ANNEX  I
Specifications of Survey Monuments for
Horizontal Controls
Annex I Specifications of Survey Monuments for Horizontal Controls

1. **Type A Triangulation Monument**
   Type A Triangulation Monument is a concrete structure which is composed of a 1250mm height cylindrical pillar and a 1500mm x 1500mm horizontal platform. A stainless steel plate is installed on the top of the pillar for forced-centering of survey instrument. The detail specification is described in Drawing No. 1A and 1B on Page I-2 and I-3 respectively.

2. **Type B Triangulation Monument**
   Type B Triangulation Monument is a concrete structure which is composed of a 380mm height cylindrical pillar and a 1500mm x 1500mm horizontal platform. The detail specification is described in Drawing No. 2A and 2B on Page I-4 and I-5 respectively.

3. **Picket Box (fixed in open ground)**
   A 400mm stainless steel rod is fixed vertically in the open ground by concrete block. A metallic picket box is installed for protection of the protruded part of the stainless steel rod. The detail specification is described in Drawing No. 4 on Page I-6.

4. **Picket Box with Concrete Platform**
   A 400mm stainless steel rod is fixed vertically in the ground by concrete block. A metallic picket box installed on a 1500mm x 1500mm concrete platform is constructed for protection of the protruded part of the stainless steel rod. The detail specification is described in Drawing No. 5 on Page I-7.

5. **Picket Box (fixed on rock surface)**
   A 210mm stainless steel rod is fixed vertically in the rock by epoxy. A metallic picket box is firmly installed on the rock surface by concrete for protection of the protruded part of the stainless steel rod. The detail specification is described in Drawing No. 6 on Page I-8.

6. **Urban Survey Mark**
   An urban survey mark is a small stainless steel survey marker which is usually installed on the existing concrete surface. The detail specification is described in Drawing No. 7 on Page I-9.
TYPE A TRIANGULATION MONUMENT

SCALE 1:20

DRAFT NO. 1A

PLAN VIEW

DIAGRAM A

DETAIL OF BEACON TOP
(NOT TO SCALE)

DETAIL OF RING-HEADED SCREW
INSTALLATION (NOT TO SCALE)

SIDE VIEW

STAINLESS STEEL PLATE

GALVANIZED IRON PIPE

BLACK PAINT

WHITE PAINT

A393 WIRE MESH
SOIL OPTION

ROCK OPTION

TYPE A TRIANGULATION MONUMENT

SCALE 1: 20
TYPE B TRIANGULATION MONUMENT

SCALE 1 : 20
SOIL OPTION

ROCK OPTION

TYPE B TRIANGULATION MONUMENT

SCALE 1: 20
PLAN VIEW

Picket Box (Construct in accordance with Dwg. No. 4)

SIDE VIEW

PICKET BOX WITH CONCRETE PLATFORM

Scale 1:20
PICKET BOX
(Fixed on Rock Surface)

SIDE VIEW
(Not to Scale)
I Before Fixing

Iron wedge and Survey Mark to be supplied by Government

Hole in existing surface to be drilled by Contractor

Ground

45 mm

3 mm

40 mm dia.

II Method of Fixing

1. Insert smaller end mild steel conical wedge halfway into open end of Survey Mark.
2. Fill half of hole with Epoxy
3. Insert Survey Mark and mild steel conical wedge into hole.
4. Hammer Survey Mark into position.

III After Fixing (as diagram below)

Survey Mark

GRANITE OR CONCRETE

EPOXY

Mild steel conical wedge