

(DZONGKHA TITLE)

BHUTAN STANDARD

Timber Window Frame - Specification



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(DZONGKHA TITLE)

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FOREWORD

This Bhutan Standard for Timber Window Frame - Specification was adopted by Bhutan Standards Bureau after the draft finalized by the Wood and Timber Product Standards Technical Committee TC 07 and approved by the Bhutan Standards Bureau Board (BSB Board) on xxxx 2021

This standard is subject to systematic review after five years to keep pace with the market trends, industrial and technological developments. Any suggestions and further information may be directed to the concerned Technical Committee.

(DZONGKHA)

BHUTAN STANDARD Timber Window Frame - Specification

1 Scope

1.1 This standard shall cover material, construction, workmanship and sizes of timber window frames generally used in residential and institutional buildings.

1.2 This standard shall not cover timber window frames for commercial, industrial, religious and other special buildings such as workshops and garages.

1.3 This standards shall cover only casement windows, and shall not cover window frames for Sliding, Revolving, Awning, Folding... etc., window shutters unless otherwise specified, and it is limited to rectangular and square windows.

1.4 This standard shall not cover double shutter windows.

1.5 Except for traditional architectural elements like kachung, horzhu, jugzhing and tshengen that are within the window frame, the traditional cornices which are above the window frame shall not be covered by this standard. These cornices shall be fabricated as an additional component as per Bhutan Building Regulation and Bhutanese Architectural Guidelines.

2 Normative References

The following documents are indispensable for application of this document. For dated references, only the edition cited applies, for undated references, the latest edition of the latest document (including any amendments) applies.

FDBTS 346: 2021 D4442-20 Standard Test Methods for Direct Moisture Content Measurement of Wood and Woodbased Materials

FDBTS 347: 2021 IS 401: 2001 (reaffirmed 2002) Preservation of Timber – Code of Practice

FDBTS 348: 2021 IS 851: 1987 Specification for Synthetic Resin Adhesives for Construction Work (Non-Structural) in Wood Practice

3 Terms and Definition

3.1 Dead knots - a knot in which the layers of annual growth are not completely intergrown with those of the adjacent wood. It is surrounded by pith or bark. The encasement may be partial or complete

3.2 Eyes (E) – each opening space between two adjacent vertical window frames

3.3 Holdfasts – are fasteners used to firmly hold the door frames on the jamb

3.4 Horzhu – the curved motif used at the head of a traditional Bhutanese window

3.5 Jamb – surface of the window frame that comes in contact with the walls and columns

3.6 Jugshing - timber rails in between the frame to divide the openings

3.7 Kachung – the vertical timber members that support the Horzhu

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3.8 Live knots - a knot free from decay and other defects, in which the fibres are firmly intergrown with those of the surrounding wood

3.9 Modular Width (MW) - the width provided in this standard for calculating dimensions and sizes

3.10 Pin hole - hole not over 2 mm in diameter, usually darkly stained and not containing bore dust or frass

3.11 Pitch pockets - accumulation of resin between growth rings of coniferous wood as seen on the cross-section

3.12 Preservatives - a substance or a chemical that is added to wood to prevent decomposition by microbial growth or by undesirable chemical changes

3.13 Profile – the ornamentation provided at the shutter frame and the beading

3.14 Rebate - a recess along the edge of a piece of timber to receive another piece or a door, sash or frame

3.15 Sapwood - the outer layers of the log, which in the growing tree contain living cells and food material. The sapwood is usually lighter in colour and is readily attacked by insects and fungi

3.16 Tier – level of similar windows

3.17 Tshengen – the traditional Bhutanese ornamentation between Jugshing and bottom door frame

3.18 Window Shutter - are movable barrier consisting of a panelled assembly or otherwise which fits into the frame

3.19 Worm hole – hole made by a burrowing worm

4 Materials

4.1 Timber

Timber suitable for the manufacture of window frame shall be in accordance with timber classification as specified in **ANNEX-A** of this standard. Window frames shall be made from all heart stock of a decay resistant species or wood treated to make it decay-resistant. Vertical timber posts, head and sill of the frame shall be of same species.

4.1.1 Defects

Defects like decay, fungal growth, boxed heart, splits, pitch pocket or streaks on the exposed faces of the frame shall be prohibited. However, the timber shall be graded as First Grade or Second Grade on the basis of the permissible defects in timber as given in **Table 1**.

Table 1: Permissible Defects in Various Grades of Timber

SL. No	Defects	First Grade	Second Grade
1	Cross Grain	Not steeper than 1 in 15	Not steeper than 1 in 10
2	Sound Knots and live knots	20mm	35mm

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	a) Size, Max b) Number per metre	1	2
3	Decayed knots, dead knots and knot holes	Not more than 10mm size centrally located and not more than 1 knot per metre. These shall be completely put out and tightly plugged with seasoned timber of the same species and properly glued, so that its grains run in the direction of main pieces.	Not more than 10mm size centrally located and not more than 2 knots per metre. These shall be completely put out and tightly plugged with seasoned timber of the same species and properly glued, so that its grains run in the direction of main pieces.
4	Pitch pockets or streaks	None	Permissible except on exposed edges, provided they are clear and filled up with putty or filler. When these are located on exposed edges of the core, they shall be cut out and plugged with similar species of timber with grains running in the same direction as that of the pieces. The pieces shall be well glued.
5	Sapwood	Total not exceeding 5mm wide and 150mm long per metre	Total not exceeding 10mm wide and 300mm long per metre
6	Pin Holes (other than due to live infestation)	Permitted provided they are not in clusters	Permitted
7	Worm holes	None	Permitted provided they are not more than 10mm in diameter and not more than one per meter and provided such worm holes are plugged with similar timber in such a manner that the plugging merge with the surrounding area both as to colour and grains
8	Checks, depth, Max	3mm, provided it is fully stopped	One-fourth of the total thickness of piece or 6mm whichever is less, provided it is fully stopped.

4.1.2 Seasoning and Treatment

Any piece of wood will give off or take in moisture from the surrounding atmosphere until the moisture in wood has come to a balance with the existing atmospheric conditions. The moisture content at which timber neither gains nor loses moisture when subject to a given constant condition of temperature and humidity is known as equilibrium moisture content corresponding to that condition.

Seasoned timber (whether air or kiln dried) shall conform to the moisture content requirements as specified in **Table 2** if the averaged moisture content of all the samples from a given lot is within the permissible limit. Sapwood of durable species in hardwood and sapwood of non-durable species shall be treated with suitable preservatives (except the water soluble leachable type) as specified in **FDBTS 347: 2021 IS 401: 1982**.

Table 2- Permissible moisture content of window frames

Window components	Moisture Content, Percent, Max	Average Moisture Content of all samples from a lot shall be	Moisture Content of individual samples shall be	Test Method
50 mm and above in thickness	16%	Within +3%	+5%	D4442 - 20
Thinner than 50 mm	14%	+2%	Within +3%	

5 Constructions and Workmanship

5.1 General

5.1.1 Timber shall be sawn in the direction of grain. Sawing shall be truly straight and square. The scantling shall be planed smooth and accurate to the full dimensions, rebates, etc, before assembly

5.1.2 All members of frame shall be exactly at right angles. The right-angle shall be checked from the inside surface of the respective members.

5.1.3 All members of frames shall be straight without any warp or bow and shall have smooth, well-planed on all sides.

5.1.4 The depth of the rebate in frame for housing the shutter shall be 15 mm.

5.1.5 The frame in contact with jamb shall have a rebate of 15 mm depth to secure the plaster.

5.1.6 Profile, casing and ornamentation shall be done as agreed between the purchaser and supplier.

5.2 Joinery

5.2.1 Frames of timber windows shall be assembled by any of the following simple, neat and strong joints:

a) Single Dovetail Joint - Dovetail joint is formed at the corner of two pieces in such a way that the notch made on one is fitted exactly into projection of corresponding size and shape made in the other. A wedge shaped dovetail joint is made in a way, which will resist withdrawal except in the direction in which it was assembled (This type of joint is usually adopted when the frame is not built-in as the work proceeds).

b) Closed Mortise and Tenon joint - For closed mortise and tenon joint the head is mortised to receive the tenon on the post. The mortise and tenon must be correctly proportioned. Thickness of tenon should be equal to 1/3 that of the member and width of tenon not exceeding five times the thickness. In case the head usually projects from 50 to 100 mm beyond the posts, and these projections called “horns” assists in making the frames secure when it is built into the wall). Mortise and tenon joints shall fit in fully and accurately preferably without welding or filling. The joints shall be glued, framed, put together and pinned with hardwood or bamboo pins not less than 8 mm dia after the frames are put together and pressed.

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c) Haunched Mortise and Tenon Joint - Haunched mortise and tenon joint is adopted when the frame is not built-in as the work proceeds. Horns are not required (These are removed after wedging has been completed) and therefore width of tenon is reduced to facilitate wedging. This haunch increases the strength of tenon at its roots and prevents twisting of post. The joint shall however be glued. In the case of doorframes without sill, the vertical members (posts) shall be held in position at specified distances by means spacers, which may be removed after fixing of the frames in position.

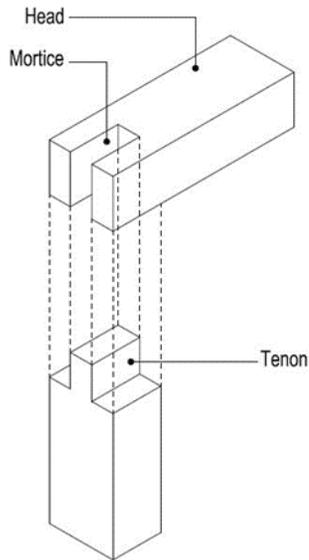


Fig.1 Single Dovetail Joint

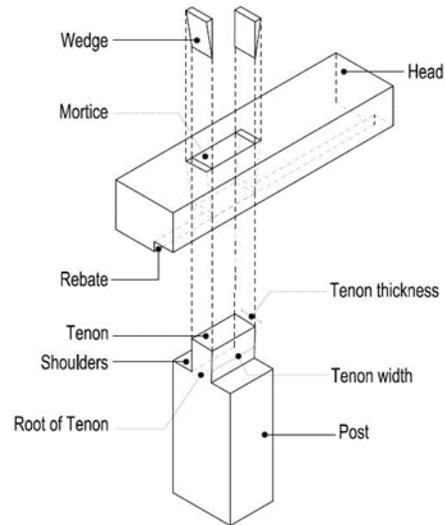


Fig.2 Closed mortise and tenon joint

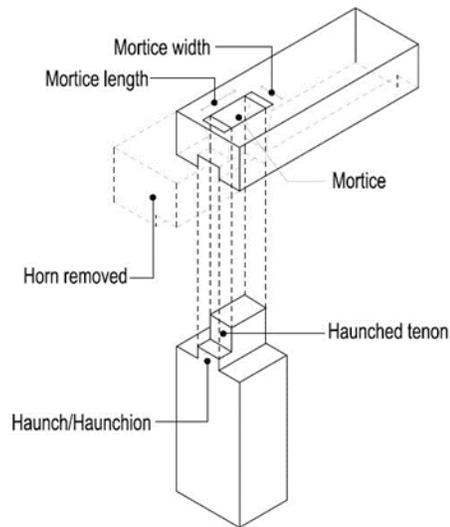


Fig.3 Haunched mortise and tenon joint

5.3 Gluing and Fastening of Joints

The contact faces of tenon and mortise shall be cleaned and treated with bulk type synthetic adhesives conforming to **FDBTS 348: 2021/IS 851: 1978** before putting together. The members shall be placed in

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proper position and further secured with suitable nails and screws. However, gluing of joints is optional and may be done with the agreement between the purchaser and the supplier.

5.4 Fixing of Frame

The frames shall be fixed either during construction of wall (built-in) or after the wall has been completed. The frames shall be placed in proper position and secured to wall or column with metallic fasteners or iron holdfasts.

5.5 Locations of Holdfasts

One holdfast on each side centrally placed shall be fixed up to a height of 60 cm. In case of height more than 60 cm, with or without horns two holdfasts shall be suitably fixed at each side (**see Fig.1, Fig.2, Fig.3**).

6 Dimensions, Sizes and Tolerances

6.1 General

6.1.1 The window type, opening size and actual window size shall be as specified in Table 3, with tolerances of +/- 3 mm for width and +/-2 mm for height. The standards sizes for the windows are deduced from the commonly used sizes in the residential and institutional buildings in the country. Window designation, unfinished and finished frame sizes shall be as specified in Table 4, with tolerances of +/- 1.5 mm. Window frame with double shutter shall be used only on jambs having minimum width of 150 mm unless otherwise specified.

6.1.2 The finished thickness of window shutter (t) shall be 35 mm and 40 mm.

6.1.3 Same member size shall be used irrespective of broadleaved or conifer timber.

6.1.4 The sizes of the scantling or the unfinished cross sectional sizes of the frame are deduced from the commonly available sizes in the country.

6.2 Designation

Window Frames shall be designated by symbols denoting number of Eyes, Type and Modular Width

Example;

- a) '3I-A550' would mean a window frame with 3 Eyes, Type I-A and Modular Width of 550 mm
- b) '3II-B650' would mean a window frame with 3 Eyes, Type II-B and Modular Width of 650 mm

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Design for window frames shall be classified as shown in following **Table 3:**

Table 3: Window Classification

Window Type	Sub-Category	Opening Dimensions (W mm x H mm)	Actual Window Dimensions (W ₁ mm x H ₁ mm)	Description
Type I	Type I-A	(W+10) x 1650	(W) x 1640	Shall have an adequate height for the provision of jugzhing and tshegen as shown in Fig.1
	Type I-B	(W+10) x 1350	(W) x 1340	Shall not have the provision for jugzhing and tshegen as shown in Fig.2
	Type I-C	(W+10) x 1000	(W) x 990	Shall not have the provision for jugzhing and tshegen as shown in Fig.3
Type II	Type II-A	(W+10) x 1650	(W) x 1640	Shall be a single tier with kachung along with horzhu, jugzhing and tshegen as shown in Fig.4
	Type II-B	(W+10) x 1650	(W) x 1640	Shall be a double tier with kachung along with horzhu, jugzhing and tshegen as shown in Fig.5
	Type II-C	(W+10) x 1350	(W) x 1340	Shall be a single tier with kachung along with horzhu as shown in Fig.6

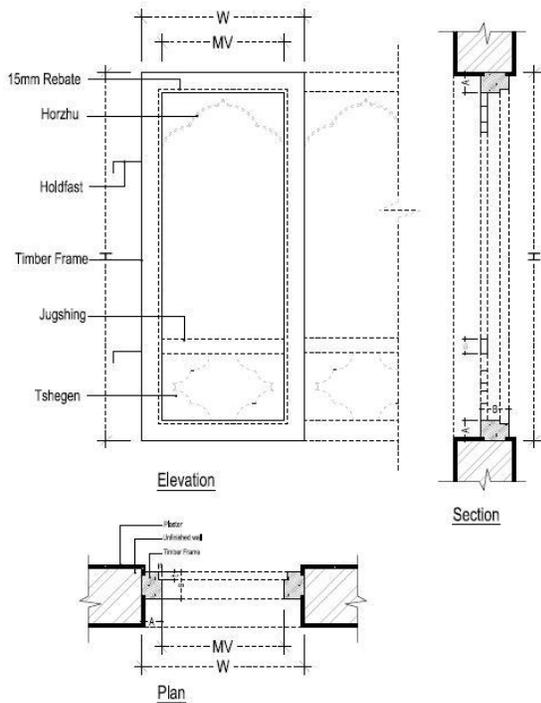


Fig. 1 Type I-A Window

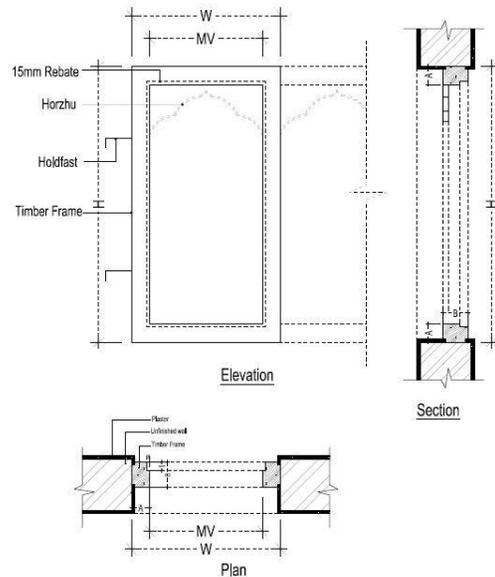


Fig. 2 Type I-B Window

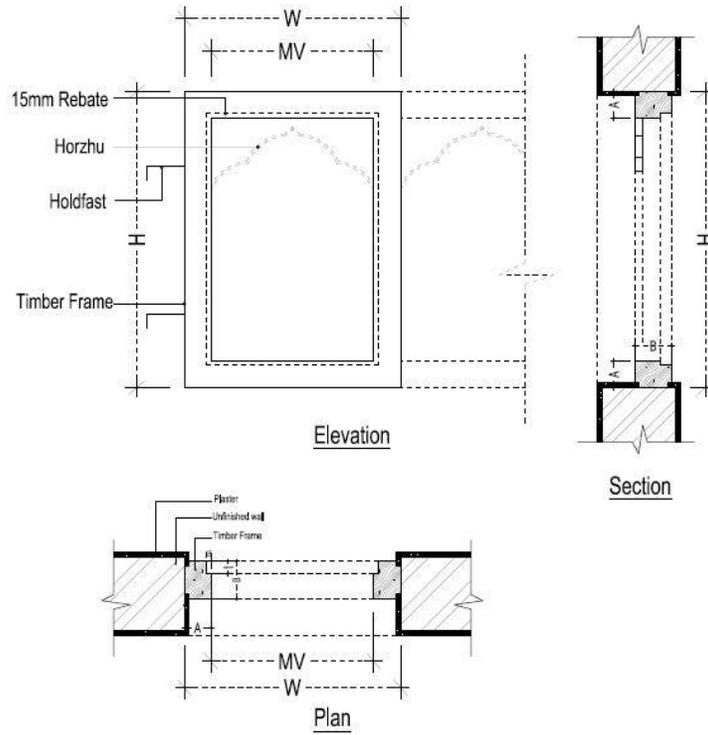


Fig. 3 Type I-C Window

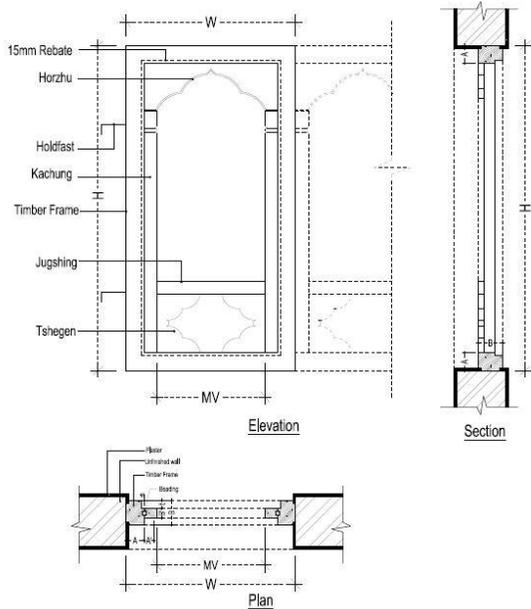


Fig. 4 Type II-A Window

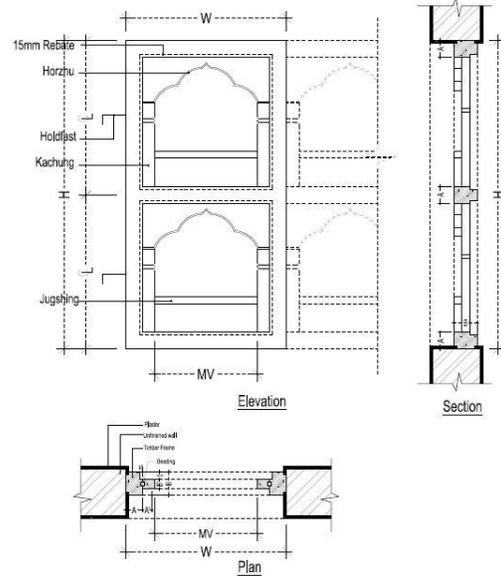


Fig. 5 Type II-B Window

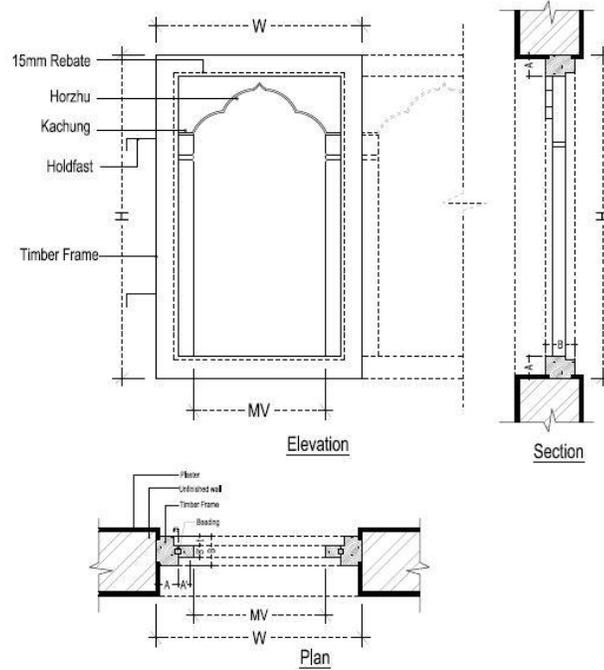


Fig. 6 Type II-C Window

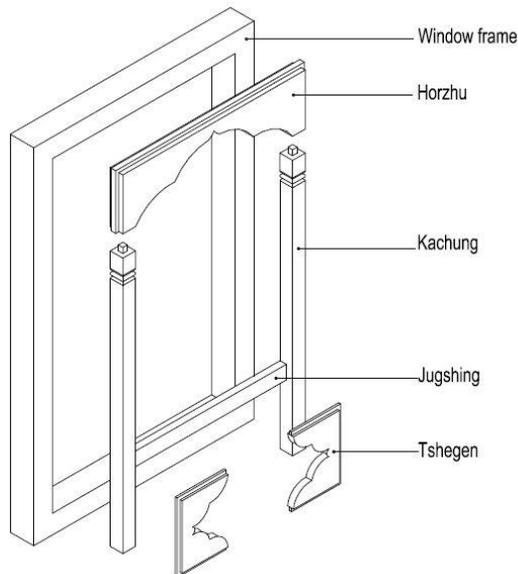


Fig.7 Isometric View of typical one module window

The constant sizes of members for all types of windows shall be as shown in **Table. 4**

Table 4: Constant Sizes of Members for all Types of Windows

Sl.No	Members	Scantling Sizes	Finished Sizes
1	Window frame size	100 x 125	90 x 115
2	Kachu Size	75 x 50	65 x 40
3	Horzhu size	Thickness = 35	Thickness = 28
4	Tshegen	Thickness = 35	Thickness = 28
5	Jugshing	35 x 75	28 x 65

Table 5 – Actual Width of Type I Windows based on number of Eyes (E) and Frame Width (A)

Window Eyes Modular Width(MV)	Actual Window Width(W) = MV*E + [(E+1)*90]				
	1	2	3	4	5
450	630	1170	1710	2250	2790
550	730	1370	2010	2650	3290
650	830	1570	2310	3050	3790
750	930	1770	2610	3450	4290

Note: Modular Width (MV) for Type I window is the clear distance between the inner sides of the window frame (for each window eye) as shown in Fig.1

Table 6 – Actual Width of Type II Windows based on number of Eyes (E), Frame Width (A) and Kachung width A'

Window Eyes Modular Width(mm)	Actual Window Width (W) = MV*E+[(E+1)*A']+(2*90)				
	1	2	3	4	5
450	760	1275	1790	2305	2820
550	860	1475	2090	2705	3320
650	960	1675	2390	3105	3820
750	1060	1875	2690	3505	4320

Note: Modular Width (MV) for Type II window is the clear distance between the inner sides of the kachung as shown in Fig.2

Table 7: Window Frame

SI.No	Designation					
	Type I-A	Type I-B	Type I-C	Type II-A	Type II-B	Type II-C
1	1I-A450	1I-B450	1I-C450	1II-A450	1II-B450	1II-C450
2	1I-A550	1I-B550	1I-C550	1II-A550	1II-B550	1II-C550
3	1I-A650	1I-B650	1I-C650	1II-A650	1II-B650	1II-C650
4	1I-A750	1I-B750	1I-C750	1II-A750	1II-B750	1II-C750
5	2I-A450	2I-B450	2I-C450	2II-A450	2II-B450	2II-C450
6	2I-A550	2I-B550	2I-C550	2II-A550	2II-B550	2II-C550
7	2I-A650	2I-B650	2I-C650	2II-A650	2II-B650	2II-C650
8	2I-A750	2I-B750	2I-C750	2II-A750	2II-B750	2II-C750
9	3I-A450	3I-B450	3I-C450	3II-A450	3II-B450	3II-C450
10	3I-A550	3I-B550	3I-C550	3II-A550	3II-B550	3II-C550
11	3I-A650	3I-B650	3I-C650	3II-A650	3II-B650	3II-C650
12	3I-A750	3I-B750	3I-C750	3II-A750	3II-B750	3II-C750
13	4I-A450	4I-B450	4I-C450	4II-A450	4II-B450	4II-C450
14	4I-A550	4I-B550	4I-C550	4II-A550	4II-B550	4II-C550
15	4I-A650	4I-B650	4I-C650	4II-A650	4II-B650	4II-C650
16	4I-A750	4I-B750	4I-C750	4II-A750	4II-B750	4II-C750
17	5I-A450	5I-B450	5I-C450	5II-A450	5II-B450	5II-C450
18	5I-A550	5I-B550	5I-C550	5II-A550	5II-B550	5II-C550
19	5I-A650	5I-B650	5I-C650	5II-A650	5II-B650	5II-C650
20	5I-A750	5I-B750	5I-C750	5II-A750	5II-B750	5II-C750

6.3 Horzhu Dimensions

The vertical dimensions of horzhu for all types of windows shall remain constant as shown in **Fig.7 (a)** and **Fig.7 (b)**

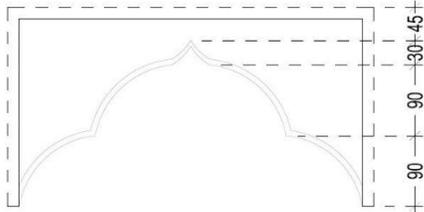


Fig.7 (a) Type I

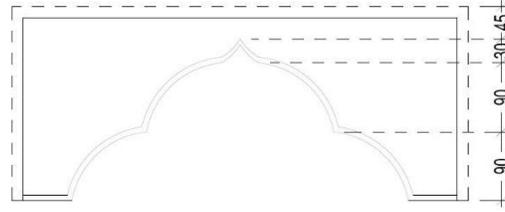


Fig.7(b) Type II

However, the horizontal dimensions shall vary as per the width of module as shown on **Fig.9** to **Fig. 10**

Horzhu for Window Type I:

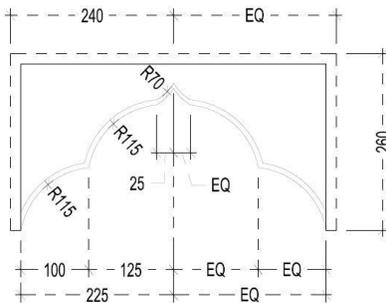


Fig. 9(a) Modular width of 450 mm

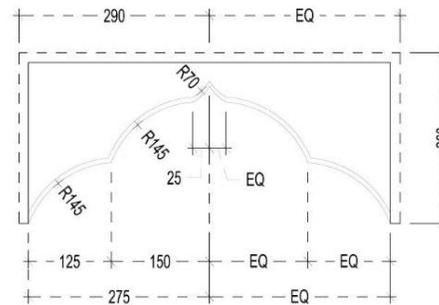


Fig. 9(b) Module width of 550 mm

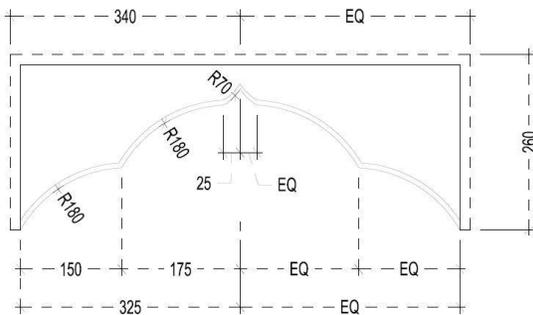


Fig. 9(c) Modular width of 650 mm

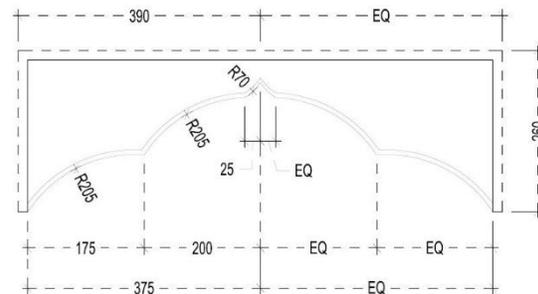


Fig. 9(d) Modular width of 750 mm

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Horzhu for Window Type II:

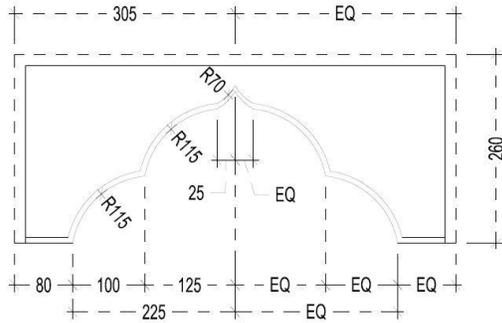


Fig. 10 (a) Modular width of 450 mm

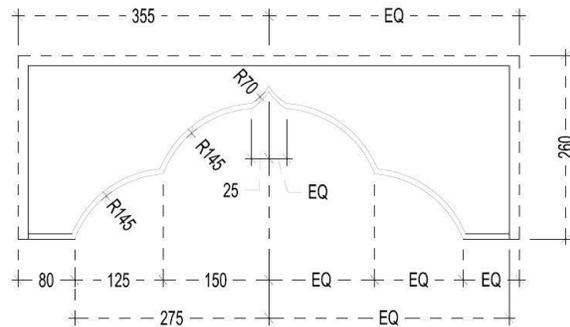


Fig. 10 (b) Modular width of 550 mm

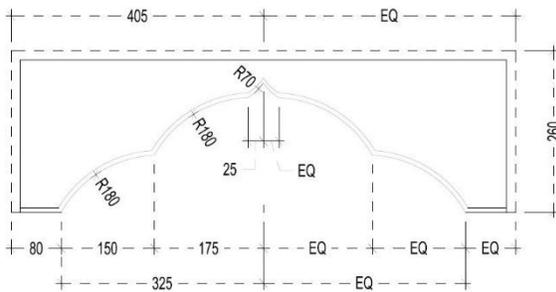


Fig.10 (c) Modular width of 650 mm

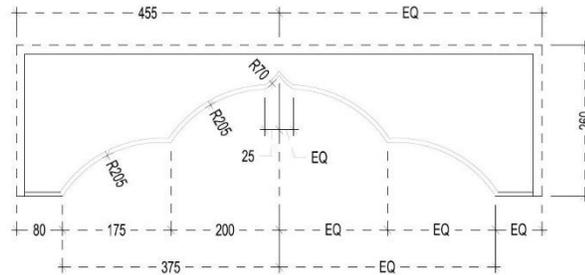


Fig.10 (d) Modular width of 750 mm

6.4 Tshegen Dimensions

The dimensions of tshegen for all types of windows shall remain constant as shown in **Fig.11**

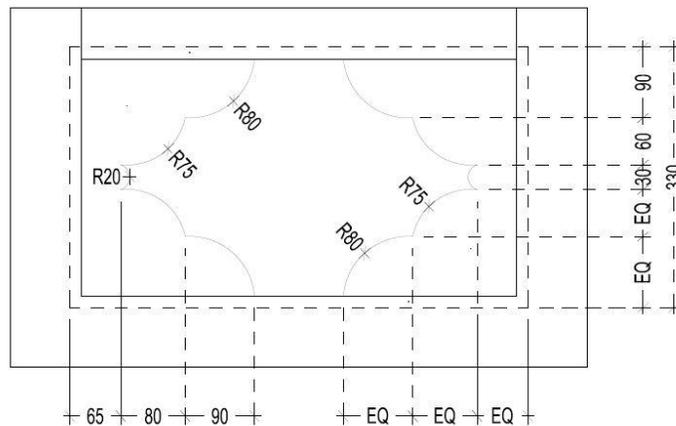


Fig.11Tshegen Dimensions

6.5 Kachung Dimensions

The dimensions of kachung for all types of windows shall remain constant as shown in **Fig.12 (a)** and **Fig.12 (b)**.

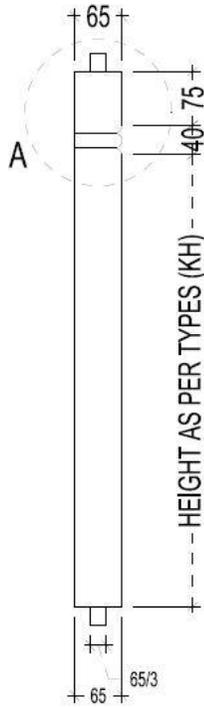


Fig.12 (a) Typical Cross Section of Kachung

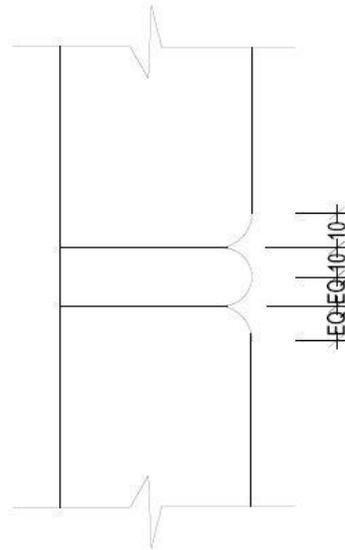


Fig.12 (b) Blown up at A

However, the height KH shall vary based on the types of window as shown in **Table.8**

Window Type	Height (KH) in mm
Type II-A	1110
Type II-B	330
Type II-C	810

7 Others

7.1 Windows with Door

7.1.1 Species of the window frame and door frame shall be same

7.1.2 Common frame between doors and windows shall be the size of the door

7.1.3 Design and sizes for doors shall be referred to **FDBTS 293: 2021** and design and sizes for windows shall be referred to **FDBTS 343: 2021**

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7.1.4 Except for internal doors, the exterior door frame which are either with windows or in isolation, the height of the door shall be adjusted accordingly to align with windows as shown in **Fig.11**

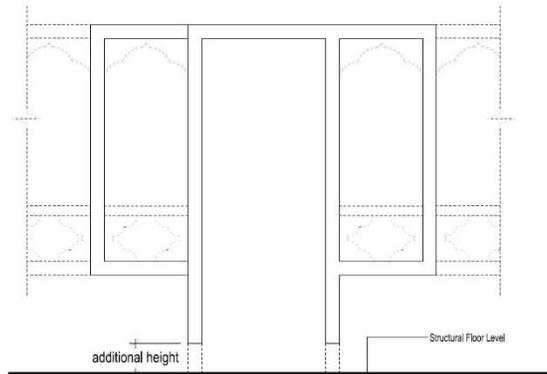


Fig.11 Typical Design of Door with Windows

7.2 Ventilators

The design and replication of the modules shall be referred to Window Type I-C of this standard. However, a minimum height of 600 mm shall be maintained.

8 Finishing

8.1 All surfaces of the frames shall be fine and smooth finished with minimum 120 grit abrasive before delivery. The unexposed surfaces in contact with either wall or lintel shall be coated with moisture barrier materials.

8.2 Window frames for wet areas shall be made water resistant on all exposed sides with suitable wood preservatives.

9 Marking

All frames shall be provided with the following information:

- a) Name of Manufacturer trade-mark
- b) Timber Species
- c) Designation
- d) Batch number; and
- e) Month and year of manufacture.

10 Sampling

In any consignment all the frames of the same type, size and manufactured from the same species of wood under similar conditions of production shall be grouped together to constitute a lot. Samples shall be selected and tested from each lot separately to determine its conformity or otherwise to the requirements of this standard.

The number of samples to be selected at random from a lot for inspection shall depend upon the size of the lot (the number of frames in the lot) and shall be in accordance to the information given in the **Table**

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7. All the frames selected in the sample shall be inspected for material, dimensions, tolerances, workmanship, joinery and finish.

A frame, which is not meeting any one of the requirement, shall be considered as defective. A lot shall be considered as conforming to the requirements of this standard in case the number of defective frames found in the sample does not exceed the permissible number of defectives. However, the defective ones shall not be counted for supply.

Table 9- Sample size and permissible number of defectives

Lot Size	Sample Size	Permissible number of Defectives
Up to 50	8	0
51 to 100	13	1
101 to 150	20	2
151 to 300	32	3
301 to 500	50	5
501 and above	80	7

11 Information to be supplied by the Purchaser

The purchaser shall supply the following information at the time of placing the order:

- a) The purchaser shall provide details of requirements,
- b) Whether any other provisions has to be made;
- c) Whether the frames are to be polished or painted.

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ANNEX A

List of Commonly available/used timber species

Note: the timber classification is based on the Royalty Schedule approved by the Ministry of Agriculture and Forest. However the list is subjected to change as per the government directives

a) Special Class

Sl. No	Scientific Name	Timber Type	Local Name				Use			
			Dzongkha	Sharchhop	Lhotsham	English	Door & Window (Shutter)	Door & Window (Frame)	Flooring	Panelling
1	Acacia catechu	Broadleaved	Toeja	Toeja	Khair	Cutch tree	yes	yes	yes	yes
2	Aquilaria agalocha	Broadleaved	Agoor	Agoor	Aghoree	Agarwood	no	no	no	no
3	Cupressus	Conifer	Tshendey	Tshenden-shing	Dhupi	Cypress	yes	yes	yes	Yes
4	Dalbergia sissoo	Broadleaved	Jaseng	-	Sissoo	North Indian Rosewood	Yes	Yes	Yes	Yes
5	Juglans regia	Broadleaved	Ta-shing	Kheshing	Okhar	Walnut	Yes	Yes	Yes	Yes
6	Junipers spp.	Conifer	Shoop	Shookpu-shing	Dhupi	Juniper	yes	yes	yes	Yes
7	Morus laevigata	Broadleaved	Tshende	Phroom-tekpa shing	Kimbu	Himalayan Mulberry	Yes	Yes	Yes	Yes
8	Shorea robusta	Broadleaved	-	-	Sal	Sal tree	Yes	Yes	Yes	Yes
9	Taxus baccata	Conifer	Ha-shing	Keerang-shing	Dhengre salla	Yew	yes	yes	yes	yes
10	Tectona grandis	Broadleaved	-	-	Sagoon	Teak	Yes	Yes	Yes	Yes

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b) A Class

Sl. No	Scientific Name	Timber Type	Local Name				Use			
			Dzongkha	Sharchhop	Lhotsham	English	Door & Window (Shutter)	Door & Window (Frame)	Flooring	Panelling
1	Acer spp.	Broadleaved	Chalam	Sermaling-shing	Kapasey	Maple	yes	yes	yes	yes
2	Albizia lebbeck	Broadleaved	Khrithang-shing	-	Kalo siris	Lebbek tree	yes	yes	yes	yes
3	Betula alnoides	Broadleaved	Taap	Char-shing	Saur	Birch	yes	yes	yes	yes
4	Betula bhutanica	Broadleaved	Taap	Chaar-shing	Bhoj Patra	Birch	yes	yes	yes	yes
5	Dipterocarpus macrocarpus	Broadleaved	-	Hollong	-	-	yes	yes	yes	yes
6	Duabanga grandiflora	Broadleaved	Patang shing	Bikaling shing	Lampatey	-	yes	yes	yes	yes
7	Gmelina arborea	Broadleaved	Gamar shing	Kholom shing	Gamari/Kha mari	Beechwood	yes	yes	yes	yes
8	Michelia champaca	Broadleaved	Kha-shing	Kar-shing	Champ	Champak tree	yes	yes	yes	yes
9	Phoebe goalparensis	Broadleaved	-	Sechanglu-shing	Bonsum	Assam Teak	yes	yes	yes	yes
10	Michelia excelsa	Broadleaved	-	Champay-shing	Rani champ	The Temple Magnolia Doltsopa	Yes	Yes	Yes	Yes

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Sl. No	Scientific Name	Timber Type	Local Name				Use			
			Dzongkha	Sharchhop	Lhotsham	English	Door & Window (Shutter)	Door & Window (Frame)	Flooring	Panelling
11	Pinus Bhutanica	Conifer	Tongphu	Chang-shing	Salla	Bhutan pine	Yes	Yes	Yes	Yes
12	Pinus wallichiana	Conifer	Tongphu	Chang-shing	Salla	Bluepine	Yes	Yes	Yes	Yes
13	Terminalia mycriocarpa	Broadleaved	-	-	Hollok/Panisaj	East Indian almond	Yes	Yes	Yes	Yes
14	Terminalia tomentosa	Broadleaved	-	-	Pakhasaj	Indian Laurel	Yes	Yes	Yes	Yes

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c) B Class

Sl. No	Scientific Name	Timber Type	Local Name				Use			
			Dzongkha	Sharchhop	Lhotsham	English	Door & Window (Shutter)	Door & Window (Frame)	Flooring	Panelling
1	<i>Abies densa</i>	<i>Conifer</i>	Dung-shing	Waangshing	Gobresalla	Silver fir	Yes	Yes	Yes	Yes
2	<i>Acrocarpus framinifoliosus</i>	<i>Broadleaved</i>	-	-	Mandaney	Indian Ash	Yes	Yes	Yes	Yes
3	<i>Adina cordifolia</i>	<i>Broadleaved</i>	-	-	Haldu	Kadam	yes	yes	yes	yes
4	<i>Ailanthus grandis</i>	<i>Broadleaved</i>	-	-	Gokul	Tree of Heaven	No	No	No	No
5	<i>Alangium excelsa</i>	<i>Broadleaved</i>	-	-	Jhikri	Alangium	No	No	No	No
6	<i>Ammora willichii</i>	<i>Broadleaved</i>	-	-	Lali	Amoora wallichii King	Yes	Yes	Yes	Yes
7	<i>Artocarpus chaplasi</i>	<i>Broadleaved</i>	-	-	Latar	Jack tree	no	no	no	no
8	<i>Bohemeria regulosa</i>	<i>Broadleaved</i>	-	Dongtsong-Shing	Dhar	False nettles	No	No	No	No
9	<i>Bucklandia populea</i>	<i>Broadleaved</i>	-	-	Pipla	Pipli tree	Yes	Yes	Yes	Yes
10	<i>Bombax ceiba</i>	<i>Broadleaved</i>	Pema geyser	Pema geyser	Semal	Cotton tree	No	No	No	No

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Sl. No	Scientific Name	Timber Type	Local Name				Use			
			Dzongkha	Sharchhop	Lhotsham	English	Door & Window (Shutter)	Door & Window (Frame)	Flooring	Panelling
11	<i>Cassia fistula</i>	Broadleaved	-	Dhongkala say Shing	Sonalu	Indian laburnum	No	No	No	No
12	<i>Cedrela toona</i>	Broadleaved	Chhuen-shing	Rawa shing	Tooni	Chinese Mahagony	Yes	Yes	Yes	Yes
13	<i>Chukrasia tabularis</i>	Broadleaved	-	-	Chekrasi	White Cedar	Yes	Yes	Yes	Yes
14	<i>Elaeocarpus</i> spp.	Broadleaved	-	Gasha-thung shing	Bhadrase	Wooden begar (Olive fruited)	Yes	Yes	Yes	Yes
15	<i>Larix griffithii</i>	Conifer	Zaashi	-	Bhangre salla	Larch	Yes	Yes	Yes	Yes
16	<i>Phoebe bainesiana</i>	Broadleaved	-	-	Aangare	Bonsum	Yes	Yes	Yes	Yes
17	<i>Picea spinulosa</i>	Conifer	Bashi	-	-	Spruce	Yes	Yes	Yes	Yes
18	<i>Pinus roxburghii</i>	Conifer	Theytong	Roinangshing	-	Chirpine	Yes	Yes	Yes	Yes
19	<i>Schima wallichii</i>	Broadleaved	Puyam	Zalashing	Chiluane	Chinese Guggar tree	Yes	Yes	Yes	Yes
20	<i>Tsuga dumosa</i>	Conifer	Sah shing	-	Dengre salla	Hemlock	Yes	Yes	Yes	Yes
21	<i>Alnus</i> spp.	Broadleaved	Gama shing	Gamo shing	Utis	Nepal Black Sedar	No	No	No	No

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Sl. No	Scientific Name	Timber Type	Local Name				Use			
			Dzongkha	Sharchhop	Lhotsham	English	Door & Window (Shutter)	Door & Window (Frame)	Flooring	Panelling
22	<i>Anthocephalus kadamba</i>	Broadleaved	-	-	Kadam	burflower-tree	Yes	Yes	Yes	Yes
23	<i>Artocarpus hirsuta</i>	Broadleaved	-	-	Aini/Koko	Wildjack or Jungle Jack	no	no	no	no
24	<i>Castonopsis</i> spp.	Broadleaved	Sokay	Tshai shing	Katus	chinquapin or chinkapin	Yes	Yes	Yes	Yes
25	<i>Cinnimomum obtusifolium</i>	Broadleaved	-	-	Gansarai	Cinnamom tree	yes	yes	yes	yes
26	<i>Garuga pinnata</i>	Broadleaved	-	-	Dabdabe	Garuga	No	No	No	No
27	<i>Lagerstroemia</i> spp.	Broadleaved	-	-	Sidha	Pride of India or Queen Crape Myrtle	Yes	Yes	Yes	Yes
28	<i>Machilus</i> spp	Broadleaved	-	-	Kawla	-	Yes	Yes	Yes	Yes
29	<i>Nyssa javanica</i>	Broadleaved	-	-	Lekh chailauna	-	Yes	Yes	Yes	Yes
30	<i>Prunus nepalensis</i>	Broadleaved	-	-	Arupata	Prunus	Yes	Yes	Yes	Yes
31	<i>Pterospermum acerifolium</i>	Broadleaved	-	-	Hathipaile	Dinner plate tree, Maple leafed Bayur tree, Bayur tree	Yes	Yes	Yes	Yes
32	<i>Sterculia villosa</i>	Boardleaved	-	Frang shing	Odal	Elephant Rope tree	No	No	No	No

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Sl. No	Scientific Name	Timber Type	Local Name				Use			
			Dzongkha	Sharchhop	Lhotsham	English	Door & Window (Shutter)	Door & Window (Frame)	Flooring	Panelling
33	Syzygium spp.	Broadleaved	-	Mentsu say shing	Jamun/Ambak e	Jamun tree	Yes	Yes	Yes	Yes
34	Tetrameles nidiflora	Broadleaved	-	-	Maina	Tetrameles	No	No	No	No
35	Quercus spp.	Broadleaved	Bjishing	-	-	Oak	Yes	Yes	Yes	Yes

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Bhutan Board Products Limited

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Department of Forests and Park Services
Ministry of Agriculture and Forest

Mr. Tashi Norbu Waiba

Association of Wood based Industries

Mr. Sangay Gyeltshen

Department of Engineering Services,
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Mr. Karma Tenzin

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Mr. Tshering Norbu

Thimphu Thromde

Mr. Sonam Tshering

Bhutan Standards Bureau

Mr. Sherab Tenzin,
Director General
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Member Secretary

Chenzom
Standardization Division
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TIMBER DOORS AND WINDOWS SUB-COMMITTEE (TC-07/SC-02)

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