AUTOMATED BUILDING PLAN & DETAILS SCRUTINY

FOR KOZHIKODE MUNICIPAL CORPORATION

REGIONAL TOWN & COUNTRY PLANNING OFFICE KOZHIKODE,
MALABAR CHAMBER OF COMMERCE
& E GOVERNMENTS FOUNDATION BENGALURU

INTRODUCTION

- Conceived, nurtured and and made in to reality by Malabar Chamber of Commerce.
- Domain Technical lead including preparation of algorithms, KMBR rule validation methods by Regional Town & Country Planning office Kozhikode.
- Software developed by E Governments foundation, Bengaluru.
- Unique model of Government, Industry and Private sector Partnership.

SALIENT FEATURES

- Software based verification of building plans and details, for compliance with the various provisions in Kerala Municipality Building Rules.
- An over all transformation in the concept of conventional plan scrutiny process.
- Minimises the human interventions in plan scrutiny.
- Facilitate prompt approvals of permit applications.
- Improved transparency in the building permit process.
- Better precision in interpretations of the various rules.
- Facility for checking conformity with the rules of the plans and details prior to official submission.
- Only the rule complied plans and details can be officially submitted for permit application.

TECHNICALITIES

- The submission drawings for building permit applications are to be uploaded on dxf. Format.
- The drawings can be prepared using any drafting software, including the open source/ free software.
- The conventions for layer naming, colours, polygons and specific texts etc. are pre defined by the software (described in the user manual) shall be adhered to.
- The scrutiny report will be generated upon uploading of the dxf. Drawing, which will produce rule wise analysis for the various parameters incorporated in the drawing.
- Only the drawings which are in compliance with all the rules will be accepted for filing permit application.

PROCEDURE

- Preparation of the drawings conventionally used for permit applications, with the details as specified in the KMBR.
- Ensuring compliance with the software layer/text/colour conventions, as specified in the manual supplied, and saving it in dxf. format.
- Log on to the portal and the drawings in dxf. format are to be uploaded.
- Drawing scrutiny reports are generated, with various details extracted from the uploaded drawings.
- The scrutiny report specifies rule wise compliance of various details extracted against the provisions stipulated in KMBR, as accepted or Not accepted.

PREPARATION OF DRAWINGS

GENERAL

- All drawings shall be drawn on 1:1 scale, in meters, in model space.
- All required details as per this guide line shall be submitted in a single drawing, drawn in model space.
- All details shall be furnished using closed polygon with polylines, lines, texts, dimensions etc. to be incorporated in layers, index colours as specified in this guideline.
- It is advisable to keep the .dxf drawing with bare minimum details, which are required by the system for rules validation.
- The drawing shall be saved in .dxf format and to be uploaded for rule validation.

PREPARATION OF DRAWINGS

GENERAL (Contd..)

- Separate drawings (Floor plan, elevations, sections, site plan, service plan, soak pit/ leach pit/ open well details etc.) incorporating all details as per KMBR, set to the scale and paper size specified, shall be prepared, saved as pdf, and these pdf files are to be separately uploaded after the dxf. drawings uploaded for rule validation, has been accepted by the system.
- All polygons with polylines shall be closed polygons, closed using <close> command in Auto CAD or similar in other software.
- The layer template file, (AIBPAS_KKD_CORP.las), which can be downloaded along with these guidelines contains all the layers which are used by the system and can be made use while creating dxf. drawings required for rule validation.
- Wherever details are to be furnished as dimensions, these are to be incorporated using dimension tools, and shall not be exploded/ edited.

PREPARATION OF DRAWINGS

GENERAL (Contd..)

- Wherever one or more polygons/ dimensions/ lines/ depicting different parameters are required to overlap, it shall be ensured that, no gaps/ spaces are left in between.
- The use of layers/ Texts/ colour conventions specified by these guidelines to designate a parameter shall be restricted to that entity only and shall not be used elsewhere in the drawing.

PREPARATION OF DRAWINGS

METHODOLOGY

- All layers which are used by the system will be made available as <.las> file which can be imported to the drafting software being used.
- Typical drawings which covers all the defined layers/ colors/ texts/ polygons will be made available, details of which can be imported to the respective drawings, and the various elements can be further matched for properties.
- Once the drafting part has been done, the file can be saved in .dxf format and can be uploaded.

PREPARATION OF DRAWINGS

MODIFICATIONS IN SITE PLAN

- Site plan shall be drawn in such a way that, the front yard of the development, defined as per KMBR is oriented towards down side of the drawing, with the direction of main entry kept perpendicular to the X axis.
- The front yard of the building including open ramps, bridges, steps or similar structures with or without parapets or railings to be marked as closed polygon using polyline drawn in **FRONT_YARD** layer.
- Side yard 1 including open ramps, bridges, steps or similar structures with or without parapets or railings of the building to be marked as closed polygon using polyline drawn in **SIDE_YARD_1** layer.
- Side yard 2 of the building including open ramps, bridges, steps or similar structures with or without parapets or railings to be marked as closed polygon using polyline drawn in **SIDE_YARD_2** layer.

PREPARATION OF DRAWINGS

MODIFICATIONS IN SITE PLAN (Contd..)

- Rear yard of the building including open ramps, bridges, steps or similar structures with or without parapets or railings to be marked as closed polygon using polyline drawn in **REAR_YARD** layer.
- Plot boundary to be marked as closed polygon using polyline drawn in **PLOT_BOUNDARY** layer.
- Building foot print shall be drawn in **BLDG_FOOT_PRINT** layer as closed polygon, to be drawn excluding open ramps, bridges, steps or similar structures with or without parapets or railings.
- Shortest distance between plot boundary and open stair shall be as dimension in **OPEN_STAIR** file.
- Notified roads shall be drawn as closed polygon in **NOTIFIED_ROAD** layer, and non-notified roads are to be drawn as polygons in **NON_NOTIFIED_ROAD** layer.

PREPARATION OF DRAWINGS

MODIFICATIONS IN SITE PLAN (Contd..)

- Cul-de-sac of whatever width but not exceeding 250 m length and pedestrian lane and street up to average 3m width and internal roads and streets of whatever width within or leading to any residential colony, abutting the plot shall be marked as polygon in **CULD_1** polygon layer.
- Lanes not exceeding 75 m length leading to one or more individual plots, abutting the plot shall be marked as polygon in **LANE_1** layer

PREPARATION OF DRAWINGS

MODIFICATIONS IN SITE PLAN (Contd..)

- The shortest distance from the building footprint layer to the nearest point on road polygon to be marked as dimension in SHORTEST_DISTANCE_TO_ROAD layer, <index colour 1> for Notified road, in <index colour 2> for Non-Notified road, in <index colour 6> for Cul-de-sac and in <index colour 5> for Lane .
- Shortest distance to the centerlines of all roads abutting or giving access to the plot shall be drawn as dimension in DIST_CL_ROAD layer in <index colour 1> for Notified road, in <index colour 2> for Non-Notified road, in <index colour 6> for Cul-de-sac and in <index colour 5> for Lane
- The shortest dimension between the building foot print polygon and the oppossit side boundary of the wider road abutting the plot shall be marked as dimension in MAX_HEIGHT_CAL layer and in <index colour 1> for Notified road, in <index colour 2> for Non-Notified road, in <index colour 6> for Cul-de-sac and in <index colour 5> for Lane
- The shortest dimension from the well to the nearest point on street abutting layers shall be marked as dimension in DIST_WELL layer and in <index colour 1> for Notified road, in <index colour 2> for Non-Notified road, in <index colour 6> for Cul-de-sac and in <index colour 5> for Lane

PREPARATION OF DRAWINGS

MODIFICATIONS IN SITE PLAN (Contd..)

- Open Well to be marked as polygon, in layer **WELL.**
- Waste disposal facility/ies to be drawn as polygon, in **WASTE_DISPOSAL** layer
- The shortest dimension from the well to the nearest point on any boundaries shall be marked as dimension in **DIST_WELL** layer and in **<index colour 7>** The shortest distance from well to nearest point on leach pit, soak pit, refuse pit, earth closet or septic tanks, shall be marked as dimension in **DIST_WELL** layer in **index colour 8.**
- Rain water Harvesting system to be marked as polygon in **RWH** layer and the capacity of the tank to be specified as text in **RWH_CAPACITY_L=XXXXX, in RWH** layer, where XXXX is the capacity in litres.
- Solar assisted water heating/ lighting system, to be drawn as polygon in in **SOLAR** layer.

PREPARATION OF DRAWINGS

MODIFICATIONS IN SITE PLAN (Contd..)

- In site plan shades and overhangs as polygons in **SHADE_OVERHANG** layer,
- Mechanical parking facilities to be marked as polygon in **MECH_PARKING** layer
- Overhead electric lines in separate layer **OHEL** layer, Voltage in **VOLTAGE** layer, the shortest dimension between the building and the electric line in **HORIZ_CLEAR_OHEL** layer

PREPARATION OF DRAWINGS

MODIFICATIONS IN FLOOR PLANS

- All floor plans shall be assigned with layers as

Layer name	Description
FLOOR_0	All entities included in the ground floor plan
FLOOR_1	All entities included in the first-floor plan
FLOOR_2	All entities included in the second-floor plan
FLOOR_-1	All entities included in the basement 1 floor plan
FLOOR_-2	All entities included in basement 2 floor plan
FLOOR_-3	All entities included in basement 3 floor plan

PREPARATION OF DRAWINGS

MODIFICATIONS IN FLOOR PLANS (Contd..)

- Habitable Rooms
  - All habitable room interiors with external boundary of openings shall be ***drawn in respective floor layer in cyan color (index color 4)***
  - The exterior boundary of the building excluding verandahs of less than 3 m width to be drawn as polygon ***in respective floor layer in blue colour (Index colour 5)***
  - The interior open spaces shall be drawn as polygon ***in respective floor layer in magenta colour (index colour 6)***
- Building exterior shall be drawn as closed polygon, drawn using polyline in **BLDG_EXT_WALL** layer, and to be marked in index colour 2, and to be drawn as separate polygons for different residential units present in the building.
- All deductibles from floor area as per rule 8 to be marked in **FAR_DEDUCT** layer, in index colour 2 for residential occupancy A1.
- Deductible areas if any in order to asses covered area shall be marked as polygons in **COVERAGE_DEDUCT** layer.

PREPARATION OF DRAWINGS

MODIFICATIONS IN FLOOR PLANS (Contd..)

- Individual residential units are to be separately marked as polygons in **RESI_UNIT** layer.
- Polygon of dimension 2.70 m x 5.50 m, to be marked in site plan or parking plan (But not in both) in **PARKING_SLOT** layer.
- Two wheeler parking lots shall be drawn as closed polygons using poly line in **TWO_WHEELER_PARKING** layer.

PREPARATION OF DRAWINGS

DETAILS TO BE FURNISHED AS TEXT IN DRAWINGS

- The following details are to be furnished as text, in prescribed format, in PLAN_INFO layer, to be described in floor plan,
- Plot area to be defined as **PLOT_AREA_M2=xxxx**, where xxxx to indicate the area in sq meter.
- Whether CRZ is applicable? To be represented as **CRZ=YES/NO**
- Whether any openings are provided below 2.1 m from the corresponding floor level where the side yard is less than 1.0 m? **OPENING_BELOW_2.1_ON_SIDE_LESS_1M=YES/NO**
- Whether any openings are provided below 2.1 m from the corresponding floor level where the rear yard is less than 1.0 m?, **OPENING_BELOW_2.1_ON_REAR_LESS_1M=YES/NO**
- Whether any NOC is available to abut the side yard?, **NOC_TO_ABUT_SIDE=YES/NO**
- Whether any NOC is available to abut the rear yard? **NOC_TO_ABUT_REAR=YES/NO**
- whether within Security zone, **SECURITY_ZONE=YES/NO**

PREPARATION OF DRAWINGS

DETAILS TO BE FURNISHED AS TEXT IN DRAWINGS (Contd...)

- The minimum clear width of access to the building and to the plots as well as the width of the road giving access to the main street shall be entered as **ACCESS_WIDTH_M=xxxx**
- Number of mechanical parking provided shall be specified in PLAN_INFO layer as **MECHANICAL_PARKING=XXXXXX**

PREPARATION OF DRAWINGS

DETAILS TO BE FURNISHED IN SECTION DRAWINGS.

- In section drawing the vertical clearance between the topmost point of the building and **VERT_CLEAR_OHEL**
- height of the building as defined by the rule (2aq) to be marked as dimension in building section in **HT_OF_BLDG** layer.

PREPARATION OF DRAWINGS

Sl No	Layer Name	Layer description
1	BLDG_EXT_WALL	To define the external wall boundary, to be used in calculation of built up area.
2	BLDG_FOOT_PRINT	To define the building foot print, from which the open spaces to be defined.
3	CULD_1	Cul de sac road
4	DIST_CL_ROAD	Distance to center lind of the road.
5	DIST_WELL	Various distances from open well.
6	FAR_DEDUCT	TO mark the areas which are to be decuted from built up area for FAR calculation.
7	FLOOR_-1	Floor number
8	FLOOR_-2	Floor number
9	FLOOR_0	Floor number
10	FLOOR_1	Floor number
11	FRONT_YARD	To define frot yard
12	HORIZ_CLEAR_OHEL	To define horizontal distance from Overhead Electric Line
13	HT_OF_BLDG	TO define Height of building
14	LANE_1	TO define Lane
15	MAX_HEIGHT_CAL	To define the distance from building foot print to the opposite side of the road
16	NOTIFIED_ROAD	To defien notified road
17	OHEL	Over Head Electrc Lines
18	OPEN_STAIR	Open stairs
19	PARKING_SLOT	To define paring slot
20	PLAN_INFO	Various data to be entered as pal info in text format.
21	PLOT_BOUNDARY	TO defien plot boundary
22	REAR_YARD	To define rear yard
23	RESI_UNIT	To define individual residential units in an apartment.
24	RWH	Rain Water Harvesting System
25	SHADE_OVERHANG	To mark shade, over hangs.
26	SHORTEST_DIST_TO_ROAD	TO define shortest disatnce to various roads.
27	SIDE_YARD_1	TO define side yard
28	SIDE_YARD_2	TO define side yard
29	SOLAR	TO define Solar assisted Heating Lighting systems
30	VERT_CLEAR_OHEL	To define vertical clearance from an overhead electric lines.
31	VOLTAGE	To define voltage of an OHEL
32	WASTE_DISPOSAL	To define waste disposal facility
33	WELL	To mark Open well
34	COVERGAE_DEDUCT	To define areas to be deducted from covered area for coverage calculation