





	0	verview	Criterion - 13			
1	S. N o.	Objective	Commitments	Appraisal	Points	
		Climate responsive building design	13.1.1 In order to optimize the building design appropriate climate responsive design strategies should be adopted.			
	1		13.1.2 The WWR (window to wall ratio) is limited to a maximum of 60% of gross wall area and the SRR (skylight to roof ratio) is limited to a maximum of 5% of gross roof area	By adopting appropriate climate responsive building design, the WWR and/or SSR is limited and all the foneetrations meet the SHGC	Mandatory with 2points	
			13.1.3 Demonstrate that the effective SHGC (Solar Heat Gain Coefficient)* of the fenestration (accounting for glazing, overhangs and/ or vertical fins) is compliant with the maximum SHGC requirement	requirement of ECBC 2007		
		Adequate day- lighting		Minimum of 25% of the living area should be daylighted and adequate	Mandatory	
			13.1.4 Ensure that the total daylighted area* of the proposed building is > 25% of the total	level of daylight is provided as prescribed by IS code	with 2points	
	2		at the centre of the daylighted area in a design sky condition	If the total daylighted area > 50% of total living area	Additional 1point	
				If the total daylighted area > 75% of total living area	Additional 1point	
	3	Efficient artificial lighting system	13.1.5 Perform artificial lighting simulation to demonstrate that the lighting levels in indoor spaces are maintained as recommended in NBC 2005	Over-design of lighting system is avoided as per clause	Mandatory with 2points	

		Methodo	logy	
Sr. No	Design Optimization	Analysis Steps	Study Parameters	Design Interventions
	Site &	Climate Analysia	Macro-climatic factors (Geographical location, Temperature, Humidity, Solar radiation, Rainfall, Wind, Sky-condition etc.)	Appropriate Design Strategies (Active+Passive)
1	Surrounding		Micro-climatic Factors (topography & landform, geologic & seismic data, soil quality, vegetation, local wind movement etc.)	Building Spacing (Foot- print)
2	Building Block	Solar Exposure Analysis	Critical Building Facade	Orientation, Internal space arrangement, Buffer spaces
	-	Sun-path analysis	Critical Solar Angle	Appropriate shading design
3	Fenestration	Solar Heat Gain	Window Size & Glazing Properties	WWR & Glass SHGC
		Daylight Analysis	Daylighted Area, Daylight Factor	Glass VLT
4	Internal	Artificial lighting analysis	Lighting Level & LPD	Efficient lighting schem
	Space	Daylight Integration	Daylighted Area, Daylight level & Artificial lighting layout	Lighting Controls







Glazing Inf	formation for a GRI	HA Rating Contd.,	
 Daylightin Minimu For 50% For 75% This area s 	g nm 25% of total living area % of the area illuminated b % of the area illuminated b should have correspondi	should be daylit (2 mandatory po y daylight, 1 rating point is earned y daylight, an additional point is ea ng daylight factor of:	ints) urned
	SI. No. Location	Daylight Factor Percent (1 DF: 80 lux)	
	1 Dwellings		
	Kitchen	2.5	
	Living room	0.625	
	Study room	1.9	
	Circulation	0.313	
	2 Schools		
	Class room desk top, black board	1.9	
	Laboratory	2.5—3.8	
	3 Offices		
-	General	1.9	T
	Drawing, typing	3.75	
-	Enquiry	0.6251.9	
	4 Hospitals	4.05	
-	General wards	1.25	
-	Fatilological laboratory	2.0-0.7.0	
	Stack room	0.0_10	
	Reading room	19.375	
	Counter area	25-375	
	Catalogue room	1.9-2.5	
	Note 100 lux is equal to a sky component of value 1.25% ba	ased on a 8000 lux design exterior illumination.	
	Source Table 3, IS: 2440-1975		

Glazing Information for a GRIHA Rating Contd.,

• Solar Heat Gain Coefficient

• Should meet the ECBC requirements

		WWR≤40%	40% <wwr≤60%< th=""></wwr≤60%<>
Climate	Maximum U-factor	Maximum SHGC	Maximum SHGC
Composite	3.30	0.25	0.20
Hot and Dry	3.30	0.25	0.20
Warm and Humid	3.30	0.25	0.20
Moderate	6.90	0.40	0.30
Cold	3.30	0.51	0.51

• Documentation details required to be furnished

Type of spaces (air	Window type			dimensi mm	on in	proposed	Shading din in mm	nensions		Multipli- cation	Adjusted SHGC of the	recomm- ended	
conditioned / non-air conditioned)	Orientation	Nomen- clature *	Number of windows	Height	Width	(SHGC as per manufacturers cut sheet)	Depth of horizontal fin	Depth of vertical fin	Projection factor (PF)	factor (M)	fenestration (glass SHGC x MF)	SHGC (Table 13.1)	Remark
Note: Spac	e name shou	ld be sam	le as giver	n in the a	rchitect	ural drawing an	d AC/non-A	C spaces s	hould be se	gregated	and the SHGC	calculator	should be















































• Requirement:

- To use low-energy/recycled materials/finishes/products in the interiors, which minimize the use of wood as a natural resource
- To use low-energy materials and products, such as composite wood products/renewable materials/reused wood/low embodied energy products/products which utilize industrial waste/recycled products like **glass**, crushed stone and other waste, such as terrazzo, or which are resource efficient finishes such as finished concrete flooring, ceiling tiles, and ceramic tiles



Acoustic Requirements for GRIHA Rating

• Ensuring that the indoor noise levels conform to the levels described in the NBC 2005 (BIS 2005a)

Table 29.2Acceptable indoor noiselevels for various buildings

Location	dB (A)
Auditoria and concert hall	20–25
Radio and television studios	20-25
Music rooms	25-30
Hospitals and cinema theatres	35-40
Apartments, hotels, and homes	35-40
Conference rooms, small offices and libraries	35–40
Court rooms and class rooms	40-45
Large public offices, banks, and stores	45-50
Restaurants	50-55



Sustainability, rests on Infinite Possibilities

SAINT-GOBAIN GLASS

