



Increasing use of Architectural Glass

– Need for regulation



About CCPS

The Confederation of Construction Products and Services is a non-profit organisation which is dedicated to the sustainable growth of construction products sector by working collectively to improve quality and efficiency in building industry in India.

Main Objectives:

Work with Construction Industry, Government bodies, Users, and Specifies to:

1. Contribute towards improvements in the quality and efficiency in construction in the country
2. Influence the development of the construction sector as organized, forward-looking and responsible

CCPS Focus Areas:

1. Develop appropriate Standards and Code of Practices
2. Develop and Conduct Training Programs and initiatives
3. Improve Standardization and Pre-assembly in building industry
4. Setup systems to collect and disseminate market data

CCPS Activities

- ◆ Prepared "Guidelines on Use of Glass in Buildings- Human Safety"
- ◆ Published "Manual on Hand Held Power Tools"
- ◆ Associated with Central PWD for preparing "Manual on Door & Window Details for Residential Buildings."
- ◆ Associated with Bureau of Energy Efficiency for preparing "Energy Conservation Building Code 2007"
- ◆ Published four in series "Construction Products in India"
- ◆ Organised 32 workshops for 1125 professionals at 8 places on "Selection of appropriate glass in buildings."
- ◆ Organised 5 workshops for 224 professionals at 4 places on "Passive Fire Protection in buildings"
- ◆ Organised "Basic training course on systems & concepts of waterproofing"
- ◆ Organised training programme on "Birla White Contractor's Meet"
- ◆ Organised more than 19 workshops on "Guidelines on use of glass in buildings-Human Safety"

OUR JOURNEY

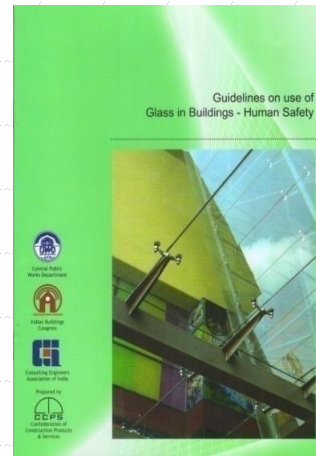
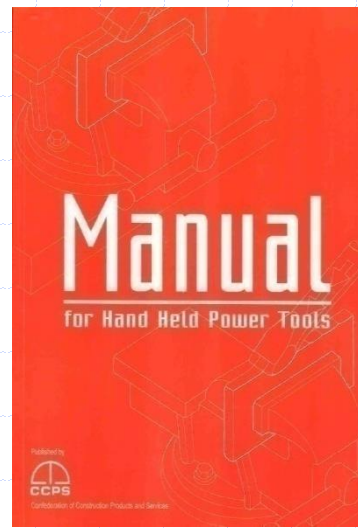
PRODUCTS STANDARDS AND CODE OF PRACTICE

1. Standardization of Doors and Windows Sizes for Residential Buildings
2. Energy Conservation Building Code 2007
3. Manual for Hand Held Power Tools
4. Guidelines on Use of Glass in Buildings: Human Safety

PROJECTS IN PIPELINE

PRODUCTS STANDARDS AND CODE OF PRACTICE

1. Selection of Hardware for use in buildings and interiors- Doors, Windows, Furniture and Glass
2. Selection and Application of Organic coated Adhesive Backed Polymeric films in glazing for Safety and Solar control purpose
3. Selection, Installation & Maintenance of Ceramic Tiles
4. Selection and Application of Façade
5. Selection of Fire Seals for Buildings



Some of the publications brought out by CCPS.

Representation of CCPS in the various Organizations and Committees:

- **Bureau of Indian Standards (IBC):** "Building Construction Practices Including Painting, Varnishing and Allied Finishes Sectional Committee CED 13".
- **Bureau of Indian Standards (IBC):** "Glass, Glassware and Laboratory ware Sectional Committee CHD 10".
- **Panels on Use of Glass in Buildings P1 & P2:** 'Use of Glass in Buildings' and 'Glazing System' under CED 13
- **CII-Indian Green Building Council (IGBC)**
- **Indian Building Congress:** Governing Council Member
- **National Committee on Real Estate & Housing by CII:** Ar. Deepak Gahlowt, Convener CCPS was Chairman of National Committee on Real Estate & Housing (CII) for 2013-14

Glass

The material of the future or a curse?



Glass use is increasing world wide

- Fashion
- Economic reasons
- Changing life styles requiring people to spend time indoors – need to stay connected
- Daylight – Physiological and physical need
- Changing society – Democracy, open home / office

Glass sale data

Domestic Float Glass	
Year	MT/Day
2000-01	886.00
2001-02	980.00
2002-03	1106.00
2003-04	1310.00
2004-05	1427.00
2005-06	1402.00
2006-07	1695.89
2007-08	2043.00
2008-09	1942.00
2009-10	2684.00
2010-11	3400.00
2011-12	4000.00
2012-13	3600.00
2013-14	3500.00
2014-15 (Apr – Jun)	4006.00

Human Safety Codes

Objective

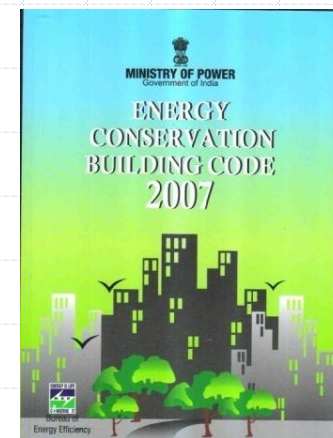
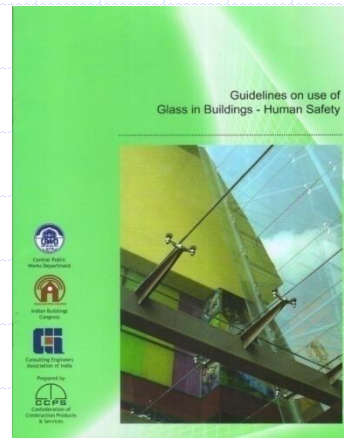
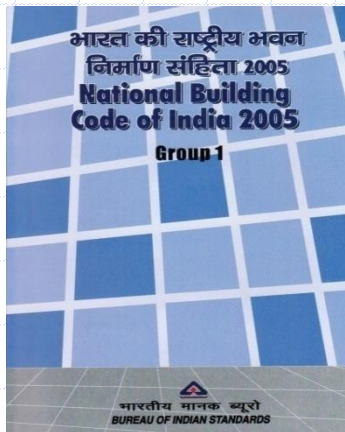
- Establish minimum level of safety to reduce injury to people from breakage of glass used in and around buildings.

Glass Regulations

- **Human Safety** - Human Impact / Falling Glass
 - CCPS Guidelines on use of glass in buildings – Human safety

- **Energy**
 - Energy Codes (Indian – Energy Conservation Building Code (ECBC 2007))

- **Fire Safety**
 - Municipal Corporation of Greater Mumbai initial work



Safety Codes - History

- 1960s First standards including American National Standard Z97.1, initiated by the glass industry to ensure safety and reduce glass related injuries.
- In 1972, the Consumer Products Safety Act passed, establishing a federal commission, the Consumer Product Safety Commission (CPSC).
- 1977, the CPSC standard 16 CFR part 1201 enacted by federal government. Unlike the voluntary ANSI Z97.1, this was mandatory for all parts of the United States.
- Australian standard established in 1989. Made compulsory in 1991.
- United Kingdom established standard in early 1990s
- Mexican Standard, 2001.
- International Residential Code, Europe and most countries in the Asia Pacific Region already control glass use.

AHMEDABAD MIRROR.com

Glass pain haunts hotel one more time

3 months after a boy crashed to death at a city hotel, a worker almost lost his life on Sunday after colliding with glass panel on the 5th floor

By Vipul Rajput

Posted On Monday, February 16, 2009 at 03:30:06 AM

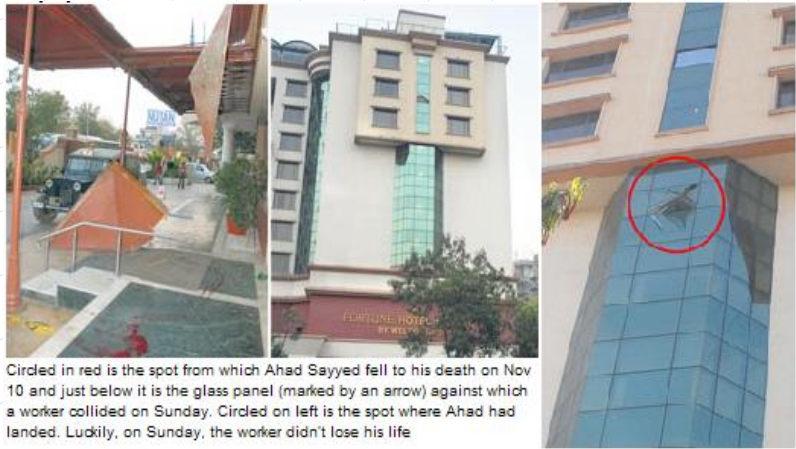
Accidents are happening once too often at Hotel Fortune Landmark, on Ashram Road. And oddly enough, the culprit remains the same glass sheets that make up the facade of the hotel. Three months after 11-year-old Ahad Sayyed of Vapi lost his life after a fall from the seventh floor of the hotel, a worker escaped death by the skin of his teeth on Sunday when he crashed through the glass, but didn't fall.

In the latest accident, a worker carrying out a repair job on a ladder in the lobby of the hotel on the fifth floor, lost his balance and crashed into the glass sheet that doubles up as a wall in the hotel. Hitting the glass with his back, he ended up precariously hanging with his back jutting out of the broken pane. He cried for help and was pulled back inside the lobby by the staff.

Picture Exclusive



HANGING ON: A worker (circled) seconds after he dashed against a glass panel on the hotel's fifth floor on Sunday



Circled in red is the spot from which Ahad Sayyed fell to his death on Nov 10 and just below it is the glass panel (marked by an arrow) against which a worker collided on Sunday. Circled on left is the spot where Ahad had landed. Luckily, on Sunday, the worker didn't lose his life

The hotel staff at first called up emergency ambulance service '108' when the accident happened at 2.30 pm. But soon, they realised that calling a public ambulance would invite unwanted attention and land them in trouble, and hence hastily shifted the injured worker to a private hospital before the '108' ambulance arrived.

By then, enough commotion had taken place for the matter to be hushed up. Passers-by gathered to see the worker hanging out of the glass at the hotel. Some even clicked pictures of the unusual sight.



(From extreme left) AM reported the cheap glass used by the hotel on Nov 12, 2008. The report of 11-year-boy falling from 7th floor of the hotel on Nov 11, 2008. A man sweeps the broken glass pieces on Sunday

The scene left little scope for the hotel to deny the incident. The hotel's floor manager Radhakrishna said, "A worker did get hurt after crashing into the glass, but he didn't fall. We have got him medical treatment, and he'll be fine."

Back on November 10, 2008, Ahad too had crashed through a similar glass sheet and fallen to death while playing Frisbee with his sister in the lobby. Ahad's family, which had put up in the hotel, had come to the city for treatment of his sister Khushboo's sinus complaint.

Soon after that incident, AM got architects and experts to test the strength of the glass to find out if a stronger one could have saved Ahad's life (Cheap glass culprit in boy's death, November 12).

The tests revealed that the glass was weak and of low quality. Experts were shocked that a hotel of the standard of Fortune Landmark could use glass of such poor quality.

Forensic Science Laboratory officials confirmed that that the hotel had fitted 4 mm thickness glass in a 6 mm thickness aluminium frame. Such glass breaks easily, they said.

Months on, and a fatal accident and laboratory tests later, the hotel did not find the glass panel unsafe and life-threatening enough to need replacement, leading to another serious accident. Whether we have seen the last of the mishaps involving the glass panel at the hotel, only time will tell

enemy
V-8

Man killed in freak accident

TRIBUNE NEWS SERVICE

CHANDIGARH, JULY 26

Mystery shrouds the death of the general manager of a Baddi-based shoe-manufacturing unit, who was critically wounded after he allegedly walked through a glass door at Naaz Saloon in Sector 20-D here this morning.

The victim, Nilendra Singh Chauhan, in his mid-forties, was rushed to the Government Multi-Speciality Hospital, Sector 16, where he was declared brought dead. A visit to the second floor of the building, where the saloon is located, presented a horrifying sight as the blood was splattered all over the place, including in the saloon, on the staircase and in the corridors outside the saloon. The saloon was covered with blood and the broken pieces of glass and the sofa, on which the victim was reportedly made to sit, was soaked in blood.

Ibrahim and Mohammad Hanif, who run the saloon, told TNS that Chauhan frequented their saloon to buy wigs and had come today for purchasing some wigs. He was in haste and made quick enquiries. "He was paying Rs 1,000 per wig, but I demanded more. During the discussion he said he was in hurry and would buy on old price. He gathered the wigs in a bag and was leaving when he walked into the glass door and injured himself," said Ibrahim.

Hanif said he ran out after hearing the noise of the broken glass and saw Chauhan holding his thigh, which was bleeding. "We made him sit on the sofa, bandaged the wound with a sheet and called the police for



Police officials examine the spot at Naaz Saloon in Sector 20 in Chandigarh where Nilender Singh Chauhan was killed after he allegedly walked into a glass door on Sunday morning. Tribune Photo: Pradeep Tewari

ambulance. As the police did not come in time, without wasting much time I put him in my car and rushed to the hospital," stated Hanif.

Raising doubts over the incident, a police officer said it was a coloured glass with brown hue and as it was being said the victim was a regular visitor, the chances of his walking into the door were far less.

Moreover, he came out of the cabin, which was adjacent to the door, and it was also doubtful that he gained as much speed to break into the glass.

The SHO of the Sector 19 police station said Chauhan was declared brought dead in the hospital. Ruling out possi-

bility of any foul play, the SHO said there was no altercation between the parties and it was an accident. He said they had initiated inquest proceedings into the matter and would get the postmortem conducted tomorrow to rule out doubts, if any, behind the death.

Chauhan was working in Nikhil International factory in Baddi, which manufactures shoes products for Action Shoes. He was reportedly in the city to visit Mansa Devi Shrine and had come to the saloon to buy some wigs. Chauhan is survived by his wife, a son and a daughter. They live in Gwalior while he hailed from Kanauj in Uttar Pradesh.

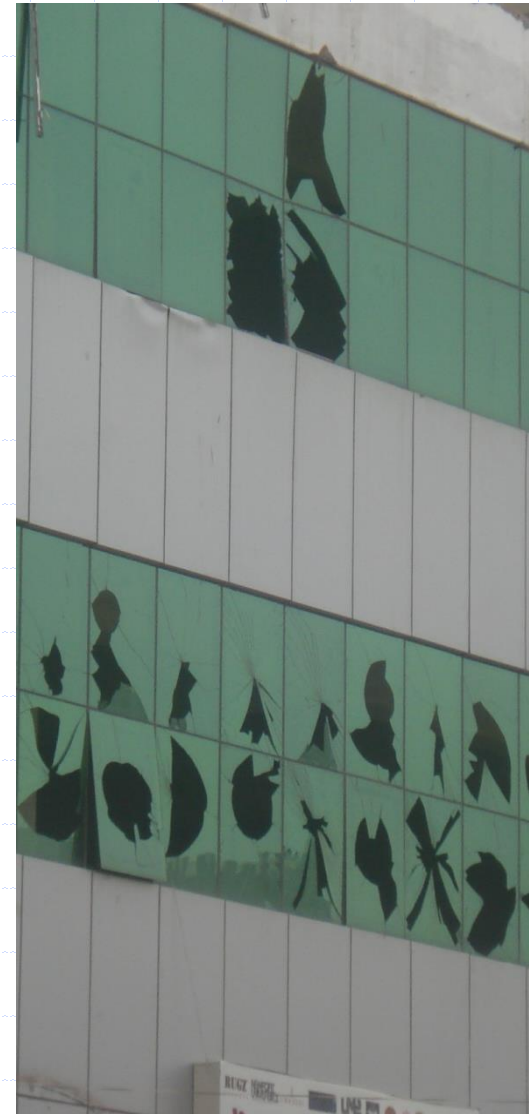
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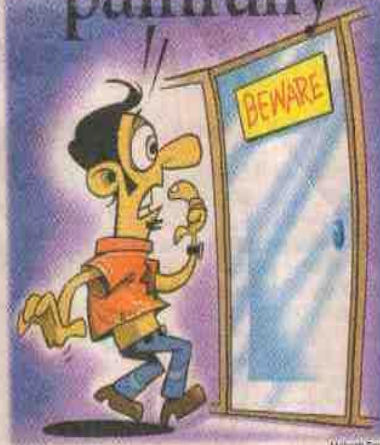
Through the glass door, painfully

Mahafred Irani | 7/04

When Jabeer Ahmed visits a mall he moves around with a slow step. It's not that the 55-year-old businessman is short-sighted, but he is wary of barrelling through an ultra-clear glass door, the invisible kind that malls love to flaunt to look modish. "I have presence of mind, but looks can deceive," says Ahmed. "I walk carefully inside malls and complexes that have sliding glass windows, translucent partitions and knobless glass doors, since the speed at which you walk determines the extent of injury. I know from experience."

Glass is one of the vanities of modern architecture, but it's the most duplicitous one. There have been innumerable cases of people suffering from deep cuts and scratches, to say nothing of shattered nerves, after marching straight into plate-glass in restaurants, museums and shops. Referred to as 'walk-through injuries', medical experts say that these collisions with glass usually cause damage to facial soft-tissue, which can be both dangerous and disfiguring.

According to Deepak Gahlawat, architect and convener of The Confederation of Construction Products and Services (CCPS), an estimated 28,000 people across the world, most of them children, suffer from injuries sustained from glass furniture. "Many countries have made it mandatory to use safety glass (non-brittle glass) in criti-



Mahesh Bhatia

cal locations and also require that the glass be manifested." Many London restos for instance have a white sheet of paper pasted on the glass pane with the words 'Don't walk into me'.

There was no such statutory warning at the Coty church that Colaba resident Anna David had a painful encounter with. A regular parishioner, David had grown so familiar with its corridors, little windows and doors that she began to glide through the church absent-mindedly. "My confidence suffered a major blow when, nose first, I dashed into a newly installed glass door," recalls David, who was so embarrassed that she quickly covered her smarting nose with a handkerchief and stumbled away. It took a few days for the church authorities to realise that it wasn't just hapless sparrows that were going splat.

Soon, a sign went up: 'Don't walk into this glass'.

One of the standard gags of comedians, walking-into-glass videos are all too popular on YouTube. The embarrassed expressions, swollen noses and sand-bagged looks that follow are well-documented for all to watch. In fact, many users have said that they get a kick out of watching unsuspecting victims, usually the short-sighted or those in a rush, slam into glass.

On a serious note, doctors and architects say that good design should factor in the transparen-

cy of glass and provide adequate warning. "Why not place a sticker or even a yellow Post-It on the super-clear glass to indicate the presence of a door?" asks Jabeer. Prem Nath, chief architect of several city malls and multiplexes adds, "To avoid accidents, it is advisable to place a sculpture, mannequin, lamp stand in front or behind the glass."

CCPS, a Delhi-based NGO, is pushing for India to frame laws to ensure that glass is used safely. In its recommendations to the Planning Commission titled 'Guidelines on use of glass in buildings: Human Safety' it specifies safety standards such as special glazing, tempered glass and laminated glass to reduce transparency.

Other safety measures include warning stickers or marking glass doors and panels with a large opaque hand.

Bar on bldgs with fixed glass facades

Bhavika Jain | TNN

Mumbai: Alarmed by last week's blaze at a commercial building in the Bandra-Kurla Complex (BKC), the BMC has decided to disallow the use of fixed glass sheets on façades.

Municipal commissioner Sitaram Kunte has asked the building proposal department and the fire brigade to draw up strict guidelines on façades and allow only those glass exteriors that can be dismantled. It has been found that firemen find it difficult to access the affected portion from outside if a building has a fixed glass facade.

All these changes have to be incorporated in the fire safety norms to be followed for a particular building. These will

THE SHINING & THE DANGEROUS



THE PROBLEMS

- Buildings with glass facades have a layer of **aluminium** inside. During a blaze, this can keep the **fire simmering** inside
- **Smoke accumulates** inside due to poor ventilation. This takes a toll on rescue operations

PAST CASES

Sept 7, 2012 | Firemen find it difficult to bring flames under control at FIFC building in BKC due to the fixed glass facade

April 8, 2011 | Fire at Diamond Square in Kalina. Glass exteriors pose a huge problem

then be verified before the fire brigade issues a no-objection certificate to the building.

For existing buildings with fixed glass exteriors, the guidelines will mention certain structural changes that have to be mandatorily carried out.

These include opening up a certain portion of the façade and replacing the existing fixed glass sheets with ones that can be dismantled.

Senior fire brigade officials say fixed glass exteriors hamper rescue operations during a

blaze (see box). "Due to the accumulated smoke, there is little visibility inside and the heat level also increases. There is also a chance of people suffocating due to this," said chief fire officer Suhas Joshi.

"The fire brigade will inspect buildings that already have full glass facades and suggest changes that have to be carried out to ensure the safety of such structures," said additional municipal commissioner Manisha Mhaiskar. The fire brigade also plans to make it compulsory for buildings with glass exteriors to have 'emergency exit' labels pasted on sheets that can be dismantled during an emergency. This will help save time as fire-fighters do not have search for access points.

Glass facade openings a must on all floors

Thursday, September 26, 2013 - 07:49 IST | Agency: DNA

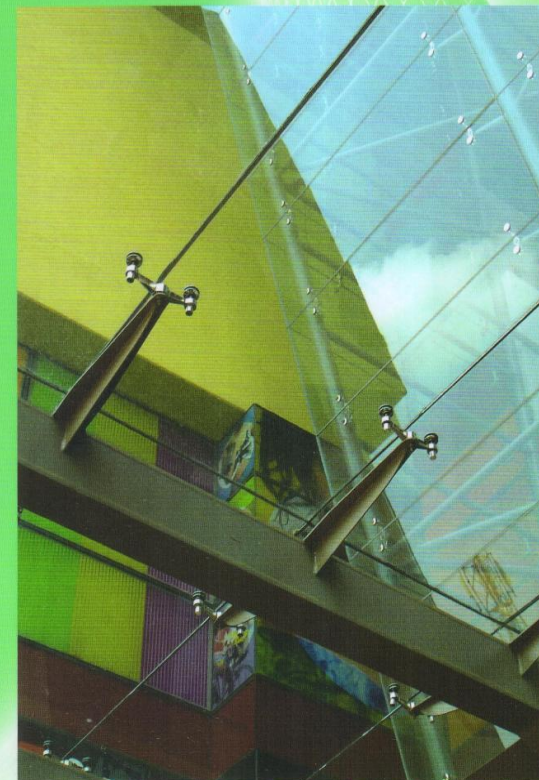


A year after a building with a glass façade in Bandra-Kurla Complex (BKC) caught fire, the city's municipality has come up with guidelines for such buildings which are mushrooming across the city, especially in business hubs.

The guidelines prepared by the Brihanmumbai Municipal Corporation (BMC) have been put together to safeguard human life and property especially in case a fire breaks out.

CCPS Guidelines on Use of Glass in Buildings – Human Safety

Guidelines on use of
Glass in Buildings - Human Safety



Central Public
Works Department



Indian Buildings
Congress



Consulting Engineers
Association of India

Prepared by



Confederation of
Construction Products
& Services

Project Objectives

Develop for the Indian building industry a commonly accepted method for

a) selection and

b) installation of

glass in buildings that is safe in relation to human safety.

Methodology for development of Guidelines

- The guidelines have been, for the first time in India, developed through the consensus method by a non profit organization.
- Adopting PPP mode involving M/o UD, CPWD, Major PWDs, Local bodies, CBRI, prominent professionals, glass processors, manufacturers, stakeholders
- Advantages
 - Fewer procedural burdens - quickly developed and modified, appeal to common sense, flexible in application,
 - Voluntary nature allows users to adapt provisions to meet unusual circumstances,
 - Much lower development cost - when compared to the state regulatory procedures.

Salient features of the Guidelines

1.0 Scope

The scope of these guidelines covers minimum safety requirements subjected to various kinds of human impact, precautions against risk of fall and falling glass.

Further this guide does not deal with the safety and security of people or goods in relation to risks of:

- a) Vandalism, riots, burglary or break in protection,
- b) Fire arm protection,
- c) Protection from explosion (terrorist attack),
- d) Natural disasters like Earthquakes, cyclone, Fire etc.,
- e) Plastic glazing, safety and security glazing etc.

2.0 Safety Glass

Safety glass shall be of four types:

- a) Toughened Safety (Tempered) Glass (TS)
- b) Toughened Float Safety Glass (TF)
- c) Laminated Safety Glass (LS)
- d) Laminated Float Safety Glass (LF)

3.0 Critical Locations

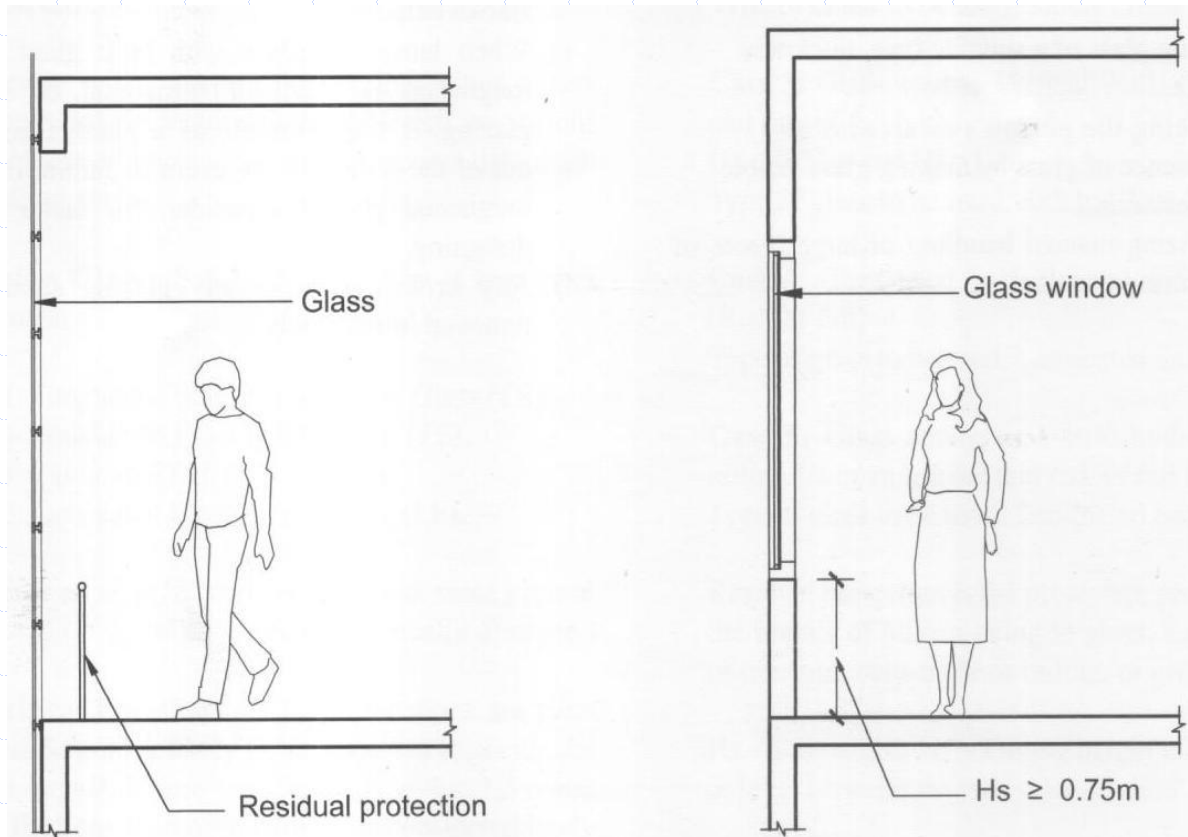
The critical locations with appropriate types of glass allowed for use are listed in the following five cases.

Case1:

Glass used as Vertical Walls (not likely to be subjected to Human Impact)

$H_s \geq 0.75$ m or with Residual Protection

Type of Glass to be used: Any glass (Safety Glass not mandatory)



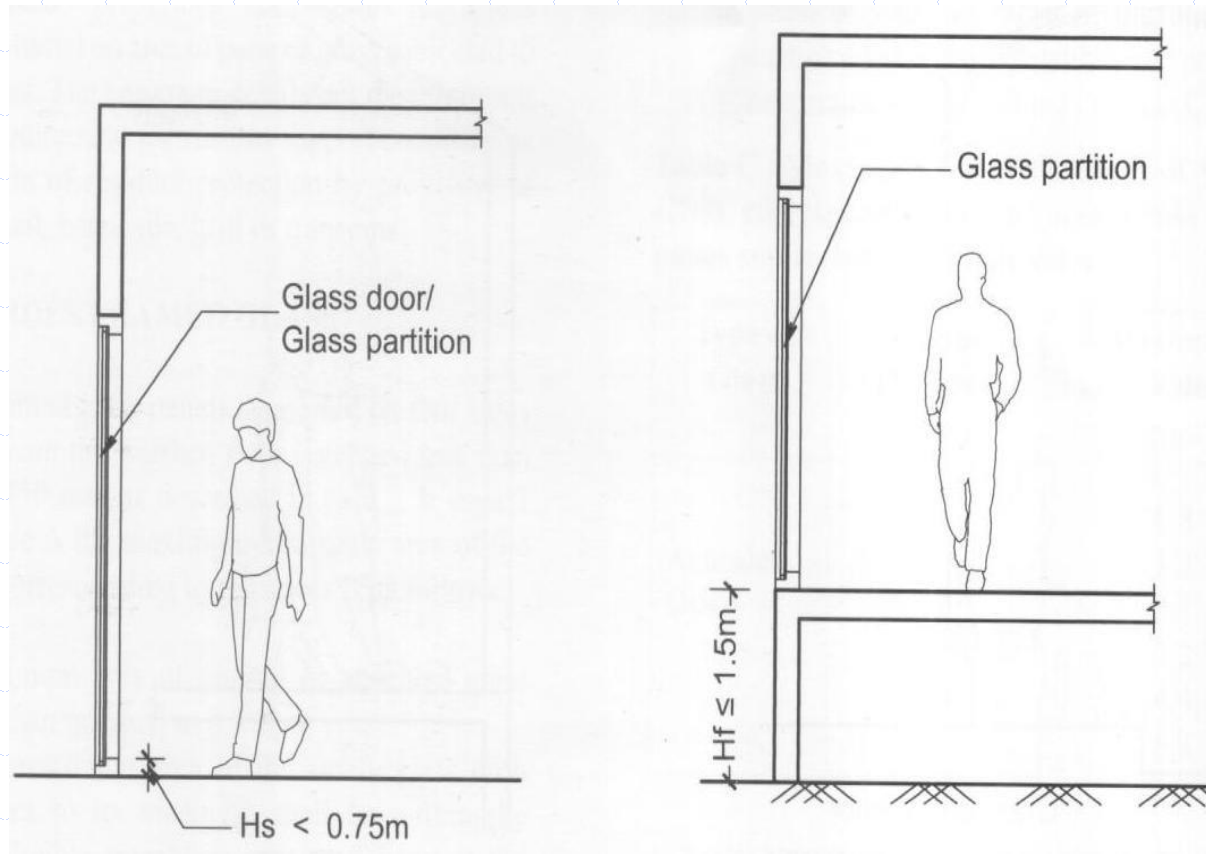
H_s = Sill height, H_f = Falling height in case of change in level between the two sides of glass

Case 2:

Glass used as Vertical Walls (Human Impact but no risk of fall)

$H_s < 0.75\text{m}$ and $H_f \leq 1.5\text{m}$

Type of Glass to be used: Safety glass (TF or LF)



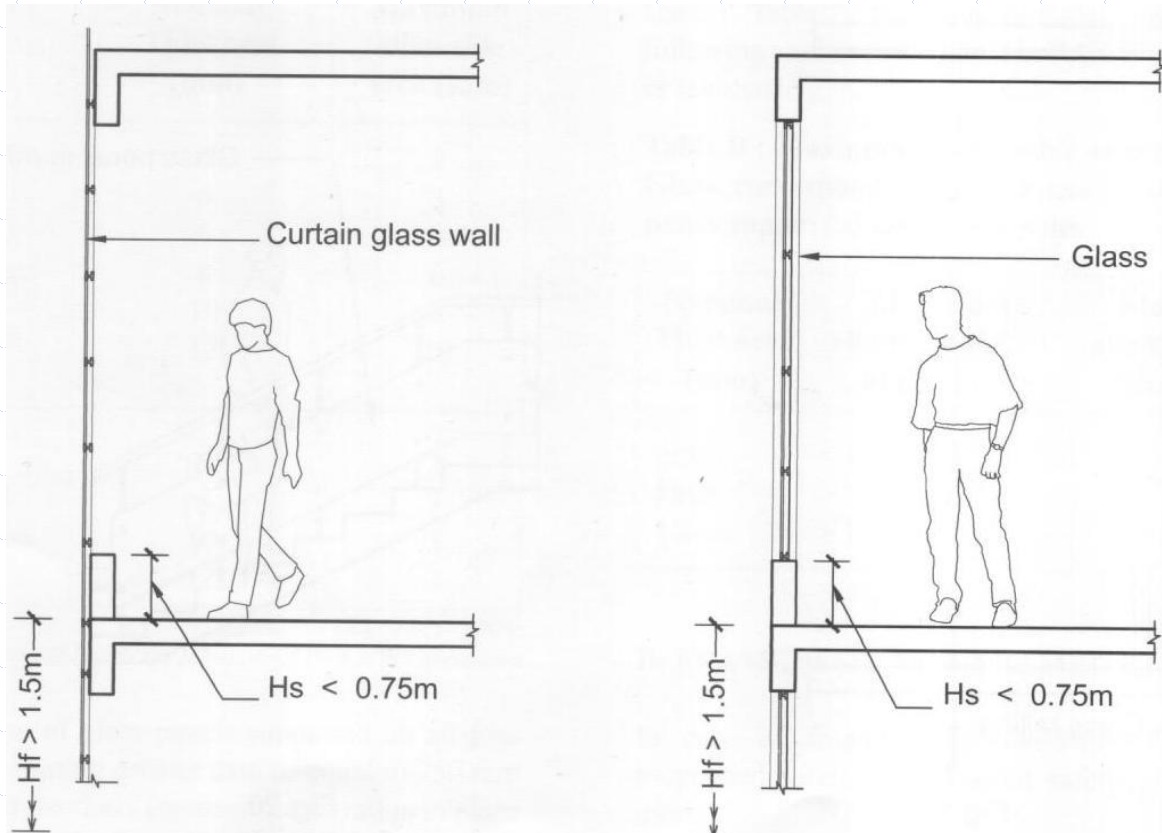
H_s = Sill height, H_f = Falling height in case of change in level between the two sides of glass

Case 3:

Glass used as Vertical Walls (Human Impact and risk of fall both)

$H_s < 0.75\text{m}$ and $H_f \geq 1.5\text{m}$

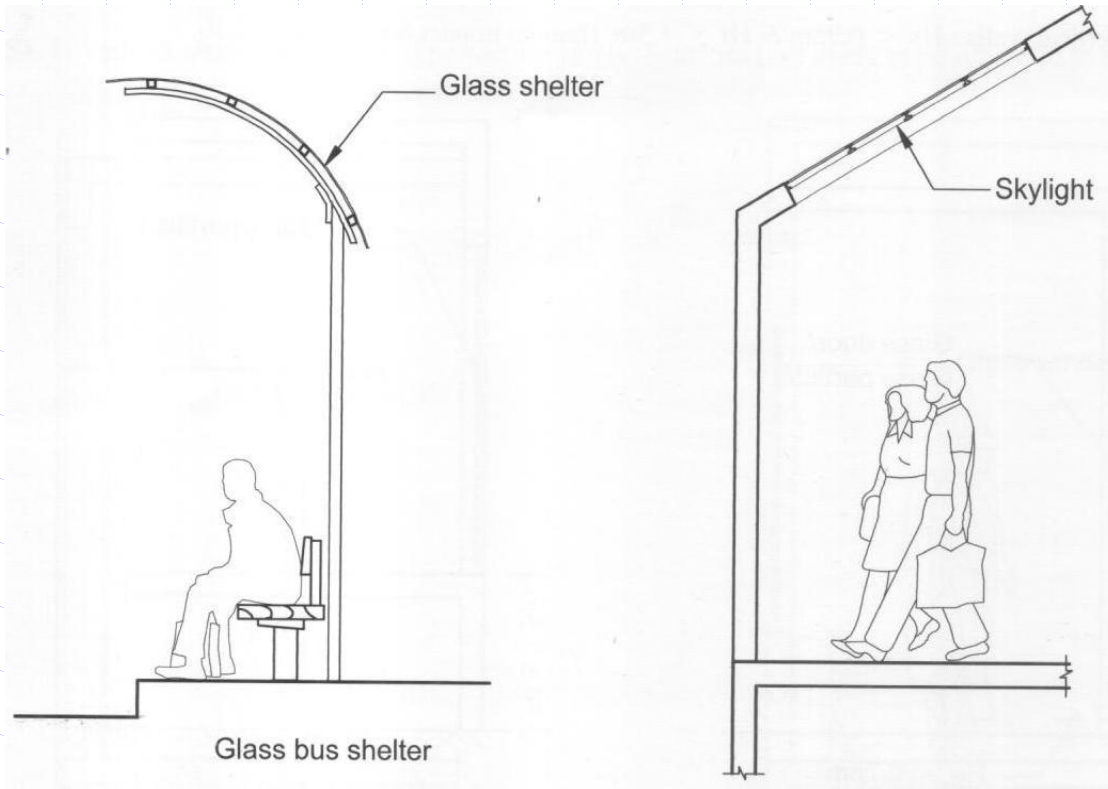
Type of glass to be used: Safety glass (LF preferred)



H_s = Sill height, H_f = Falling height in case of change in level between the two sides of glass

Case 4:

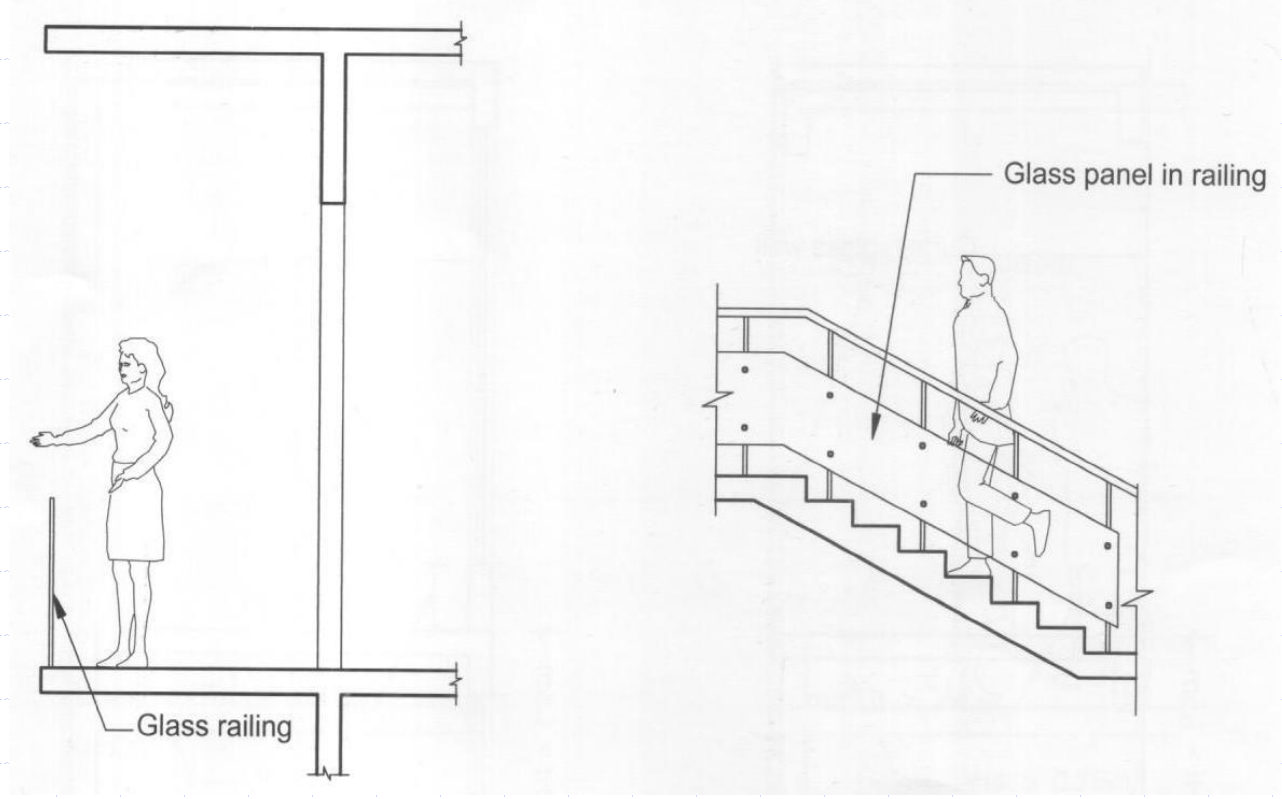
Glass used in Horizontal or sloped glazing (Risk of fall)
 Type of glass to be used: Laminated safety glass (LF)



Case 5:

Glass acting as a balustrade, parapet or a railing (Human Impact and risk of fall both)

Type of glass to be used: Laminated safety glass (LF)



4.0 Manifestation

Clear glass panels mistaken for an unimpeded path of travel should be marked to make them visible by incorporating manifestation.

5.0 Identification of safety Glass

Glass shall be indelibly and distinctly marked with type of glass, name or logo to identify the manufacturer, thickness of glass etc.

6.0 Safety Glass Test Requirements

Glasses should meet the tests requirement as laid down in IS : 2553 (Part 1)

7.0 In external laminated glass facades ,openable portions have to be left at regular distances as required for fire fighting and smoke exhaust

Requirements for Fire Protection

■ **Fireman knock-out/openable glazing panels**

- Glazing panels required for venting and emergency access from the exterior.
- Knock-out panels are generally fully tempered glass to allow full fracturing of the panel into small pieces and relatively safe removal from the opening.
- Knock-out panels are identified by a non-removable reflective dot (typically two inches in diameter) located in the lower corner of the glass and visible from the ground by the fire department.

■ **Egress window**

- Window designed to be large enough for a fire fighter to climb in or a person to climb out in an emergency.
- Building codes often require each bedroom of a home to have an emergency exit window, with minimum sizes specified. Generally requires 20" width and 24" height opening and 5.7 sq. ft. opening.

Requirements for Fire Protection

■ **Perimeter Protection**

- A curtain wall by its very nature does not provide compartmentation
- The use of fire sprinklers has been shown to mitigate this matter
- Unless the building is sprinkled, fire may still travel up, if the glass on the exposed floor is shattered due to fire influence, causing flames to lick up the outside of the building
- Fire rated assemblies may be required in unsprinklered buildings. The ratings of the Perimeter Fire Containment System must be equal to or greater than the floor rating

■ **Protection against Fire Leaping**

- Spandrels to be provided with insulation or / and projections to be provided
- Distance between external wall and glass façade shall not be more than 300 mm

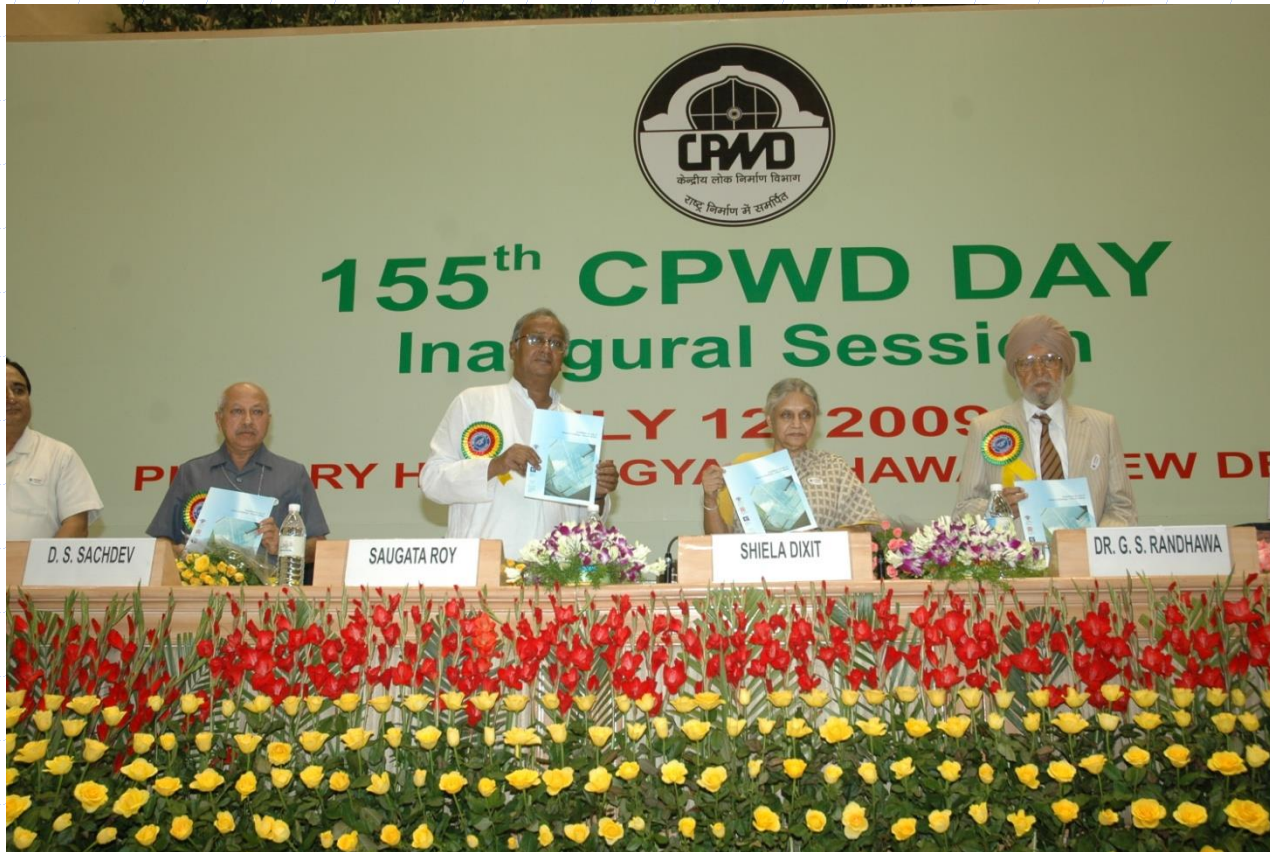
■ **Protection against falling glass**

- Safety Glass - tempered / toughened glass is the best protection
- Safety Glass - Laminated Glass is also a solution

Wide Propagation of Recommendations of the Guidelines by CCPS

- **The purpose of Guidelines is to suggest how to regulate glass in relation to human safety and not to sell more safety glass but to exhibit the wide choice that exists and allow the use of annealed glass with precautions or specify the use of safety glass at critical locations**
- **Guidelines were reviewed by an Expert Committee under former DG, CPWD**

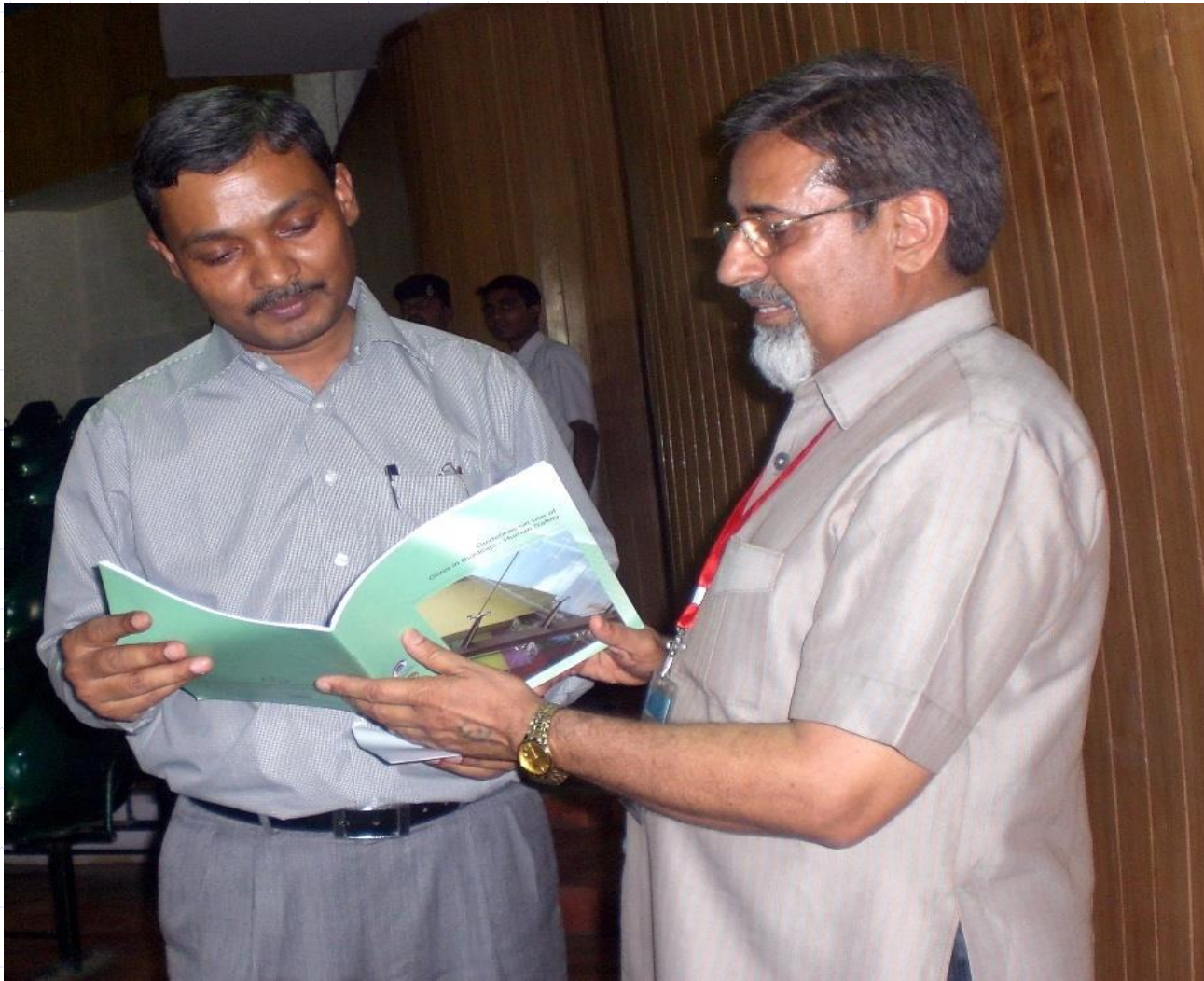
- Member (HUD), Planning Commission took meeting on 12.12.2008 on 'Safe use of glass in buildings through building byelaws etc'. CCPS gave presentation.
- Planning Commission requested Municipal Adm., Housing & UD Secretaries of all State Govts./UTs to initiate appropriate action to ensure safe use of glass in buildings by insisting certain conditions (Vide letters dated 04.02.2009 and 26.11.2009)
- Organized more than 19 workshops/training programs/presentations
- Approached and contacted Central & State UD ministries, Govt. construction departments, Development Authorities & Local Bodies, Associations, Professionals, builders etc.



- Guidelines were released on the occasion of “**155th CPWD DAY**” on 12th July 2009 in the presence of Smt. Shiela Dixit, Hon'ble Chief Minister, Govt. of Delhi, Chief Guest, Sh. Saugata Roy, Hon'ble Minister of State for Urban Development, Guest of Honour



Presenting guidelines to Lt. General, (Retd.) Bhopinder Singh, PVSM, Lieutenant Governor, Andaman & Nicobar Islands



**Presenting guidelines to Mr. Chanchal Kumar, IAS,
Secretary, Building Construction Deptt. Govt. of Bihar**



Discussions with Sh. T. K. Anil Kumar, IAS, Secretary , U D Deptt., Govt. of Karnataka & Sh. S. B. Hunnur, Director, TCPO on 25th January 2014

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IDEAS

DESIGN FOR

THIS & THAT

NEWS SAFETY IN THE USE OF GLASS

Glazing, while popular, brings in its wake human safety requirements. The risk of injuries from falls and the danger of falling glass, have led to the need for suitable product design to counter the vulnerability of glazing. The Confederation of Construction Products and Services (CCPS) with the support of the glass industry, has recently released the "Guidelines on the Use of Glass in Buildings for Human Safety" for specialists and homeowners alike.

NEED TO KNOW:

- Besides the visual appeal of glass, offered in clear, tinted, coated, frosted decorative and mirror forms, glass is also tested for its safety quotient by a grunting shock test, fragmentation test, warp test, ball test, light stability test, and fracture and adhesion test, in accordance with IS 2533.
- It is also necessary to note that only when glass is laminated with polyvinyl butyral (PVB) can it qualify as safety glass. Also,

all safety glass must be marked with a certification mark.

- To reduce the likelihood of injury, specially heat-treated safety (tempered) glass is reduced to granular fragments upon breaking. Laminated safety glass fragments don't fly out.

Such places include glass balustrades, stairs in critical impediments in high-traffic areas. Indicators that it will be put to the handling should be suitable for fire-fighting and smoke exhausts are absolutely necessary. For more information, visit: www.cpindia.com.

— By Shilpa Mazumdar



DESIGN TODAY

REGISTERED NO. L/HR/FRD/2551/07-08 SPACES ETCETERA

REGISTERED NO. L/HR/FRD/2551/07-08 SPACES ETCETERA

Textile 20+ str

DESIGN TODAY

October 2009 Rs. 30

GUIDELINES

Central Public Products and Services growth of the construction in Buildings — Human occasion of the 155th Conference were Delhi Chief Minister's development Saugata Roy (governor)

NEWS SAFETY IN THE USE OF GLASS

Glazing, while popular, brings in its wake human safety requirements. The risk of injuries from falls and the danger of falling glass, have led to the need for suitable product design to counter the vulnerability of glazing. The Confederation of Construction Products and Services (CCPS) with the support of the glass industry, has recently released the "Guidelines on the Use of Glass in Buildings for Human Safety" for specialists and homeowners alike.

NEED TO KNOW:

- Besides the visual appeal of glass, offered in clear, tinted, coated, frosted decorative and mirror forms, glass is also tested for its safety quotient by a grunting shock test, fragmentation test, warp test, ball test, light stability test, and fracture and adhesion test, in accordance with IS 2533.
- It is also necessary to note that only when glass is laminated with polyvinyl butyral (PVB) can it qualify as safety glass. Also,

all safety glass must be marked with a certification mark.

- To reduce the likelihood of injury, specially heat-treated safety (tempered) glass is reduced to granular fragments upon breaking. Laminated safety glass fragments don't fly out.

Such places include glass balustrades, stairs in critical impediments in high-traffic areas. Indicators that it will be put to the handling should be suitable for fire-fighting and smoke exhausts are absolutely necessary. For more information, visit: www.cpindia.com.

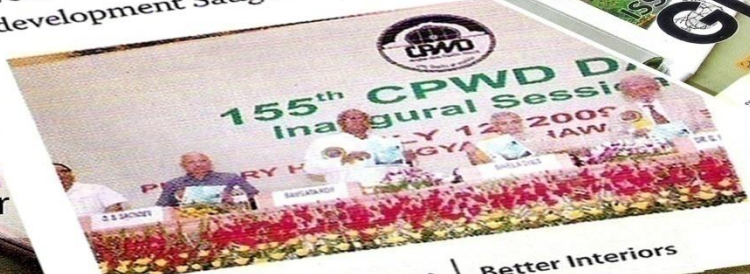
— By Shilpa Mazumdar

ISSUE FOCUS GLASS

PROJECTS WEEKEND HOME, SÃO PAULO LATTER HOUSE, THAILAND HOTEL BANGALORE OFFICE HEADQUARTERS, INDORE

PLUS MYTHS & VARIETIES INTERIORS AND RESIDENCE (INTERVIEW)

adopting involving all architects, municipalities and other departments, etc.



CCPS to set building permit data

New Delhi: To fill the much needed gaps in data available on the growth of real estate sector in India, the Confederation of Construction Products and Services (CCPS) has raised a demand that a nation-wide system be set up to collect and release building permit data, that is used the world over to measure and monitor real estate activity and is considered an important indicator of the state of the economy. In India, building permits and construction certificates are issued by various municipalities and local government authorities.



IGNIT



CCPS Calls For Professionalism in Construction

THE building products industry has moved a step towards getting organised with the setting up of the Confederation of Construction Products and Services (CCPS). The founder members of this body include Arcus Ltd, SPL Ltd, Mico Bosch India Ltd, TISCO and Gujarat Guardian. CCPS has 27 members as of now, with Shreekant Somany taking on as its first president.

"While construction products are aspiring for international standards, the workforce remains untrained or under trained. This has handicapped workers from informing their clients about what is new and hot in this sector." In his view, setting up training centres funded by the government to augment professionalism would improve workmanship.

At its First National Conference on Construction Products and Services, held in New Delhi in April, CCPS presented an action plan to train construction workers and help develop a common system of branding skilled workers. Speaking on the occasion, Somany

The CCPS will also collate data on housing sites and building permits, which is available with municipal authorities, and is the best economic indicator to assess demand for materials and services. It is proposing a joint effort with the National Buildings Organisation and HUDCO, to develop a mechanism for the collection and publication of this information.

will collaborate with Indian Standards for international standardisation especially in assembled and

glass Aug - June edition 2006

CCPS Holds Training Programme for 'Selection of Right Glass for Buildings', AIS Glass Solutions Plays A Prominent Role in the Programme

Glass and Its Applications

New Delhi based Confederation of Construction Products and Services (CCPS) is a non-profit organisation set up for promoting quality and efficiency in the field of construction. Under its positive regard, it has started a training programme for architects, builders, contractors, facility managers and other people associated with the construction industry with assistance from a unique revolutionary glass processing company of the country, M/s AIS Glass Solutions Ltd. on the subject 'Selection of Right Glass for Buildings'.

It is very much evident that the applications of glass in buildings are increasing at a rapid pace. Because of its inherent specific characteristics and utility, glass has become an indispensable structure in modern building. Because of this indispensable structure of glass in the building industry, professionals associated with the building industry to pay ample attention to the choice of right glass keeping the safety and energy efficiency considerations in view. It is basically to fulfil this objective that CCPS has tied up with AIS Glass Solutions Ltd. to undertake the challenging task of organising an intensive training programme for the 'selection of right glass for buildings' from time to time in different metropolitan centres of other cities. Under this programme, 1000 professionals will be associated with the industry in the first two phases, in the first and the third phase, respectively. The training in some cities is scheduled to be conducted in the next six months.

Date	Place	Date	Place
20 May, 06	Kolkata	15 July, 06	Ahmedabad
3 June, 06	Lucknow	29 July, 06	Chennai
17 June, 06	Mangalore	12 August, 06	Jairpur
1 July, 06	Mumbai	26 August, 06	Pune

Under the training programme planned, the training course will provide information regarding heat control and noise regulated glass, thermal breakage, safety and security and allied issues. The participants will also be provided with the following information:

- AIS Glass Solutions Ltd. A lot of thinking and effort has gone into the preparation of this manual.
- It presents detailed, objective and scientific information on basic flat glass products and added flat glass products.

Training Session on Glass

CCPS is conducting a special training programme on glass in Pune today

Confederation of Construction Products & Services (CCPS) a non-profit organisation committed to the improvement of the construction industry, is organising a one-day training programme today, August 5, at Hotel Ambassador, Shivajinagar. This event, focused on "Selection of Glass in Modern Buildings" is part of its training initiative, in association with AIS Glass Solutions Limited.

train 1,000 more in major cities. The fee for the one-day programme is Rs. 1250, and includes lunch and refreshments. All participants will be given a certificate of participation and a complimentary copy of the training manual.

... locations is crucial. Besides glass panels must not become safety options such as opaque glass that is suitable to the use. In exterior usage, openings and vents for and smoke exhausts are absolutely necessary. information, visit: www.ccpsindia.com.

— By Shubra Mazumdar

NEWS WATCH

CCPS initiative for standardising door and window sizes: The Confederation of Construction Products and Services (CCPS) has launched an initiative to improve dimension-ordination among doors and window products.

CCPS brings together architects, designers, real estate developers and government organisations and product manufacturers to jointly classify and recommend a specific set of common sizes of door/window panels, frames, wall openings and associated elements in the building industry. Standardised sizes that are widely used in the real estate industry will encourage availability of pre-assembled products. It will also make possible the widespread use of ready-to-use curtains, blinds and other interior furnishings.





Bylaws on glass use in bldgs
 JDA will soon forward proposal to govt regarding rules on use of glass in residential and commercial constructions

DNA Correspondent
 The Jaipur Development Authority (JDA) will soon forward a proposal to the state government regarding drafting of bylaws on the use of glass in residential and commercial buildings, ensuring safety of people in risk areas.

The Confederation of Construction Products and Services (CCPS) on Wednesday organised a workshop for JDA officials to discuss the proposal. JDA officials suggested bylaws regarding the use of glass in buildings and decided to go through the bylaws and ask the state government to frame new bylaws.

Lakshmi Soni, secretary, JDA, said the proposal is being forwarded to the government. "Safety is the primary concern while using glass in buildings. We have accepted their proposal and agreed to it for the existing buildings," said Soni. If the suggestion is accepted, the bylaws will certainly see to it that accidents do not occur. "We will certainly see to it that the bylaws are framed in a way that the safety of people is ensured," she said.

The Confederation of Construction Products and Services (CCPS) has also suggested bylaws regarding the use of glass in buildings and decided to go through the bylaws and ask the state government to frame new bylaws.

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राजस्थान पत्रिका
 पिकसिटी पत्रिका

‘इमारतों में लगे कांच मापदण्ड से विपरीत’

जेडीए में आयोजित कार्यशाला में सामने आई स्थिति

जयपुर, राजधानी के विद्यार्थी व व्यावसायिक इमारतों में उपयोग किया जाने वाला कांच सुरक्षित नहीं है। भौगोलिक परिस्थितियों के अनुरूप कांच का उपयोग नहीं करना कभी भी दुर्घटना का कारण बन सकता है। जेडीए में बुधवार को नगर नियोजन विभाग तथा कॉन्फेडरेशन ऑफ कंस्ट्रक्शन प्रोडक्ट्स एण्ड सर्विसेज, दिल्ली (सीपीएस) की ओर से आयोजित कार्यशाला में यह स्थिति सामने आई।

के साथ इमारत के भीतर कार्यरत कर्मचारियों के भी दुर्घटनाग्रस्त होने का खतरा बढ़ता है। उन्होंने राज्य सरकार से नए विनियम में संशोधन करने की मांग करते हुए सेपेडी ग्लास संबंधित स्टैंडर्ड को बायलाइन में शामिल करने का प्रस्ताव सीपीए है। उधर, इस संबंध में राजस्थान सरकार के प्रमुख शासन सचिव, नगरीय विकास विभाग जनसचरी शाखा में श्री सचिवी विभागों की गाइडलाइन की पालना सुनिश्चित करने के लिए छिज्जानुमा आवश्यक: विशेषज्ञों के मुताबिक इमारतों में सन रोडो (छज्जानुमा) ग्लास का उपयोग करना जरूरी है, जो गर्म के लिए आरंभिक है। इनके उपयोग के नियम भी दिशा के अनुसार हैं। दक्षिण दिशा की देखती हुई ग्लास का उपयोग कम से कम 15 डिग्री सेल्सियस से अधिक तापमान पर ही करना चाहिए।

दैनिक भास्कर
 गुलवार 26 मई 2011
 जयपुर प्रथम पृष्ठ 9, 2011

THE TIMES OF INDIA
 HC STAYS RELEASE AND CIRCULATION OF BOOK BY LAWYER OF HIS ASSOCIATION WITH RADIA

शीशे की इमारतें खतरनाक
 जेडीए सभागार में हुई कार्यशाला में विशेषज्ञों की राय : सभी बिल्डरों के लिए अनिवार्य हो सीलीपीएस की गाइडलाइन

नगर संवाददाता, जयपुर

इमारतों में शीशे का अंधाधुंध प्रयोग खतरनाक है। इससे स्वास्थ्य और पर्यावरण पर तो विपरीत असर पड़ ही रहा है, दुर्घटनाएं भी बढ़ रही हैं। इसका खतरा खतरों के लिए सभी भवन निर्माताओं को गाइडलाइन मानना अनिवार्य करना चाहिए।

इस मुद्दे को लेकर सभागार में बुधवार को एक बैठक हुई।

गलबोलों से उदाहरण लेकर बताया कि ऑफिसों में आने-जाने के दरवाजे लगे शीशे का खतरा है, जिससे घट से कई बार खाली दरवाजा खोलने का खतरा हो जाता है। लोग इन खोले हुए दरवाजों पर चढ़ जाते हैं।

इसी बात को लेकर सभागार में बुधवार को एक बैठक हुई।

Class use: Plea to amend building by-laws in city

Pink City is growing and use of glass in residential buildings is also growing rapidly. The Confederation of Construction Products and Services (CCPS) has proposed to add the Jaipur Development Authority to add the "Guidelines for use of glass in buildings" in building by-laws. A meeting was held at the Jaipur Development Authority on Wednesday.

Secretary Lak Nath Soni, said, "We have accepted the suggestion and forward it to the government. We will certainly see to it that the bylaws are framed in a way that the safety of people is ensured," she said.

समाचार जगत

तय मानदण्डों के अनुरूप ग्लास लगाए जाने का मानवीय दुर्घटनाओं से बचना होगा सम्भव

जयपुर (कांस.)। जयपुर विकास प्राधिकरण, के भवन मंथन हाल में बुधवार को कॉन्फेडरेशन ऑफ कंस्ट्रक्शन प्रोडक्ट्स एण्ड सर्विसेज (सीपीएस) एवं नगर नियोजन विभाग जयपुर विकास प्राधिकरण (जेडीए) के बीच कांच के प्रयोग के बारे में विशेष कार्यशाला का आयोजन हुआ। पूरे देश के साथ-साथ राजस्थान में भी जयपुर की अध्यक्षता में ग्लास का उपयोग का आयोजन हुआ है।

प्रयोग सम्मल प्रकार का रहा है। विशेषज्ञों के अनुसार ग्लास का उपयोग का आयोजन हुआ है। विशेषज्ञों के अनुसार ग्लास का उपयोग का आयोजन हुआ है। विशेषज्ञों के अनुसार ग्लास का उपयोग का आयोजन हुआ है।

दैनिक नवज्योति

इमारतों में नियम विरुद्ध कांच का उपयोग

सीलीपीएस ने की गाइडलाइन की शिकायतें लागू करने की मांग

जयपुर, 25 मई। जयपुर शहर में जेडीए इमारतों में ग्लास का उपयोग बढ़ता जा रहा है। लेकिन यह भी नियमों के विरुद्ध है। जेडीए की गाइडलाइन में ग्लास का उपयोग का आयोजन हुआ है। विशेषज्ञों के अनुसार ग्लास का उपयोग का आयोजन हुआ है। विशेषज्ञों के अनुसार ग्लास का उपयोग का आयोजन हुआ है।

Implementation of CCPS Guidelines by 17 States, Central & State Govt. Deptts., PSUs and Private Contractors

OM, GO, orders issued by various States, Govt. Deptts

1. **CPWD**, Govt. of India, **OM** dated 04.08.2009 for mandatory implementation of Guidelines in the department throughout the country and PWD, Government of National Capital Territory of Delhi
2. **Govt. of Andhra Pradesh, G.O.Ms. No. 205 dated 27.02.2009** addressed to all Municipal Commissioners /Vice Chairmen of Urban Development Authorities/Commissioners of Municipal Corporations in the State, Hyderabad Metropolitan Development Authority, Hyderabad, GHMC and all other concerned to follow and ensure the guidelines and conditions whenever permissions are accorded for use of glass in buildings.
3. **Greater Hyderabad Municipal Corporation**, Circular dated 10.11.2009 to indicate as one of the condition on usage of glass in the plans while releasing the building permissions.
4. **Govt. of Rajasthan**, Urban Development & Housing Office Order No. F.10(7)UDD/3/2009 dated 18.01.2011
5. **Town Planning Department**, O/o Chief Town Planner, Govt. of Rajasthan letter No. TPR:8265:08:54/7553-68 dated 11.05.2011
6. **Rajasthan Housing Board**, Jaipur Office order No. 176 dated 08.03.2011
7. **Jaipur Development Authority UO Note No. JDA/ ACTP / BPC(BP) /2011 /D-838** dated 26.05.2011

- 8. Govt. of Delhi**, PWD OM No. E-in-C/W /NNET/2010 /5708 dated 25.11.2010
- 9. Delhi Development Authority** OM No. EM/(10)/2010 /Circular/ Vol III/4671 dated 29.11.2010
- 10. Haryana PWD (B & R)** Memo No. 5535-47/WI dated 19.08.2011
- 11. Govt. of Manipur** PWD, OM No.12/10/2007-CE/819 dated 05.08.2008
- 12. A & N Administration**, Andaman PWD OM No. Arch-07/2009/3828 dated 21.12.2009
- 13. NBCC**, Order No. AGM/Safety/2011-12/311 dated 25.01.2012
- 14. Airport Authority of India**, Technical Instruction No. 86, No. AAI/Member (Plg)/ Tech-Inst./ 2012 dated 20.01.2012
- 15. Indian Trade Promotion Organization** guidelines to be followed at Trade Fairs included CCPS Guidelines recommendation
- 16. Amity School of Engineering & Technology**, Noida included CCPS Guidelines in Curriculum for teaching Engineering students. No. JB/Pcrs/D/115 dated 13.12.2013
- 17. Ahluwalia Contracts (India) Limited, New Delhi** to strictly adhere the instructions/guidelines vide order dated 25.06.2014

Bureau of Indian Standards

**IS 16231 (Pt. 4) 2014 – “Code of Practice for Use of Glass in Buildings
Part 4: Safety Related to Human Impact”** is based and derived from CCPS Guidelines

भारतीय मानक
Indian Standard

IS 16231 (Part 4) : 2014

भवनों में काँच के प्रयोग — रीति
संहिता

भाग 4 मानव प्रभाव से संबंधित सुरक्षा

Use of Glass in Buildings — Code
of Practice

Part 4 Safety Related to Human Impact

ICS 81.040.20

Practice for glazing in buildings (first revision)', in view of the comprehensive provisions, proposed herein. However, the contents of the same are included as an informative annex in IS 16231 (Part 1). In the formulation of this standard, inputs were derived from the Confederation of Construction Products and Services, New Delhi's publication, 'Guidelines for Use of Glass in Buildings-Human Safety'.

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NEW DELHI-110002
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Price Group 5

Suggestions

1. Glass Use in Buildings should be governed by regulations from human, fire, structure, energy point of view
2. Central and State, UD & Housing Ministries to ensure inclusion of CCPS Guidelines recommendations in building byelaws by local bodies and development authorities
3. Organize training workshops/seminars for Govt. officials, professionals, associations, developers and builders to acquaint about Glass Guidelines in collaboration with CCPS
4. Wide propagation of practices for safe use of glass in electronic & print media

5. Include recommendations of Guidelines in revised National Building Code 2015
6. Teaching glass related subjects in Educational Institutions
7. Initiate glass related training courses/ programs in ITIs to develop trained & skilled work force
8. Survey of existing buildings of Govt. Departments, Commercial Complexes, Hotels, Hospitals/ Nursing Homes, Airports etc. for appropriateness of glass used and suggest solutions
9. Collect glass injury data through hospitals with CCPS
10. Collect data on energy consumption in large occupied buildings and make public the same for study and analysis
11. Share widely fire incident reports in case of major fire incidents.

**Download CCPS Guidelines and copies of orders
from**

www.ccpsindia.com

THANK YOU

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