group II features only to be used with group I features 4,11,13 and 14
- b) Group III features only to be used with group I features 8,9 and 12
- c) Group IV features only to be used with group I features 4,5,11,13 and 14
- d) Group V features only to be used with group I feature 3

Item Coverage 18 The items for pipework and chambers defect survey by CCTV shall be in accordance with the MCHW Volume 4 Section 1 Chapter III Preambles to the Bill of Quantities General Directions and include for:

- (a) provision, calibration and operation of all equipment;
- (b) moving between locations;
- (c) lifting covers and gratings, replacement and bedding;
- (d) suspension of work due to high flows;
- (e) recording and coding;
- (f) still photographs;
- (g) video recordings;
- (h) maintaining communication with the Overseeing Organisation's Representative for the duration of the survey;
- (i) protection measures in connection with existing damaged covers and gratings;
- (j) repairing or replacing items damaged during the foregoing operations;
- (k) supplying water and electricity;
- (l) the loss of, or recovery of, or damage to, any survey equipment during the course of the survey;
- (m) locating chambers and gullies;
- (n) use of stoppers and over-pumping;
- (o) bringing to site, erecting and setting up including site preparation, moving between locations and removing from site of forced ventilation plant and equipment;
- (p) cleaning existing drainage systems (as MCHW Volume 4 Section 1 Chapter IV Series 500 paragraph 84).

Pipework geometric survey by laser profiler

Itemisation 19 Separate items shall be provided for the measurement of pipework geometric survey by laser profiler in accordance with MCHW Volume 4 Section 1 Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Site establishment
	2 Provision of digital data and other reporting
	3 Surveying of pipework by laser profiler

Item Coverage 20 The items for pipework geometric survey by laser profiler shall be in accordance with the MCHW Volume 4 Section 1 Chapter III Preambles to the Bill of Quantities General Directions and include for:

- (a) pipework and chambers defect survey by CCTV works (as this Series paragraphs 17 and 18).

NOTES FOR GUIDANCE ON THE METHOD OF MEASUREMENT

1 Compilation of Bill of Quantities

Irrespective of whether a contract document is being compiled solely for a drainage survey or in conjunction with other works, the Bill of Quantities shall be compiled in accordance with Volume 4 Section 1 Chapters I, II and III, and include such items from Chapter IV as may be required.

In order to ensure that this Series is properly drawn into the Contract, the Method of Measurement for Drainage Surveys should be included in the Preamble to the Bill of Quantities either by replication in full or by specific reference to Volume 5.

With regard to Traffic Management the compiler should consider the adequacy of paragraphs 21 to 27 inclusive of Series 100 in relation to the scope of the works.