ROYAL GOVERNMENT OF BHUTAN

BHUTAN BUILDING RULES 2002

Department of Urban Development & Housing
Ministry of Communications

TABLE OF CONTENTS

Page No.

1. SHORT TITLE

These rules shall be called the Bhutan Building Rules - 2002 (BBR-2002) and shall come into force with effect from 1st January 2003. These rules shall apply to all the declared urban areas and supersede all other rules and circulars on building regulations.

2. OBJECTIVES

(a) To facilitate and regulate a functional and safe building construction.
(b) To promote a healthy living environment.
(c) To encourage professional approach to building design and construction.
(d) To preserve and promote traditional architecture.
(e) To promote awareness on basic minimum design standards and procedures.

3. DEFINITIONS

3.1 Definitions

In these rules, unless the context otherwise requires, the following shall be the definitions.

3.1.1 “Architect” shall mean a person with degree or diploma in architecture from a recognised Institute.

3.1.2 "Applicant" shall mean the registered owner(s) of a land plot who applies in the prescribed form to construct/alter/extend a building.

3.1.3 "Addition and Alteration" shall mean addition to the floor area of a building and re-flooring or re-roofing or re-construction of any kind.

3.1.4 “Basement” shall mean the lower storey of a building more than 75% below the lowest ground level.

3.1.5 “Building” shall mean any structure for whatsoever purpose and of whatsoever materials constructed and every part thereof, whether used as human habitation or not including foundation, plinth, walls, floors, roofs, chimneys, plumbing and building services, fixed platforms, veranda, balcony, cornice or projection, part of a building or anything affixed thereto.

3.1.6 "Building line” shall mean the plinth of the building running in line with the adjoining plinth of the building parallel to the road.

3.1.7 “Building Inspector” shall mean a technical person authorised to inspect buildings and their premises during construction / renovation / addition / alteration.

3.1.8 "Carpet area” (otherwise called "Net Internal Floor Area") shall mean the covered area of the usable rooms at any floor (excluding the area of the wall)

3.1.9 “Competent Authority" shall mean the authority as defined in the Municipal Act, 1999.

3.1.10 “Commercial Zone" shall mean an area primarily intended for commercial purposes.

3.1.11 "Commercial Building" shall mean a building primarily used for commercial purposes. Mixed use buildings with commercial areas on the ground floor and residential above shall be defined as "Commercial Buildings" for the purposes of this document.

3.1.12 “Common wall” shall mean a structure joining two or more properties.

3.1.13 "Deviation" shall mean any departure from the approved documents, irrespective of the degree of change.

3.1.14 “Dwelling Unit” shall mean an independent housing unit with separate facilities for living, cooking and sanitary requirements.

3.1.15 “Engineer” shall mean a person with degree or diploma in engineering from any recognised Institute or University of Engineering.

3.1.16 "FAR or Floor Area Ratio" shall mean the quotient obtained by dividing the sum of the plinth areas of all floors by the area of the plot:

$$\text{FAR} = \frac{\text{Sum of plinth areas of all floors}}{\text{Plot area}}$$

3.1.17 "Habitable room" shall mean a room used for living purposes and shall not include kitchen, bathroom, water-closet or store room.

3.1.18 "Industrial Zone" shall mean an area primarily intended for industries (light, heavy and service).

3.1.19 "Institutional Zone" shall mean an area primarily intended for institutional purposes.

3.1.20 ”Implementing Authority” shall mean Municipal / City Corporation.

3.1.21 "Land-Use" shall mean any particular activity/use, assigned to an area of land.

3.1.22 "Loft/Attic" shall mean the space within the confines of the roof structure, above the ceiling of the top floor.

3.1.23 "Mezzanine floor" shall mean an intermediate floor between two main floors accessible only from the lower floor.

3.1.24 "Municipal Boundary" shall mean boundary of a town as defined by the Competent Authority.

3.1.25 "Occupancy Certificate" shall mean an official document issued by the Implementing Authority certifying that the building is safe and fit for occupation.

3.1.26 "Public building" shall mean a building used as a place for worship, hospital, school, club, theatre and public hall or for similar public purposes.

3.1.27 "Plot" shall mean a piece of land enclosed by definite boundaries fixed by the Implementing Authority.

3.1.28 "Parking space" shall mean an area, covered or uncovered, sufficient in size to park vehicles with space for movement.

3.1.29 "Plinth" shall mean a portion of a building between the surface of the surrounding ground level and the finished floor surface immediately above the ground.

3.1.30 "Plinth Height" shall mean the height of the finished floor of the lowest floor level above the ground level.

3.1.31 "Plinth Area" shall mean the built-up covered area measured at the floor level of the basement or of any storey, including the walls.

3.1.32 "Plinth Area Rate" (PAR) shall mean the prevailing cost of construction per square meter.

3.1.33 ”Porch” shall mean a covered surface supported on pillars or otherwise for the purpose of pedestrian or vehicular approach to a building.

3.1.34 "Property" shall mean either a business or industrial premise; a single domestic dwelling, e.g. a house or an apartment; or a building with multiple domestic dwellings, businesses or industries or empty lot.

3.1.35 "Residential zone" shall mean an area primarily intended for residential purposes.

3.1.36 "Recreation & Open Spaces" shall mean an area primarily intended for active and passive recreational purposes.

3.1.37 "Reserved Zone" shall mean areas set aside for future development within the Municipal boundary & urban control zone.

3.1.38 "Residential building" shall mean a building used for human habitation including garage and out house.

3.1.39 " Right of Way" (ROW) shall mean an area reserved for road carriageway, central verge, footpath, roadside drains, avenue plantations and utilities.

3.1.40 "Sub-Division" shall mean the division of a single property into two or more parts.

3.1.41 "Sanitary Inspector" shall mean a technical person authorised by the Implementing Authority to inspect water supply and sanitation.

3.1.42 "Set back" shall mean a distance between the plot boundary and building or the distance between buildings.

3.1.43 "Urban Control Zone" shall mean a defined peripheral area immediately outside the municipal boundary as fixed by the Competent Authority.

3.1.44 "Zoning Plan" shall mean a geographical area designated in the approved Urban Development Plan for the purpose of regulating land uses within the approved municipal boundary.

3.1.45 “Urban Centre” shall mean those areas, declared such by the Competent Authority from time to time.

3.2 Interpretation and meaning of expression

The use of present tense includes future tense, the masculine gender includes feminine gender and singular includes plural or vice versa.

4. PROCEDURE FOR OBTAINING BUILDING PERMIT AND OCCUPANCY PERMISSION

4.1 Building Permit

4.1.1 A person shall not erect any building or carry out any additions and alterations without obtaining a building permit from the Implementing Authority. Building permit shall be issued only to the legal owner of the land plot.

4.1.2 Construction of a building shall not be allowed within the urban control Zone without an approved development plan. However, the land outside the municipal boundary but within the urban control zone boundary shall continue to be rural for the purpose of taxation till such time it is included in the Municipal boundary.

4.2 Application for Building Permit

4.2.1 An owner of a plot who intends to erect a building or carry out additions and alterations to a building shall make an application in writing to the Implementing Authority in a prescribed form (Annex 1). The application for building permit shall be signed only by the legal owner of the plot or authorised signatory.

4.2.2 The applicant shall submit signed drawings, prepared by registered architects/engineers/planners or engineering/architectural firms, along with the application as per guidelines (in Annex 4). The architects/ engineers/ planners or engineering/architectural firms, while preparing the drawings, shall comply with all requirements of the Building Rules, urban development plan, architectural guidelines and other requirements of the municipal authorities so that the drawings are complete in all respects for approval by the municipal authorities.

4.2.3 Drawings shall be prepared in International system of units (S.I units) only.

4.2.4 Respective Municipal Corporations shall respond to the application for building permit within 30 days and give final approval within 90 days.

4.3 Ownership Title

An application for a building permit shall be accompanied by proof of ownership of the land.

4.4 Building Permit Fee

An applicant shall pay the fee as stated in the Schedule of Fees to the Implementing Authority upon submission of the drawings.

4.5 Validity

The validity of the approved plan shall be for two years from the date of approval. The construction should start within two years from issue of building permit.

4.6 Electricity, Water and Sewerage connections

An applicant with a certified copy of building permit may apply to the respective agencies for temporary connection of services like electricity, water and sewerage.

4.7 Inspection

4.7.1 Site layout shall be verified and approved by the authorised Engineer / Building Inspector from the Implementing Authority (Refer to Section 14.3).

4.7.2 Building constructions shall be subject to routine / periodic inspections by the Implementing Authority. In the event of deviation(s) from the approved plan including quality control the Implementing Authority shall have the full authority to stop construction as per clause no. 4.10 of this rule.

4.8 Permission to occupy

4.8.1 On receipt of the application, (vide annex 2) the building and its premises shall be inspected within 2 weeks by the Implementing Authority to verify that the work has been completed as per the approved building drawings. The inspection team shall consist of authorised Architect and Engineer from Implementing Authority. Based on this inspection report the Occupancy Certificate (Annex 3) shall be issued/refused. The inspection team shall, amongst others, verify that:

(a) Septic tank and soak-pit have been constructed as per standards (refer to Plumbing Code BTS-001) and are located as per approved plan.

(b) Domestic drains (to collect the rainwater) have been constructed as per standards (refer to Plumbing Code BTS-001) and are connected to the nearest covered or open public storm water drain.

(c) The completed portion of the building/dwelling unit applied for occupation is fit and safe for occupancy (Refer to Section 14.1).

(d) Construction debris around the building, and/or on the abutting road, and/or adjoining property are cleared by the applicant.

(e) The applicant has permanently displayed the full postal address (house number, street name and zone) outside the main entrance

to the building and where appropriate, at each dwelling unit, showing unit number.

4.8.2 Permanent connection to services like, water, sewerage, electricity and telephone to the building shall be given by the respective agencies after issue of occupancy certificate only.

4.9 Alteration from the approved building plan

Alteration from the approved building plan shall require prior approval from the Implementing Authority.

4.10 Cancellation of building permit

If the construction is not as per the approved building drawings, the Implementing Authority shall, by written notice, direct the owner to stop further construction. The construction shall be resumed only after approved rectification is carried out to the satisfaction of the Implementation Authority. In case the owner fails to rectify the deviations the Implementing Authority shall cancel the building permit and disconnect the services.

5. CHANGE OF BUILDING USE

The applicant shall apply in writing to the Implementing Authority for conversion of building use. Permission for change of use shall be given only if the building use conforms to land use schedule, structural safety of the building and any other relevant clause of this rule.

6. PLANNING PERMIT

6.1 Site Coverage in Residential buildings

6.1.1 The maximum permissible site coverage in a residential building shall be within set back rules but not exceeding sixty percent of the plot area.

6.1.2 Cantilevered staircases and balconies projecting up to 1.2 m from the ground floor external wall face shall be permitted. Such projections/structures shall not cover the septic tanks.

6.1.3 The site coverage for buildings other than residential buildings shall be according to the provisions of the zoning plan or as approved by the Competent Authority in the absence of Zoning Plan.

6.2 Set back lines for residential buildings

6.2.1 Residential building shall have set back as mentioned below unless specified otherwise in the relevant Urban Development Plan and Zoning

Plans. The set back shall be measured from the outer most wall / staircase landing / window projection.

6.2.2 FRONT SET BACK

(a) The set back facing road shall not be less than 3.0 m at any point or it should follow existing building lines.

(b) In case of two or more sides facing a street the front set back shall have an average width of 3 m but not less than 1.8 m at any point.

6.2.3 SIDE AND REAR SET BACK

A minimum set back of 3 m shall be maintained.

6.2.4 Two or more habitable structures on the same plot shall have 6m between the two structures.

6.3 Site coverage in commercial buildings

The permissible site coverage in a commercial building shall be within set back rules. Cantilevered projection in commercial buildings shall be allowed only at the rear side.

6.3.1 FRONT SET BACK

A minimum front set back of 1.5 m shall be maintained from the property line or follow existing building lines.

6.3.2 SIDE SET BACK

A minimum set back of 2 m shall be maintained on either side. No cantilevers and balconies shall be allowed on the sides. A combined building proposed on two or more adjoining plots may be permitted, on the condition that a setback of at least 50% of the savings is added on the side.

6.3.3 REAR OR OTHER SET BACK

(a) The rear set back shall be not less than 5 m at all points in areas not connected by sewer lines.

(b) The rear set back in areas connected with sewer lines shall be at least 3 m at all points.

6.4 Basements

Basements shall be permitted provided adjoining properties are not affected. It has to conform to the Local Area Plan or most recent/current relevant urban development plan.

6.5 Compound walls

In commercial areas compound walls shall not be allowed. Other than commercial areas, the construction of compound walls/hedges shall require approval of the Implementing Authority. The maximum height of such hedges shall not exceed 1.5m.

6.6 Vehicular Parking Areas

Vehicular Parking Areas shall be as per "Planning Standards for Urban Centres in Bhutan" and the "Guidelines for Urban Roads in Bhutan". However, the following minimum parking space shall be mandatory for the designated use.

Description	Minimum requirement
Residential building with more than two bedrooms	1 light vehicle parking per dwelling unit
Residential buildings with two bedrooms	1 light vehicle parking per dwelling unit if it is a single occupant unit. In case of two or more number of dwelling units, 50% parking may be allowed for two wheelers parking
Residential buildings with less than two bedrooms	1 two-wheeler parking per dwelling unit
Hotels	1 parking space for every 30 sq. metre
Cinema halls	1 parking space for every 10 fixed seats

6.6.1 Municipality or private developers shall provide paid parking spaces according to local area plan for commercial zones.

6.7. Painting

Bhutanese paintings shall be provided on all traditional architectural elements. Painted “fake imitation” of traditional architectural features shall not be allowed.

6.8 Building Height

6.8.1 The number of stories of the building shall be determined by the Local Area Plan / Urban Development Plan.

6.8.2 Permissible number of stories will be determined from the level of the lowest natural ground level providing principal access to the development.

6.8.3 If the topography demands provisions for additional stories, this will be decided on a case by case basis or by Local Area Plan.

6.8.4 The height of buildings shall be governed by the “guidelines on traditional architecture of Bhutan”

7. ARCHITECTURAL CONTROL

7.1 Architectural Design

7.1.1 The architectural features and outer façade of a building shall conform to the "Guidelines on Traditional Architecture".

7.1.2 In localities where uniform front elevation design makes it obligatory to construct an arcade, the area covered by such an arcade shall be considered as built up area.

7.2 Minimum floor space of rooms in residential buildings

	ROOM FUNCTION	MINIMUM FLOOR AREA	MINIMUM WIDTH	REMARKS
7.2.1	**LIVING:**			
(a)	Combined Living/ Dining	12 m^2	3000mm	
(b)	Only living.	9 m^2	3000mm	Primary room when separate dining is provided.
(c)	Dining/Family room	7.5 m^2	2500mm	Secondary room when living room is provided separately
7.2.2	**BEDROOM:**			
(a)	Primary bedroom	12 m^2	3000mm	When only one bedroom is provided.
(b)	Secondary bedroom	9 m^2	3000mm	When more than one bedroom is provided.
(c)	Additional /other bedroom	7.5 m2	2500mm	Bedroom provided in addition to primary/secondary bedroom
7.2.3	**KITCHEN:**			
(a)	Kitchen cum store	6 m^2	2000mm	When no separate store is provided.
(b)	Kitchen	4.32 m^2	1800mm	Separate store has to be provided.
(c)	Store	1.44 m^2	1200mm	Store with a separate kitchen
7.2.4	**BATHROOM:**			
(a)	Toilet	2.16 m^2	1200mm	
(b)	Toilet with internal partition wall	3.36 m^2	1400mm	Min width of 900mm for water closet.
(c)	Bathroom	1.82 m^2	1300mm	
(d)	Separate WC	1.08 m^2	900mm	
7.2.5	**BALCONY:**	1.35 m^2	900mm	

7.3 Circulation space requirements

		DIMENSIONS FOR:	
		RESIDENTIAL BUILDINGS	**INSTITUTIONAL AND COMMERCIAL BUILDINGS**
7.3.1	Clear width of private corridor or staircase (internal stair serving one residence only).	Min 900mm	N/A
7.3.2	Clear width of common corridor or staircase	Min 1100mm	Min 1500mm (unless calculated to be greater according to fire escape rules)
7.3.3	Height of staircase handrail above pitch line of staircase	Min 900mm	Min 900mm
7.3.4	Staircase riser	Max 190mm	Max 190mm
7.3.5	Staircase tread	Min 250mm	Min 280mm
7.3.6	Height of doors	Min 1800mm	Min 2000mm
7.3.7	Width of door to habitable room	Min 850mm	Min 900mm
7.3.8	Width of door to main entrance	Min 900mm	Min 1000mm
7.3.9	Width of other doors	Min 700mm	Min 850mm
7.3.10	Habitable room floor to ceiling height in high altitude	Min 2450mm	Min 2450mm
7.3.11	Habitable room floor to ceiling height in low altitude	Min 2750mm	Min 2750mm
7.3.12	Water closet, bathroom or store floor to ceiling height	Min 2100mm	Min 2300mm
7.3.13	Mezzanine floor to ceiling height	Min 2100mm	Min 2300mm

7.4 Light and Ventilation requirements

7.4.1 HABITABLE ROOM

A habitable room shall be provided with windows and other apertures having a total openable area not less than 1/6th of the floor area. The openings shall face directly onto an external space.

7.4.2 KITCHEN

A kitchen shall be provided with ventilation through windows/ventilators having a minimum area equal to 1/6th of the floor area of the kitchen.

7.4.3 WATER CLOSET

The water closet located against the external wall shall be provided with an opening or a glazed window not less than 0.2 sq. m for lighting and ventilation.

7.4.4 STORE ROOMS AND THE LIKE

A storeroom shall have ventilation through windows and ventilators or other apertures. In case of window, the opening shall not be less than 1/10th of the floor area.

7.4.5 BASEMENT FLOOR

A basement shall have ventilation through windows, ventilators or other apertures, the area of which shall not be less than 1/10th of the floor area.

7.5 Artificial Lighting and Mechanical Ventilation

Wherever the day lighting and natural ventilation is insufficient to meet the standard requirements of lighting and ventilation the same shall be ensured through artificial lighting and mechanical ventilation. (Refer to BTS-012).

7.6 Ventilation shaft

A ventilation shaft shall be provided for toilet, kitchen and store room that do not have adequate direct access to natural ventilation from an external open space.

The size of such ventilation shaft shall be as follows:

7.6.1 1.5 sq.m in area with a minimum width of 1.0m for building up to 2 floors.

7.6.2 2.8 sq.m in area with a minimum width of 1.2m for building of 3 and 4 floors: and

7.6.3 4.0 sq.m in area with a minimum width of 1.5m for building of 5 and 6 floors including basement floors.

All shafts shall be accessible from ground floor with minimum opening size of 900x2000mm height.

7.7 Plinth Height

The plinth height shall not be less than 150 mm.

7.8 Fire Safety (Refer to BTS-014)

7.8.1 Every building meant for human occupancy shall be provided with exits sufficient to permit safe escape of occupants, in case of fire or other emergency. However, this shall not be mandatory for those residential buildings having single dwelling unit.

7.8.2 Exits shall be free of obstructions and be clearly visible with the routes to the exits clearly marked and sign posted.

7.8.3 Doors with a fire resistance of at least ½ hour shall be provided along the escape routes to prevent spread of fire and smoke particularly at the entrances to stairs.

7.8.4 All escape exits shall provide continuous means of egress to the exterior of a building or to an exterior open space leading to a street. Exit routes shall be arranged so that they may be reached without passing through another occupied space.

7.8.5 Exits shall be so located that the travel distance to the exit on each floor shall not exceed the distances given below:

Building type	**Travel distance**
Residential	22.5m
Institutional	22.5m
Commercial/Assembly	30m
Industrial	45m

7.8.6 The travel distance to an exit from the dead end of a corridor shall not exceed half the distance specified in the table above, except in institutional and commercial/assembly building types in which case it shall not exceed 6m.

7.8.7 Wherever more than one exit is required exits shall be placed as remote from each other as possible and shall be arranged to provide direct access in separate directions from any point in the area served.

7.8.8 All building having more than four floors and all institutional and commercial/assembly building types having an area of more than 500sq.m on each floor shall have a minimum of two fire escape staircases. The provision of additional alternative staircases shall be subject to the requirements of travel distance being complied with.

7.8.9 Fire escape staircases must be of a protected type and at least one shall open directly into an exterior space or to an open place of safety. 'Protected' means that if there is a fire anywhere in the building, it should not be allowed to enter the staircase shaft. No internal windows can be provided looking into fire escape staircases.

7.8.10 Interior fire escape stairs must be constructed of a non-combustible material throughout and as completely enclosed self-contained units with an external wall constituting at least one of the sides.

7.8.11 Doors onto fire escape staircases must have a fire resistance of at least one hour, should open in the direction of escape and must not reduce the minimum width of the landing or staircase.

7.8.12 All buildings should be provided with at least one fire extinguisher on each floor.

7.8.13 All buildings must have a fire plan showing:
(a) Location and number of fire extinguishers.
(b) Means of escape – location of internal and external fire escape stairs, fire exits and direction of escape.

7.8.14 Fireplaces shall have a floor of concrete or similar fire proof material and shall be provided with a flue or chimney. Chimneys shall extend 600mm or more above the highest point of the roof.

7.9 Elevators (Refer to BTS-011)

Buildings having more than four floors shall have elevator(s). Elevators cannot be used for fire escape purposes. Elevators shall not be mandatory for buildings that have four floors or less from the main entrance, provided such an entrance is the primary entrance to the building and has direct access to a vehicular road.

7.10 Garage cum servants quarters

Each servant's quarter shall comprise of one habitable room of not less than 12 sq.m floor area, exclusive of kitchen, veranda, bathroom and lavatory. Such out house shall comply with set back lines of main structure.

7.11 Porch

Porch shall be permitted in all buildings in compliance with set back rules.

7.12 Septic tank & Soak pit (Refer to BTS-001)

The minimum distance between the building and septic tank shall not be less than 3m and between the building and soak pit, not less than 5m.

7.13 Roof and site drainage

7.13.1 Down pipes, gutters and spouts shall be provided for buildings in commercial areas to discharge rainwater into the storm water drain.

7.13.2 Roof pitches should be between 12 degree and 15 degree for profiled metal sheeting or in accordance with technical requirements for other materials.

8. ACCESS FOR THE DISABLED

8.1 The ground floor of institutional buildings must be accessible to disabled people through at least one entrance.

8.2 Where ramps are necessary or desired for disabled access they shall not have a slope of greater than 1 in 12. A ramp shall have a handrail on at least one side and preferably two sides.

8.3 Ramps must have a non-slip surface and a level platform at the top, which are at least 1800x1800mm if a door swings out onto it. Platforms must extend at least 300mm beyond each side of a doorway. Each ramp must have at least 1800mm straight clearance at the bottom.

8.4 Ramps must have level platforms at 9.5m horizontal intervals and wherever they turn.

8.5 Where toilets are generally provided an appropriate number of facilities (in accordance with the use and capacity of the building) must be made accessible to and be usable by disabled people.

8.6 Disabled toilets for wheelchair access must be at least 1520x1520mm square, have a door of 1000mm wide opening inwards and have appropriately designed and mounted handrails to provide support. Disabled toilets should be designed to follow standard codes of good practice.

9. STRUCTURAL CONTROL (Refer to BTS-002 to 009)

9.1 Structural Design

Structural design shall comply to the codes and specifications but not limited to the following, adopted and / or issued by the Competent Authority from time to time.

9.2 Analysis of Structure (building)

9.2.1 PWD structural design standards 1997

9.2.2 IS 1893 - 1984: Criteria for earthquake resistant design of structures

9.2.3 IS 456 – Code of practice for plain and reinforced concrete

9.2.4 IS 875 –1987: Code of practice for Design loads (other than earthquake)

9.2.5 NUDC/007/1985 – Timber Roof Trusses

9.2.6 NUDC/002/1985 – Manual for Timber Engineering Design

9.3 Design of Structure (buildings)

9.3.1 PWD structural design standards 1997

9.3.2 IS 4326 – Earthquake resistant design & construction of building

9.3.3 IS 456 – Code of practice for plain and reinforced concrete

9.3.4 NUDC/007/1985 – Timber Roof Trusses

9.3.5 NUDC/002/1985 – Manual for Timber Engineering Design

9.3.6 IS 800 – Design of steel structures

9.3.7 IS 806 – Design of Tubular Truss

9.3.8 IS 1904-1978: Code of practice for structural safety of buildings (Shallow foundation)

9.4 Detailing of Structure (buildings)

9.4.1 PWD structural design standards 1997

9.4.2 IS 13920 –1993: Ductile detailing of concrete structures subjected to seismic forces

9.4.3 IS 4326 – Earthquake resistant design & construction of building

9.4.4 IS 456 – Code of practice for plain and reinforced concrete

9.4.5 NUDC/007/1985 – Timber Roof Trusses

9.4.6 NUDC/002/1985 – Manual for Timber Engineering Design

9.4.7 IS 800 – Design of steel structures

9.4.8 IS 806 – Design of Tubular Truss

10. Floors

10.1 Ground floor shall be so constructed as to prevent dampness rising by capillary action into the floor.

10.2 Flooring of kitchen shall be of impervious and fire proof materials.

10.3 Toilet and bathroom shall have floor of impervious materials.

10.4 The internal walls of water closet shall be finished with an impervious material up to a minimum height of 90 cm from the floor.

10.5 The floor and walls of the basement floors shall be provided with damp proofing treatment.

11. WATER SUPPLY AND SANITATION CONTROL

11.1 Residences

11.1.1 Dwelling units with individual conveniences shall have at least the following fixtures:

(a) One bathroom provided with tap either separate from or combined with,
(b) One water closet
(c) One sink in the kitchen or alternative arrangements for washing utensils.

11.1.2 Dwelling units without individual conveniences shall have the following fixtures:

(a) One water-tap with drainage arrangement in each tenement.
(b) One water closet and one bathroom with tap for every two tenements

11.1.3 Connection to the municipal water supply and sewer line shall be made with the approval of the Implementing Authority. Where there is no municipal sewer system, septic tank with soak pit shall be provided.

11.1.4 Licensed plumbers shall execute works involving repair or installation of sanitary fittings.

11.1.5 Building owners shall be responsible for making appropriate arrangements for disposing of construction debris as specified by the Implementing Authority.

11.1.6 Plumbing shall be as per the prevailing “Code of Practice for Plumbing” and “Water & Sanitation Rules”.

11.1.7 Gutters and down pipes shall not be less than 100 mm diameter.

12. ELECTRICAL INSTALLATIONS CONTROL (Refer to BTS-010)

The electrical drawings shall be submitted while applying for the building permit along with other drawings. Permanent connection shall be given only after issue of occupancy certificate. All service connections shall be given only after an Implementing Authority approves the building plan.

12.1 Licensed electricians shall execute all works involving house wiring, repair or installation of electrical connections.

12.2 Minimum requirement of socket outlets in a residential dwelling unit shall be as specified in the table below:

Location	Number of 5 amps sockets	Number of 15 amps sockets
Bed room	1	1
Living room	1	2
Kitchen	-	1
Dining room	1	1
Living/dining combined	1	2
Bath room	-	1

13. TELEPHONE

13.1 For buildings, which require provision of telephone services, detail plans shall be submitted as per the guidelines (Annex 4).

13.2 Telephone wiring to any point shall be standard 0.5 mm gauge single pair copper wire in a 25 mm PVC/Ms conduit which shall be located at least 500 mm from any electrical cable route.

13.3 A proper bridge shall be provided where electrical and telephone routes cross.

13.4 Telephone terminal points shall be at least 1500 mm above the floor level in an accessible area.

13.5 A maximum of five pairs of telephone wires shall be drawn through 25mm conduit.

14. RESPONSIBILITY OF THE APPLICANT

A person who applies for permission to erect a building or carry out additions and alterations shall ensure that:

14.1 The building under construction is completed within five years from the date of commencement. In the event that the construction is stopped for a period exceeding one year the owner shall erect a pitch roof over the finished floor.

14.2 **Materials used must comply with minimum standards as specified in IS codes, PWD specification and other relevant codes of practice.**

14.3 Close supervision is exercised over the construction by an experienced Supervisor / Engineer.

14.4 A qualified/licensed Plumber/Electrician executes the work of sanitation, water supply plumbing and electrical installations.

14.5 Necessary precautions are taken against accidents, damages or inconvenience to the public and workers or adjacent property either directly or indirectly during the execution of the work.

14.6 Private or public properties interfered/damaged during construction are restored / reinstated to the satisfaction of the Implementing Authority / affected property owner. In the event, the interference is affecting both the parties the restoration shall be carried out jointly as determined by the Implementing Authority.

14.7 The workers are protected through provision of helmets, safety belts, boots, and working gloves.

14.8 The building under construction has proper scaffolding, platforms, net and signboards cautioning the pedestrian and vehicular traffic.

15. MAINTENANCE OF BUILDING

15.1 The owner of the building shall ensure regular maintenance of the building, including painting.

15.2 Complaints from neighbours or tenants on the unsatisfactory water supply and sanitary conditions, improper / deteriorated electrical wires deteriorated septic tank and soak pit, surface drains and surrounding environment shall be repaired/replaced/rectified by the owner of the property.

16. REHABILITATION/DEMOLITION OF UNSAFE BUILDINGS

Buildings shall be inspected periodically by an authorised engineer and if found unsafe the owner shall be responsible to rehabilitate failing which the owner shall be asked to demolish. After notification if the owner has not taken action the Implementing Authority shall demolish at the risk and cost of the owner.

17. IMPOSITION OF FINES AND PENALTIES

17.1 The Implementing Authority shall be held responsible for non-compliance of Bhutan Building rules.

17.2 If the owner of the building continues construction despite written notice from the Implementing Authority for the rectification of deviations from the approved plan, services like water supply and electricity shall be disconnected. Such services shall be restored only after rectification of the deviation to the satisfaction of the Implementing Authority. As a last resort the Implementing Authority shall serve notice for demolition vide clause no. 4.10 and 19 of this rule.

17.3 Any construction of a building or structure without written permission from the Implementing Authority shall be demolished at the risk and cost of the defaulter.

17.4 Any construction of additional floor/s (horizontal or vertical extension) without the written permission of the Implementing Authority shall be demolished at owner's cost.

17.5 Change of building use without written permission of the Implementing Authority shall be regularised on payment of fines only if it conforms to the land use schedule and safety standards. If the building use does not conform to the land use and safety standards it will revert to the original use and the defaulter shall still pay a fine. The fine shall be 20% of the cost of construction of misused floor area determined by the Competent Authority.

17.6 Occupation of any building without obtaining occupation certificate shall result into disconnection of services. Services shall be restored only after reconnection charges and fine have been paid to the Implementing Authority and occupation certificate has been obtained.

18. DEMOLITION OF BUILDINGS FOR RECONSTRUCTION

An owner of a building having service connections such as water, electricity, sewer and other connections, shall notify all the utility agencies concerned prior to demolition of the building. A permit to demolish a building shall be issued by the Implementing Authority on receipt of clearance from the respective utility agencies.

19. UNAUTHORISED CONSTRUCTION

19.1 Stop Order

The Implementing Authority shall notify in writing to stop the unauthorised construction immediately.

19.2 Demolition of unauthorised constructions

The Owner of an unauthorised structure shall be served at least three notices by the Implementing Authority before the demolition of an unauthorised building:

First notice of 15 calendar days; failing which

(a) Reminder notice of 10 calendar days; failing which

(b) Final notice of 5 calendar days, failing which the illegal/unauthorised building shall be demolished by the demolition squad.

19.3 Demolition squad for an unauthorised building

A demolition squad shall consist of representatives from Implementing Authority, Department of Power and Royal Bhutan Police or any other agencies as directed by the Competent Authority.

20. MISCELLANEOUS

Review and Revision

The Competent Authority shall review and revise Bhutan Building Rules from time to time as deemed necessary.

ANNEX 1

APPLICATION FOR CONSTRUCTION OF BUILDING IN URBAN CENTRES. (Rule 4.2)

(Please type or write in clear block letters, use additional sheet if necessary)

To:
The Chairperson/Thrompen
Urban Centre .....

1. Name of applicant: .....……

Pass port size Photo

2. Sex: Male( )Female( )
3. Date of Birth : Day ( ) Month ( ) Year ( ) Age ( )
4. Citizenship Identity Card No. .....…….
5. Permanent Address: .....
6. Present Address: .....
7. Postal Address:……
8. Contact details: Telephone No. (residence):……..
   Telephone No. (office):……
   Fax No.:…….
   E-mail address:…….
9. Land ownership:
   - Government Allotment (Allotment order no & date) …….
   - Purchased from the open market (Registration no & date) …….
   - Allotted under Kasho (Copy of Kasho to be attached) ……..
   - Inherited/exchanged/gifted (Details of previous owner to be attached)
   - Subdivided (Approval letter no & date) ……..

10. Plot details : Plot No.:.....… Area:.....…...sq.m Dimensions:.....

11. **Declaration**: The information supplied in this application form is correct to the best of my knowledge and if there are any discrepancies, I shall be personally responsible for the same and I am prepared to face any disciplinary or legal action against me.
    Date : ..... Place: .....…..
    Signature :

For official use only

Noting of the dealing officer with regard to land holdings, building construction, etc.
Recommended ( ) Not recommended ( )
Name & Signature of the Dealing Officer: .....

Signature of Thrompon/Chairman : .....
City/Municipal Corporation

Remarks (if any):

ANNEX 2

APPLICATION FOR OCCUPANCY CERTIFICATE

To:
The Thrompon/Chairman,
City/Municipal Corporation,
.....

Sir,

I hereby certify that the addition/ alteration/ construction of building on Plot/Thram No. ..... in ..... Lam . in ….....town has been completed on ....., according to the approved building plan/ drawings, vide permit No. ..... dated .....

The work has been completed to our best satisfaction. Workmanship and all the materials (type and grade) have been used strictly in accordance with the approved documents/drawings and relevant standards, codes of practice and specifications. Provisions of the Bhutan Building Rules, conditions or orders issued thereunder have not been transgressed/violated in the course of the work. The building is fit for use for which it has been added /altered/ constructed. The necessary 'Occupancy Certificate' may be issued.

Signature of the Owner: .....
Name & Address:.....
Telephone No. (residence): .....
Telephone No. (office): .....
Fax No.: .....
E-mail address: .....
Dated: .....

ANNEX 3

OCCUPANCY CERTIFICATE
(Vide Rule 4.8)

To,

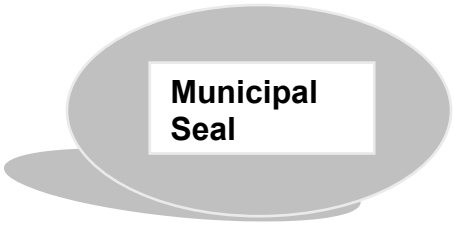
……
……
……
……

Sir/Madam,

With reference to the application dated …....., regarding the addition/ alteration/construction of building on plot/Thram No. ..... in street/ Lam..... , ...in .....town has been inspected on date ..... and found that the building is **fit / not fit** for occupation.

Instruction / Remarks (if any):

Thrompen/Chairman
City/Municipal Corporation
Dated:



ANNEX 4

Drawing guidelines

Drawings with complete design information and details, but not limited to the following shall be submitted to the Implementing Authority for scrutiny and approval.

Architectural drawings

(a) Site plan shall be drawn to scale and shall include the position of the proposed building in the plot showing the dimensions of the plot boundaries, set back lines and showing the approach road, location of septic tanks, soak pit, roof drainage, and drainage plan.

(b) Site plan shall include a schematic drawing showing information on adjacent plot like building line, permanent features, drainage, access road, septic tank and soak pit location.

(c) Layout plan of each floor, elevations of all sides of the building, sections through toilets and staircases, details of doors, windows, traditional cornices, railing/parapet, opening and other methods of ventilation, details of toilet and kitchen.

(d) Drawings shall have proper title block indicating name of owner, type and number of storey, location, date, revision number and date, scale, and north direction.

(e) The following minimum scales shall be followed:

- Site plan 1:500
- Elevation/plan/section 1:100
- Stair case/toilet/kitchen details 1:50
- Door/windows/cornice details 1:25

Structural drawings

(a) A copy of design calculation notes.

(b) Design codes used shall be listed on the drawing.

(c) Loads (assumed or actual) shall be listed on the drawing.

(d) Material properties shall be listed on the drawing.

(e) Assumed soil bearing capacity or soil investigation report shall be attached.

(f) Foundation plan, truss layout plan showing truss & purlin spacing, beam and slab layout plan for each floor showing clearly the staircase opening, shaft opening and any other openings and depressions.

(g) Concrete and reinforcement details for foundation, beams, slab, staircase, lintel, cornice, projections, zhu and rabsey, wall, etc.

(h) Truss elevations and connection details showing the holding down details.

(i) Details of separation gap indicating the location of such gap on the plan wherever required

(j) Details of splice locations and splice length for beams, columns, slab and staircase.

(k) For Load bearing walls, details of plinth band, lintel band, roof band including vertical bars at corners, opening jambs, wall junctions to be shown.

(l) Foundation details indicating depth of foundation and plinth level.

(m) Dimensions shall be clearly indicated for all structural members.

(i) Anchorage of beam bars in an external Beam – Column junction
(ii) Column ties and Beam stirrups details
(iii) Retaining details in case of foundation founded on different levels

(n) Drawings shall bear proper title block indicating name of owner, type and number of storey, location, drawing title, date, revision number.

Electrical Connections

(a) Single line diagram of total electrical system showing incoming terminal point and distribution network.

(b) Electrical layout plan showing positions of light points, power points, any other outlets, switches and wiring diagram.

(c) Tapping off junctions, switchboards, and distribution circuits for power and lighting from SDB and phase distribution (in the case of multiphase installations) shall be indicated clearly on the wiring layout plan.

(d) Sub distribution boards showing circuits and respective loads and protection devices.

(e) Power distribution boards for large multi-storey buildings showing floor-wise distribution from main control board and incoming power line.

(f) For multi-storied / complex buildings, design calculations shall be submitted.

Additions and/or alterations to existing installations

The following information shall be submitted for additions and/or alterations to existing Installation:

(a) Polarity test results
(b) Insulation test results
(c) Earth continuity test results
(d) Earthing test results
(e) Capacity, condition and specification of existing spare circuits
(f) Rating, specification & condition of existing incoming mains control gear
(g) Composite (existing and proposed) layout plans for all floors.

Note: For factories, relevant by laws shall be followed as per Bhutan factory electricity rules/ I.S.

LEGEND SHALL SHOW:

(a) Type and wattage of fixtures
(b) Type of SDBs
(c) Type of PCBs and connected load
(d) Type of MCBs
(e) Switches and Switchboards
(f) Junction boards

Compound Electrification work

(a) Fixture and fitting specification

(b) Foundation details for support poles etc.

(c) Terminal box details.

(d) Size and type of cable proposed to be used.

(e) Single line diagram showing
    (i) Connections
    (ii) Phase distribution
    (iii) Circuitry

Telephone connections

Submitted drawings shall indicate symbols and legend. All points, junctions, routes ducts, telephone terminal cabinet are to be clearly indicated.

Drainage & Sanitation

(a) Plan showing Kitchen, bathroom and WC outlets.

(b) Plan showing location of septic tank and soak-pit or sanitary pipe lay out to the nearest sewer line, including manholes, wherever it exists.

(c) Drainage layout plan connecting to the nearest storm water drain.

(d) Sewer design shall be in accordance with plumbing code of practice.

(e) Materials and sizes of pipe line.

Water Supply

(a) Layout plan of internal plumbing system of each floor with details of pipe sizes and material.

(b) Water meters shall be provided for each dwelling unit.

(c) Plumbing design shall be in accordance with plumbing code of practice.

(d) Materials and sizes of pipe line