BRITISH STANDARD

BS 5964-2: 1996
ISO 4463-2: 1995

Building setting out and measurement —

Part 2: Measuring stations and targets

ICS 91.040

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee B/212, Tolerances, drawing practice, modular coordination, joints, project information and computer modelling, upon which the following bodies were represented:

Architects and Surveyors Institute
Association of Building Engineers
Association of County Councils
British Institute of Architectural Technologies
Building Employers' Confederation
Chartered Institute of Building
Chartered Institution of Building Services Engineers
Concrete Society
Department of the Environment (Building Research Establishment)
Institution of Civil Engineers
Institution of Structural Engineers
Local Authority Organizations
Royal Institute of British Architects
Royal Institution of Chartered Surveyors
Society of Chief Architects of Local Authorities

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

Brick Development Association
British Constructional Steelwork Association Ltd.

This British Standard, having been prepared under the direction of the Sector Board for Building and Civil Engineering, was published under the authority of the Standards Board and comes into effect on 15 September 1996

The following BSI references relate to the work on this standard:
Committee reference B/212
Draft for comment 91/12503 DC

ISBN 0 580 26304 5

Amendments issued since publication

Amd. No.	Date	Comments

Contents

National foreword

This Part of BS 5964 is identical with ISO 4463:1995 *Measuring methods for building — Setting-out and measurement — Part 2: Measuring stations and targets,* published by the International Organization for Standardization (ISO). It provides advice and guidance on selection, site location and maintenance of measuring stations and targets, for all types of building construction.

The series of parts comprising BS 5964 provide guidance on the following aspects of setting out and measurement:

— *Part 1: Methods of measuring, planning and organization and acceptance criteria;*

— *Part 2: Measuring stations and targets;*

— *Part 3: Checklists for the procurement of surveys and measurement services.*

The parts are referred to in BS 5606:1990 *Guide to accuracy in building.*

Cross-references

Publication referred to	Corresponding British Standard
Normative	
ISO 4463-1:1989	*Building setting out and measurement* Part 1:1990 *Methods of measuring, planning and organization and acceptance criteria* (Identical)
Informative	
ISO 7078:1985	BS 6953:1988 *Glossary of terms for procedures for setting out, measuring and surveying in building construction (including guidance notes)* (Identical) BS 7307 *Building tolerances. Measurement of buildings and building products*
ISO 7976-1:1989	Part 1:1990 *Methods and instruments* (Identical)
ISO 7976-2:1989	Part 2:1989 *Position of measuring points* (Identical) BS 7334 *Measuring instruments for building construction. Methods for determining accuracy in use*
ISO 8322-1:1989	Part 1:1990 *Methods for determining accuracy in use: theory* (Identical)
ISO 8322-2:1989	Part 2:1990 *Methods for determining accuracy in use: measuring tapes* (Identical)
ISO 8322-3:1989	Part 3:1990 *Methods for determining accuracy in use: optical levelling instruments* (Identical)
ISO 8322-4:1991	Part 4:1992 *Methods for determining accuracy in use of theodolites* (Identical)
ISO 8322-5:1991	Part 5:1992 *Methods for determining accuracy in use of optical plumbing instruments* (Identical)
ISO 8322-6:1991	Part 6:1992 *Methods for determining accuracy in use of laser instruments* (Identical)
ISO 8322-7:1991	Part 7:1992 *Methods for determining accuracy in use of instruments when used for setting out* (Identical)

ISO 8322-8:1992	Part 8:1992 *Methods for determining accuracy in use of electronic distance-measuring instruments up to 150 m* (Identical)

The Technical Committee has reviewed the provisions of ISO 1803-1:1985, ISO 1803-2:1986 and ISO 4464:1980 to which normative reference is made in the text and has decided that they are acceptable for use in conjunction with this standard. A related standard to ISO 1803 is BS 6100 *Glossary of building and civil engineering terms* Subsection 1.5.1:1984 *Coordination of dimensions; tolerances and accuracy*.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 28, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

blank

1 Scope

This part of ISO 4463 deals with the progressive stages of establishing and marking measuring stations and targets on building sites. The aspects covered are planning, functional needs and maintenance.

This part of ISO 4463 applies to measuring stations and targets in all types of building construction.

Examples of different stations and targets and location plans are given in annex A.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 4463. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 4463 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of the IEC and ISO maintain registers of currently valid International Standards.

ISO 1803:—[1)], *Building construction — Expression of dimensional accuracy — Vocabulary.*

ISO 4463-1:1989, *Measurement methods for building — Setting-out and measurement — Part 1: Planning and organization, measuring procedures, acceptance criteria.*

3 Definitions

For the purposes of this part of ISO 4463, the definitions given in ISO 1803 and ISO 4463-1 apply.

4 General

Stations and targets are the basis of all setting-out and measuring procedures. It is important that the locations of stations and targets are properly planned and constructed to meet their functional requirements throughout the building process. The requirements include the need for stability, accessibility and clear lines of sight throughout their useful life, wherever possible.

The type, quality and permanence of stations and targets depend on the particular project requirements in relation to the various categories of setting-out and measurement described in ISO 4463-1.

Planning and maintenance of stations and targets are essential to ensure reliable results.

5 Planning

5.1 Location

The locations of the stations and targets should be chosen to meet the requirements and conditions of the particular construction site. These may depend on:

a) the type of construction and complexity;

b) the availability and suitability of the proposed locations for the stations and targets;

c) the intended locations of the site offices, stores and site construction roads;

d) the locations of underground utilities;

e) the ground conditions;

f) the period for which each station and target is required.

During the relevant stages of construction, it is important to keep essential lines of sight between stations and targets clear of all obstructions to enable the setting-out and subsequent check and compliance measurements to be made.

Stations should have easy access and sufficient working space to allow free movement around the point.

5.2 Approvals

Before establishing stations and targets outside the site, permission may be required from the adjacent property owner. Before establishing stations and targets on the construction site, it is recommended that the site manager is in agreement with the proposed locations. Each location should be indicated on both the site plan and the appropriate location plan.

5.3 Programme

A programme giving the time schedules for the establishment of the stations and targets should be prepared, which takes into account the construction schedule, the ground conditions, the accessibility to the building site and its location.

This programme should, wherever possible, include sufficient time to allow for relevant settlement and shrinkage to take place before the primary stations are used for measurement purposes.

[1)] To be published. (Revision of ISO 1803-1:1985, ISO 1803-2:1986 and ISO 4464:1980).

6 Functional needs of stations and targets

6.1 Stability and durability

On the site there are many risks to the stability of measuring points, such as disturbance from site traffic and works, settlement in the ground due to proximity of excavation, blasting, load from heavy foundations and vibrations from traffic.

When constructing stations and targets, their design and materials should fulfil the needs of stability and durability. Examples of stations and targets are given in annex A.

6.2 Protection

Appropriate actions should be taken to protect stations and targets in vulnerable locations from disturbance by providing physical barriers such as posts and guard rails. Visual warnings such as buntings or painted rails should be provided.

Wall targets outside the site should be placed out of reach from the ground level.

6.3 Marking

Stations and targets should have distinct and unambiguous marks. For a specific site, all stations and targets should have unique referencing. These should be indicated on the location plan.

6.4 Station and target description

All important stations and targets should be described so that they can be located easily.

For each of these stations or targets, a description should be given that provides the following information:

a) location sketch indicating the position of the station or target in relation to an easily recognizable permanent feature or features (witness marks);

b) identity reference;

c) whether it concerns a station, target or bench-mark;

d) form of construction;

e) coordinates or level value, as appropriate;

f) date.

Examples of descriptions for a station and a bench-mark are given in Figure 1.

a)

Date: *1988-05-12*

POINT DESCRIPTION X: 1 852,260 Y: 376,458 Z:

Project: *ABC Motor Works, Oldtown, LC Constr. Co.* Page: *1*

Point reference: *3* Type: *Primary*

ID-text: *PP3 LC*

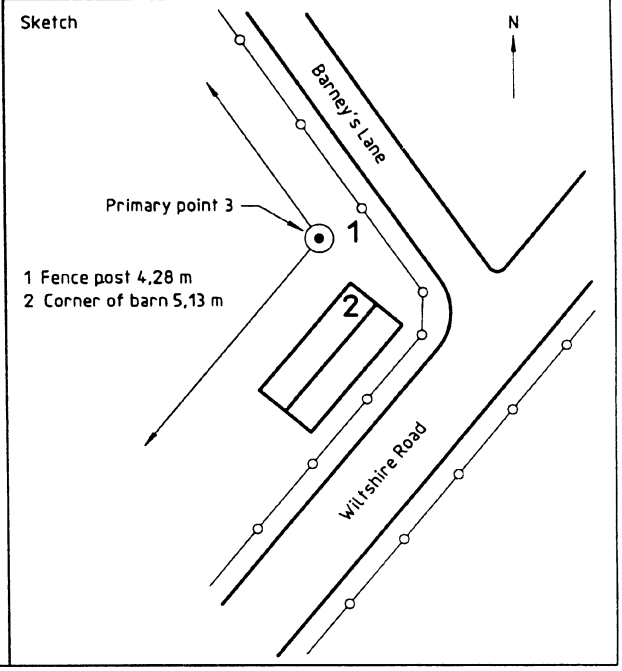
Recognition signs: *See points 1-2 on sketch*

Witness marks: *Do not exist*

Coordinates: *See computer printout 1988-05-31, local coordinates*

Notes: *Steel pipe with ID-collar in earth-bound stone*

Drawn up by: *TR*



b)

Date: *1988-05-30*

POINT DESCRIPTION X: Y: Z: +18,258

Project: *Forsyth Brokers, Newtown, LC Constr. Co.* Page: *2*

Point reference: *12* Type: *BM*

ID-text: *BM12 LC*

Recognition signs: *See points 1-2 on sketch*

Witness marks: *Do not exist (Master Benchmark on 54 Curzon Cr.)*

Coordinates: *+18,258 m in Newtown local height system*

Notes: *Steel stud with ID-collar in building foundation*

Drawn up by: *TR*

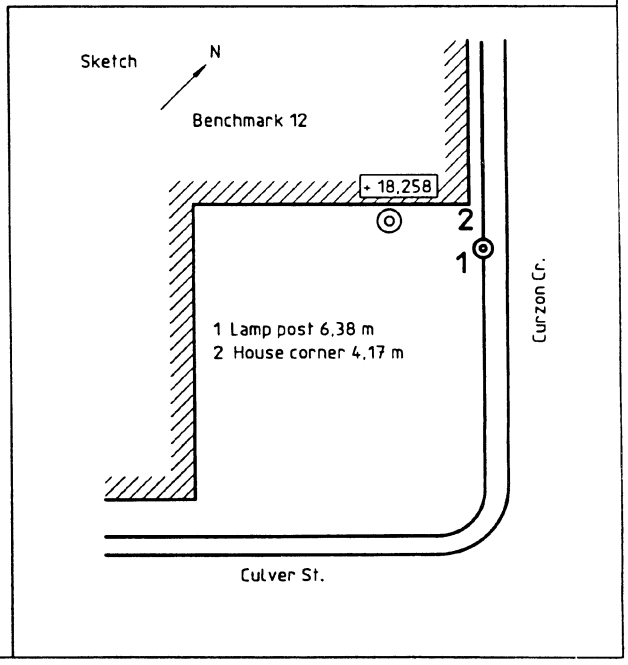


Figure 1 — Examples of forms for point description

7 Maintenance

7.1 Visual

The first stage of inspection is to look for any visible indication of changed status; i.e. damage, movement or instability of a station or target.

7.2 By measurement

An inspection by measurement should be made when the integrity of the station or target appears to have been disturbed, or at the time of handing over the responsibilities for the established setting-out system.

When the inspection reveals that the existing station or target is not valid or is unstable, wherever possible, correct location of the station or target should be reinstated or an alternative station or target established in a stable location.

An up-to-date record should be kept of any changed status, or re-instatements, or of new positions of stations and targets

Annex A (informative)
Examples of stations and targets

A.1 This annex gives examples of measuring stations and targets (Figure A.1 to Figure A.18) and an example of measuring points and targets (Figure A.19). It includes a Guide (Table A.1) which is subdivided according to the main uses of the stations and targets.

This annex also includes two examples of a location plan of stations and targets (Figure A.20 and Figure A.21) and a list of symbols to be used on location plans (Table A.2).

A.2 The duration of stations and targets varies greatly for particular stations and targets on specific sites, but is in general assumed to be the following:

a) short term: up to 1 month;

b) medium term: up to 1 year;

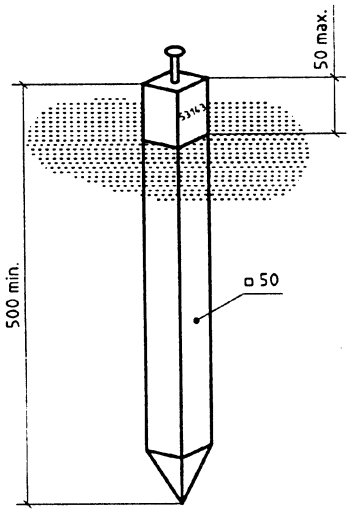
c) long term: at least for the duration of the building project.

Table A.1 — Guide to facilitate the use of annex A

Example No.		Detail points	Targets	Markers	Point protection	Location plan of stations and targets
Primary points	Secondary points					
		1				
2	2					
3 BM						
4	4 BM					
5 BM						
6	6	6				
	7			7		
	8 BM					
			9			
10				10		
	11					
		12	12			
13 BM				13		
14 BM	14 BM					
15 BM						
16 BM						
					17	
					18	
19			19			
						20
						21

BM = benchmark
The numbers refer to Figure A.1 to Figure A.21.

Dimensions in millimetres



Type: Wooden peg.

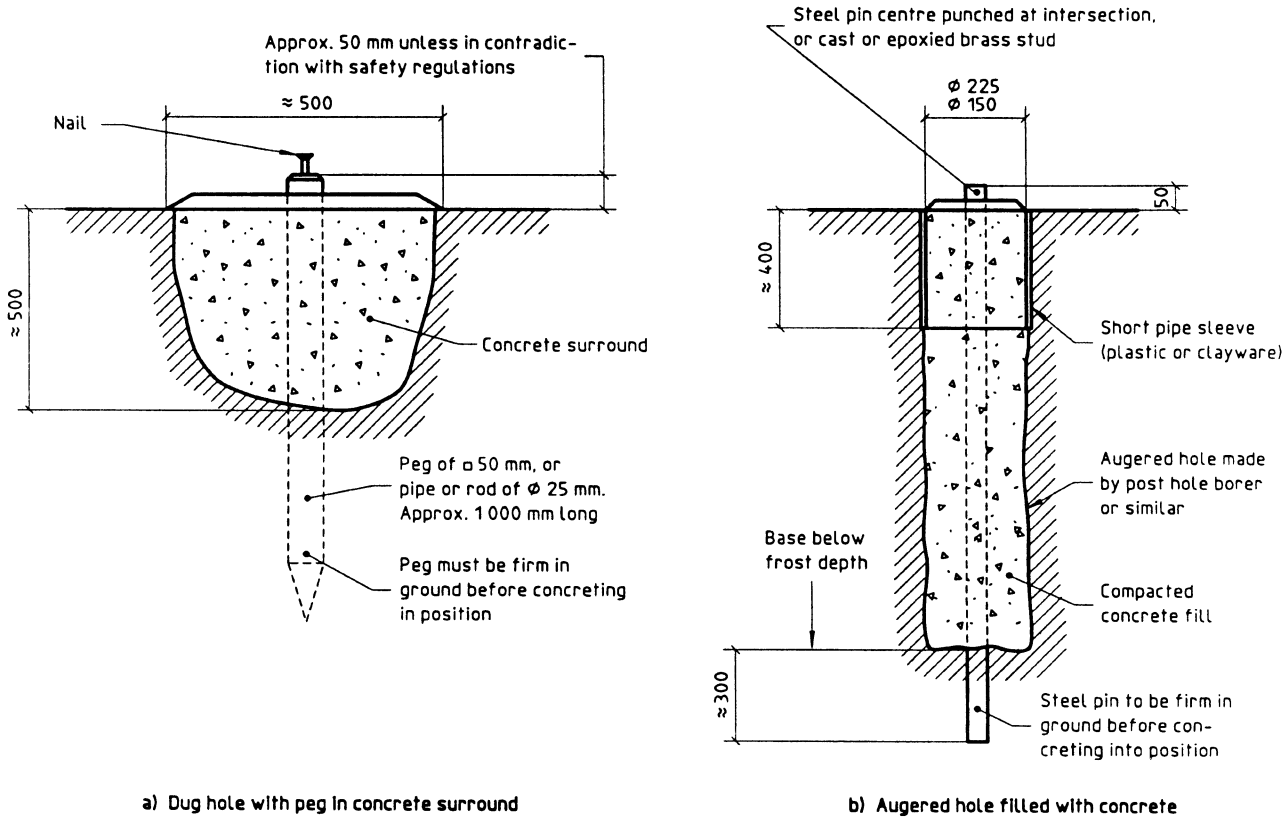
Main uses: Corner points, earthworks, street kerbs.

Duration: Short term.

Precautions: May not be suitable where frost heave can occur.

Figure A.1 — Stations and targets: Example 1

Dimensions in millimetres



Type: *In-situ* cast concrete block in dug or augered hole.

Main uses: Primary and secondary points within boundary of site.

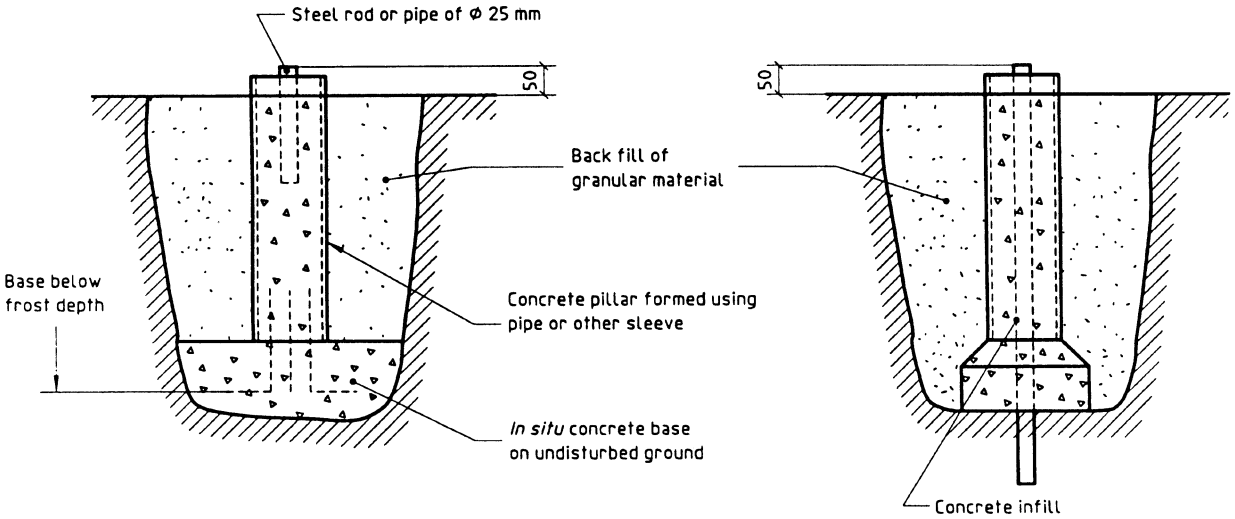
Duration: Type a): medium term;
Type b): long term.

Precautions: To be positioned so as not to be affected by site traffic or operations.

NOTE — Type a) is not suitable for areas with frost heave.

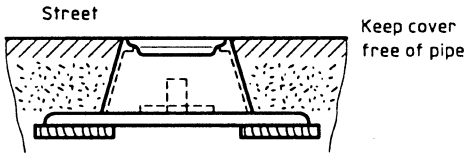
Figure A.2 — Stations and targets: Example 2

Dimensions in millimetres



a) Concrete pillar on concrete base

b) Concrete pillar using pipe sleeve with rod driven into undisturbed ground



c) Example of protection for station below ground level [applies to both alternatives a) and b)]

Type: *In situ* pillar using pipe or other sleeve.

Main uses: Primary points and benchmarks. (The material can usually be obtained on site.)

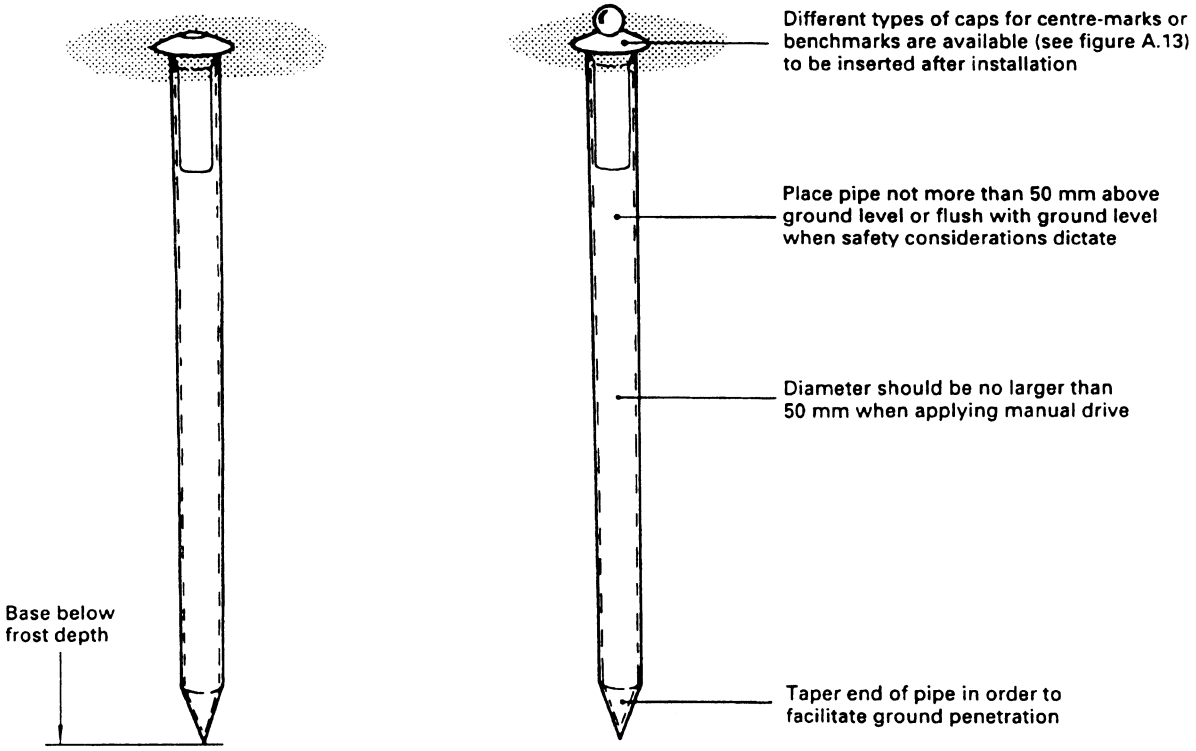
Duration: Long term.

Precautions: Should be well marked and protected from vehicle/machinery damage.

NOTES

1 Suits most ground conditions even where frost heave can occur.
2 See figure A.13 for example of marker in upper end of steel.
3 See figures A.17 and A.18 for examples of station protection.

Figure A.3 — Stations and targets: Example 3



Type: Driven pipe.

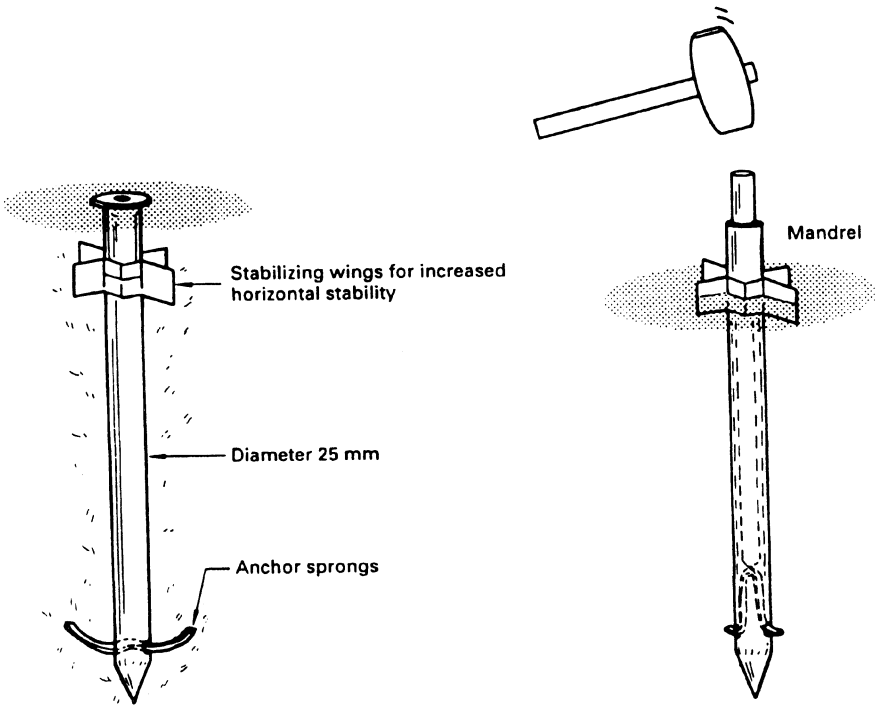
Main uses: Primary and secondary points or secondary benchmarks.

Duration: Long term.

Precautions: For depths larger than 1 m, use a post hole digger or pipe with multiple sections and ensure connections are tight.
Use driving adapter or "dead-blow" hammer to prevent damage on top of pipe.

NOTES
1 Suits ground conditions where frost heave can occur.
2 Steel pipe from site or pipe makers are commercially available.

Figure A.4 — Stations and targets: Example 4



Construction

Drive down pipe to about 100 mm above desired depth (at least the frost depth). Push out the anchor sprongs with mandrel. Drive pipe down over the remaining 100 mm of the desired depth. Remove mandrel and insert marker or benchmark stud.

Type: Pipe with anchor sprongs and stabilizing wings.

Main uses: Primary points and benchmarks, especially for long-term projects and/or in areas with frost heave.

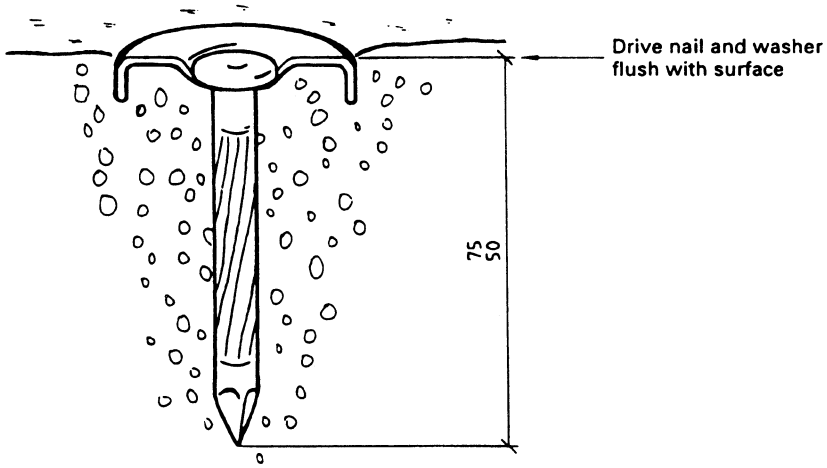
Duration: Long term.

Precautions: In stony ground, use hard steel points and drill the first 0,5 m of the desired depth with post-hole digger.

NOTES
1 Several types are commercially available .
2 See figure A.13 for example of marker.
3 See figures A.17 and A.18 for examples of station protection.

Figure A.5 — Stations and targets: Example 5

Dimensions in millimetres



Type: Nail and identification washer.

Main uses: Auxiliary points or, when necessary, primary or secondary points.

Duration: Medium term.

Precautions: Surround nail with paint for easy identification. Enquire whether the area is to be resurfaced in the near future.

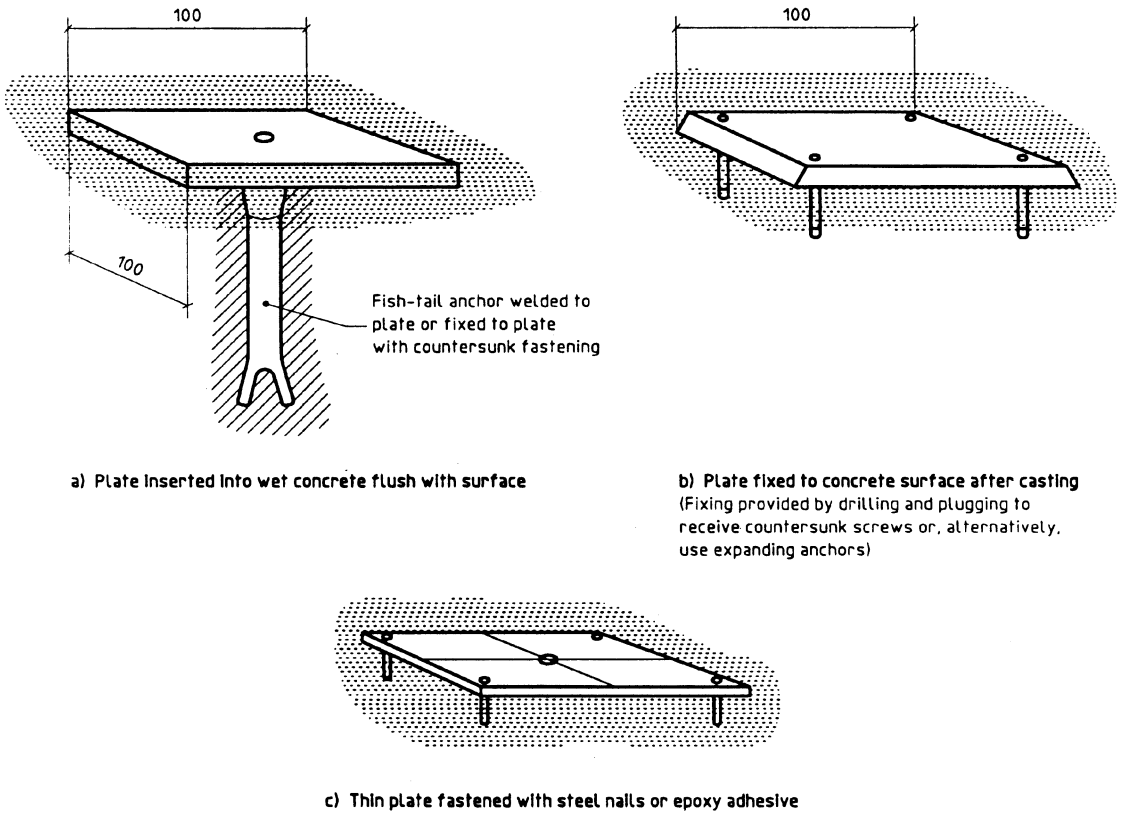
NOTES

1 Used in asphalt or tarmac surfaces.

2 Several types are commercially available.

Figure A.6 — Stations and targets: Example 6

Dimensions in millimetres



a) Plate inserted into wet concrete flush with surface

b) Plate fixed to concrete surface after casting
(Fixing provided by drilling and plugging to receive countersunk screws or, alternatively, use expanding anchors)

c) Thin plate fastened with steel nails or epoxy adhesive

Type: Steel plate in concrete (e.g. concrete slab).

Main uses: Marking secondary points (e.g. mark drilled, punched or scratched in the plate) for further setting-out and/or compliance measurements at a later stage.

Duration: Medium term to long term.

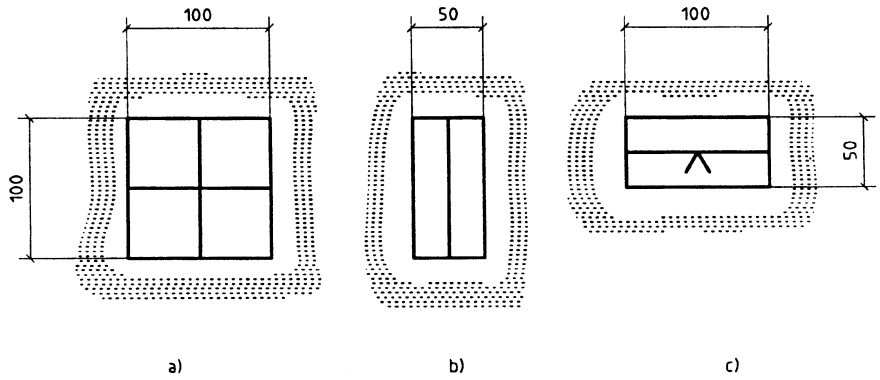
Precautions: Type a): Top of plate should be flush with surface of concrete.

Type b): If plate is fixed to concrete surface after casting, plate edges should be tapered to prevent people tripping.

Also check safety regulations on site.

Figure A.7 — Stations and targets: Example 7

Dimensions in millimetres



Type: Painted marks with pencil lines, on floors and walls.

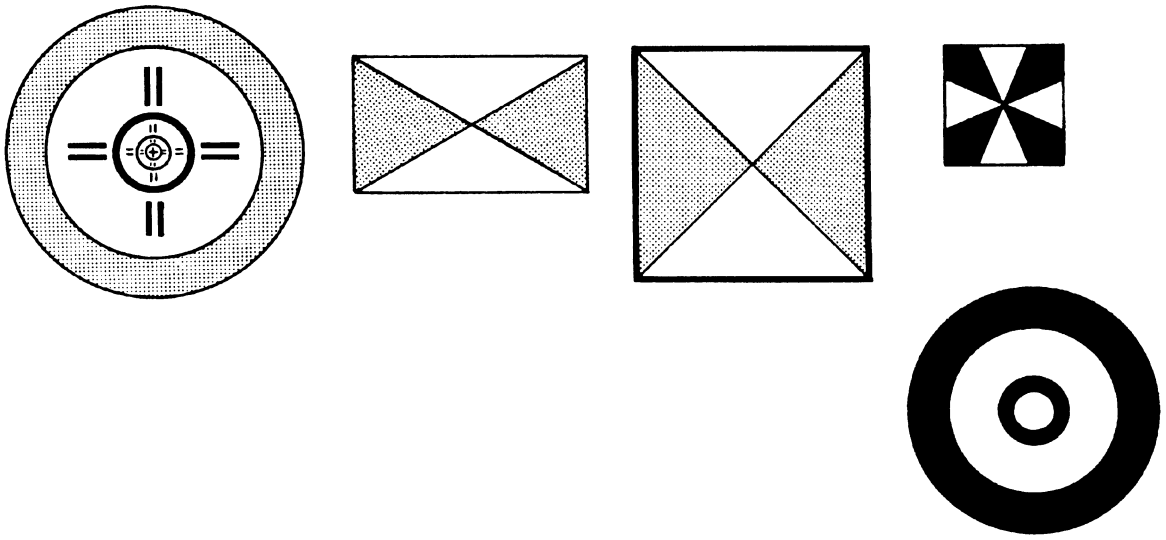
Main uses: Type a): grid points and plumbing points.
Type b): secondary points.
Type c): benchmarks.

Duration: Short term.

Precautions: Paint marks or wax crayons should not be used on finished elements of work.
Instead of painted marks, adhesive labels can be used, see figure A.9.

NOTE — To promote accurate sighting, the thickness of the pencil lines should not exceed 0,5 mm for sighting distances up to 50 m, and 1 mm for 100 m.

Figure A.8 — Stations and targets: Example 8



Minimum dimensions for primary points: 200 mm
Minimum dimensions for secondary points: 100 mm

Apply high-contrast colours (e.g. white, black, yellow and red)

Type: Wall targets, elevated targets, aiming targets.

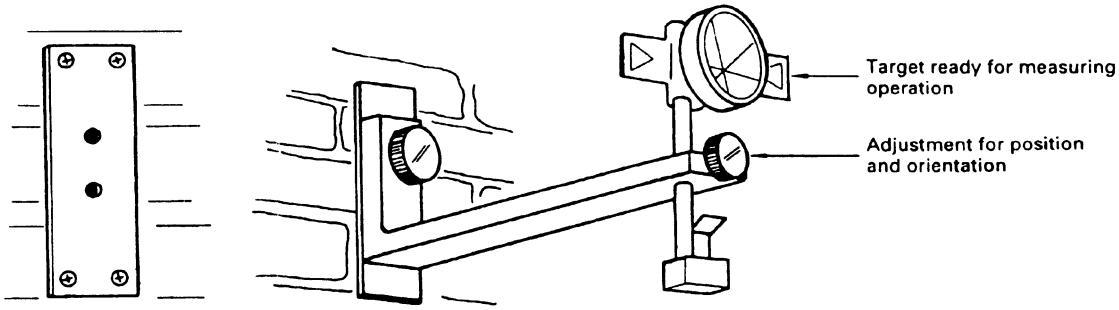
Main uses: Combined measuring point and aiming target.

Duration: Medium term.

Precautions: Surfaces shall be smooth to avoid aiming errors due to asymmetrical reflections from illumination sources. This can be the case with targets painted by hand on walls or thin self-adhesive targets.
Level target before final fixing of position.
Screw fixing should be used.

NOTES
1 Various types are commercially available.
2 When used in conjunction with EDM, the target should be suitable for the particular equipment used.

Figure A.9 — Stations and targets: Example 9



Type: Detachable wall-mounted target.

Main uses: Primary points, especially when site operations do not allow other markers, or when coverage of ground points by ice and snow is expected.

Duration: Long term.

Precautions: Height above ground should be about 2 m to ensure clear lines of sight.

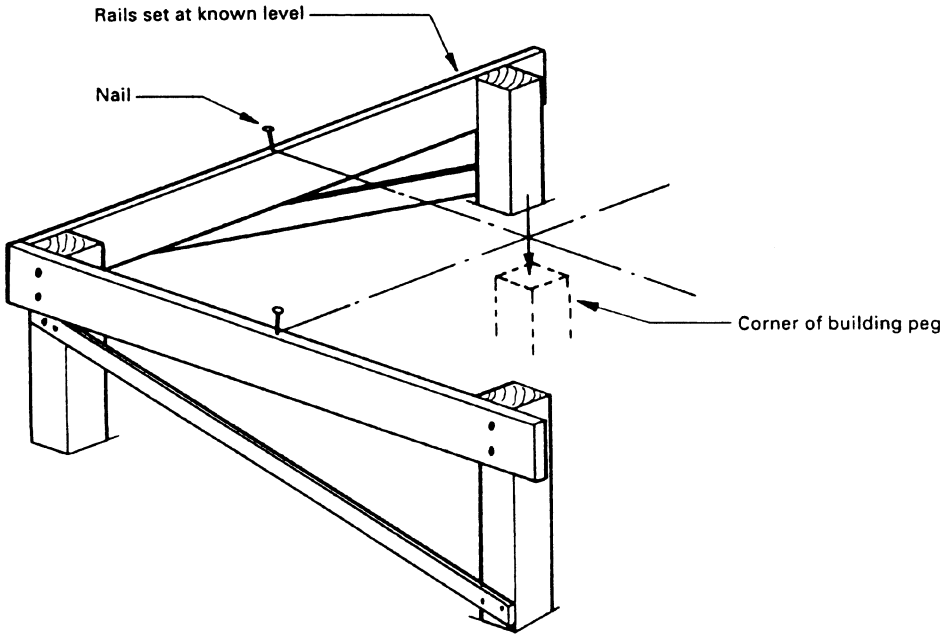
When using several brackets, make sure their dimensions are consistent Avoid buildings which are likely to be subject to deformation.

Obtain permission from the building owner.

When necessary, drill out the slots of the screws so that removal of the plate will be difficult.

NOTE — The coordinate point is not the hole in the wallplate but the centre of the target after levelling the bull's eye.

Figure A.10 — Stations and targets: Example 10



Type: Corner profile.

Main uses: Marking building line, wall faces from corner points.

Duration: Short term.

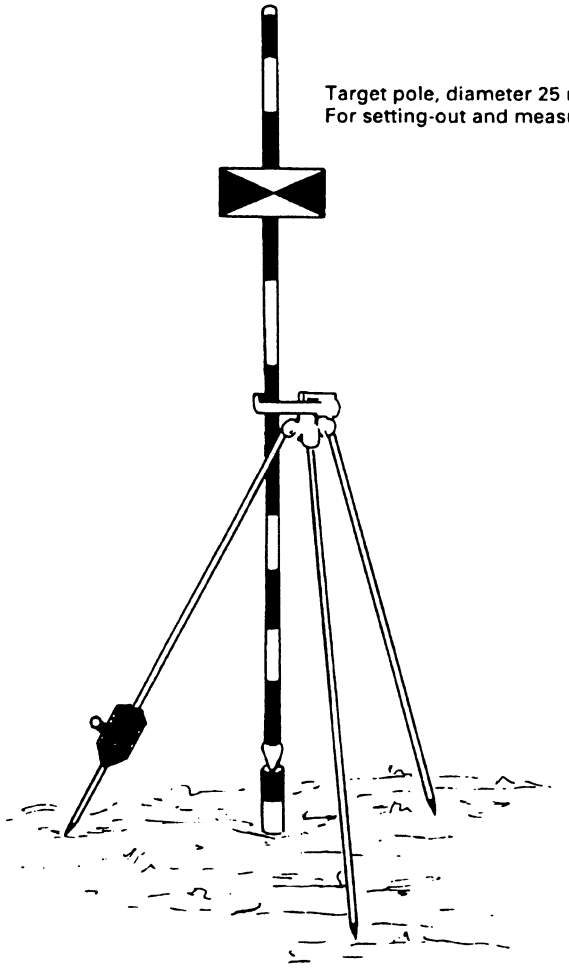
Precautions: Place profiles so that they will not be disturbed by subsequent excavation and will not obscure visibility.

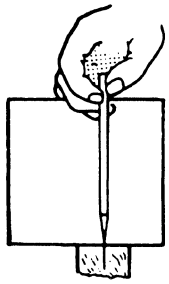
NOTES

1 Rails should be horizontal and approximately at right angles to the line to be marked.

2 Allowance should be made for excavation work.

Figure A.11 — Stations and targets: Example 11





Fine nails and pencil points can be used for distances up to 40 m

Type: Range rods, target poles, nails and pencil points.

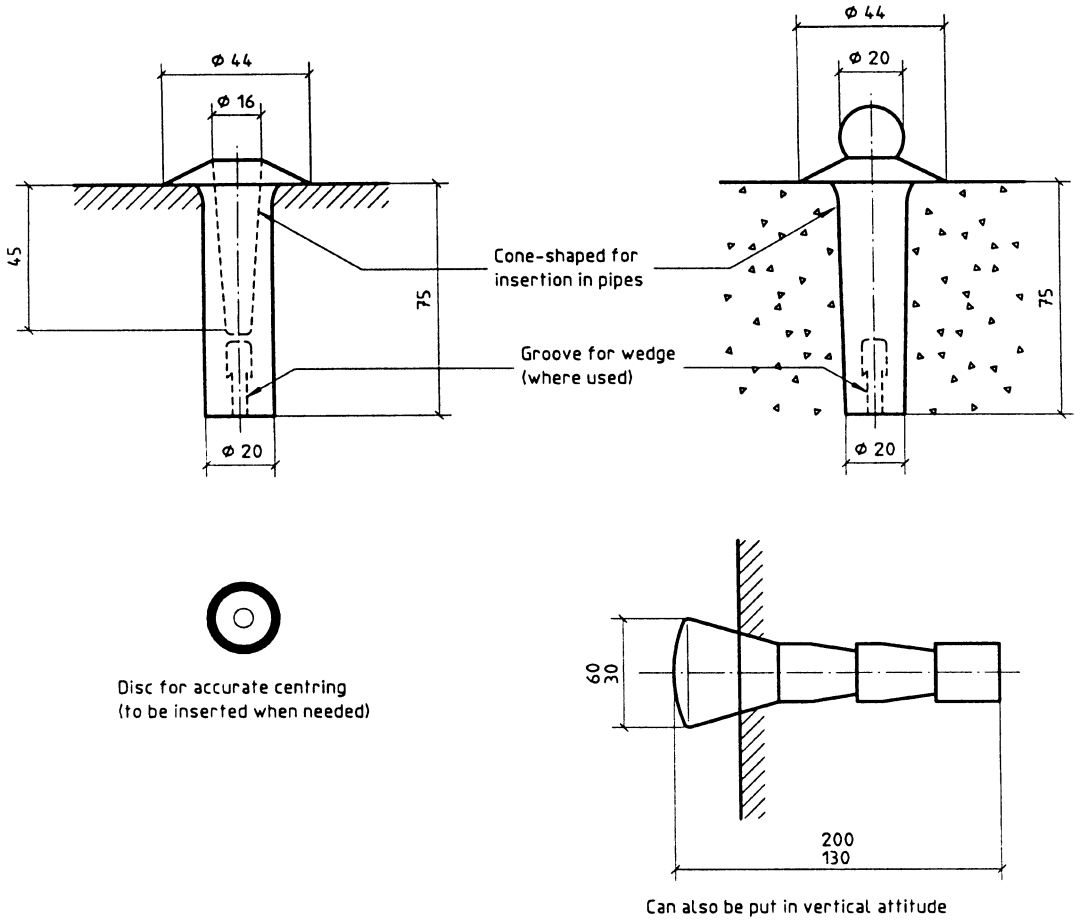
Main uses: To facilitate measurements between instrument and ground marks.

Duration: Short term.

Precautions: For rods and poles, steel shoes should fit in pipes or studs used on site.
Check verticality (e.g. with bull's eye level).
Deviation from straightness should be no more than 4 mm.
Use rods with fluorescent paint.

Figure A.12 — Stations and targets: Example 12

Dimensions in millimetres



Type: Metal markers and studs.

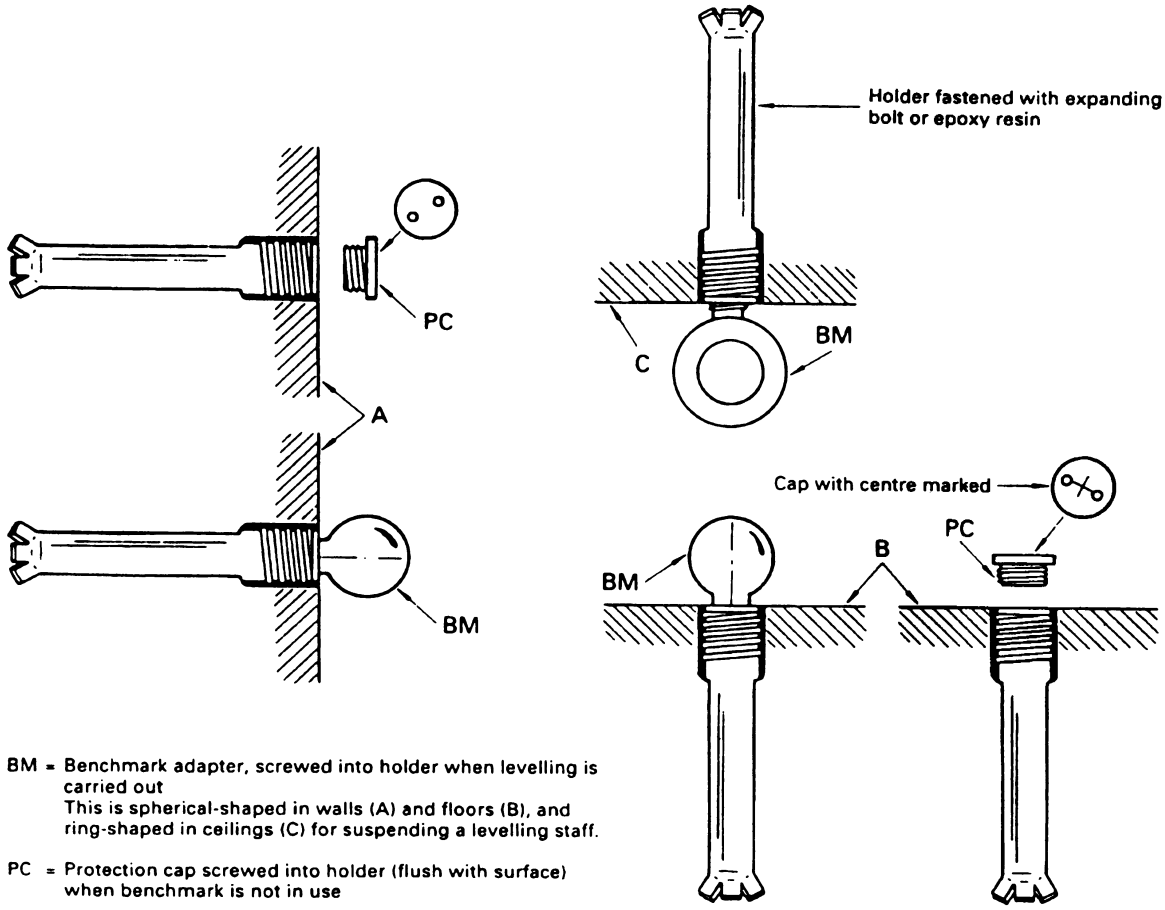
Main uses: Primary points and benchmarks.

Duration: Long term.

Precautions: Make sure there is tight contact between the collar of the marker and the material in which it is inserted. For accurate centring of instrument, insert centring adapter in marker.

NOTE — To be used directly in bedrock, concrete, masonry or on a steel pipe (see figures A.3 to A.5).

Figure A.13 — Stations and targets: Example 13



BM = Benchmark adapter, screwed into holder when levelling is carried out
This is spherical-shaped in walls (A) and floors (B), and ring-shaped in ceilings (C) for suspending a levelling staff.

PC = Protection cap screwed into holder (flush with surface) when benchmark is not in use

Type: Benchmarks.

Main uses: Primary and secondary benchmarks in areas where heavy site actions are going on or where other types of benchmarks might be damaged or might cause injury.

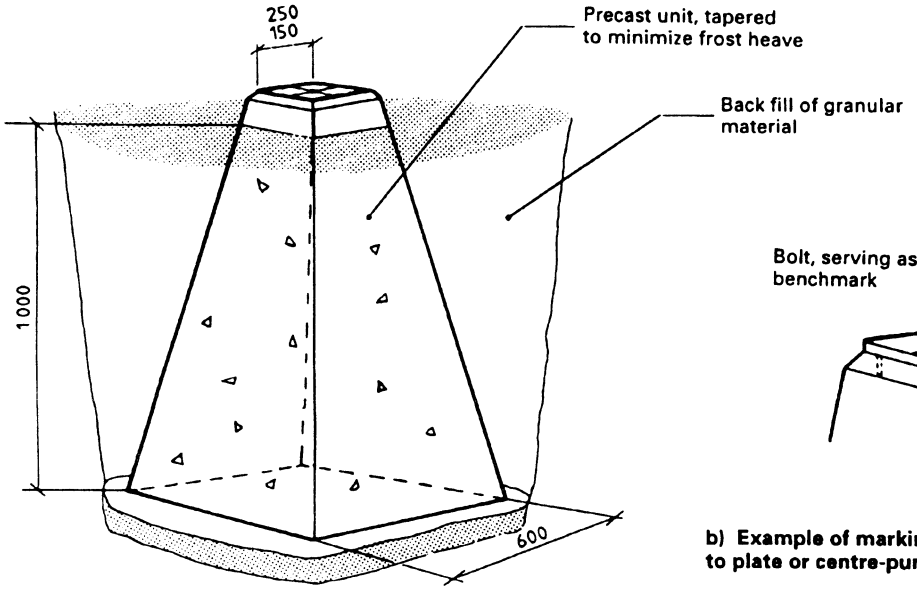
Duration: Long term.

Precautions: Primary benchmarks are not to be placed in locations subject to settlement.
Select location so that projecting building parts do not prevent the levelling staff from being held vertically.
Screw on protection cap immediately after use to protect the threads in the holder from damage.

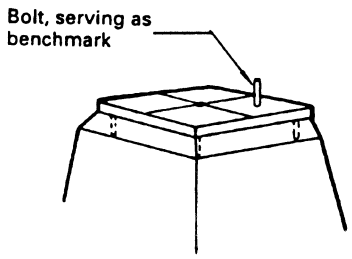
NOTE — Various types are commercially available.

Figure A.14 — Stations and targets: Example 14

Dimensions in millimetres



a) **Bedded on mortar or sand**



b) **Example of marking: Intersection lines scribed on to plate or centre-punched mark or drilled hole**

Type: Precast concrete block (with or without top metal plate).

Main uses: Primary points and benchmarks.

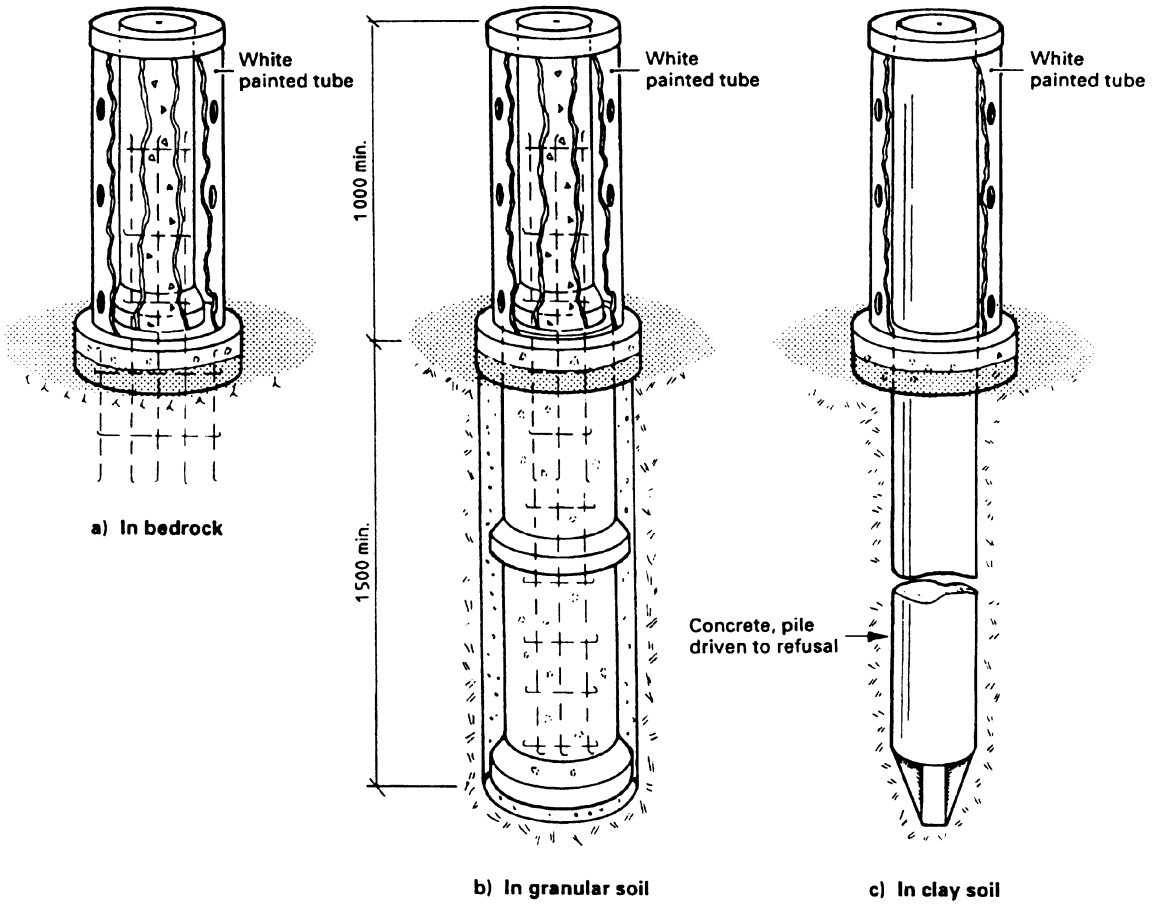
Duration: Long term.

Precautions: Very heavy; will need mechanical handling.
Bedding for precast block needs to be carefully prepared.

NOTES
1 Suits ground conditions where frost heave can occur.
2 In some countries, these types are used for marking boundaries of properties and are, as such, commercially available.
3 Seldom used on building sites.

Figure A.15 — Stations and targets: Example 15

Dimensions in millimetres



Type: Observation pillar.

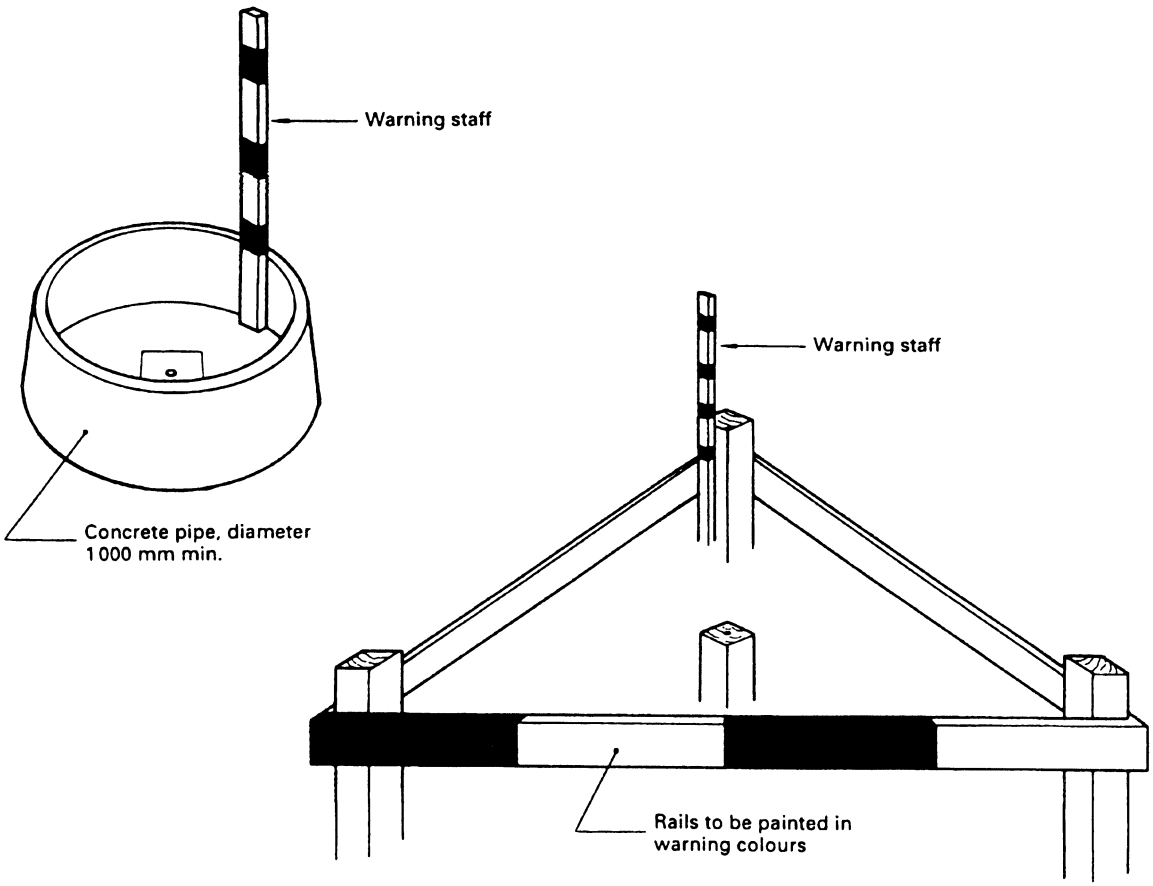
Main uses: Primary points for long-term projects (setting-out and deformation measurements).

Duration: Long term.

Precautions: To be located so as to avoid site traffic.
Provide station protection (see note on figure A.17).

NOTE — Can also be provided with benchmark.

Figure A.16 — Stations and targets: Example 16



Type: Station protection.

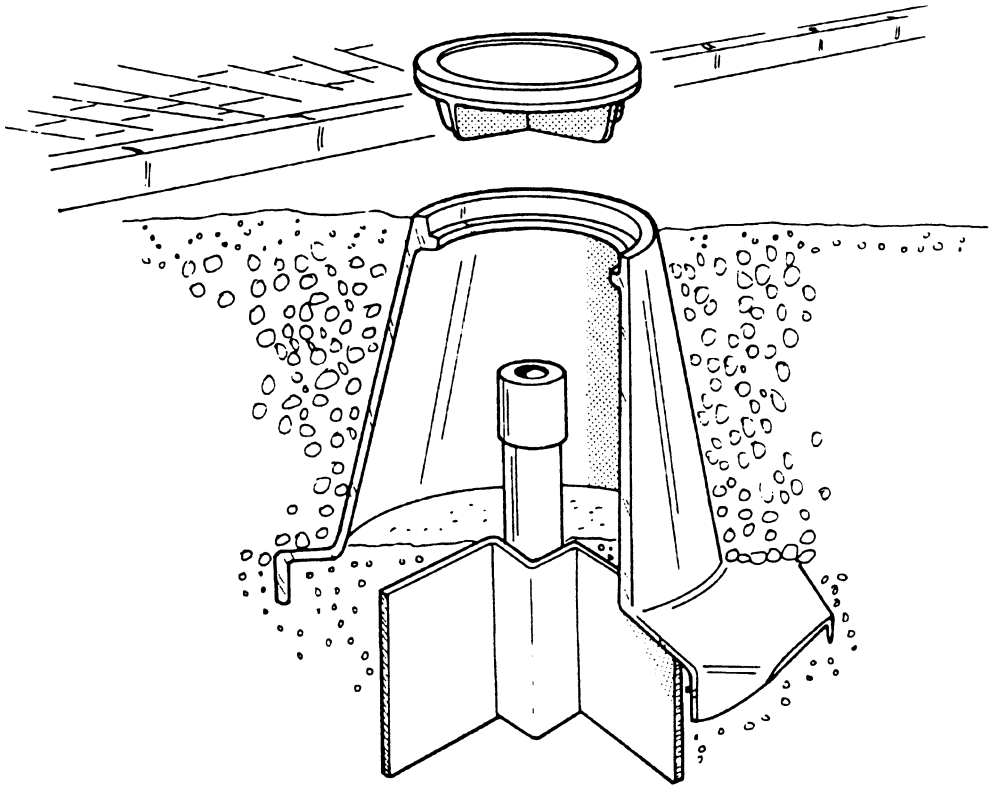
Main uses: To protect measuring points and benchmarks.

Duration: Medium term.

Precautions: Inside area should be large enough to allow instrument to be set up where possible.
One side should be easily removable for access to instrument and to provide more room to work.

NOTE — In particularly hazardous positions, the guard rails and posts should be replaced by scaffolding to give greater protection.

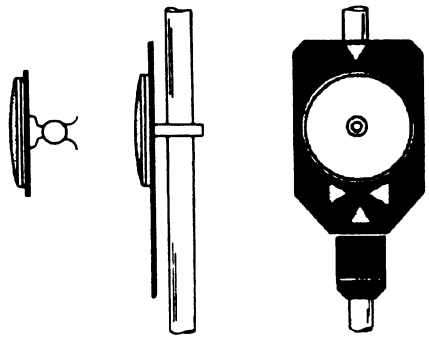
Figure A.17 — Stations and targets: Example 17



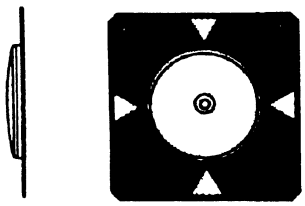
Type: Station protection.

Main uses: To protect measuring points marked below surface.
Duration: Long term.
Precautions: Enquire whether area will be resurfaced in near future.

Figure A.18 — Stations and targets: Example 18



a) Plastic reflector and aiming target with clip to be fastened onto measuring rod



b) Plastic reflector and aiming target to be mounted on wall, usually fastened with screws

Type: Short-range reflector, usually made of plastic materials.

Main uses: As reflector (and target) on rod for polar setting-out.
As permanent wall-mounted target in primary nets.

Duration: Medium term.

Precautions: To be checked, together with a particular EDM instrument, for measuring range, accuracy at right angle to the line of sight, and possible loss of accuracy at other angles of incidence.

Additional information: Testing procedure is given in ISO 8322-10.
If the manufacturer of the EDM instrument recommends a certain type of short-range reflector, the testing will be simplified.

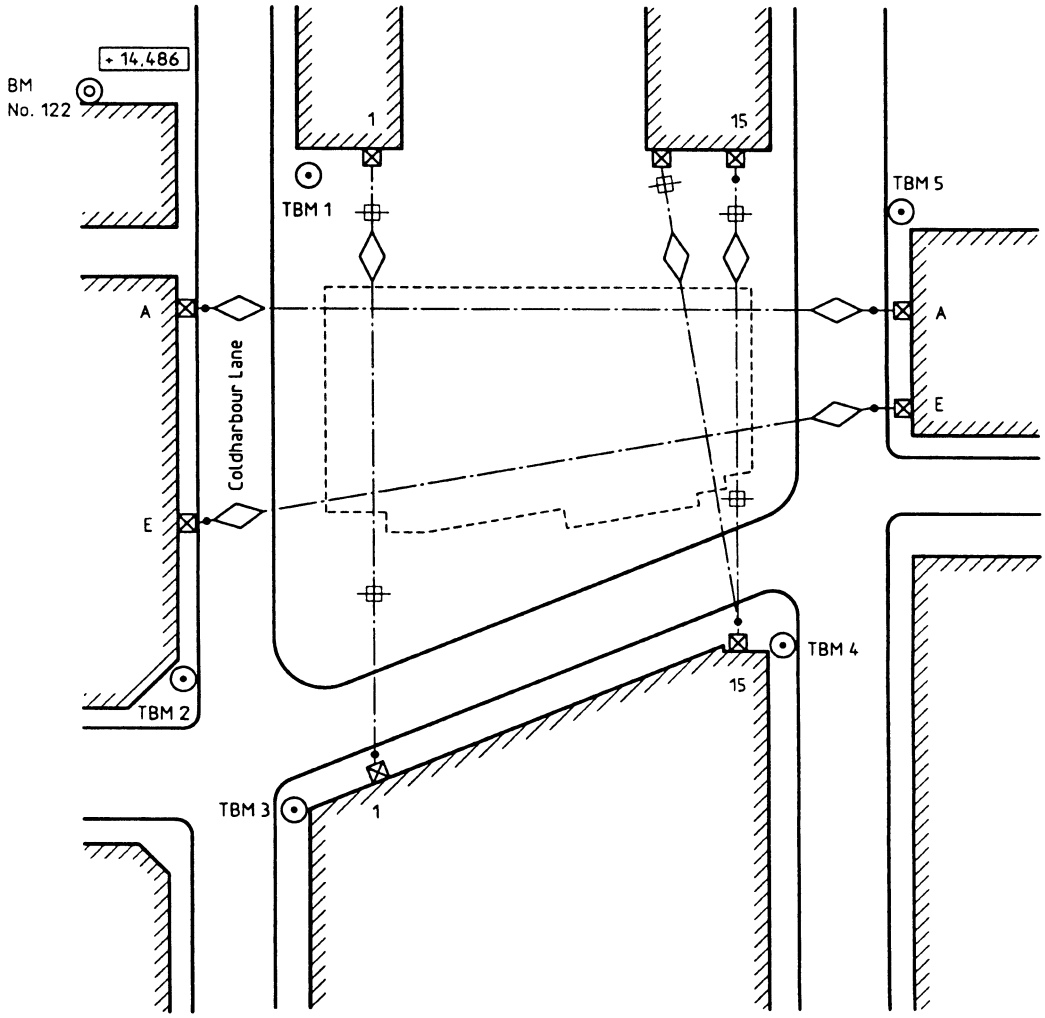
NOTE — Design of aiming targets may vary to suit different EDM designs.

Figure A.19 — Measuring points and targets: Example 19

A.3 The setting-out plan is an important requirement to ensure that there is a record of how stations and targets are located for reference and checking.

Two alternative examples, Figure A.20 and Figure A.21, illustrate two different principles.

Figure A.20 shows a grid system. Setting-out is performed from certain fixed points and lines and preferably only certain predetermined points and lines are set-out.



Key

◎	Primary benchmark
⊙	Temporary benchmark
⌖	Peg set in concrete (instrument station)
•	Nail
⊠	Elevated target

NOTES

1 All site levels related to benchmark BM No. 122 Coldharbour Lane.

2 Site levels are TMBs 1 to 5.

3 Grids No. 1 to 15 and A to E.

4 For symbols, see table A.2.

Figure A.20 — Example of a setting-out plan (grid system)

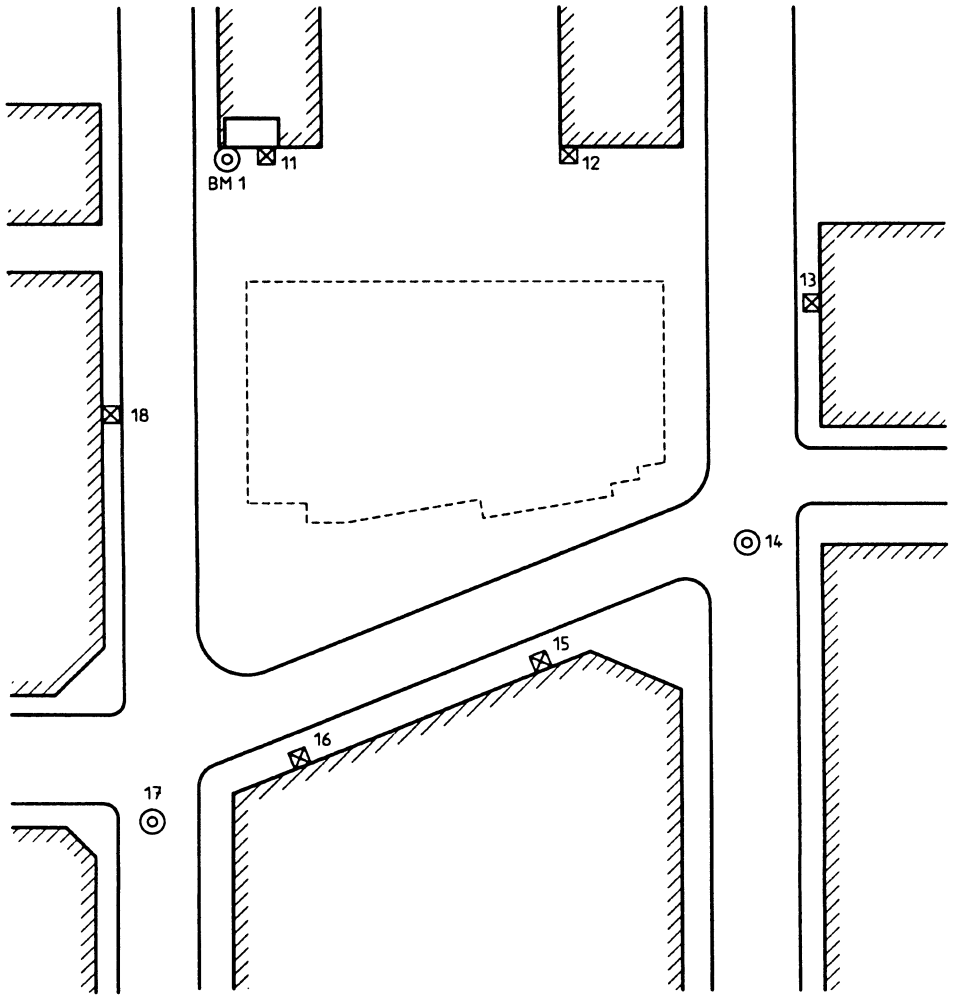
Figure A.21 shows a coordinated system with the following features:

a) a coordinate system, orientated on the main axes of the building;

b) the building is dimensioned in such a way that the coordinates in the local system of parts of the building are readily accessible;

c) use of the method of free station points.

This alternative (Figure A.21) provides greater flexibility, and its advantages increase with increases in the size and complexity of the building.



NOTES

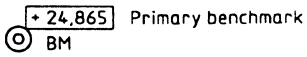
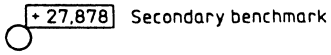
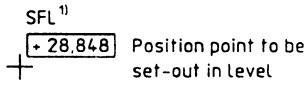
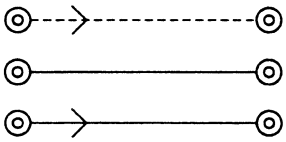
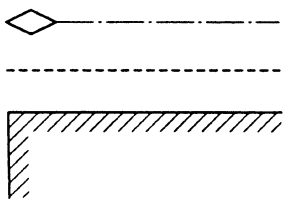
1 BM 1 is an existing benchmark.

2 Primary points numbers 14 and 17 are existing municipal measuring stations; primary points numbers 11, 12, 13, 15, 16 and 18 are specially established elevated targets.

3 For symbols, see table A.2.

Figure A.21 — Example of a setting-out plan (coordinated system)

Table A.2 — Symbols used in Figure A.20 and Figure A.21: Coordinate stations and targets

Triangulation points		Connecting point with site system Other triangulation point	
Primary points		At ground level Elevated targets	EXAMPLE 
Secondary points		Inside or outside the building Intended for plumbing	EXAMPLE 
Position points		Point at ground or floor level	EXAMPLE 
Primary line		Direction Distance Direction and Distance	
Secondary line **Position line** **Outline of existing building**			

1) SFL = structural floor level

Annex B (informative)
Bibliography

[1] ISO 7077:1981, *Measuring methods for building — General principles and procedures for the verification of dimensional compliance.*

[2] ISO 7078:1985, *Building construction — Procedures for setting-out, measurement and surveying — Vocabulary and guidance notes.*

[3] ISO 7976-1:1989, *Tolerances for building — Methods of measurement of buildings and building products — Part 1: Methods, instruments and accuracy.*

[4] ISO 7976-2:1989, *Tolerances for building — Methods of measurement of buildings and building products — Part 2: Position of measuring points.*

[5] ISO 8322-1:1989, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 1: Theory.*

[6] ISO 8322-2:1989, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 2: Measuring tapes.*

[7] ISO 8322-3:1989, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 3: Optical levelling instruments.*

[8] ISO 8322-4:1991, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 4: Theodolites.*

[9] ISO 8322-5:1991, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 5: Optical plumbing instruments.*

[10] ISO 8322-6:1991, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 6: Laser instruments.*

[10] ISO 8322-7:1991, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 7: Instruments when used for setting-out.*

[12] ISO 8322-8:1992, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 8: Electro-optical distance-measuring instruments up to 150 m.*

[13] ISO 8322-10:1995, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 10: Distance between non-glass reflectors and electronic distance-measuring prisms (traditional glass prisms) for distances up to 150 m.*

List of references

See national foreword.

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL