

**[ DENR ADMINISTRATIVE ORDER NO. 2005-13,  
July 29, 2005 ]**

**REVISED GUIDELINES FOR THE IMPLEMENTATION OF THE  
PHILIPPINE REFERENCE SYSTEM OF 1992 (PRS92)**

Pursuant to Executive Order No. 45, series of 1993 entitled "Adopting the Philippine Reference System of 1992 as the Standard Reference System for Surveys in the Philippines" as amended by Executive Order Nos. 280 and 321, series of 2000 and 2004, respectively, the following rules and regulations are hereby issued for the guidance and compliance of all concerned.

**Article 1 - GENERAL PROVISIONS**

*SECTION 1. Policy* - It is the policy of the State to effectively manage the country's natural resources through the adoption of a single survey reference system. Henceforth, the PRS 92 is hereby adopted as the single reference system for all surveys and mapping.

*SECTION 2. Objectives* - This order aims to prescribe the guidelines for the full implementation of the PRS 92. It has the following objectives:

1. To provide the guidelines for the completion of a national geodetic network.
2. To provide the guidelines for integrating the old surveys and maps into the new network; and
3. To provide the guidelines for the maintenance of the national geodetic network.

*SECTION 3. Scope and Coverage* - These guidelines shall cover all land surveys and mapping activities, whether conducted by government agencies or private individuals and/or entities. In preparing nautical and aeronautical charts, however, other appropriate reference systems may be adopted.

*SECTION 4. Definition of Terms* - The following terms as used in these guidelines shall be defined as follows:

**Aeronautical Chart** - a representation of a portion of the earth, its culture and relief, specifically designed to meet the requirements of air navigation.

**Control Point** - a point on the ground, with position and elevation established by geodetic methods, which is used as a reference for a dependent survey. Control points are generally classified in four orders (with first order denoting highest quality) according to precision of the methods and instruments used in establishing them, and the accuracy of the resultant positions and elevations.

Densification - is a survey undertaken to establish additional control points in a given area to satisfy the requirements of the national geodetic network and facilitate referencing of other surveys in that area.

Field Offices - the Regional, Provincial and Community Environment and Natural Resources of the DENR.

Geodetic Control Network - a system of strategically located control points covering large areas.

Geodetic Leveling - a leveling of high order accuracy, usually extended over large areas, to furnish accurate vertical control for all surveying and mapping operations.

Geoid - the equipotential surface of the earth that approximately coincides with the mean sea level.

Gravimetric Survey - a survey made to determine the acceleration of gravity at various places on the earth's surface.

Nautical Chart - a chart specifically designed to meet the requirements of marine navigation, showing depths of water, nature of bottom, configuration and characteristics of coast, dangers and aids to navigation.

Reference Spheroid/Ellipsoid - a theoretical figure that approximates the figure of the earth.

Tidal Observations - a series of continuous sea level measurements conducted at particular sites to provide the information required for the determination of sea level datum planes, tidal predictions and reduction of soundings.

Transformation Parameters - a set of numerical values that define the mathematical relationship between datums or coordinates.

## Article II - POSITION OF SURVEYS

SECTION 5. Fixing of Survey Position - All surveys shall be fixed in position on the surface of the earth by monuments of permanent nature. The Philippine Plane Coordinate System (PPCS) shall continue to be adopted using the PRS92 parameters. The procedures and specifications provided for in the DENR Administrative Order No. 98-12 otherwise known as the Revised Manual for Land Surveying Regulations in the Philippines shall continue to be adopted.

## Article III - GEODETIC CONTROL NETWORK ESTABLISHMENT

*SECTION 6. Network Design* - The national or primary geodetic network consists of interconnected and homogenously adjusted control points which form the basic reference of all surveys and mapping activities in the country. It is comprised by first and second order control points which are nominally spaced at 50 and 10 to 25 kilometers, respectively. The secondary network consists of third and fourth order control points which shall be densified to an extent where each barangay in the country has at least a pair of control points. The existing Bureau of Lands Location Monuments (BLLMs), political boundary monuments, triangulation stations, primary stations of cadastral surveys and other similar stations shall be made part of the secondary network, Provided that: These points are resurveyed or converted into PRS92 and satisfy the accuracy requirements for such points.

*SECTION 7. Establishment and Densification of the Control Network* - The establishment and densification of the national geodetic network shall continue to be undertaken in accordance with the pertinent provisions of DAO 22, s. 1994, DAO 98-12 s. 1998 and other pertinent issuances until such time that new procedures and standards are formulated. In general, CGSD-NAMRIA shall be responsible for the establishment and densification of the primary network while the RSD-LMS shall be responsible for the establishment and densification of the secondary network and establishment of other lower-order control points.

The densification of the network shall be completed by the year 2010.

*SECTION 8. Establishment of Control Points by Other Agencies and Private Surveyors* - In cases where it is necessary for them to do so, survey teams of other government agencies and private survey practitioners shall be allowed to establish control points; *Provided* that: Said points satisfy the accuracy requirements; *Provided further*: That in such cases, an incentive system shall be established.

*SECTION 9. Description of Monuments* - Generally, Control Points shall be marked by concrete monuments. The standard concrete monuments shall be in accordance with the following specifications:

Order of Accuracy	Cross-Section	Length	Above Ground	Below Ground
First	30 x 30 cm	120 cm	20 cm	100 cm
Second	30 x 30 cm	120 cm	20 cm	100 cm
Third	25 x 25 cm	120 cm	20 cm	100 cm
Fourth	20 x 20 cm	100 cm	20 cm	80 cm

Control points may also be set on existing masonry and other similar permanent structures or on an exposed surface of immovable hard rock or boulder.

*SECTION 10. Markings and Numbering of Control Points* - The mark, inscriptions and numbering of control points are prescribed in Annex A\* of this order. Project controls that have been observed and integrated into PRS92 shall be marked as "PRS92".

*SECTION 11. Transformation Parameters* - In establishing new control points, the current set of parameters being used to transform WGS84 coordinates to PRS92 coordinates and vice versa shall continue to be utilized until such time that a new set or coordination with the LMB/LMS, shall conduct research and development work to determine the appropriate set or sets of local/zonal parameters. Guidelines on the process of adopting the new transformation parameters shall be issued thereafter.

*SECTION 12. Connection Surveys* - If the establishment of additional control points becomes necessary in view of the distance of the survey area from the established PRS92 control points, the Geodetic Engineer may, at his cost, requests RSD-LMS or NAMRIA to undertake the survey. The Geodetic Engineer may also undertake the survey of additional control points provided that the procedures, documentation and accuracy requirements, as provided in this Order and other pertinent issuances are

complied with. The control point survey data shall form part of the survey returns which shall then be evaluated for possible inclusion in the national geodetic network.

#### ARTICLE IV - MAINTENANCE OF THE GEODETIC NETWORK

*SECTION 13. Inventory and Exchange of Control Point Information* - The LMB/LMS and CGSD -NAMRIA shall keep up-to-date their respective lists of control points and exchange digital copies in a prescribed format of the same. The list shall include the name or designation, location (municipality or barangay), grid and geographic coordinates and upon request, descriptions of the control points.

*SECTION 14. Recovery of Control Points* - (a) The DENR surveying units shall recover and connect to PRS92 all BLLMs and political boundary monuments (PBMs, CBMs, MBMs, BBMS), triangulation stations established by organizations, the work of which is of acknowledged standards and all primary stations of cadastral surveys and other similar stations of at least fourth order accuracy. The survey parties shall submit, as part of their survey report, a Location Monument Recovery Report (LMRR) in accordance with DAO 61 series of 1993, copy furnished to NAMRIA and LMB. The LMRR shall include a report on lost control points.

b. In cases where it is necessary for them to do so, survey parties of other government agencies and private practitioners shall likewise be allowed to undertake recovery and connection to PRS 92 BLLMs and political boundary monuments (PBMs, CBMs, MBMs, BBMs), and triangulation stations; Provided: that they meet the accuracy standards; Provided, further that an incentive system for such cases shall be established. Said survey parties shall likewise submit LMRR as part of their survey returns. The reports shall describe the condition of the reference points as to whether they are still in their original state, damaged, disturbed and lost.

*SECTION 15. Maintenance and Protection of Control Points* - The LMS and NAMRIA shall be primarily responsible for the preservation of control points. They shall coordinate with local government units, other government agencies, and the private sector in undertaking said function. It shall also be the professional responsibility of every Geodetic Engineer to help protect these control points from destruction.

*SECTION 16. Lost, Disturbed and Destroyed Control Points* - Lost, damaged or destroyed control points/monuments shall be identified and re-established, if necessary.

Any person who shall intentionally destroy, alter, disturb or remove stations, monuments or control points shall be penalized in accordance with the provisions of the Cadastral Act, Revised Administrative Code and the Revised Penal Code.

#### ARTICLE V - TESTING OF GPS EQUIPMENT AND EVALUATION OF GPS DATA

*SECTION 17. Testing of GPS Equipment* - All GPS receivers shall be tested and certified by NAMRIA and registered with LMB every three (3) years. The LMS shall assume the responsibility of testing GPS receivers as soon as its personnel are capable of performing the task. The certificate of registration of the GPS used in any survey shall form part of the survey returns. Control surveys made with instruments which have not been tested and certified or whose registrations have expired shall not be accepted for verification and approval by the RTD for Lands.