राजस्थान सरकार

राजस्व मण्डल राजस्थान, अजमेर

क्रमांकः BR/ LR/ NLRMP/ F-122/Phase-2/ 210   दिनांक:-23-1-17

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विषय :–डिजीटाइज्ड शीटों के फाइनल प्रिंट के टेम्पलेट फा ... (Standard Design Document) दिए जाने बाबत् ।

प्रसंग :– आयुक्त, भू-प्रबन्ध एवं नोडल अधिकारी DILRMP का इ-मेल दिनांक 13.01.2017

महोदय,

उपरोक्त विषयान्तर्गत आयुक्त, भू-प्रबन्ध एवं नोडल अधिकारी DILRMP कार्यालय, जयपुर से जरिए ई–मेल से डिजीटाइज्ड शीटों के फाइनल प्रिंट हतु टेम्पलेट एवं **S.D.D.** (Standard Design Document) उपलब्ध करवाए गए है, जो आवश्यक कार्यवाह हेतु प्रेषित है ।

(विनीता श्रीवास्तव)
निबंधक,
राजस्व मण्डल राजस्थान
अजमेर
दिनांक :- 23-1-17

क्रमांक :– राम / सम /211-12

प्रतिलिपि :–

1. आयुक्त एवं नोडल अधिकारी DILRMP, भू-प्रबन्ध विभाग जयपुर ।
2. जिला कलक्टर समस्त ।

(सुरेश कुमार शिंगी)
उप निबंधक (भू.अ.),
राजस्व मण्डल राजस्थान,
अजमेर

DDS DIGBOR

Subject: DDS DIGBOR
From: Commissioner Settlement <scr-rj@nic.in>
Date: 13/01/2017 6:50 PM
To: bor-rj@nic.in

Sir,

This is in reference to DDS, Format, Modified note / Format is enclosed for onward transmission to concerned vendor. This has been discussed with vendors   M/S ILFS and M/S ADCC representatives on 13.1.17 at Jaipur.

With Regards.

12
16·1·17

―Attachments:―

DDS DIGBOR 13-1-2017.doc   1.6 ME

DR. (R)

16/01/17

P.A./Regr.
116
S.N.   Date
17/1/17

The details mentioned below are part of inputs for GIS based data structures, lay out and legend for the final outputs (which is always to be kept horizontal, sample already made available by settlement Department). Some inputs of scope of work have been further elaborated, as per discussions held in meeting held under chairmanship of Chairman Board of Revenue at Ajmer on 7.12.2016, there will not be any deviation from the RFP.

2. DATA DESIGN, SPECIFICATION/STRUCTURE & FORMAT

2.1   Introduction

A data design provides a comprehensive architecture for the database to be viewed in it's entirely and evaluate how the various aspects of it need to interact. A good design results in a well-constructed, functionally and operationally efficient database that –

- Satisfies the objectives and supports requirements

- Contains required data without redundancy

- Organizes data so that different users can access the same data

- Accommodations of different versions of the data

- Distinguishes applications that maintain data for those who use it.

- Appropriately represents codes and organizes geographical features.

Database standards are an important element of the database design. Standards enable applications and technology to work together, they encourage efficiency and effectiveness, help reduce costs in investments, protect data against technological change and lead to availability of accurate, complete and current data. Tools, applications and data affect each other and standards are established with this condition.

2.2   PROCEDURES FOR BUILDING THE DATABASE

The elements of the database are to be created as per the standards herein and scientists/consultants have to take care that digitization is as per the standards. The inputs are subject to validation at each stage, and will include qualitative as well as quantitative checks for input accuracy.

The creation of a clean digital database is the most important and complex task upon which the usefulness of the database lies. **Two aspects need to be considered here; one is its unique identification for associating attributes that link to the records and second is the geographic data necessary to define where the parcel of land or for that matter any other features is located .**

At every stage, there will be necessary and proper data verification to ensure that the resultant database is as free as possible from error. Errors would generally be of the following types.

1. Spatial data is incomplete or double Khasra ID or missing & blank Khasra ID
2. Spatial data is in the wrong place
3. Spatial data is at the wrong scale
4. Spatial data is distorted
5. Spatial data is linked to wrong attributes
6. Non-spatial data is incomplete.

Spatial data on early mismatching w.r.t. original Revenue Map prints. For evaluating the digital data the following guidelines/parameters would be checked.

1. Attribute verification providing the correctness of feature coding by listing it out and comparing with the manuscript maps. Complete checking of all parcels for shape & form and listing of polygons with zero/no attribute.
2. Verification of scale/units (i.e. w.r.t input maps)
3. Checks for digitization errors like slivers, dangles, overlapping lines and dimension errors.
4. Checks for mosaicing of maps and verification of edge matches with adjacent maps by displaying them side-by-side.

2.3 DATABASE CONSTRUCTION GUIDELINES

1. **Building village cadastral map database in GIS environment** for planning and implementation of various projects at the micro-level. This document lists out in detail the various processes and specifications (**as defined in RFP**) based on the following broad points.-
2. The village maps received from Revenue Department will be scanned by adopting standard procedures mentioned in RFP document.
3. Tiling with grid in case of grid approach /georeference with known coordinates, WGS84 transformation.
4. Uniform tic points (8-10) using standard grid(known value as per ground unit) are marked on the hard copy map received, scanned through suitable Scanner in RFP defined (300-400dpi).Similar grid is generated in suitable CAD or any other GIS software. Input map scale and other parameters are defined.
5. 1:1 replica of original hard copy is generated as hard copy print along with soft copy with all scanned parameters are to be submitted for QC I.
6. Then the approved scanned village maps will be vectorized / digitized .
7. Tarmeen updation, print for **QC2.**
8. Digitized village cadastral maps will be edge matched wherever required and mosaiced to form a layer in the GIS database at the village level, in case of new village formation, boundary delineation as per bifurcation/new carvation..
9. Print on 1:4000 scale for village or villages in case of new village formation..
10. A primary key field will be generated (in tune with NIC codes) which will be amenable to attribute data attachment (RoR data).
11. Final output hard copy prints generated as per documents defined under RFP.**QC3A.**

12. **Geo location**- 8-10 points are to be selected from any web data or points collected from SRSAC (has image mosaic of state), the village Coordinates will be stored in WGS84 in metric unit & 43 Zone (North Hemisphere). This will be separate set in .shp file.

    The UTM projection with datum WGS84 will be checked under QC3B. (Edgematchig with adjacent villages may not be required). **QC3B**

13. Submission of final print for checking acceptance on 1;4000, in standard legend format.(Horizontal mode with maps legend on right as given in samplesoft copies may be provided both in Hind and English)

2.4   INPUTS FOR THE PROJECT

1. Hardcopies of cadastral maps
2. Meta data and general attributes RoR data etc.

2.5   QUALITY ASSURANCE

The project will have well defined and set procedures for quality assurance of the database. The QC procedures are both qualitative and quantitative. All scanned & digitized output data or hard copy maps generated from digitized data by the Service Providers/entrepreneurs will have to go through the quality check procedure before acceptance. The following aspects regarding quality assurance have to be adhered to by Service Providers/entrepreneurs and the same are to be verified by the designated technical team from Land Record department:

1. The quality assurance of the data will be carried out by using automated routines as well as manual checks, as required at Service Provider end prior to generation of hard copy maps. This will include checks for topological correctness, unique feature coding, and completeness of data, naming conventions, accuracy and errors.
2. The quality assurance form duly filled has to be submitted along with the soft copy data.
3. Data not complying with the standards and accuracy specifications will be returned back to Service Providers for necessary corrections and will have to be re-submitted after necessary corrections.
4. If the data complies with the quality assurance standards and error limits are in the prescribed range, the data will be accepted.
5. The quality assurance should comply with the following aspects (1) positional accuracy, (2) Attribute accuracy, (3) Logical consistency, (4) completeness and (5) mosaicing fit of the data.

6. Quality assurance of database will be done within a specified time frame by Revenue-Department.
7. On sample basis, files of individual villages and the mosaic will be digitally quality checked by Revenue Department..

The criteria and acceptance levels for various parameters are given below:

i. File naming	100%
ii. Directory structure	100%
iii. Data readability	100%
iv. Data structure	100%
v. Data format	100%
vi. Topology	100%

vii.	Attribute correctness	100%
viii.	Attribute completeness	100%
ix.	Data mosaicing	100%

At each step of the process, adopted for computerization of the village map, quality check has to be applied to ensure error free database generation.

3. <u>GENERAL GUIDLINES FOR WHOLE PROCESS UNDER OF THIS DILRMP PROJECT (PROCESS METHDOLOGY as mentioned in RFP)</u>

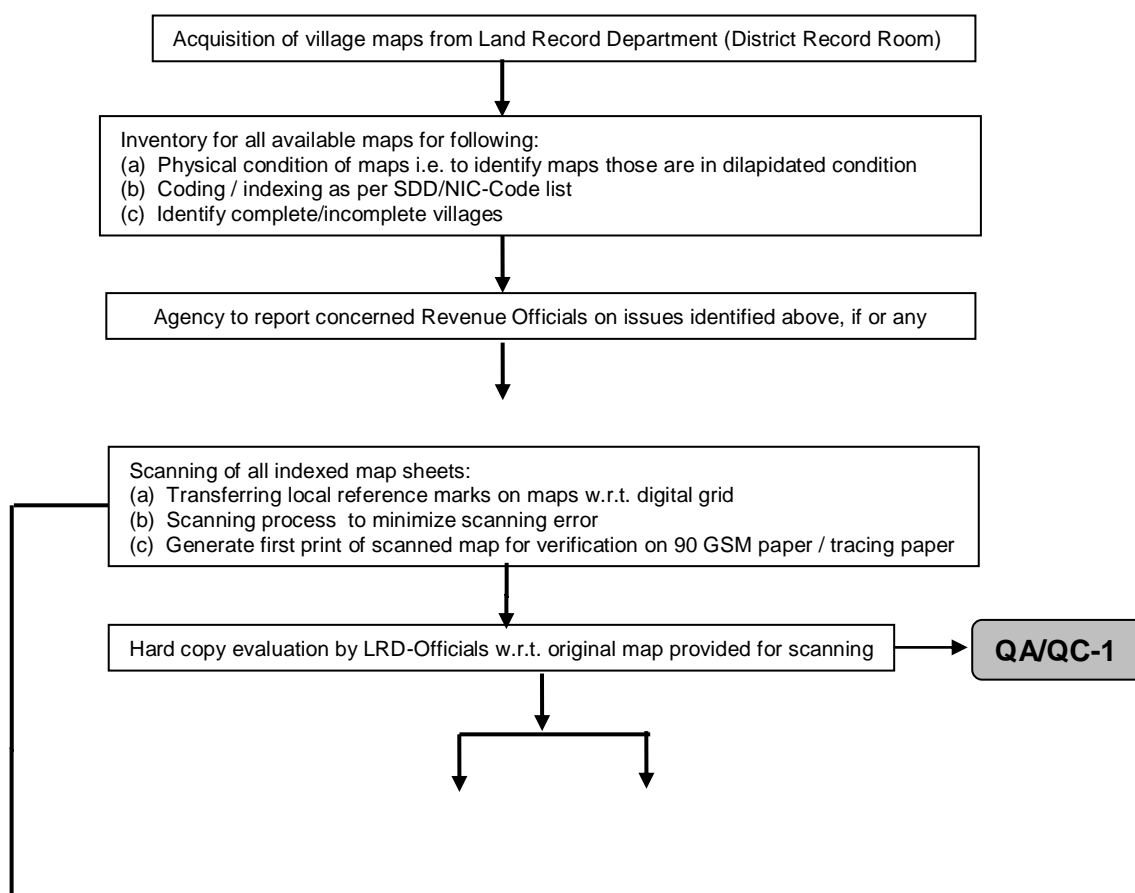<u>**Phase 1**</u> **– Scanning of latest settlement cadastral maps/Revenue maps**

<u>**Phase 2**</u> **– Digitization of scanned and approved cadastral maps/Revenue maps**

<u>**Phase 3**</u> **– Linkage of digital data(SHP files) with RoR data**

<u>**Phase 4**</u> **– Handover all deliverables to Department, Imparting trainings and one year AMC**

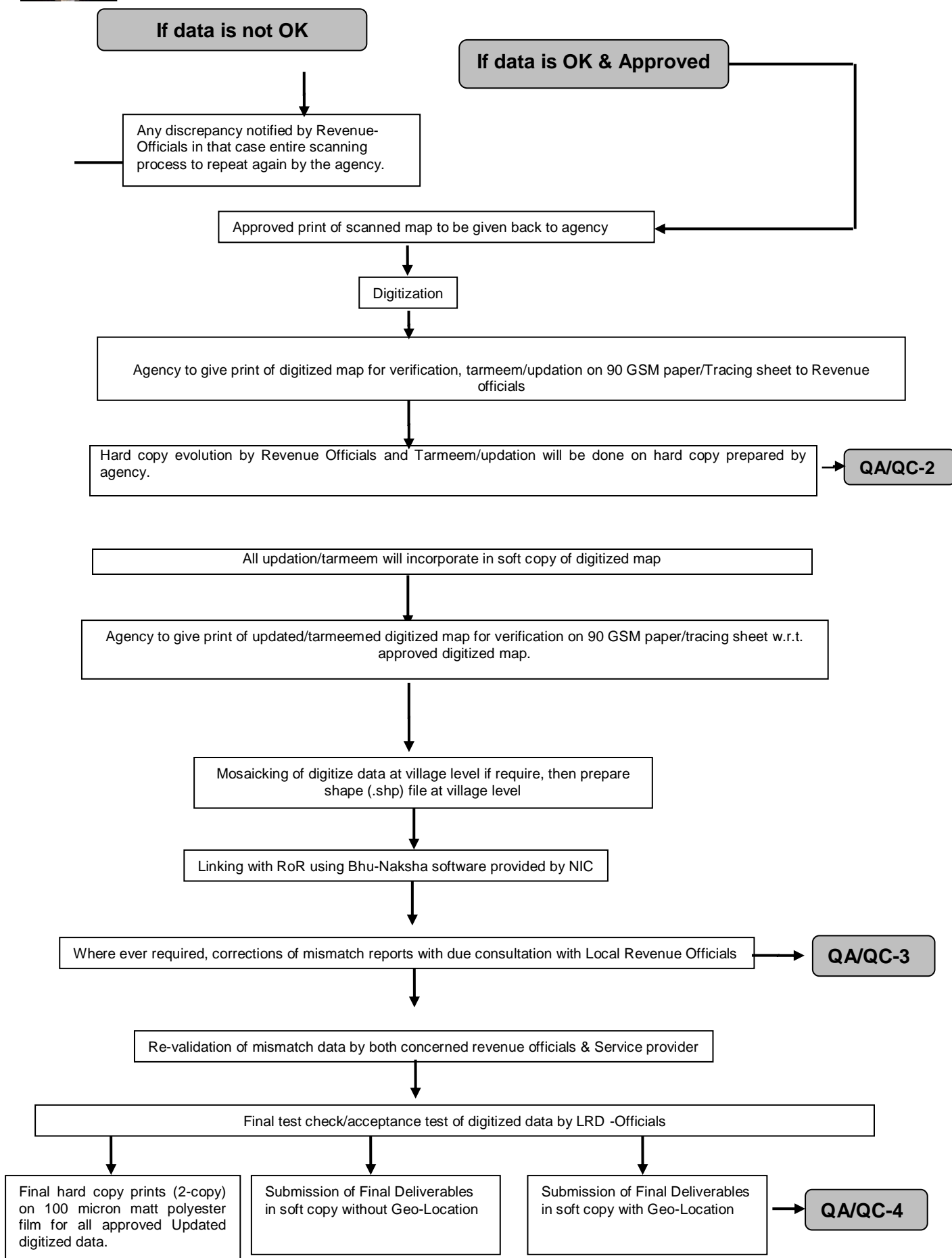**Following process to be followed for whole process for Scanning, Digitization & digital database generation and Linking with RoR:**

Flow Chart

```
┌─────────────────────────────────────────────────────────────────────┐
│ Acquisition of village maps from Land Record Department (District     │
│ Record Room)                                                          │
└─────────────────────────────────────────────────────────────────────┘
                                  │
                                  ▼
┌─────────────────────────────────────────────────────────────────────┐
│ Inventory for all available maps for following:                      │
│ (a) Physical condition of maps i.e. to identify maps those are in     │
│     dilapidated condition                                             │
│ (b) Coding / indexing as per SDD/NIC-Code list                        │
│ (c) Identify complete/incomplete villages                             │
└─────────────────────────────────────────────────────────────────────┘
                                  │
                                  ▼
┌─────────────────────────────────────────────────────────────────────┐
│ Agency to report concerned Revenue Officials on issues identified     │
│ above, if or any                                                      │
└─────────────────────────────────────────────────────────────────────┘
                                  │
                                  ▼
┌─────────────────────────────────────────────────────────────────────┐
│ Scanning of all indexed map sheets:                                  │
│ (a) Transferring local reference marks on maps w.r.t. digital grid    │
│ (b) Scanning process  to minimize scanning error                      │
│ (c) Generate first print of scanned map for verification on 90 GSM    │
│     paper / tracing paper                                             │
└─────────────────────────────────────────────────────────────────────┘
                                  │
                                  ▼
┌──────────────────────────────────────────────────────┐      ┌──────────┐
│ Hard copy evaluation by LRD-Officials w.r.t. original │─────▶│ QA/QC-1  │
│ map provided for scanning                             │      └──────────┘
└──────────────────────────────────────────────────────┘
                           │
                    ┌──────┴──────┐
                    ▼             ▼
```

If data is not OK

If data is OK & Approved

Any discrepancy notified by Revenue-Officials in that case entire scanning process to repeat again by the agency.

Approved print of scanned map to be given back to agency

Digitization

Agency to give print of digitized map for verification, tarmeem/updation on 90 GSM paper/Tracing sheet to Revenue officials

Hard copy evolution by Revenue Officials and Tarmeem/updation will be done on hard copy prepared by agency.

QA/QC-2

All updation/tarmeem will incorporate in soft copy of digitized map

Agency to give print of updated/tarmeemed digitized map for verification on 90 GSM paper/tracing sheet w.r.t. approved digitized map.

Mosaicking of digitize data at village level if require, then prepare shape (.shp) file at village level

Linking with RoR using Bhu-Naksha software provided by NIC

Where ever required, corrections of mismatch reports with due consultation with Local Revenue Officials

QA/QC-3

Re-validation of mismatch data by both concerned revenue officials & Service provider

Final test check/acceptance test of digitized data by LRD -Officials

Final hard copy prints (2-copy) on 100 micron matt polyester film for all approved Updated digitized data.

Submission of Final Deliverables in soft copy without Geo-Location

Submission of Final Deliverables in soft copy with Geo-Location

QA/QC-4

Note: Vender is responsible for incorporation of information updated by district Revenue Officials and the new dataset after updation/tarmeem will be saved as a new dataset. (One soft copy of digitized data before updation/tarmeem will be preserved).

3.1 <u>Phase 1 Scanning Process</u> :

3.1.1 <u> </u>**Acquisition of village maps** – Latest settlement cadastral maps/ Revenue maps are available in each District Record room. Agencies should have contact with Revenue officials of Record rooms for awareness about record room and other information about cadastral map/Revenue maps especially about care take and handling with revenue maps. And also can get information regarding no. of maps sheets tahsil wise with in District.

3.1.2 **Inventory for all available maps** – Agencies should have check physical condition of cadastral maps and make report for damage/dilapidated condition maps and provide it to Record room officials/District Administration and BOR officials for another copy for scanning process or provide other alternate solution. Agencies should also create a list of complete/Incomplete village according availabilty of Revenue maps in record room and this report is also tol submit to District administration as well as to BOR Ajmer.

3.1.3 **Collecting hardcopy maps/sheets and Indexing & Coding** -- Department of Revenue and local administration shall provide Latest Chakbandi/Bandobasti Cadastral map/revenue map sheets to the Vendors at work station provided by district administration for scanning and subsequent processing as per project plan submitted by the Vendor. A1/A0 or as per actual Map should be treated as one unit, billing is to be done on input sheet basis. All receiving and submission of hard copy of maps will be entered in a Resister maintained by Agencies as well as Record room officials. SIO/NIC will provide village code for indexing and coding to Agencies and they will use for create database according provided code.

For scanned output *.tiff will be coded as per standard naming convention Eg:(IN Indian umbrella code) the structure of data path will be as per below:

District

Tehsil

ILR Code

Patwar Circle

Village

Code file name

3.1.4 Service Providers will use naming coding scheme or design MIS in such a way that the village maps can be indexed to the standard numbering/naming convention and the same would be used for scanning and further activities. This would enable to keep track of all

sources in proper order. First of all visual inspection of supplied village maps from Department of Land Records is to be done and inventory work for missing, damaged/dilapidated problematic maps etc. is to be carried out. The source condition, legibility and completeness would be checked. If any discrepancy is observed with source material, that would be referred back to District Revenue Officials for replacement or clarification.

Scanning of map sheets-

The maps have to be scanned with the following specifications:

- Maps to be scanned at 300 dpi (colour) .
- The image will be stored in *.tiff format.
- The image orientation will be upright. The image will be cleaned and despeckled to remove noise.
- Measured length and width within the bounding box of map will be +/- 0.1% of the map manuscript measurements.
- The image will not be skewed or warped. After scanning, alignment of image orientation (with North arrow)/ and cropping, cleaning etc. have to be done.
- Tiling map using GRID in Ground Unit meter.

The scanned map might have carried forwarded the errors due to differential scanning, wear and tear, differential shrinkage / expansion. The net result is non-uniform scale at parts of the map, deflection in north orientation etc. To make the map planimetrically accurate, rectifying the map with the vector grid is suggested.

Grid rectification of village sheet in permissible RMS (root mean square) error with minimum 10-15 tie points spread all over the sheet.

Deliverables of Scanning Activity :

1. One hard copy print on 90 gsm paper/transparency sheet for checking purpose w.r.t. original maps provided for scanning. Agencies will do rescanning work and submission of hard copy for QC till 1:1 match with original revenue maps.(Deviation as per RFP).

2. Submission for approval of hard copy maps one soft copy of raster image in .tiff Format in a DVD/HDD/Soft media and approved hard copy maps will return to Agencies for their reference for next step.

3.2 Phase 2 Digitization Process :

The aim of this task is to digitize all the Khasra polygons & administrative boundaries from the village maps. In this phase, data capture of points, lines, and polygons features will have to be done with respect to RFP specifications and the scanned images.

Data capture is to be performed in GIS environment using internally developed menu with appropriate layer and symbol.

3.2.1. Polygons, points, and lines have to be captured in their respective layers.
3.2.2 The coincide lines have to be digitized only once and used for both of the polygons.
3.2.3 The data should be topologically correct for each of the layers.
3.2.4 The features such as wells, temples, trees, village tri-junctions etc. have to be digitized as point features.
3.2.5 The features such as rivers and roads have to digitize as linear features.

3.2.6 Logical connectivity of the features have to be followed i.e. a river will not join a road. The connectivity of the rivers/roads has to be maintained except cases where a river feature is crossing a road feature.

3.2.7 Centre lines will not be digitized for the double line features / polygons.

3.2.8 The digitized line will be followed in the centre of the raster data.

3.2.9 If the shape of the parcel boundary is shown straight in the image, it should be digitized only with use of two nodes/ vertices.

3.2.10 There should not be any overshoots, undershoots and duplicate features.

3.2.11 Appropriate symbols have to be used as per the source map.

3.2.12 The polygon features have to be closed without any dangles or slivers.

3.2.13 Feature-specific codes will be used for attribution. Each parcel polygon will have a unique Khasra number as per the coding scheme (provided).

3.2.14 These drawing templates having Layer and symbol information as block. Block list also available in drawing.

3.2.15 This drawing template will be used to finalize sheet wise digitization output only.

3.2.16 Print for Tarmeem will be submitted from this standardized template (individual sheets).

3.2.17 Scanned updated Tarmeem map will be rectified in digitized map and tarmeem will be updated in digitized map.

3.2.18 Village wise final Mosaic output will not have standardized template in suitable software. Template to print final map at 1:4000 scale in Landscape direction will be prepared later.

3.2.19 Shape file delivery will be made for Attribute attachment as per RFP(RoR integration) in UTM coordinates.

3.2.20 For out put, an approved template as provided by Settlement Department is to be used with legends, Title, scale bar, north arrow, different layers used for capturing various information, map text details and borders etc. The symbols, standard legend, and logo block for use in the Vectorization process would be created as GIS blocks and used whenever necessary.

3.2.21 The required attribute information such as parcel / Khasra numbers available on the maps have to be assigned to the vectorized polygons as Unicode texts. The drawing file for each village has to be created in this task. If village information is available in more than one map sheet, all the sheets have to be edge matched into one village drawing (Edge matching, removal of redundant / duplicate text/labels, scale adjustments etc.,). In case of size of map being larger than standard format, it will be divided in symmetrical grids and each part of village map print will also be generated on 1:4000 scale.

3.2.22 Soft copy of each QC stage is also to be provided along with hard copy to Department and SARSAC each.

4. STANDARDS FOR DATA STRUCTURE

Table 4.1   : Various data folder nomenclature

HDD VOLUME NOMENCLATURE

For scanned output *.tiff will be coded as per standard naming convention Eg:(IN Indian umbrella code) the structure of data path will be as per below:

District

Tehsil

ILR Code

Patwar Circle

Village

All file name code as per file extension.

Table 4.2 : Each FOLDER should contain the following files for each village

I	TIFF*	I DDDTTTTTVVVVVVss.tiff	Sheet-wise scanned file (Raw or all scanned file)
		DDDTTTTTVVVVVVss.tfw	Sheet-wise grid corrected file (Geo tiff)
II	.shp .shx .dbf	*W*DDTTIIPPVVVNN♣.shp DDDTTTTT.shp VVVVVV.shp	Sheet-wise
		*WM*DDTTIIPPVVVNN♣.shp	Mosaic of drawing file at village level(**WM** as prefix)
III	*F*DDTTIIPPVVVNN♣.pdf	*F*DDTTIIPPVVVNN♣.pdf	Sheet-wise PLOT files converted to PDF format (F as prefix)
IV	DDDTTTTTVVVVVVss.shp* (*ArcGIS feature files –* *unrectified*)	*a*DDTTIIPPVVVNN♣	Every Layer of feature
		*l*DDTTIIPPVVVNN♣	Every Layer of feature
		*p*DDTTIIPPVVVNN♣	Every Layer of feature

* *this is where the alphabetical district/Tehsil codes has to be used.*
♣ *this is where the numeric codes of the district/Tehsil has to be used*

Table 4.3: Standard DWG (AutoCAD Drawing File) layers and the block names as part of the digitization template.

   Standard DWG (AutoCAD Drawing File) layers and the block names as part of the digitization template in CAD environment for digitization of Cadastral maps under Digitization of cadastral Maps Project, RAJ.

Horizontal/Landscape Template
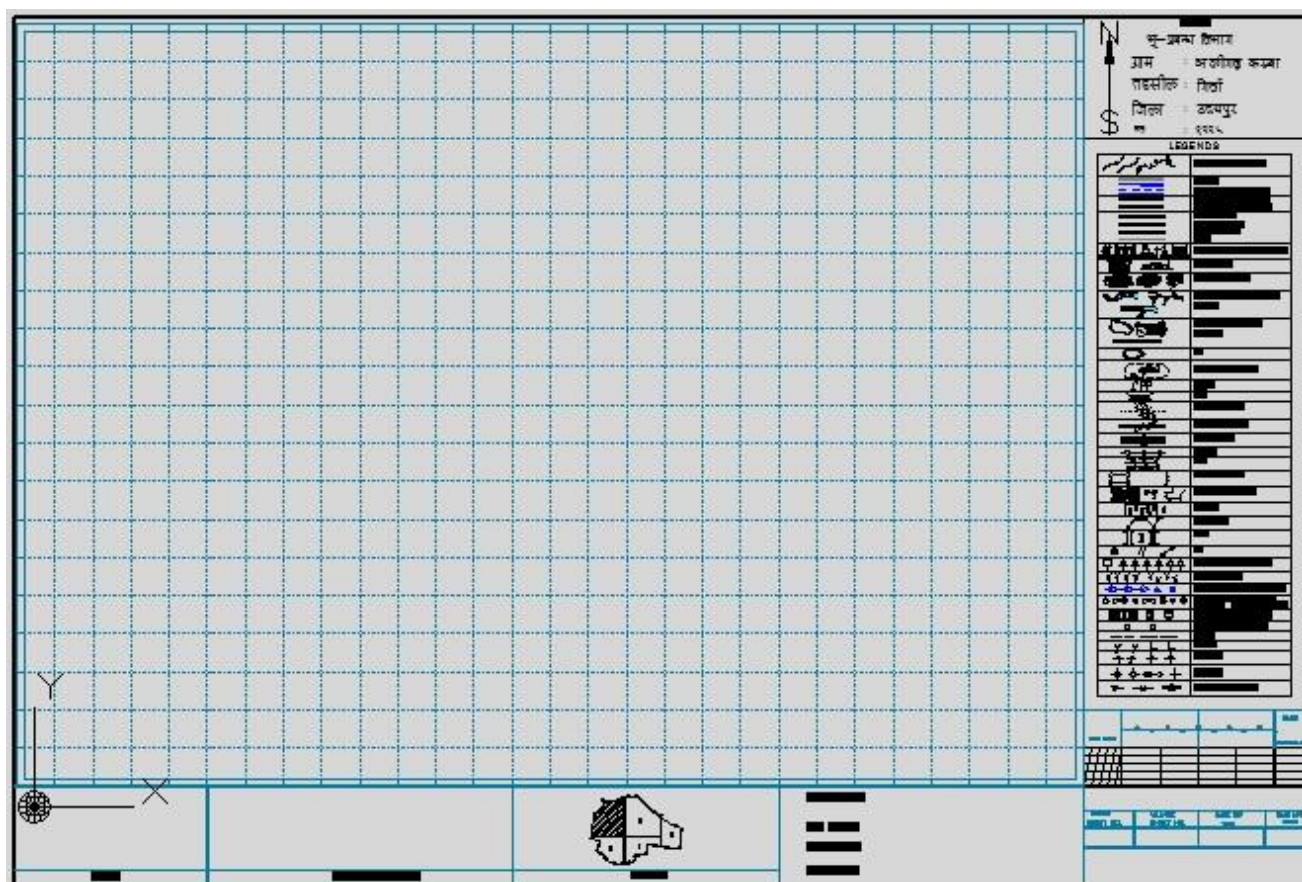
Layers used for Digitization

Different layers (point,line,area)are used for map composition. Line layer are required ror the map composition part, while area layers are mainly required for both map checking and composition.

composition part, while area layers are mainly required for both map checking composition.

Sr.No	Layer Name	Colour & Code	Line Type	Feature Type	Line Type Details
1	GEN_GRID	142	Continous		Reference Map Grid
2	GEN_HATCH	5	Continous		Embank Hatching
3	GEN_IMAGE	132	Continous		Raster Image of Cadastral map
4	GEN_INDEX	7	Continous		Map Index
5	GEN_LEGEND	7	Continous		Legend of Map
6	GEN_MARGIN	142	Continous		Margin Line
7	LINE_CARTTRACK	242	Continous	Line	Cart Track path
8	LINE_FALSE	7	Continous	Line	False lines of Parcels
9	LINE_JOIN	252	Continous	Line	Outside of village boundary Parcels
10	LINE_PADDY	252	Dashed	Line	Paddy line (LW = 0.4)
11	LINE_RAIL	7	Track	Line	Railway Line (LW = 0.4)
12	LINE_STREAM	7	Dashdot	Line	Center Line of River makes village boundary (LW = 0.6)
13	LINE_TRAVERSE_STATION	5	Continous	Line	Line between traverse station
14	LINE_VILL_DIVIDE	7	Dashdot	Line	At junction of three villages (LW = 0.6)
15	OFF_LINE_STREAM	122	Continous	Line	Stream not involve in printing but participate in Topology
16	OFF_LINE_TS	122	Continous	Line	Traverse not involve in printing but participate in Topology
17	OFF_POLY_ABADI_PARCEL	122	Continous	Polygon	Abadi Parcels not involve in printing but used in Topology
18	OFF_POLY_EMBANK	122	Continous	Polygon	Embakment not involve in printing but used in Topology
19	OFF_POLY_FOREST	122	Continous	Polygon	Forest Boundary not involve in printing but used in Topology
20	OFF_POLY_PARCEL	122	Continous	Polygon	Parcel Boundary not involve in printing but used in Topology
21	OFF_POLY_RIVER	122	Continous	Polygon	River Boundary not involve in printing but used in Topology
22	OFF_POLY_RIVER_PARCEL	122	Continous	Polygon	Common Parcel/River Boundary not involve in printing but used in Topology
23	OFF_POLY_ROAD_PARCEL	122	Continous	Polygon	Common Road/Parcel Boundary not involve in printing but used in Topology
24	OFF_VILL_BOUND	122	Continous	Polygon	Village Boundary not involve in printing but used in Topology
25	POLY_ABADI_PARCEL	14	Continous	Polygon	Abadi Parcel Boundary
26	POLY_EMBANK	5	Continous	Polygon	Embankment polygon

27	POLY_FOREST	102	Continous	Polygon	Forest parcels
28	POLY_KILLA_PARCEL	6	Continous	Polygon	Killa boundary in Consolidated areas
29	POLY_MURRBA_PARCEL	10	Continous	Polygon	Murrba boundary in Consolidated areas
30	POLY_PARCEL	6	Continous	Polygon	Parcel Boundary
31	POLY_PARCEL_2	6	Dashdot	Polygon	Parcel Boundary with deferent line type
32	POLY_RIVER	5	Continous	Polygon	River polygon
33	POLY_RIVER_FOREST_PARCEL	5	Continous	Polygon	Common boundary for River and Forest polygon
34	POLY_RIVER_PARCEL	5	Continous	Polygon	Common boundary for river and parcel polygon
35	POLY_ROAD_FOREST_PARCEL	1	Continous	Polygon	Common boundary for road and forest polygon
36	POLY_ROAD_PARCEL	1	Continous	Polygon	Common boundary for road and parcel polygon
37	POLY_ROAD_RIVER_PARCEL	1	Continous	Polygon	This is the common boundary for road and river polygon
38	POLY_VILL_BOUND	7	Continous	Line	This is used for the Village Boundary (LW = 0.5)
39	SYM_ABADI	250	Continous	Symbol	Symbol used for abadi
40	SYM_ALL	250	Continous	Symbol	Layer used for all other symbols
41	SYM_TRAVERSE_POINT	5	Continous	Symbol	Symbol used for traverse station
42	SYM_WELL	162	Continous	Symbol	Symbol used for Well
43	TEXT_TUDA_NO	7	Continous		village boundary Tuda no.
44	TEXT_DIMENSION	250	Continous		Text for dimensions
45	TEXT_MAPIN	7	Continous		Text place inside the village boundary area
46	TEXT_MAPOUT	7	Continous		Text place outside the village boundary area
47	TEXT_TRAVERSE_STATION	5	Continous		Text for Travers station
48	TEXT_BATA_NO	1	Continous		Batta No mentioned outside Village Boundary
49	TEXT_FEATURE_TYPE	5	Continous		Text used for database in shp fil,e for type of feature
50	TEXT_PARCEL	7	Continous	Height 4-6	Text used for printing only
51	TEXT_PARCEL_TOPOLOGY	1	Continous		Text used for database in shp file

Note :- Layers may be as per map.

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Text Used for Digitization

TXT_PARCEL	Parcel/Khasra text	TXT_Parcel	Black	2	English
TXT_SUB _PARCEL	Sub Parcel/Khasra text	TXT_Sub_Parcel	Black	2	English
TXT_DIMENSION	Length of boundary line	TXT_Dimension	Black	2	English
TXT_BATA_NO	Along with village boundary	TXT_Bata_No	Red	2	English
TXT_MAPOUT	A text out side the village boundary	TXT_Mapout	Black	5	Hindi
TXT_MAP_IN	A text in side the village boundary	TXT_Mapin	Black	2	Hindi
TXT_WELL_NO	Well Number	TXT_Well_no	Black	2	English

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4.4 Reference of Standard Symbol:-

SR.NO	SYMBOL	BLOCK NAME	LAYER	SR.NO	SYMBOL	BLOCK NAME	LAYER
1		64B	SYM_ALL	46		SYM38	SYM_ALL
2		64C	SYM_ALL	47		SYM39	SYM_ALL
3		GEN_MARGIN	GEN_MARGIN	48		SYM40	SYM_ALL
4		GRID_H	GEN_GRID	49		SYM41	SYM_ALL
5		SGN01_ARROW	SYM_ALL	50		SYM41A	SYM_ALL
6		STV01_JUNCTION_3	SYM_TRAVERSE_POINT	51		SYM42	SYM_ALL
7		STV02_JUNCTION_4	SYM_TRAVERSE_POINT	52		SYM43	SYM_ABADI
8		SYM01	SYM_ALL	53		SYM44	GEB_LEGEND
9		SYM02	SYM_ALL	54		SYM45	SYM_ALL
10		SYM03	SYM_ALL	55		SYM46	SYM_ALL
11		SYM04	SYM_ALL	56		SYM46A	SYM_ALL
12		SYM05	SYM_ALL	57		SYM46B	SYM_ALL
13		SYM06	SYM_ALL	58		SYM46C	SYM_ALL
14		SYM07	SYM_ALL	59		SYM46D	SYM_ALL
15		SYM08	SYM_ALL	60		SYM46E	SYM_ALL
16		SYM09	SYM_ALL	60		SYM47	SYM_ALL
17		SYM10	SYM_ALL	60		SYM48	SYM_ALL
18		SYM11	SYM_ALL	60		SYM49	SYM_TRAVERSE_POINT
19		SYM12	SYM_ALL	60		SYM50A	SYM_WELL
20		SYM13	SYM_ALL	60		SYM50B	SYM_WELL
21		SYM14	SYM_ALL	60		SYM51A	SYM_WELL
22		SYM15	SYM_ALL	60		SYM51B	SYM_WELL
23		SYM16A	SYM_ALL	60		SYM51C	SYM_ALL
24		SYM16B	SYM_ALL	60		SYM52A	SYM_ALL
25		SYM17	SYM_ALL	60		SYM52B	SYM_ALL
26		SYM18	SYM_ALL	60		SYM53	SYM_ALL
27		SYM19	SYM_ALL	60		SYM54	SYM_ALL
28		SYM20	SYM_ALL	60		SYM54B	SYM_ALL
29		SYM21	SYM_ALL	60		SYM55	SYM_WELL
30		SYM22	SYM_ALL	60		SYM56	SYM_ALL
31		SYM23	SYM_ALL	60		SYM57	SYM_ALL
32		SYM24	SYM_ALL	60		SYM58	SYM_ALL
33		SYM25	SYM_ALL	60		SYM59	SYM_ALL
34		SYM26	SYM_ALL	60		SYM60A	SYM_ALL
35		SYM27	SYM_ALL	60		SYM60B	SYM_ALL
36		SYM28	SYM_ALL	60		SYM61	SYM_ALL
37		SYM29	SYM_ALL	60		SYM61A	SYM_ALL
38		SYM30	SYM_ALL	60		SYM62	SYM_ALL
39		SYM31	SYM_ALL	60		SYM62A	SYM_ALL
40		SYM32	SYM_ALL	60		SYM63	SYM_ALL

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41		SYM33	SYM_ALL	60		SYM64A	SYM_ALL	
42		SYM34	SYM_ALL	60		SYM65	SYM_ALL	
43		SYM35	SYM_ALL	60		SYM-AB	SYM_ALL	
44		SYM36	SYM_ALL	60		TREE	SYM_ALL	
45		SYM37	SYM_ALL	60		TREE-A	SYM_ALL	

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4.5 Standard Legend:-

Symbol	Description
	सीमा रेखा — जिला, तहसील, ग्राम
	रेल्वे लाइन पक्की सीमा — प्रोसिस्ट व चैन लाइन
	सड़क — पक्की सड़क (मैटल्ड रोड), कच्ची सड़क (मैटल्ड रोड)
	रास्ता — स्थाई रास्ता, स्थाई रास्ता (बिना मेढ़), कच्चा रास्ता (अस्थाई), पगडण्डी
	मन्दिर, मस्जिद, गुरुद्वारा, गिरजाघर (चर्च), ईदगाह
	शमशान, कब्रिस्तान
	पहाड़, पहाड़ी, रेत का टीला
	नदी सय बहाव, नाला—नाके अन्य बहाव, नदी में सीमा
	तालाब सय पाल, बांध सय पाल, नहर सय पाल
	खान
	विमान उतराई स्थान (एयर पोर्ट)
	पेट्रोल पम्प
	पुलिया
	नदी के ऊपर रेल्वे लाइन
	रेल्वे लाइन के ऊपर सड़क
	नहर के ऊपर सड़क
	फट्टक लाइन
	तारबार
	किला, उत्तर दिशा सूचक
	निर्मित कुओं का छत्र, छत्र सीमा
	फलदार बाग
	नग एवार्धिका सीमा
	आबादी
	अन्य
	चौपाटा/चौहट्टा, चैहट्टा/सेगहट्टा/त्रिपटा
	सूटा/सेहट्टा, कच्चा सूटा
	ट्रार्ई लाइन, तीन सीमानी, चार सीमानी चमक
	पक्का कुआ—जगता, गुणीदार, सूखा कुआ, कच्चा कुआ—जगता, गुणीदार
	बाव्ड़ी सय कुआ, चौकोर कुआ, कुण्ड
	पीठ बुक का पूकान (स्टेशन) अन्य
	संग्रा, छटार्ई
	गोखा, केरा
	कटान, लकडग
	चौपाटा, चौखटा
	पक्का स्तीप, पक्का स्टीम, बंजर

Note-Symbol may be changed as per existing legend cadastral map.

Table 4.6 Field description of LINE features Shape in table (IDDTTIIPPVVV.shp)

S.N0	Field/Item Name	Field/Item Width	Field/Item description
1	BHUCODE*	11,C	DDTTIIPPVVV(will be used as unique id to link RoR data)
2	VILL_NAME	50,C	Village name in english
3	LIN_CODE	4,C	Line symbol code of the line feature
4	LENGTH	4,C	Line length of the line feature
5	FEAT_TYPE	2,C	Information of the parcel types (As per the codes specified)
6	REMARKS	50,C	Comments regarding the feature

Table 4.7: Codes of Line features in the line Shape data base file (IDDTTIIPPVVV)

CADCODE	LAYERNAME (ENGLISH)	LIN_CODE
LIN01	LIN_ROAD	0101
LIN02	LIN_RAIL	0102
LIN03	LIN_DRAIN	0103
LIN04	LIN_JOIN	0104
LIN05	LIN_OTHERS	9999

Note : *The line feature Shape contains the line features other than the parcel boundary.*

Table 4.8: Field description of POINT features Shape in table (IDDTTIIPPVVV.shp)

S.N0	Field/Item Name	Field/Item Width	Field/Item description
1	BHUCODE*	11,C	DDTTIIPPVVV(will be used as unique id to link RoR data)
2	VILL_NAME	50,C	Village name in english
4	SYM_CODE	6,C	Point symbol code of the point feature
5	FEAT_TYPE	6,C	Information of the parcel types (As per the codes specified)
6	REMARKS	50,C	Comments regarding the feature

Table 4.9 : Design and structure of the POINT spatial topology database file

SN	Field/Item Name	Field/Item Width	Field/Item description
1	SYM_CODE	4,4,C	Point symbol code of the point feature
2	FEAT_TYPE	20,20,C	Feature type of symbols
3	REMARKS	50,50,C	Comments regarding the feature

Each village mosaic DWG/DXF file has to be generated and converted to the GIS data file, preferably in ArcGIS Shape data model. The features have to be separated in separate polygon, line and point entity. The Shape should have prefix of 'a', 'l' and 'p' for polygon, line and point Shape, respectively. Each Shape should have the desired fields and codes as specified in the table 4.5 through 4.7. The polygon feature should have both polygon and line topology. The polygon Shape PAT file will have the attributes as specified in table 4.10. Proper bifurcation and allotment of parcel number should be done as per the standard. The reporting of error in the FEAT_ERR and assignment of the parcel land use in FEAT_TYPE has to be properly executed (Table 4.8 and Table 4.9).

Table 4.10 : Description of ERROR codes in the polygon features under item FEAT_TYPE

S. No.	TEXT TO BE INSERT/LAYERS	DESCRIPTION	CODE (in FEAT_TYPE field)
1	O/TEXT_PARCEL	ZERO LABEL (0)	O
2	TEXT_PARCEL	DUPLICATE	U
3	1 part of 1, 2 part of 1*	CONTINUED PARCEL-1	P

Table 4.9 **: Font and Text Styles**

S.No	Style Name	Font	Remarks
1.	Txt_Parcel	Standard	English Text
2.	Txt_Bata_No	Standard	English Text
3.	Txt_Mapin	Mangal	Hindi Text
4.	Txt_Mapout	Mangal	Hindi Text
5.	Txt_Dimension	Standard	Hindi Text
6.	Txt_Eng	Arial	General Purpose English

Table 4.11 : Description of PARCEL TYPE codes in the polygon features under item FEAT_TYPE

S. No.	TEXT TO BE INSERT ON TEXT_STANDARD LAYER (Autocad)	DESCRIPTION	CODE (in FEAT_TYPE field)**
1	GA	GRAM ABADI	GA
2	AB	ABADI	AB
3	RI	RIVER	RI
5	RO	ROAD	RO
7	WB	WATER BODY	WB
8	PL	PIPE LINE	PL
9	IS	RIVER ISLAND	IS
10	CA	CANAL	CA
11	RL	RAILWAY	RL
12	TB	TANK BUND	TB
13	MA	MINING AREA	MA
14	GR	GRASS AREA	GR
15	HI	HILLY AREA	HI
16	SK	SMASHAN, KABRISTHAN	SK
17	FO	FOREST	FO
18	TO	ORCHARDS	TO
19	SC	SCRUB	SC
20	PA	PARCEL	PA
21	RF	RESERVED / PROTECTED FOREST (includes RF/PF area, brought-in around the scattered village to complete the village as one polygon)	RF
22	NA	Map details / Information not available	NA

NOTE

* *Part of single khasra separated by other features (like road, pipeline, etc.)*

** *This is the description of khasra for which a khasra id (parcel no) has already been given. Example,. if the khasra is a water body, having a parcel no 45 in KIDE, then the code in the FEAT_TYPE should be given WB. By default all polygons are parcels 'PA', unless otherwise defined in either of the classes given in the above table. Also consider the point attribute information while assigning the landuse/landcover – e.g. the Landuse*

Theme symbols and amenity symbol kabaristhan, etc. should be considered while assigning the FEAT_TYPE values.

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Abbreviation	Description
S	STATE CODE
D	DISTRICT CODE
T	TEHSIL CODE / SUB TEHSIL CODE
V	VILLAGE CODE
I	ILR CODE
P	PATWARI CIRCLE CODE

Table 4.12: Field description of polygon features Shape database in DDTTIIPPVVV table

S.N0	Field/Item Name	Field/Item Width	Field/Item description
1	**VILL_NAME**	50,C	Village Name in English
2	**BHUCODE**	12,12,C	*DDTTIIPPVVV*
3	**KID_HND**	20,20,C	Original parcel (Khasra) number in Hindi
4	**AREA**	30,30,C	Area of polygon
5	MAP_SHEET_No.	20,20,C	Two digit Musavi no. reference as per musavi code(NN)
6	FEAT_TYPE	2,2,C	Information of the parcel types(as per code specified)
7	REMARKS	50,50,C	Comments regarding the feature

Table 4.13 : Field description of polygon features Shape in vaDDTT database table

S.No	Field/Item Name	Field/Item Width	Field/Item description
1	**BHUCODE ♣**	12, 12, C	Same code as described in table 8. DDTTVVVVVVV
2	**VNAME_ENG**	30,30,C	**English Village name** as it appears in the sheet
3	**VNAME_HND**	30,30,C	Village name in Hindi (DVB-TTSurekhEN font)
4	**DISTRICT**	30,30,C	**District name** as it appears in the Cadastral sheets
5	**TEHSIL**	30,30,C	**Tehsil name** as it appears in the Cadastral sheets
6	**ILR**	30,30,C	Patwar circle as it appears in the Village record
7	**PC**	30,30,C	Revenue as it appears in the Village record
8	**COMMENTS**	30,30,C	Comments to make the categories implicit

Deliverables of Digitization Activity: -

1. First printout of digitized output on 90gsm paper/transparency sheet for updation/tarmeem by Revenue officials.

2. Second printout of updated/tarmeemed digitized data for checking verification on 90gsm paper w.r.t. updated tarmeemed sheet.

3. One print out of final updated data with true scale (mother map scale) sheet wise on 100 micron polyster film.(one copy)

4. One print out of final updated data on 1:4000 scales in landscape template (sheet wise) on 100 micron polyster film.(one copy)

5. Soft copy of Digitized data without updation/tarmmem in DWG format.

6. Soft copy of final updated/Tarmeem Digitized data in SHP file format.

7. Soft copy of final updated/Tarmeem Digitized data in SHP file format with UTM Coordinates (not Geo-referencing).

8. All codes / file names/ feature ID will as per NIC HQ Delhi available on site, in case of confusion NIC Jaipur may be contact.

3.3 Phase 3 Linkage of digital data(SHP files) with RoR data:

After preparation of final digitized data (SHP file) it will be linking with RoR data . For this phase work Agencies will coordinate with concern District NIC office and with help of NIC officals SHP files will improt in BHUNAKSHA software which will linked with existing RoR(Jamabandi record). Any mismatch report regarding missing khasra nos. Will solve with coordnation of Revenue officals , NIC officals and Company experts team.

3.4 Phase 4 Deliverables to Department, Imparting trainings and AMC:

Hard copy Prints:-

- 90 GSM/Tracing Paper scan check prints for I : I true replica for verification/checking of scanned output.

- 90 GSM/Tracing Paper check print of digitized output at cadastral map level for updation/tarmeem
- 90 GSM/Tracing Paper print of incorporated updated map after updation & tarmeem for checking and verification.
- Final print on 100 micron polyester film of approved scan map
- Final print on 100 micron matt polyester film of duly approved digitized output at cadastral maps level

Soft Copy Data:-

- Duly approved final scanned Cadastral output as *.tiff files (at 300 DPI). District level in Hard Disk as per the described format.
- Digitized Output of maps (at Cadastral level) as DWG file before updation.
- Digitized output of updation/tarmeem data at village level after Mosaicing of all map sheet of concerned village as per described format(SHP file).
- Meta data having details of all digital data.

- A separate set of Geo-Located .shp file (village wise) on WGS84 UTM projection(Not Geo-Reference)

Note: Soft copy data will be delivered in properly labeled DVD/HDD's as per the standard nomenclature as mentioned in "Data Design, Structure and Format Document"

Training:-

- Workshop at district level for Patwari/RI (Revenue Officials)
- District Administration will make a team of IT knowledge revenue officials
- Team will co-ordinates with agencies and Engineers of Agencies will organize training at district Collector office.
- Capacity Building and data management prepared by concerned agencies.
- Training for Data management.

AMC:-

- Agencies will provide technical support for one year to Department for handling of soft data submitted by Concern Company.
- One expert Engineer from Company will assist in their concern district.
- Concern District administration can contact to Companies Engineers for any assistance regarding this project data.

5. Geo-located SHP file (Not Geo-reference):

Department needs a another set of geo-located final digitized data (SHP file) village wise on any form of spatial data (Google, Being maps or data provided by SRSAC Rajasthan). This set of data should open at their geo-located position and not require any edge matching. Coordinate will be stored in WGS84 in metric unit & 43 Zone (North Hemisphere).

SRSAC will check geo-location of this data set and saved data on WGS84 only.

5. INPUTS/SUPPORTS REQUIRED FROM THE DEPARTMENT

5.1 HARDCOPY ORIGINAL MAPS

- Details of total no. of Villages & maps Sheets in a tehsil/district.
- Village wise original maps & maps Sheets for scanning.
- Details of all supplied/ issued maps along with required code detail.

5.2 DETAILS FROM NIC

- Village directory having details of all villages with their respective codes at tehsil level.
- Updated digital data of revenue records (ROR) for linking with digital data .Bhunaksha software for data linking.

5.3 SUPPORT:

- To provide office space to agencies at District HQ for scanning activity & QC of scanned check prints matching purpose.

- Concerned Revenue official/Patwari (QC Team) availability for maps verifications at different stages.

- Timely verification/checking is required & returning back the checked maps for corrections and finalization.