SOCIETY OF CHARTERED SURVEYORS IRELAND

Surveys of Land, Buildings and Utility Services at Scales of 1:500 and Larger

SCSI Professional Guidance

RICS the mark of property professionalism worldwide

Surveys of Land, Buildings and Utility Services at Scales of 1:500 and Larger

Client Specification Guidelines

1st Edition

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This guidance note was edited by:

- Ben King FSCSI, FRICS – Railway Procurement Agency

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- James Kavanagh MRICS, RICS – Director of Land Group
- Tom Mulreid MSCSI, MRICS – Apex Surveys
- Colin Bray MSCSI, MRICS – Ordnance Survey Ireland

1 Project Information

Project Information

The information given in the following clauses provides essential information needed for the Project.

1.1 Project Designation

Name .....

Reference No .....

1.1.1 Purpose of Project

The Project Objective is to provide information to enable the following work to be carried out by the Client:

.....

1.1.2 End Product

Under this Project the following is to be produced by the Surveyor:

.....

1.1.3 Project Scale

The nominal survey scale(s) for information provided under this Project will be

1: .....

1.1.4 Client Provisions

The following facilities will be supplied by the Client to the Surveyor:

.....

1.1.5 Project Constraints

The following specific constraints will apply to the work carried out under this Project:

.....

1.1.6 Form of Contract

The Terms and Conditions of Contract are

either (a) GCCC New Public Works Contracts (2007)

or (b) the RICS Terms and Conditions of Contract for Land Surveying Services (3rd Edition) 2009.

or (c) other (specify).

Client Organisation

1.2 Project Contacts

The principal contact names and addresses relating to this Project are given in the clauses which follow.

1.2.1 Primary Client

Name ..... Address .....
.....
Email ....
Tel ....
Fax ....

1.2.2 **Client Representative** for matters concerning the project

Name ..... Address .....
.....
Email ....
Tel ....
Fax ....

1.2.3 **Client Contact** for day-to-day contact Position .....

Name ..... Address .....
.....
Email ....
Tel ....
Fax ....

1.2.4 Finance Department for invoicing

Name ..... Address .....
.....
Email ....
Tel ....
Fax ....

1.2.5 **Others** (known Local and Statutory Authorities etc.)

Name ..... Address .....
.....
Email ....
Tel ....
Fax ....

1.3 Survey Summary

1.3.1 Area/Extent of Survey

either (a) The area and extent of the survey is shown on the following plan(s):

or (b) The area and extent of the survey is described below:

1.3.2 Address of Project & Site

The site is located at: Address .....

.....

.....

The occupier of the site is: Name .....

1.3.3 Scale of Drawings Required

Where hard copy drawings are specified for this Project then the following scales will be required:

.....

1.3.4 Digital Data Required

Digital data is specified for this Project and is required in the following formats:

.....

1.3.5 Proposed/Estimated Start Date

.....

1.3.6 Completion Date Required

.....

1.3.7 Agreed Entry to Site

either (a) There is no specific limitation on site access and the Surveyor need make no special arrangements.

or (b) The Surveyor shall inform the Client in advance of the proposed access dates required, so that the Client may inform the owners/occupiers.

or (c) The Surveyor will be required to inform the site owners/occupiers of the specific access dates required and a list and plan will be supplied by the Client when requested by the Surveyor.

1.4 Summary of Specification

The following Sections of the Standard Specification have been completed:

1 Project Information

2 Land Surveys

3 Underground Utility Services

4 Measured Building Surveys

5 Presentation of Results

Annexes

A Permanent Ground Markers

B Planimetric Features

C Additional Spot Heights and Breaklines

D Underground Services

E Building Features

F Presentation of Final Plans

1.5 Survey Records

The Surveyor shall make available to the Client for inspection, on request, all survey data including that obtained from other sources.

either (a) The Surveyor shall retain the same for a period of ..... years.

or (b) The Surveyor is to supply copies of all information to the Client.

2 Land Surveys

Planimetric Control

2.1 Control Network

The Surveyor shall

either (a) establish three-dimensional control at a density sufficient to achieve the specified accuracies.

or (b) advise on appropriate control arrangements and submit details to the Client for approval.

or (c) establish control at the locations required by the Client and shown on the following documents: .....

2.1.1 Permanent Ground Markers

The main survey stations shall be of stable construction. Standard forms of markers are shown in Annexe A and, unless otherwise specified within the accompanying documents, the Surveyor should choose the most appropriate marker for each location from this selection.

2.1.2 Survey Grid

The survey shall be related to

either (a) the existing project grid, namely: .....

or (b) the Irish Transverse Mercator (ITM) Grid.

or (c) a Project/Local Grid based on the Irish Transverse Mercator (ITM) Grid.

or (d) an arbitrary grid.

A description of the grid system used shall be quoted on each survey drawing and schedule of permanent control stations upon the index drawing.

Ordnance Survey Ireland (OSi) provide a free coordinate converter for all survey grid coordinate conversions between ITM, UTM, ETRF89 and Irish Grid (IG) at http://www.osi.ie/en/alist/co-ordinate-converter-tool.aspx.

2.1.3 Accuracy

The maximum error between permanent survey control stations shall not exceed

either (a) 1 part in 40,000, for distances exceeding 200 metres. For shorter distances the maximum error shall not be greater than ± 5mm.

or (b) 1 part in ..... , for distances exceeding ..... metres. For shorter distances the maximum error shall not be greater than ± ..... mm.

Documentation

2.1.4 Schedule of Permanent Control Stations (including Ordnance Survey Stations if used)

A schedule shall be prepared giving the following information for the permanent control stations:

- station designation
- survey grid used
- survey co-ordinates (and ETRS89 co-ordinates when available)
- orthometric height value (and ellipsoidal height when available)
- combined local scale factor (when available)
- description of type and location
- date established

Where an existing project grid has been specified, then an initial schedule of the existing control shall be supplied by the Client.

2.1.5 Location Diagrams of Permanent Control Stations

A diagram shall be prepared for each permanent control station with a map showing its general location, a photograph of the station and vicinity, and a station sketch showing dimensions to a minimum of three easily recognisable and durable points, to enable the station to be easily found. The diagram shall include a description of the type of marker used and its designation.

2.1.6 Drawing of Permanent Control Network

For all but the simplest (two station) surveys a control network CAD drawing shall be prepared. The control network drawing shall show

either (a) the connections between the permanent control stations.

or (b) the connections, together with the accepted distances and bearings of each observed line in the network.

2.1.7 Survey Report

Items detailed in clauses 2.1.4 to 2.1.6 may be combined in the form of a survey report, also incorporating details of the Height Control. If a full report is required then this shall be specified in clause 5.2.3.

2.2 Height Network

The Surveyor shall

either (a) establish vertical control at a density sufficient to achieve the specified accuracies.

or (b) advise on appropriate control arrangements and submit details to the Client for approval.

or (c) establish control at the locations required by the Client and shown on the following documents:…….

2.2.1 Height Datum

All heights shall be related to

either (a) Ordnance Datum Malin Head as defined by geoid model OSGM02, checking the selected datum against at least two other OSGM02 height determinations.

or (b) Ordnance Datum Malin Head as defined by geoid model OSGM02, accepting the value given from the geoid model.

or (c) agreed project datum, namely:……

The location, description and value of the height datum used shall be quoted on each survey drawing and upon the index drawing.

Ordnance Survey Ireland (OSi) provides the geoid model OSGM02 at http://www.osi.ie/en/alist/co-ordinate-converter-tool.aspx.

2.2.2 Project Height Datum

Project height control stations shall be established to give, where possible, a density of at least one per map sheet at the main plotting scale. Height control stations shall consist of

either (a) the permanent control stations.

or (b) suitable reference points on existing stable features.

or (c) constructed stations where there are no suitable stable features.

2.2.3 Accuracy

The height difference between any two points used as permanent height control shall

either (a) not be in error by more than ±5 x kmm, where k is the square root of the distance in kilometres between the points being considered, or ±5 mm, whichever is the greater.

or (b) be to the following accuracy: .....

2.2.4 Schedule of Height Control

A schedule shall be prepared giving the following information:

- height control station designation
- height datum/geoid model used
- orthometric height value (and ellipsoidal height when available)
- description of type and location
- date established

Where an existing project datum has been specified then an initial schedule of the existing control height points shall be supplied by the Client.

2.2.5 Location Diagrams of Height Control

A diagram shall be prepared for each height control station with a map showing its general location, a photograph of the control station and vicinity, and a sketch showing dimensions to a minimum of three easily recognisable and durable points, to enable the control station to be easily found. The diagram shall include a description of the type of marker used and its designation.

2.2.6 Drawing of Height Control Network

When height control stations are located on other than permanent control stations a height control network CAD drawing shall be prepared. The control network drawing shall show the connections between the height control stations (including the permanent control stations where relevant).

2.2.7 Survey Report

Items detailed in clauses 2.2.4 to 2.2.6 may be combined in the form of a survey report, also incorporating details of the Planimetric Control. If a full report is required then this shall be specified in clause 5.2.3.

2.3 Planimetric Information

The following general categories of detail shall be surveyed:

	Permanent buildings/structures
	Temporary/mobile buildings
	Visible boundary features: walls, fences, hedges
	Roads, tracks, footways, paths
	Street furniture
	Statutory Authorities' plant and service covers where visible
	Changes of surface
	Isolated trees/wooded areas/limits of vegetation
	Pitches/recreation
	Private gardens or grounds (off-site areas)
	Water features
	Earth works
	Industrial features
	Railway features with arranged access
	Other (specify)

2.3.1 Accuracy

The accuracy of planimetric detail shall be such that the plan position of any well defined point of detail shall be correct to within 0.15mm R.M.S.E at the plan scale when checked from the nearest permanent control station.

2.3.2 Obscured Ground

Detail which cannot be surveyed to the specified accuracy without extensive clearing shall be

either (a) surveyed approximately and annotated accordingly.

or (b) surveyed, following clearing by the Client.

or (c) surveyed, following clearing by the Surveyor.

2.4 Height Information

Height information shall be provided

either (a) as spot heights throughout the survey area.

or (b) by spot heights and three-dimensional strings/breaklines to detail specified in Annexe C, together with contours.

or (c) by contours only.

Sufficient spot heights and breaklines shall be surveyed such that the ground configuration, including all surface discontinuities, is represented on the survey drawing.

2.4.1 Spot Heights

The maximum distance between adjacent spot heights shall be ..... metres. Ground survey spot heights on hard surfaces shall be correct to ± 10mm R.M.S.E and elsewhere to ±25mm R.M.S.E, except on ploughed or otherwise broken surfaces. Spot heights shall not be interpolated.

2.4.2 Contours

Contours shall be shown at vertical intervals of ..... metres.

At least 90% of all contours shall be correct to within one half of the specified contour interval. Any contour which can be brought within this vertical tolerance by moving its plotted position in any direction by an amount equal to 1/10th of the horizontal distance between contours, or 0.5mm at plan scale, whichever is the greater, shall be considered as correct.

2.4.3 Obstructed Ground

Contours which cannot be represented to the specified accuracy without extensive clearing shall be

either (a) surveyed approximately and annotated accordingly.

or (b) surveyed, following clearing by the Client.

or (c) surveyed, following clearing by the Surveyor.

3 Underground Services Surveys

Types of Survey

Underground services surveys will consist of one or more of the following types of survey:

(A) Record information

Underground service information to be taken from Statutory or other Authorities' record drawings and plotted to agree as closely as possible with surveyed surface features.

(B) Direct visual surveys

Accessible inspection chamber covers should be lifted where permissible and services positively identified.

(C) Direct visual surveys supplemented by record drawings

Accessible inspection chamber covers should be lifted where permissible and services positively identified. Routes of services between access points to be taken from record drawings and plotted to agree as closely as possible with surveyed surface features and trench scars where obvious.

(D) Full investigation including electronic tracing

Services to be fully investigated by visual survey supplemented by electronic, or other tracing of inaccessible routes.

3.1 Extent of Survey Required

Services listed below shall be surveyed by the method indicated. All work should be carried out with due regard to the Health & Safety guidelines for working within confined spaces.

A	B	C	D	Service
				Surface water drainage
				Foul drainage
				Water
				Gas
				Electricity
				Telecommunications
				Other services
				Other underground utility features

3.1.1 Services Information

Information derived from the survey methods (B), (C) and (D) shall be supplied as

either (a) invert levels, pipe diameters and annotations on the CAD drawings.

or (b) inspection chamber description sheets.

3.1.2 Derived Information

Where information is derived from Statutory Authorities' record drawings, a schedule shall be provided giving full details, e.g. drawing number, scale, etc. All information taken from records shall be clearly identified as such on the survey CAD drawings.

3.2 Report

A report shall be submitted indicating any anomalies between surveyed data and records, detailing likely accuracies achieved and commenting on services not located for any reason (e.g. unliftable or hidden covers). All unidentified features should be highlighted in this report.

4 Measured Building Surveys

This Section of the Specification deals with the survey of the building or structure. Section 2 deals with the survey of the surrounding area and the provision of external control.

Types of Survey

Building surveys are classified by the type and accuracy of the control network used. The types are defined in the clause which follows.

4.1 Methods of Survey

Measured building surveys will consist of one or more of the following methods of survey:

(A) Un-connected survey

Using simple methods which do not enable one part of the survey to be related to another.

(B) Semi-connected survey

One floor (normally the ground floor) is surveyed with all parts connected by instrumental control. Other floors are matched by assuming verticality of common features.

(C) Fully-connected survey

All floors are instrumentally related to a common survey control framework.

Planimetric Control

4.2 Control Network

The Surveyor shall

either (a) establish plan control at a density sufficient to achieve the specified accuracies.

or (b) advise on appropriate control arrangements and submit details to the Client for approval.

or (c) establish control at the locations required by the Client and shown on the following documents: .....

4.2.1 Permanent Markers

The main survey and height control stations intended for control and future setting out shall be of stable construction.

The Surveyor shall

either (a) advise on the most suitable method of marking the main survey stations.

or (b) use the following types of internal markers:

.....

4.2.2 The Survey Grid

The survey shall be related to

either (a) the external survey grid specified in clause 2.1.2.

or (b) an arbitrary grid, which is established by reference to an existing feature of the building, namely: .....

4.2.3 Accuracy

The maximum error between permanent survey control stations shall not exceed

either (a) ± 5mm or 1 part in 20,000 for distances exceeding 50 metres.

or (b) ± ..... mm or 1 part in ..... for distances exceeding ..... metres.

Documentation

4.2.4 Schedule of Permanent Control Stations

A schedule shall be prepared giving the following information for the permanent control stations:

- station designation
- survey grid used
- survey co-ordinates (and ETRS89 co-ordinates when available)
- orthometric height value (and ellipsoidal height when available)
- combined local scale factor (when available)
- description of type and location
- date established

Where an existing project grid has been specified, then an initial schedule of the existing control shall be supplied by the Client.

4.2.5 Location Diagrams of Permanent Control Stations

A diagram shall be prepared for each permanent control station with a map showing its general location, a photograph of the station and vicinity, and a station sketch showing dimensions to a minimum of three easily recognisable and durable points, to enable the station to be easily found. The diagram shall include a description of the type of marker used and its designation.

4.3 Height Network

The Surveyor shall

either (a) establish vertical control at a density sufficient to achieve the specified accuracies.

or (b) advise on appropriate control arrangements and submit details to the Client for approval.

or (c) establish control at the locations required by the Client and shown on the following documents: .....

4.3.1 Height Datum

All heights shall be related to

either (a) the external survey project height control

or (b) Ordnance Datum Malin Head as defined by geoid model OSGM02 , accepting the value given from the geoid model.

or (c) Other agreed datum, namely: .....

Ordnance Survey Ireland (OSi) provides the geoid model OSGM02 at http://www.osi.ie/en/alist/co-ordinate-converter-tool.aspx.

4.3.2 Project Height Datum

Project height control stations shall be established to give, where possible, a density of at least one per plan/floor and a minimum of three in total. Height control stations shall consist of

either (a) the permanent control stations.

or (b) suitable reference points on existing stable features.

4.3.3 Accuracy

The height difference between any two points used as permanent bench marks shall

either (a) not be in error by more than ± 3mm on any floor or by more than ± 1.5mm per metre of height between floors

or (b) be to the following accuracy: .....

Documentation

4.3.4 Schedule of Height Control

A schedule shall be prepared giving the following information:

- height control station designation
- height datum/geoid model used
- orthometric height value (and ellipsoidal height when available)
- description of type and location
- date established

Where an existing project datum has been specified then an initial schedule of the existing control height points shall be supplied by the Client.

4.3.5 Location Diagrams of Height Control

A diagram shall be prepared for each height control station with a map showing its general location, a photograph of the control station and vicinity, and a sketch showing dimensions to a minimum of three easily recognisable and durable points, to enable the control station to be easily found. The diagram shall include a description of the type of marker used and its designation.

4.4 Information Required

The following general categories of detail shall be surveyed:

	Floor plans
	Roof plans
	Ceiling plans
	Sections
	Elevations
	Computations

4.4.1 Accuracy of Detail

The accuracy of surveyed detail shall fall within the following limits:

- **Plans** - on fully-controlled surveys the absolute plan position of well defined detail shall be accurate to ± 10mm at 1:50 scale or ± 20mm at 1:100 scale, when checked from the nearest survey control station on that floor.

- **Dimensions** - directly measured figured dimensions shall be quoted to the nearest centimetre. The Surveyor's estimate of the achievable accuracy for dimensions which cannot be directly measured should be sought.

- **Heights** - the quoted level of any feature relative to the nearest height control station on that floor shall be to ± 5mm.

5 Presentation of Results

Graphical Data

5.1 Style of Drawing

CAD drawings produced shall be to a consistent style and all the features specified shall be presented on the final drawing(s) or data set(s) to a neat and legible standard.

5.1.1 Style Guide

Style of presentation of the specified work shall be

either (a) based on an existing recognised standard.

or (b) based on typical samples submitted by the Surveyor for approval.

or (c) based on typical samples attached by the Client.

Conventional symbols and abbreviations shall be

either (a) based on an existing recognised standard.

or (b) based on a list submitted by the Surveyor for approval.

or (c) based on a list attached by the Client.

The proposed sheet border and title block shall be agreed between the Client and the Surveyor.

5.1.2 Sheet Size and Layout

The final plans shall be produced on standard ..... size sheets at a scale of 1: ..... Unless otherwise shown on the sheet layout, adjoining sheets may be butt joined or overlapped.

The sheet layout shall be

either (a) attached by the Client.

or (b) submitted by the Surveyor for approval.

5.1.3 Grid

The grid shall be plotted to an accuracy of ± 0.2mm R.M.S.E on any sheet up to A0 size.

The grid shall be shown

either (a) as grid ticks.

or (b) as continuous lines.

or (c) in the following manner: .....

Grid values shall be shown at the following interval: ..... metre.

5.1.4 Reductions and Compilations

Reduced drawings shall be produced on standard ..... size sheets.

Reductions at 1: ..... scale shall be derived from the large scale plans by

either (a) recompilation without redrawing.

or (b) simplification and redrawing as appropriate to the scale.

5.2 Drawing Content

5.2.1 Detail

All specified features shall be represented on the final CAD drawing in accordance with the style specified in clause 5.1.1 and annotated appropriately.

5.2.2 Contours

Where contours are specified then they shall be presented in the following manner:

- Index contours shall be shown by a specified type of line at ..... metre vertical intervals.
- The value of each index contour shall be indicated at intervals along the contour, not exceeding ..... mm.
- Steep slopes, where the horizontal distance between contours is less than ..... mm, shall be shown by conventional symbols between the tops and bottoms of slopes, which shall also be indicated.

5.2.3 Reference Information

Location drawings and diagrams may be located within the information margins of the main drawings or may be placed on a separate drawing of the same style.

The Surveyor will provide as part of the final product the following items:

- location three-dimensional drawing required at 1: ..... scale
- sheet layout diagram with cross references to overlays
- schedules required (refer to Annexe F)
- Survey Report (clause 2.1 and clause 2.2).

5.2.4 Overlays and Half-tones

The overlays and half-tones required are detailed in Annexe F.

5.3 Advance Copies

either (a) Preliminary three-dimensional CAD drawing file(s) shall be provided.

or (b) Paper prints and /or positive transparencies of the preliminary plots on stable base material shall be provided as ..... copies of each sheet.

or (c) Other (specify).

or (d) No advance copies are required.

5.4 Final Drawings

5.4.1 Proof Copies

either (a) Digital and paper copies of the final three-dimensional CAD drawings shall be submitted to the Client for approval before delivery of the final CAD drawings , unless otherwise agreed.~~,~~

The Client shall return one set within ..... working days with any amendments to be incorporated in the final CAD drawings.

or (b) No proof copies are required.

5.4.2 Transparencies

Transparencies shall be presented on stable base material, not less than 0.1mm in thickness with matt drawing surfaces on both sides,

either (a) Forward-reading master transparencies shall be provided as ..... copies of each sheet.

or (b) Reverse-reading duplicate transparencies shall be provided as ..... copies of each sheet.

5.4.3 Paper Copies

Copies are to be reproduced from transparencies or by direct plotting. ..... copies of each sheet to be provided.

Digital Data

5.5 Supply of Digital Data

Digital data shall be supplied for the following purposes:

- automated plotting (clause 5.5.2)
- use in a Geographic Information System and CAD System (clause 5.5.3)
- digital ground modelling (clause 5.5.4).

5.5.1 Standards of Accuracy

either (a) All digital data supplied shall conform to the same standards of accuracy specified in Sections 2, 3 and 4 for each type of data.

or (b) Data will be supplied to the following accuracies:

.....

.....

5.5.2 Digital Data Suitable for Automated Plotting

The digital data used to plot the final drawings shall

either (a) be three-dimensional only. All text including spot height and contour values shall be supplied as text elements/annotations at the relevant height.

or (b) be supplied in a format suitable for re-plotting with the same line styles and symbols in the Client's CAD or computer drafting system defined in clause 5.6.

or (c) be supplied as a continuous database without visible gaps or overshoots in continuous features or between files. Data files shall correspond to drawings at the acquisition scale.

or (d) conform to the Client's existing draughting standards, details of which are supplied below:

.....

.....

5.5.3 Digital Data for use in a Geographic Information System (GIS) and CAD System

The digital survey data used to prepare the final drawings shall be restructured for input to the geographic or land information system (GIS or LIS) and CAD System as defined in clause 5.6 below.

The data relating to the planimetric features shall be

either (a) two-dimensional.

or (b) three-dimensional.

or (c) to the following specification:

.....

All survey features shall be represented as either continuous three-dimensional polylines (or similar) or point entities. Blocks/symbols shall not be used to represent linear features.

Spot heights, breaklines and contours shall be supplied as three-dimensional points or strings with height values displayed as text annotations at the relevant height.

The data shall be supplied as a continuous database with no mathematical gaps, or overshoots in continuous features or between files. Data files shall correspond to map sheets at the acquisition scale.

5.5.4 Digital Data for Digital Ground Modelling (DGM)

Height information (Digital Ground Model or DGM) for use on an engineering modelling system is required.

The DGM shall consist of

either (a) an irregular spot height grid forming a triangular irregular network (TIN).

or (b) irregular three dimensional strings/breaklines and spot heights forming a TIN.

or (c) a regular level grid forming a square network.

Three-dimensional information shall not contain crossing breaklines, duplicate co-ordinates with differing elevations or two-dimensional points within a three-dimensional string. All features, including breaklines which describe the discontinuity within the DGM shall be represented as a three-dimensional continuous polylines or similar.

Co-ordinates and spot heights shall be obtained by direct measurement for each point except where the ground surface is built over, where the ground surface is obscured by thick vegetation or where there are expanses of water. Unless bed levels have been specified, the water level at the time of survey shall be used.

Height points interpolated from a surveyed framework of spot heights shall comply with the requirements of clause 2.4. Points on contour strings shall be recorded at sufficiently close intervals to ensure that they agree with contours plotted at the specified survey scale.

5.6 System Information

The Client's systems information is as follows.

5.6.1 System Name

.....

5.6.2 Data Format

The required format to be used for the data transfer is

.....

5.6.3 Computer Operating System

.....

5.6.4 Transfer Media

The data shall be supplied on

either (a) Digital Video Disc (DVD): to the following specification:

type .....

media format .....

sides.....

or (b) Compact Disc (CD): to the following specification:

type .....

media format .....

sides .....

or (c) other medium to the following specification:

.....

.....

5.6.5 Test Data

A small sample of test data shall be submitted to the Client in the specified or proposed format for testing and approval prior to the production of the final digital data.

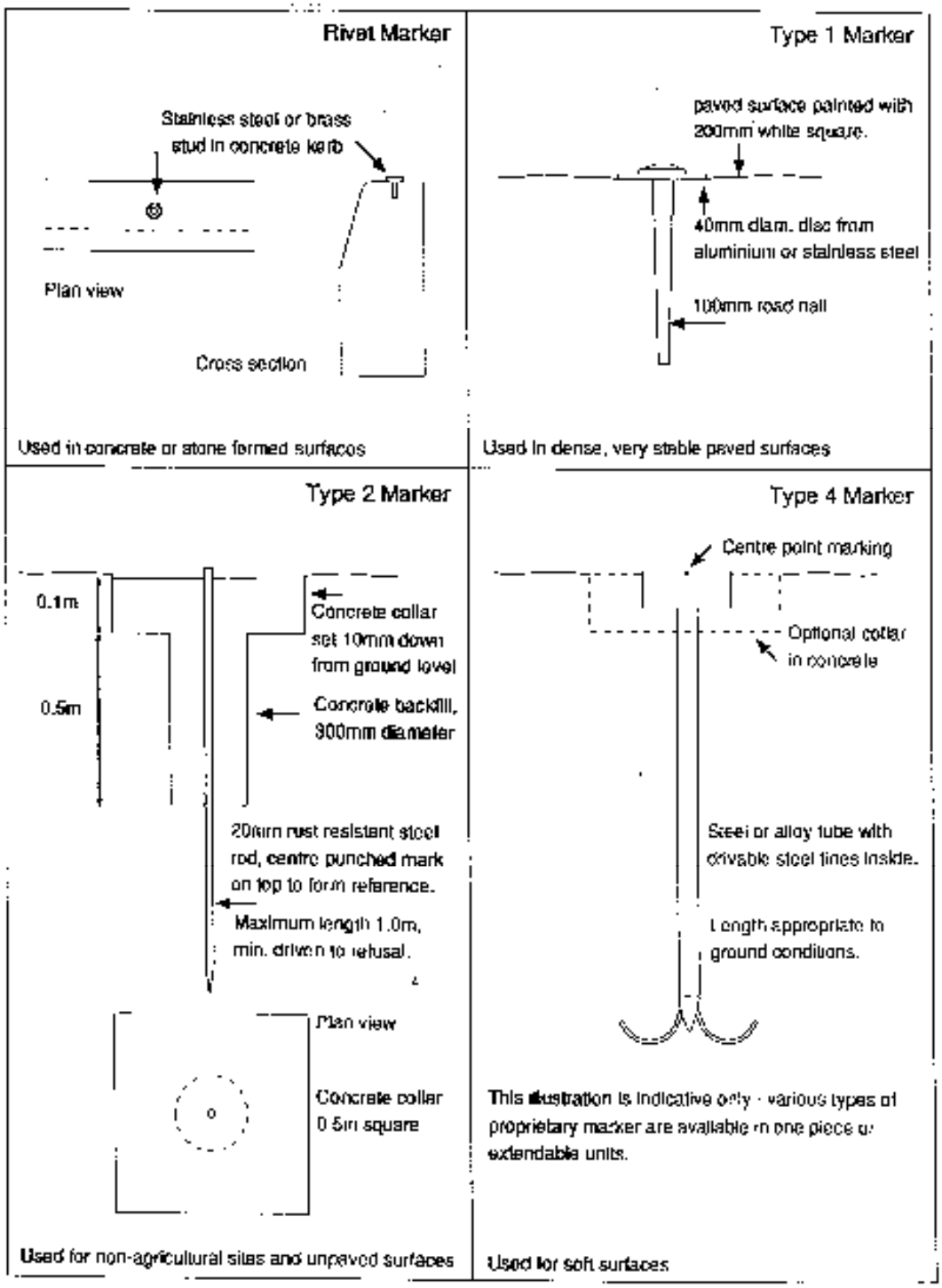
5.6.6 Data Supply

The data shall be supplied on the medium as defined in clause 5.6.4 above. The medium shall be externally marked with a label showing:

- date
- file name(s).
- project administration details (name, contract number etc.)

A paper plot shall accompany the digital data at sufficiently large scale to show clearly all the data contained in the files, together with a final layer listing.

Annexe A - Permanent Ground Markers



Annexe B - Planimetric Features

This Annexe indicates the features which are usually shown at the various scales of 1:500, 1:200, 1:100 and 1:50.

At each increase in scale more details can be shown and more detail can be plotted to true scale instead of conventionally. As a general rule those features whose plotted size is less than 1mm on the plan will be shown conventionally, if at all.

ONLY THE ITEMS INDICATED WITH A TICK WILL BE SURVEYED

(†) Features usually shown only at 1:200 scale and above.

(‡) Features usually shown only at 1:100 scale and above.

1 Permanent buildings/structures

	Archways, underpasses, culverts
	Bridge over, bridge under
	Buildings detailed at plinth line
	Foundations
	Overhead features, canopies, porches, etc.
	Ramps, loading bays
	Ruins
	Steps: steps generalised, (‡) Steps individual
	Structures detailed at plinth line
	Threshold levels
	(‡) Boot scraper
	(†) Gullies
	(†) Rain water down pipes
	(†) Rodding eyes
	(‡) Waste pipes
	Other (specify)

2 Temporary/mobile buildings

	Garden sheds, greenhouses
	Mobile buildings
	Overhead features, canopies, porches, etc.
	Temporary buildings or structures

3 Visible boundary features - walls, fences, hedges

	Fences: with type, with height
	Gate: (†) direction of opening shown
	Hedges, conventionalised below 0.5m width, (‡) to scale
	Walls: with type, with height, piers generalised, wall single line below 0.25m width
	(†) Walls, piers surveyed, wall single line below 0.11m width
	(‡) Walls, piers and widths fully surveyed

4 Roads, tracks, footways, paths

	Channel line - road
	Centre line - road
	Camber line on roundabouts
	Carriageway edge
	Drop kerbs
	Top of kerb
	Crash barriers
	Gullies, kerb outlets
	Pedestrian barriers
	Pedestrian crossings
	Road markings, e.g. giveway, crossing limits, parking bays, etc.
	Speed bumps
	Traffic islands, (†) details
	Other road features, e.g. vehicle sensors
	Back edge of footway
	Paving pattern details
	Unmade tracks and paths, centre only, (†) sides

5 Street furniture

	Belisha Beacons
	Barriers
	Bollards
	Bus stops, bus shelters
	Control boxes
	Hoardings
	Lamp posts
	Letter (post) boxes
	Mile posts
	Notice boards
	Posts
	Road signs
	Street name plates, (‡) wall mounted
	Ticket machines
	Traffic signals
	Troughs
	Vent pipes
	(†) Drainage channels
	(†) Cellar hatches and pavement lights
	(†) Coal holes
	(†) Cycle racks
	(†) Litter bins
	(†) Reflector posts
	(†) Salt/grit bins
	(†) Seats
	Other (specify)

6 Statutory Authorities' plant and service covers where visible

	Air valves
	(‡) Cable TV house points
	Cable TV inspection covers
	Cabinets (identified)
	Electric covers
	Electric poles
	Fire hydrants, (†) shown to scale
	Gas/water stop valves and stop cocks (cover)
	Inspection covers with level
	Lamp holes
	Marker posts
	Over head wires, (†) building connections to be shown
	(†) Pole stay wires
	Surveillance cameras
	Telecommunications inspection covers
	Telegraph poles
	Telephone call boxes
	(†) Water meter or gas meter covers (distinguished from valve)

Note: Underground services surveys are dealt with in Section 3 and Annexe D of this Specification.

7 Changes of surface

	HARD SURFACES		**SOFT SURFACES**
	Brick		Cultivated
	Concrete		Grassed
	Metalled		(†) Grass, maintained area
	Paving		Planted
	Setts		Rough ground
	Other (specify)		Other (specify)

8 Isolated trees, wooded areas, limits of vegetation

	Bushes/shrubs above 2m diameter
	Isolated trees above 0.15m trunk diameter, (‡) above 0.1m
	Ornamental/road side trees, (‡) planting box shown
	(‡) Staked saplings (individual)
	Areas of saplings/young trees
	Edge of vegetation
	Woodlands perimeter trees/tree canopy only
	Tree/bush details required on the drawing or on schedule • Height ... estimated • Height ... measured • Spread ... (canopy diameter) • Trunk diameter/circumference/(girth) at 1.2m above ground • Species • Other special requirements

9 Pitches/recreation

	Pitch/playground limits only
	(†) Pitch markings, goal posts
	(†) Play ground apparatus

10 Private gardens or grounds (off-site areas)

This section relates to areas outside the main site.

	Buildings, surveyed in detail
	Buildings, generalised
	Inspection covers in domestic property
	(†) Door openings
	(†) Garden paths, patios, retaining walls
	Other (specify)

11 Water features

Water features surveyed in outline only, (†) surveyed in detail.

	Fountain
	Groynes/sea defences
	Harbour wall, breakwater
	High water mark
	Landing stage
	Lock, perimeter and gates
	Low water mark
	Mooring posts
	Navigation beacons
	Outfall pipes
	Pier, jetty
	Pond/lake
	Pond/lake, top of bank
	Pond/lake, bottom of bank
	Pond/lake, water level
	Pond/lake, bed level
	Pumps
	River, top of bank
	River, bottom of bank
	River, water level
	River, direction of flow
	River, bed level
	Shore line detail exposed at low tide
	Streams and ditches, top of bank
	Streams and ditches, bottom of bank
	Streams and ditches, water level
	Streams and ditches, direction of flow
	Streams and ditches, bed level
	Weirs/waterfalls, indicative features surveyed from the bank

12 Earth works

	Bank bottom
	Bank top
	Mounds, spoil heaps
	Quarries, pits and mineral workings (limit only)
	Quarries, pits and mineral workings, detailed survey
	Retaining wall, base
	Retaining wall, top
	Sloping masonry, bottom
	Sloping masonry, top
	Terraces
	Other (specify)

13 Industrial features

	Aerial
	Cable ducts (specify detail required)
	Chimneys
	Chimneys, (with height) (specify)
	Electric sub stations or transformers (perimeter fence only)
	Filter beds, limits only
	Flagstaffs
	Inspection pits
	Overhead pipes/cables, (†) height required
	Pipe work or ducts (specify detail required)
	Overhead line tower/freestanding mast or pylon
	(‡) Overhead line tower/freestanding mast or pylon, bases shown
	Tanks/storage chambers individually surveyed
	Tanks by bund walls or perimeter only
	(†) Flood lights
	(†) Water taps/Stand pipes/Troughs
	(‡) Earth rods
	Other (specify)

14 Railway features (with arranged access)

	Ballast shoulder
	Buffers/stop blocks
	Cabinets, switch boxes
	Cable ducts
	Catchpits
	Cess limits
	Electrified rails (indicative only)
	Gantries
	Height gauges
	Huts
	Mile posts
	Platform furniture (specify)
	Platforms
	Points and crossovers
	Power masts
	Rails (gauge faces)
	Refuges
	Signals
	Signal boxes
	Signs
	Telephones
	TV monitors/cameras
	(†) Gradient posts
	(†) Grease points
	(†) Grit bin
	(†) Point rods (symbolised)
	(†) Track (distance) markers
	(‡) Check rail (on curves or bridges)
	(‡) Non ducted cables
	(‡) Points box/lever
	Other (specify)

15 Other - Special requirements or special areas .....

Annexe C - Additional Spot Heights and Breaklines

Spot heights and breaklines (surface discontinuity strings) are required at the following locations, in addition to general spot heights, or to supplement information given by contours.

ONLY THE ITEMS INDICATED WITH A TICK WILL BE SURVEYED

	Banks, top and bottom at ..... m intervals
	Building/structure corners
	Ditches, streams, drains - sections at ..... m intervals
	Floor/threshold levels
	Hilltops, depressions and saddles
	Inspection covers, gullies, ducts and conduits
	Railway lines, both rails/low rail/high rail at ..... m intervals
	Railways, centre of tracks at sleeper level, at ..... m intervals
	Road centreline, channel, kerb, pavement at ..... m intervals
	Steps and ramps, top and bottom
	Water levels (with date of survey) to rivers, streams, ponds, etc.
	Weirs, outfalls
	Other locations (specify)

Other - Special requirements or special areas .....

Annexe D - Underground Services

This Annexe is used in conjunction with the table given in clause 3.1, which specifies the type of survey required. The following tables specify the features and the level of information required.

ONLY THE ITEMS INDICATED WITH A TICK WILL BE SURVEYED

1 Drainage (surface and foul)

	Main drainage only
	All drainage, including minor connections
	Cover levels
	Invert levels, including drop pipes
	Pipe sizes
	Direction of flow
	Cesspits, septic tanks, interceptors (identify only)
	Pumping stations and pumping mains

2 Water

	Pipe sizes
	Approximate depth
	Minor connections to buildings, standpipes, etc.
	Water tower and storage tank capacities
	Pipe material

3 Gas

	Pipe sizes
	Approximate depth
	Storage tanks - outline and capacity
	Pipe material

4 Electricity

	Cable voltage: low or high
	Approximate depth

5 Telecommunications

	Number and sizes of duct
	Approximate depth
	Identification of ownership

6 Other services

	Heating (including ducts, cover and sump levels)
	Fuel pipelines
	Salt water mains
	Chilled water
	Steam
	Oxy-acetylene
	Propane
	Public address systems
	Alarm systems
	Computer cabling
	Compressed air
	Radio and TV relay cables and plant
	Other (specify)
	Pipe sizes, where applicable
	Approximate depth

7 Other underground utility features

	Service tunnels or ducts
	Reservoirs - outline and capacity
	Storage tanks - outline, capacity and content
	Other (specify)

8 Other - Special requirements or special areas .....

Annexe E - Building Features

This Annexe indicates the features which are usually shown at the scales of 1:100 and 1:50 for general building surveys.

At the larger scale more details can be shown and more detail can be plotted to true scale instead of conventionally. Those features whose plotted size is less than 1mm on the plan will be shown conventionally, if at all.

As a general rule structural detail and major partitions will be shown.

ONLY THE ITEMS INDICATED WITH A TICK WILL BE SURVEYED

(†) Features usually shown only at 1:50 scale.

1 Structure

	Beams
	Columns
	Doors
	(†) Roof structure
	(†) Under floor details - construction, depth only for r.c./similar
	Walls
	Windows
	Other (specify)

2 Fitting out

	(†) Cupboards
	(†) False ceiling
	(†) Fixed furniture
	Floor, wall and ceiling description
	Partitions
	(†) Planters
	Raised floor
	Window details
	Other (specify)

3 Levels

Heights should be: given from floor level / related to datum.

	Arch heights
	Beam soffits
	Ceiling heights
	Floor levels in corners
	Floor levels at centre of room and doorways
	Stairs, top and bottom
	Window and door heights
	Other (specify)

4 Services

Services information usually shown only at 1:50 scale.

	Fire equipment
	Inspection chambers
	Lights
	Pipework
	Plant
	Radiators
	Risers
	Service intakes
	WCs, sinks and basins
	Sprinklers
	Switches/sockets
	Other (specify)

5 Roof Plans

	Chimneys
	Drainage features
	Fire escapes, catwalks
	Parapets
	Plant and services
	Ridge lines
	Surface materials
	Vents
	Windows and skylights

6 Roof spaces

	(†) Ceiling joists - size, spacing and alignment
	Hatches
	(†) Services
	Tanks
	(†) Trusses - size, spacing and alignment

7 Sections

Sections are required at the locations shown on Client Drawing .....

	External building face shown in outline
	External building face shown in full detail
	Sections to show simple outline elevation of facing wall
	Principal heights
	Structural members

8 Elevations

Elevations are required at the locations shown on Client Drawing .....

	Elevations shown in outline only
	Elevations shown in full detail
	Balconies
	Chimneys
	Door and window reveals
	(†) Door and window sills and heads
	(†) Door and window detail
	Parapets
	Pipes
	Principal heights
	Roof details
	(†) Stonework/brickwork details
	String courses
	Indicate floor levels with broken lines

9 Other information

	Dimensions as indicated on Client key plan
	Main room dimensions
	Room areas
	Room volumes
	Other data (specify)

10 **Other** - Special requirements or special areas .....

Annexe F - Presentation of Final Plans

1 Drawing presentation

Surveyed information shall be presented on drawings and overlays in the following manner:

Feature	On detail Sheet	As Separate full-tone sheet	In full-tone On half-tone detail sheet	As an overlay
Heights/Levels				
Contours				
Trees				
Foul drainage				
Storm drainage				
Water				
Gas				
Electricity				
Telecommunications				
Other (specify)				

2 Grouping of services

	All services information on same drawing
	Services grouped on drawings (specify groupings)
	Each service on a separate drawing
	Drainage shown on a separate drawing
	Other (specify)

3 Schedules

	Building schedule giving number, construction, use and floors
	Inspection chamber schedule
	Trees, giving girth, spread, height, species etc.
	Survey report
	Other (specify)

Quickspec for Topographical and Measured Building Surveys

This quick reference Specification Sheet, summarising the full SCSI guidance (1:500 and larger), is intended for use on small or straightforward schemes and assumes that the first option clause (where appropriate) is used throughout. Margin numbers indicate the relevant main guidance sections or clauses.

The Client should tick the requirement(s) needed in each subject category. Where no item is selected for a particular category the Surveyor will assume that there is no requirement. Additional information, where necessary, should be provided in a covering letter.

If this Sheet does not provide adequate opportunity to specify the survey then the main guidance document should be used to prepare the Survey Specification. **Please read the User Guide carefully.**

Clause	Subject	Choices									
1.1	**Project Information**										
1.1.2	**Client**										
1.1.3	**Contact & Telephone**										
1.2	**Survey Extent**	Location plan attached		Textual description		Proposals plan		(Indicate items supplied by Client)			
1.3	**Scale(s) 1:**	50		100		200		500		Other	
2.1	**Plan Control Grid**	Based on ITM/IG grid*		Project grid based on ITM/IG		Project grid		Local grid			
2.2	**Level Datum**	GPS derived national datum		Project datum		Local datum					
2.3	**Detail Survey**	Boundaries		Outline		Full Detail		(see also Buildings, Section 4)			
2.4	**Trees**	Foliage Lines		Trunk over 0.15m dia.		All Trees					
2.5	**Height Information**	Spot Heights		Contour Interval		Road Spacing					
3	**Underground Services**	Cover Position		Cover level		Invert/Pipe Size					
4	**Buildings External**	Outline		Full		Footprint		Eaves/ Ridge		Elevations	
4.1	**Buildings Internal**	Ground Floor		All Floors		Roof		Sections			
5.1	**Plan Reproduction**	Final Drawings		Proof Plots		Survey Report					
5.2	**Digital Data**	Format									
5.6	**Computer Media**	Internet Download		Email attachment		Portable hard drive		Cd/DVD		Other	
	REMARKS										

* Combined Local Scale Factor applies