5.1 - General

A network of reliable survey marks is the corner stone of survey co-ordination, and will remain so for many years to come.

The placement and preservation of Permanent Marks and other substantial survey marks is an essential ingredient in the maintenance of the State survey system.

Surveyors should encourage greater community awareness of the very considerable investment made in placing, co-ordinating and/or heighting these marks, and in particular, the benefits to be derived from the preservation of these widespread public assets.

Survey marks, apart from the traditional wooden peg, have taken a variety of forms over the years. These include but are not restricted to:

- blazed trees
- arrowheads cut in rock
- plaques and tablets, cast in various metals and set in concrete
- Standard Survey Marks
- metal tubing
- metal pipes and rods set in concrete or driven to refusal in the ground
- high tensile drive nails
- other nails, spikes, rivets and short lengths of metal pipe or rod
- chisel cuts in concrete structures

Many have protective covers, and some have indicator/guard posts nearby.

For geodetic survey, the ground marks may have superimposed a stone cairn, concrete pillar or survey beacon.

The following Sections provide general information concerning recognition and construction of survey marks.

5.2 Cadastral Surveys

These are set out in some detail in Section 7.2.

5.3 Permanent Marks


Schedule 1 of the Regulations illustrates five designs of metal tablets which may be expected to appear in ground marks. A tablet has now been introduced for marking the common border with South Australia. These and six designs which have been in use for some time pre-dating current Regulations as shown in Fig. 5.1.

Four basic specifications for the construction of permanent marks are given in the Regulations. These provide for a simple mark cast in situ, (see Fig 5.1(a)), a precast mark, (see Fig 5.2) and two more substantial marks cast in situ. See Figs.5.3 and 5.4.

5.4 Permanent Mark Covers

Not all permanent mark plaques which constitute the station mark are protected with a cover. See Fig.5.3 and Fig. 5.4.

For many years the covers in most common use have been the cast iron cover with captive iron lid and the round pre-cast concrete collar with a concrete lid. Both of these are inscribed with the indentification: “Permanent Mark - Survey Co-ordination Act.”

The pre-cast concrete mark is illustrated in Figs.5.5(a) and 5.5(b). The cast iron cover, shown in Figs. 5.6(a) and 5.6(b), is used in the type of construction shown in Fig.5.4. This cast iron cover has been used widely throughout the State, but has now been superseded by the square pre-cast concrete box, with captive steel lid, inscribed “Survey Mark”, as is shown in Figs. 5.7(a) and 5.7(b) as has the round pre-cast pattern.

5.5 Permanent Mark Sketch Plans


Each permanent mark sketch plan is to be forwarded to the Surveyor-General within one month of the establishment of the permanent mark. Each permanent mark will be assigned a registration number by Land Victoria if a number has not already been allocated. A number can be allocated on request or reserved through Land Victoria's on-line survey mark information system (SMES).

Registration is sequential within each parish beginning with 1.

An example of a completed Permanent Mark Sketch Plan is shown in Fig.5.8.

5.6 Supplementary Permanent Mark Sketch Plans

Supplementary Permanent Mark Sketch Plans serve two purposes:

(a) to provide additional information to locate the mark, especially when most of the original information has disappeared as a result of development works.

(b) to record the bearings and distances observed to and from the marks as a result of a cadastral survey.

Supplementary Permanent Mark Sketch Plans are to be forwarded to the Surveyor-General within one month of obtaining the additional information. These will be registered by Land Victoria and given the same registration number as the original Permanent Mark Sketch Plan.

An example of a completed Supplementary Permanent Mark Sketch Plan is shown in Fig.5.9.
Fig. 5.1
Plan

- Standard metal plaque placed centrally.
- Ends of stem splayed outwards.
- Concrete aggregate: 30 Mpa.
- Base not less than 300 mm diameter.
- 600 mm minimum depth unless on solid base.
- Standard metal tablet as shown in survey co-ordination regulations.
- 6 mm dia mild steel rod 500 mm long.
- Ends of stem splayed outwards.
- 25 mm dia hole to take rod for handling purposes.
- Lightweight aggregate concrete: 30 Mpa.

Section

- PM plaque welded to steel rod.
- PVC pipe 75 mm pre-cast concrete collar.
- 15 mm steel reinforcing rod.
- Concrete cast in situ.
- Crushed rock passing 15 mm sieve.
- Not passing 9 mm sieve.
- Mild steel rod 25 mm dia. coated with bitumen.
- 15 mm cross bars welded to steel rod.
- Combined PM and bench mark concrete collar can move up or down with surface movement whilst the plaque and rod remain stable.

Installation instructions:
- Punch mark to be made centrally on cap.
- Prongs on tablet to be bent outwards.

All dimensions are in millimetres.
5.7 Reference Marks

The Land Surveyors Regulations, Part 2 1947, made provision for the use of a Standard Survey Mark to be used as reference mark. These marks consisted of a 19mm steel spike at least 300mm in length with a triangular steel head stamped SSM and a broad arrow. They are no longer used. These are still to be found in some areas, but are not permanent marks, unless registered as such. An example is shown in Fig. 5.10.

5.8 Approved Reference Marks

Reference marks currently approved by the Surveyors Board are set out in Section 7.2.7. Other styles of reference have been used at various times over the years, and may be found in some areas.

5.9 Levelling Bench Marks

Illustrative material concerning bench marks of various types is set out in Section 8.4.
PERMANENT MARK SKETCH PLAN

Township .................................................................................................. Parish  LUCKNOW

NOTE:
(1) Connections to be shown to buildings, fences, poles, survey marks or monuments nearby.
(2) Unless verified by a Licensed Surveyor, all boundaries are to be shown by broken lines.
(3) Connection should be shown to nearest Crown allotment boundary or named street or road.

Description of Permanent Mark: METAL PLAQUE SET IN A PRECAST CONCRETE BLOCK.

Existence of box-cover: NIL marker post: BLUE PAINTED GAL IRON POST

I certify that the Permanent Mark shown in this sketch has been established on the ground by me in accordance with the Regulations under the Survey Co-ordination Act 1998 and that the information shown hereon is correct.

Department or Authority: PROPERTY AND SERVICES

Authority’s Reference or Designated No.: 1289

Municipality: BAIRNSDALE

AM G REFERENCE CO-ORDINATES.
(Nearest 100 metre)
(May be scaled from 1 100 000 map)
ZONE 55
E ...
N ...

TO BE FILLED IN BY C.P.O
REGISTERED SURVEYS PARISH REGISTERED NUMBER

42

Fig. 5.8
SEC 6 (1) (c) SURVEY CO-ORDINATION ACT 1958

SUPPLEMENTARY PERMANENT MARK SKETCH PLAN

Township ........................................ Parish ..................................

NOTE:

Registered number of the permanent mark should be quoted with certification otherwise sketch shall provide sufficient information for the identification of the permanent mark by the CPO

ENQUIRE AT CPO FOR AG AND AHD INFORMATION

Registered Number of Permanent Mark (if known) 42

I certify that the information shown hereon is correct.

Department or Authority PROPERTY AND SERVICES Signature *

Authority’s Reference or Designated No. SC 8912 Date *

Municipality BAIRNSDALE If a Licensed Surveyor the letters L S. to be added

If a Registered Surveyor the letters R S. to be added

AMG REFERENCE CO-ORDINATES.

ZONE 55

E 285800
N 5899700

REGISTERED SURVEYS PARISH REGISTERED NUMBER

TO BE FILLED IN BY CPO SUPPLEMENTARY

42

Fig. 5.8
5.10 State Survey Mark Numbering System

With the advent of a computer based Central Plan Register in the then CPO (see Section 3.1.2), a parallel system of a Survey Mark Register was initiated (see Section 3.1.3). With the incorporation of all substantial survey marks into the Register, identity problems would have been introduced should all marks be permitted to retain their original alpha/numeric identifier in various combinations. After consultation with the principal contributors to the System, it was agreed that a unique reference number be assigned to every mark introduced into the System. This numerical identifier is based on a 9-digit format, details of which are available from the Land and Survey Information Centre. This System is not intended to supplant existing and long standing systems held in various organisations. Its primary purpose is quick computer search and retrieval and unique mark identification.