SECTION – I GENERAL

I- Introductory Remarks : Responsibilities for creation of Topographical and Cartographic will be as follows:-

(a)	Primary Mapping	}
(b)	Compiled Mapping of 1/M State Maps and 1:250,000 too maps, and reissue of Topo maps.	} Respective GDC's }
(c)	Geographical Mapping	} NGDC/GIS & RS

This chapter deals with mapping rules for (a) and 1:250,000 maps, Rules for 1/M State Maps and (c) are laid down in Chapter XI, T.H.B.

2. Primary Mapping: Mapping of the entire country has been completed on 1:50,000 Scale. Respective GDCs would now have to review all The history sheets and identify such sheets which are not based on photogrammetric survey, so that such areas can be mapped using the most recent photography and updated using the appropriate imageries.

Similarly, GDCs should make an inventory of areas of their responsibility which have already been surveyed on 1:25,000 or larger scale (for Project areas etc.) so that the contours and height data can be used to crate a DEM of uniform standard. Thereafter, mapping of remaining area on 1:25,000 Scale should be completed using aerial photography or Satellite stereo imageries of resolution equivalent to that or CARTOSAT imageries or better. Concurrently the areas already surveyed should be updated using imageries followed by field validation for limited details as decided by SOI in due course. This will help in creation of a Digital Topographical database for the entire country which are up-to-date as laid down as our departmental mapping policy.

3. Batching of Sheets : In order to ensure a steady flow of work through the Reproduction Office, all GDCs will divide their sheets into four batches marked A,B,C,D (preceded by the year) for submission during the 1st, 2nd, 3rd and 4th quarters of the official year respectively.

4. Sheet File : Every sheet should have a separate file, the tile of which will be the number of the sheet, or, in the case of special maps, the name of the map. This file should be opened as soon as the survey of the sheet is commences, and in it will be kept all correspondence and extracts from letters from other files, which refer to the sheet.

In the case of an extra departmental series of maps with a common heading and on a common scale, only one sheet file need be opened provided it is considered enough to meet the needs of the series.

5. Training : It is important that all Officers and subordinates should be trained in generation of Digital database, ab-initio as well as by digitization of color separates. The instruction of young officers and subordinates is one of the most important duties of the supervising officers, and in order that they may carry out this duty in the most efficient manner, it is desirable that all Group A and Group B officers should have practical experience of digitization and patterning.

6. Supervision : For convenience of supervision and control, the Technical staff of GDCs will be distributed amongst sections. Section officers are, as a rule, fully employed in the supervision of their men, in the examination of the work in progress, in the completion of database and in the final examination in the section. All other members of the GDC present during recess are required to take their share, according to their qualifications, in the actual preparation of database and in computations. The Incharge of the GDC is responsible for the final examination of the fair plots

7. Colours for 1:50,000 Sheets : The 1:50,000 sheets will be published in colours as follows:-

(a) Black **:** All outline, lettering, prominent surveyed trees, live or barren dead moraines (lateral medial or terminal), scree, rock-falls, fans and symbols not mentioned below. Primary Yard grid and connected information, if required, will be printed in black.

(b) Red: Roads, tracks and paths; kilometer stones (or milestones) on roads and their numbers; arrows indicating coincidence or road , track, or path with single-line streams; road bridges, masonry dams; road tunnels, fords and ferries(symbols only); towns, beacons, steamer signals, navigation marks, etc., if lighted; boarder square letters and numbers; the legend RESTRICTED and edition note in the north margin and the box containing the legend RESTRICTED and the warning note appearing under it in the south margin. Metalled roads, towns, and villages (except huts and ruined villages)_ will have a red tint between the red lines, but metalled roads will not have a red villages, now hen they pass between tinted sites at other places, vide para 451 (c). Primary Metric grid and connected informations will be printed in red (Also see para 411).

(c) (i)Blue : Lines of high and low water, fathom lines and their lettering, mud on foreshore, submerged sand, rocks, etc; limits of double-line rivers and of the perennial water in them from the sea as far as the tides reach; singe-line streams which generally contain water; perennial canals (see para 93); steamer services; falls and rapids; licks, weirs, siphons; distance stones and their distances on perennial canals; canal bench-marks and their heights; sluices along perennial canals; aqueducts; pipe lines; marshes; reed symbol in perennial waters; springs; wells; limits of all areas of permanent snow or glaciation; recognized routes over glaciers and permanent snow; all ice features; water features; whether on or office; contours across ice and permanent snow, including those across live moraines; contours above permanent snow line; contour values of blue contours.

(ii) Blue Tine: Wills be used over sea areas (except foreshore), and over the water areas of rivers and canals which are too wide to be shown by a single-line, and of lakes and tanks; very small perennial tanks, which would receive inadequate prominence if printed in blue tint, should be blocked in and printed fin solid blue.

(d) Green: Scattered trees except prominent surveyed trees; scattered scrub and bushes including tea bushes; grass and the riband denoting the external boundary of reserved and protected forests. Green tint will be sued to indicate all wooded areas, dense or open. Green tint will be carried over roads both metalled and unmetalled. Secondary Metric grid ticks and its allied information will and be printed in green.

(Note- An external boundary is that separating reserved, etc., forests from land which is not reserved; a green riband will, therefore, be entered round exclusions, but not along the common boundary between two reserved, etc, forests).

(e) Yellow: Cultivated areas

(f) Brown: Mounds; rock cliffs whether above or below the snow line; broken ground which is not on the outline original contours and contour values except those mentioned in sub para © 9i) above; rocks and sand except in the beds of rivers, lakes or tanks, or on the foreshore; stony waste; dead moraines if under vegetation (grass, scrub or trees). Secondary Yard grid ticks and its allied information will be printed in brown.

8. Colours for 1:250,000 Sheets : The colours for 1:250,000 sheets will be the same as those for 1:50,000 sheets except that cultivation limits and the yellow tint will be omitted. In the case of areas contiguous to India, the cultivation limits and yellow tint will be shown provided the information is available and 1:250,000 (quarter-inch) forms the primary scale.

9. Director of Military Survey Corrections: When corrections and additions to maps of military importance are suggested by the Director, Military Survey, they should, as a general rule be accepted by the Survey of India. If, however, for any reason the officer responsible for the drawing of a sheet s\ considers that it would not be advisable to accept any particular correction or addition, he should refer to the Surveyor General, who in his capacity as Director of Military Survey, will take up the matter with the Chief of the General Staff, explaining the objections to the entry of the corrections suggested, and obtain a final decision in the matter.

See Appendix E for rules of procedure as regards exchange of information between the Director Military Survey and the Survey of India.

SECTION – II
PREPARATION FOR CREATION OF DTDB & DCDB

10. All efforts should be concentrated on ensuring that the DTDB created is GIS ready. While ensuring continuity of linear details, it must be ensured that nodes are created at the crossing point of linear details. Height tagging of all contours as well as points which indicate height, must be ensured. Closing of area details must be checked. Adequate care must be taken while digitizing 'areas inside areas' so that the facilty to generate replies to area related queries as well as ease of patterning such details is ensured. A detailed datamodel structure is a pre requisite for this purpose. Till such time a policy decision is made in this regard, the existing DVD model enclosed at Appx 'A' will be followed.
Attribute data tables will also have to be created and attached to the entities. Till such time this is done, the procedure adopted till now will be followed, i.e. text data will be entered along side the details at their appropriate place.

While digitizing colours separates for creation of DTDB the following should be ensured:

(a) Main drainage and rivers which are wide to be so depicted, should be shown by two lines.

(b) (i) Unmetaled roads, tracks and paths in hilly country should, and main routes may, be marked to be emphasized . Classification of roads should be decided based on the most recent ground situation.

(ii) Double-line roads, metalled and unmetalled, will be classified as roads of first, second and third importance. There will be no definition of "importance", but the Director, NGDC will decide for the whole of India what roads are to be classed as of first importance, and the Additional Surveyor General of the zones will decide, for their own areas, which roads are to be classed as of second and third importance. All National Highways however, will be treated as roads of first importance. The Director, NGDC, will prepare and maintain an index of roads of first importance and other Directors will prepare and maintain indexes of roads of second and third importance for their areas, in consultation with officers responsible for adjoining areas.

(iii) Any one of these classes of roads may contain metalled or unmetalled portions.The words "Motorable" or "Gravelled" should be entered along unmetalled prints when appropriate and may be qualified by a brief remark as to period.

(iv) Motorable cart-tracks suitable for four-wheel drive vehicles, occurring in desert areas such as Rajasthan, where metalled and unmetalled roads hardly exist, may carry the remarks "Motorable (four-wheel drive)" with the addition of the words 'in dry season' where applicable.

(v) The remark "Jeepable", with the addition of words 'in dry season' where applicable, should be entered along unmetalled roads and tracks on which only light and powerful vehicles (such as jeeps) can ply.

(vi) Motorable cart-tracks suitable for four-wheel drive vehicles, occurring in desert areas such as Rajasthan, where metalled and unmetalled roads hardly exist, may carry the remarks "motorable (four-wheel drive)" with the addition of the words in 'dry season' where applicable.

(c) (i) Cliffs and broken ground, when they are stream, river or coastal features, are shown in black otherwise they should be dawn on the contour original, and will appear in brown on the published map. To apply this rule correctly, the question of emphasis must be considered. In hilly country, precipitous banks near water courses are not abnormal, and the necessary emphasis is given to such features by the symbols being drawn in brown. But, as the country flattens out, steep banks gain in importance as these form very considerable obstacles, and it is necessary to call attention to them. This can only be done by showing the symbol in black.

(ii) To judge where the colour should change, or whether it is better to make no change, will occasionally be difficult, especially in country where the change from precipitous hills to more or less level plain is sudden and abrupt. In a mass of high hills, black symbols look incongruous, but in the plains brown gives no emphasis. Where the broken ground extends from the plains into low hills, and does not penetrate these very far, it is probably best to given prominence to the obstacle in the plains, even if this entails giving it rather too much prominence in the hills. Arbitrary changes, particularly along the edges of sheets, should be avoided, and the broken up are should be considered as a whole' in cases where there is any room for doubt as to what colour should be employed to show broken ground on a sheet, executive officers should consult their Director.

11. Contour Original : As already stated all contours should be tagged. However, till such time rules for depiction of contour values, derived from the tagged data, for hard copy products, are finalized, The contour values will be entered in the correct location and alignment, as per guidelines given here under.

(a) Contour values should be entered in series where appropriate, such as on long continuous or high steep slopes, so as to show the configuration of the round in figures at a glance.

(b) Contour values are not usually required on ring contours of summits if the height of the summit is typed.

(c) In flat country where contours are few, values should be given to selected fine contours as well as to the thickened ones, both in the body of the original and in the border.

(d) The values of all thickened contours should, as a rule, be typed in the

border of the fair original, but where the slopes are very steep, some of these values may be omitted.

(e) Where contour values in the border of a fair original interfere with the border grid values, either the contour value must be omitted or else the grid value should be shifted sufficiently to clear the contour value and an arrow entered connecting the grid value to its grid line.

12. Incorporation of Textual information: **All** names will be entered in the attribute table attached to the feature and all heights will be tagged. However till such time this is done the guideline existing heretofore will be followed. More heights are to be shown on the map, in areas where the contours appearing on the sheet are few.

The following rules apply in the entering textual information on hard copy products.

(a) (i) Heights are of importance from a military as well as from an engineering point f view. All heights entered on a fair original should be those of ground level except in the case of triangulation stations and bench-mark. As regards the selection of position for typing heights, the rules for the selection of the position of names given in para 61(a) are equally applicable to heights. The heights of all triangulation stations and permanent intersected points should usually be entered, but if two heights occur on the same hill-top, the height of the higher one only should be entered. A selection of trigonometrical and clinometric heights should be entered at important and easily recognizable places, such as road and river junctions, isolated hillocks, ferries, fords, bridges, distance stones, isolated trees, saddles, and passes, etc. The particular point to which a height refers should be indicated by a triangle or dot to denote its exact position: exceptions may be allowed in cases where there is no doubt as to the particular point to which the height refers. At least one height should normally be entered within the area of a town or other place of importance.

(ii) In high mountain areas, clinometric and photogrammetric heights should be rounded off to the nearest 5 metres in accordance with the orders given in Chapter V, if this has not already been done on the plane-table or air survey section and the required data are available. In the absence of data, the rounding off may be done at the discretion of the Officer in charge of GDC. Hypsometric and aneroid heights will be rounded off to the nearest 50 metres.

(iii) Occasionally, where other heights are not available, heights from sources such as Irrigation, Railway etc., may be entered, even if they are not attached to any particular points. These will afford some indication of the general height of an area above sea-level, and should be shown as clinometric heights but without dots.

A Sheet with no contours or spot heights in plain areas should have foot-note giving an indication of the approximate average height above mean sea-level of the area covered by the map.

(iv) Relative heights should be entered on the banks of streams at about 5 cm intervals (on the published sheet) or wherever great changes occur, at cuttings and embankments on roads, canals and railways, on banks of old rivers and depressions and in broken ground at suitable places. The relative heights of sand-hills, isolated rocks, and

rocky scarps should also be entered. Relative heights of less than 2 metres should not usually be entered, unless they are f distinct value, as for instance, to show the shallowest part of a nala and then only if they can be conveniently inserted.

(v) The selected position of the height should be carefully marked on the guide and great care must be taken to see that the height dot is shown in its correct position. The correct fount number of the type to be used should be entered in brackets alongside each entry.

(iii) Depths of wells measured in accordance with Chapter –II which are 30 metres or over, will be shown as relative heights in blue on the largest scale topographical map. Depths under 30 metres may be shown if, in the opinion of the Director concerned, the information is of special value. On all sheets on which depths of wells are entered a special foot-note as in para 498(cc) (iii) should be added.

(vii) Relative heights should usually be omitted from 1:250,000 sheets, except in cases where no maps of the area in question have been published on a larger scale, or in sheets containing very flat area where the relative heights of small isolated mounds may be of great importance.

(iv) On all sheets showing spirit-levelled bench marks to which the G.T heights have not been adjusted, the following foot-note should be added:-

"The triangulated heights (and contours) in this sheet have not been adjusted to the heights of the spirit-levelled bench marks and may not be strictly in accordance with them".

(ix) The trigonometrical height type (upright type) will be used for heights of all triangulation station of observations, except G.T towers, etc. (see below), and for permanent traverse stations as defined in Chapter V. when the ground height of the permanent detail marking the position of the latter has been accurately measured; also for the ground level height of those intersected pints (triangulation of traverse) where either the actual ground level has been observed or the height above ground level of the signal observed has been accurately measured.

All station heights in upright type must agree with the values given in the triangulation pamphlets or other records, as modified by any subsequent adjustment that may have been carried out.The height given should be that of the mark-stone and of the upper mark when there are two or more.

Italic type will be used for all clinometric and photogrammetric heights, and for the ground level height of trignometrical points where the ground level height has not been accurately determined.

Only ground level heights o G.T towers and of stations on buildings, or of any other station at which ground level is more than 2 metres below the upper mark, will

be entered (in italic type), or the heights may be omitted altogether if not considered necessary.

The principles on which the above rules are based are :-

a. Only ground heights should be entered on the map, a difference of 2 metres or less being negligible.

b. Only heights of the accuracy of triangulation should be entered in upright type, others being in italics.

c. If the height of a trigonometrical station is entered in upright type, it should agree with the pamphlet (apart from subsequent adjustment). If this violates (1) above, the ground heights is entered in italics.

(b)(i) The heights of all geodetic and tertiary bench marks should be entered to the nearest tenth of a metre from the leveling pamphlets and/or other permanent records held in the department. In entering the bench mark heights to the tenth f a metre, decimal point will be used, which will be placed centrally to the top and b base level of the figures. The decimal point will be drawn slightly smaller than the dot for spot height.

(vi) The height of other survey of India bench marks which are not of a permanent nature, and heights of PWD, Railway canal etc. bench marks, may be entered when heights would otherwise be wanting, subject t the proviso in the case of extra –departmental bench-marks that they do not disagree materially with Survey of India bench marks.

(vii) Heights of geodetic bench marks, with the letters BM, will be shown in Roman type and those of tertiary bench marks and the letters BM in Italic type. Extra-departmental bench marks should also be entered in Italics but without the letters BM as for clinometric heights. Canal bench-marks (without the letters BM) will appear in blue on published maps.

13. **Depiction of Vegetation**: It will be ensured that different types of vegetation are shown with their proper symbols in open country, and to indicate the limits of jungle areas which will be shown by green tint on the published sheet. In these jungle areas, remarks should be given such as “dense”. “fairly dense”, or “open”, and in cases where the jungle consists predominantly of certain types of trees, a description of the tree growth should always be given. In preparing this green tree and tint guide, the edges should always be compared with the adjoining sheets and signed and a dated by a responsible officer in token of the fact that the necessary adjustments have been carried out.

Section III

Digitisation of details

A – GENERAL

Symbols – Conventional Signs – Symbols are laid down in the chart ' Conventional Signs Table' which should be strictly adhered to. The introduction of a new symbol, whenever necessary, will be made by the Director, Business & Publication on the approval of Surveyor General. When any new symbol is employed, its use must be noted in the 'History Sheet' with an explanatory note. The Director, Business & Publication will advise how best it can be explained as a foot-note if it is necessary to do so.

When the meaning of a symbol, which is not shown in the tables at the bottom of the map (see the chart ' Border Specimen for Topo Map') is doubtful, a description of the same should be typed against the symbol.

Executive Officers must see that all authorized additions or corrections are entered on all copies of the chart ' Conventional Signs Table' in their offices.

Emphasis of certain features – Before the drawing is commenced, it is necessary to consider the sheet as a whole, and to select the important details to which it is desired to give special prominence. Main drainage and the principal lines of communication should be drawn so as to make them stand out prominently in the sheet in comparison with the rest of the detail. Care should be taken, however, not to overdo this exaggeration, and it should be remembered that it is the relative, and not the absolute thickness of line which gives prominence.

B – RIVERS AND STREAMS

Water features – The principles on which water features have been depicted on the plane-table sections are given in Chapter V. In order that these principles may be followed in the drawing of fair originals and that differences in style of drawing of different

surveyors may be assimilated, certain portions of Chapter V are reproduced below, with the wording slightly altered, where necessary, to make them applicable to fair drawing.

Rivers, Streams, Nalas, etc., - It is difficult to lay down hard and fast rules as to how streams should be shown, but as a general rule all rivers, streams, channels and nalas, if not less than 6 mm in length on the scale of publication, should be shown, if 1 mm in width or over, by two lines, and if narrower, by a single line graduated according to the distance from its source.

Stream emerging from hills – A stream emerging from hills may spread out into numerous small channels, some of which are clearly visible and other not, and of which the main one varies with each spate. In such cases, bars of varying lengths (to distinguish them from un-surveyed streams) should be drawn to represent the more prominent channels as actually surveyed.

Streams, etc., from photo-surveys – Streams, etc., incorporated from photo-surveys, should be drawn in accordance with the rules laid down in Section XII.

Single-line streams – The course of a stream not wide enough to be shown by two lines, should be shown by a single continuous line. When a perennial water-channel within a double-line nala is in continuation of a single-line blue stream, the width of the former may be exaggerated so as not to be in marked contrast with the latter.

Double-line streams – The banks of all rivers and streams the courses of which are shown by two lines, should be shown by continuous lines, or if more suitable, the broken ground or high bank symbol. Where the perennial water-channel is wide enough to be shown on the map by a blue stipple, and not by a single blue line, the limits of this stipple must be drawn as a fine continuous lines, except in sandy beds or tidal areas, and except where these limits are already sufficiently indicated by the drawing of the banks. The names of water-forms should be printed in black.

Junction of dry and tinted streams – In the case of a dry double-line stream joining a river or other tinted sheet of water, in which the blue tinted water (a) does not reach the bank,

(b) is shown up to the bank, no line will be drawn across the mouth of the dry double-line stream, unless a definite bank or drop is known to exist.

Representation of perennial water – The Survey of India is not required to make elaborate or special researches to ascertain whether there is perennial water in any particular portion of a river or stream. It will be sufficient if this is indicated as correctly as possible, in the course of survey operations from local information.

Arrows – Whenever the nature of the country is such that the direction of flow of streams and important canals is doubtful, arrows, firmly drawn in black, should be drawn closed to single-line or in the centre of double-line streams to indicate the correct direction of flow. These arrows should preferably be drawn near the name of the river or stream concerned, and may also be drawn just inside the sheet edges, if space permits, or they may be drawn in the border if there is no suitable position in the body of the sheet.

Waterfalls, islands, etc., - Water falls and their heights, rapids, rocks, islands, sluices and weirs should be shown.

Dry beds of double-line rivers and streams – Dry beds of rivers and streams, where not rocky or cultivated, will be shown either by the shaded sand symbol. Where applicable, or by a uniform tint printed in black. Shaded sand will always be drawn by hand in the style laid down in para 193. The uniform tint, which sould be omitted in very narrow streams, may be drawn by hand or applied in the Reproduction Office, the sand should be drawn in such a way as to afford the minimum of contrast.

Broken grounds, etc., - The following may be taken as a useful guide depicting banks of rivers and double-line streams, and broken ground generally, but where, over large tracts of country, this guide would be unsuitable, Directors may authorize departures from it. These instructions apply to rivers passing through flat or undulating ground and not to those river banks which are essentially part of a hill-side.

A Shelving bank of a double-line stream should be shown by a fine line

A steep bank of a double-line stream, which is less than 3 metres in height, should be shown by a fine line, but if the bank is so steep that it is impossible for

country carts to go up and down at intervals of every kilometer at least, then it should be shown by a thick line, provided that this thick line can be employed for continuous length of at least 25 mm on the published sheet.

A steep bank of a double-line stream, which is less than 3 metres to 6 metres in height, should be shown by a thick line.

A steep bank of a double-line stream, which is over 6 metres in height, will be shown by hachuring. For height, over 6 and under 15 metres, a single line representating the top of the bank will be drawn. For heights of 15 metres and over, another line representating the base of the bank will be entered, with occasional breaks. The baseline will be drawn fine and the upper line slightly finer than the lines from 3 to 6 metres in the preceding sub-para. Hachures will be fine, close together, without any thickening at the upper ends, and not too regular, being thus similar to shading in a pen-and-ink sketch. The object of this symbol is to give an effect of a line of homogeneous texture and of gradually increasing width to represent increasing height. The more nearly vertical the bank the closer should be the hachures. The symbol should not bear the slightest resemblance to that for embankments and cuttings.

The broken ground symbol should only be used for broken ground which is at least an average of 40 to 60 metres in width and at least 13 mm in length on the published sheet.

The drawing of the broken ground symbol should vary according to the ground depicted. It should not be more conspicuous than its nature justifies – that with relative height under 3 metres being drawn line, and that with height 3 metres or more shown by a thicker line.

In interpreting these orders, the Table of Conventional Signs should be carefully consulted.

Banks of old rivers and depressions – The rules contained in above para also apply generally to banks of old rivers and depressions. In case where only one bank of an old river in discernible on the ground and is not sufficiently high or steep to be shown by hachures, the direction of slope will be in doubt. The best way to indicate this is by the use of spot heights at suitable places on the high and low ground. These need not be too close together. The depiction of such features by a form-line, or one-sided ravine symbol in brown, will frequently be the most suitable treatment, especially in cases where the degeneration of the original bank is considerable.

C. COAST-LINE, FORESHORE, STEAMER ROUTES, ETC.

Coast-line – The coast-line, i.e., the line corresponding to high water, and the line of low water, both at ordinary spring-tides, will be shown by a continuous line and by a dotted line respectively, both printed in blue with the words " High water line" and "Low water line", in black entered at convenient places above and below their lengths respectively. The delineation of the coast-line, both for the "High waterline" and the "Low waterline", will be copied from the largest scale Marine Survey Chart available and checked on the ground whenever possible. In case of difference noticed during topographic survey, the line farther seaward will be accepted as correct.

Foreshore – The foreshore is defined as the zone between the high and low water lines, both the sea front and up tidal rivers; this zone will not be tinted blue as for perennial water; important detail on the foreshore should be entered. Sand and rocks on the foreshore will be printed in black, and tress in green. Mud may be shown by broken blue horizontal lines thinning out gradually towards the high water line and the nature of the ground typed in intervals. Sand on the foreshore should be lightly shaded along the edge next to the sea.

Streams passing through foreshore – A single-line stream passing through the foreshore will be shown by a continuous line, whether perennial or not. Double-line streams will show limits of water channels b fine dotted lines. In both cases the line will be printed in blue. Important permanent features on the foreshore will be shown in black.

Tidal limits in streams – Up a double-line river or stream, the banks will be shown, as far as the high spring-tides reach, by continuous blue lines; in the case of a single-line stream, a single continuous blue line should be used. A tidal arrow should be drawn just below the highest point reached by the high-spring tides, and at other suitable points.

Junctions of dry and tidal streams – In the case of a dry double-line stream joining a tidal river or creek, in which the blue-tinted water (a) does not reach the bank, (b) is shown up to the bank, no line will be drawn across the mouth of the dry double-line stream unless a definite bank or drop is known to exist.

Steamer services – Steamer services will be shown by the prescribed symbol in blue, with the words "Steamer service" entered in black at suitable intervals along the symbol. No symbol will be shown along single-line streams, but the words " Steamer service" will be typed in black along the stream or in the border, if necessary. Distances and destinations of steamer services will be entered in the border to the nearest important steamer station. Routes for ocean-going steamers in sea areas will not be shown.

Bathymetric contours – Previously five-fathom and ten-fathom bathymetric contours were shown in the Marine Survey charts. Now instead of five-fathom, six-fathom bathymetric contours are shown in the Naval Hydrograpghic and Admiralty charts. Except for a sheet, for whole of which six-fathom bathymetric contours are not available, six-fathom (11 metres approximately) and ten-fathom (18 metres approximately) bathymetric contours will be shown – for other sheets five-fathom (9 metres approximately) and ten-fathom (18 metres approximately) bathymetric contours will be shown. Ten-metre and twenty metre bathymetric contours should be shown provided these are available for complete sheets. The values of these metric contours in fathoms need not be shown.

Bathymetric contours will be shown by dotted lines in blue.

D. CANALS

Canals – All canals, field channels and drains, which form part of a recognized canal system should be shown by their proper symbols, which will be printed in blue or black according to whether the canals are perennial or non-perennial. Field channels and drains

not forming part of the recognized canal system, which are less than 2 metres in depth from the top of the bund to natural ground level or are less than two kilometers in length, should usually be omitted. In the case of canals emanating from rivers, the term perennial indicates that the supply of water is normally available at all times, being ensured by a dam or weir and regulator, while non-perennial indicates that the supply of water is regulator, while non-perennial or inundation canals are those which can only deliver water when the parent river rises above a certain flood-level. Reservoir or tan-fed canals should be considered as perennial if the water supply normally lasts for the full year. The whole or any canal system from main branches downwards, should be shown either in blue or in black as the case may be Locks, weirs, siphons, distance stones and their distances, etc., occurring in canal systems, will be printed in the same colour as the canal symbols.

Canal distance stones – Where the canal distance stones are not in miles or kilometers and appear in feet or metres, etc., the appropriate foot-note should be added to the map. As a general rule every 1,000 metres (or 5000 ft) stone should be shown on 1:50K maps so long as this does not interfere with the entry of more important information. They should be shown in their correct positions as survey, and not entered arbitrarily. Ever 1000 metres (or 5000 ft) stone should be numbered on the 1:50K maps, but it will suffice if every 5000 metres (or 20000 ft.) stones are numbered on the 1:250K maps.

Double-line canals – Canals, of which the width of clear water-way is 20 metres or over, should be shown by fine double-lines.

Single-line canals – Canals and drains, of which the width of clear water way is less than 20 metres are to be shown by single lines in varying widths in accordance with their relative importace, the entire canal system being considered as a whole.

Embankments – Embankments along canals should not, as a rule, be shown, but they should be indicated by a liberal use of relative heights (i.e., the heights of the top of the embankments above the adjacent country) with a foot-note. In exceptional cases, where other detail is right embankments as well as relative height with foot-note may be shown.

Roads on canal banks – Along canals, roads suitable for wheeled traffic, and avenues of trees, should be shown where possible, but on crowded sheets, the limitations of scale will necessitated the use of foot-notes.

Subject to modification on the orders of the Director in special cases, the ordinary un-metalled roads along canal inspection ways on dressed berms, will be depicted as follows :-

On 1:50K sheets, motorable roads will be shown by the unmetalled road symbol along main, branch and important distributary canals, or by the remark "Motorable road follows canal embankment" typed along the canal alignment at suitable intervals; otherwise by the cart-track symbol.

On 1:250K sheets, these will be shown by the cart-track symbol down to distributaries, or by the remark " Motorable road follows canal embankment" typed along the canal alignment at suitable intervals. They will not be shown along 'Minors' unless forming part of an important link route.

Metalled roads, if found along canal banks, will invariable be shown by their appropriate sysmbol.

Order of omission of detail – On crowded sheets, the order or omission of canal detail should be –

Embankments (b) Avenues, (c) Road on one side of canal or the other, and (d) Roads on both sides of the canal

On most sheets, owing to the limitations of the scale, these omissions will be necessary either in part or as a whole.

E. LAKES, TANKS, WELLS, ETC.

Lakes, tanks and ponds – The margins of all lakes tanks and ponds should ordinarily be shown by a continuous fine line. The edges of all excavated tanks should be thickened, and of other tanks, only the edge along which there is an embankment. For an excavated tank with embankment, only one line should be shown to denote the common edge of the excavation and the embankment. The addition of hachuring on the outside of the thick line is necessary where the embankment or bund is 3 metres or more in height; where the outside of the embankment is very steep and its outside top edge is sharp, a fine line should be drawn along the top of the hachuring. Other bunds will be shown by the embankment symbol in black.

Level of perennial water – The level of perennial water in all lakes and tanks, where it does not coincide with the margins of the lakes and tanks themselves, should be shown by a fine continuous black line.

Very small perennial tanks – Very small perennial tanks, which might be inadequately represented if printed with blue tint, should be blocked in and printed in solid blue.

Junctions of streams and lakes – In the case of a dry double-line stream joining a lake or other tinted sheet or water, in which the blue-tinted water (a) does not reach the bank, (b) is shown up to the bank, no line will be drawn across the mouth of the dry double-line stream, unless a definite bank or drop is know to exist.

Low-lying land – Low-lying land usually flooded for a considerable period every year will not be shown as a lake, but will have the words " Usually flooded from …… to ……." Printed across it.

Non-perennial tanks – All non-perennial tanks, and the non-perennial portions of tanks, if they do not show marsh, grass, cultivation, etc., will be a black tint.

Salt lakes – When the water of a perennial lake for tank is found to be saltish or brackish, a note to this effect should be entered against the name or site of such lake or tank.

Marshes – All marshes should be shown by their proper symbol which will be in blue on the published map. Reeds in perennial water will be shown by the high grass symbol printed in blue. The horizontal lines used in the ordinary marsh symbol will be omitted in such cases.

Karezes – should be shown by the proper symbol, with the dept of shaft in metres entered at intervals, e.g., 5r;' disused karezes and the depths of their shafts will be printed in black.

Pipe lines – Main pipe lines should be shown by the symbol for karez with the works " Pipe line" printed alongside. Name and symbol will be printed

Wells and springs – Important wells and springs should be shown by their appropriate symbols. In arid country, all wells and springs are imported and should be shown; when the symbol for a well or spring is liable to be overlooked, owing to the presence of contours, etc., or when it is necessary to emphasize its importance, the word "Well" or "Spring" ("Spr" if space is cramped) may be entered alongside the symbol and the symbol itself drawn slightly larger and heavier. The lettering will appear in blank on the published sheet. If the water in any well or spring is known to be saltish or brackish, this fact should also be noted alongside the symbol. Depths of wells will be shown in accordance with the orders.

F. ROADS, PATHS AND FIRE LINES

Roads – The classification of roads as settled, vide para 61(b) should be carefully followed.

Metalled roads – Metalled roads will have a red tint applied between the two lines except in the areas of towns, cantonments or large villages, and when passing between tinted sites at other places, when the roads should be left white.

Main routes through towns – Main routes through towns will be emphasized by being shown slightly wider than other streets.

Roads and paths in hills – Symbols for paths, tracks and un metalled roads in heavily contoured areas should be drawn slightly heavier than similar symbols appearing in the plains, in order to show them up. Main trade routes should be drawn more heavily than other less important roads of the same description.

Travellers' and explorers' routes – Routes followed by travellers and explorers will not be shown unless they are recognized tracks.

Road names – (a) Road names, except those of National Highways, will not be entered on maps of the 1:50K and 1:25K scales without the express approval of the Director, who will limit his sanction to names generally accepted by the public outside the area served by the road (subject to the proviso that names which consist of names of destinations will

never be shown), on the Northern, Western and the Eastern Frontier of India. (b) Names of all National Highways will be entered in the body of the topo maps as shown in the Table of Conventional Signs. For clarity a name may be repeated.

Width of double-line roads – The width of roads shown by double lines should be as follows, measured between the inner edges of the lines :

If drawn for reduction by one-third –

Roads of First importance	…	…	…	…	0.95 mm
Roads of Second importance	…	…	…	…	0.80 mm
Roads of Third importance	…	…	…	…	0.70 mm

Distance stones – As a general rule, every milestone and kilometer stone should be shown the 1:50K and 1:250K sheets, so long as this does not interfere with the entry of more important information. In town or village sites, or where the sheet is very crowded, it will frequently be advisable to omit a distance stone. They should be shown in their correct positions as surveyed, and not entered arbitrarily on one side of the road.

Numbering of distance stones – Every milestone and kilometer stone should be numbered on the 1:50K sheets and every fourth milestone and fifth kilometer stone on 1:250K sheets. The numbering should, however, give way to other detail, were difficult to number clearly, the 3rd and 5th milestone / 4th or 6th kilometer stone or both should be entered instead of the 4th milestone / 5th kilometer stone.

Double numbering of distance stone

A) With the introduction of metric system, it is possible :

(a) Only kilometer stones along some roads, etc. :

(b) Both mile and kilometer stones on some other roads, canals, etc.;

(c) Only milestones along the remaining roads, etc.;

then to indicate the above the under mentioned special foot-note will be entered :

Where only milestones exist along any road, railway or canal they are shown with their numbers in upright type, e.g., '20', elsewhere only kilometer stones with their numbers in slant type e.g., *'20'* are shown even though both types of distance stones exist.

(ii) that some roads, railways, canals, etc., may have distance stones in kilometers only while other may still be in miles. In such cases, on 1:50K scale sheets

subject to the provisions of paras 8 and 9 above, the numbering of stones in kilometers will be typed in slant type 8 I and those in miles 7R

In these cases, a special foot-note should be added as follows :-

The kilometer stone numbers along roads, railways and canals* are shown in slant type e.g., '*5*' whereas milestone numbers are shown in upright type, e.g., '5'.

(*Enter remarks as applicable).

If a sheet contains only milestones, their numbers will be type in italics with the following special foot-note :-

Distance stones are in miles.

When the distance is recorded on the plane-table section from two or more places, the executive officer will decide what distance stone numbers should be entered along the road throughout its length. Usually, only one set of numbers will be recorded, but, if two are employed, they should be entered in the form of a fraction, thus 2/14. This should not be resorted to without reference to the Director, Map Publication. Initials of places, from which distance stones are numbered, should not be entered. Distance stone numbers on roads of first importance should normally be entered from the nearest well-known and important town along the route.

Embankments and cuttings – Embankments and cutting in connection with roads, railways, etc., should be drawn in accordance with the following general rules :-

(a) An embankment or cutting, which is less than 2 metres in height or depth, should not be shown.
(b) An embankment or cutting, which is 2 metres or more in height or depth, should be shown by hachuring.

(c) An embankment or cutting, which is 3 metres or more in height or depth, which is very steep and the top edge of which is sharp, should shown with a fine line along the top of the hachuring. The fine line may, however, omitted if it would give to the symbol more space than is desirable, and would cause the displacement of village sites or other symbols.

(d) To avoid over crowing of detail, embankments along roads and railways may be omitted in those areas where embankments would occur as a matter of course. An occasional relative height may be inserted to indicate an embankment.

Track or path coincident with detail – When a track or path is coincident with detail along which it cannot conveniently be shown, such as a single line or narrow double-line stream or a boundary, only the symbol for the stream or boundary should be drawn and that for the track or path should be omitted. When the fact, that the track or path is coincident with the detail, is not sufficiently obvious, one or more arrows (pointing down-stream in case of streams) should be entered on alternate sides of the stream or boundary, and if the coincidence is lengthy, the words " Track (or path) follows bed (or boundary)" may be printed along the coincidence in addition to the arrows.

Bridges of boats, ferries and fords – When a road crosses a river by a bridge or boats, ferry or ford, explanatory words "Bridge of boats" and "Ferry" should be added wherever such exist, and the word "Ford" should be typed at important crossings of double-line and single-line streams and rivers. If these means of crossing are only periodical, the explanatory words should be further qualified by adding the limit of that period, thus :-

"Bridge of boats (March to June)", "Ferry (March to June)", or "Ford (March to June)".

In broad rivers, tidal creeks, and estuaries, where there is room, the type of ferry should be shown, e.g., " Steam ferry", "Ferry (motor boat)". "Ferry (country boat)"

In the case of a ferry service which covers a considerable distance and touches at one or more points between terminal stations, the steamer service symbol should be used with the description "Steamer service", "Steam ferry", or "Steam ferry service" as most suitable.

Description of bridges – Descriptive wording as to the construction of a bridge, i.e., whether it is or "Iron", "Wood", or "Masonry", and its name, may be entered. Bridges whch are submerged during exceptional floods, should be shown by the ordinary symbol and have the words "Low level" typed against them, and "Causeway" will be entered against raised or paved crossings.

It is sometimes not easy to decided where the term low level bridge ends and where a raised causeway begins. The following guiding principles will apply :-

(a) If the total length of the free water-way underneath the road surface exceeds the total length of masonry, etc., across the gap, it is low level bridge. and
(b) *usually* low lever bridges have railing along each side.

Motor Transport turning points :- Turning points for motor transport specially constructed by or for the Army, will be shown by the prescribed symbol and explained in a special foot-note (see para). The symbol will not be used for turning points or termini on motor bus routes.

Fire lines – All important forest fire lines will be surveyed and shown on topographical maps so far as the scale permits.

Symbol to be used for fire lines – The symbol to be used will be same as for unmetalled roads, but with very short bars and printed in black, except when the fire line is in regular use as a line of communication, in which case, only the appropriate road or track symbol will be used and printed in red. In either case, if space permits, and the fact is important, the word "Fire line" may be typed in black at intervals along the symbol. The symbol itself should not be explained in any way in the foot-notes to topographical maps.

Rececourses – Racecourse tracks may be shown by the black symbol for fire lines with a suitable descriptive remar.

G. RAILWAYS

1. **Railways** – As railway, tramway and mineral lines are shown on plane-table or air survey sections by different symbols to those employed on fair original, care should be taken that the correct symbol for the gauge (and whether the line is single or double) is used.

2. **Interpretation of "Broad gauge"** – In maps which extend beyond India, the term "Broad gauge" should be interpreted broadly, and not in its limited Indian sense; and for all gauges wider that the metre gauge, the broad gauge symbol should be used. In all such cases, however, the gauge should be typed along the symbol, thus : - 1.44m gauge, 1.52 m gauge, etc.

3. **Different gauges alongside each other** : - Where line of different gauges run alongside each other, both will be shown by their respective symbols. When, however, a smaller gauge is laid on the same sleepers between the rails of a broader gauge, the symbol for the broader gauge only will be shown, with the words "One track for both gauges" typed alongside.

   Double line track symbol will be used for three (or more) line tracks of the same gauge, with the description 'Three lines', etc., entered alongside the symbol, or alternatively, the fact should be explained by a special foot-note in the south margin of the sheet.

   Electrified portions of railway tracks will be similarly explained either by a description alongside the symbol or by a special foot-note.

4. **Double lines at stations** – The ordinary short lengths of double lines at railway stations, on single line railways, should not be shown, but important marshalling yards will be shown as in the Table of Conventional Signs.

5. **Railway station enclosures** – The limits of railway station enclosures will be shown as surveyed by fine continuous lines in black. Where no enclosure exists, the railway station will be shown by the conventional symbol.

6. **Distance stones** – Milestones and kilometer stones on railway should be shown in their correct positions as surveyd, and not entered arbitrarily on one side of the line. They should be shown in accordance with the rules laid down in Paras .

7. **Embankments, cutting and bridges** – For rules regarding embankments, cuttings and bridges on railways, see Para and .

H. TELEGRAPH LINES, ETC.

1. **Telegraph and telephones lines** – All overhead telegraph and telephone lines, outside towns, will be shown, except those along railways.

2. **Omissions in towns** – In towns, owing to crowded detail, both telegraph and telephone lines may be omitted, but when the main lines can be shown terminating at the main telegraph or telephone office, without confusing the map, this should be done.

3. **Telephone lines, ropeways and power lines** – The symbols for telegraph lines will be used for telephone lines, ropeways and power lines, with the addition of the appropriate description typed at intervals along the symbol. When used for a ropeway, this symbol will be drawn distinctly heavier. The terminal points of a ropeway will be shown by small red blocks inside black square enclosures as for railway stations, with the words "Ropeway terminus" or "Terminus" typed against them where there is room; destinations should be entered in the border when necessary. Power lines should be drawn slightly heavier according to importance. Sub-stations along power lines will be shown by small red blocks.

When telegraph and telephone lines, power and telegraph lines or power and telephone lines, etc., appear on common poles, the descriptive remark along the symbol will be “Telegraph & telephone lines”, “Power & telegraph lines”, “Power & telephone lines”, etc.

The above remarks will also apply to cases where the lines, although on different poles, cannot be shown separately due to lack of room.

4. **Submarine cables** – Submarine cable lines in sea areas will not be show, at their terminal stations, the words “ Submarine cable”, with destination and approximate distance in kilometers will be typed in the general direction of the line.

5. **Cables under rivers** – Short lengths of cable lines under a river may be shown by the usual symbol for a telegraph line, with a typed description.

I. SITES AND BUILDINGS

1. **Sites and buildings** – The limits of buildings and blocks to be tinted should be drawn with thickened lines as in the Table of Conventional Signs.

2. **Undue prominence of soiled segments** – Undue prominence may be given to small villages if printed in solid segments or with partly solid and partly tinted segments. Small villages should, therefore, be drawn, as far as possible, with open blocks.

3. **Size of blocks which can be tinted** – Tint will be applied to building and village blocks, not in ruins which, if oblong, are not less than 0.5 mm X 2 mm and, if square, not less than 1 mm X 1mm (inside dimensions) on the scale of publication. In hilly or wooded areas where such very small tinted sites would not show up well, sites of the minimum size and slightly larger, on the scale of publication, should be filled in.

4. **Building to be shown** – The sites of dak or travellers’ bunglows, post offices, kyaungs, etc., need only be shown when the buildings are isolated. Hospitals, dispensaries, markets, post offices, telegraph offices, police stations, etc., should be shown in exist, and

they should only be shown if there is room, and with due regard to their relative importance to other buildings and names. Schools should not be shown.

5. **Important buildings** – Important buildings in towns should be blocked in.

6. **Aerodromes** – All landing grounds are designated as aerodromes according to the internationally accepted convention adopted by the International Civil Aviation Organization. An aerodrome is known as a defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure or movement of aircraft.

The Director General of Civil Aviation of India maintains lists of aerodromes in India available for civil use. These lists are published by him in the form of Aeronautical Information Circulars. The information published in these circulars is corrected and supplemented by similar circulars published by him from time to time. Aerodromes controlled by the Indian Air Force are not included in these circulars. For Military Aerodromes, Landing Grounds / Strips, the Director of Military Survey and Director, Survey (Air) will be consulted and correspondence in this connection will continue to be addressed by regional circles to DMP.

7. **Details to be shown in aerodromes, landing grounds or landing strips** – (i) No details pertaining to an aerodrome, will be shown. The limit (perimeter) of an aerodrome will be shown by a black line if permanently fenced, otherwise by black dots. Roads will not be shown inside an aerodrome limit but will be shown up to it. Other topographical features not forming part of an aerodrome, like streams / rivers, telegraph, telephone and power lines passing through it will, however, be depicted. These instructions apply *mutatis mutandis* to landing grounds and landing strips.

(ii) An aerodrome, a landing ground or a landing strip will be shown by the standard symbol placed centrally within its limit. The size of the symbol may be suitably reduced if there is not enough room to show it full size within the limit. If space permits, the

remark “Aerodrome, Landing Ground or Landing Strip” will be entered along the symbol; otherwise the symbol will be explained by the under mentioned special foot-note as appropriate.

“ Aerodrome in this sheet shown thus …….
“ Landing Ground / Landing Strip in this sheet is shown thus …….

J. BOUNDARIES

1. The following boundaries are to be drawn by their appropriate symbols, and will be printed in black :-

(a) (i) **External boundary of India** – This will be shown by the boundary international symbol (see table of Conventional Signs). The correct alignment for the external boundary of India, if not already available with Directors, will be obtained from ……., Dehra Dun. Indian territory is defined in the First Schedule of the Constitution of India.

(ii) New editions of maps containing any portion of the external boundary of India normally require prior approval of the Government of India before they are finally published. Provision should, therefore, be made in the Publication Instructions for 7 extra proofs in black, brown and green (para) for submission to the Director, Map Publication and obtaining a boundary report. The boundary report with the proofs will then be submitted, if necessary, by DMP to the Government of India, Ministry of External Affairs.

(b) **International boundaries** - See para

(c) Boundaries of State and Centrally Administered Territories.

(d) Boundaries of districts, and major partitions of districts. The subdivision, tahsil, taluk, or township will generally be the major partition of the district, but with the approval of the local government and the Surveyor General, boundaries of minor partitions may be substituted as provided for in para .

(e) If of sufficient importance, boundaries of estates may, with the permission of the local government, be shown by the symbol for a tahsil boundary. A descriptive remark should be typed along the symbol at intervals. Such boundaries, however, will not carry any boundary ribands.

(f) Boundaries of reserved, etc., forests, if cleared and demarcated, see also para (b).

(g) Demarcated camping grounds will be shown with dotted limits as for cultivation. Shephered's camping grounds in sparsely inhabited regions will be shown by a black dot, appreciably smaller than the mine symbol, with name.

(h) When two boundaries coincide, as for instance those of a reserved forest and a tahsil, the more important (in this case the tahsil) boundary only will be entered.

2. **Boundaries not to be shown** – The following boundaries should not be entered, except as stated below :

(a) Boundaries of the areas delimited and declared as such for Scheduled Tribes in the Autonomous districts vide the Sixth Schedule of the Constitution of India unless specially asked by the local government.

The subdivision boundary symbol, with appropriate boundary riband, will be employed in such cases.

(b) Undemarcated boundaries of reserved forests where information regarding these is not available from large scale forest maps.

(c) Boundaries of municipalities or cantonments.

(d) Boundaries of private estates and plantations, except as laid down in para (e).

(e) Village, kwin, and other similar boundaries, except when required for special village boundary editions, or when, as in parts of the country such as Malabar, villages consist of huts or houses scattered over the area, they may be required to be shown on ordinary editions.

(f) A separate symbol will not be used for boundaries of Divisions.

(g) The inner line or any special foot-not concerning it.

(h) Subdivisions of the districts of Arunachal Pradesh.

3. **Boundaries along roads and water courses** – The symbol for a boundary will be entered –

(a) In its proper position, when the boundary runs along the bed of a river or stream shown by two lines wide enough to admit the symbol conveniently.

(b) Alternately on each side of a road, river, or stream when the boundary runs along the middle of the road, or along the bed of the river or stream, and cannot be shown conveniently as in (a). In this case when the boundary symbol consists of crosses or dots in combination with bars, one cross or dot with one bar should be placed alternately on each side of the road, river or stream.

(c) Close outside and parallel to the symbol of a road, river, or stream when the boundary runs along the edge of the road, or bank of the river, stream, etc. The symbol will be entered on the correct side, i.e., if the boundary is along the north edge or bank then the boundary symbol will be entered on the north side of the symbol for the road, river, stream, etc.

4. **International boundaries** – The Ministry of External Affairs are responsible for supply the necessary information regarding international boundaries other than the external boundary of India. Two proofs in black, brown and green of sheets containing such boundaries should be submitted to that Ministry by the Director concerned, through DMP for their approval before the map is published. Necessary provision should be made in the Publication Instructions for the supply of extra proofs.

5. **Undemarcated state, district, tribal or tahsil boundaries** – The undemarcated boundary symbol should only be used for such state boundaries as are known to be

undermined, or in dispute. For state boundaries that, though not demarcated, are unlikely to change, the ordinary state boundary symbol should be used.

District, taluk or tahsil boundaries which are undemarcated (that is not fixed with boundary pillars) and are surveyed as pointed out on the ground by the local officials and authenticated as correct by the state Governments on boundary verification traces, should be shown by the appropriate symbols and without any accompanying remark.

If one or more authorities, in whose jurisdiction a boundary falls, refuse to verify the alignment of a boundary surveyed on the ground as pointed out by the local officials or otherwise, the alignments of the boundary as claimed by the authorities concerned will be obtained from them and verified on the ground as pointed out under their direction and will be shown on the map (in the case of a state boundary by the symbol or undemarcated boundary) with the remark "Disputed" typed centrally in the disputed area.

In all doubtful cases, reference should be made to the Surveyor General through DMP for orders.

6. **Boundary Pillars** – The following rules govern the insertion of boundary pillars :-

(a) (i) All main boundary pillars marking the external boundary of India and other international boundaries in transfrontier areas, and such minor and subsidiary pillars as mark changes direction as well as those which can be accommodated without the symbols of boundary pillars clashing with one another, with numbers, will be entered on 1:25K or 1:50K scale, whichever is the larger scale for maps of the area. The numbers of a few minor and subsidiary pillars may, however, be omitted where they overcrowd the sheet, obliterate details or create ambiguity about pillar numbers (also see para). Intermediate pillars, which are sometimes erected by the local authorities for their own guidance, need not be entered. Reference pillars, if any, should also be entered. The sizes of symbols and numbers of main pillars will be larger than those of the minor, subsidiary and reference pillars. Doubtful cases should be referred to the Director, Map Publication.

(ii) Publication on scales smaller than the largest will show all the main, minor and subsidiary boundary pillars as can conveniently be shown without overcrowding the sheets as mentioned in para (i) above, but all the numbers need not necessarily be entered. This is left to the discretion of Directors.

(iii) The source of information from which international boundaries, other than the external boundary of India, has been obtained, should be fully stated in special foot-note.

(b) All boundary pillars should be drawn with their sides parallel to sheet edges and no boundary pillars other than those in (a) will be entered on 1:250 K sheets.

(c) When clearly demarcated, all boundary pillars, with their numbers, marking boundaries between states, will be entered on the 1:50K sheets. If, however, carrying out this order would result in overcrowding a sheet, Directors may authorize the omission of some of the pillars or their numbers, care being taken not to omit those pillars which mark an important change of direction in the boundary.

(d) Boundary pillars on district, tahsil and minor boundaries, will not be entered on 1:50K sheets, unless they are conspicuous pakka marks or have been used for the control of the survey.

(e) Forest boundary pillars will not be entered on the 1:50K and smaller scale sheets unless they are pakka and conspicuous. All forest boundary pillars will, however, be entered on 1:25 K scale sheets. In case of congestion a few boundary pillars may be omitted but those at the changes of direction must appear.

(f) (i) Only those village trijunctions, which are conspicuous pakka marks or which have been fixed at the time of survey, should be shown on 1:50K sheets, the crow's foot symbols (λ) being used, which should be symmetrical with one arm pointing north, except when village boundaries are shown, when the arms should point in the direction in which the boundaries run.

(ii) When the survey is based on village traverses of the cadastral survey, all trijunctions found at the time of survey will be shown as in (i) above.

Trijunctions not found will not be shown. All boundary pillars should be drawn with their sides parallel to sheet edges.

7. **Reduction of boundaries from large scales** – When boundaries reduced from larger scale surveys have to be inserted on previously published sheets, it may be found that they will not exactly follow, if rigidly applied, the same topographical features on both sheets. In this case, either the sheet must be corrected, or the boundary be placed correctly with reference to the natural features shown on the sheet, or as per boundary notification, if available, as it is more important that the boundary should be correct with regard to the topography than that it should be strictly in position with regard to the graticule.

8. **Ground beyond boundary to be shown** – It must be remembered that it is very difficult to check a boundary unless some details beyond it are shown, and it is, therefore, laid down that whenever a water shed forms a boundary, the reverse slope should be shown, and the boundary line should never form the actual limit of any sheet, unless that line is inaccessible and nothing beyond it is visible. Both the high banks of all rivers forming boundaries should invariably be surveyed, unless there is any valid reason for not doing so, and everything that it may be possible to fix accurately beyond boundaries should be recorded in order to assist identification in future.

K. CULTIVATION AND OTHER LIMITS

1. **Cultivation limits** – The limits of cultivation, including areas liable to be cultivated but lying fallow for the time being, will be shown by dotted lines, which will be omitted where a road, field-bund, path, boundary, stream, canal, or building forms the limet; if considered necessary, the limits of cultivation may be drawn along the edges of ravines or broken ground, when these are printed in brown. When patches of fallow land and field bunds less than 2 metres in height occur in areas of permanent cultivation but are not worth showing, a special foot-note on the following lines should be entered :-
"Periodical cultivation dependent on rainfall occurs in the southern half of the sheet, with numerous field-bunds of less than 2 metres in height"

2. **Field-bunds** – Field-bunds not less/than 2 metres in height should be shown by the usual embankment symbol.

3. **Other limits** – The limits of village enclosures, orchards, gardens, plantations, camping grounds, perimeters of aerodromes, and burial grounds will be shown by a dotted line if open, and by a fine continuous line if enclosed by a / wall or permanent fence.

4. **Wooded areas** – When wooded areas are enclosed by a wall or artificial fencing, it will be shown by a fine continuous line which will appear in black on the published map; when wooded areas are not enclosed, the limits will not be specifically denoted on the fair original.

L. TRIGNOMETRICAL STATIONS AND INTERSECTED POINTS

1. **Symbols for trionometrical stations, etc** – Trigonometrical stations and intersected points of geodetic triangulation and normally, those of topographical triangulation, should be shown by the appropriate symbols on 1:50 K and 1:250 K sheets.

2. **Stations and points of subsidiary triangulation** – Stations and intersected points of subsidiary triangulation should not be entered on 1:50 K or 1:250 K sheets except as stated below, but if their heights are required to be entered, they should be shown by the symbol and type laid down for approximate heights.

   In case the subsidiary triangulation has been extended to join up two regular series and proper adjustment of the series has been made the stations may be shown by the normal trigonometrical station symbols.

   If the accuracy of the heights of the subsidiary triangulation is beyond doubt the heights should be shown in upright type but with symbol of intersected points.

M. ORNAMENTATION

1. **Ornamentation** – As the general appearance of a sheet depends greatly on good ornamentation, care must be taken to depict this on an original in an artistic manner.

   Ornamentation includes those items in the drawing of which latitude is given to make them look artistic, e.g., sand (flat, or shaded, or sand-hills), surveyed trees, broken ground, stony wastes, rocks, sheets rock, embankments, marshes, reeds, rapids and tidal or direction arrows.

1. **Green tree and tint original** – As a rule separate green tree will be digitized .
2. **Wooded areas** – Limits of all wooded areas, whether dense or open, which will be shown by a green tint on the published map, will be drawn by a fine continuous black line on the green tree and tint original; small detach patches are also to be considered.

   A green tree and tint original will not be necessary for a sheet completely covered with jungle. Also see para , second sub-para. Adequate instructions for preparation of a green tint plate will however, be given in the Publication Instructions.

3. **Scattered trees and scrub, etc** – These should be shown by their appropriate symbols, the trees being varied in size to differentiate between high and low types of tree growth. Prominent surveyed trees should be drawn on the outline original to appear in black on the published map.

   Scrub and undergrowth should be indicated by dots of varying sizes. The sparing use of irregular half circles, as shown in the symbol tables, is permitted, where scattered dots do not give sufficient prominence.

   In cultivated areas the tendency is for the green symbols not to have sufficient prominence. In areas of cultivation, therefore, the symbols should be drawn slightly heavier.

4. **Grass** – Wherever grass forms an obstacle in view or to ground movements, it will be shown by the high grass symbol, the density being varied as necessary. Clumps of grass where they form a distinct feature, particularly in desert areas, will also be shown. The height of grass and species, if known, will be indicated by descriptive remarks.

Short grass, being a normal characteristic in this country, will not be shown.

5. **Tea bushes and planted trees** – Dots should be used for tea bushes and straight lines of planted trees or tea bushes should be shown as surveyed.

6. **Density of symbols** – The number of tree symbols should vary with the number of the trees. In an avenue of trees the distance between the tree symbols should vary with the prominence of the avenue. Care should be taken, however, not to overdo the density of the trees. In country where scattered trees are numerous, the number shown should be sufficient to convey a correct impression. This applies to areas under cultivation as well as to waste areas.

Section IV
DEPICTION OF TEXTUAL INFORMATION

A—GENERAL

202. Spelling of name.- Name as picked up by the surveyors on the ground, scrutinized by the camp officers and finally passed by Officer in charge of the field survey operations should be correctly transliterated to Devanagari and then to Roman according to the approved system as given in App. B. Also the lists of names in local script must invariable be obtained from the district authorities concerned and carefully compared against those picked up by the surveyor. Normally the two lists should agree except for minor variations. Preference, however, should be given to the spelling as picked up by the surveyor after he has consulted local authorities. In doubtful cases, O.C. Party may exercises his own discretion based on his own knowledge of names in the area. The general principal laid down by the Govt. of India for transliteration of names is given in the succeeding para for compliance. For Imperial Gazetteer / the Gazetteer of India names see para 205.

Where it is established that the Roman spelling of names which appear on the existing maps are incorrect, the newly transliterated Roman spelling, obtained by following the above system of transliteration should be accepted as correct and entered as office-copy corrections for incorporation on the relevant maps when taken up for reissue. Immediately on entering the corrections in office copies, steps should be taken to inform the Railway and Posts and Telegraphs, etc., authorities, of the changed spellings. Roman spellings of names appearing in the Constitution of India should, however, be adhered to unless changed by the Government of India in the past and future.

203. General principles laid down by the Government for transliteration of names.- After obtaining the views of State Governments during 1953, Govt. of India decided that the following principles and procedures should be adopted for determining the correct spelling of geographical names :-

(a) Authority to determine the spelling of any name in the script used as the official language of the Centre will vest in the Central Government.

(b) All Ministries of the Central Govt. and Subordinate Offices will observe the spelling approved by the Central Government.

© The Survey of India will be the only authority for the transliteration of names from one script to another according to the system approved by

the Central Government. In the event of disagreement between the Survey of India and a State Government, the decision of the Government of India will be final.

(ii) Where a State Government uses a script (other than the Devanagari script) which differs from that used by the Central Government, or where a local script of the State differs from the script used by the central Government, the State Government will be the authority for deciding the spelling of geographical names of places or features in the State in local script. Survey of India will be responsible for transliterating these names into Devanagari or Roman script in accordance with the approved system of transliteration and in consultation, where necessary, with the State Government and other appropriate authorities.

(iii) State government will have full authority, where they adopt Hindi in the

Devanagari script as the official language or even where Hindi is only a Local language of the State Government, to give names to places and natural features within their areas hitherto unnamed. Such names will be Communicated to the Survey of India in the Devanagari script for Transliteration to the Roman script. Should it be necessary to alter the Existing spelling in Devanagari script of a name in use by the Survey of India, the State Government will ask the Survey of India to adopt the new Spelling. If the Survey of India is unable to agree, the State Government may refer the matter to the Central Government for a decision. This Procedure will apply also to changes in the spelling of names that appear in The Gazetteer of India.

204. Change in names, -- the Government of India decided The policy regarding changes to place names in 1953. According to the Government of India's orders if an existing name of a village, town, etc., is sought to be changed to a new name by the local inhabitants / authorities, prior approval of the Government of India, Ministry of Home Affairs, is required to be obtained through the Government of the state in which the place is situated. The State Government have to keep in view the following broad principles when putting up proposals, for changes in place names, to the Government of India: -

(d) Unless there is some very special reason, it is not desirable to change a Name which people have got used to.

(e) Names of villages, etc., having an historical connection would not be changed as far as possible.

(f) A change should not be made merely on grounds of local patriotism or for linguistic reasons, e.g., villages, etc., should not be renamed after national leaders merely to show respect to them or for satisfying local sentiment in the matter of language, etc.

The Home Ministry generally consults the Surveyor General before passing final orders on the State Government's proposal. In the event of the proposal being approved by the Government of India, the State Government is required to submit the new name written in local script to the regional Director of the Survey of India who supplies the spelling of the name in English/ Hindi after transliterating according to the approved system of transliteration. The change is then notified by the State Government in a Gazette and is brought into use by all the Government department and the public.

205. Names in the imperial Gazetteer and the Gazetteer of India.- The Gazetteer of India is being published in four volumes to replace the Imperial Gazetteers. The Gazetteer of India, if published, otherwise the imperial Gazetteers will be the primary authority for the spelling of names and the spelling of names as given therein should normally be followed.

It frequently happens, however, that an Imperial Gazetteer / the Gazetteer of India spelling is incorrect and consequently a change might be required. Most of the changes would pertain to minor variations in pronunciation and, therefore, should be accepted in consultation with the state Government concerned. In such cases, the names picked up by the surveyors on the ground and correctly transliterated according to the approved system should be entered on the fair original and D.M.P. informed of the change for obtaining S.G.'s approval and taking appropriate action for correction of the Imperial Gazetteer / the Gazetteer of India. If the changes are such that they cannot be accepted for any reasons (see Para 203) or which come within the purview of Para 204 or last sentence of second sub-Para of Para 202, the State Government should be asked to refer the matter to the Central Government for a decision. In these cases, the names as appearing in the Imperial Gazetteer / the Gazetteer of India should be entered on the fair original till the change is approved by the Central Government.

All change of spelling in the Imperial Gazetteer / the Gazetteer of India should be mentioned in the History Sheet. Cases, which remain sub judice, should also be mentioned in the History Sheet. No.1 Drawing Office maintains a list of all changes in the spellings given in the Gazetteer.

206. Minor spelling lists. —For names which are not to be found in the Imperial Gazetteer/ the Gazetteer of India, the District Gazetteers and minor Spelling lists as available may be consulted as a guide; such lists should be maintained in the Drawing Office of the regional Director concerned.

271. Special lists of names.- If the respective State Governments have Published a comprehensive list of villages in each taluk / district, such list may be consulted. But for Roman names of the villages, the transliterated version of SOI will only be used.

208. Burmese and Shan names --- The authority for the transliteration of Burmese and Shan names is contained in "Tables for the transliteration of Burmese into English" and "Tables for the transliteration of Shan names into English"

207. Doubtful cases – In doubtful cases, a reference should be made to the Local authorities, but as these officials are not necessarily bound by the same Spelling rules as are in force in the department; it may not always be possible to accept their suggestions.

210. Accents --- Accents must be used in the spelling of names on maps. Accents will not, however, be entered on a final "a" "i" or "u" even though used in the Imperial Gazetteer or other authorized lists. Accents will be drawn at a distance above each letter approximately one-fourth the height of a capital letter of the type concerned.

211. Horizontal accent to be used. —In many cases, the minor lists agree, except in the accents used, with the Imperial Gazetteer: in the latter, the horizontal accent (-) has replaced the acute (') and grave (*) accents, and this practice is to be followed in the spelling of all Indian names on maps

212. Accents in Burmese, Tibetan and Andamanese names--- In the case of Burmese, Tibetan (see Para 5 of Appendix B) and Andamanese names the circumflex (A) and the modification (..) may be employed where their use is supported by good authority, or appears requisite in order to indicate the correct pronunciation.

213. Names ending in" pur"—In case of village names ending in " pur", no accent should be used on the "u" of that termination, except in area outside Indian where its use is authorized by Gazetteers and other authorities mentioned in Appendix B.

214. Full stop--- Full stops after abbreviations, initials, etc., are never to be used on the body of a sheet, but should be used when appropriate in the borders or margins. The decimal point may, however, be used, in the body of

the sheet to express selected Survey Of India bench-mark heights to the tenth of a metre (See Para 64 b (i).

209.Spaces between initials --- when initials are used in combination with a name (or number), the space between the name and the nearest initial should be slightly wider than the space between the initials, so that they do not appear as part of the name. (See Para 229)

216 Hyphens--- Hyphens will not be used in compound names either in India or in Transfrontier countries, except in the following cases; -

(i) Where necessary to ensure correct pronunciation, e.g., Maz-ham. Pa-ngam.

(ii) In the case of single letters, as the Persian "i"or"o"e.g.., Ab-I-Panja, Mandab-o-Mandarab.

(iii) When a compound name is typed in two lines, a hyphen may at discretion be inserted at the end of the first line.

(iv) In Burmese, Shan, Chinese, Indo- Chinese and Thai names, for which there are special rules

217. Compound names --- The component words of compound names should stand apart except in rare cases such as Nizamuddin. The initial letters of these component words will be in upper case and of the connecting particles in lower case.

(a) Common place termination --- As regards common place termination such as 'gaon' 'nala', 'darrah, 'talao' etc.' which differ in form in different places, it will be found that, in most cases, the Imperial or District Gazetteers, or accepted spelling lists contain instances of the spelling required, or clues thereto; where, however, no examples occur, the commonly accepted local rendering must be transliterated according to the rules.

219 Descriptive vernacular names----- When a descriptive vernacular name (generally the name of a natural feature), e.g., khwar, Darra, etc., (for stream beds), Ghundi, Ghar, etc., (for hills), is a component part of a name and the local inhabitants generally couple the descriptive word with the name, the latter, when entered on a sheet, should include the descriptive word. The usual practice is to separate the two words when the name is applied to the natural feature for which the descriptive word

is given, and to combine them in one word when the name applies to a village or other feature: e.g. (Malai' is the Tamil word for ' hill')

Chenni Malai .. .. Name of hill

Chennimalai .. ..Name of village.

220 Translations of descriptive names.---- Translations of descriptive vernacular names should not be entered when their meaning is sufficiently clear, either from the use of a symbol or by a study of the neighbouring topography, or when the descriptive vernacular name is well-know, as for instance, in Tibetan, such names as La, Tsho, Dzong, Gonpa,etc. It is, however, permissible to enter each such descriptive terms as "Rope Bridge", the vernacular names for which might not be well known. When, however, the local words for pass, river, fort, etc., might not be readily understood, their meaning should be given in a foot-note on topographical maps on the 1:250,000 and larger scales.

221 Fiscal names --- It frequently happens that the fiscal name of a village, as given in the list, differs from the name by which the village is best known and commonly called by the people of the country; the latter appellation is obviously that which is required on a topographical map; the discrepancies, therefore, should be carefully elicited by field surveyors and noted by the entry of both names on the plane-table section, and the well-known name on the fair original (the less important name being entered in brackets after or below the more important name).

222 Fiscal names liable to change----- Fiscal name of village areas of which the site name are liable to frequent change, or which contain no permanent site, such as the "dehs" and "chaks" in Punjab may be entered on 1: 50,000 sheets in the type prescribed for unimportant localities.

223 Positions of names---- Site names should be typed, as a rule, horizontally, close to, and to the east of the site; but if, to do this, it would be necessary to break important detail, the name may be placed further away or in another position. (See Para 62 (a) (i). Names of railways, roads, canals, streams, hill ranges, and (in special cases) administrative units, long slanting ferries over wide rivers, long viaducts or bridges, steamer service routes, submarine cables, high and low water lines, and fathom lines and their metric equivalents may be typed out of the horizontal (case also para 257); but these names should be typed close and parallel to the symbol in a position as nearly horizontal as possible.

218 Breaking detail for names-----(a) Boundaries must sometimes be Broken for lettering, but only when absolutely necessary.

(b) Lettering should be typed clear of detail as far as possible, but when it cannot be avoided, detail, whether it is to appear in black or colours, should be broken on the fair original where there is any likelihood of its obscuring the lettering. Breaks in detail to be printed in black will not be joined up by the Reproduction Office. Breaks in detail, which is to be printed in colour, must be joined up on the colour patterns and the Reproduction Office, and must be completed in blue on the fair original during drawing.

The above orders refer to sheets with names typed on the outlines original. For sheets with a separate name original, items of black detail appearing on the outline original, which clash with names on the name original, will be broken. In this case, the breaks should not be completed in blue.

225 Emphasizing names by spacing letter --- Certain classes of type, as used for names of railways, administrative towns, heights, contour values, etc., stand out with additional emphasis and character if fine spaces of tin, or paper, are inserted. Such type in the smaller founts is often difficult to read without spacing. This, however, should not be overdone.

226. Examination of names----- Names on the original must be in agreement with those in the reference list on the plane-table section. (See Chapter V). The only names, which will possibly not appear on this list, will be spaced names, they will appear on the typer's guide (Para 62).

227 Symbols not in foot note tables---- When a symbol is used in the body of the sheet, which does not appear in the table of symbols printed in the standardized footnotes, an explanation of the symbol may be typed alongside it, if space permits, or a special footnote explaining the symbol may be added. Similarly, when the nature of the ground cannot be suitably expressed by any existing symbol, a brief description may be typed across the area.

224Use of capitals and hyphens in descriptive remarks----- When descriptive remarks are entered on a map, hyphens should not be used between component words. The type employed (Upper and lower case) should be that prescribed in the type table. Descriptive remarks should not be spread out at the expense of legibility, merely to cover an area, but should be repeated if necessary. These orders do not apply to the words "Reserved or Protected Forest" Whether used in conjunction with a name or not, as these are not considered as descriptive remarks.

For use of initial capital letters in conjunction with the descriptive remarks see Appendix F.

229. Abbreviations.--- When abbreviations, e.g. 'JM' for 'Jute Mill ' 'IF' ' Indigo Factory''Chy' for Chimney' 'Disp for 'Dispensary ' 'Hosp' for' Hospital', etc., which are not ordinarily explained in the standard symbol tables, are entered in a sheet without explaining what they stand for, they should be explained in a reference table as specified in the Border Specimen. Both the abbreviations and their related words in full in the body of a sheet will not be allowed.

The words "Minor", "Channel" and "Distributary" in canal names should be unabbreviated wherever possible. When abbreviations are necessary, they should take the form "Min", "Chl", "Disty"

If space does not permit entry of the names of the months in full the following abbreviations will be used: --

Jan, Feb, Mar, Apr, Jun, Jul, Aug, Sep, Oct, Nov, and Dec.

*Abbreviations of metric units of lengths/ distances should be correctly used.

230. Rules for maps in black.---- On topographical maps, on which roads and water features are printed in black, mines and passes should have the words 'Mine'
And 'pass' typed against their respective symbols on the body of the map and in the foot-notes ; and whenever there is any possibility of wells being confused with unnumbered boundary pillars, such wells should have the word' Well' typed against them on the map, but the word' Well' need not be typed in the foot-notes. The type to be used in these cases should be the same as that used on the maps for place names.

B- LAKES, TANKS, RIVERS AND STREAMS

233. Initial R for river – The initial letter R for River should be entered after the names, not before.

234. Name of lakes, tanks, rivers, etc.--- Names of lakes, tanks, rivers, etc, should preferably be typed within the water area. Names of small lakes and tanks may, however, be typed horizontally outside their limits.

228 Names of rivers, streams and canals.---- Names of rivers and streams should be typed parallel to their courses in such positions that they may read from west to east. The size of type selected for river names should vary with the importance and length of the river, and be gradually increased from the source towards the mouth. When a river or stream has more than one name and alternative or alternatives are typed, the different names should be separated from one another by the word "or" (in upper or

lower case according to the style of the main name, and one fount smaller than the latter): the alternative name or names should not be included in brackets.

Names of main canals should be entered in upper case and names of branch canals in upper and lower case. The name of the main canal should be added to the branch name, in the same type but within brackets, in one or two places in each sheet where its omission would leave doubt as to the canal system to which the branch belongs.

236. Position for stream and river names.----- The positions for stream and river names must be carefully selected so as to stand out clearly and interfere as little as possible with the detail and contours. It should also be selected so that the name, while remaining parallel to the course of the river, is typed in as straight a line as possible.

C--- RAILWAYS

237. Railway station names. The spelling of names or railway stations should not be taken from railway lists; they must, as for other names, be correctly spelt. The initials RS, without the name, should only be entered against a railway station when there can be no doubt whatever as to what the name is.

The name of a railway station may only be omitted when it lies in or very close to the site of a town or large village from which it takes its name. In cases where the station lies close to a small, village, from which it takes its name, the station name should be typed rather than the village name, being the more important of the two.

The Alphabetical List of Railway Stations published by the Railway Board should be consulted.

235. Flag, Pick-up and Halt stations.---- The names of 'Flag' 'Pick-up' and 'Halt' stations should be entered as'…….RS (flag)' ; the names of ' Reversing' stations should be entered as ……RS (reversing)' ; the names of others subsidiary stations, such as Siding, Crossing, Passing, Block-House and Cabin, being of doubtful utility, should not normally be shown.

236. Names of railways.--- The name of a railway with, if necessary, the branch name should be typed along the line and, unless the railway is broad gauge, the size of the gauge should either be entered along the line or, if more convenient, centrally below the railway and branch names. Abbreviations may be used.

The following are the metric equivalents of the different kinds of gauges to be show on our topo maps on metric system: --

Dimension in F.P.S. System	Metric equivalent
5’ 0”	1524 mm
4’ 8 1/2”	1435 mm
3’ 3-3/8	1000 mm
2’ 6”	762mm
2’ 0”	610mm

The gauge should be shown in metres correct to two places of decimal. There should be a space between the railway and branch names and the size of the gauge should be in brackets, e.g., SOUTHERN RAILWAY Alnavar Dandeli Branch (Meter gauge), NORTHEAST FRONTIER BY D H Branch (0.61 m gauge). When the name of a railway is different from that of the railway system, which operates the railway, the system name will be entered in brackets in abbreviated from after the name of the railway, e.g., CHAPARMUKH SILGHAT RAILWAY (NFR).

237. Type for branch names and gauge.----- Branch names and size of gauge should be typed in the upper and lower case of the type, which is used for the name of the railway. When two different gauges of railway run together, the smaller being laid on the same sleepers between the rails of the broader gauge, the words “ One track for both gauges” will be typed alongside, vide Para 131.

238. Authority for names of railways.----- The names of railways, with the words” Main Line” (in the lower case of the type) when necessary, and the names of branches and sections of railways should be taken from the current ‘ History of Indian Railways’ published sexennially by the Railway Board, in which this ’information (previously given in the annual’ Administration Report on the Railways in India’) is now incorporated. They should, as in the case of station names, be correctly spelt. In taking names from the History of Indian Railways, technical names, such as “N.E Line, commercial section”. or superfluous information, when a railway, has no other section, such as the names of terminal stations entered with the name of the railway, may be ignored.

D—TOWNS AND VILLAGES

242. Village names.--- The size of type used for village names must depend on the importance of the village. In densely populated country in the plains, where village names are numerous, the smallest type prescribed in the type table for village names should be used for all except large and important villages. Where, however, the villages are not numerous, the intermediate size type prescribed should generally be used, the smallest being kept for small hamlets. In the hills, where the smallest type does not show up well, names of village should almost invariably be printed in the intermediate size type. In the case of very large village, the largest type laid down in the table should be used.

Each sheet should be considered as a whole and the best use made of the various sizes of type prescribed to give the best indication of the varying importance and size of the towns and villages.

238. Tribal village.----- In localities where villages often consist of several distinct parts, each inhabited by a different tribe, or where it is important for political or military reasons that the name of the tribe inhabiting a village should be give, the tribal name without brackets should be added either below or to the right of the village name or names (see Para 221). The name should be printed in the upper case of italic type, but one size smaller than that used for the village name. Where the same tribal names are repeatedly used on a map, the initial letter may be occasionally used in place of the full name, if no ambiguity is caused and the use of the full name would injure important detail.

239. Sites falling in two sheets.--- When a town or village site or other feature fails across the common edge of two sheets and is not completed in the border in accordance with the orders in paras 319 and 320, the name should be typed in the body of the sheet in which the larger portion falls and in the border of the sheet containing the smaller portion. The style of type used in the border should be the same as that in the body of the adjoining sheet but may be in a smaller fount if desirable. In the north and south border, the name should be typed parallel and close to the edge of the map opposite the town and village. In the east and west border the name should be typed horizontally, but when the name cannot be fitted into the border, it may be typed parallel and close to the edge of map. Names in the border should not be spaced.

245. Numbers for names.---- In the case of large towns, cantonments, etc, where numerous names would obscure detail, the Director of the Circle may authorize the use of numbers on the body of the sheet in place of the less important names, with a reference

table outside the border. See Para 305. Their names or abbreviations for the more important sites, such as CH, IB, Hospital PTO, Should be typed in the body of the maps.

246. Description of special buildings, etc., to be typed--- In the case of building, etc., for which no symbol is prescribed, it is better to type a description than to introduce a new symbol, e.g. "Ziarat", "Saraj", etc.

Mode of typing descriptive remarks is given in the current Type Table for Topographical maps in metric system (Gill/Mono Type), on scales 1: 25,000 and 1: 50,000 and 1:250,000.

243. Abbreviations.—Certain abbreviations are shown in the foot-notes but their use is not compulsory, and, where prominence is desired and there is room, the full name may often be usefully added to the abbreviations of names of bungalows, e.g., "RH (Canal) " or" Canal Rest House"." RH (Forest)" or "Forest Rest House".

244. Markets. —The day of the week on which a market is held should be entered in brackets after the word market, using the following abbreviations if space does not permit entry of the complete word: -

Mon, Tues, Wed, Thurs, Fri, Sat, and Sun.

245.Ruins -- The words " In ruins "in brackets, should be entered against the sites of ruined towns and forts (see also Para 250).

E- SPACED LETTERING

250. Places of Religious or Antiquarian Importance--- "Old English " type will be used for the names of place, including ruins, of religious or antiquarian importance. The use of this type, if not overdone, adds contrast and greatly improves the appearance of a sheet. These founts will normally only be held by Drawing Officers who will be responsible for the typing in of such names at the time of examination of field party sheets.

251. Fairs.--- Important fairs, with period in brackets, should be entered on fair sheets.

252. Battle- Fields.—All battlefields, which can be correctly located, will be show on all scales larger than and including the 1:250,000 whether there is a memorial or not. The name and year should always be shown, but if on the 1:250,000 scale there is no space; the name may be omitted but never the year. The years of sieges will not be given.

E – SPACED LETTERING

253. Major partitions of districts.--- The names of the major partitions of districts, which appear in the district heading, will be typed across the area of the partition. Where a district has no partitions, its name will be spaced across the map as well as entered in the district heading; no administrative compartment, shown on the map, shall be left without a name spaced across it or in the border. Each name will be typed horizontally across the center of its area, which may cover more than one sheet. Except in the cases refereed to in Para 257 below, one or two inter-letter spaces should be left between the boundary and the initial or final letter. This space may be increased where necessary, but the inter-letter space (center to center) should not exceed 15 cm (on scale of publication). Also see Section XVIII

247. Unadministered areas contiguous to India----- The word UNADMINISTERED' in the absence of any recognized name of such an area, will be typed horizontally across the center of the area in administrative type and treated in all respects as an administrative name for entry on maps.

248. Substitution of minor partitions.--- Subject to the Surveyor General's approval the names of the minor partitions of districts, etc., may be substituted for those of the major partitions in any administrative areas for which Directors, after consultation with the Local Governments, consider the minor partitions to be of comparatively greater local importance than major partitions.

SECTION IV – TYPING

249. Spaced names extending over more than one sheet.----

When a spaced name extends over more than one sheet, care should be taken to get the same alignment, spacing, and size of letters in each sheet. To ensure this, adjoining published sheets should be consulted, and where adjoining sheets have not been published, or published on scales other than the prescribed metric scale, the orders in Para 440 should be carefully complied with.

257. Name of small or isolated areas. The names of small or isolated areas should be typed in the most suitable positions and may extend slightly beyond the limits of the areas to which they refer, and, in exceptional cases, to avoid the use of references, may be typed on a slant or in a curve. If however, it is impossible to type the name, the initial letter or a pair of letters should be typed in the body of the map and explained in a footnote. In explaining the reference, the foot-note should not mention the locality or the map square in which the area fails, but should give full information as to its administrative connection, so that it will be unnecessary to show such as area in the administrative index. (See Para 259 (b). Initial letters should be used as reference rather than figures, which might be, confused with the reference figures of the administrative index. (See Para 304).

258. Position of spaced names.--- The position of each spaced name should be carefully chosen so as to fall once only across the center of the area to which it refers, and each letter should be equally spaced, care being taken that important detail is avoided, and that important tops or other hill features are not obscured.. Reference should be made to small-scale maps, or the local administration, if adjoining sheets of the same scales are not available to cover the whole area. If however, it is know that the whole of such an area will not be covered by adjoining sheets on the same scale, then its name should be typed in the most suitable position across the sheets that are to be published.

259. Name in the border. --- When only a portion of a tahsil, etc., or a district / state containing no internal subdivisions, falls within a sheet, the name will be typed in the border or borders adjoining the area, except when the name, or one or more letters of the name, has already been entered in the body of the sheet in accordance with Para 253 and 258. The name, however, be inserted in the border when by its omission, there would be any doubt as to the particular tahsil, etc., to which a small area on an edge belongs. Even when they refer to large areas, such border names must not be unduly spaced out; the letters forming the names should not be more than 20 mm apart when reduced. When alternative names are entered in the borders, the word "OR" without any space between the letter, should be typed in upper case.

260. Size of type. -- The size of type to be used will depend on the spaces between the letters. Vide Type Table.

261. Letters in border.-- Such letters as do not appear in the body of a sheet will be added in a smaller type of similar description in the border so as to have the complete name on each sheet, the bottom of all the letters being in the same horizontal line.

254. Tribal names.-- (a) The rules laid down for the typing of tahsil names apply generally to tribal names, but when the tribal area consists of a long narrow strip, running north and south or nearly so, the name may be typed horizontally several names in the body of the sheet. To avoid unnecessary repetition, however, the name may be typed out of the horizontal, care being taken that the letters do not cross or intermingle with letters of other spaced names.

a. The letters of tribal names, which are not typed in the body of the sheet, may be typed in the border in the same way as tahsil names, as long as they do not interfere with the latter. Tribal names, however should not be spaced along the border, and should always be in the singular.

© Where it is desired to show a tribe as subdivided into clans, the clan names should be typed across their areas with the main tribal name in brackets below that of each clan.

Where it is desired to show further subdivisions, i.e., sub-clans, the

name of the sub-clan should be similarly typed with the name of the clan in brackets below; the main tribal name, if it is desired to show it, being, in this case, spaced across the whole area in accordance with preceding orders.

(d) If considered desirable, such names may be typed out of the horizontal, but the horizontal position should not be departed from without good reasons.

(e) The tendency to spread out spaced names to cover large areas should be checked; the principle of repeating the names should be followed.

(f) Officers in charge of units should consult the military and political officials as to what tribal name should be shown on our maps.

262. The generic term "Tribe" will form a part of all the tribal names.

255. Names of localities and other areas---- Apart from administrative and tribal names, which have been dealt with in the foregoing paras, names that apply to areas as distinguished from points or sites, such as localities, reserved forests, large areas of water, etc., should always be spaced, provided that this can be done without extending them beyond the area to which they apply. It is better to use smaller type, spaced, if there is no room to space the larger type. Names consisting of more than one word should be typed in two or more lines if there is no room to type them spaced in one line. Such names should not be typed with wide spaces between the letters; they should, as a rule, be typed entirely within the body of the sheet, and may be repeated in the same and adjoining sheets if necessary.

256. Reserved, etc., Forests,-- In order that there may be no doubt as to which is the forest side of a forest boundary, care must be taken to put the words "RESERVED FOREST", "PROTECTED FOREST", or "STATE FOREST", as the case may be, in each forest area. Where there is not sufficient room to enter these words, the initials RF, PF, or SF may be used instead, or the name may be entered in the border, if the area to which it refers extends beyond it. In all cases where there is room, the name of the forest will be typed in addition. When the names of the reserved/protected forests are spaced, abbreviations RF/PF will not be used along with the names but the words RESERVED/PROTECTED FOREST will be entered in full with same inter-letter spaces as in the spaced names.

257. Spelling of Reserved Forest names---- The names of reserved, etc., forest must be spelt correctly according to the authorized rules; should a forest name be derived from some adjoining feature, the spelling of both names must naturally agree.

266 Use of the word “Range”. --- The word “Range”, as applied to forest range, should not be used, since its application in this way is a purely technical one. Instead of designating forests as “Ranges” they should be entered as Reserved or Protected Forests. On special forest maps on the 1:25,000 or other scales, the word ”Range” may be entered to denote a forest range, is the forest officers use it as such; but wherever used, it must invariably be preceded by the word “Forest”

267 Name in blank areas.--- (a) If the blank portion of a sheet falls in a different state (or corresponding administrative area) to the remainder of the sheet, then the name of the state, etc should be typed across the blank space ; but if the blank portion does not fall in a different state, etc., and falls in a different district, etc., then the name of the district, etc., should be typed across the blank space. This rule, however, will not apply to blank areas of a state or district of which a portion is partially mapped.

(g) The name typed not across the blank space on a sheet should not be entered in the title or heading, or in the Administrative Index of the sheet. (See Section XIX. Para 517 (c).

© The following note when applicable will be typed in the blank space in a sheet :

“ The area left blank on this sheet will be or has been published on the…scale as part of sheet No……..”.

F. - HILL NAMES AND COUNTOUR ORIGINAL

268. Name of hill ranges. - Names of hill ranges should be spaced and typed along the ranges in such position as to read from west to east, presuming the bottom of the map to be normally south. Sharp curves should be avoided as much as possible. When hill ranges extend to two or more sheets, their names should be typed on each sheet, but it is also permissible to type names once only in the manner described in paras 256,258 and 261, the bottom of all letters in this case being on the same curve. Name of mountain groups falling in two sheets should always be treated in the latter way, so that the extent of the group may be gauged from either sheet. The letters of the name should lie near but need not necessarily be on the crest line of the range. The word ‘Range’ should be reserved for such ranges as appear on the 1: 2.5 M map of India ; the local names, e.g.,‘Dhar’, ‘Ghar’, ‘Koh’, should be used for the shorter stretches of such hill features.

The major mountain ranges for which special type is prescribed in the Type Table for topographical maps are:- Great Himalaya, Great Karakoram, Hindu Kush, Kunlun, Vindhya, Western Ghats, and Eastern Ghats. The generic term ‘range’ will

not be used with these range names and these will not be shown on any maps larger than 1:250,000.

269. Personal and improvised names.--- In accordance with the Govt. of India orders, vide Para 203 (e), the State Govt. have full authority to give names to places and natural features, falling within their areas, hitherto unnamed, and also to decide their spellings local script. The State Govts, should, therefore, be consulted in the absence of any existing names of places, etc. If the State Govts, are unable to suggest any name, improvised names may be entered on our maps keeping in view the following principles:-

(b) Personal names will not be accepted for use on Survey of India maps.

(c) No improvised names will be accepted without the sanction of the Surveyor General. The Director before recommending sanction will take into consideration the following points: -

a. The lack of local names in the vicinity.
b. The suitability of the name.
c. When possible, the degree to which it is used by other travelers.

The required density of names in a particular area depends largely on its accessibility and popularity among travellers. Thus in Sikkim, our maps are very deficient in names although the numerous travelers there have accepted many improvised names for minor peaks and passes, some of which might well appear on our maps. In less frequented areas, the need for more names is much less.

Suitability is a difficult matter to define but entirely fanciful or humorous names should be rejected. In case of doubt, the Director should refer to the Surveyor General.

© Improvised names will usually have been given in English or other European languages. If so, they should seldom be translated into the local vernacular although such translation is not forbidden.

(d) Names improvised in European languages other than English should not be automatically translated into English. Thus, Colle Italia, if accepted, would not become Italy or Italian Pass. If however, such names are subsequently accepted and translated into English by later explorers, the English name might be accepted.

(v) Improvised names, when first entered on maps, should be distinguished from names, found locally by the use of square brackets. A foot-note to the effect that such names have been improvised and are not likely to be locally known,

should be entered, see Para 498 (m). It will always be permissible to remove the brackets in subsequent editions, if it is considered that the name has become widely known. Names adopted from existing names in the vicinity, and names in European languages, will not be distinguished in this way.

G. MISCELLANEOUS

270. Contour value:- The selected contour values will be typed, if possible, in the gaps left in the contour drawing but if it has not been feasible to leave these gaps, spaces must be carefully erased. Care should be taken that no contours (either thick or fine) are drawn within or touching the lettering of the contour values.; there should be a clearance all round of about 0.5 mm. Contour values; should not be typed upside down, but in such a manner that they can be read from the bottom edge of the sheet.

G. MISCELLANEOUS

(a) Boundary pillars of external boundary of India.- The numbers of the boundary pillars of the external boundary of India and international boundaries in transfrontier areas will be typed in Arabic numerals in upright or italic founts, in accordance with the numerals used for the numbering of the pillars in the authoritative description of numerals to be used for the numbers of boundary. Directors of Circles should ascertain from the Addl. S.G. Director, Map Publication, the description of numerals to be used for the numbers of boundary pillars on each of their sheets which include portions of such boundaries. Where space does not permit owing to the pillars being too close together, the numbers of selected pillars may be omitted at the discretion of the Circle Director.

(b) Names of Geodetic, etc., stations. —Names of geodetic and other trigonometrical stations should only be entered on the map if they have been verified by the surveyor as locally recognized; they should be correctly spelt.

(c) Names of travellers and explorers. —Names of travellers and explorers will be rigidly excluded from the face of maps. They may be referred to, if necessary, in the footnote or compilation index, vide Para 420.

SECTION V
BORDERS AND MARGINAL WORK

Boarder Specimen to be followed:- The Survey of India emblem title, borders, notes, scale &c., will be in accordance with the latest Border Specimen for Open series map/ Defence series map as case may be. All borders and marginal items in any sheet will be completed by the Data acquisition wing responsible for data assimilation of the GDC.

The measurement for spacing of headings and foot-notes on the border specimen are designed for average sheets. Exceptional cases it may be require special treatment. In such cases, the measurement laid down should not be followed slavishly but balance should be preserved. For the sake of clarity, spaces between separate items should seldom fall below 4 mm at the scale of publication.

West Margin Items:

Open series Map:-The Survey of India emblem, text for map series and colour of the series box in Cyan for OPEN SERIES MAP in a single row as per latest OPEN SERIES MAP border specimen.

The first line of the text " OPEN SERIES " places in centrally in the box, and the text "MAP" in the second line placed centrally as per border specimen.

Defence series Map :-The Survey of India emblem, text for map series and colour of the series box deep Purple for DEFENCE SERIES MAP in a single row as per latest DEFENCE SERIES MAP border specimen.

The first line of the text " DEFENCE SERIES " places in centrally in the box, and the text "MAP" in the second line placed centrally as per border specimen.

Title :

Sheet numbering :- International Map of the World(IMW) system should be followed.

For example sheet **No. H43K16** on 1:50,000 scale

'N' in upper 'o' in lower followed by '.' .

The First letter of sheet number character (H in above example) stands for latitude zone of 4° each, stated with A from equator 0°-4° North Latitude and next North zone from 4° - 8° latitude reference as B and so on.

The second two figures (43 in above example) stands for Longitude zone of 6° each. Greenwich which is at 0° longitude , is at zone 30 and increases to East .

In the above example the zone **H43** refer to 1:1,000,000 scale IMW sheet numbering to area covering latitude 28°-32° and longitude 72°-78°.

The next character '**K**' after **H43** ,stands for 1:250,000 sheet number and next figure "**16**" stands for 1:50,000 sheet number.

Sheet numbering in 1:250 ,000 scale :

Each zone of 6° longitude and 4° latitude, on 1: 1,000,000 scale, further divided into twenty four (six west to east and four north to south) each covering an area 1° of longitude by 1° of latitude. Thus each of its division of 1° longitude and 1° latitude refers to 1;250,000 scale sheet.

Each 1:250,000 sheet will carry its 1:1,000,000 sheet zone number followed by its own sheet number.

In the above example , the sheet covering area on ground from longitude 76°-77° and 30°-31° latitude on 1:250,000 will be numbered as **H43K** .

Lat **H**	A	B	C	D	E	F
	G	H	I	J	**K**	L
	M	N	O	P	Q	R
	S	T	U	V	W	X
Long **43**						

Sheet numbering in 1:50 ,000 scale :

Each 1:250,000 sheets divided into sixteen 1:50,000 sheets, each 1:50,000 sheet will cover an area 15' of longitude by 15' of latitude . Each 1:50,000 sheet will carry its 1:250,000 sheet number followed by with its own sheet number. For example; the south-east corner sheet falling in 1:250,000 sheet No.H43K will be numbered as **H43K16**, the letters and numbers are in one line.

1	5	9	13
2	6	10	14
3	7	11	15
4	8	12	**16**

Sheet numbering in 1:25,000 scale :

Each 1:25,000 sheet will cover an area 7½' of longitude by 7½' of latitude. Thus , four 1:25,000 sheets will form one 1:50,000 sheet. Each sheet will carry its 1:50,000 sheet number with its own sheet number following it. Thus, the north-east corner sheet falling in 1:50,000 sheet No,H43K16 will be numbered as **H43K5NE**, the letters and numbers are in one line.

NW	**NE**
SW	SE

Sheet numbering in 1:10,000 scale :

Each 1:10,000 sheet will cover an area 3' of longitude by 3' of latitude. Thus , twenty five sheets will form one 1:50,000 sheet. Each sheet will carry its 1:50,000 sheet number with its own sheet number following it.

A	B	C	D	**E**
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y

Thus, the north-east corner sheet falling in 1:50,000 sheet No,H43K5 will be numbered **H43K5E**, the letters and numbers are in one line

Sheet numbering in 1:2,000 scale :

Each 1:2,000 sheet will cover an area 36 " of longitude by 36" of latitude. Thus , twenty five sheets will form one 1:10,000 sheet. Each sheet will carry its 1:10,000 sheet number with its own sheet number following it.

01	06	11	16	**21**
02	07	12	17	22
03	08	13	18	23
04	09	14	19	24
05	10	15	20	25

Thus, the north-east corner sheet falling in 1:10,000 sheet No,H43K5E will be numbered **H43K5E21**, the letters and numbers are in one line.

All character in sheet numbering will be in upper case.

Index to sheet, Administrative index : (What should be its name ?????)
What the index to sheet and Administrative index are intended to show:-

The combine Index to sheet and Administrative index is intended to explain at a glance the sheets falling adjacent to the current sheet at the center. It also show the District and State or UT under which the sheets under index covers.

Underlying Principle:-
i.The position of the current sheet will be placed center of the index box containing nine adjacent sheets.

ii. Sheet Numbers of all adjacent sheets to be placed Centrally.

iii.The sheet limit and sheet number of the present sheet placed center of the index box are thickened as per border specimen.

iv. Administrative boundary up to district level to be shown in the administrative index.

v. District name in upper lower case where as State name in Upper case in a clear space for each district. State name should be placed below district name centrally justified.

vi. Name of Union territory will be shown in Upper case.

vii. International / State or UT boundary should be thickened in the administrative boundary in the index.

viii. The area covered by the state / UT will got the colour tint in the administrative index as assigned for the state/UT as per para …..

ix. If space does not permits for district name and state name or UT name, a reference number should be place in the region and the reference number clarified below the index to sheet box. The reference should explain below the index. Each statement for district name and state name in a single line. District name (in upper lower) followed by comma then state name in upper case followed by full stop. In case of Union territory reference number should follow UT name in Upper case followed by full stop.

a) If more than one references are there it should be place in two columns as per border specimen. The first reference should start from left
b) The part of the sheet covered by sea should get blue tint, and text “SEA” should be placed at the position of Administrative name. Sheet numbering will be shown as usual.

Reference to Department :
“ BHARATIYA SURVEKSHAN VIBHAG” in Devanagari “ SURVEY OF INDIA” in English with colour of the series to be placed as per border specimen.

Edition legend :

The edition legend will be entered once in the west margin item. The full edition foot-notes will be entered as follows (see Border Specimen):-

The edition number in the legend will be that of the latest edition as 1st Edition 2006 . The qualifying words 'Provisional', 'Preliminary', 'Revised', &c., and the date of the edition, are to be shown in the edition foot-note,

The editions on metric scales will be numbered serially from first onwards irrespective of the previous editions of a map. The edition number will be entered as per example below:-

1st Edition 1978; 2nd 2006.

[Previous Editions on 1-inch scales: Provisional 1901:1903: 1st (Preliminary) 1915; 2nd 1935; 3rd 1950].

Price Note : Position as per border specimen and price amount as per latest order.

Conventional Symbols : Symbols and colours as per border specimen , Explantaion text and their symbol in a single row.

Abbreviations.- When abbreviation e.g "JM' for ' Jute Mill', 'IF' for 'Indigo Factory', ' Chy' for 'Chimney', etc., which are not ordinary explained in the standard symbol tables, are entered in a sheet without explaining what they stand for, they should be explained in a reference table as specified in the Border Specimen. Both the abbreviations and their related words in full in the body of a sheet will not be allowed.

The words "Minor", "Channel" and " Distributary " in canal names should be unabbreviated whenever possible. When abbreviation are necessary, they should take the form "Min" , "Chl" ,"Disty".

If space does not permit entry of the names of the months in full the following abbreviations will be used:-

Jan, Feb, Mar, Apr, Jun, Jul, Aug, Sep, Oct, Nov, Dec.

Abbreviation of metric units : Abbreviation of unit of length/ distances should be correctly used. 'cm' for centimeter, 'm' for metre, 'km' for kilometer. No capital letter to be used in these abbreviations, not the terminal full stop or 's' to indicate plurality.

References :

All abbreviations which are not covered under para …..If more than one such abbreviation are used in the sheet, then it should be placed in two columns as per border specimen.

Notes :

In all foot-notes, references & c , on a map, the first line of each notes or paragraph will be indented one *cm*, thus:-

Tahsil boundaries are approximate.

Boundaries are undemarcated and approximate and are not to be taken as any authority in setting tribal disputes.

Heights & contours in metres.

Heights in metres (In the sheet not containing any contours)

Contours are approximate.(not applicable to sheet not containing any contours)

Water features are shown in blue where they generally contain water.

The exterior boundaries of area of Reserved or Protected Forest are shown by green ribands.

Cultivated areas are coloured yellow.

Wooded area coloured green.

Scattered trees and other vegetation are in green, but prominent surveyed trees are in black.

Special foot notes :
Special foot-notes are frequently necessary and these should be drafted to suit each particular case. Below are given examples of such foot-notes. Director of GDCs are invited to send to director ……, any additional forms of foot notes that they may consider should be included in the list. Special foot-notes should be entered unless they give information of real value. They should be grouped according to subjects and should be care fully punctuated.

a) **Coast-line and bathymetric contours**.
The High and low water lines, and ten-and twenty-metre bathymetric contours have been taken from Admiralty/Hydrographic survey chart No……(and name if available), dated….. with correction to ….
b) **Bench-marks**.
Heigh of Bench-marks have been taken from the old revenue survey map.

c)**Boundaries**.
i. Owing to change in the course of the …..River the boundary between ….. and … Districts should not be accepted as authoritative.

ii. The state and district boundaries in the ….River follow the main deep water channel and will change with fluctuations of that channels.

215. Forest boundaries have been taken from Forest maps and adjusted to boundary pillars surveyed on the ground.
216. The state boundary between Punjab and Haryana State has been surveyed as pointed out by the local official on the ground but has not been verified by the Government concerned.
217. Main pillars of the India-Pakistan boundary are shown larger and subsidiary ones smaller.
218. The common boundaries of Reserved Forests between Bhatkot West R F & Donagiri R F and Donagiri R F & Ukhalalekh R F in squares C/2,3 have not been shown for want of reliable information.
219. The territorial water of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line
220. The Boundary of Meghalaya shown on this map is as interpreted from the North-Eastern Area(Reorganisation) Act, 1971, but has yet to be verified.
221. The …….(enter the name of the concerned state/districts) boundary has been surveyed as pointed out by the local officials on the ground, but has not been verified by the Government concerned/ District authorities.

d)**Boundary pillars**.
i.Sites of bobundary pillars not found at the time of survey are shown thus :-
ii.Village trijunction are shown thus :-

e)**Bridges**.
i.Only bridges of a permanent nature have been shown.
ii.Log bridges in this sheet are liable to be washed away during monsson.

f) **Buildings** : Important buildings are shown in black with name

g)**Canal**.
i.Canal distance stones are 1,000metres (or …. Feet as unit used on the ground) apart and every fifth stone is shown.

ii. Canal distance stones are 5,000metres (or …. feet as unit used on the ground) apart.

iii.In the Firozpur district canal distance stones are 1,000metres (or …. Feet as unit used on the ground) apart and everyone is shown; in other areas only every fifth stone is shown.

iv. Unmetalled roads along canal embankments are shown by cart-track symbols; these are usually motorable.

v. A relative height e.g.,.6r, marked along a canal, indicates the height of the top of the canal embankment above the adjacent country.

vi.Roads fit for wheels traffic, and avenues of trees, exist along all main and branch canals and distributaries in this sheet except(here detail any exception) ……. Permission to use these rodas is required from the Irregation authorities.

vii. The Halgaah Distributary has been entered from information, supplied by the chief Engineer, Irregation Branch, Punjab.

viii. The alignment of canal in …….. and …… districts and their distance stones and names, have been entered from extra-departmental information.

h) **Compilation**.

i.Rigorously surveyed on surveyed on stereoscopic plotting machines from 1:70,000 and 1:60,000 vertical air photographs taken in May-June 2003 and March 2005, respectively.

ii. Rigorously surveyed from 1:60,000 vertical air photographs taken in November 2003 and compiled graphically.

iii. The area in the south-west portion of the sheet, fed by the Bari Doab canal system, has been revised up to 1995 in respect of constructional developments resulting from the project.

iv. The detail inside the China border has been sketched from across the boundary, and is, therefore, likely to increase in error as it gets further from the border..

v. This sheet has been compiled from 1:25,000 survey(For surveys on scales other than 1:25,000 the actual scale of survey should be mentioned).

i)**Cultivation**.

i. Periodical cultivation dependent on rainfall occurs in the southern half of the sheet; numerous field bunds of less than 2 metres in height occur through out the area.

ii. *Jhum* or temporarily cultivated area occur through-out the jungle; they are normally abandoned after 2-3 years and not shown.

iii.Only about one-third of the area coloured yellow on this map is cultivated in any one year.

iv. Cultivation is periodic and dependent on rainfall.

v. In terraced cultivation, the partly obliterated water channels have been shown by black broken lines.

j)**Ferries**.

Ferries on the Godavari River take pedestrian traffic only.

k)**Form-lines**.

Near the west edge of this sheet, hill features are shown by form-lines at approximate vertical interval of 100 metres.

l) **Glaciated regions**.

In this sheet ---------- the height of the area shown by form-lines snow line is about 5,000 metres.

m) **Hand pumps**.

Hand pumps are numerous throughout the sheet only the important one have been shown.

n)**Heights**.

i. The triangulated heights (and contours) in this sheet have not been adjusted to the heights of the spirit-levelled bench-marks and may not be strictly in accordance with them.

ii. Height along canal banks have been taken from canal bench-marks and information supplied by the canal authorities : they may not be in strict accordance with those based on survey data.

iii. Most of the heights in the sheet have been taken from the old level charts of the Punjab.

iv. The average height of ground above the mean sea level in this sheet, is about 10 metres.

o) **Improvised names**.

Names enclosed in square brackets have been improvised and probably not known locally. Names adopted from existing names in the vicinity and names in European languages are not so distinguished.

p) **Magnetic variations**.

The area shown on this map ----------is appearing in square … of this map magnetically disturbed and the variation given may differ largely from the actual value.

Or

The ……..half/quarter of the area appearing on this map magnetically disturbed and the variation given may differ largely from the actual value.

q) **Mines**.

Disused mica mines are liable to be reworked periodically. Some tracks in the areas of these mines are motorable with difficulty.

r)**Miscellaneous**.

i. This map contains alterations and additions based on information obtained from official government sources.

ii. The country is generally sandy; majority of cart-tracks are motorable from October to june.

iii. In areas of lesser reliability in squares…. hill features are shown by continuous form-lines at a vertical interval of 40 metres and drainage by broken lines.

iv. In areas covered by snow glare and dark shade on the photographs, hill features are shown by continuous form-lines and drainage by broken lines.

v. The sheet has been reissued as a result of verification surveys in respect of …..(enumerate the detail verified) carried out during ….. (enter the field season).

s) **Names**.

i. In Marathi names the letter d has frequently the sound of ; y invariably the sound of i ; and v invariably that of w, when an initial letter, and of o when otherwise placed.

ii. The letter P stands for *Pura* or Purwa.

t) **Paths**.

Foot-paths leading to the plateau from the south and west are impassable for pack animals.

u) **Perennial water**.

The accuracy of the information regarding perennial water on this map is not guaranteed and must not be accepted without further investigation.

v) **Rivers**.

i. The course of the …….. River has altered so greatly since the previous survey that adjustment of edges is not possible.

ii. Owing to shifting sands the course of the …..River is continually changing.

iii. The area adjoining the …..River is liable to change owing to continual fluctuation in the course of river .

w) **Roads**.

i. The road from ……..to …… has been entered from information received from ……

ii. The roads with 'Alignment approximate' or 'AA' typed alongside have been taken from extra departmental information up to …...

iii. All unmetalled roads inside the Tea Gardens are motorable throughout the year. Permission to use these roads is required from the Tea Garden authorities.

iv. Motor transport turning point ……... (symbol)

v. Roads/cart-tracks/power lines, etc …. Have been entered as a result of verification survey carried out during……..(entered field season).

vi. All cart-tracks and unmetalled roads along canals are motorable throughout the year. Permission to use these is required from the irrigation authorities.

vii. Cart-tracks, in this sheet , against which there is no descriptive remark,are generally motorable (four-wheel drive) in dry season.

x) **Railways**.

i. The …… railway branch has been entered from information supplied by the railway Board.

ii. The distance stone along the ……. Railway have been entered from extra-departmental information.

iii. The Central Railway is four-lined from ……. to …. And electrified from …….. to ……

y) **Steamer Services**.

i. The steamer service route and stations have been entered from information supplied by the River Steam Navigation Compaany Ltd.

ii. A launch service is maintained along the Godavari River between …… and …. From … to ……

z) **Streams**.

i. Throughout this sheet, numerous small bunds occur across streams; only the important ones are shown.

ii. Rivers and streams in Andhra Pradesh are named in different localities according to names of villages situated on their banks.

iii. The Godavari Rivers is generally fordable from March to june.

aa) **Tanks**.

i. Tanks in this area usually contain water from July to December .

bb) **Tansmission lines**.

i. The main power line has been entered from the information supplied by ……
ii. Microwave towers for mobile phone less than 10 metres are not shown.
cc) **Trees and forests**.

i. New sites for casuarinas plantation are chosen from time to time; the trees in existing plantations, when fully grown, are cut down and removed.

dd) **Tube wells**. Tube well are numerous throughout the sheet, only important one have been shown

ee) **Villages**.

i. The villages in the …….. area of a temporary nature.

ii. The Bastar District most of the hamlets forming part of a village are known as *pards*, named after the founder of each hamlet. The hamlet in which headman of the village lives is known as *Peddapara*.

iii. Village sites are liable to periodical change within their boundary limits.

ff) **Wells**.

i. Lined (or unlined, as case may be) wells are numerous in the southern half of the sheet.

ii. Numerous lined wells exist throughout the cultivated portion of this sheet.

iii. A relative height, e.g., *30r*, against a well, in blue, indicates its total depth in metres..

iv. Wells in the sandy areas are mostly brackish.

v. The majority of the wells in this sheet are brackish and are liable to dry up in the hot season ; only the more important ones have been shown .

vi. Wells are numerous throughout the sheet; only the important ones have been shown.

vii. Most of unlined well symbols indicate covered tanks, called *kunds*, which usually contain surface collection of rainwater.

COMPILATION INDEX :

Compilation index should includes detail of data based on the map is prepared including survey seasons.
Season of survey- When the whole of the mapped land area is the result of rigorous modern ground survey on the primary scale prescribed for the area or has been compiled in whole or in part from the rigorous modern ground survey on larger than the prescribed scale. If the survey occupied more than one season consecutively, the information should be expressed thus Surveyed 2005-07; if the seasons are not consecutive, thus- Surveyed 2005-06, 2008-09. In the later case the area should be clearly shown in the compilation index.

Compilation heading:- (a) when whole mapped land area of the sheet have same method of ground survey a reference text should be placed in the compilation index and detail to be explain under reference to the text.

x. when any parts of a mapped land area are derived from different sources, whether these be ground surveys of different degrees or reliability or part ground and part air surveys without systematic ground verification survey, each area should be precisely marked on the compilation index with a reference number and the reference is explain the detail of method and season outside the index

a) Areas mapped from air photographs without systematic ground verification survey will be regarded as complied. In the compilation index, in such cases will be 'Compiled from air photographs'. A compilation index will always be given in all case where varying degrees of reliability can be indicated.

b) In the case of areas mentioned in sub-para (b) above, the following data will invariably be given either as special foot-notes or as foot-notes to the compilation index as appropriate:-

Scale and type (whether vertical or oblique) or photography, date, method of compilation, i.e. by plotting machines or graphical etc.,

Revision or Correction Surveys:- (a) When the whole area, for which the seasons of Survey are given in the heading, is resurveyed or revised in the field the date of survey will be altered to that of resurvey or revision. When only part of the area is resurveyed or revised, the date of resurvey or revision will be added to the date of survey.

(b) In the case of verification surveys, when only partial revision has been carried out, the season heading will remain unaltered. A foot-note, however, will be given explaining. Whenever possible, the items to which the verification survey has been directed.

Compilation Foot-notes or Index : In every case detail of survey season will be included in compilation heading. Detail description for each section of area surveyed in different nonconsecutive seasons, adopting different technology, using different materials should have a reference number in the compilation index and the references should explained outside the box as shown in the border specimen. When material is derived from air photographs which have not been systematically verified on the ground, the compilation foot-note should give date and scale of photography, the method of compilation.

The descriptive notes should give the origin, nature, scale and date of survey when they are known.

The descriptive notes may take the following forms:-

A Surveyed 2001-02.

B Surveyed 2000-01, 2005-07.

C Rigorously surveyed on stereoscopic plotting machines from 1:70,000 and 1:60,000 vertical air photographs taken in March-April 2002 and May 2005 respectively.

D Rigorously surveyed from 1:60,000 vertical air photographs taken in November 2001 and compiled graphically.

Outrigger, how shown in compilation index: When an out rigger is added to a fairly drawn sheet, it should ordinarily be shown as such on the index, but, when the outrigger embraces the whole length or breadth of the map, neither the form nor the size of the index should be altered.

Projection : A map projection uses mathematical formulas to relate spherical coordinates on the globe to flat, planar coordinates.
UTM projection is used for OSM (as case may be)

Datum : A **datum** defines as national or international map reference system for the position of the spheroid relative to the center of the earth. A datum provides a frame of reference for measuring locations on the surface of the earth. It defines the origin and orientation of latitude and longitude lines.
WGS84 is used as datum for OSM sheets (as case may be)

Magnetic variation :

The note in the North margin of all topographical sheets will be worded as follows:-

Magnetic Variation from True North about 2 ¾" East in 2005.

Increasing West
(---------- by about 2' annually)
Decreasing

Wording when the magnetic variation is nearly zero:- In such cases the working will be:-

Magnetic variation from True North about 0' in 2005

West
(Increasing by about 2' ------ annually).
East

Calculation of Magnetic Variation and 'Annual change':- The values to the nearest ¼ th for all topographical sheets will be interpolated from the chart showing Lines of Equal Magnetic Declination. Epoch 2005.0 [REG. NO. 9654 101D' 88C (G.&R.B. 1:6 M)], until such time as new observations enable the Director, Geodetic and Research Branch, to issue more up-to-date values. No attempt should be made to adjust these values for intermediate years.

Annual change will be calculated to the nearest 1' using the same chart, and shown as such. When the annual change of magnetic declination amounts to zero, the annual change should be shown as "(Annual change negligible)"

The areas marked by the symbols x or x on the chart, mentioned in the first sub-para, are those which are magnetically disturbed. A special foot-note to that effect will be entered on all such sheets, and will take the following form:-

The area shown on this map or appearing in square …… of this map is magnetically disturbed and the variation given may differ largely from the actual value.

Or

The ……. Half/quarter of the area appearing in this map is magnetically disturbed and the variation given may differ largely from the actual value: entering East, North, South, West, etc., as is pertinent.

Procedure when no values are available:- In case of emergency, when no values of any kind are immediately available the value may be calculated from the mean of the compass declinations on the field sections, and the words " Approximate" entered before "Magnetic" in the heading.

Latest chart showing Lines of Equal Magnetic Declination Epoch to be used.

Graphical scale bar: A Graphical scale bar to be placed as per latest border specimen.

Contour interval : Contour interval should be given for the sheet on which contours of the whole sheet are drawn. In general contour interval for a standard 1:50,000 sheet is 20 metre . If contours at interval 10 metre available(can be compiled) for the whole sheet then the text " CONTOUR INTERVAL 10 METRES" to be shown.

In case , sheet not containing any contour then the text to be corrected to

" **HEIGHT AND CONTOURS IN METRES"**

Detail about map : As per border specimen as applicable to GDC

Website : *www.surveyofindia.gov.in*

Caution Note : *Reproduction in whole or part by any means is prohibited Without the written permission of Survey of India, the National Mapping Agency*. (in red)

GOVERNMENT OF INDIA COPY RIGHT, year.

South Margin :

BHARAT KE MAHASURVEYKHAYAK ……..KE NIDESHAN MAY PRAKASHEET (In Devnagari)

Published under the direction of …… ….., Surveyor General of India.

Survey of India, Hathibarkala Estae, Post box No.37, Dehra Dun-248001 (Uttarachal)

Department of Science & technology, Government of India.

Square letters and Figures :

Square letters (A B C D E F)and figures(1 2 3 4 5 6) as per border specimen

Graticule values :

Every four corner graticule will have value in degree,minutes and second ,where as interim graticule will have value in minutes and second as per border specimen

Administrative space name :

Administrative name up to Tahalsil/ Mandal can be spaced in the border if not spaced in the body of the map

Destination :

Distance and destinations on road.- Distances and destinations on roads are only required for the more important rods, and are given generally to the nearest town or important village. The more important the route the more advantageous it is to give destinations to large and important centers; in such cases, double destinations are sometimes useful, one to the nearest important town and the other to the terminus of the route, but such double destinations should be sparingly used. However, destinations to the terminations should not be repeated unnecessarily in the case of convergent roads which lead to the same place.

Distance will invariably be entered in kilometers irrespective of whether the distance stones are in kilometers or miles. The abbreviation 'km' will be used for kilometers in giving distance.

In the case of single destinations, the names and distances should, wherever possible, be in one line in the directions of the road where it leaves the sheet, except in the case of winding roads when it is sometimes more suitable to type the destination in the direction of the locality. When the distance stone along a road are shown on sheet, the name of, and the distance t the place from which the distance is measured, if it does not fall within the area of the sheet, should be entered in the border as the destination of the road; exception to this rule will occasionally be necessary, as in the case where the distance of a road is measured from the boundary of a district, or from some particular cross-road, an not from a town or village. When the destination of the road is situated less than a quarter of a kilometer from the point where the road reaches the edge of the sheet, only the name of the destination will be shown without distance. When the distance is less than a kilometer it will be shown to the nearest quarter of a kilometer and when over one kilometer it will be shown to the nearest kilometer. In the case of double destinations, that of the nearest should be given first.

Distance and destinations on railways.- Distance and destination on a railway should be given to the nearest railway junction if it does not happen to be a well-known town or to the letter. The abbreviations, "R.S." or Jn., will not be entered against the name of a well-known town if it is in the only railway station. In towns like Madras, Bombay, etc., which are served by more than one railway station the names of the railway stations will be entered like 'Bombay Central', "Egmore", etc.

Distance and destinations on canals.- Distances and destinations in the borders are not usually required for canals. If entered, however, they should conform to the rules for road distances and destinations, except that distances along canals are often measured in multiples of 1,000 meters or feet, etc., and not in miles and commence not form a town or village but from some point on the canal. In these cases, and in the case where a road with distances and destinations follows a canal, neither the distances nor destinations along the canal should be entered in the border.

REG No. Position as per Border Specimen, Number and year as per latest data

PRINTING GROUP : Name of the printing Group under which the printing job done

Foot-notes and reference lists

Para 304 : To be retained
Para 305 : To be retained

Area statement(To be discussed)

Para 306 :
Para 307 :
Para 308:
Para 309:
Para 310:
Para 311:

Outriggers:- When an outrigger is added to a sheet the limits of the outrigger should be marked on the index.

Numbering of outriggers sheets.- When it is necessary to add part of an adjoining sheet as an outrigger, the sheet numbers should include the number of the sheet in which the outrigger falls, if no further publication of the latter sheet on the same scale will take place, thus:- H43D4 and D8 (not H43D(4 & 8),

which would signify that the 1:50,000 publication of the areas covered by those sheets is completed (the full sheet number should appear first). Instance of I:250,000 sheet is H43E&A. on the other hand, and outrigger of a portion of a sheet, which will later on the published separately on the same scale, does not require the entry of its sheet number

Limits of outriggers.- Outriggers should not normally exceed 1/6 the length or breadth of the parent sheet. All outriggers will have the border extended round them, excepting only in the case of those which do not go beyond the normal border of the parent sheet. In case where the north border has been extended eastwards or westwards to include an outrigger, the central and other headings should be placed in their correct positions with reference to this whole border and not to that of the parent sheet along.

Arrangement of foot-notes.- The approval of the Director of GDC should be obtained to any departure from the normal arrangement of foot-notes that may be required to give a balanced appearance to the map.

Border letters and numbers. For outrigger sheet- (a) All graticule squares or parts of squares. Including any outriggers, will be lettered and numbered in the borders in the manner explained below. In the case of incomplete squares, the border letter or number will be placed midway between the extension of the line marking the edge of the sheet and the nearest graticule line, i.e. exactly as if the square were a complete one.

(b) On the part containing the parent sheet, the border letters and numbers will be those normally used. (vide Border Specimen).

(c) On the part containing an outrigger, if the outrigger is on the west side, the border letters on 1:50,000 sheets will be AA for the first square to the west. Should the outrigger extend beyond this square, the lettering for the next one westwards will be BB and so on. If the outrigger is on the east, the border letters will be FF and GG for the first and second squares respectively, and so on.

(d) Similarly, the border figures for outriggers to the north would be 11,22, &c., and, for those on the south, 66,77, &c.

(e) Similarly, in the case of 1:250,000 sheets, they would be AA, BB, &c., FF, GG, &c. 11, 22, &c., and 44, 55, &c.

(f) Such, double lettering and numbering will serve to show at a glance which portions of a map have been drawn as outriggers to the parent sheet, and as every square or part of a square will be lettered an numbered, no special foot-note concerning the outriggers is required.

Complete of details and names in borders.- Only such detail should be drawn as will fulfill the purpose, and if, in the opinion of the officer responsible for the fair drawing of a map, its value would be enhanced by completing within the border some important details, e.g., the site of town or important village, a boundary, a coastal feature, an important river, road, or railway leaving the sheet and re-entering it a short distance away, &c., the Director of the GDC should be consulted, and, if he agrees, such details may be entered, provided it does not seriously interfere with other information, such as tahsil names, &c., If such detail cannot be drawn correctly to scale within the limits of the border, it may be shown therein diagrammatically by dotted lines, but the dotted line should be confined to short lengths of very simple detail. Boundary ribands should not be carried over portions of boundaries entered in the border.

Military station and civil town.- Similarly, in the case of a military station or important civil town, lying on the common edge of two sheets, the whole of such station or town may be completed in an outrigger on both sheets, the border being broken where necessary and completed round the external portion of the station or town. In such cases, care must be taken to see that the arrangement of typing on both sheets is identical, so that, if the sheet numbers, indexes, area statements, &c., for sheets with outriggers, will not apply to these special cases.

Insets. –(a) Insets may be shown on guide maps or other special maps under the orders of the Circle Director, but should not be drawn on other departmental maps without the formal approval of the Director,

Map Publication, and then only on a coastal sheet to show an area of departmental survey that could not well be shown in any other way, or to give clear information about a congested area.

(b) The inset should contain sufficient information as t latitude and longitude to locate the are, and should, if possible, overlap the main map, with some prominent feature or name common to both. If the inset forms an extension to the main map, a suitable reference should be entered in the border of the latter.

© All insets with their titles, scales, and notes should be enclosed within a narrow border or firm line, separating them entirely from the main map and its graticule or grid.

(d) It is not essential that insets, other than extensions of the main map, should be drawn in strict accordance with the rules in this chapter.

Longitude- On maps of all scales on which the meridians are drawn, the text 'E. of GREENWICH' will be placed in the lower border immediately to the right of the number defining the longitude of the western edge of the sheet.

Border contour values:-Border contour values for all thick contour will be given as a rule, but where the slope is very steep, some of these values may be omitted. The contour values should be equidistant from the edge according to the border specimen. When the ground is gentle slope value to thin contour can be given for more readability.

Section XIII

EXAMINATION OF Cartographic database

The examination of hard copy of Cartographic database is one of the most important duties of the wing in-charge responsible for preparation of the cartographic database. As Digital (.dgn) data may be the main source for the cartographic data base the necessary editing must be done on the digital data base as per requirement of the cartographic data base. The hard copy of full pattered sheet to cartographic data base to be examined before submitted for publication.

The examination may be divided into two parts.

a. General examination.
b. Examination in detail.

General Examination :

The general examination should deal with the following points:-

i. Detail outside borders or marginal details.
ii. Border details.
iii. General scrutiny.

Detail outside borders or marginal details:-

a) Title, whether in accordance with the most recent Border Specimen.
b) Index to sheets,correctness of numbering and thickness of lines.
c) Season of survey in compilation index.
d) Correct datum and Projection information.
e) Magnetic variation and annual chage to be compared with value given in the latest chart showing Lines of Equal Magnetic Declination, Epoch.
f) Area Statement to be checked and total compared with area quadrilaterals in Auxiliary Tables.
g) That all necessary special foot-notes have been entered and that the History Sheet is complete and clear.

Border details:-

i. Corner graticule values and degree,minute and second symbols.
ii. Destinations
iii. Administrative names in border (if not spaced in the body)
iv. Square letter and figures
v. Border
vi. Other graticule with minute and second value and symbol.
vii. Contour values in the borders.
viii. Names in the border.
ix. Edges

General scrutiny:-

A general scrutiny should be made as regards the following points :-

a) Placement of text. Whether the names and figures are well placed and in correct alignment; whether the spaced names of subdivisions/ taluk are properly arranged and in agreement with adjoining sheets.
b) Drainage, whether due prominence has given to main streams and proper graduation maintained.
c) Registration of detail should be checked thoroughly, as input .dgn data may have many connectivity for its own cause which are not required for Cartographic data base.
d) Letters and figures should be examined under tints for legibility.

Detailed examination:- This is normally carried out three times for any sheet. First by the Section officer, then after correction, it is examined by Officer in charge of the wing and returned to the section for further correction. Finally the sheet should be submitted to wing in charge for final scrutiny along with the history sheet and all correction slips starting from Section Officer scrutiny. Final examination and correction will be under wing in charge of Final scrutiny . History sheet and PI will be finalized under him before submission to the Director of the GDC.

Examination in detail

a) Records for detail examination of specified items should be kept against each items with signature of both the examiner and the correction carried out by.
b) The wing in charge and Section officer will make his independent through examination, one square at a time.
c) The examination should be based on the latest field records.
d)

Tabular guide for examination-

Head	Name of detail	Points needing attention
a.	i. Streams	Sinuosities of stream as per latest field record Dumb-bell marks at change of perenniality along the single stream. Thickness of single line stream as per length

		In case of double line stream the width of all points exactly corresponds to that of latest field records Breaking of stream at bridges except " Irish bridge". Correctness of direction of flow Arrow and track follows bed(in red). Breaking of steep banks of dry bed at crossing of roads and tracks with no bridges
	ii.Sand	Correctness in the direction of gradation of sand dots . In dry stream no sand dot should touch any detail that will appear in colour. And sand dots in the blank space between lettering of names.
	iii.Shingle and rocks in stream beds	None is omiited
	iv.Broken and precipitious banks and cliff in stream.	None is omitted Does not extend from the edge of the stream Steep banks of 3 metres or more in height , and very steep ones of less height but of such a length that they will be at least 25 mm length on the scale of publication are shown by a thickened line
	v.Islands	River bank features are as per latest Table of Conventional Sign.
	vi. Fords, ferries, waterfalls and rapids	Non is omitted, shape as per field records, has its own tint or blank, properly adjusted for sand dots or blue tint with the surrounding shapes.
	vii. Arrows denoting flows..	The none is omitted on symbol as well as text.
	viii. Bathymetric contours..	
	ix.Glacier features.	They should appear wherever there is a chance of doubt as to the direction of flow, preferably near the name of the river or canal.
		As per Admiralty and Marine survey chart depth in meters without negative value.
		Non is omitted, not duplicated in black and brown

b	Canals	That none is omitted and all bridges, lock, sluice, dams, weirs, aqueducts, and distance stones are entered.
c	i.Lakes, ponds, tanks and marshes; mud on foreshore. ii.Springs and well	That all the more important ones appear in the sheet.
d	i.Roads, metalled and unmetalled, and trade route. ii.Cart-tracks, mule-paths and foot-paths. iii.Avenues of trees iv.Roads and path through town and villages. v. Distance stone and their numbering. vi. Cutting and embankments vii. Bridges, viaducts and passes	Non is omitted, symbol as per importance, unmetelled road and routes slight heavier in hill and sandy area where they are liable to be overpowered by contours. In accordance with the symbols, as far as space permit, non is omitted, unless they are seasonal and redundant. drawn heavier in hill and sandy area where they are liable to be overpowered by contours. At regular interval and variation in size of symbol. Clarity with the avenue follows. Double line road continues, the main routes through town duly emphasized , single line road and paths right upto the town or village. Every mile stone and kilometer stones are shown in their correct position and correct side of the road (as long as it does not interfere with entry of more important information otherwise can be omitted). In town or village in crowed area it may be omitted. In case of having mile stones and kilometer stones, both will be shown in proper position but only kilometer stones will be numbered. Mile stones are in Upright and km stones are in italic. None is omitted except those less than 2 metres in height or depth and shown by hachuring. Embankment which is 3 metres or more may be omitted to avoid overcrowding of detail along roads and railways where embankment would occurs as a matter of course. Relative height may be inserted occasionally to indicate an embankment. Non is omitted.

e	i.Towns, villages, ruins.. ii.Deserted site iii.Post office, police station,dispensaries,dak bunglows, rest house, mills. iv. Market v.Fort, watch-towers, churches,mosques,temples, pagodas, kyaungs, idgahs, shines, light house, monuments	No site or buildings are omitted. None is omitted Non is omitted, space should be made for those site as far as possible. The text 'market' invariably placed near the sites which are meant for daily market. The text market (with abbreviated day name) for weekly market with days. None is omitted
f	i.Telegraph , telephone lines. ii.Power lines iii.Battle field iv.Water main, graves, battle fields, mines,riffle ranges, beacons, steamer signals, navigation marks, oil-well,salt pan, tidal arrow, wireless station, transmission tower, karezes, streamer services routes, aerodrum, landing ground	No telegraph , telephone lines to be shown in the topo sheet. None of the important power line missing. Important power line starts from 440 volt and above. 11000 volt and above to be shown as main power line. In case of Main power lines on pylon (should follow the text 'Main power line on pylon') Position of pylon to be shown as surveyed. Otherwise convensional main power line symbol to be shown followed by text 'main power line' Non is omiited, Site with names and years of battle should follow. Non is omitted
g	i.Railways	That the name the line and, when necessary, the gauges are suitably typed along the railway . That station buildings, enclosures, tunnels, bridges, cuttings, and embankments are entered and finely drawn in accordance with the prescribed symbols. That the drawing of roads passing under railways is broken at the bridges under which they pass, and that the drawing of

	ii.Mineral lines and tramways	the railway symbol is similarly broken in the case of an over-way bridge, and that both road and railway symbols are drawn in the case of level-crossing. That the gauges is suitably typed along the lines.
h	Ornamentation	That the nature of growth in open country, and in orchards and topes, is correctly shown by the use of the different tree and grass symbols prescribed. That, in the case of forest growth, the density of the growth is indicated by appropriate descriptive remarks. That no garden whose size justifies their entry are omitted, and that the nature of their growth is discriminated as far as the symbols prescribed permits. That all symbols are correctly shown.
i	Limits of cultivation	That these are continuous, except along natural features drawn on outline, roads, tanks, boundaries, canals, or buildings so that the colour list shall have no difficulty in determining the area for colouration.
j	Boundaries	That the symbol for these is correctly drawn and that it exactly corresponds to the changes of direction of the boundary on the ground as shown on field records or on such other authorities as is accepted. That the position of the boundary, where not disputed, agrees with all notification at the time of force. That boundary pillars and their numbers are entered in accordance with existing rules. That care has been taken to discriminate between pillars surveyed and those not found at the time of survey.
k	i. Triginometrical, traverse, clinometric, photogrammetric and Bench-mark	That all ground heights of trigonometrical stations and bench-marks are entered; as also a section of ground level height of other trigonometrical points , theodolite traverse stations, and of plane-table fixing and intersection points; and where no other heights are available, heights , such as irrigation, Railway, &c, even if they are not attached to any particular points, are occasionally entered. That the correct symbols for triangulation stations and intersected points and proper types for their height are used. That height values accord with the contours on the contour original. That height values accord with the natural fall in streams and rivers.

		That the heights are placed attention paid to positions with regard to the riband, along boundaries That, in high mountain area, clinometric and photogrammetric heights have been rounded to the nearest 5 metres in accordance to chapter V.
	(a) Canal and other bench-marks.	That, as many as possible of these having height in accordance with the Survey of India, are entered. That as many as possible of these both maximum and minimum and intermediate are entered without causing undue covering, and having regard to the position of the contours next above and below them.
	(b) Relative height and height of water fall.	That these are in correct position, plotted from the graticules in the case of all trigonometrical stations and of all intersected points of geodetic series, and traced or blue-printed, and if necessary adjusted, in the case of others.
	(c) Symbol for position of heights.	That the symbols are placed as prescribed That every heights has a triangle, dot, or symbol indicating its exact position, except such heights as are not attached to any particular points. That a sheet with no contours or spot heights in plain area has a foot-note giving an indication of the approximate average height above mean sea-level of the area covered by the map.
l	Names and lettering	That the prescribed type has been used. That the spelling (including accents) of all names is accordance with the corrected list of field records ; or in case of space names as per typer's guide. That names of streams, villages, etc., near the edges agree with those which have already been published on the adjoining sheets, and that where the latter are wrong, attention is drawn to them in the history sheet, for necessary correction to be noted in the office copies . That names in small type clear of boundary ribands. That each names most suitably placed, having regard firstly to the identity of the object to which it refers and secondly to avoidance of, or interference with, detail which will ultimately appear in black. That the type used is that prescribed for each particular class of name. That the rules governing spaced names have been compiled with, and especially that any name spreading over more than one sheet preserves continuity of alignment, spacing and size of letters.

		That the orders regarding omission of aero-dromes in area prohibited to civil aircraft, have been compiled with on sheets for issue to the public.

Examination of contour original in detail :-

a) registration with stream
b) legibility of names , letterings and figures with contour or contour value.
c) Contours are broken in sand-hills or dunes, cliffs, broken ground, cutting and embankments, precipitous ground, under culverts / bridges canals, lakes and tanks, and also at places selected for typing contour values.
d) Contour across *nala* and river bed.
e) Same broken ground should not be in black as well as brown.
f) Border contour value may be avoided not to covered on name and grid figures.
g) Agreement of contours and contour values with heights
h) Contour value at clear space, readable direction.
i) Contours are in agreement with Glacier features

Discrepancies between Ground verified PT section and Cartographic data(Hard copy)

It is very important that in charge of data acquisition wing should see there is nothing missing in the design file from the latest verified data from the ground. The ground verified data (if not digitized afresh) must be incorporated in the existing design file, Points and line details are inserted or deleted as per ground verified data and all shapes are modified as per latest verified data.

Responsibility for accuracy:-

a)The in charge of data acquisition wing is responsible for the correctness of the data in design file in every respect as the Cartographic data base is a derivative of the original design file.
b) The Director of the GDC is responsible for final scrutiny, the correctness of the publication Instructions , and for the colour patterns

Final Scrutiny : The scrutiny of the Cartographic data base(on hard copy) in the GDC should be strict one. Special care should be directed to the examination of titles, index , administrative boundaries and its related colours, space names, border destinations and distances. Confirmation of Ist and 2^{nd} importance of Roads.

SECTION XVII

BOUNDARY RIBANDS

499. **Colouring of boundaries** – All our regular topographical maps will have boundaries coloured in accordance with the rules given in the succeeding papagraphs.

500. **External boundary of India** – On all the topographical maps the external boundary of India will carry two boundary ribands, each of width 1.5 mm. The riband on the Indian side will be orange in colour, and that on the other side of the appropriate colour for the country laid down in para 507.

501. **Undemarcated boundaries** – (a) Where a state boundary shown by the undemarcated symbol, vide para 152, a broken riband of the appropriate colour will be used. The broken riband will have each space the length of one bar and a cross of the symbol, and each bar of colour will be twice that length.

(b) **District, subdivision and reserved and protected forest boundaries** – These boundaries will have continuous and not a broken riband even if the whole or part of a boundary carries the remark "Alignment unverified" vide para 493(b).

502. **Rules governing the use of ribands** – (a) All boundaries that appear on a map that is to be coloured, are to be shown by ribands of colour in accordance with the table in para 507 below.

(b) When the exterior boundary of an area of reserved, &c., forest coincides with any other boundary, the riband or ribands of the latter must be placed so as to avoid being superimposed on the green forest riband.

(c) The forest boundary riband will not be shown along the external boundary of India.

503. **Position of ribands** – In order to comply with para 502 the following rules will be adhered to :-

(a) The green forest boundary riband (para 508 below) will always be placed on the inside of its boundary symbol. But if the forest boundary follows a single-line stream / road / track, the riband will always be placed along the edge of stream / road / track nearer to the forest side.

Where forest boundary riband and administrative boundary ribands occur together on a narrow double-line river, it is permissible to place the forest boundary riband along the symbol in the bed of the river, if space permits, and the administrative boundary ribands along the river banks as usual.

(b) Other single ribands will be placed on the boundary symbol, but if they coincide with the forest boundary riband mentioned in sub-para (a) above, they will be placed on the opposite side of the symbol.

(c) If the forest boundary riband mentioned in (a) above coincides with a double riband, that riband which would fall on the same side of the boundary as the forest boundary riband mentioned in (a), should be placed on the inner side of the riband mentioned in (a).

504. **Widths of ribands** – The following will be widths of boundary ribands when these boundaries are coloured (for OSM and DSM maps) : -

(a) External of India or International two ribands, each … … 1.5 mm

(b) State, two ribands, each … … … … … … … 1.0 mm

(c) Districts, and areas of similar status, or tribal areas
Which are not part of any district, two ribands, each … … 0.75 mm

(d) Subdivision or other administrative partition of a
District of similar status, total width … … … … … 1.0 mm

(e) Thanas, or similar boundaries for which the tahsil
Boundary symbol is used, total width… … … … 0.5 mm

Note – Boundries of estates referred to in para 148(e) will not be coloured.

(f) Exterior boundary of areas of reserved, &c., forests … … 0.5 mm

505. **Light colours to be used** – The ribands for items (a) to (d) or para 504 will be printed with a fine tint in appropriate colour, and those for items (e) and (f) in solid colour. Light colours should be used, to avoid obscuring detail and to improve the appearance of the map.

506. **Ribands along rivers** – When single or double ribands are necessary along a boundary n the bed of a river, or along a perennial stream shown by a single line, it is permissible to enter a riband on each bank in the case of a double riband, and on either bank in the case of a single riband, if the character along the boundary symbol. In the case of non-perennial single-line streams, single-colour riband should be placed centrally over the stream, and double-colour ribands one on either side.

507. **Colours of ribands** – The following colours will be used :-

(a) In India :-

ANDAMAN & NICOBAR ISLANDS	…	…	…	Pink
ANDHRA PRADESH	…	…	…	Burnt Sienna
ARUNACHAL PRADESH	…	…	…	Pink
ASSAM	…	…	…	Indigo
BIHAR	…	…	…	Burnt Sienna
CHANDIGARH	…	…	…	Pink
CHATTISGARH	…	…	…	Jaba Red
DADRA & NAGAR HAVELI	…	…	…	Pink
DELHI	…	…	…	Pink
GOA, DAMAN & DIU	…	…	…	Pink
GUJRAT	…	…	…	Burnt Sienna
HARYANA	…	…	…	Bluish Purple
HIMACHAL PRADESH	…	…	…	Jaba Red

JAMMU & KASHMIR	…	…	…	Indigo
JHARKHAND	…	…	…	Golden Yellow
KARNATAKA	…	…	…	Bluish Purple
KERALA	…	…	…	Indigo
LAKSHADWEEP	…	…	…	Pink
MADHYA PRADESH	…	…	…	Bluish Purple
MAHARASHTRA	…	…	…	Reddish Purple
MANIPUR	…	…	…	Golden Yellow
MEGHALAYA	…	…	…	Burnt Sienna
MIZORAM	…	…	…	Pink
NAGALAND	…	…	…	Bluish Purple
ORISSA	…	…	…	Indigo
PONDICHERRY	…	…	…	Pink
PUNJAB	…	…	…	Burnt Sienna
RAJASTHAN	…	…	…	Indigo
SIKKIM	…	…	…	Primrose Yellow
TAMIL NADU	…	…	…	Reddish Purple
TRIPURA	…	…	…	Golden Yellow
UTTARAKHAND	…	…	…	Burnt Sienna
UTTAR PRADESH	…	…	…	Reddish Purple
WEST BENGAL	…	…	…	Reddish Purple

(b) Outside India :-

AFGHANISTAN	…	…	…	Light Blue
BANGLADESH	…	…	…	Jaba Red
BHUTAN	…	…	…	Primrose Yellow
BURMA	…	…	…	Burnt Sienna
CHINA	…	…	…	Bluish Purple
NEPAL	…	…	…	Indigo
PAKISTAN	…	…	…	Green Viridian
SRI LANKA	…	…	…	Reddish Purple
U.S.S.R.	…	…	…	Reddish Purple

(c) In the case of the external boundary of India, the riband on the Indian side will always be orange. The India State boundary riband, if of a different colour, will stop at the external boundary of India.

508. **Reserved, &c., forests** – The exterior boundaries of the areas of reserved, and protected forests will be coloured by a green riband. The common boundaries between forests under entirely different ownership (e.g., between forests of contiguous States) should be considered as exterior ones and, in such cases, the forest boundary riband should be placed centrally over the State boundary symbol. Boundaries of exclusions inside a forest should also be treated as exterior boundaries.

There is no objection to showing boundaries of forest villages, with the forest boundary symbol without riband, in cases where they are demarcated and reasonably permanent. They will not be shown unless it is desired by the Divisional Forest Officer

concerned, from whom enquiries should be made and who should be asked to say whether they are permanent.

The reserved forest boundaries in a foreign country adjacent to India, will not carry any riband.

DATA ORGANISATION

Sl. No.	CATEGORY	MAPS
1.	BUILDINGS	Buildings residential Buildings religious Antiquities Buildings others
2.	HYDROGRAPHY	Rivers Canals Other water features Hydro associated features Coastal features
3.	COMMUNICATIONS	Roads Railways Embankments and Cuttings (roads and ra Aerodromes
4.	LAND COVER	Land cover Vegetation Land use features
5.	UTILITIES	Transmission lines Pipe lines
6.	BOUNDARIES	Administrative divisions Administrative boundaries Limits
7.	HYPSOGRAPHY	Contours Mountain features Mud volcanoes Sand features Heights, BMs and Control Points High mountain features
8.	VITAL INSTALLATIONS	Civil vital installations Military vital installations
9.	MAP FRAME & TEXT	Marginal and border items Names Grid (Metric) Grid (FPS)

ANNEXURE 'A' ASCII CODES FOR ACCENTED CHARACTERS AND OTHER SYMBOLS
ANNEXURE 'B' LINE WEIGHT AND LINE THICKNESS RELATIONSHIP

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- BUILDINGS						**MAP -- BUILDINGS RESIDENTIAL**	
Hut permanent	HUT_P	1101	P	1	0	0	19
Hut oblong permanent	HUT_OP	1102	P	1	0	0	19
Hut temporary	HUT_T	1103	P	2	0	0	3
Hut oblong temporary	HUT_OT	1104	P	2	0	0	3
Block village/town	BLOCK	1105	A	3	0	0	3
CATEGORY -- BUILDINGS						**MAP -- BUILDINGS RELIGIOUS**	
Temple	TEMPLE	1201	P	4	0	0	0
Chhatri	CHATRI	1202	P	4	0	0	0
Church	CHURCH	1203	P	4	0	0	0
Christian memorial	CMEMRL	1204	P	4	0	0	0
Buddhist kyaung	KYAUNG	1205	P	4	0	0	0
Idgah	IDGAH	1206	P	4	0	0	0
Gopuram	GOPURM	1207	P	4	0	0	0
Mosque	MOSQUE	1208	P	4	0	0	0
Pagoda	PAGODA	1209	P	4	0	0	0
Gurudwara	GURDWR	1210	P	4	0	0	0
Tomb	TOMB	1211	P	4	0	0	0
CATEGORY -- BUILDINGS						**MAP – ANTIQUITIES**	
Fort conventional	FORT_C	1301	P	5	0	2	3
Fort as surveyed	FORT_S	1302	L	5	0	3	3
Fort in ruins	FORT_R	1303	P	5	0	2	3
Moghal Kos Pillar/Kos Minar	KOSPLR	1304	P	5	0	0	3
Battle-field	BFIELD	1305	P	5	0	1	0
Cave	CAVE	1306	P	5	0	0	3
Monument	MONUMT	1307	P	5	0	0	3
Village in ruins	R_VILG	1308	A	5	0	0	3
CATEGORY -- BUILDINGS						**MAP -- BUILDINGS OTHERS**	
Watch-tower	W_TOWR	1401	P	5	0	0	0
Chimney	CHIMNY	1402	P	5	0	1	3
Cave inhabited (when not antiquity)	CAVEIH	1403	P	5	0	0	3
Cave uninhabited (when not antiquity)	CAVEUH	1404	P	5	0	0	0
Deserted site	D_SITE	1405	P	5	0	1	3
Piquet or post	PIQUET	1406	P	5	0	0	3
Post Office	PO	1407	P	3	0	0	0
Post & Telegraph Office	PTO	1408	P	3	0	0	0
Telegraph Office	TELG_O	1409	P	3	0	1	0
Hospital	HOSP	1410	P	3	0	5	3
Dispensary	DISP	1411	P	3	0	5	3
Veterinary Hospital	VETHOS	1412	P	3	0	4	1
Circuit House	CH	1413	P	3	0	2	0
Rest House Or Inspection Bungalow	RH	1414	P	3	0	2	0

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- BUILDINGS						**MAP -- BUILDINGS OTHERS**	
Rest House Or Inspection Bungalow	PS	1415	P	3	0	2	0
Tourist Site	T_SITE	1416	P	3	0	4	17
CATEGORY -- HYDROGRAPHY						**MAP – RIVERS**	
River bank unbroken < 3 m	RB_SHL	2101	L	6	0	0	0
River bank 3-6 m high	RB_3_6	2102	L	6	0	2	0
River bank 7-15 m high	RB7_15	2103	L	6	0	3	0
River bank > 15 m	RB_O15	2104	L	6	0	4	0

River bank broken < 3 m	RBBSHL	2105	L	6	2	0	0
River bank broken 3-6 m high	RBB3_6	2106	L	6	2	2	0
River bank broken 7-15 m high	RBB715	2107	L	6	2	3	0
River bank broken > 15 m	RBBO15	2108	L	6	2	4	0
River island	R_ILND	2109	A	6	0	1	0
Flow arrow in river	FARROW	2110	P	6	0	2	0
Stream single-line dry 1st graduation	S_DRY1	2111	L	7	0	1	0
Stream single-line dry 2nd graduation	S_DRY2	2112	L	7	0	2	0
Stream single-line dry 3rd graduation	S_DRY3	2113	L	7	0	3	0
Stream single-line dry 4th & above graduation.	S_DRY4	2114	L	7	0	4	0
Stream dry undefined/unreliable	S_UNDF	2115	L	7	3	1	0
Broken ground/ravines less than 6 m	BG_L_6	2116	L	7	7	0	0
Broken ground/ravines 6-15 m	BG6_15	2117	L	7	7	2	0
Broken ground/ravines over 15 m	BG_O15	2118	L	7	7	3	0
Water channel in dry river-bed	PS_D_R	2119	L	8	0	2	1
River water channel area	WCAREA	2120	A	8	1	1	1
Stream single-line perennial 1st graduation	S_PER1	2121	L	8	0	1	1
Stream single-line perennial 2nd graduation	S_PER2	2122	L	8	0	2	1
Stream single-line perennial 3rd graduation	S_PER3	2123	L	8	0	3	1
Stream single-line perennial 4th & above graduation	S_PER4	2124	L	8	0	4	1
Stream perennial unreliable	S_P_UR	2125	L	8	3	1	1
Doubtful features blue (?)	DOUTBL	2126	T	8	0	2	1
River bank unreliable	RBSHUR	2127	L	6	2	1	0
CATEGORY -- HYDROGRAPHY						**MAP – CANALS**	
Canal banks, for double-line perennial canal over 20 m wide	CDPO20	2201	L	9	0	1	1
Canal banks, for double-line non-perennial canal over 20 m wide	CDNP20	2202	L	9	0	1	0
Drain banks for double-line non-perennial drain	DRNNPD	2203	L	9	0	0	0
Canal single-line perennial < 20 m or branch / important distributary	CSPL20	2204	L	10	0	3	1
Other distributary/minor perennial	MINORP	2205	L	10	0	1	1
Canal perennial distance stone tick	CPDSTK	2206	P	10	0	2	1
Canal perennial distance stone number	CPDSNO	2207	T	10	0	2	1
Canal navigation lock (S)	NVLOCK	2208	L	10	0	0	1

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- HYDROGRAPHY						**MAP – CANALS**	
Sluice on canal/stream single line/protective embankment	SLUICE	2209	P	10	0	2	1
Weir and/or lock on perennial canal (C)	WEIRPC	2210	P	10	0	2	1
Aqueduct/Viaduct Canal :							
Aqueduct on perennial canal (C)	AQDCTP	2211	P	11	0	2	1
Aqueduct on perennial canal (S)	AQDTPS	2212	L	11	0	2	1
Viaduct on canal (Black) (C)	VDCBKC	2213	P	11	0	0	0
Viaduct on canal (Red) (C)	VDCRDC	2214	P	11	0	0	3
Siphon on single-line perennial canal	SIPHNP	2215	P	10	0	2	1
Canal tunnel	C_TUNL	2216	L	10	1	1	1
Canal single line non-perennial < 20 m or branch/ important distributary	CSNP20	2217	L	11	0	3	0
Other distributary/minor dry	MINORD	2218	L	11	0	1	0
Canal non-perennial distance stone tick	CNPDTK	2219	P	11	0	2	0
Canal non-perennial distance stone number	CNPDNO	2220	T	11	0	2	0
Canal/Drain double-line disused/under construction	CDLDUC	2221	L	11	2	1	0
Canal/Drain single-line disused/under construction (with appropriate remark)	CSLDUC	2222	L	11	3	3	0
Drain single-line non-perennial	DRNNPS	2223	L	11	0	0	0
Siphon on single-line non-perennial canal	SIPHND	2224	P	11	0	0	0

Flow arrow in canal	FAROWC	2225	P	11	0	2	0
Sluice on double line canal/stream	SLUICD	2226	L	10	1	2	1
Siphon on double-line perennial canal	SPHPDL	2227	L	10	2	2	1
Siphon on double-line non-perennial canal	SPHDDL	2228	L	11	2	0	0
Navigation lock (C)	NVLCKC	2229	P	10	0	0	1
Canal milestone Number	CNDSNM	2230	T	10	0	2	1
Drain banks for double-line perennial drain	DRNPDL	2231	L	9	0	0	1
Drain single-line perennial	DRNPSL	2232	L	11	0	0	1
Weir and/or lock on non-perennial canal (C)	WERNPC	2233	P	10	0	2	0
Weir and/or lock on perennial canal (S)	WEIRPS	2234	L	10	0	2	1
Weir and/or lock on non-perennial canal (S)	WERNPS	2235	L	10	0	2	0
Aqueduct on non-perennial canal (C)	ADTNPC	2236	P	11	0	2	0
Aqueduct on non-perennial canal (S)	ADTNPS	2237	L	11	0	2	0
Viaduct on canal (Black) (S)	VDCBKS	2238	L	11	3	0	0
Viaduct on canal (Red) (S)	VDCRDS	2239	L	11	3	0	3
CATEGORY – HYDROGRAPHY							**MAP -- OTHER WATER FEATURES**
Well lined	WELL_L	2301	P	12	0	0	17
Tube-well/Pump house	T_WELL	2302	P	12	0	0	17
Tank perennial conventional	TANKPC	2303	P	12	0	1	17
Overhead tank	OHTANK	2304	P	12	0	0	17
Hand pump	HDPUMP	2305	P	12	0	1	1
Well dry	WELDRY	2306	P	12	0	0	17
Depth of well	DEPTHW	2307	T	12	0	2	1

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- HYDROGRAPHY							**MAP -- OTHER WATER FEATURES**
Well unlined	WELLUN	2308	P	13	0	1	1
Spring	SPRING	2309	P	13	0	1	1
Reeds in perennial water	REEDS	2310	A	13	1	0	1
Mud/Tidal flats	MUDTID	2311	A	13	2	0	1
Swamp or Marsh	SWAMP	2312	A	13	3	0	1
Waterfall on single-line perennial stream	WFALSP	2313	P	15	0	1	1
Rapids in single-line stream	RAPIDS	2314	P	13	0	0	1
Rapids in double-line stream	RAPIDD	2315	L	13	0	1	1
Tank perennial excavated	TANKPE	2316	A	14	0	3	0
Limit of water in lakes/Tanks (Blue wash)	LIMITW	2317	A	14	0	0	1
Tank/Lake perennial as surveyed	TANKPS	2318	A	14	0	2	0
Tank non-perennial conventional	TANKDC	2319	P	15	0	1	0
Tank non-perennial excavated	TANKDE	2320	A	15	0	3	0
Tank non-perennial as surveyed	TANKDS	2321	A	15	0	2	0
Waterfall on single-line non-perennial stream	WFALSD	2322	P	15	0	1	0
Waterfall on double-line perennial stream	WFALDP	2323	L	15	0	1	1
Waterfall on double-line non-perennial stream	WFALDD	2324	L	15	0	1	0
Covered unlined wells/tanks called kunds,baoris etc.	COVTNK	2325	P	13	0	0	1
Flat sand limit in lakes/tanks	FSANDL	2326	A	15	5	1	0
CATEGORY -- HYDROGRAPHY							**MAP -- HYDRO ASSOCIATED FEATU**
Tank embankment 2-3 m	TEB2_3	2401	L	16	5	1	0
Tank embankment > = 3 m	TEBGE3	2402	L	16	0	1	0
Tank embankment steep	TEBSTP	2403	L	16	0	2	0
Field bund across stream	FBUNDS	2404	L	16	0	3	0
Protective embankment 2-3 m	PEB2_3	2405	L	17	5	0	0
Protective embankment > = 3 m	PEBGE3	2406	L	17	0	1	0
Sheet rock in river-bed/coast	SROCRB	2407	A	18	2	0	0
Rounded rocks in river-bed/coast	ROCKRB	2408	A	18	3	0	0
Edged rocks in river-bed/coast	EROCRB	2409	A	18	5	0	0
Rock ribs in river-bed/coast	RIBSRB	2410	A	18	0	1	0
Flat sand limit in sandy river-bed	FSANDR	2411	A	19	1	1	0

Dam (Masonry or rock filled)	DAMROF	2412	L	19	0	2	3
Dam (Earthwork)	DAMEWK	2413	L	19	0	2	0
Weir	WEIR	2414	L	19	0	1	1
Weir on single or narrow double line (d" 0.5 mm) stream	WEIR_S	2416	P	19	0	1	1
Protective embankment distance stone tick	PEDSTK	2417	P	17	0	1	0
Protective embankment distance stone number	PEDSNO	2418	T	17	0	1	0
Bridge on protective embankment (C)	BGPE_C	2419	P	17	0	2	0
Bridge on protective embankment (S)	BGPE_S	2420	L	17	0	2	0
Rocky knob along/off coast conventional	RNOBCC	2421	P	18	0	0	0
Rocky knob along/off coast as surveyed	RNOBCS	2422	L	18	0	2	0

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- HYDROGRAPHY					**MAP -- COASTAL FEATURES**		
Anchorage	ANCHOR	2501	P	20	0	0	0
Beacon, Steamer signal, Navigation mark unlighted etc.	BUNLTD	2502	P	20	0	0	0
Buoy unlighted	BUOYUL	2503	P	20	0	0	0
Tidal arrow	TARROW	2504	P	20	0	0	0
Pier or Jetty masonry (C)	JETYMC	2505	P	20	0	0	0
Pier or Jetty masonry (S)	JETYMS	2506	L	20	0	0	0
Pier or Jetty open (C)	JETYOC	2507	P	20	0	0	0
Pier or Jetty open as surveyed	JETYOS	2508	L	20	3	0	0
Shingle/sand not submerged	SLSAND	2509	A	20	2	2	0
Cliff along coast	CLIFFC	2510	L	20	3	1	0
Broken ground along coast	BKGRDC	2511	L	20	7	1	0
Beacon, Steamer signal, Navigation mark lighted	BLIGHT	2512	P	21	0	0	3
Lighthouse	LHOUSE	2513	P	21	0	0	0
Lightship	LTSHIP	2514	P	21	0	0	0
Buoy lighted	BUOYLT	2515	P	21	0	0	3
Submerged rock with danger line	SBROCK	2516	A	22	5	1	1
Submerged sand	SBSAND	2517	A	22	0	0	1
Mangrove swamp	MGSWMP	2518	A	22	2	0	1
Coast-line shown as high water line	HWLINE	2519	L	22	0	3	1
Coast-line shown as low water line	LWLINE	2520	L	22	1	0	1
Island (formed by high water line)	ISLAND	2521	A	22	0	1	1
Coral reef	COREEF	2522	A	22	0	2	1
Rann/salt waste wet	RANWET	2523	A	22	3	0	0
Rann/salt waste dry	RANDRY	2524	A	22	5	0	0
Steamer service (double-line river)	STEAMR	2525	L	22	7	1	1
Shoal	SHOAL	2526	A	22	5	0	1
Tidal river double-line perennial	TDDLPR	2527	L	22	0	2	16
Tidal stream single-line perennial	TDSPST	2528	L	22	0	1	16
Tidal creek	TCREEK	2529	L	22	0	0	16
Pier or Jetty Masonry with berth	JTYMCB	2530	P	20	0	0	0
Tidal river double-line non-perennial	TDDNPR	2531	L	22	0	2	0
Tidal stream single-line non-perennial	TDSNPS	2532	L	22	0	1	0
Tidal water limit	TDWLMT	2533	A	22	1	0	16
Ocean/sea/gulf/bay areas	SEAREA	2534	A	22	0	0	16
Flat sand along coast/sea, submerged	FSANDS	2535	A	22	1	0	1
Shaded sand along coast/sea, submerged	SSANDS	2536	L	22	2	0	1
Flat sand along coast/sea, not submerged	FSNDNS	2537	A	22	1	0	0
Shaded sand along coast/sea, not submerged	SSNDNS	2538	L	22	2	0	0

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY – COMMUNICATIONS						**MAP – ROADS**	
Road metalled 1st importance/ National highway	RDMT_1	3101	L	23	0	3	3
Road metalled U/C 1st importance	RDMUC1	3102	L	23	7	3	3
Road U/M 1st importance	RDUM_1	3103	L	23	2	3	3
Road 1st importance distance stone tick	RDSTK1	3104	P	23	0	2	3
Road 1st importance distance stone number	RDSTN1	3105	T	23	0	2	3
Road distance stone number (mile)	RDSTNM	3106	T	23	0	2	3
Bridge on road 1st importance (C)	BGRD1C	3107	P	23	0	5	3
Bridge on road 1st importance (S)	BGRD1S	3108	L	23	0	5	3
Bridge on road 1st importance (P)	BGRD1P	3109	L	23	0	4	3
Box for road Name/No.	RDNBOX	3110	L	23	0	1	0
Road metalled 2nd importance/ State highway	RDMT_2	3111	L	24	0	2	3
Road metalled U/C 2nd importance	RDMUC2	3112	L	24	7	2	3
Road U/M 2nd importance	RDUM_2	3113	L	24	2	2	3
Road 2nd importance distance stone tick	RDSTK2	3114	P	24	0	2	3
Road 2nd importance distance stone number	RDSTN2	3115	T	24	0	2	3
Bridge on road 2nd importance (C)	BGRD2C	3116	P	24	0	4	3
Bridge on road 2nd importance (S)	BGRD2S	3117	L	24	0	4	3
Bridge on road 2nd importance (P)	BGRD2P	3118	L	24	0	3	3
Road metalled others	RDMT_3	3119	L	25	0	1	3
Road metalled U/C others	RDMUC3	3120	L	25	7	1	3
Road others distance stone tick	RDSTK3	3121	P	25	0	2	3
Road others distance stone number	RDSTN3	3122	T	25	0	2	3
Bridge on road others (C)	BGRD3C	3123	P	25	0	2	3
Bridge on road others (S)	BGRD3S	3124	L	25	0	3	3
Bridge on road others (P)	BGRD3P	3125	L	25	0	2	3
Bridge of boats or pontoon bridge	BOATBR	3126	L	25	0	6	3
Viaduct (Road)	VIDCTR	3127	L	25	0	4	3
Causeway	CAUSEW	3128	L	25	0	5	3
Road U/M others	RDUM_3	3129	L	26	2	1	3
Road U/M under construction	RUMUC3	3130	L	26	3	1	3
Turning/passing point	PASSPT	3131	P	26	0	2	3
Cart-track plains	CTRAKP	3132	L	27	0	1	27
Cart-track hills/wooded area/desert	CTRAKH	3133	L	27	0	3	27
Bridge on track/foot path (C)	BGCRTK	3134	P	27	0	2	27
Cart/pack-track distance stone tick	TRACKS	3135	P	27	0	2	3
Cart/pack-track distance stone number	TRACKN	3136	T	27	0	2	3
Ferry	FERRY	3137	L	27	1	1	3
Ford	FORD	3138	L	27	1	2	3
Track follows stream-bed/boundary etc.	TRFBED	3139	L	27	0	1	3
Road in dry river-bed	RDRBED	3140	L	27	0	2	3
Pack-track hills	PAKTRH	3141	L	28	5	3	3
Pack-track plains	PAKTRP	3142	L	28	5	1	3

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- COMMUNICATIONS						**MAP – ROADS**	
Foot-path hills	FPATHL	3143	L	29	1	3	3
Foot-path plains	FPATHP	3144	L	29	1	1	3
Road tunnel	RDTUNL	3145	L	29	1	0	3
Doubtful features red (?)	DOUBTR	3146	T	29	0	2	3
Doubtful features black (Roman ?)	DOUBTB	3147	T	30	0	2	0
Doubtful features black (Italics ?)	DOUTBK	3148	T	30	0	2	0
Toll	TOLL	3149	P	30	0	1	0

Pass	PASS	3150	P	30	0	0	0
Bridge on track/footpath (S)	BGCRTS	3151	L	27	0	2	27
Bridge on track/footpath (P)	BGCRTP	3152	L	27	0	0	27
Express Highway	RDEXHW	3155	L	23	0	4	27
Distance Stone Tick on Express Highway	RDEXTK	3156	P	23	0	3	27
Distance Stone No. on Express Highway	RDEXTN	3157	T	23	0	3	27
Bridge on Express Highway (C)	BGEXHW	3158	P	23	0	5	27
Bridge on Express Highway surveyed (S)	BGEXHS	3159	L	23	0	5	27
1st Importance Road/National Highway with double carriageway	RD1MDC	3160	L	23	0	3	27
Distance Stone Tick on 1st Importance Road/National Highway	RDSTNH	3161	P	23	0	2	27
Bridge on 1st Importance Road/National Highway double carriageway (C)	BGNHDC	3162	P	23	0	4	27
Bridge on 1st Importance Road/National Highway(C)	BGNHSC	3163	P	23	0	4	27
2nd Importance Road/State Highway with double carriageway	RD2MDC	3164	L	24	0	3	27
Distance Stone Tick on 2nd Importance Road/State Highway	RDSTSH	3165	P	24	0	2	27
Bridge on 2nd Importance Road/State Highway double carriageway (C)	BGSHDC	3166	P	24	0	3	27
Bridge on 2nd Importance Road/State Highway (C)	BGSHSC	3167	P	24	0	3	27
3rd Importance Road/Other Metalled Road with double carriageway	RD3MDC	3168	L	25	0	2	27
Distance Stone Tick on 3rd Importance Road/Other Metalled Road	RDSTOM	3169	P	25	0	2	27
Bridge on 3rd Importance Road/Other Metalled Road double carriageway	BGORDC	3170	P	25	0	2	27
Bridge on 3rd Importance Road/Other Metalled Road	BGORSC	3171	P	25	0	2	27
CATEGORY – COMMUNICATIONS						**MAP – RAILWAYS**	
Railway station hut	RS_HUT	3201	P	1	0	0	3
Railway broad gauge double-line	RLBGDL	3202	L	31	0	6	0
Railway B/G double-line U/C	RBDLUC	3203	L	31	3	6	0
Railway B/G double-line distance stone tick	BGDLTK	3204	P	31	0	2	0
Railway B/G double-line distance stone number	BGDLNO	3205	T	31	0	2	0
Bridge on railway B/G double-line (C)	BRBGDC	3206	P	31	0	2	0

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- COMMUNICATIONS						**MAP – RAILWAYS**	
Bridge on railway B/G double-line (P)	BRBGDP	3208	L	31	0	3	0
Railway B/G single-line	RLBGSL	3209	L	32	0	5	0
Railway B/G single-line U/C	RBSLUC	3210	L	32	2	5	0
Railway B/G single-line distance stone tick	BGSLTK	3211	P	32	0	2	0
Railway B/G single-line distance stone number	BGSLNO	3212	T	32	0	2	0
Bridge on railway B/G single-line (C)	BRBGSC	3213	P	32	0	2	0
Bridge on railway B/G single-line (S)	BRBGSS	3214	L	32	0	2	0
Bridge on railway B/G single-line (P)	BRBGSP	3215	L	32	0	3	0
Railway other gauge double-line	RLOGDL	3216	L	33	0	4	0
Railway other gauge double-line U/C	ROGDUC	3217	L	33	5	4	0
Railway O/G double-line distance stone tick	OGDLTK	3218	P	33	0	2	0
Railway O/G double-line distance stone number	OGDLNO	3219	T	33	0	2	0
Railway distance stone number (mile)	R_MILE	3220	T	33	0	2	0
Bridge on railway O/G double-line (C)	BROGDC	3221	P	33	0	2	0
Bridge on railway O/G double-line (S)	BROGDS	3222	L	33	0	2	0
Bridge on railway O/G double-line (P)	BROGDP	3223	L	33	0	3	0
Railway other gauge single-line	RLOGSL	3224	L	34	0	4	0
Railway other gauge single-line U/C	ROGSUC	3225	L	34	2	4	0
Railway O/G single-line distance stone tick	OGSLTK	3226	P	34	0	2	0
Railway O/G single-line distance stone number	OGSLNO	3227	T	34	0	2	0
Bridge on railway O/G single-line (C)	BROGSC	3228	P	34	0	2	0

Bridge on railway O/G single-line (S)	BROGSS	3229	L	34	0	2	0
Bridge on railway O/G single-line (P)	BROGSP	3230	L	34	0	3	0
Bridge on road and railway (C)	BGRRLC	3231	P	35	0	2	0
Bridge on road and railway (S)	BGRRLS	3232	L	35	0	5	0
Bridge on road and railway (P)	BGRRLP	3233	L	35	0	6	0
Mineral line or tramway	TRMWAY	3234	L	35	0	3	0
Viaduct railway	VDUCTR	3235	L	35	0	4	0
Railway sidings	RSIDGS	3236	L	35	0	2	0
Level crossing	LEVELC	3237	T	35	0	2	30
Railway tunnel	RLTUNL	3238	L	35	1	1	0
Railway station enclosure (C)	RSENCC	3239	P	35	0	0	0
Railway station enclosure (S)	RSENCS	3240	A	35	0	0	0
Metro Railway	METRO	3241	L	35	2	1	0
Metro Railway under construction	METRUC	3242	L	35	4	1	0
CATEGORY -- COMMUNICATIONS				**MAP -- EMBANKMENTS AND CUTTINGS (ROADS A**			
Embankment 2-3 m one side	EMB23O	3301	L	30	3	0	0
Embankment 2-3 m both sides	EMB23B	3302	L	30	3	1	0
Embankment > 3 m one side	EMBG3O	3303	L	30	0	0	0
Embankment > 3 m both sides	EMBG3B	3304	L	30	0	1	0
Cutting 2-3 m one side	CUT23O	3305	L	30	6	0	0
Cutting 2-3 m both sides	CUT23B	3306	L	30	6	1	0
Cutting > 3 m one side	CUTG3O	3307	L	30	7	0	0
Cutting > 3 m both sides	CUTG3B	3308	L	30	7	1	0

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- COMMUNICATIONS					**MAP – AERODROMES**		
Aerodrome limit (walled/fenced)	AEROWL	3401	A	36	0	2	0
Aerodrome limit (not walled/fenced)	AERONW	3402	A	36	1	2	0
Aerodrome	ARODRM	3403	P	36	0	0	160
Landing ground/strip limit (walled/fenced)	LANDWL	3404	A	36	0	1	0
Landing ground/strip limit (not walled/fenced)	LANDNW	3405	A	36	1	1	0
Landing ground/Landing strip	LANDST	3406	P	36	0	0	160
Helipad	HLIPAD	3407	P	36	0	1	3
CATEGORY -- LAND COVER					**MAP -- LAND COVER**		
Forest reserved	FORSTR	4101	A	38	6	1	2
Forest protected/others	FORSTP	4102	A	38	6	0	2
Open or dense wooded area	WOODED	4103	A	38	3	0	2
Forest fire line	FIRELN	4104	L	38	5	1	0
Forest Riband	FRIBND	4105	L	38	0	2	2
Scrub Area	SCRUB	4106	A	39	1	0	0
Scrub (Dot for undergrowth)	SCRUBD	4107	P	39	0	0	2
Scrub (Curve for scrub)	SCRUBC	4108	P	39	0	0	2
Orchard, Plantation (walled/fenced)	GARDNO	4109	A	40	0	0	0
Orchard, Plantation (not walled/fenced)	GARDNW	4110	A	40	1	0	0
Tea or coffee garden (walled/fenced)	TCOFEW	4111	A	40	0	1	0
Tea or coffee garden (not walled/fenced)	TCOFNW	4112	A	40	1	1	0
Betel or vine on trellis (walled/fenced)	BETELW	4113	A	40	0	2	0
Betel or vine on trellis (not walled/fenced)	BETLNW	4114	A	40	1	2	0
Vegetable/pineapple garden (walled/fenced)	VGTBLW	4115	A	40	0	3	0
Vegetable/pineapple garden (not walled/fenced)	VGTBNW	4116	A	40	1	3	0
CATEGORY -- LAND COVER					**MAP – VEGETATION**		
Surveyed tree	SRTREE	4201	P	40	0	1	0
Other tree small	TREES	4202	P	44	0	0	2
Other tree big	TREEB	4203	P	44	0	0	2
Bamboo	BAMBOO	4204	P	44	0	0	2
Casuarina	CASURI	4205	P	44	0	0	2
Conifer (pine, fir etc.)	CONIFR	4206	P	44	0	0	2
Cactus or aloes	CACTUS	4207	P	44	0	0	2
High Grass	GRASSH	4208	A	44	0	0	2

Palmyra	PLMYRA	4209	P	44	0	0	2
Palm upright	PALMUR	4210	P	44	0	0	2
Palm inclined	PALMIN	4211	P	44	0	0	2
Plantain	PLANTN	4212	P	44	0	0	2
Betelnut	BETELN	4213	P	44	0	0	2
Cane-brake	CANBRK	4214	P	44	0	0	2
Avenue of tree	AVENUE	4215	L	44	0	0	2
Surveyed tree (Betelnut)	SRTRBN	4216	P	40	0	1	0
Surveyed tree (Casuarina)	SRTRCS	4217	P	40	0	1	0
Surveyed tree (Conifer)	SRTRCN	4218	P	40	0	1	0
Surveyed tree (Palm)	SRTRPM	4219	P	40	0	1	0
Surveyed tree (Palmyra)	SRTRPL	4220	P	40	0	1	0
Bamboo (thin)	BAMTHN	4221	P	44	0	0	2

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- LAND COVER						**MAP – VEGETATION**	
Grass	GRASS	4222	P	44	0	0	2
CATEGORY -- LAND COVER						**MAP -- LAND USE FEATURE**	
Brick/lime kiln conventional	KILN_C	4301	P	37	0	1	0
Brick/lime kiln as surveyed	KILN_S	4302	L	37	0	1	0
Oil-well	OILWEL	4303	P	37	0	1	0
Oil-tank	OILTNK	4304	P	37	0	1	0
Mine-shaft	MSHAFT	4305	P	37	0	1	0
Rifle range head	RIFRHD	4306	P	37	0	0	0
Air bombing/firing range	ARANGE	4307	A	37	3	1	0
Air bombing target	BTARGT	4308	P	37	0	1	0
Air firing target	FTARGT	4309	P	37	0	4	0
Wireless station conventional	WIRESC	4310	P	37	0	1	0
Wireless station as surveyed	WIRESR	4311	A	37	1	1	0
Air mooring or tall telegraph / Wireless station mast	ARMAST	4312	P	37	0	1	0
Quarry	QUARRY	4313	A	37	0	0	0
Cultivation	CULTIV	4314	A	41	1	2	4
Camping ground	CAMPGR	4315	A	42	1	0	0
Camping ground-shepherd's	CAMPSP	4316	P	42	0	1	0
Grave	GRAVE	4317	P	42	0	1	0
Burial ground	BURALG	4318	A	42	0	0	0
Salt pans	S_PANS	4319	A	43	1	0	0
Barren/fallow/habitat land	BRNLND	4320	A	42	1	1	0
Rifle range (surveyed)	RIFLES	4321	L	37	5	0	0
Wind turbine	WNTRBN	4322	P	37	0	3	0
CATEGORY -- UTILITIES						**MAP -- TRANSMISSION LINES**	
Telephone & telegraph line	TPHONE	5101	L	45	6	0	0
Main power line conventional	MPLCON	5102	L	46	7	0	0
Main power line on pylon surveyed	MPLSUR	5103	L	46	0	0	0
Main power line pylon	MPLPOL	5104	P	46	0	0	0
Power line conventional	PLINEC	5105	L	46	3	0	0
Ropeway	R_WAY	5106	L	46	2	0	0
Ropeway terminus	RWAYTR	5107	P	46	0	0	0
Power line with pole surveyed	PLINSR		L	46			
Power line convention	PLIN_C		L	46			
Power line pylon	PL_POL		P	46			
CATEGORY -- UTILITIES						**MAP -- PIPE LINES**	
Oil pipe line	OILPL	5201	L	47	7	0	0
Gas pipe line	GASLN	5202	L	47	2	1	0
Karez disused	KARZDU	5203	L	47	7	1	0
Water pipe line	WPLINE	5204	L	48	7	0	1
Karez	KAREZU	5205	L	48	7	1	1

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- BOUNDARIES				**MAP -- ADMINISTRATIVE DIVISIONS [NOT APPLICA**			
Administrative Division - Village	ADMVIL	6101	A	49	6	1	0
Administrative Division - Municipality	ADMMUN	6102	A	49	2	2	0
Administrative Division - Subdivision/Tahsil/Taluk	ADMTAH	6103	A	49	1	0	0
Administrative Division - District	ADMDIS	6104	A	49	5	2	0
Administrative Division - State	ADMSTA	6105	A	49	7	3	0
Administrative Division - Country	ADMCON	6106	A	49	0	4	0
CATEGORY -- BOUNDARIES					**MAP -- ADMINISTRATIVE BOUNDARI**		
International Boundary without pillars	INTBWP	6201	L	50	4	4	0
International Boundary with pillars	INTBDP	6202	L	50	0	4	0
State boundary demarcated	STATBD	6203	L	50	4	3	0
State boundary un-demarcated	STATUD	6204	L	50	7	3	0
District boundary	DISTBD	6205	L	50	5	2	0
Subdivision, Tahsil, Taluk	SUBDIV	6206	L	50	1	0	0
Paragna boundary in U.P.	PRGNUP	6207	L	50	3	2	0
Village boundary	VILBDR	6208	L	50	6	1	0
Boundary pillar main as surveyed	BPMAIN	6209	P	50	0	0	0
Boundary pillar subsidiary	BPSUBS	6210	P	50	0	0	0
Boundary pillar unlocated	BDPUNL	6211	P	50	0	0	0
Trijunction pillar	TRIPLR	6212	P	50	0	0	0
Line of control	LCONTL	6213	L	50	0	4	30
Line of actual control	LOACNL	6214	L	50	0	5	0
Contonment boundary	CANTBD	6215	L	51	1	0	0
Municipal boundary	MINIBD	6216	L	51	2	2	0
CATEGORY -- BOUNDARIES					**MAP – LIMITS**		
Fence	FENCE	6301	L	52	3	0	0
Wall	WALL	6302	L	52	0	0	0
CATEGORY -- HYPSOGRAPHY					**MAP – CONTOURS**		
Contour index/thick	CINDBR	7101	L	53	0	2	22
Contour intermediate/thin	CINTBR	7102	L	53	0	0	22
Depression contour (in plains)	DCONBR	7103	L	53	2	0	22
Approximate/unreliable contour thick	APXIND	7104	L	53	3	2	22
Approximate/unreliable contour thin	APXINT	7105	L	53	3	0	22
Form line/Sub-feature broken	SUBBRW	7106	L	53	5	0	22
Form line/Sub-feature continuous (pre 1905 Survey)	SUBOLD	7107	L	53	0	1	22
Contour value	CONVBR	7108	T	53	0	2	22
Contour index/thick in snow	CINDBL	7109	L	53	0	2	7
Contour intermediate/thin in snow	CINTBL	7110	L	53	0	0	7
Approximate/unreliable contour in snow thick	APSIND	7111	L	53	3	2	7
Approximate/unreliable contour in snow thin	APSINT	7112	L	53	3	0	7
Form line/Sub-feature broken in snow	SUBBLU	7113	L	53	5	0	7
Contour value in snow	CONVBL	7114	T	53	0	2	7
Bathymetric contour, Fathom line	BTHCON	7115	L	53	1	2	16

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- HYPSOGRAPHY					**MAP – CONTOURS**		
Bathymetric contour value	BCONVL	7116	T	53	0	2	16
Breakline	BRKLIN	7117	L	53	0	1	0
CATEGORY -- HYPSOGRAPHY					**MAP -- MOUNTAIN FEATURES**		
Depressions or devil's cauldrons	DEPSON	7201	L	54	1	0	8
Broken or rocky ground	BRKNGD	7202	A	54	2	0	8
Scarp or cliff over 20 m high	CLFO20	7203	L	54	5	2	8
Scarp or cliff 6 m to 20 m	CF6_20	7204	L	54	5	1	8

carp or cliff under 6 m	CLFLT6	7205	L	54	5	0	8
Earth or gravel slide	ESLID	7206	A	54	3	0	8
River terraces	REVTER	7207	A	54	0	2	8
Isolated rock masses	IROCKM	7208	A	54	4	0	8
Sheet rock on mountain side	S_ROCK	7209	A	54	7	0	8
Terraced scarp	TSCARP	7210	L	54	6	1	8
Rocky knob conventional	RNOB_C	7211	P	54	0	0	8
Rocky knob as surveyed	RNOB_S	7212	L	54	0	2	8
Sheet rock	SHROCK	7213	A	54	7	1	8
Boulder	BOULDR	7214	P	54	0	1	8
Rock outcrop	ROCROP	7215	A	54	0	0	8
Stony waste	SWASTE	7216	A	54	1	1	8
Rock pinnacle (C)	RPINCL	7217	P	54	0	1	8
River gorge	RGORGE	7218	L	54	3	1	8
Cutting/broken bank in hills	CUTTNG	7219	L	54	2	0	8
Rock pinnacles	RPINCS	7220	A	54	2	1	8
Boulder Surveyed	BLDRSY	7221	A	54	0	1	8
Boulders in an area	BLDARA	7222	A	54	3	1	8
River fan formed by side stream	RIVRFN	7223	L	54	4	1	8
CATEGORY -- HYPSOGRAPHY						**MAP -- MUD VOLCANOES**	
Crater as surveyed	CRAT_S	7301	A	55	0	0	0
Pinnacles	PINC_S	7302	A	55	0	1	37
Mud vent as surveyed	MUDVNT	7303	A	55	0	1	0
Mud flow as surveyed	MUDFLO	7304	A	55	0	2	37
Pinnacle conventional	PINCLC	7305	P	55	0	0	37
Crater conventional	CARTAC	7306	P	55	0	0	37
CATEGORY -- HYPSOGRAPHY						**MAP -- SAND FEATURES**	
Ground clear of sand	GCSAND	7401	A	56	1	0	37
Steep face of sand hill	SESHIL	7402	L	56	0	0	37
Sand hill and sand dune as surveyed	SHILL	7403	L	56	1	0	37
Shifting sand dune	SSDUNE	7404	P	56	0	1	37
Elevated flat sand area	EFSARA	7405	A	56	1	1	37
Conical top of dune	CTDUNE	7406	P	56	0	0	37
Flat sandy area	FSAREA	7407	A	56	0	0	37

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- HYPSOGRAPHY						**MAP -- HEIGHT, BMs AND CONTROL P**	
Triangulation station	TRGHTS	7501	P	57	0	1	0
Triangulation point	TRGHTP	7502	P	57	0	1	0
Triangulation station/point height/name	TRIGHT	7503	T	57	0	4	0
Rectangulation station/point	RECSTN	7504	P	57	0	1	0
Approximate/spot height position	APOXHP	7505	P	57	0	1	0
Approximate/spot height	APOXHT	7506	T	57	0	2	0
Relative height position	RHTP	7507	P	57	0	1	0
Relative height	R_HT	7508	T	57	0	2	30
Bench mark geodetic	BM_GT	7509	P	58	0	1	0
Bench mark geodetic height	BMGTHT	7510	T	58	0	4	0
Bench mark tertiary	BM_TR	7511	P	58	0	1	0
Bench mark tertiary height	TRBMHT	7512	T	58	0	2	0
Bench mark canal	BM_C	7513	P	58	0	1	1
Bench mark canal height	CBMHT	7514	T	58	0	2	1
CATEGORY -- HYPSOGRAPHY						**MAP -- HIGH MOUNTAIN FEATURE**	
Moraine medial	MORINM	7601	L	59	1	0	0
Moraine lateral	MORINL	7602	L	59	2	0	0
Moraine terminal	MORINT	7603	L	59	3	0	0
Rock couloir	RCOUR	7604	A	59	0	0	8

Scree	SCREE	7605	A	59	1	1	0
Rock fall	RKFALL	7606	A	59	5	1	0
Pass in permanent snow	PASSPS	7607	P	59	0	0	7
Hanging glacier	HANGLA	7608	A	60	4	0	7
Ice fall	ICEFAL	7609	A	60	5	0	7
Crevasses due to uneven bed	CRVSUB	7610	L	60	6	0	7
Crevasses due to movement of ice stream	CRVMIS	7611	L	60	7	0	7
Ice pinnacle (C)	IPINCL	7612	P	60	0	0	7
CATEGORY -- HYPSOGRAPHY						**MAP -- HIGH MOUNTAIN FEATURE**	
Bergschrunds	BRGCHD	7613	L	60	0	0	7
Permanent snow	PRSNOW	7614	A	60	1	0	7
Ice wall	ICEWAL	7615	L	60	0	1	7
Glacier stream	G_STRM	7616	L	60	0	2	7
Glacier lake	G_LAKE	7617	A	60	0	2	7
Ice cave	ICECAV	7618	L	60	0	3	7
Ice couloir	I_COUR	7619	A	60	3	1	7
Route over glacier	ROGLCR	7620	L	60	1	0	7
Snow cornice	SCORNC	7621	A	60	0	4	7
Giants kettle	GKETLE	7622	A	60	2	0	7
Ice pinnacles	IPINCS	7623	A	60	0	0	7

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- VITAL INSTALLATION						**MAP -- CIVIL VITAL INSTALLATION**	
DAM IMPORTANT	D_IMPD	8101	T	14	0	1	5
Reservoir	RESWIR	8102	A	14	0	2	5
Aerodrome limit (walled/fenced)	AROWLD	8103	A	36	0	2	5
Aerodrome limit (not walled/fenced)	ARONWD	8104	A	36	1	2	5
Aerodrome	ARODRD	8105	P	36	0	0	5
Landing ground/landing strip limit (walled/fenced)	LNDWLD	8106	A	36	0	1	5
Landing ground/landing strip limit (not walled/fenced)	LNDNWD	8107	A	36	1	1	5
Landing ground/landing strip	LNDSTD	8108	P	36	0	0	5
Helipad	HLIP_D	8109	P	36	0	1	5
Microwave tower/Air mooring or Tall telegraph / Wireless station mast	MTOWER	8110	P	37	0	0	5
Power house, satellite launch station, TV tower, etc.	PHSLTV	8111	T	37	0	2	5
Water works, Gas/Oil/Water pipe line	W_WORK	8112	T	37	0	3	5
Wireless station conventional	W_STNC	8113	P	37	0	1	5
Wireless station as surveyed	W_STNS	8114	L	37	1	1	5
Oil-well	O_WELL	8115	P	37	0	1	5
Oil-tank	O_TANK	8116	P	37	0	1	5
Oil pipe line	O_PLIN	8117	L	47	7	0	5
Water pipe line	W_PLIN	8118	L	48	7	0	5
Gas pipe line	G_PLIN	8119	L	49	2	1	5
Descriptive remarks: Foot bridge, Iron-bridge, Wooden-bridge, motorability, etc.	DESRMK	8120	T	27	0	0	5
CATEGORY -- VITAL INSTALLATION						**MAP -- MILITARY VITAL INSTALLATIO**	
Piquet or post	PIQUTD	8201	P	5	0	0	5
Piquet or post (description)	PQTPST	8202	T	5	0	0	5
Air bombing/firing range	A_RNGE	8203	A	37	3	1	5
Air bombing target	B_TRGT	8204	P	37	0	1	5
Telephone & telegraph line	T_PHON	8205	L	45	6	0	5
Line of control	L_CNTL	8206	L	50	0	4	5
Line of actual control	L_ACTL	8207	L	50	0	5	5

Note : The above list is not exhaustive. Any other detail appearing in Defence surprint will also come under this category. The cartographic attributes (feature name, type, LV, LC, WT, etc.) of the feature will be same except colour which will be CO=5 and DVD code will have extra digit 1 preceeding main code.

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- MAP FRAME AND TEXT					**MAP -- MARGINAL AND BORDER ITE**		
CENTRAL HEADING	C_HEAD	9101	T	61	0	6	0
'N' of sheet 'No.' on all sheets and in case of 1:250,000 sheets the letters and figures as well e.g. for sheet heading "No. 53O" the letters N,53 and O.	SHEETN	9102	T	61	0	5	0
'o' in No. numerator and denominator in 1:25,000 and 1:50,000 sheets, NAME OF 1:250,000 SHEET, 1:25,000/1:50,000/1:250,00 along scale	NUMDEN	9103	T	61	0	4	0
DISTRICT HEADING	D_HEAD	9104	T	61	0	3	0
REFER TO BOX TEXT AND INDIA, Edition Year (below S.G's imprint) e.g. 1992.	RTOBOX	9105	T	61	0	2	0
Season Heading : e.g. Surveyed 1991-92, Compiled from various sources, Magnetic Variation Legend, HEIGHTS AND CONTOURS, REFERENCES - heading in south margin	S_HEAD	9106	T	61	0	1	0
Special & Standard foot notes, Decreasing / increasing note, (Annual Change negligible), (Also see foot-note), (Also see compilation index), REGISTRATION LEGEND, PRINTING OFFICE NOTE, COPYRIGHT NOTE, Price Note, Scale letters and numbers, CONTOUR INTERVAL, S.G's name, Not applicable, Upright text under references	NOTES	9107	T	61	0	0	0
Edition No. (South Margin), S.G.'s imprint, E. of GREENWICH, Italics text in standard/special foot-notes and under references	EDITON	9108	T	61	0	0	0
FOR USE OF DEFENCE FORCES ONLY	FUODEF	9109	T	61	0	4	5
EDN. LEGEND AND RESTRICTED/SECRET	E_LEGE	9110	T	61	0	3	3
Text in Restricted box	RB_TXT	9111	T	61	0	0	3
COMPILATION INDEX :							
Thick line in index	COMTHK	9112	L	61	0	3	30
Outline of index	COMTHN	9113	L	61	0	2	30
TEXT for INDEX HEADING	COMHED	9114	T	61	0	1	30
Text for index notes	COMTXT	9115	T	61	0	0	30
Administrative Index :							
International/state boundary in index	ADMTHK	9116	L	61	0	6	40
Outline of index/district boundary	ADMTHN	9117	L	61	0	2	40
Text for Index Heading	ADMHED	9118	T	61	0	1	40
Text for index notes	ADMTXT	9119	T	61	0	0	40
Index to Sheets :							
Thick line in index	ITSTHK	9120	L	61	0	6	60
Thin line in index/Hachuring	ITSTHN	9121	L	61	0	2	60
Text for Index Heading	ITSHED	9122	T	61	0	1	60
Internal text in index	ITSTXT	9123	T	61	0	0	60

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- MAP FRAME AND TEXT						**MAP -- MARGINAL AND BORDER ITE**	
International Numbering :							
Thick line in index	INITHK	9124	L	61	0	6	1
Thin line in index/Hachuring	INITHN	9125	L	61	0	2	1
Text for Index Heading	INIHED	9126	T	61	0	4	1
Internal text in index	INITXT	9127	T	61	0	2	1
Copy right symbol	C_SYMB	9128	P	61	0	0	0
Line features (Black) for boxes	LINE_B	9129	L	61	0	2	50
Line features (Red) for boxes	LINE_R	9130	L	61	0	2	3
B O R D E R I T E M S							
MAP FRAME :							
Map border line (Thick)	MBLTHK	9131	L	61	0	7	0
Map border line (Thin)	MBLTHN	9132	L	61	0	2	0
Map graticule lines	MGLINE	9133	L	63	0	2	0
Degree symbol	DEGREE	9134	T	63	0	1	0
Minute symbol	MINUTE	9135	T	63	0	1	40
Second symbol	SECOND	9136	T	63	0	1	30
Letters A, B, C, D etc. and Figures 1, 2, 3, 4	LETFIG	9137	T	61	0	3	3
ADMINISTRATIVE NAMES	ADMNAM	9138	T	50	0	2	0
Degrees in graticule value	DEGVAL	9139	T	63	0	3	50
Minutes and seconds	MINSEC	9140	T	63	0	1	50
Cross marks for latitude, longitude	CROSSM	9141	P	63	0	2	0
NOT FOR EXPORT	NFEXPT	9142	T	61	0	0	3
CATEGORY – MAP FRAME AND TEXT						**MAP – NAMES**	
STATE HEADQUARTER	STATHQ	9201	T	3	0	5	30
DISTRICT HEADQUARTERS	DISTHQ	9202	T	3	0	5	0
SUB DIVISION/TAHSIL/TALUQ H Q	SUBDHQ	9203	T	3	0	3	30
Other towns	TOWNLV	9204	T	3	0	3	0
Large villages	LARVIL	9205	T	3	0	2	0
Other villages REVENUE VILLAGE NAME	VILAGE	9206	T	3	0	1	0
Alternative name	ALTNAM	9207	T	3	0	1	30
Hamlet	HAMLET	9208	T	3	0	0	0
Names of important buildings e.g. Govt. houses, High Court	IMPBLD	9209	T	3	0	2	30
Names of ordinary buildings e.g. Club, Market, Sarai, Jail, etc.	ORDBLD	9210	T	3	0	1	40
LOCALITY NAMES:							
5 to 10 cm apart on the scale of publication	LN5T10	9211	T	3	0	3	40
Less than 5 cm apart	LN_LT5	9212	T	3	0	2	40
TRIBAL NAMES:							
5 to 10 cm apart on the scale of publication	TN5T10	9213	T	3	0	3	60
Less than 5 cm apart	TN_LT5	9214	T	3	0	2	60

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY – MAP FRAME AND TEXT						**MAP – NAMES**	
Descriptive remarks e.g. Chimney, Cemetery, Gurudwara, Annual fair, Monument, In ruins, Wall, Fence, Factory, Dairy farm, Park etc.	DESBLD	9215	T	5	0	0	0
Fort large	FORTLA	9216	T	5	0	1	0
Fort other	FORTOT	9217	T	5	0	0	30
ANTIQUITIES	ANTIQT	9218	T	5	0	1	0
LARGE RIVER, LAKES, TANKS	LRIVER	9219	T	6	0	3	0

Other rivers, lakes, tanks	ORIVER	9220	T	7	0	2	0
CANAL MAIN LINE	CANALM	9221	T	9	0	1	0
Canal branch line/distributary perennial	CANALB	9222	T	10	0	1	0
Canal, drain, minor used as a name without proper name	DRAINM	9223	T	10	0	1	0
Descriptive remarks, viz. Canal disused/under construction, Viaduct, Siphon, Aqueduct, Sluice, Weir, Overhead tank, Covered tank, Artesian, Drinkable, Dry, Brackish, Causeway, etc.	DESRWF	9224	T	11	0	0	0
Falls, Rapids, Springs, Swamp, Reeds, Mangrove Swamp, Mud	FRSSRS	9225	T	13	0	0	0
DAM IMPORTANT	DAMIMP	9226	T	14	0	1	0
Dam other	DAMOTH	9227	T	14	0	0	0
Small sea areas, straits, sea features, creek, channel	SSEAAR	9228	T	20	0	1	0
LARGE SEA AREAS eg. BAY OF BENGAL, ARABIAN SEA, INDIAN OCEAN etc. (to be spaced) ' GULF OF KHAMBAT', 'GULF OF KUTCH' (not spaced)	LSEAAR	9229	T	22	0	5	0
High and low water lines, Descriptive remarks viz. Rann	HLWLIN	9230	T	22	0	1	0
GROUP OF ISLANDS/ARCHIPELAGOES	GISLDS	9231	T	22	0	3	0
Large islands, submerged sands and sand banks	LISLDS	9232	T	22	0	4	0
Small islands, submerged sands and sand banks	SLSLDS	9233	T	22	0	1	30
Capes/Promontories important	CAPESI	9234	T	22	0	3	30
Capes/Promontories others	CAPESO	9235	T	22	0	2	30
NAME OF ROADS	NROADS	9236	T	23	0	1	0
Destination along roads, ford, ferry, motorability remark, AA, Foot-bridge, Iron-bridge etc.	D_ROAD	9237	T	27	0	0	0
Pass name	PASSNM	9238	T	30	0	1	0
Destination along railways	D_RAIL	9239	T	34	0	0	0
RAILWAY NAME MAIN LINE	RNMAIN	9240	T	32	0	2	0
Railway name branch line	RNBRCH	9241	T	32	0	1	0
Railway name	RLYNAM	9242	T	32	0	1	30
Railway station	RLYSTN	9243	T	35	0	1	30
Railway Station:							
IMPORTANT JUNCTIONS	IMPJNS	9244	T	35	0	2	0
Other junctions	OJNSTN	9245	T	35	0	1	0
Aerodrome name	AERODM	9246	T	36	0	1	0

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- MAP FRAME AND TEXT						**MAP – NAMES**	
Descriptive remarks viz. Camping ground, Rifle range, Brick kiln, Wireless mast, Quarry, Salt-pans, Wire fence etc.	DESLCR	9247	T	37	0	0	0
Site name	SITENM	9248	T	37	0	1	0
FOREST NAME RESERVED OR PROTECTED	RFPF	9249	T	38	0	3	0
FOREST NAME RESERVED/PROTECTED OTHERS	RFPF_O	9250	T	38	0	1	0
Descriptive remarks viz. Dense mixed jungle, Open scrub, Fire line, Grass 3m high etc.	DMJNGL	9251	T	38	0	0	0
Tea garden name, Casuarina plantation, Green belt etc.	TGDNAM	9252	T	40	0	0	0
Telegraph/Telephone line, Power line, Oil pipe line, Karez, Water pipe line	DREELE	9253	T	45	0	0	0
ADMINISTRATIVE SPACED NAMES:							
10 to 15 cm. apart on the scale of publication	AN1015	9254	T	50	0	6	0
5 to 10 cm. apart on the scale of publication	AN0510	9255	T	50	0	5	0
Less than 5 cm. on the scale of publication	ANLT05	9256	T	50	0	3	0
Boundary pillar main	BPMTXT	9257	T	50	0	1	0
Boundary pillar subsidiary	BPSTXT	9258	T	50	0	0	0
Descriptive remarks viz. Stony waste, Rocky knob, Depression, Dep., GW, etc.	DESHPS	9259	T	54	0	0	0

Hill and peak names	HPEAKN	9260	T	54	0	1	30
IMPORTANT MOUNTAIN RANGES (to be spaced)	IMRANG	9261	T	54	0	3	0
Other hills (to be spaced)	OTHILL	9262	T	54	0	1	40
NAME OF VALLEYS, PLAINS	VALEYN	9263	T	54	0	1	50
LARGE GLACIER NAME (to be spaced)	LGLACR	9264	T	58	0	2	0
Others	OTHERS	9265	T	58	0	1	0
Descriptive remarks of sea features viz. Destination of steamer service, Steamer station, Beacon, Coral reef, Name of Steamer station, Country boat, Landing stage, Cyclone shelter, Aquaculture ponds, Back water, Jetty, Buoy, Shoal, Liable to flood, Tidal lock, Light house etc.	DESRSF	9266	T	22	0	0	0

Note: Name typed/printed in upper case will also appear in upper case in the map.

FEATURE NAME	ABBREVIATED NAME	FEATURE CODE	FEATURE TYPE	LEVEL CODE	LINE CODE	WEIGHT CODE	COLOUR CODE
CATEGORY -- MAP FRAME & TEXT						**MAP -- GRID (METRIC)**	
Grid lines (thin)	GTHINL	9301	L	62	0	1	5
Grid lines (thick)	GTHCKL	9302	L	62	0	5	5
Grid junction line (along graticule)	JLGRAT	9303	L	62	0	6	5
Grid figures (large) in border, Grid reference box heading viz. GRID I A (Metres), & other internal text except Grid reference name & its coordinate, Mean Grid North Legend	GFIGLG	9304	T	62	0	1	5
Grid figures (small) in border, Text metres in border, Grid reference name & coordinate	GFIGSL	9305	T	62	0	0	5
Grid figures (inside body)	GFIGIN	9306	T	62	0	3	5
GRIDDED	GRIDED	9307	T	62	0	2	5
Grid reference box	GRIDBX	9308	L	62	0	2	5
Grid reference letters	GRIDRL	9309	T	62	0	1	5
Secondary Grid ticks (thin)	SGRTHN	9310	L	62	0	1	2
Secondary Grid ticks (thick)	SGRTHK	9311	L	62	0	5	2
Secondary Grid figures (large)	SGFIGL	9312	T	62	0	2	2
Secondary Grid figures (small) & Secondary Grid text metres	SGFIGS	9313	T	62	0	0	2
Secondary Grid remarks	SGREMK	9314	T	62	0	1	2
CATEGORY -- MAP FRAME & TEXT						**MAP -- GRID (FPS)**	
Grid lines (thin)	FGTHIN	9401	L	63	0	1	5
Grid lines (thick)	FGTHIK	9402	L	63	0	5	5
Grid junction line (along graticule)	FGJUNC	9403	L	63	0	6	5
Grid figures (large) in border, Grid reference box heading viz. GRID I A (Yards), other internal text except Grid reference name & its coordinate, Mean Grid North Legend	FGFIGL	9404	T	63	0	1	5
Grid figures (small) in border, Text yards in border, Grid reference name & coordinate	FGFIGS	9405	T	63	0	0	5
Grid figures (inside body)	FGFIGI	9406	T	63	0	3	5
GRIDDED	FGRDED	9407	T	63	0	2	5
Grid reference box	FGRBOX	9408	L	63	0	2	5
Grid reference letters	FGREFL	9409	T	63	0	1	5
Secondary Grid ticks (thin)	FSGTHN	9410	L	63	0	1	2
Secondary Grid ticks (thick)	FSGTHK	9411	L	63	0	5	2
Secondary Grid figures (large)	FSGFLG	9412	T	63	0	2	2
Secondary Grid figures (small) & Secondary Grid text yards	FSGFSL	9413	T	63	0	0	2
Secondary Grid remarks	FSGREM	9414	T	63	0	1	2
CATEGORY -- MAP FRAME & TEXT						**MAP – SCALES**	
Map Scale Metric	SCALEM	9501	L	61	0	1	0
Map Scale Yards	SCALEY	9502	L	63	0	1	0

ASCII CODES FOR ACCENTED CHARACTERS AND OTHER SYMBOLS

In DVD, the accented characters and other symbols will be represented by corresponding ASCII characters as given in this table.

OCTAL code	ASCII/DECIMAL code	Keyboard character with description	Associ
076	62	> (Greater than)	
074	60	< (Less than)	
174	124	I (Vertical)	
134	92	\ (Back slash)	
100	64	@ (Commercial at)	
043	35	# (Number sign)	
136	94	^ (Carot)	
047	39	' (Apostrophe)	
042	34	" (Quote)	
041	33	! (Exclamation point)	

ANNEXURE 'B'

" LINE WEIGHT AND LINE THICKNESS RELATIONSHIP"

Map making was one of the major design consideration of the Data Model Structure. Different line weights have been assigned to each topographical detail so as to obtain required thickness at the time of plotting/scribing. Cartographers are advised to follow the criteria given below :-

TABLE - I

Sl. No.	Line Weight	Line Thickness (mm.)
1.	WT=0	0.075
2.	WT=1	0.100 0.125
3.	WT=2	0.150 0.175
4.	WT=3	0.200 0.225
5.	WT=4	0.250 0.275
6.	WT=5	0.300 0.325
7.	WT=6	0.350 0.375

In the above table each line weight code represents two line thicknesses (except line weight =0). The first line thickness is taken by default and wherever it represents second on the same is indicated in remarks column of the Data Model Structure.

The convention for the line thickness should be followed for all linear and text features appearing under categories No. 1-8. However for text appearing under category No. 9, i.e. MAP FRAME & TEXT, the convention mentioned in TABLE-II should be followed.

TABLE - II

Sl No.	**Line Weight**	**Point Size**	**Line Thickness (mm.)**
1.	WT=0	6I / R	0.175
2.	WT=1	8I / R	0.275
3.	WT=2	9I / R	0.325
4.	WT=3	12I / R	0.450
5.	WT=4	14I / R	0.525
6.	WT=5	18I / R	0.650
7.	WT=6	24I / R	0.800

DATA MODEL
FOR
DIGITAL CARTOGRAPHIC VECTOR DATABASE
CREATION
ON
MICROSTATION BASED SYSTEMS

(REVISED, MARCH 2002)

PREPARED
AT
MODERN CARTOGRAPHIC CENTRE
SURVEY OF INDIA
DEHRADUN.