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DOOR POLICY

Objective :-

Objective of this policy is to standardise specifications of doors for different grades of projects inventorise hardware for each of type of door and establish acceptance criteria. The policy shall also stipulate guidelines on methods of installation of door frame and stages when these will be installed. This policy deals with wooden doors only.

RESIDENTIAL PROJECTS

These are categorised in four groups viz.,

(1) Luxury
(2) High end
(3) Aspirational
(4) Casa

Type of doors in each of above categories are :-

(1) Fire doors – FD
(2) Entrance door
(3) Internal door
(4) Doors for wet areas or
(5) Doors exposed to rain

A. FIRE DOORS FD :

1. Used where ?
   Fire doors shall be provided at locations specified in fire NOC and are required in buildings taller than 24 meters. These will be generally required for :-

   a. Entrance to an apartment
   b. Kitchen door (if provided)
   c. Escape stairway entrance
   d. Electrical shaft (if opening into staircase)
   e. Electrical meter room
   f. Plant rooms

2. Rating of fire doors shall be as stipulated in fire NOC.

3. 2 hours or more fire rated doors may be in steel.

4. Fire rated flush doors and frames shall conform to requirement of IS 3614.

5. All fire doors supplied at site shall have CBRI test certificate for specified fire rating.

6. Escape doors shall be provided with panic bars from inside.

7. Wherever fire doors are access controlled, provision shall be made to disable the access control in case of fire (signal from FA panel can disable access control).

8. Glass used for vision panel in fire rated door (if any) shall have the same fire rating as that of the door.

9. All escape doors shall be provided with an intumescent strip in such a way that in case of fire, gap between shutter and frame is completely sealed to prevent smoke entering into escape area.

10. Above specifications will be applicable for all grades of projects.

11. Finishing / Architrave treatment will differ according to project classification.

12. All main doors and bed room doors shall be provided with cover moulding or architrave . In case of luxury and high end projects these will be provided to toilet doors to.

B. <u>ENTRANCE DOORS :</u>

1. Minimum wall thickness required shall be 150mm.

2. Door shutter shall be solid hot pressed flush door with thickness not less than 38mm.

3. Door frames shall preferably have provision of an additional rebate on outer side so that second door shutter (safety door shutter) can be installed at a later date by the customer without any alteration to existing door.

4. The door frame shall be fixed flush with outer face of the wall and joint between the frame and masonry (concrete) shall be treated with an architrave except in lobbies where wall panelling is provided.

5. In area where wall panelling is provided, door frames shall be fixed in such a way that door shutter is flush with finished wall panelling.

6. Care shall be taken to ensure that door shutter finish is identical with that of wall panelling (i.e., colour, stains or groove of the veneer) and that grooves match accurately.

7. In case of building above 70 meters in height, entrance doors shall be provided with friction hinges or concealed door stopper or door restrictor.

8. The width of the main door shutter should not exceed 3’ 6”. In case where width of the door shutter exceed 3’ 6”, floor spring shall be used instead of door hinges.

9. In all buildings with height over 70 m, the architrave shall be placed at the junction of the door frame and the wall to ensure thatcracks are not visible.

C. <u>INTERNAL DOORS :</u>

1. Doors to bed room, study room will fall in this category.

2. Door shutters shall be solid hot pressed flush doors with thickness not less than 32mm (not applicable to the rated kitchen doors).

3. Door frame sections shall not be less than 125 x 65mm in case where frames are in teak wood and not less than 100 x 65mm where these are in red meranti.

4. In case of imported factory manufactured doors, door frames shall be in MDF or HDF. Use of LDF will not be allowed.

5. Factory made door shutters shall have solid infill with peripheral framing and lock rail.

6. Adhesive glue shall be phenol formaldehyde or equivalent.

7. No alterations to door shutters shall be permissible.

8. All shutters shall be factory made. Wherever laminate or veneer finish is specified, the veneer or laminate shall be continuous over the lipping. Thickness of laminate or veneer shall not be less than 1mm. Where paper veneer is specified, its thickness should not be less than 0.5mm.

9. When two sides of door shutters have different finishes, the edge of the shutter will have the finish of external face of the shutter.

10. In all buildings with height over 70 m, the architrave shall be provided at the junction of the door frame and the wall to ensure that any cracks are not visible.

D. DOORS FOR WET AREA:

1. Bath room and wash area doors will fall in this category.

2. Door frames shall be in Teak wood or Red Meranti with section not less than 100 x 50mm.

3. In case of imported factory manufactured frames, only HDF or composite of wood pulp and PVC is permissible. MDF and LDF shall not be allowed.

4. Door shutters shall be 32mm thick solid core hot pressed door with phenol formaldehyde or marine grade adhesive and BWR grade plywood facing.

5. Factory made door shutters shall have solid infill with peripheral frame and lock rail. Resin shall be phenol formaldehyde or equivalent.

6. Door frames shall be fixed flush with the external face of bath room wall.

7. Door shutter shall be provided with 2mm thick aluminium capping on the bottom edge to prevent water ingress.

8. Frames shall be provided resting on the finished floor of area external to the bathroom.

9. Flooring of the bed room or area external to bathroom shall be continued all the way upto external face of the bath room door shutter and shall be kerbed with marble / granite threshold in such a manner that ;-

    - Threshold falls exactly under the bathroom shutter and hence is not visible when door is in closed position.

    - Thickness of the threshold shall be more than the difference in floor levels of wet & dry area (i.e., drop in floor for wet area) at the threshold.

10. Bathroom door shutter will have provision to unlock from outside in case of emergency.

11. External finish of bathroom shutter will match with the internal finish of bedroom door. Internal finish of bathroom door shall be in laminate or waterproof panel or veneer with PU polish.

12. Gap between door frame and wall on external side shall be treated with Architrave in case of high end and luxury apartments.

E. <u>DOORS EXPOSED TO RAIN:</u>

1. Door opening on terrace or opening out of the covered area of building will fall into this category.

2. All such doors shall have RCC chajja protruding atleast 2' beyond external face of wall.

3. Door frames and shutters will have same specifications for bathroom doors except that external facing shall be of marine ply.

4. Doors shall be fixed at least 30cm above the finished terrace/pavement level so that wall below can be waterproofed with watta.

5. External face of both shutter and frame need to be protected with PU paint.

6. Door shutter will have drip mould fixed at the bottom on its external face so that water does not enter inside.

7. All doors shall be compulsorily provided with door closers.

GUIDELINES FOR FIXING DOOR FRAMES

1. In CASA projects, door frames may be installed alongwith masonry by hold fasts fixed to frames with 2 screws (not nails). Hold fast shall be embedded in concrete.

2. Size of hold fasts shall be minimum 230 x 25 x 3mm with split end.

3. Hold fasts shall be fixed 3 Nos on either side, 1' from top and bottom of the frame and third at the centre.

4. Alignment of the frame is checked with respect to the starter layer of the masonry keeping allowance for internal wall plaster.

5. Vertical legs of the frame are kept secured from 'arching in' by wedging a timber batons.

6. Base and the sides of frames in contact with masonry need to be treated with bituminous paint.

IN PROJECTS OTHER THAN CASA

1. Frames shall be fixed :

   (a) Prior to internal plaster where no sub frames are provided. This will typically be applicable to aspirational and high end category projects.
   (b) After gypsum plaster where sub frames are provided. Provision of subframes shall be compulsory in luxury residential projects.

2. Imported factory manufactured frames can be fixed only after completion of internal plaster and flooring (including initial coat of polish).

3. In case of (1a) ;

   (a) Dimensional integrity of masonry opening shall be maintained by use of a template.

(b) Alignment of frame is maintained in line with plaster with the help of levelling strips of gypsum plaster or with plaster stop beads.

(c) Frames shall be fixed with coach screws or anchor fasteners suitable for masonry/concrete.

(d) Gap between the masonry and the frame is sealed with PU foam.

4. In case of (1b) ;

(a) After completion of masonry sub frames are fixed to define outer dimension of the frame (sub frame will therefore provide accurate "finished" masonry opening).

(b) Masonry opening shall be left with ;
W = width of door frame + 2 x thick of sub frame
H = height of door frame + 1 x thick of sub frame
('H' is always measured from FFL).

(c) Sub frames shall be fixed with expansion screws or expansion bolts.

(d) Sub framess can be fabricated from salwood or marine plywood or any other hardwood and will have same thickness as of internal plaster.

(e) After completion of internal plaster and flooring (including initial polishing) frames are fixed into the finished opening with coach screws or anchor bolts suitable for masonry or concrete as the case may be.

(f) Imported factory manufactured door frames are fixed with PU foam (manufacturer's instructions need to be followed).

(g) If door section has architrave sections, these can be fixed after fixing door shutters.

IMPORTANT CHECK LIST

At P.O. :-

1. Provision of procurement policy for frames & shutters will apply.
2. It will be ensured that timber scantlings obtained from cutting rebate in the frame, is supplied alongwith the frame. These can be used on architrave. (Manufacturers are stating that they use this for packaging and hence, cannot supply free of cost – need to verify).

In Godown :-

1. All frames and shutters shall be stored 1' clear off the floor.
2. Frame and shutters will be stacked horizontally with at least 3 supports.
3. Distance between supports and height of stack shall be as per manufacturer's instructions.
4. No material shall be stacked above door frame / shutters.

At site :-

1. Protect the edges of door frames by taping cardboard or foam rubber.
2. Do not remove protection plastic from factory manufactured doors until handover.
3. Should any wet work become necessary after doors are fixed, then protection plastic has to be provided.
4. Always keep the door shutter in 'closed' position when not in use.
5. Provide rubber bush and magnetic door stopper immediately after fixing door shutter.
6. Ensure that in fully open position, magnetic door stopper has full contact between strike plate and magnet.

Schedule of door hardware :-

1. Schedule of door hardware shall be as per Annexure – C enclosed.
2. Make and material of hardware shall be as per Architect's approval.

Acceptance criteria :-

1. Acceptance criteria, sampling frequency and tests to be carried out alongwith permissible deviation limits are given in Annexure – B & C hereto.

2. Any dispute regarding acceptability shall be referred to Head – Procurement whose decision shall be final and binding on the supplier.

Please refer Annexures A1, A2, A3 and A4 for standard door frame dimensions and other details.

Dimensions given in above annexures may be changed only with approval of HOD-Design.

Acceptance criteria for door shutters	-	Please refer Annexure B1
Acceptance criteria for door frames	-	Please refer Annexure B2
Schedule of hardware	-	Please refer Annexure C

Segment - Luxury

Sr.No	Module	Type	Masonary Opening		Door frame	Frame Specs	Rebate in Frame	Grooves in Frame	Shutter size			Shutter Specs	Architrave		Remarks	
			Width	Height	Size (in mm)				Width	Height	Thickness		Size (in mm)	specs		
			C	D	X x Y				E	F			A x B			
1	Main Door	Single leaf flush door	1200	2450	180 X 58	Teakwood factory manufactured frame finished in 3 coats of Polish to match shutter finish	**51 x 12**	**Specification required**	1102	2400	48 mm	40 mm thk solid core shutter with 4 mm thk **recon** veneer on both sides finished with 3 coats of Polish	na	na	The Door Frame size and design needs to be coordinated with the Lobby design in specific .	The frame size mentioned is the minimum dimension .
2	Service / Servants Entry	Single leaf flush door	1050	2450	143 X 58	Teakwood factory manufactured frame finished in 3 coats of Polish to match shutter finish	**41 x 12**	**Specification required**	952	2400	38 mm	30 mm thk solid core shutter with 4 mm thk recon veneer on both sides finished with 3 coats of Polish	na	na	The Door Frame size and design needs to be coordinated with the Lobby design in specific .	The frame size mentioned is the minimum dimension .
3	Pooja area		-	2450	-	-			-	-	-	-	-	-		

General Notes :

All the Opening sizes are clear masonary sizes . (|The dimension above FFL are 50 mm less then what are mentioned above)

Kitchen* - kitchen door is applicable only for air conditioned residences.

lipping patti provided for shutter adjustment is to be finished with 3 coats of polish to match shutter finish

All shutters should be as per quality norms defined by QC & purchase department.

Architects to check CFO NOC for the thichness of the Shutters (kitchen/ Main door) before finalizing the Door Schedule…

The Shutter Sizes mentioned are with the Lipping 'Patti' on all the sides as per detail . Lipping 'Patti' to be in Teak wood - size 8 mm.

Segment - High End

Sr.No	Module	Type	Masonary Opening		Frame	Frame Specs	Rebate in Frame	Grooves in Frame	Shutter size			Shutter Specs	Architrave		Remarks	
			Width	Height	size				Width	Height	Thickness		Size (in mm)	specs		
			C	D	X x Y				E	F			A x B			
1	Main Door	Single leaf flush door	1200	2450	180 x 58	Teakwood frame finished in 3 coats of Polish to match shutter finish	**51 x 12**	**Specification required**	1102	2400	48 mm	40 mm thk solid core shutter with 4 mm thk Veneer on both sides finished with 3 coats of Polish	75 x 12	Teakwood Architrave finished in 3 coats of Polish		accessories details
2	Other rooms	Single leaf flush door	1050	2450	143 x 58	Teakwood frame finished in 3 coats of Polish to match shutter finish	**41 x 12**	**Specification required**	952	2400	38 mm	30 mm thk solid core shutter with 4 mm thk Veneer on both sides finished with 3 coats of Polish	75 x 12	Teakwood Architrave finished in 3 coats of Polish		
3	Pooja area		-	2450		-			-	-	-	-	-	-	As per design	
4	Kitchen	Single leaf Sliding door	900	2450	143 x 58	Teakwood frame finished in 3 coats of Polish to match shutter	**41 x 12**	**Specification required**	965	2400	38 mm	30 mm thk solid core shutter with 4 mm thk Veneer on both sides finished with 3 coats of Polish	75 x 12	Teakwood Architrave finished in 3 coats of Polish		
5	Toilets	Single leaf flush door	900	2450	143 x 58	Teakwood frame finished in 3 coats of Polish to match shutter finish	**41 x 12**	**Specification required**	802	2400	38 mm	30 mm thk solid core shutter with 4 mm thk Veneer on both sides finished with 3 coats of Polish	75 x 12	Teakwood Architrave finished in 3 coats of Polish		
6	Powder Toilet	Single leaf sliding door	800	2450	na	Top hung system			865	2400	12 mm	12 mm thk Toughened Glass Shutters .			Sliding flush door can also be opted	
7	Utility	Single leaf	1100	2450	143 x 58	Teakwood frame finished in 3 coats of Polish to match shutter finish	**41 x 12**	**Specification required**	1002	2400	38 mm	30 mm thk solid core shutter with 4 mm thk Veneer on both sides finished with 3 coats of Polish	75 x 12	Teakwood Architrave finished in 3 coats of Polish		
7	Store	Single leaf door	1100	2400	143 x 58	Teakwood frame finished in 3 coats of Polish to match shutter finish	**41 x 12**	**Specification required**	1002	2350	38 mm	12 mm thk Toughened Glass Shutters .	75 x 12	Teakwood Architrave finished in 3 coats of Polish		
8	Shaft Doors for Dry balcony	Single Shutter	600	1500	na	Stone frame from all sides	**asper design**	**as per design**	548	1450	30 mm	30 mm thk solid core shutter with textured Paint same as the sorrounding wall colour.	Stone Jambs & Cill to protrude by 15 mm outside the wall face.	na		

General Notes :

All the Opening sizes are clear masonary sizes . (|The dimension above FFL are 50 mm less then what are mentioned above)

All the wooden members sizes are finished sizes .

Kitchen* - kitchen door is applicable only for air conditioned residences.

lipping patti provided for shutter adjustment is to be finished with 3 coats of polish to match shutter finish

All shutters to be of water proof quality

Architects to check CFO NOC for the thichness of the Shutters (kitchen/ Main door) before finalizing the Door Schedule…

APD - As per design

Standardization of Doors and Frames

Segment - Aspirational

Sr.No	Module	Type	Masonary Opening		Door frame	Frame Specs	Rebate in Frame	Grooves in Frame	Architraves for Frames		Shutter size		Finished Thickness	Shutter Specs	Details	Dimensions are from the Bottom of the Shutter.				Notes
			Width	Height	size						Width	Height				Height of Handle	Height of Latch	Height for the name plate location	Height for the Eye piece	
			C	D	X x Y				L1	L2	E	F								
1	**Main Door**	Single leaf flush door	**1100**	**2250**	**119 x 58**	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**45 x 12**	**No Grooves**	Out of 19 x 19 (refr drg)	38 x 6	1008	2205	42 mm	34 mm thk solid core shutter with 4 mm thk veneer on both sides finished with 3 coats of Polish	refer Annexure 1, 3, 7 -dig 1 & Annexure 4/5 for end condition	1000	900	1680	1500	Civil Work : "Return" of wall by 6" is desirable . A Threshold needs to be planned to prevent Dust & Water enrty .
2	**Other rooms**	Single leaf flush door	**900**	**2250**	**94 x 58**	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**35 x 12**	**No Grooves**	Out of 19 x 19 (refr drg)	38 x 6	808	2205	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3, 8 -dig 4 & Annexure 4/5 for end condition	1000	900	na	na	For flats Above 90 Mtrs all the internal Doors to have Door Closer .
3	**Kitchen***	Single leaf Sliding door	**900**	**2250**	**N / A**	Stone frame. Polished	**na**	**No Grooves**	NA	NA	1000	2250	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 6, 8 -dig 3, Annexure 3 dig 2 / 3	1000	900	na	na	To ensure clear opening size for the movement of the Kicthen/dry balcony Gadets (Washing machine /fridge etc0
4	**Utility next to the Kitchen**	Double leaf un equal shutter .	**1100**	**2250**	**N / A**	Stone frame. Polished	**na**	**No Grooves**	NA	NA	as/design	as/design	as per detail	Aluminum Sliding Folding Door as per detail Drawing .	NA	as/design	900	na	na	To ensure that the clear opening is enough for the movement of Washng machine .
5	**Utility away from kitchen**	Single leaf flush door	**900**	**2250**	**94 x 58**	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**35 x 12**	**No Grooves**	Out of 19 x 19 mm (refr drg)	38 x 6	808	2205	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3 & Annexure 4/5 for end condition	1000	900	na	na	Tile drop should be planned on the outer side of door . Please refer the drawing.
6	**Store in the Kitchen**	Single leaf Openable	**800**	**2250**	**N / A**	Stone frame. Polished	Single Rebate (Size to be determined)	**No Grooves**	NA	NA	708	2205	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3 & Annexure 4/5 for end condition	1000	na	na	na	
		Sliding Door	**750**	**2250**	na	Stone frame. Polished	No Rebate	**No Grooves**	NA	NA	850	2250	32	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 6, 8 -dig 3, Annexure 3 dig 2 / 3	1000	na	na	na	
6	**Store away from Kitchen**	Single leaf flush door	**800**	**2250**	**94 x 58**	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**35 x 12**	**No Grooves**	Out of 19 x 19 mm (refr drg)	38 x 6	708	2205	32	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3 & Annexure 4/5 for end condition	1000	na	na	na	
5	**Toilets**	Single leaf flush door	**800**	**2250**	**94 x 58**	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**35 x 12**	**No Grooves**	Out of 19 x 19 mm (refr drg)	38 x 6	708	2205	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3 dig 2 / 3 & Annexure 8 -dig 4	1000	900	na	na	Threshold to be planned for the tToilet door which is abutting bedroom with wooden flooring.
			750	**2250**	N / A	Stone frame. Polished	**Specification required**	**No Grooves**	na	na	710	2225	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 3 dig 2 / 3 & Annexure 8 -dig 4	1000	900	na	na	Stone frame can be used where the frame is not in continuation with other door Frames .
6	**Shaft Doors in Deck**	Single Shutter	**600**	**1500**	na	Stone frame. Polished	**Specification required**	**No Grooves**	na	na	560	1460	32 mm	30 mm thk solid core shutter finished with textured paint same as the external wall finish.	refer Annexure -3 dig 2 / 3	1000	as/design	na	na	

General Notes :

All the Opening sizes are clear masonary sizes . (The height above FFL is 50 mm less then the mentioned height)

All the wooden members sizes are finished sizes .

Kitchen* - kitchen door is applicable only for air conditioned residence

All shutters should be as per quality norms defined by QC & purchase department.

All dimension mentioned are in mm .

Segment - CASA

Sr.No	Module	Type	Masonary		Door frame	Frame Specs	Rebate in Frame	Grooves in Frame	Lipping "Patti"		Shutter size		Thickness	Shutter Specs	Details	Dimensions from the bottom of the Door shutter				Notes
			Width	Height	size						Width	Height				Height of Handle	Height of Latch	Height Of the Name Plate	Eye piece	
			C	D	X x Y				L1	L2	E	F								
1	**Main Door**	Single leaf flush door	1100	2250	119 x 58	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**43 x 12**	**No Grooves**	Out of 19 x 19 (refr drg)	38 x 6	1008	2205	40 mm	40 mm thk solid core shutter finished with 0.8 mm thk textured laminate on both sides	refer Annexure 1, 3, 7 -dig 1 & Annexure 4/5 for end condition	1000	900	1680	1500	
2	**Other rooms**	Single leaf flush door	900	2250	94 x 58	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**35 x 12**	**No Grooves**	Out of 19 x 19 (refr drg)	38 x 6	808	2205	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3, 8 -dig 4 & Annexure 4/5 for end condition	1000	900	na	na	
3	**Kitchen***	Single leaf Sliding door	900	2250	**Specification required**	**Stone frame. Polished**	**Specification required**	**No Grooves**			1000	2250	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 6, 8 -dig 3, Annexure 3 dig 2 / 3	1000	900	na	na	
4	**Utility next to the Kitchen**	Double leaf unequal shutter .	1100	2250	**Specification required**	**Stone frame. Polished**	**Specification required**	**No Grooves**			APD	APD	as per detail	Aluminum Sliding Folding Door as per Drawing .	NA	APD	900	na	na	
5	**Utility away from kitcheb**	Single leaf flush door	900	2250	94 x 58	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**35 x 12**	**No Grooves**	Out of 19 x 19 (refr drg)	38 x 6	808	2205	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3 & Annexure 4/5 for end condition	1000	900	na	na	
6	**Store in the Kitchen**	Single leaf Openable	800	2250	**Specification required**	Stone frame. Polished	**Single Rebate (Specification required)**	**No Grooves**			760	2230	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3 & Annexure 4/5 for end condition	1000	na	na	na	
		Sliding Door	750	2250	**Specification required**	Stone frame. Polished	**No Rebate**	**No Grooves**			850	2230	32	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 6, 8 -dig 3, Annexure 3 dig 2 / 3	1000	na	na	na	
6	**Store away from Kitchen**	Single Leaf Door	800	2250	94 x 58	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**35 x 12**	**No Grooves**	Out of 19 x 19 (refr drg)	38 x 6	714	2207	32	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3 & Annexure 4/5 for end condition	1000	na	na	na	
5	**Toilets**	Single leaf flush door	800	2250	94 x 58	**Red Miranti** frame finished in 3 coats of Polish to match shutter finish	**35 x 12**	**No Grooves**	Out of 19 x 19 (refr drg)	38 x 6	714	2207	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 1, 3 dig 2 / 3 & Annexure 8 -dig 4	1000	900	na	na	
			750	2250	**Specification required**	Stone frame. Polished	**Specification required**	**No Grooves**			710	2230	32 mm	30 mm thk solid core shutter finished with 1 mm thk laminate on both sides	refer Annexure 3 dig 2 / 3 & Annexure 8 -dig 4	1000	900	na	na	
6	**Shaft Doors in Decks .**	Single Shutter	600	1500	**Specification required**	Stone frame. Polished	**Specification required**	**No Grooves**	na	na			32 mm	30 mm thk solid core shutter finished with textured paint same as the external wall finish.	refer Annexure -3 dig 2 / 3	1000	APD	na	na	

General Notes :

All the Opening sizes are clear masonary sizes . (The height above FFL is 50 mm less then the mentioned height)

All the wooden members sizes are finished sizes .

19 mm Stone considered for the " stone frames ".

Kitchen* - kitchen door is applicable only for air conditioned residences.

lipping patti provided for shutter adjustment is to be finished with 3 coats of polish to match shutter finish

All shutters should be as per quality norms defined by QC & purchase department.

Fire rated Door set can used for staircases where the door is not directly seen from the lobby .

Where the Door is directly in the lobby the Door needs to follow the Specification of the Main door of the Flats But.

The Shutter Sizes mentioned are with the Lipping 'Patti' on all the sides as per detail . Lipping 'Patti' to be in Teak wood - size 8 mm.

APD - As per design

ACCEPTANCE CRITERIA FOR DOOR SHUTTERS

Related IS code : As per IS 2202 (part- 1) - 1999

ANNEXURE - B1

Testing Criteria : As per IS 4020 (part 1 to 16) - 1998

Test Frequency : one door sampel for Lot size upto 300nos and 2 door samples for above 300 numbers

SR. No.	NAME OF THE TEST	PROCEDURE	TO BE CONDUCTED WHEN	TO BE CONDUCTED WHERE	ACCEPTENCE CRITERIA	OUTCOME OF FAILURE (Action to be taken in case of test failure)	Action to be taken in case of Performance Failure (i.e. after installation of doors)
1	**Dimensions and squareness**	Measure the Height, width, thickness & squareness of the door sample	After material arrived at site	At site by QC personnel / Random door sample send to external laboratary	The dimensions of nominal width and height shall be within a limit of +/-5mm. The door shutter shall not deviate by more than 1mm on a length of 500mm. The thickness of the door shutter shall be uniform throughout with the permissible variation of not more than 0.8mm between any two points. the nominal thickness of the shutter shall be within a limit of +/-1mm	Lots not confirming will not be put to use and will be returned back to the supplier	**PHASE I** If item fails during first 24 months from delivery, the following to be recovered from supplier a) Replacement cost b) Penalty recovery from supplier (Penalty will be 10% of the failed door value which includes door installation cost) Recovery to be enabled through a recurring performance bank guarantee which shall be taken from the suppliers. The applicable peformance bank guarantee will be 5 lakhs for the suppliers having annual turnover of more than 30 lacs from lodha and 2 lacs for the suppliers having annual turnover of less than 30 lacs from Lodha. **Phase II: (Deadline 31 Dec 2010)** At least 10 suppliers to be evaluated and ranked jointly by quality and purchase dept. Standard manufacturing procedures and incentive methods to be developed for the suppliers to manage our quality standards. It will help us to eliminate "Failure in test" clause. Quarterly audits to be made jointly with purchase and quality department for selected suppliers.
2	**General Flatness**	**Measurement of Twist**: the door shutter is held freely in vertical plane or mounted vertically so that there is no external restraint.Any three corners of this face determina a plane of reference. The deviation of the fourth corner is measured with respect to this plance with a plumb bob. Measurement of Warping and cupping: Measurement of warping and cupping on one of the faces of the door shutters is measured with respect to straight lines parallel to each edge and located 20mm or less from the edge. The distance of the face from these straight lines is measure.	After material arrived at site	Random door sample send to external laboratary	The twist, cupping and warping shall not exceed 6mm	1% devaluation on P.O amount	
3	**Local planeness test**	The door shutter shall be placed in a horizontal position or held freely in convenient position. Squares of 200mmx200mm shall be drawn, spread over the entire area of the shutter for measurement purpose. A suitable measuring device suitably fixed at the centre of a straight edge of 150mm length shall be placed on the ten different squares on the face of the door shutter. The depth at each point shall be measured to an accuracy of 0.1mm	After material arrived at site	Random door sample send to external laboratary	The depth of deviation measured at any point shall not be more than 0.5mm	1% devaluation on P.O amount	
4	**Impact indentation test**	the door shutter shall be placed horizontally resting on a suitable frame equally on all the four edges. A steel ball of about 50mm diameter and weighing 500+/- 10g shall be allowed to fall freely from a height of 750 +/- 5mm at any randomly selected 10 different points on both the surfaces of the door shutter leaving distance of 75mm from the deges. The depth of indentation shall be measured to an accuracy of 0.1mm	After material arrived at site	Random door sample send to external laboratary	No defects such as cracking, tearing or delamination and the depth of indentation shall not be more than 0.2mm	1% devaluation on P.O amount	
5	**Flexure test**	The door shutter shall be held firmly along one long edge and the adjacent short edge and it shall be ensured that the three fixed corners are in one horizontal plane. Loading shall be done on the top corner of the door shutter 50 mm from the free edge, resulting deformation in the vertical plane of the door shutter. The loading shall be done in steps of 100 N (10 kgt) upto a maximum of 500 N (50 kgf) and unloaded after 15 min in the same steps. The deflection shall be measured initially and after 15 min with the load and finally after 3 min of the removal of the load. All deflections of the free corner shall be measured to an accuracy of 0.1 mm with reference to the diagonally opposite fixed corner.	After material arrived at site	Random door sample send to external laboratary	There shall not be any residual deflection of more than one tenth of the maximum deflection. The deflection at the maximum load shall not be more than one thirtieth of the length and one fifteenth of the width, whichever is less.	1% devaluation on P.O amount	
6	**Edge loading test**	The door shutter shall be hung vertically, bearing or with 12 mm dia pivot supported at the top and bottom or hinged on one longitudinal edge.The load shall be applied on the top of the other longitudinal edge parallel to the plane of the door shutter at a distance of 25 f 5 mm from the edge. The loading shall be done in steps of not more than 200 N (20 kgl) at a time until a load of 1 000 N (100 kgf) is reached and kept constant for a period of 15 min. The deflection at the loaded edge at the end of 15 min shall be recorded. The deflection shall also be measured 3 min after the removal of the load to an accuracy of 0.1 mm.	After material arrived at site	Random door sample send to external laboratary	The deflection of the edge at the maximum load shall not be more than 5 mm. On removal of the loads, the residual deflection shall not be more than 0.5 mm, failing which the test may be repeated on the other edge in the reverse direction. Also there shall be no lateral buckling by more than 2 mm during loaded condition and no residual lateral buckling after removal of the load.	1% devaluation on P.O amount	

SR. No.	NAME OF THE TEST	PROCEDURE	TO BE CONDUCTED WHEN	TO BE CONDUCTED WHERE	ACCEPTENCE CRITERIA	OUTCOME OF FAILURE (Action to be taken in case of test failure)	Action to be taken in case of Performance Failure (i.e. after installation of doors)
7	**Shock Resistance test**	The door shutter shall be hinged in a vertical plane flush with a fixed frame. The rope with a leather ball of approximately 200 mm in dia and containing 50 N (5 kgf) of sand hung vertically by a rope required for giving the shock for soft and light body impact. for soft and heavy body impact A spherical leather sail cloth bag of approximately 350 mm in diameter is filled with sand until it reaches a mass of 300 N	After material arrived at site	Random door sample send to external laboratary	There shall be no visible damage in any part of the door after twentyfive blows on each end. Door shutters, when tested in accordance with 3.1 of IS 4020 (Part 8), the normally hung shutter, with angings, fixings and fastenings hould with stand without any significant permanent deformation and without deterioration the five impacts on both sides of the shutter	1% devaluation on P.O amount	
8	**Buckling test**	The door shutter shall be placed in a rigid rig and fixed in a way similar to actual installation. The door shutter shall be opened to an angle of 90 * 5' and secured at its top free corner to prevent any lateral movement. A typical method of attachment of the load and its location is shown in Fig.1 for guidance. A load of 400 N (40 kgf) is applied at 1000 f 5 mm from the bottom of the door at right angles to the plane of the door shutter and in the direction of opening, in increments of 100 N each. Incremental load is applied only after stabilization of the deformation created by the previous loading. The deformation at the lower free corner is measured to an accuracy of 1 mm 5 minutes after the application of the load and 15 minutes after unloading.	After material arrived at site	Random door sample send to external laboratary	Shall not show any detoriation and any residual deformation more than 5 mm after 15 minutes of unloading and the initial deflection also shall not be more than 50 mm.	1% devaluation on P.O amount	
9	**Slamming Test**	Suitable fixture shall be made to hold the door shutter horizontally flat and hinged on one long edge and resting freely on a wooden rail 50 mm from the other long edge. The door shutter shall be placed in a horizontal position suitably hinged at three equidistant places or at the discretion of the manufacturer on one of the long edges. The other edge is lifted up so as to form an angle of not less than 30" at the hinged edge and allowed to drop under its own weight, 50 times on the rail at the rate of 4-5 drops per minute.	After material arrived at site	Random door sample send to external laboratary	Shall not have any visible damage in any part of the door at the end of 50 successive impacts. Only superficial damage of laminate is accepted	1% devaluation on P.O amount	
10	**Misuse test**	Suitable frame to hold the door simtter vertically in a manner similar to its installation in practice shall be made. The door shutter shall be hinged on one long edge to the frame. A hard wood slip such as Laurel,Sal, Bijasal of 50 mm x 50 mm and of thickness, adequate to match the thickness of the door shutter shall be placed vertically at the bottom of the hinged stile of the frame in such a way as to keep the door ajar at 70 f 5'. The force is applied progressively to the handle or equivalent position and at right angles to the plane of the frame in the direction of closing until it reaches 300 N (30 kgf)	After material arrived at site	Random door sample send to external laboratary	There shall not be any permanent deformation of the fixing or any other part of the door set in hindering its normal working after the test.	1% devaluation on P.O amount	
11	**End Immersion Test**	The door shutter shall be immersed to a minimum depth of 300 mm in water at ambient temperature for 24 hours and then allowed to dry for 24 hours at ambient temperature. This cycle shall be repeated eight times.The door shutter shall be examined for any delamination in the immersed portion of the shutter	After material arrived at site	Random door sample send to external laboratary	Shall have no delamination at the end of the test. This test shall be carried out on door shutters only after they pass in glue adhesion test.	1% devaluation on P.O amount	
12	**Glue Adhesion Test**	Two square sections, 150 mm x 150 mm shall be cut from the corners of the door shutter. These corner sections, as cut from the door shutter, shall be submerged in a pan of water at ambient temperature, care being taken that the pieces do not touch the bottom of the pan. The water shall then be brought to the boiling temperature and maintained at this temperature for 4 hours and then dried in a chamber at 27 f 2°C and relative humidity of 65 f 5 percent for 24 hours. At the end of the drying period the samples shall be examined for delamination. Glue lines in all the four exposed edges of the plywood on both faces of a specimen and the glue lines between the plywood faces and the stile and rail shall be examined for delamination.	After material arrived at site	Random door sample send to external laboratary	Shall be considered to have passed the test if no delamination has occurred in the glue lines in the plywood or if no single delamination of more than 50mm in length and more then 3mm in depth has occurred in the assembly glue lines between the plywood faces and stile and rail. Delamination at a knot, knot hole, a pitch pocket and worm hole or other permissible; wood defects shall not be considered in assessing the sample. A door shutter shall be deemed to have passed the test if both the specimen tested passed the test.	2% devaluation on P.O amount	
13	**Screw withdrawal Resistance Test**	This test shall be carried out on three test specimens of size 150 mm x 75 mm cut along the longitudinal edge of upper/lower half portion of the door shutter, using a suitable test equipment having an arrangement to pull the screws fixed on the specimen so as to measure the maximum load required for complete withdrawal. Prior to testing, the test specimen shall be conditioned at 27 f 2°C and at relative humidity of 65 f 5 percent for one week. Two prebores of 3 mm diameter shall be made along the stile at an interval of 50 mm on the face and along the edges of the specimen. Screws of size No. 8 and 50 mm length (see IS 6760) shall be fixed at these points to a depth of 25 mm. The specimen shall then be placed on the test equipment and load applied at the specified rate of 2 mm per minute for withdrawal of one screw at a time. The maximum load required for complete withdrawal shall be noted in each case.	After material arrived at site	Random door sample send to external laboratary	The required load to withdraw the screw completely shall not be less than 1000 N. On withdrawal, there shall be no visible damage to the surface either by delamination or extra chipping off at the points of withdrawal.	1% devaluation on P.O amount	

SR. No.	NAME OF THE TEST	PROCEDURE	TO BE CONDUCTED WHEN	TO BE CONDUCTED WHERE	ACCEPTENCE CRITERIA	OUTCOME OF FAILURE (Action to be taken in case of test failure)	Action to be taken in case of Performance Failure (i.e. after installation of doors)
14	**Knife test**	The test shall be carried out on a stout table to which is screwed a wooden batten against which the edge of the test specimen is placed. The knife is inserted with its cutting edge parallel to the grain of the outer veneer and worked into, or if possible, along a glue line and the veneer is prised upward. It is essential that the knife be firmly guided along the glue line.	After material arrived at site	Random door sample send to external laboratary	The adhesion is excellent when it is difficult to find the glue line and impossible to keep the tool within it for more than 6 mm without cutting into adjuncent wood. On prising upwards, the veneer/facing sheet usually breaks off over a width only slightly greater than that of the tool.	1% devaluation on P.O amount	

Notes

All the shutters visually inspected for Test 1, Bubbles, Undulations, scraches etc. at site
For laboratory test, quality team will select and stamp the flush door from the lot being manufactured at supplier's factory. The selected flush door will be sent by supplier to our site with remaining quantity. From the site it will be
All the tests at external laboratory should be conducted without decorative veneer / laminate.
All the shutters should be packed with Polyethyelene bags and Tightly strapped with corrugated sheets.

ACCEPTANCE CRITERIA FOR DOOR FRAMES

Type of Wood : Teak / Red meranti **ANNEXURE - B2**

Checking Criteria : As per IS 4021 :1995

Test Frequency : For each frame

SR.NO.	NAME OF THE TEST	PROCEDURE	TO BE CONDUCTED WHEN	TO BE CONDUCTED WHERE	ACCEPTENCE CRITERIA (Second Grade)	OUTCOME OF FAILURE(ACTION to be taken)
1	**Moisture content**	With Electronic Moisture meter. 1. The moisture meter reading shall be taken at 6 points along the length of the each frame. 2. To take the average of 6 readings. 3. The average reading must comply with the acceptance criteria	After the material has arrived at site	On site by CM personnel.	Between 1st july and 30th September upto 22% and for the rest of the period upto 20% moisture content is allowed.	Lots not confirming will not be put to use and will be returned back to the supplier
2	**Sound knots and live knots**	**Visual inspection/Physical Measurement Sound knot**: A tight knot free from decay, which is solid across its fact, and at least as hard as the surrounding wood. **Live knot:** A knot free from decay and other defects, in which the fibers arc firmly intergrown with those of the surrounding wood.	After the material has arrived at site	On site by CM personnel.	Maximum 3 knots/meter with permissible size of Maximum 60mm	Accept/Reject based on meeting the alongside criteria. No devaluation.
3	**Sap wood**	**Visual Inspection Sap wood:** The outer layers of the log, which in the growing tree contain living cells and food material. The sapwood is usually lighter in color and is readily attacked by insects and fungi	After the material has arrived at site	On site by CM personnel.	Total not exceeding 25% on each surface area	Lots not confirming will not be put to use and will be returned back to the supplier
	If there are 3 knots of more than 35 mm per meter then only 10% Sap wood is allowed in a particular member of the frame.					
4	**Decayed knots, dead knots and knots holes**	**Visual inspection** **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.	After the material has arrived at site	On site by CM personnel.	Not more than 10mm size centrally located and not more than 2 knots/meter. These shall be completely filled and tightly plugged with seasoned timber of the same species and properly glued.	Accept / Reject the frames based on criteria. No devaluation.
5	**Pin holes**	**Visual Inspection Pin holes:** Hole not over 2 mm in diameter, usually darkly stained and not containing bore dust or frass.	After the material has arrived at site	On site by CM personnel.	Should not be in cluster. In finished frames all other pinholes shall be completely filled and tightly plugged with seasoned timber of the same species and properly glued.	If live termites found in the pinholes the timber will be rejected. Accept / Reject the frames based on criteria. No devaluation.
6	**worm holes**	**Visual Inspection of Worm holes**	After the material has arrived at site	On site by CM personnel.	Not Permitted.	Accept / Reject the frames based on criteria. No devaluation.
7	**Checks**	**Visual Inspection/Physical Measurement Checks :** separation of fibers along the grain which is confined to one face of a piece of wood.	After the material has arrived at site	On site by CM personnel.	One fourth of the total thickness of piece or 6mm whichever is less, provided it is fully stopped	Accept / Reject the frames based on criteria. No devaluation.
8	**Cracks**	**Visual Inspection**	After the material has arrived at site	On site by CM personnel.	Hair cracks upto 12" in length; Major cracks - length 6", width upto 1 mm and depth upto 10mm. The cracks shall not occur at joints.	Accept / Reject the frames based on criteria. No devaluation.

SR.NO.	NAME OF THE TEST	PROCEDURE	TO BE CONDUCTED WHEN	TO BE CONDUCTED WHERE	ACCEPTENCE CRITERIA (Second Grade)	OUTCOME OF FAILURE(ACTION to be taken)
9	**Dimensions, construction and workmanship**	**Visual Inspection / Physical Measurement**	After the material has arrived at site	On site by QA/QC personnel.	Dimensions +3mm -2mm for width and +2mm -3mm for thickness. The length tolerance will +5mm. All members of frame shall be exactly at right angles. All members of frame shall be straight without any warp or bow and shall have smooth, well-planed on three sides exposed at right angles to each other.	Accept/Reject based on meeting the alongside criteria. No devaluation acceptable.
11	**Antitermite treatment**	**Type of preservative** - Organic solvent. **Recommended preservative chemicals** - Copper naphthenates / copper abietates / zinc naphthenates / zinc abietates / synthetic pyrethroids / chlorpyrifos **procedure** - As per Manufacturer's specifications and application preocedure	For Ready made frames - After the frames has arrived at site **For wood** - After the material has arrived at site and Before doing the joinery work for frame	On site **by contractors**	Copper naphthenates/abietates recommended absorption shall be 0.5 kg/cum as per IS 401-2001 table no -2 Zinc naphthanates/abietates recommended absorption shall be 0.8 kg/cum as per IS 401-2001 Table No-2 Chlorpyrofos / synthetic pyrethroids recommended absorption shall be as per manufacturer's specifications	Copper naphthenates/abietates recommended absorption shall be 0.5 kg/cum as per IS 401-2001 table no -2 Zinc naphthanates/abietates recommended absorption shall be 0.8 kg/cum as per IS 401-2001 Table No-2 Chlorpyrofos / synthetic pyrethroids recommended absorption shall be as per manufacturer's specifications

NOTES

All the frames should be immediately unloaded and visually inspected when received. Rejected material to be handed over to the supplier immediately.

Detail checking should be completed by the end of next working day after delivery. On detail checking, site CM should give a report on Acceptance / rejection which should be conveyed to the suppliers.

All frames will be bought in finished form. (Polishing will be done on site by contractors)

In cetain cases, based on practical implications inspection will be conducted at supplier's factory based on the mutual agreement between Supplier and purchase department.

SCHEDULE OF IRON MONGERY / DOOR HARDWARE

ANNEXURE - C

DESCRIPTION	ENTRANCE DOOR			BEDROOM & PASSAGE			KITCHEN			BATHROOM			TERRACE		
	C	A	H & L	C	A	H & L	C	A	H & L	C	A	H & L	C	A	H & L
Friction hinges for building height > 70 mtrs	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N
Railway type hinges for building height < 70 mtrs	N	Y	Y	N	Y	Y	N	Y	Y	N	N	N	N	Y	Y
Ordinary butt hinges for building height less than 70 mtrs	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y	N	N
Night latch with lock	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
Night latch with multipoint magnetic lock	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
Decorative handle from outside	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N
Door stopper (magnetic / manual leg operated)	Y	Y	Y	Y	Y	Y	NA	NA	NA	N	N	N	N	N	N
Door buffer (rubber bush)	N	N	N	N	N	N	NA	NA	NA	Y	Y	Y	N	N	N
Internal tower bolt	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	Y	Y
Cylindrical lock	N	N	N	Y	Y	Y	N	N	N	Y	Y	Y	N	N	N
Aldrop bolt	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
Latch	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N
Door closer	N	N	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y
7 Lever mortice lock as an option to cylindrical lock	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N
Eye piece	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N

ABBREVIATIONS :-

C	**CASA**
A	**ASPIRATIONAL**
H	**HIGH END**
L	Luxury

NOTES :

1. Standard heights for fixing door hardware

All locks and lock bolts - 900 mm above FFL.

All door handles - 1050 mm 1bove FFL.

Eye piece - 1500 mm above FFL.

Bottom end of the tower bolt - 1800 mm above FFL.

2. Provision of panic bar to escape staircase door shall be as specified by the architect.

3. All service shaft doors shall have elanky locks.