

## Research Paper

### Title:

**Analysis of the Delhi-Unified Buildings Bye Laws 2016 with respect to the integration of provisions of the National Building Code.**

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### Abstract:

The National Building Code has been created by the Bureau of Indian Standards and has been developed right since 1965, on the basis of recommendations to have uniform building guidelines which are updated regularly as improvements in the industry keep happening. But the National Building Code, as an advisory has to be adopted by the various land owning agencies and the municipalities in the state to make it binding. In Delhi, the Unified Building Bye Laws 2016 are applicable to 5 municipalities, which have to compulsorily enforce the bye law for sanctioning building permits within their jurisdictions. This paper analyses, clause by clause, the various provisions of the National Building Code, 2016 that have been adopted in the Unified Building Bye Laws, 2016 and thus made mandatory by law. It has been found that not all of the parts of the National Building Code have been adopted, but certain sections dealing with lighting, ventilation, water supply, drainage and structural design have been adopted and made mandatory universally. There is a need to give universal statutory backing to all the provisions the National Building Code as these are created by nationally renowned experts. Another advantage is that all the energies can be channelized on creating one document for the whole country instead of multiple local byelaws with variations and delays in updating the same.

**Keywords:** *National Building Code, 2016, Unified Building Bye Laws-2016, statutory provisions, Building regulation, advisory, law, adoption of guidelines.*

### 1. Introduction:

With the aim of maintaining public health in an urban development, buildings have been regulated by model housing laws. Looking back, in 1901, the tenement law was passed in New York. It aimed at including all the provisions which urban dwellers today take for granted. This included provisions for fire, light and ventilation, indoor plumbing and other measures. The effect of the enforcement of this was a dramatic improvement of housing conditions in 11 years after its passage. The mortality rate dropped from 20.057 per thousand in 1900 to 14.11 per thousand in 1912<sup>1</sup>. In India too, the All India Sanitary Conference was held in 1914, which set out to highlight the 'main evils resulting from certain defects in the Bombay City Municipal Act and the Byelaws, there under. It was suggested in the conference that changes be made for improving health by increasing light, ventilation, appropriate

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<sup>1</sup> Russell Lopez, *Building American Public Health: Urban Planning, Architecture, and the Quest for Better Health in the United States*, Building American Public Health: Urban Planning, Architecture, and the Quest for Better Health in the United States (Palgrave Macmillan, 2012), <https://doi.org/10.1057/9781137002440>.

open spaces, among other suggestions<sup>2</sup>. This highlights the importance of byelaws as a public health measure for urban areas, and the deliberations made on it from more than a century.

### 1.1. History of the National Building Code.

In India, the States and the municipalities are empowered to make byelaws for controlling the built environment in the limits of the city. This meant that throughout India, across municipalities and states there were different bye laws that were in force. This fact was observed after the third Five Year Plan when the Planning Commission decided that the whole gamut of operations involved in construction, such as administrative, organisational, financial and technical aspects should be studied in depth. In 1965, a panel of experts were appointed and a 'Report on Economies in Construction Cost' was published in 1968<sup>3</sup>. This report revealed that some of the prevailing methods of construction were outmoded, some designs were burdened with safety factors and municipal building byelaws at some places were out dated. This resulted in the recommendation that a 'National Building Code' be prepared to unify the building regulations throughout the country. The work was entrusted to the Indian Standards institute which is now called the Bureau of Indian Standards. The Bureau of Indian Standards set up a guiding committee, for preparation of the National Building Code with representatives from construction agencies, research institutions, municipal corporations and other experts. The first version was published in 1970. This was revised in 1983 and a substantial revision was made in 2005. The current version is the National Building Code of 2016<sup>4</sup>, consists of 13 parts numbered from Part 0 to Part 12. These parts are composed in two voluminous books.

The Foreword of the current National Building Code, 2016 states that:

The Code contains regulations which can be immediately adopted or enacted for use by various departments, municipal administrations and public bodies. The provisions of this Code are intended to serve **as a model for adoption** by local bodies, Public Works Departments and other government construction departments, and other construction agencies. Existing PWD codes, municipal byelaws and other regulatory media could either be replaced by the National Building Code of India or suitably modified to cater to local requirements in accordance with the provisions of the Code.

(Emphasis supplied)

This clearly means that the National Building Code, 2016 is a non-binding, advisory or a recommendatory document which has to be adopted in part or as a whole by the local bodies for it to be actually followed in the jurisdiction of the local body which adopts it.

We shall analyse the status of adoption of the National Building Code-2016 (or previous versions) by the Delhi Development Authority in the Unified Building Bye Laws, 2016.

### 1.2. About the Unified Building Bye Laws-2016

Before looking directly at the Unified Building Bye-Laws, 2016<sup>5</sup>, the originating law must be taken into consideration. The Unified Building Bye Laws, 2016 have been created under the Delhi Development Act, 1957<sup>6</sup> along with the Master Plan of Delhi. There is also the Delhi Municipal Corporation Act, 1957<sup>7</sup> which clearly states two facts:

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<sup>2</sup> *Proceedings of the Third All-India Sanitary Conference Held at Lucknow, January 19th to 27th 1914* (Thacker, Spink & Co., 1914), <https://wellcomecollection.org/works/bha99znp/items?canvas=6>.

<sup>3</sup> 'Report on Economies in Construction Costs' (Planning Commission, 1968), <https://indianculture.gov.in/report-economies-construction-costs>.

<sup>4</sup> Bureau of Indian Standards, *National Building Code 2016*, SP 7: 2016, 2016.

<sup>5</sup> 'Unified Building Bye Laws for Delhi, 2016' (n.d.),

[http://119.226.139.196/tendernotices\\_docs/july2018/COMPENDIUM%20OF%20UBBL%20201605082020.pdf](http://119.226.139.196/tendernotices_docs/july2018/COMPENDIUM%20OF%20UBBL%20201605082020.pdf).

<sup>6</sup> 'Delhi Development Act, 1957', accessed 13 May 2022, <https://legislative.gov.in/sites/default/files/A1957-61.pdf>.

<sup>7</sup> 'Delhi Municipal Corporation Act, 1957' (n.d.), [https://www.mha.gov.in/sites/default/files/DMC-Act-1957\\_0.pdf](https://www.mha.gov.in/sites/default/files/DMC-Act-1957_0.pdf).

1. No building can be erected without the sanction of the Commissioner of the Municipal Body in Delhi.
2. The onus of creating the byelaws for sanction of buildings is to be created by the Central Government and not by the Municipality itself.

In this regard, the Delhi Development Authority, an organisation under the Central Government creates the bye laws for the whole of Delhi, in the areas under jurisdiction of the Delhi Development Authority. It goes on to state its exclusive role in creation of the Bye Laws for Delhi.

The Delhi Municipal Corporation Act, 1957 states as follows:

332. Prohibition of building without sanction.—No person shall erect or commence to erect any building, or execute any of the works specified in section 334 except with the previous sanction of the Commissioner, not otherwise than in accordance with the provisions of this Chapter and of the bye-laws made under this Act in relation to the erection of buildings or execution of works [349A. Power of Central Government to make bye-laws.—(1) The Central Government may, by notification in the Official Gazette, make bye-laws for carrying out the provisions of this Chapter

The Delhi Development Act, 1957, states as follows:

[53A. Restriction on power of a local authority to make rules, regulations or bye-laws in respect of certain matters.—(1) Notwithstanding anything contained in any law for the time being in force, no rule, regulation or bye-law shall be made or amended by a local authority in respect of matters specified in sub-section (2) unless the Authority, upon consideration of such rule, regulation or bye-law, certifies that it does not contravene any of the provisions of the master plan or the zonal development plan.

Under Section 57 read along with Section 13 of the Delhi Development Authority Act, 1957, the Delhi Development Authority (or DDA) enacts the Unified Building Byelaws.

The Sanctioning authorities under 1.4.10 of the Unified Building Bye Laws 2016 are:

1. The Delhi Development Authority,
2. New Delhi Municipal Council,
3. South Delhi Municipal Corporation,
4. North Delhi Municipal Corporation,
5. East Delhi Municipal Corporation,
6. Delhi Cantonment Board

This means that authorities 2 to 6 are not responsible for the creation of the building byelaws, as stated earlier, but may be responsible for execution of the byelaws made by the Developing Authority. The DDA may also be one of the Sanctioning Authorities, apart from playing the role of creator of the building byelaws.

## **2. Need for the Study:**

There may be some confusion with respect to the applicability of the provisions of the National Building Code, 2016 (or earlier) for obtaining a building permit in Delhi or other urban areas in India. This study studies the complete document of the Unified Building Bye Laws 2016 to see the various instances; the National Building Code may have been notified/adopted for a particular use case. This study compiles these and presents a clear picture of the applicable portions of the National Building Code, 2016 (and earlier versions) in the Unified Building Bye Laws, 2016. This will provide clarity in

knowing which provisions of the National Building Code, 2016 have been made mandatory by their application.

### **3. Aims of the Study:**

To find out the provisions of the National Building Code, 2016 that have been adopted in the Unified Building Bye Laws, 2016

### **4. Methodology:**

In this study the soft copy of the Unified Building Byelaws 2016 was opened in a PDF reader. A search function was operated with the terms 'national building code' and 'nbc'. The term 'national building code' resulted in 35 results and the term 'nbc' resulted in 41 results. All the positions of the location of the terms in the document were studied and compiled in a table. The table consisted of the following entries:

- 4.1. Clause of the Unified Building Bye Laws 2016
- 4.2. Provision from the National Building Code, 2016 (or earlier)
- 4.3. Contents of the Clause
- 4.4. Remarks.

A final analysis was then made with a list of the provisions from the National Building Code 2016 (and earlier versions) that have been included in the Unified Building Bye Laws, 2016. This will also indicate the provisions of the National Building Code, 2016 which will be deemed mandatory owing to their adoption in the Unified Building Bye Laws, 2016.

### **5. Results: Integration of the National Building Code, 2016 (and earlier versions) into the Unified Building Byelaws, 2016**

This paper aims to undertake a clause by clause study of where all any provisions of the National Building Code, 2016 have been mentioned in the Unified Building Bye Laws, 2016. This shall be tabulated in the Table 1 below:



**Table 1: Analysis of the Inclusion of Provisions from the National Building Code into the Unified Building Bye Law, 2016**

#	Clause of the Unified Building Bye Laws 2016	Provision from the National Building Code, 2016 (or earlier)	Contents of the Clause	Remarks.
1	1.3.4	No specific provision pointed out.	All documents such as Acts, Notifications, Rules & Regulations including BIS Codes, National Building Codes, Delhi Fire Service Rules, Indian Electricity Rules, etc. <b>referred in these Building Bye-Laws</b> shall be applicable as amended from time to time. Thus for the current status for any legal, official purpose, the amended provisions issued by the concerned Ministry/departments(s) shall be followed.	This states that the concurrent version of the National Building Code 'referred in these Building Bye-Laws' shall be applicable
2	Table 3.2	No specific provision pointed out. If defined within NBC, it is a limited inclusion.	Type of Construction: Type 1 & 2 only (as per the National Building Code)	It draws the definition of the Type of Construction as defined in the National Building Code.
3	Appendix XIV Environmental Conditions for Buildings and Constructions (Category '1': 5000 sq. m to <20,000 sqm) And Category '2' 20,000 sq. m to <50,000 sq. m ) and Category '3' (50,000 sq. m to <1,50,000 sq. m)	No specific provision has been mentioned. The most obvious reference is to Part 8, Section 1: Lighting and Ventilation of Buildings.	For indoor air quality the ventilation provisions as per National Building Code of India shall be made.	This is valid for the environmental clearances of only those buildings which fall in the built up category of 5000 sq.m up to 1,50,000 sq. m. This is not a blanket provision, as mentioned in Part 8, Section 1: Lighting and Ventilation in Buildings.

4	7.20 Lighting and Ventilation of Habitable Rooms read with 7.2.20	Part-VIII [incorrectly written as Part VII in the UBBL-2016] Building Services (Section-1 lighting and Ventilation of National Building Code of India, 2016)	7.2.20 Where the lighting and ventilation requirements are not fully met through day lighting and natural ventilation, the same shall be further ensured through artificial lighting and mechanical ventilation as given in part-VII Building services (Section-1 lighting and Ventilation of National Building Code of India). The latest version of the National Building Code of India shall be taken into account at the time of enforcement of these Building Bye-Laws.	This section specifically talks about Performance based Lighting and Ventilation.
5	7.23.1 f	Part VIII Section 1 Lighting and Ventilation of National Building code	There shall be provided at all time for each person employed in any room of factory at least 3.5 sq.m of floor space exclusive to that occupied by the machinery and a breathing space of at least 15 cum.	This is specific for industrial buildings, like factories.
6	7.24	Special Provisions for Other Buildings which are not covered under MPD and Building Bye Laws:	For Hospitals, Hotels & Banquets Halls, Stadiums, Jails, Court Complexes, Art Galleries, Museums, Filling Stations, Bus Terminals/ Depot, Multi-storey Parking, Sports Complexes and any other special structures/ buildings, the provisions in the following documents shall apply: a. Development Control Regulations of MPD. b. National Building Code. c. Any other statutory provisions of Republic of India. d. International Guidelines of credential.	This is valid for all those buildings which are not included in the Masterplan Delhi or the Unified Building Byelaws, which in fact cover most residential, institutional buildings, hospitals etc.
7	7.28.3	No specific provision mentioned.	Mechanical Car Lift and Hoist: Shall be as per relevant provisions of IS codes/ National Building code/ manufacturer specifications	
8	Table 8.2 Note 2	No specific provision mentioned.	Ramps shall be counted as one of the means of escape wherever permitted in National Building Code.	This clause is only valid for High Rise Buildings, which are buildings above 15 m height. Most plotted residential buildings are below this height. Therefore all provisions are not universal.

9	8.4.5 h.	Part 4: Fire and Life Safety, and Part 8: Building Services; Section 3: Air-conditioning, Heating and Mechanical Ventilation of National Building Code.	Mechanical extractors shall be designated to permit air changes per hour as required by NBC Part 4, Fire and Life Safety in case of fire or distress call. However, for normal operation, air changes schedule shall be as given in Part 8, Building Services, Section 3, Air-conditioning, Heating and Mechanical Ventilation of National Building Code.	This recognises the Part 4 and Part 8 (Section 3) for the purposes mentioned. This clause is only valid for High Rise Buildings, which are buildings above 15 m height. Most plotted residential buildings are below this height. Therefore all provisions are not universal.
10	8.4.9 k	Part V of the National Building Code, 2016 lists the IB codes that have been listed in the Unified Buildings Bye Laws 2016.	Glass quality shall be as per IS Codes given below in Table 8.3. 2553 (Part 1):1990 Specification for safety glass: Part 1 General purpose (third revision) 2835:1987 Specification for flat transparent sheet glass (third revision) 438:1994 Specification for silvered glass mirrors for general purposes (second revision) 5437:1994 Specification for figured rolled and wired glass (first revision). 14900:2000 Specification for transparent float glass. 16231:2014 (Part 4) Code of Practice on use of Glass in Buildings – Safety Related to Human Impact. <i>BIS Codes &amp; National Building Code of India concerning standards, as amended from time to time; unless otherwise specified in these bye –laws shall be followed.</i>	This clause is only valid for High Rise Buildings, which are buildings above 15 m height. Most plotted residential buildings are below this height. Therefore all provisions are not universal. This is because the adoption is only for the High Rise Buildings.
11	9.1 Structural Safety	Part-VI structural design, section-1 loads, section-2 foundation, section-3 wood, section-4 masonry, section-5 concrete and section-6 steel	The structural design of foundation, masonry, timber, plain concrete, reinforced concrete, pre-stressed concrete and structural steel shall be carried out in accordance with Part-VI structural design, section-1 loads, section-2 foundation, section-3 wood, section-4 masonry, section-5 concrete and section-6 steel of National Building Code of India taking into consideration all relevant standards prescribed by Bureau of Indian Standards including the	This appears to be universally applicable.

			standard given in IS-Code 13920-2016, 4326-1993, 13828-1993, 13827-1993, 13935-1993, 456:2000, 800-1984, 801-1975, 875 (Part 2):1987, 875 (Part 3):1987, 875 (Part 4):1987, 875 (Part 5):1987, 883:1966, 1904:1987, 1905:1987, 2911 (Part 1): Section 1: 1979, 1893-2002 for general structural safety, cyclone/wind protection, Earthquake protection.	
1 2	9.2.4 Quality of Materials and Workmanship	Part-V Building Materials and Part-VII Construction Practices and Safety	All material and workmanship shall be of good quality conforming generally to accepted standards of Central Public Works Department and Indian Standard Specification and Codes as included in Part-V Building Materials and Part-VII Construction Practices and Safety of National Building Code of India.	This appears to be universally applicable.
	9.2.5 Control of Signs (Hoardings) and Outdoor Display Structures.	Appears to be Part 10, Section 2: Signs And Outdoor Display Structures	No advertising signs (including hoarding) on buildings or on land shall be displayed without the prior approval of the Sanctioning Authority. The standards specified in National Building Code of India as amendments time to time shall be applicable.	This only talks about hoardings for advertising, but gives this specific provision a universal applicability.
	9.3 Fire Safety	Part 4: Fire and Life Safety	Rule 27 of Delhi Fire Service Rules shall be marked fire and life safety measures as per the National Building Code of India concerning minimum standards for fire prevention and fire protection as covered under Rule 33 of the Delhi Fire Service Rules	This makes Part 4: Fire and Life Safety valid only for Certain Buildings (High Rise) like Residential buildings above 15 m, educational, mercantile and institutional above 9m, etc., as per Rule 27 of Delhi Fire Service Rules, 2010. This means it is not universally applicable.
	9.3.2 Pressurization of Staircases (Protected Escape Routes)	Part 4: Fire and Life Safety	For pressurization specifications of various building components refer NBC Chapter 4 Fire and Life Safety.	This makes Part 4: Fire and Life Safety valid only for Certain Buildings (High Rise) like Residential buildings above 15 m, educational, mercantile and institutional above 9m, etc., as per Rule 27 of Delhi Fire Service Rules,

				2010. This means it is not universally applicable.
	9.3.9 Provision of First Aid, Fixed Fire Installation and Fire Fighting Appliances	Part 4: Fire and Life Safety	The fire fighting measures shall be provided on all floor including basements, occupied terrace, lift rooms etc. as per the National Building Code of India, Part 4, Fire and Life Safety, (Minimum requirement for fire fighting appliances) as applicable with reference to the height and class of occupancy.	This makes Part 4: Fire and Life Safety valid only for Certain Buildings (High Rise) like Residential buildings above 15 m, educational. , mercantile and institutional above 9m, etc., as per Rule 27 of Delhi Fire Service Rules, 2010. This means it is not universally applicable.
	9.4 Building Services: General	Part-VIII Building Services, Section-2 Electrical Installation, Section-3 Air conditioning and heating, Section-5 installation of Lifts and Escalators	The Planning design and installation of electrical installations, air conditioning installation of lifts and escalators should be carried out in accordance with Part-VIII Building Services, Section-2 Electrical Installation, Section-3 Air conditioning and heating, Section-5 installation of Lifts and Escalators of National Building Code of India.	These provisions appear to be universally applicable.
	9.4.4 Plumbing Services	Part-IX Plumbing Services, section-1 water supply; Section-2 Drainage and Sanitation and Section-3 Gas Supply	The planning, design, construction and installation of water supply, drainage and sanitation and gas supply system shall be in accordance with Part-IX Plumbing Services, section-1 water supply; Section-2 Drainage and Sanitation and Section-3 Gas Supply of National Building Code of India.	These provisions appear to be universally applicable.

Table 9.15 Sanitary Requirements for Large Stations and Airports.	Part ix Section 2- Drainage and Sanitation	Note: Provision for wash basins, baths including shower stalls, shall be in accordance with Part ix Section 2- Drainage and Sanitation of National Building Code of India and amendments time to time.	This provision is Valid for Airports and Large Stations only, but the NBC Part is otherwise universally applicable.
Annexure VI	Not Specifically Mentioned	MPD 2021, provides the guide for the preparation of Layout Plans under the various regulations including norms for facilities and circulation system whereas Service Plans for the provision of physical infrastructure like, Water supply, Sewage, Drainage etc. have to conform to the Municipal Bye Laws as provided in the National Building Code.	Reference is made with respect to the Development Control Rules and General Building Requirements
Annexure VII 1: Protection from Earthquakes		In those areas where there are no dangers of soil liquefaction or settlements or landslides, all building structures and infrastructures should be designed using the relevant Indian Standards as provided in the Building Regulations and the National Building Code	This is to be read with Part 6 of Structural Safety which is already universally applicable.
Annexure VII 2: Protection from cyclonic wind damage		Buildings, structures and infrastructures in the cyclone prone areas should be designed according to the Indian Standards and Guidelines as provided in the Regulations and the National Building Code.	This is to be read with Part 6 of Structural Safety which is already universally applicable.
Annexure X: 3 b	Part 8, section 3	The inside design conditions of a conditioned space shall conform to National Building Code 2005 (Part 8, section 3) The outside design conditions shall conform to National Building Code 2005 (Part 8, section 3)	Energy Efficiency for HVAC, mandatory only for Commercial buildings.
Chapter 2: g Service Plans		Service plans of building services such as plumbing, HVAC, installation of electrical fittings, etc., as per NBC norms and standards are to be shown on the same scale as that of the building plan.	This is as per the NBC Norms which have been otherwise made mandatory.

	Chapter 2: j Requirement of Site	Part III : Development Control Rules And General Building Requirements	Distance from Electric Lines: No verandah, balcony, or the like shall be allowed to be erected or any additions or alterations made to a building within the space between the building and overhead electric supply line in accordance with the Indian Electricity Rules (National Electric Code 2011, Clause 3.2) and its amendments from time to time The distances provided in NBC (Part III) are indicated.	The Part 3 is the general guidelines, or model development guidelines. Making this mandatory will over rule all bye laws.
	7.4.13	Part 4: Fire and Life Safety	For basement of size more than 200sq.m. of BUA, the Fire Safety measures as per NBC –Part 4 norms shall be followed.	This appears to be a universally mandatory provision.
	7.23.3	Part 6: Section 1 3.2.1.1 Assembly buildings — These shall include any building or part of a building where groups of people congregate or gather for amusement, recreation, social, religious, patriotic, civil, travel and similar purposes; for example, theatres, motion picture houses, assembly halls, city halls, marriage halls, town halls, auditoria, exhibition halls, museums, skating rinks, gymnasiums, restaurants (also used as assembly halls), place of worship, dance halls, club rooms, passenger stations and terminals of air,	Assembly Buildings (Cinema, Theatres, Multiplex, Auditorium, Museum, Exhibition hall, Gymnasium, Stadia, Restaurant, Club room etc.) Definition of Assembly Buildings as per NBC shall be followed.	This is for the sake of definition.

		surface and other public transportation services, recreation piers and stadia, etc.		
	7.23.3 d	At various Sections.	Design Guidelines for Assembly Buildings, if not provided in these bye -laws and MPD then in-force, the NBC guidelines or any other statutory provisions of Republic of India shall be followed.	This is an exceptional rule for Assembly buildings.
	8.4.3 g	Part 4, Fire and Life safety Table no1 to 18	Access to main staircase shall be gained through adequate fire resistance rating (Refer NBC Part 4, Fire and Life safety Table no1 to 18) Automatic closing doors placed in the enclosing walls of the staircases. It shall be a swing type door opening in the direction of the escape.	Only valid for High Rise Developments.
	8.4.3 k	Part 4, Fire and Life safety	In case of single staircase it shall terminate at the ground floor level and the access to the basement shall be by a separate staircase. However, the second staircase shall lead to basement levels provided the same is separated at ground level by either a ventilated lobby with discharge points at two different ends or through enclosures with fire resistance rating door (Refer NBC Part 4, Fire and Life safety) or through a fire protected corridor.	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010
	8.4.4 Lifts	Part 4, Fire and Life safety	Lifts Walls of lift enclosures and lift lobby shall have fire rating of two hour; Lift lobby doors in lift enclosures shall have fire resistance Lifts if communicating with the basement, the lift lobby of the basements shall be pressurized as suggested in clause 8.5.4(f) and 8.5.4(h) with self-closing door with fire resistance rating For Pressurization Specifications of various building components refer NBC Chapter 4 Fire and Life Safety Clause 4.10	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010



8.4.5 Basements	Part 4, Fire and Life safety (most related)	The staircase of basements shall be of enclosed type having fire resistance rating The staircase shall communicate with basement through a lobby with self-closing doors with fire resistance rating as per relevant NBC code mentioned above. For travel distance table 8.2 given below should be followed. If travel distance exceeds that given in the table below, additional staircases shall be provided. Mechanical extractors shall be designated to permit air changes per hour as required by NBC Part 4, Fire and Life Safety in case of fire or distress call Boiler room shall be provided at the first basement along the periphery wall with fire resistance rating	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010
8.4.6 Compartmentalisation	Part 4, Fire and Life safety (most related)	The building shall be suitably compartmentalized so that fire/smoke remains confined to the area where fire Incident has occurred and does not spread to the remaining part of the building. All floors shall be compartmented as per NBC	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010
8.4.7 Ramps	Part 4, Fire and Life safety (most related)	All structural design/safety aspects as per latest BIS Codes & NBC, shall be complied along with consideration of weight of Fire Engine & its manoeuvrings Minimum size of the car lift shall be as per NBC norms.	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010
8.4.9	Part 4, Fire and Life safety (most related)	Service ducts and shafts shall be enclosed by walls and doors with fire resistance rating (Refer	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010

8.5.2 Electrical Services	Part 4, Fire and Life safety and Part 8, Section 2: Electrical and Allied Installations. (most related)	Separate circuits for water pumps, lifts, staircases and corridor lighting and blowers for pressurizing system shall be provided directly from the main switchgear panel (for detailed specifications refer NBC).	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010
8.5.4 Air Conditioning	Part 4, Fire and Life safety and Part 8; Section 3: Air Conditioning, Heating and Mechanical Ventilation. (most related)	The air filters of the air-handling units shall be of non-combustible materials or fire rated (refer NBC)	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010
8.5.6 Gas Supply	Part 4, Fire and Life safety and Part 9; Section 4: Gas Supply (most related)	For detailed information on gas pipe installations, refer NBC.	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010
8.10 General features – free from FAR calculations (subject to Fire Safety Clearance and other mandatory clearances):	Part 4, Fire and Life safety and Part 8; Section 5: Installation of Lifts, Escalators and Moving Walks. (most related)	The lift lobby preventing stake and plume effect as per NBC norms and as approved by the Fire Services, shall be free from FAR calculations. For size of lift lobby See 8.4.4. (a).	Only valid for High Rise Developments, which are defined in the UBBL-2016 as 'Any buildings of 15m and above height shall be considered as high rise building.' Or as per Section 27 and 33 of the Delhi Fire Service Rules, 2010

9.31 Fire Escape Staircase	Part 4, Fire and Life safety (most related)	The route and enclosure to fire escape shall be free of obstructions at all times, except a doorway leading to the fire escape which shall have the required fire resistance. Fire escape shall be constructed of non-combustible materials of required fire resistance (refer NBC Part 4). Unprotected steel frame staircase will not be accepted as fire escape. The staircase enclosure if on external wall of the building shall be ventilated to atmosphere at each landing or in case it is in the core of the building it shall be maintained at a positive pressure as mentioned in NBC part IV, Fire and Life Safety, with both automatic and manual operation facilities and fire alarm systems.	Only valid for buildings as per Section 27 and 33 of the Delhi Fire Service Rules, 2010 (Refer 9.3 of the UBBL-2016)
9.3.2 Pressurization of Staircases (Protected Escape Routes)	Part 4: Fire and Life Safety. (most related)	For pressurization specifications of various building components refer NBC Chapter 4 Fire and Life Safety.	Only valid for buildings as per Section 27 and 33 of the Delhi Fire Service Rules, 2010 (Refer 9.3 of the UBBL-2016)
10.1 Provisions and applicability of Green Buildings	Not specified, but maybe suggesting Part 11: Approach to Sustainability. (most related)	<i>The schemes/ projects formulated on the basis of provisions given in Master plan/ Zonal Development Plan will require approval as indicated: {Chapter 3 of these Bye-Laws, NBC (latest), ECBC 2007 or latest, BEE Star rating/ IGBC/ GRIHA Certification}</i> Provisions and applicability for various plot sizes (all use premises)	Valid for all buildings of plot size more than 105 sq. m. (This excludes a major chunk of plotted residential building stock of Delhi)
11.3 Applicability of Provisions for Universal Design for Persons with Disabilities, elderly and Children	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	<i>For additional and detailed requirements other than specified in these Unified Building bye- Laws 2016, the Harmonized Guidelines and Space Standards for Barrier Free Built Environment for Persons with Disability and Elderly Persons – February 2016 published by Ministry of Urban Development, Govt. of India shall be followed along with NBC Chapter 3- Clause 13 Requirements for accessibility in Built environment for elders and persons with disabilities and Annex B: Anthropometrics and Requirements for Accessibility in Built-Environment for Elders and Persons with Disabilities.</i>	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.

11.4.3	Tactile Ground Surface Indicators (TGSI): Tactile Guiding and Warning Blocks:	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	Tactile ground surface indicators or tactile guiding and warning tiles/blocks aid blind and vision impaired pedestrians negotiate the built environment shall be provided as per NBC norms in force.	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.
11.5.1		Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	<i>Note: For Details of Doors, Windows, Operational Control and devices and other building requirements, Signages, Escalators etc. the standards specified in NBC Chapter 3 - Clause 13 Requirements for accessibility in Built environment for elders and persons with disabilities and Annex B: Anthropometrics and Requirements for Accessibility in Built-Environment for Elders and Persons with Disabilities shall have to be followed as amended from time to time.</i>	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.
11.8.1		Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	Visual contrast and lighting, emergency assistance alarm, as per NBC in force.	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.
11.8.2.1		Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With	It shall have a water-closet; grab bars, and washbasin, essential washroom accessories, an alarm to seek emergency help, complying with NBC in force.	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.

		Disabilities		
	11.8.4 a	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	Grab bars as per NBC norm in force shall be provided in toilet or sanitary rooms in accordance with this clause.	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.
	11.13.2	Part 3, Section 13 Development Control Rules And General Building Requirements: Requirements For Accessibility In Built Environment For Elders And Persons With Disabilities	The minimum number of accessible changing rooms should be provided depending on the type and use of the building. In the event that changing rooms are provided alongside a toilet area, these should comply with the specifications as per NBC in force. An alarm/call bell/switch shall be provided as per NBC in force.	Accessibility clauses are only applicable to Public Buildings. Not applicable to private plotted residences. Even in Residential Group Housing, it is valid only for common areas on the ground level/stilts.
	Table 13.2; 1: Hospital/Tertiary Health Care Centre		No height restriction subject to clearance from AAI, DFS, DMA, NMA to process the proposed revision of NBC as soon as possible. Till the time the NBC is revised, Delhi Fire Service (DFS) may allow no restrictions of height for health care facilities with commensurate fire and life safety measures, subject to clearance from AAI, DFS, MA, NMA and other statutory provisions	Exclusion is made for Healthcare Buildings Height Clearance, provisionally.

	Annexure V 2:	Part 4: Fire and Life Safety.	The minimum standards for fire prevention and fire safety for buildings as may be applicable with reference to the height of the building and class of occupancy for the purposes of section 32 and section 35 of the Act shall be as are provided in the building byelaws or National Building Code of India 2005 Provided that classes of occupancies or buildings or premises for which fire prevention and fire safety measures are not provided in the building bye-laws or National Building Code of India 2005, the Director may require owner or occupier of such occupancies or buildings or premises to provide fire prevention and fire safety measures in accordance with international standards as may be provided by the Fire Prevention Wing,:	Only valid for buildings as per Section 27 and 32, 33 and 35 of the Delhi Fire Service Rules, 2010 (Refer 9.3 of the UBBL-2016)
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## 6. Analysis:

In general, from the results tabulated above, it can be stated that

The Unified Building Bye Laws 2016 have been selective in choosing the provisions of the National Building Code 2016.

On an analysis it was found that, there were various clauses that were universally applicable and there were others that selectively applicable.

The list of clauses analysed, along with their applicability and the riders are given in Table 2.

**Table 2: The analysis of the adopted provision of the National Building Code, 2016 in the UBBL-2016**

S. No	Provision of the National Building Code, 2016	Whether adopted to be given universal applicability in the Unified Building Bye Laws 2016	If not universal, the limited conditions in which the provision of the National Building Code, 2016 is applicable to the UBBL-2016/Other Remarks.
1	Part 0: Integrated Approach-Prerequisite for Applying Provisions of the Code.	No	
	Part 1: Definitions	No	
	Part 2: Administration	No.	Service Plans (The drawings) for Building Services are to be made as per the NBC.
	Part 3: Development Control Rules and General Building Requirements.	No. Part 3, Section 13-Development Control Rules and General Building requirements for Accessibility in Built Environment for elders and persons with Disabilities is universally applicable to Public Buildings.	General Guidelines esp. when distance in electric lines is to be defined. Part 3, Section 13 not valid for general private residences and group residences (with exception to public spaces)
	Part 4: Fire and Life Safety	No	-Valid only for High Rise Buildings defined as buildings with height $\geq 15$ m, or defined in Section 27, 32, 33, and 35 of Delhi Fire Services Rules, 2010 -Appears to be universally valid for basements, more than 200 sq. m.
	Part 5: Building Materials	Yes	
	Part 6: Structural Design	Yes	
	Part 7: Construction Management, Practices and Safety	Yes	
	Part 8: Building Services		
	Section 1: Lighting and Natural Ventilation	Yes	
	Section 2: Electrical and Allied Installations	Yes	

	Section 3: Air Conditioning, Heating and Mechanical Ventilation	Yes	
	Section 4: Acoustics, Sound Insulation and Noise Control	No	
	Section 5: Installation of Lifts, Escalators and Moving Walks 5A Lifts 5B Escalators and Moving Walks	Yes	
	Section 6: Information and Communication Enabled Installations	No	
	Part 9: Plumbing Services(Including Solid Waste Management)		
	Section 1: Water Supply	Yes	
	Section 2: Drainage and Sanitation	Yes	
	Section 3: Solid Waste Management		
	Section 4: Gas Supply	Yes	
	Part 10: Landscape Development, Signs and Outdoor Display of Structures.		
	Section 1: Landscape Planning, Design and Development	No	
	Section 2: Signs and Outdoor Display Structure	No	Only Specific Provision of Permission for Outdoor Hoarding is universally applicable
	Part 11: Approach to Sustainability	No	
	Part 12: Asset and Facility Management	No	

The following Parts and Sections mentioned in the National Building Code, 2016 (or earlier versions) appear to be given universal applicability across buildings:

1. Part V: Building Material
2. Part VI: Structural Design
3. Part VII: Construction Management, Practices and Safety
4. Part VIII, Section 1: Lighting and Natural Ventilation
5. Part VIII, Section 2: Electrical and Allied Installations
6. Part VIII, Section 3: Air Conditioning, Heating and Mechanical Ventilation
7. Part VIII, Section 5: Installation of Lifts, Escalators, and Moving Walks
8. Part IX, Section 1: Water Supply
9. Part IX, Section 2: Drainage and Sanitation
10. Part IX, Section 4: Gas Supply

## 7. Conclusion

For any provision of any guideline or advisory to be legally binding, it must be backed by a law duly promulgated by the legislature. Any document that is advisory in nature or is a guideline cannot be legally enforced. The mere nature of the National Building Code, created by the Bureau of Indian Standards, is advisory. The Unified Building Bye Laws, 2016 on the other hand is a document created by law under the Delhi Development Authority Act, 1957 read along with the Delhi Municipal Corporation Act, 1957.

The Unified Building Bye Laws 2016 have taken multiple provisions from the National Building Code 2016 and earlier versions. But it is appropriate to state that the whole of the National Building Code, 2016 has not been adopted in the Unified Building Byelaws, 2016. It can also mean that the whole National Building Code, 2016 (or earlier) is not a binding document. This would also means



that since the Unified Building Bye Laws, 2016 is the legally binding document, for obtaining building sanction/permit, the provisions of the National Building Code 2016 (and earlier versions) which have not been specifically included/adopted/referenced in the Unified Building Bye Laws 2016 are not mandatory but voluntary in nature. These are not legally binding.

It is further recommended that the National Building Code, 2016 created after much deliberation, by an expert committee, must be adopted in total by all states and municipalities, as this will decrease any scope for discrepancy which may exist from city to city. This will also channelize the energies of the experts to create one expert document instead of repeating energy state by state and municipality by municipality.

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### **CASRAI Author CRediT:**

Author RS did Conceptualization, Data Curation, Formal Analysis, Methodology, Writing-original draft and Writing-review & editing.

Author MM did Supervision, Validation and Project Administration and Writing-review & editing.

Author AD did Supervision and Validation.

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