

## Establishment and locating criteria of tall buildings

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**Abstract:** - High today of the major events of the world and especially in big cities. The growing population and shortage of land prices and urban development problems can be horizontal, vertical and Exalted Among the reasons for making the move to the development said. Development of tall buildings around the world, especially in the last two decades steeply upward growth. Always the tall buildings and urban professionals, architects and other scholars focus of discussion was the construction of the various ways it has been criticized for supporting. Tall buildings as the main index compared to other elements of spatial structure - Physical Cities in shaping the present and future prospects of cities and towns as well as in terms of length and grade plays a role in the world. The relationship between the primary objective of building long exposures and positions and principles of construction in accordance with the provisions of Sublime and its status in the region. This communication must not nobleman in a way that not only enhances the graceful buildings must also comply with the city sky line. The purpose of this study was to investigate how to establish a long and important buildings from the key criteria in making tall buildings and locate them.

**Method:** This descriptive - analytical understanding of the principles that tall building, the location of tall buildings and measures are playing a major role in a tall building, is provided at the end of a tall building better strategies to improve the taking proper places to build them are discussed.

**Keywords:** - tall building, location, building density, sky line.

### I. INTRODUCTION

Since population of cities increased and rate of population global growth was continued demand of house very much, so, human also has afforded to carry out present problem by ways of variation including the way - tend to have towers. These methods tend to the towers. This phenomenon can be considered as a basic phenomenon in current urbanism. The second half of the nineteenth century, beginning with the vertical growth of buildings (tall building) has been associated with the West. Since then, the high-rise building phenomenon has registered his face as one of the dominant figures in the world of architecture and urbanism. The debate about high density commercial development inevitably touches on the controversial area of tall buildings. After a period of low demand, tall buildings have grown in popularity over the last two decades, particularly in commercial areas. Tall buildings since the beginning of the formation of human civilizations, the attention has been focused on people and communities. Industrial Revolution in Europe and the changes that occurred in the eighteenth and nineteenth centuries AD, brought about major changes in the lifestyle and subsequent multiple occurrences of inventions and discoveries made more speed up the process. These developments create new cities and the rapid expansion of existing towns and followed up with a way of taking advantage of modern buildings as a solution to urban development were used. However, in many cases, the lack of high-level theoretical authentic view of architecture, urban planning and construction, has been criticized, but these buildings are always based on the needs of communities, their continued presence on the field proven also added.

## II. PROBLEMS DEFINED

21 century, without a doubt, the sky is called scratch. Prior to the construction of tall buildings around the world reflect on the impact of global competition in the development of leading world cities. And had not been developed at the height of insecurity in times of disaster and 5 times higher than other cities in height evolved suffer. More than a century has passed since the advent of residential and commercial class. (Towers and skyscrapers – New York). In the beginning, such as a sign structure of technological progress and technical communities have been recognized. The introduction of modern methods of design and architecture, the use of new and advanced materials, the emergence of new technologies such as System Installation central air, fire, garbage disposal, pumping water to the upper floors, elevators, and even introduced New patterns of urban life and provided in accordance with modern architecture, including some who were not provided with any one, not Sublime building could be considered as part of the construction industry. Why was the first high- abrasion and sky line, in advanced industrial societies - particularly the United States of America - tall and proud, the sky line?

Something that causes problems in different dimensions and aspects of social, economic, and security is the horizontal growth of the main obstacles to sustainable urban development and the security dimension, areas for social disturbances, and the non-prepared unrests. Although domestic experts estimate the extent of damage in cities with high-rise buildings are short and not confined to scientific analysis But urban planners in developing countries that have a high percentage of high-rise buildings are the facts and figures have It indicates that the growth of cities that have not developed horizontally and the height of insecurity in times of disaster and 5 times higher than other cities in height evolved suffer. Tall building design from early to late stages of construction requires a precise and extreme efforts on issues such as the use of technology and modern structures responsible for building, environmental issues, according to the vision and perspective of the urban fabric and the inside the building, according to the energy consumption of buildings and being rejected by the inhabitants of the issues that will be very important in the present era. In addition, and perhaps at the top of a tall building metropolitan management issues and administrative managements of other issues that should be considered in these buildings. The views expressed in this article while working in the field of tall buildings and high-rise building construction to review the terms of the main criteria in the areas of construction pay.

## III. RESEARCH NEEDS

Issues such as population increased in the twentieth century, the need for more housing in the cities, the need for greater use of land in high-density urban centers, the need to rebuild and modernize urban areas, people want to live and work in urban centers and the need to reduce costs caused by horizontal expansion of cities, among the factors that make tall buildings in major cities worldwide as a necessary raised. But in many countries, the predominance of trade and economic development goals and standards caused non-coherent combination of poor in urban areas is a variety of functions. Construction of tall buildings with modern style, first in America and then in Europe began in large cities after decades in developing countries were also common. Requirements today, especially the increase in population growth and urbanization, has prompted officials to deploy more growing population in urban areas, high-rise buildings or in other words, to promote the vertical growth of cities. Also, due to the increasing population, especially in the big cities on the one hand relatively significant amount of housing on the one hand and the need to prevent the spread of the urban landscape, Construction of tall buildings as a solution to the land issue is essential.

## IV. METHODOLOGY

In this study, the above mentioned methods, analytical - descriptive and inferential statistics, which is kind of asking for definitions and principles of construction to determine the location of tall buildings, long-discussed, paying to construction regulations and observance of the permitted height and bearing in mind the rule of the nobility, would be measures in place and construction sites.

### Tall building

‘Tall’ is a relative term, and any discussion of tall buildings needs to be set in an appropriate context. Planning guidance has tended to define high buildings as structures which significantly exceed the general building heights of their surroundings. As the average height for buildings increases, this means that buildings defined as tall at one moment in time, or in one particular place, may not be considered tall in another context. (Buchanan and partners; 2008: 25) High density and tall buildings are not synonymous – it is possible to have relatively high density without tall buildings, and some tall buildings have a low net to gross floor space ratio, thus constraining density.

- The tall building and urban settlements, the building is defined as follows: the height of a building, causing the formation of various conditions on the design, construction and use of those buildings are in an area at a

particular period, it is. Hence, the location and the construction of tall buildings and materials as long as they are dependent on the height of 300 meters beyond (CTBUH, 1995, 31).

The difference is that the building of skyscrapers and tall buildings do not necessarily use all classes of office, residential and there, but a significant number of skyscrapers are composed of layers with different functions. In other words, a subset of the tall buildings are skyscrapers. Another definition that has emerged in recent decades, the buildings taller than three meters high is said above; buildings over 150 meters tall skyscraper called the lower height of buildings, the main difference in their surrounding environment. is the height of other buildings, tall buildings are considered. (CTBUH, 2013).

#### **Building density (coefficient of Infrastructure)**

One of the major problems faced by many people living in the city's congestion problem. Every day we hear several times the density of words, but it means that it is used in architecture and urbanism do not know. After hearing the word density in the sense that everyone thinks in his mind, is the accumulation and compaction. Increased density leads to increased productivity in five key ways:

- increased specialization – there may be enough business to support a general accountant or lawyer in a small town but in a large city there is enough to support business advisers who specialize in very narrow fields of work thereby improving efficiency and expertise;
- Knowledge spillovers, both between firms in the same sector and across sectors, leading to increased innovation;
- Competition – the presence of lots of firms offering similar products spurs on competition, innovation and efficiency and there are lots of buyers to compete for;
- Larger labor markets offer wide choices for employers and the opportunity to recruit staff with specialist skills;
- Economies of scale are created by serving larger markets.

#### **Height and relative height**

The height of the building due to its quantitative nature is a factor, which easily controlled due to the destination between the object and the observer, as well as the confinement of the building as 1 to 2, buildings higher than 3 stories are out

#### **Height and human scale**

One of the key issues associated with the architecture of tall buildings, a significant effect of height (as inherent and inalienable tall buildings), and the proportions of the formation of this type of buildings. Because of the high rise buildings is inherent, it can be concluded that the building would look good on a human scale, at first seems to be true. To create a human scale tall buildings can create optimum space around the building creates visual depth than optimal communication structure and form in the viewer to bring there. To achieve an appropriate human scale to the space around it should not be too large visual contact with the surrounding atmosphere is weak and of course it should be small enough to feel the fear of large-scale structure in a confined space makes the man.

#### **Building Floors**

One of the measures that can be used as a tool to control the population density, the number of structural classes is allowed. Building index actions to control the number of classes is allowed. Floors of the building have a direct impact on the sky and landscape and therefore, is an important index for city planners. In summary, the method of construction of floors allowed near the dumping ground is allowed to occupy. Terms tall building in Iran is formed based on the same logic.

#### **Sky line**

Sky Line, the boundary layer separation on the sky of the observer. Sky Line is one of the most important elements of the urban landscape and identity, including TV and view any place.

#### **Theoretical tall building and its growth**

Tall building in the world is a phenomenon of the late 19th and early 20th centuries the figure itself and the first steps in the development of skyscrapers from around 1880 to 1900 was taken in Chicago. Formation and growth of this phenomenon can be explained in terms of different views and opinions. Actions taken toward the tall building in the world can be searched in the following schools:

#### **Chicago school**

Chicago school is a term used in the context of changes in the city of Chicago after the Great Fire of 1871 refers .simple and away from any array of decorations inside and outside the building, along with other structures, is shown .not urban. These attitudes and density of tall buildings in the vicinity of each other growing cities in America, especially intissues has been the center of many cities.

**Modernization School (Functionalism)**

The school reached its peak growth in the twentieth century and the most influence in shaping this century has skyscrapers. Great ideas for this school more than anything arising out of poor conditions of the lower classes of urban industrial society. One of the leaders of this school, "Walter Gropius", "Le Corbusier" and "Mies Van Der Rohe" named.

General principles of their beliefs through statements that the 1931 Charter of Athens, Athens, presented at the World Congress of Modern Architecture by Le Corbusier and later writing income is available. The large high-rise projects other than the school of thinkers can meet the pressing need for housing and other needs, as well as other dimensions of the cover. Performance traditions of the past in any field of applied arts and technology and techniques, materials, forms of construction and urban form rejected and the application of new techniques stressed the industry. Create specific shapes and simple (no decoration and presentation) in front of a decorative shapes and decoration covered with gravel, using geometric shapes in buildings and urban versus organic forms in buildings and urban context of the sample. Modulation, and pre-fabricated standardization also other principles of this philosophy. Result of industrial applications and new techniques to achieve mass production to production, construction and housing, and economic performance has been the concern of other aspects of the school.

**Constructivism School**

Constructivism school branch of modernism (performance -oriented) in Russia (USSR) after the October revolution, which coincides with the end of World War II. Characterized the years following the First World War, the Soviet Union was intense activity in the field of urbanism and architecture, took the theoretical and practical aspects .building on a large scale in the extreme simplicity of the action inside and outside the building. Developments in this direction due to the need to rebuild the Soviet revolution and offering new plans in all matters rose.

**Structuralism School (technology -oriented)**

The mid-1950s and for almost 20 years, the idea of an urban area (in the form of a large interconnected buildings) on architectural thinking about cities reigned. Street form a walkway or a bridge, protected against the weather, the indoor courtyard inside the building as a function of a huge and gigantic frame .capabilities emphasize the latest technology and the emphasis on the practical projects - fiction, such as vertical cities, settlements in three dimensions, in space, in the space of artificial and abnormal high-density assembly of complex structures and mechanisms offered. The first mega- structure projects by Japanese architects ' Kenzo Tangeh "Boston harbor was developed for this project for Bank of Tokyo released the same year. Other projects can Mega structure residential complex "Safadi Moshe", "SFU" in Columbia by Arthur Erickson, the airport "Charles de Gaulle" near Paris and ... Noted.

**History of tall building**

For over a century, the rise residential and commercial buildings in the class (including towers, high rises and skyscrapers) passes. Find a way, these structures were recognized as a sign of technological progress and technical communities. The introduction of modern methods of design and architecture, the use of new materials and advanced, emerging technologies, new facilities such as central air conditioning systems, fire fighting, garbage disposal, pumping water to the upper floors, elevators, and even introduces new patterns of life this modern urban architecture, including some that were not being provided for each tall building could be raised as part of the construction industry. But gradually, over time and especially after the end of World War II, the construction of high rises and skyscrapers, the boast of strength and technical capabilities of the countries, was another important reason: High population growth and lack of adequate land for construction of residential units. Countries such as Japan, Hong Kong, Malaysia and Singapore, quickly followed by major industrial countries, especially the United States of America, they began to pace in this way.

With the start of the last decade of the twentieth century, this transformation has been, however, in support of sustainable behaviors, new facade, free-form mass of words and symbolic architectural innovations have been made. Used in most countries, the growing trend, tall building as a symbol of industrial progress and its technical agenda were; Moreover, population growth, as well as other issues raised only a number of small and overcrowded, but had become a global issue. Our knowledge of the development of tall buildings has grown and developed over our history in a way that matters is that it all firsthand knowledge of business operations and the project is over. We need to be experts in this field to Know and as well as focus groups of individuals who have been focusing on the development of skyscrapers and the alliance of specialized researchers to engage with. Consequence according to the type of high rise buildings in urban areas and the need for multidisciplinary caused the rise buildings as one of the significant issues in the field of engineering and architecture in tall

buildings in Hong Kong Conference 1990 and presented papers in the field of tall building architecture indicates the importance of the tower in the world today is, papers in different fields such as systems and concepts, structures, tall buildings, high-rise office buildings, innovation in the field of tall building design, modular systems, studies and buy aesthetic design of tall buildings in the urban context of vertical social behavior residents of high-rise buildings, saving energy costs immunization against fire, wind and earthquake seismic monitoring in the field and will provide a variety of specialties, all of which indicate implications in the design and implementation of the towers. All the things mentioned above are crucial in creating unity among members effectively. (See table 1.) In cities such as New York, Chicago, Shanghai and Singapore are known to influence the sky. Cloud structures, mainly in the United States and Asian countries like Japan and China are seen. Dubai is also the city where homes have recently been converted to cloud structures. In Europe, Rotterdam, Warsaw and Moscow are examples of cities where skyscrapers have constructive effects. A large part of the cities in Western Europe, traditionally urban areas have evolved in a way that suggested that skyscrapers could be considerable resistance. Table1. Differences (differences) in the number of buildings that suggests the sky.

(Table 1)Tall building height minimum

country	Height(meters)
Austria	25
Belgian	25
Denmark	22
Germany	22
Finland	28
Netherlands	13
Norway	22
Sweden	23
Switzerland	22
England	24

#### General regulations governing the design and construction of tall buildings

- Having legal distance from the sidewalk or street lighting sun to create public spaces and streets.
- Keep a distance from each other's legal structure (e.g., assuming a distance of 2.5 meters maximum height of 27 meters) taller buildings on the 8th floor and independent construction apart following is recommended because it is less buildings construction an array of capital condensing and the shadow is passing quickly. Construction of these buildings is not obstructing the natural scenery and landscape urbanism should be built in inappropriate places.

#### Engineering principles based on international and national laws

- Location of tall buildings
- Remoteness from locating of seismic faults.
- Sufficient impermeability and resistance to dirt construction site
- Far away from power lines.
- The issue of privacy.

Not a problem of environmental pollution because these structures with respect to the rate of height and width and shape, can act as a barrier against air movement and increased air pollution, it be utilize better pencil style (narrow buildings) In physical terms, and it is recommended that access to the building as possible at a distance of 500 meters or 1000 meters from the bus station, subway stations are located. Highways and Motorway connects directly to the input of these buildings is prohibited; except for certain important buildings. If the building height to width ratio of 2 to 1, 1 to 1 or 1 to 2 if there is an active and dynamic modes exceed the ratio of 2 to 1 gives a sense of fear of the narrowing space.

In physical and accessibility rules, it is recommended that access to the building established as possible at a distance of 500 meters or 1000 meters from the bus station, subway stations are located. It is forbid direct connects these buildings entrance to Highways and Motorway, unless some case such as special significant buildings.

#### Principles tall building designated locations

The general criterion is the sensitivity to the natural environment and the built environment action plan in coordination with the construction; Thus creating jobs in areas where buildings have environmental capacities are high, more people than how it can be treated.

Major axis to achieve the above principles:

### 1-The image of the city

Principles and methods in urban planning and urban design to fit in on the scale and it read:

Review that was done on the old towns shows that the ratio of width to height of a building is an aggression; it is possible to give the observer a sense of fear of tight spaces.

Review that was done on the old towns shows that the ratio of building height to width should not exceed one to one, may give the observer a sense of fear of tight spaces.

## V. URBAN LANDMARK

World cities on a variety of aesthetics, form, color, shape, material rests. Artistic view of modern architecture in the city is gradually accepted principles of diversity and form and composition. One of the most striking aspects of risk diversification, the creation of urban signs is maturing. Signs are an important factor in the diagnosis of various parts of the city.

Usually have a characteristic appearance, such as buildings and other objects that could be a good sign. No signs of recognition, it is very difficult to navigate and move on. In the past, the continuous appearance of cities that had access dimensions could possibly be the guide, but it seems that people are more and more relying on the signs over the city. So in locating land suitable locations for sign-making should be recognized.

## VI. URBAN DIVERSITY

Lynch and posing in a variety of designs says:

Diversity is an important factor in the development of human potential and truly distinguishes and identifies and maintain it is necessary to understand and identify the person. Legible City is a structure has obvious value, which means the city so you can easily find locations. Between the city and the vitality and dynamism of its economy, this volatility is associated with systems that feature full life.

## VII. UTILIZATION OF ENVIRONMENTAL CAPACITIES

Taking advantage of the power of context -oriented environment restatement is not limited merely to the natural environment, but also can be formed in an artificial environment desirable. However, these areas must many groups of people, place of residence, work and the possible returns.

### Location Criteria of tall buildings

Important factors before making any decision must be remembered, is that where and for what type of building construction is proceeding? How the indicators of household and future residents of Culture? Definitely residential users in urban areas with tall buildings are constructed so understanding the role of tall buildings in urban areas, taking into account social, economic and physical is important and the aim is that these buildings by residents as well as the environmental conditions before any plan is identified and evaluated. So plan for high-rise buildings and facilities necessary for social welfare rights units in the neighborhood and the following is essential:

1-Communication and transportation routes, public facilities and infrastructure, conservation of natural and environmental resources, prediction of the population, beautification and development of desirable landscape, compatibility of adjacent buildings are both from the perspective are among the most important factors to be considered where selecting the site for a tower block.

2. Accessibility of relief and emergency services, e.g. fire fighting facilities to the building is another important factor, therefore:

- The tall buildings should not be located in narrow and blind areas, mountain skirts and high hills; the latter for creating sloping passages.

- The tall building should have sufficient frontage in order to provide enough protection. When fire accidents occurs in nearby blocks. At emergency times, the passages and routes must be so designed that the relief services would have an easy access to the building. The fire fighting services should be able to deploy at the least 8m far from the construction spaces.

3. Development of buildings that will lead to the formation of unpleasant, dense, and over- populated areas without sufficient social relationship should be avoided.

4. Tall buildings should not be located too close, or in an area consisting of ordinary buildings. This disrupts the hierarchical process of space privacy in quite private places (House) and semi-private places (alleys, blinds, etc...). Tall buildings should also be so designed that no overview would exist.

5. Tall buildings should have sufficient co-ordination, not only with their own components but also with adjacent installations, e.g. roads, public parking's, schools, shopping centers, libraries, parks and green areas. In other words, the complex should provide residents with all requirements.

So in terms of density and tall buildings, open space should be allocated.

6 - Locate and design buildings to the height differences on this issue should be settled, and the walls are padded backs and are visible from the street should be avoided.

7 - The corner of the site, should withdraw patterns and building lines of adjacent streets will be answered.

8 - Highlights and strategic retreat from the building, which is so different and diverse architectural to include more open space for planting trees, walk ways, wide, more backyard, Plaza of the not access other General and open space.

Establishment of open spaces around the tower blocks may somehow contribute in abolishing the heterogeneity of the urban texture. Also in order to prevent the change of scale and hence to establish harmony in the urban perspective, an open space should be allocated between tall and medium scale buildings.

1. Site locations of tall buildings in a city should be so decided such that they provide a scattered perspective.

2. Building blocks should be spaced at least 2-2.5 times the height of the highest building.

3. The facades should be designed in harmony with the city profile.

4. In order to prevent sun radiation obstruction especially in cold seasons, the tall buildings should be built separately. In case they are designed in rows, they should be spaced with the length of the winter shadow.

5. For every 30.48cm (1ft) height, 7.6cm (3inches) spacing between buildings is necessary and this spacing, in any case, should not be less than 2.5m (U.S. zoning regulations). The construction of tall buildings in the area where they are prohibited is defined as follows:

- In the privacy of the main faults
- In the privacy of valuable buildings and historic cultural heritage law
- The department has a categorized Privacy Protection
- In areas where traffic problems those are unsolvable.
- In areas where it is impossible to solve the problems of urban facilities.
- Where the construction of tall buildings to other buildings in the risk area.
- Where the construction of tall buildings that surround the rights gained in other places.
- No criteria skylight on the ground, the distance and open space to be provided.
- Detailed plans of the areas where construction is prohibited.
- In areas where the population has reached its population limit.

## VIII. CONCLUSION

Nowadays, various communities to gain fame and status in the international arena, to encourage the design and construction of skyscrapers and tall towers. The main reason people attempt to build tall buildings that demonstrate the power and the fame way, like past remain or continue, in this direction, to serve human desires all the technical capabilities and structures. The topic of the future skyscrapers and futuristic prediction methods and tools in various aspects including architectural, structural and will, undoubtedly, will be an important issue for designers now and in the future.

Building technologies and implementation methods are increasingly more sophisticated and more accurate and enable to achieve greater heights. In recent years despite of earlier skyscrapers, structures more and more service request form located so that its shape can dictate the form of the building. However, high-tech styles - single, structural expressionism art concepts and structures, building structures, and ... although nowadays can be hidden better than it from the past, but there are more than ever the desire to display and demonstrate the process of transferring the load to the ground.

Overall, one of the most desirable and success criteria for tall buildings in urban areas primarily related to access appropriate places. Therefore, many of the successful buildings have been established in the major cities of the world near major public transportation stations and also near the motorway exit and entry sites. Tall buildings has greater access than conventional buildings and if be locate the correct locate and can role play in tune with urban transport nodes the relationship between traffic. Obviously this success largely depends on the access roads to the dimensions and specifications mutually established structures of the passages that have be avoided the ability to generate traffic, In this case, would harm run the tallest structure in the streets, the streets the efficiency. In establishing the appropriate permissions to build up, these permissions, such as walking, driving and..., and thus take place all necessary measures should be considered for the inputs, outputs and supply the required parking including users, users and access for emergency vehicles.

## IX. STRATEGIES

- Increased building density only when has confirmed urban land provision and standards.
- How to establish high-rise to be distributed in field of perspective and urban space of right ought.
- Tall buildings should be established due to be constructed in a logical hierarchy of spatial localization.
- In public and semipublic spaces designed such buildings with the aim to prevent congestion, noise and noise pollution measures need to be done.

- To prevent scale and create disharmony in the urban landscape, in field of the proximity high-rise and small buildings should be used or should human and it should be considered scales the central space between the long and short form of open and green space.
- The architectural design of tall buildings should be avoided of high frequency components similar elements.
- In terms of both aesthetic and functional aspects are prefer (impact on surrounding tissue narrow and tall buildings from the types of bulking up.
- Establishment of a high-rise in historic contexts is not appropriate, and is lacking textures value of historical evidence in this respect.
- Utilize from high-rise visibility on creating facades or signs of municipal services.
- Urban areas are not only surrounded by tall buildings, but these buildings are better buildings locate in the scale of being human.
- How to create shade of tall buildings and the surrounding areas should be reset to help environmental regulations.
- To determine the critical wind speed up body tissues and deal with them, can prevented from create adverse speeds in urban areas and passageways. These points can also intensify wind flow can be exploited to eliminate air pollution.

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