

ARCHITECTURE AND THE ARCHITECT

Architecture is the art and science of designing and building structures according to aesthetic and functional criteria. Structures built in accordance with such principles are also architecture. Architecture is the temple of life.

The architect is a person trained and experienced in the designing of buildings and in the coordination and supervision of all aspects of the construction of buildings. The construction of a building is a cooperative process in which architects, structural engineers, services engineers, economists, lawyers, doctors, landscape architects, sociologists, surveyors and other sub-contracted specialists take part.

When the architect designs a structure he uses cumulative knowledge of centuries. His sphere of knowledge is constantly expanding. He has to combine art, science, advanced technology, ecology and economics in his work. The main problem facing the architect today is to avoid any conflict with nature and the landmarks of by-gone days.

According to the International Union of Architects at present there are more than one million fully qualified architects in the world. In the highly developed countries there is one architect per two or three thousand people. In the developing countries there is one architect per 500,000 or one million people.

The world's greatest masterpieces of architecture are the Pyramids in Egypt, the Parthenon in Greece, St Paul's Cathedral in London, the Colosseum in Rome, Saint Peter's Basilica in Vatican, the Cathedral of Saint Basil the Blessed in Moscow, Saint Isaac's Cathedral in St Petersburg, the Cathedral of Notre Dame (Our Lady) in Paris, the Empire State Building in New-York, the Taj-Mahal Mausoleum in India, the Church of the Holy Family in Barcelona, the Great Wall of China and many others.

Architectural creation is a never-ending process and the architect creates order in the picturesque variety of nature.

New words:

art – искусство	union – союз
structure – сооружение, постройка	to face – стоять перед лицом
aesthetic – эстетический	knowledge – знание, эрудиция
functional - функциональный	landmark – архитектурный памятник
criteria – критерии	science – наука
person – человек, личность	structural engineer – инженер-строитель
principle – принцип	services engineers – инженеры по водоснабжению, водоотведению, газо- и теплоснабжению, электричеству
according to – согласно	sub-contracted – нанятый по контракту
in accordance with – в соответствии	supervision – наблюдение, контроль
life – жизнь	temple – храм
lawyer – юрист, адвокат	qualified – квалифицированный
landscape - ландшафт	masterpiece – шедевр
surveyor – геодезист	process – процесс
advanced – передовой, прогрессивный	never-ending – бесконечный
to avoid – избегать	order – порядок
by-gone days – ушедшие эпохи	picturesque – живописный, образный, колоритный
to create – создавать, творить	variety – разнообразие
creation – творение, творчество	nature – природа
per – на	holy – святой
constantly – постоянно	church – церковь
century – век, столетие	cathedral - собор
cumulative – накопленный, совокупный	
experienced – опытный	
to expand – расширять, увеличивать	

Building construction

Every building must satisfy its intended use, must be technically sound, and must convey aesthetic meaning.

The major elements of a building include: the foundation; the structure; the exterior walls; the interior partitions; the environmental-control systems; the vertical transportation systems; communications; and the power, water supply, and waste disposal systems.

The foundation supports the building and provides stability. The most common types of foundations are classified as shallow and deep. Shallow foundations are several feet below the bottom of the building; examples are spread footings and mats. Deep foundations are several dozen feet below the building; examples are piles and caissons. The foundation chosen depends on the strength of the rock or soil, magnitude of structural loads, and depth of groundwater level.

The most economical foundation is the reinforced-concrete spread footing. It consists of concrete slabs. Mat foundations are used when the building loads are extensive and the soil is weak. A mat is a flat concrete slab, heavily reinforced with steel. Piles are used in areas where soil conditions are poor. They are made of timber, concrete, or steel and are located in clusters. Caisson foundations are used when soil consists of weak materials such as fill or peat.

The basic elements of any ordinary structure are the floors and roof (horizontal members), columns and walls (vertical members), and bracing (diagonal members) to give the structure stability.

With low buildings the variety of possible shapes is much greater than with taller buildings. A simple single-story structure consists of a reinforced-concrete slab laid directly on the ground, exterior masonry walls and a roof. For low buildings, the use of interior columns between masonry load-bearing walls is still the most common construction method.

With multistory buildings the most common form of building structure is the skeleton frame, which consists of the vertical members combined with a horizontal framing pattern. For structures up to 40 stories high, reinforced concrete, steel or composite-reinforced concrete and steel can be used in a variety of ways. The basic elements of the steel skeleton frame are vertical columns, horizontal girders spanning the longer distance between columns, and beams spanning shorter distances. For buildings over 40 stories, steel is the most appropriate material. However, recent advances in the development of high-strength concretes made concrete competitive with steel. For very tall buildings the mixing of steel and concrete is becoming more popular.

The exterior walls consist of an exterior skin backed with insulation; a vapor barrier; sound-deadening materials; and an interior skin. The exterior skin may be made of metal (stainless steel, aluminum, bronze), masonry (concrete, brick, tile), or glass. Limestone, marble, granite, and precast concrete panels are also used for facades.

The traditional method of constructing a roof is to lay down over a steel or concrete deck rolls of roofing felt laminated with tar and topped with gravel. New grasslike and ruglike synthetic materials made of plastic are also used.

Traditional methods of partitioning a building interior include the use of masonry walls 10 to 15 cm thick made of concrete, gypsum, or pumice block, painted or plastered; or wood or metal frames covered with lath over which plaster is spread. Plasterboard and wallboard are increasingly used.

The environmental-control systems include heating, cooling, ventilation, lighting, and sound control. In most large buildings complete, year-round air conditioning is now standard.

The major form of vertical transportation in high-rise structures are elevators. Low-rise buildings and the lower floors of commercial buildings may also have escalators. For fire protection all buildings have stairways.

Communications include such subsystems as intercommunications, public address, closed-circuit television and the more usual telephone-wiring systems.

Buildings must have a piped-in water supply for drinking, washing, cooking, waste disposal, internal fire fighting and air-conditioning systems or boilers. There are many devices for disposal of wet and dry wastes in buildings.

Building Construction

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| 1. foundation - фундамент | 22. roof – крыша, кровля |
| 2. structure – сооружение, здание | 23. bracing – связка, жесткое крепление |
| 3. exterior - наружный | 24. shape - форма |
| 4. interior - внутренний | 25. tall - высокий |
| 5. partition - перегородка | 26. to consist of – состоять из |
| 6. to provide - обеспечивать | 27. column - колонна |
| 7. stability - устойчивость | 28. girder – балка, брус, перекладина |
| 8. to support – поддерживать, нести | 29. beam - балка |
| 9. shallow - мелкий | 30. to span – перекрывать, соединять |
| 10. deep - глубокий | 31. appropriate - подходящий |
| 11. pile - свая | 32. skin – оболочка, обшивка |
| 12. strength - прочность | 33. insulation - изоляция |
| 13. soil – почва, грунт | 34. vapor - пар |
| 14. magnitude – величина, размер | 35. limestone |
| 15. load - нагрузка | 36. tar - смола |
| 16. depth - глубина | 37. to plaster - штукатурить |
| 17. slab - плита | 38. plasterboard - гипсокартон |
| 18. to reinforce – усиливать, армировать | 39. heating - отопление |
| 19. poor – слабый, плохой | 40. to cover - покрывать |
| 20. weak - слабый | 41. stairway - лестница |
| 21. floor – перекрытие, этаж | 42. waste - отходы |

Word combinations:

1. power supply - энергоснабжение
2. water supply - водоснабжение
3. spread footing – ленточный фундамент
4. mat foundation – сплошной фундамент
5. groundwater level – уровень грунтовых вод
6. reinforced concrete - железобетон
7. soil conditions – состояние почвы, грунта
8. load-bearing wall – несущая стена
9. single-story structure – одноэтажное здание
10. multistory structure – многоэтажное здание
11. skeleton frame - каркас
12. high-strength concrete – высокопрочный бетон
13. sound-deadening materials – звукоизоляционные материалы
14. stainless steel – нержавеющая сталь
15. high-rise structure – высотное здание, сооружение
16. fire fighting - пожаротушение
17. fire protection – защита от огня, пожара
18. closed-circuit television – кабельное телевидение
19. piped-in water supply – водопроводное водоснабжение
20. waste disposal – устранение отходов

Building Materials

All building materials are divided into three groups: 1) **main** building materials 2) **binding** building materials 3) **secondary** building materials.

Main building materials are rocks, stones, timber and metals. They are used for bearing structures.

Binding materials are lime, gypsum, concrete and cement. They are used for making artificial stones and for binding together masonry units.

Secondary building materials are plaster, stucco, glass, plastics, paint, linoleum, tile, laminate, parquet, wall-paper, etc. They are used for interior and exterior finish of the building.

Natural building materials are rocks, sand, lime, clay, timber, etc. Artificial building materials are cement, concrete, brick, tile, metal, paint, wall-paper, glass, plastics, etc.

Timber is referred to the group of the main building materials. It is the most ancient structural material. It is light and easy to work. But wood has certain disadvantages: it burns and decays.

Stone belongs to one of the oldest building materials used by man. It has many properties such as mechanical strength, compactness, porosity, sound and heat insulation and fire-resistance. There are different kinds of stones. Granite is very hard, strong and durable. It is used for foundations, columns, steps and entire facades. Its color may be gray, yellow, pink and deep red. Sandstone is easy to cut and shape. It is often used for facing rough walls and for interior decoration. Marble is a crystalline stone used for decorative purposes. It takes on a high polish.

Bricks were known many thousands of years ago. They are artificial building materials. Bricks are made by pressing clay into blocks and burning them to hardness. Bricks are hard and easily fastened together with the help of mortar. They are produced in a great variety for widely different purposes.

Metals are divided into ferrous metals and non-ferrous metals. Ferrous metals include iron, steel and its alloys. Cast iron is the cheapest ferrous metal. It is used in building for compressed members of construction. Steel is used for framework of buildings and as reinforcement in modern ferroconcrete structures. Non-ferrous metals have high electric and heat conductivity, high corrosion resistance and light weight. The oldest and the best known light metal is aluminum. It is used in lift bridges, long span roofs, dome roofs, crane jibs, window and door frames and other structures.

Glass and plastics are used in construction of different kinds of buildings. Glass has excellent combination of physical, chemical and mechanical properties. The outstanding property of glass is its chemical inertness. Glass is used for constructing doors, windows, walls, roofs, pipelines, etc. Plastic is the name for various derivatives of resin, cellulose and protein. Nowadays plastics can be applied for constructing doors, windows, wall panels, siding, pipes, furniture, etc.

Remember the words:

artificial - искусственный
binding - вяжущий
cement - цемент
chemical - химический
clay - глина
combination - сочетание
compactness - плотность
concrete - бетон
disadvantage - недостаток
door - дверь
durable - долговечный
excellent - отличный
exterior - наружный

masonry – каменная кладка
plaster - штукатурка
stucco - штукатурка
wood – дерево (материал)
glass - стекло
plastic - пластик
paint - краска
tile – плитка (керамическая)
parquet - паркет
linoleum - линолеум
wall-paper - обои
finish - отделка
column - колонна

foundation - фундамент
granite - гранит
gypsum - гипс
hard - твердый
hardness - твердость
inertness - инертность
interior - внутренний
light - легкий
lime - известь
main – основной, главный
mechanical - механический
outstanding - выдающийся
physical - физический
pipeline - трубопровод
porosity - пористость
property - свойство
rock – камень (природный)
sand - песок
secondary - второстепенный
stone - камень
strong - крепкий
timber – лесоматериал, строевой лес
to belong - принадлежать
to bind – связывать, скреплять
to burn – гореть, обжигать
to decay - гнить
to divide - делить
to refer - относиться
to use – использовать
wall panel – стеновая панель
window - окно

steps - ступени
sandstone -песчаник
to cut - резать
to shape – придавать форму
to face - облицовывать
rough – зд. неоштукатуренный
marble - мрамор
purpose - цель
brick - кирпич
to fasten - соединять
to apply – применять, использовать
to include - включать
mortar – раствор (строительный)
variety - разнообразие
iron - железо
steel - сталь
alloy - сплав
cast-iron - чугун
cheap - дешевый
framework - каркас
ferroconcrete - железобетон
weight - вес
various - разнообразный
derivative - производное
reinforcement - арматура
resin - смола
cellulose- целлюлоза
protein- протеин
wall – стена
furniture - мебель
siding - сайдинг

Remember word combinations from the text:

bearing structure – несущая конструкция
compressed member of construction – конструкция, работающая на сжатие
corrosion resistance – стойкость к коррозии
crane jib – стрела крана
dome roof – купольная крыша
electric conductivity - электропроводимость

ferrous metal – черный металл
fire-resistance – огнестойкость, огнеупорность
heat conductivity - теплопроводность
heat insulation - теплоизоляция
lift bridge – подъемный мост
mechanical strength – механическая прочность
non-ferrous metal – цветной металл
reinforced concrete - железобетон
sound insulation - звукоизоляция
to take on a high polish – хорошо полироваться

Student's Life

I live together with my parents. We are lucky to have a large apartment not far from the downtown. Our apartment is on the fifth floor in a nine-story building. Usually we use the elevator. There are two bedrooms, a living room, a kitchen, a bathroom and a lavatory in our apartment.

I'm in my first year and have classes six days a week: on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday. I have no classes on Sunday.

My working day begins early. I get up at 6.30 in the morning and go to the bathroom. In the bathroom there is a shower with a shower curtain, a washbasin and a mirror above it, a towel rail and scales on the floor. I have a shower and clean my teeth. Then I get dressed and have breakfast. For breakfast I usually have a glass of orange juice, a boiled egg, a cup of coffee or tea and a cheese or ham sandwich. At 7.40 I leave home. It takes me 20 minutes to get to the University. Usually I go by bus (trolley-bus, tram, city express taxi). The traffic is very bad in the morning and I'm sometimes stuck in traffic jams. Nevertheless I'm never late for my classes. The morning classes at University start at 8 o'clock. I attend all the lectures and never miss any seminars.

At 3 o'clock in the afternoon my classes are over. I feel tired and hungry, so I go home to have dinner. My mother is busy at daytime and I have to cook dinner myself. Our kitchen is packed with various domestic appliances, such as a fridge, a washing machine, a dishwasher, a microwave oven, a food processor, a toaster and even an electric can-opener. We use our kitchen as a dining-room. For dinner I usually have some soup, meat or fish and some vegetables or pasta. After dinner I relax and sometimes have a nap, do some work about the house and get ready for classes in my bedroom.

My bedroom is not very large, but it's very comfortable with a French window, a bed, a chest of drawers with some pictures of my relatives on it. There is a wardrobe of natural wood, a bookcase where I keep my books, a big color TV, a DVD player, a personal computer on the desk and a hi-fi music system in my bedroom.

In the evening, if the weather is fine, I go out with my friends. When it's raining or snowing outside, I stay at home and spend two or three hours watching television, playing computer games, reading a book or listening to music. I'm fond of rock music and enjoy the songs of Yuri Shevchuk. Sometimes my friends come to me and we just chat this and that. At midnight I go to bed.

apartment - квартира
downtown – центр города
lavatory - туалет
to be in the first year – быть на первом курсе
early - рано
bathroom – ванная комната
shower curtain – штора для душа
washbasin- умывальник
mirror - зеркало
scales - весы
towel rail – перекладина для полотенца
to have a shower – принимать душ

wood – дерево (материал)
to have dinner - обедать
to get ready for classes – готовиться к занятиям
in the evening - вечером
to go out – гулять(на улице)
nap – короткий сон: to have a nap - вздремнуть
to listen to music – слушать музыку
to chat - болтать
to miss - пропускать
to be late for - опаздывать
to relax – расслабиться, отдохнуть
to go to bed – ложиться спать

to clean teeth – чистить зубы
to get dressed - одеваться
to have breakfast - завтракать
to leave home – уходить из дома
in the morning - утром
to attend lectures – посещать лекции
in the afternoon – днем
elevator - лифт
chest of drawers - комод
domestic appliances – бытовые приборы
washing machine – стиральная машина
dishwasher – посудомоечная машина
fridge - холодильник
food processor – кухонный комбайн
can-opener- консервооткрывалка
microwave oven – микроволновая печь
wardrobe – шкаф
dining-room - столовая

to be over – заканчиваться (о занятиях)
to be stuck in traffic jams – стоять в пробке
tired - усталый
hungry - голодный
to be busy – быть занятым
to cook – готовить (пищу)
to spend – проводить (время)
to listen to music – слушать музыку
to do some work about the house – выполнять работу по дому
traffic – движение, транспорт
hour - час
to be fond of – любить, увлекаться
cheese - сыр
ham - ветчина
orange juice – апельсиновый сок
boiled egg – вареное яйцо
bookcase – книжный шкаф

THE UNITED STATES OF AMERICA

The United States of America was founded in 1776 when 13 English colonies revolted and declared themselves independent.

The USA is a federal republic on the continent of North America. Its area is 9.6 mil sq km. By area it is the third largest country in the world after Russia and Canada. The population of the country is about 300 million and it is the third most populous country in the world behind China and India.

The United States of America is washed by the Atlantic Ocean in the east. The Atlantic coastline stretches more than 3,000 km. In the west the USA is washed by the Pacific Ocean (more than 2,000 km). In the south it is washed by the Gulf of Mexico. The Gulf of Mexico coastline extends 2,625 km. The USA borders on Canada and Mexico.

The USA consists of 50 states and the District of Columbia, the seat of the national Government. The capital of the country is Washington. The 50 U.S. states vary widely in size and population. The largest states by area are Alaska, Texas, and California. The smallest state is Rhode Island. The states with the largest population are California, Texas, and New York. Wyoming is the least populous state.

The Great Lakes in the USA include five lakes (Superior, Huron, Michigan, Ontario, and Erie) with the area of 244,100 sq km. Lake Michigan is the only one of the lakes that is located entirely in the United States. The other four lakes lie on the border between the United States and Canada.

The Missouri River is the longest river in the United States. It flows 3770 km to its mouth in the Gulf of Mexico. While the Mississippi ranks as the second longest river in the United States after the Missouri River, it carries a greater volume of water than any other American river.

The country is rich in natural resources. The United States of America is a highly developed country and occupies the first place in the world in the industrial output. It has a highly developed heavy and light industries and is famous for its motor-car, oil-refining, chemical and atomic industries. Its agriculture is widely mechanized.

New Words:

to found – основывать
a colony - колония
to revolt – восставать
to declare – заявлять
independent – независимый
area – площадь
population – население
populous – многолюдный

the Great Lakes – Великие озера
entirely – полностью, целиком
to lie – лежать, находиться
border – граница
mouth – устье
river – река
to carry – нести
volume – объем

to wash – омывать
the Atlantic Ocean – Атлантический океан
the Pacific Ocean – Тихий океан
the Gulf of Mexico – Мексиканский залив
coastline – береговая линия, побережье
to stretch – тянуться
to extend – протягиваться
to consist – состоять
District – округ
seat – местонахождение
government – правительство
to vary – различаться
widely – широко
size – размер
to include – включать
lake – озеро

water – вода
to be rich in – быть богатым чем-либо
highly developed – высокоразвитый
to occupy – занимать
output – производство
heavy industry – тяжелая промышленность
light industry – легкая промышленность
place – место
to be famous for – быть известным чем-либо
motor-car industry – автомобильная
промышленность
oil-refining industry – нефтеперерабатывающая
промышленность
agriculture – сельское хозяйство
mechanized – механизированный
natural resources – природные ресурсы

Word test “USA”

Тексты для самостоятельной работы

ARCHITECTURE AND DESIGN OF DUBAI TOWER

The tower is designed by Skidmore, Owings and Merrill, which also designed the Willis Tower (formerly the Sears Tower) in Chicago and the new One World Trade Center in New York City. The Burj Khalifa uses the bundled tube design, invented by Fazlur Rahman Khan. Proportionally, the design uses half the amount of steel used in the construction of the Empire State Building thanks to the tubular system. Its design is reminiscent of Frank Lloyd Wright's vision for The Illinois, a mile high skyscraper designed for Chicago. According to Marshall Strabala, an SOM architect who worked on the building's design team, Burj Khalifa was designed based on the 73 floor Tower Palace Three, an all residential building in Seoul. In its early planning, Burj Khalifa was intended to be entirely residential.

Subsequent to the original design by Skidmore, Owings and Merrill, Emaar Properties chose Hyder Consulting to be the supervising engineer with NORR Group Consultants International Limited chosen to supervise the architecture of the project. Hyder was selected for its expertise in structural and MEP (mechanical, electrical and plumbing) engineering. Hyder Consulting's role was to supervise construction, certify SOM's design, and be the engineer and architect of record to the UAE authorities. NORR's role was the supervision of all architectural components including on site supervision during construction and design of a 6-storey addition to the Office Annex Building for architectural documentation. NORR was also responsible for the architectural integration drawings for the Armani Hotel included in the Tower. Emaar Properties also engaged GHD, an international multidisciplinary consulting firm, to act as an independent verification and testing authority for concrete and steelwork.

The design of Burj Khalifa is derived from patterning systems embodied in Islamic architecture. According to the structural engineer, Bill Baker of SOM, the building's design incorporates cultural and historical elements particular to the region. The Y-shaped plan is ideal for residential and hotel usage, with the wings allowing maximum outward views and inward natural light. The design architect, Adrian Smith, has said the triple lobed footprint of the building was inspired by the flower Hymenocallis. The tower is composed of three elements arranged around a central core. As the tower rises from the flat desert base, setbacks occur at each element in a spiralling pattern, decreasing the cross section of

the tower as it reaches toward the sky. There are 27 terraces in Burj Khalifa. At the top, the central core emerges and is sculpted to form a finishing spire. A Y-shaped floor plan maximizes views of the Persian Gulf. Viewed from above or from the base, the form also evokes the onion domes of Islamic architecture. At its tallest point, the tower sways a total of 1.5 m.

To support the unprecedented height of the building, the engineers developed a new structural system called the buttressed core, which consists of a hexagonal core reinforced by three buttresses that form the 'Y' shape. This structural system enables the building to support itself laterally and keeps it from twisting.

The spire of Burj Khalifa is composed of more than 4,000 tonnes of structural steel. The central pinnacle pipe weighing 350 tonnes was constructed from inside the building and jacked to its full height of over 200 m using a strand jack system. The spire also houses communications equipment.

In 2009, architects announced that more than 1,000 pieces of art would adorn the interiors of Burj Khalifa, while the residential lobby of Burj Khalifa would display the work of Jaume Plensa, featuring 196 bronze and brass alloy cymbals representing the 196 countries of the world. It was planned that the visitors in this lobby would be able to hear a distinct timbre as the cymbals, plated with 18-carat gold, are struck by dripping water, intended to mimic the sound of water falling on leaves.

The exterior cladding of Burj Khalifa consists of 142,000 m² of reflective glazing, and aluminium and textured stainless steel spandrel panels with vertical tubular fins. The cladding system is designed to withstand Dubai's extreme summer temperatures. Additionally, the exterior temperature at the top of the building is thought to be 6 °C cooler than at its base. Over 26,000 glass panels were used in the exterior cladding of Burj Khalifa. Over 300 cladding specialists from China were brought in for the cladding work on the tower.

A 304 room Armani Hotel, the first of four by Armani, occupies 15 of the lower 39 floors. The hotel was supposed to open on 18 March 2010 but after several delays the hotel finally opened to the public on 27 April 2010. The corporate suites and offices were also supposed to open from March onwards but the hotel and observation deck remained the only parts of the building which were open in April 2010.

The sky lobbies on the 43rd and 76th floors house swimming pools. Floors through to 108 have 900 private residential apartments(which, according to the developer, sold out within eight hours of being on the market). An outdoor zero-entry swimming pool is located on the 76th floor of the tower. Corporate offices and suites fill most of the remaining floors, except for a 122nd, 123rd and 124th floor where the *Atmosphere* restaurant, sky lobby and an indoor and outdoor observation deck is located respectively. In January 2010, it was planned that Burj Khalifa would receive its first residents from February 2010.

Burj Khalifa is expected to hold up to 35,000 people at any one time. A total of 57 elevators and 8 escalators are installed. The elevators have a capacity of 12 to 14 people per cabin, the fastest rising and descending at up to 18 m/s. Engineers had considered installing the world's first triple-deck elevators, but the final design calls for double-deck elevators. The double-deck elevators are equipped with entertainment features such as LCD displays to serve visitors during their travel to the observation deck. The building has 2,909 stairs from the ground floor to the 160th floor.

The graphic design identity work for Burj Khalifa is the responsibility of Brash Brands, who are based in Dubai. Design of the global launch events, communications, and visitors centers for Burj Khalifa have also been created by Brash Brands as well as the road show exhibition for the Armani Residences, which are part of the Armani Hotel within Burj Khalifa, which toured Milan, London, Jeddah, Moscow and Delhi.

THE NEW ONE WORLD TRADE CENTER

One World Trade Center (1 WTC) is the main building of the new World Trade Center complex in New York City. The 104-story super tall skyscraper is being constructed in the northwest corner of the 16-acre World Trade Center site, occupying the location where the original

8-story 6 World Trade Center once stood. Construction on below-ground utility relocations, footings, and foundations for the building began in 2006. The tower's steel structure topped out in 2012, and work is currently underway on its spire.

By the time of its scheduled completion in late 2013, One World Trade Center will be the tallest building in the Western Hemisphere and the third-tallest building in the world by pinnacle height, with its spire reaching a symbolic 1,776 feet (541.3 m) in commemoration of the year of American independence. It has been the tallest building in New York City since 2012. The building will be known by its legal name, One World Trade Center, rather than the colloquial name, Freedom Tower. The new World Trade Center complex will also feature three other high-rise office buildings and the National September 11 Memorial & Museum, located just south of One World Trade Center, where the Twin Towers once stood. The construction is part of an effort to memorialize and rebuild following the destruction of the original World Trade Center complex during the terrorist attacks of September 11, 2001.

Architecture and design

Many of Daniel Libeskind's concepts from the 2002 competition were later discarded from the tower's design. One World Trade Center's final design consisted of simple symmetries and a more traditional profile, intended to bear comparison with selected elements of the contemporary New York skyline. The tower's central spire draws from precedents such as the Empire State Building and the Chrysler Building, and is also visually reminiscent of the North Tower of the original World Trade Center, rather than being an off-center spire intended to echo the Statue of Liberty.

The building's footprint is a 61 m square with an area of 3,700 m², nearly identical to the footprints of the original Twin Towers. The tower rises from a 56 m windowless concrete base, designed to protect it against truck bombs and other ground-level terror threats. Originally, the base was intended to be clad in decorative prismatic glass, but a simpler glass-and-steel façade was adopted when this proved unworkable. The current base cladding design consists of angled glass fins protruding from stainless steel panels, similar to those on 7 World Trade Center. LED lights behind the panels will illuminate the base at night. Cable-net glass façades on all four sides of the building for the higher floors, designed by Schlaich Bergermann, will be consistent with the other buildings in the complex. They measure 18 m high and range in width from 9.1 m on the east and west sides (for access to the observation deck) to 15 m on the north side, and 21 m on the south for primary tenant access. The curtain wall was manufactured and assembled in Portland by Benson Industries, using glass made in Minnesota by Viracon.

From the 20th floor upwards, the square edges of the tower's cubic base are chamfered back, transforming the building's shape into eight tall isosceles triangles, or an elongated square antiprism. Near its middle, the tower forms a perfect octagon in-plan, and then culminates in a glass parapet whose shape is a square oriented 45 degrees from the base. A 124 m sculpted mast containing the broadcasting antenna – designed in a collaboration between SOM, artist Kenneth Snelson (who invented the tensegrity structure), lighting designers and engineers – is secured by a system of cables, and rises from a circular support ring which will contain additional broadcasting and maintenance equipment. At night, an intense beam of light will be projected above the spire, being visible over 300 m into the air above the tower.

David Childs of Skidmore, Owings and Merrill, the architect of One World Trade Center, said the following regarding the tower's design:

We really wanted our design to be grounded in something that was very real, not just in sculptural sketches. We explored the infrastructural challenges because the proper solution would have to be compelling, not just beautiful. The design does have great sculptural implications, and we fully understand the iconic importance of the tower, but it also has to be a highly efficient building. The discourse about Freedom Tower has often been limited to the symbolic, formal and aesthetic aspects but we recognize that if this building doesn't function well, if people don't want to work and visit there, then we will have failed as architects.

Zaha Hadid

Zaha Hadid is an Iraqi-British architect. She received the Pritzker Architecture Prize in 2004—the first woman to do so. Her buildings are distinctively futuristic, characterized by the "powerful, curving forms of her elongated structures" with "multiple perspective points and fragmented geometry to evoke the chaos of modern life".

From parking garages and ski-jumps to vast urban landscapes, Zaha Hadid's works have been called bold, unconventional, and theatrical. Zaha Hadid studied and worked under Rem Koolhaas, and like Koolhaas, she often brings a deconstructivist approach to her designs.

Born in Baghdad, Zaha Hadid studied at the highly regarded Architectural Association in London, was a partner in the *avant garde* Office of Metropolitan Architecture with Rem Koolhaas, and has held prestigious posts at one time or another at the world's finest universities including Harvard, Yale, and many others. Much admired by the younger generation of architects, her appearance on campuses is always a cause for excitement and overflowing audiences.

"Zaha Hadid has become more and more recognized as she continues to win competition after competition, always struggling to get her very original winning entries built. Discouraged, but undaunted, Zaha Hadid has used the competition experiences as a 'laboratory' for continuing to hone her exceptional talent in creating an architectural idiom like no other.

"It is not surprising that one of the architects whose work Zaha Hadid admires is another Pritzker Prize winner, the preeminent South American author of Brasilia, and other major works — Oscar Niemeyer. They share a certain fearlessness in their work and both are unafraid of risk that comes inevitably with their respective vocabularies of bold visionary forms.

"The full dimensions of Zaha Hadid's prodigious artistic outpouring of work is apparent not only in architecture, but in exhibition designs, stage sets, furniture, paintings, and drawings."

In 2010, Hadid has been commissioned by the Iraqi government to design the new building for the Central Bank of Iraq. This will be her first project in her native Iraq. Hadid's project was named as the best for the Vilnius Guggenheim Hermitage Museum in 2008. In October 2011, Zaha Hadid was on the jury for the award of the Pritzker Prize. In February 2013 she was assessed as one of the 100 most powerful women in the United Kingdom by Woman's Hour on BBC Radio. -