



BROAD
SUSTAINABLE
BUILDING
远大可持续建筑



A 200-STORY ENERGY AND MATERIAL EFFICIENT,
EARTHQUAKE RESISTANCE BUILDING

A CAR-FREE CITY FOR 100,000 PEOPLE

A MILESTONE OF LIFE-STYLE TRANSFORMING

SKY CITY ONE



SKY
CITY
空中
城市

Concept Phase 2010.11.20

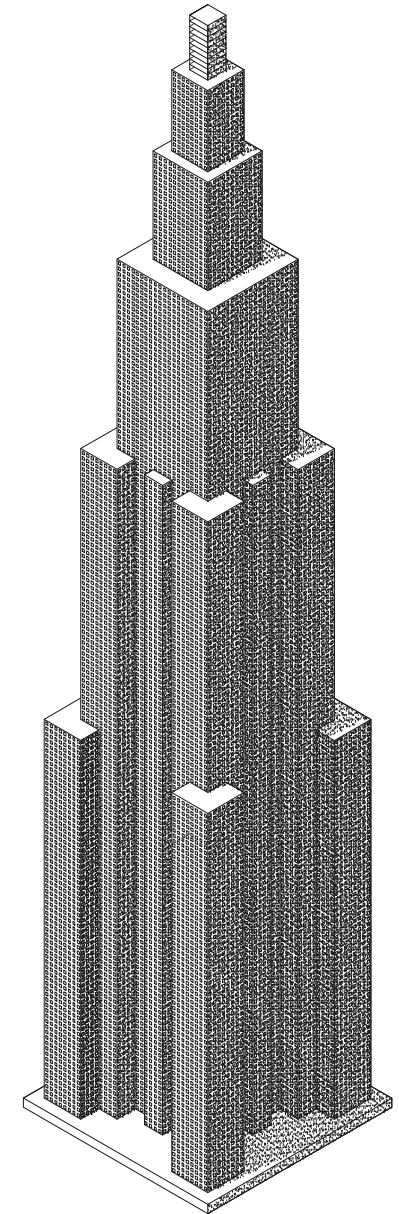
WHAT IS “SKY CITY”?

- Superior energy, material and land efficient “Skyscraper”
- A mixed community co-exist of high-medium-low social class, which integrates residence, business and shopping
- Alleviating city disease of traffic jam, air pollution, resource waste and social alienation.
- Landmark is not the goal, only focus on the core value of construction – “Building benefit mankind”

Government enhances urbanization management

- Urban planning and construction should focus on the human-oriented, land & energy efficient
- High utilization of land space
- Expand population density, prevent over-extend of metropolis
- Prevent and control “city disease”
- Promote smooth & healthy development of real estate
- Increase the housing supply to the low and middle income people
- Develop public rental housing

(Abstracts of “the proposals of 12th five-year development program by China central government”)



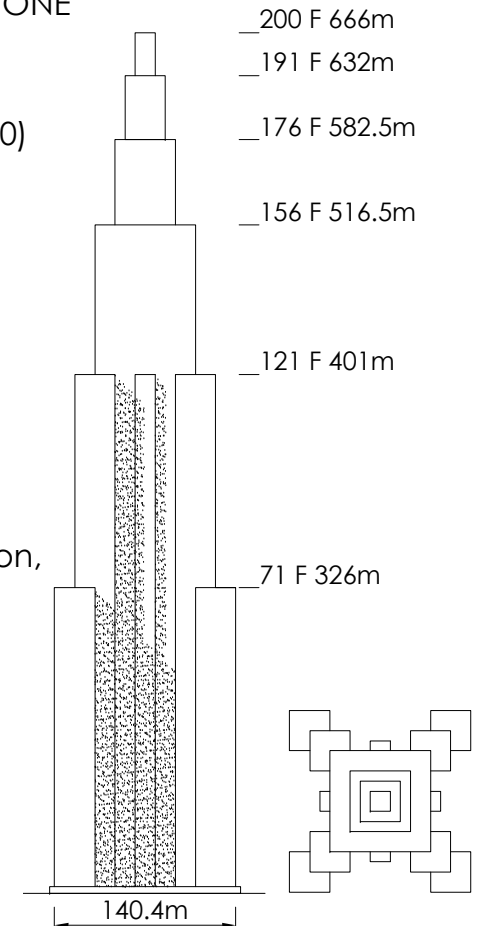
SKY
CITY
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TECHNICAL GOALS

- Minimum land occupation
- Maximum activity space
- Lightest building material weight
- Highest earthquake resistance level
- Lowest energy consumption
- Best indoor air quality
- Minimum construction waste
- Fastest construction speed

Main specification of SKY CITY ONE

- Building area: 1,610,000 m² (Plot ratio: 50)
- Land area: 32,400m² (180×180)
- Building storey: 200
- Total height: 666m
- Earthquake resistance level: Level 9 ①
- Construction material: Approx. 400 kg/m² ②
- Energy consumption: 90kWh/m²a ③
- Indoor air ventilation: 100% fresh air, 99% purification, ventilation frequency 5-10 times/h in occupancy
- Fabrication term: 4months for fabrication, 2 months for installation
- Occupancy capacity: Rated 70,000 people, Maximum 100,000 people



Note: ①Level 9 is 2 times higher than level 8 and 2.7 times than level 7

②Construction materials decomposition(kg): steel 155, concrete 70, ceramic & marble 15, wall, window and door 90 and other 70

③Energy consumption decomposition(kWh): Air conditioning 40, ventilation & illumination 20, elevator 10 (Annual primary energy consumption per square. meter)

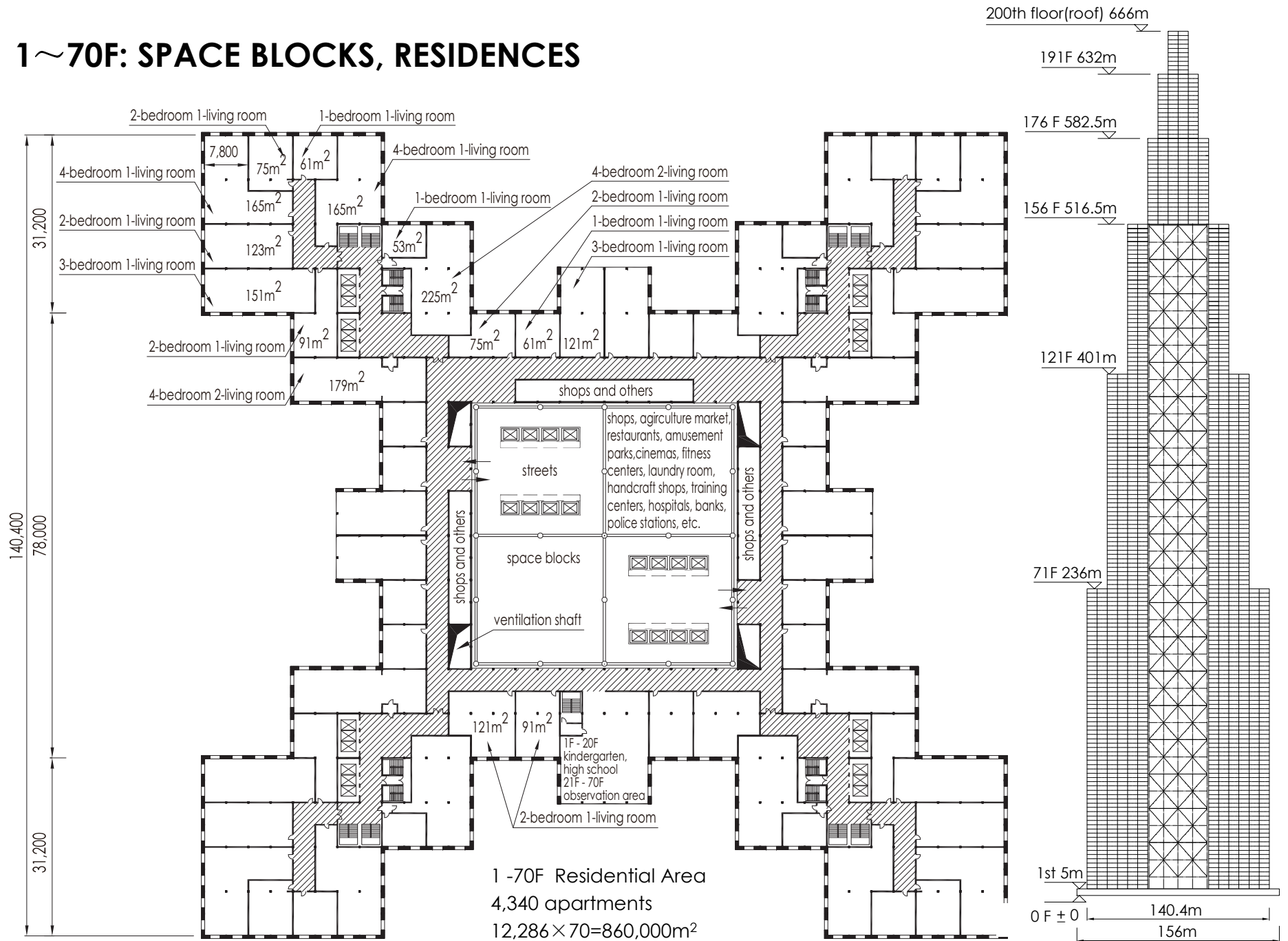
BUSINESS GOALS

- Enable people living and working in the same building, alleviate city traffic jam.
- Provide high-rise apartment at dear price for high-income, low-rise apartment at affordable price for low-income.
- Encourage syncretic relationship among different social classes, along with mutual benefit. Building a harmonious society.

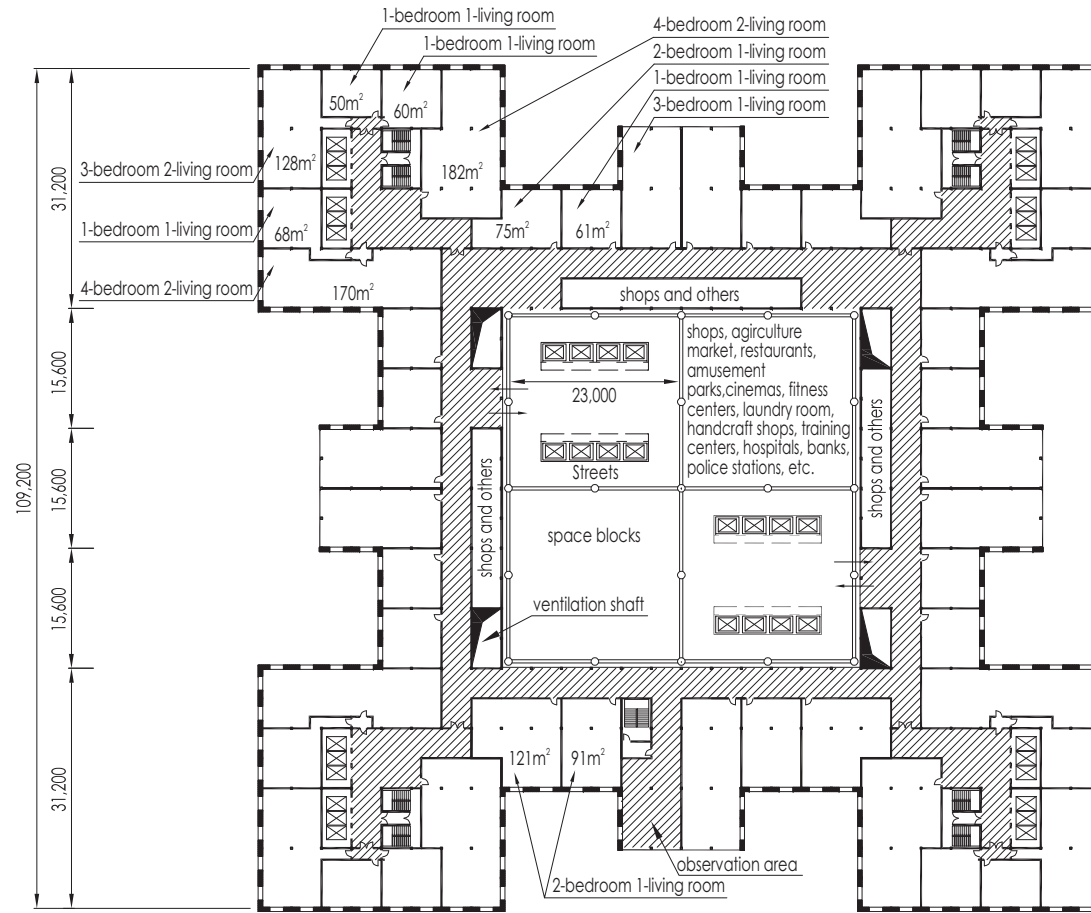


World's top ten highest skyscrapers are built only for the rich.
SKY CITY is shared by the rich and the common.

1~70F: SPACE BLOCKS, RESIDENCES



71~120F: SPACE BLOCKS, RESIDENCES

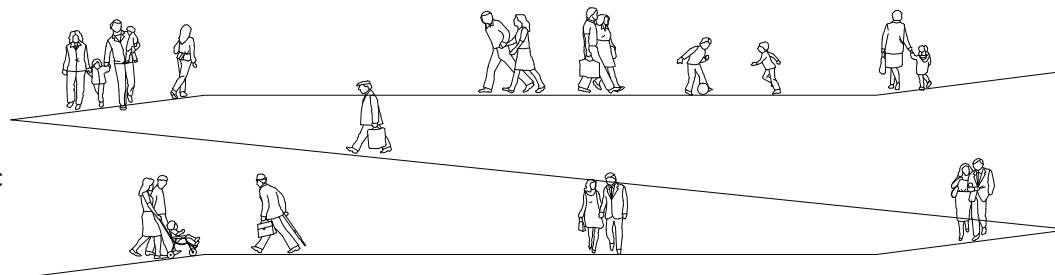


71-120F Residences: 2,350 apartments $9,491 \times 50 = 47,460\text{m}^2$

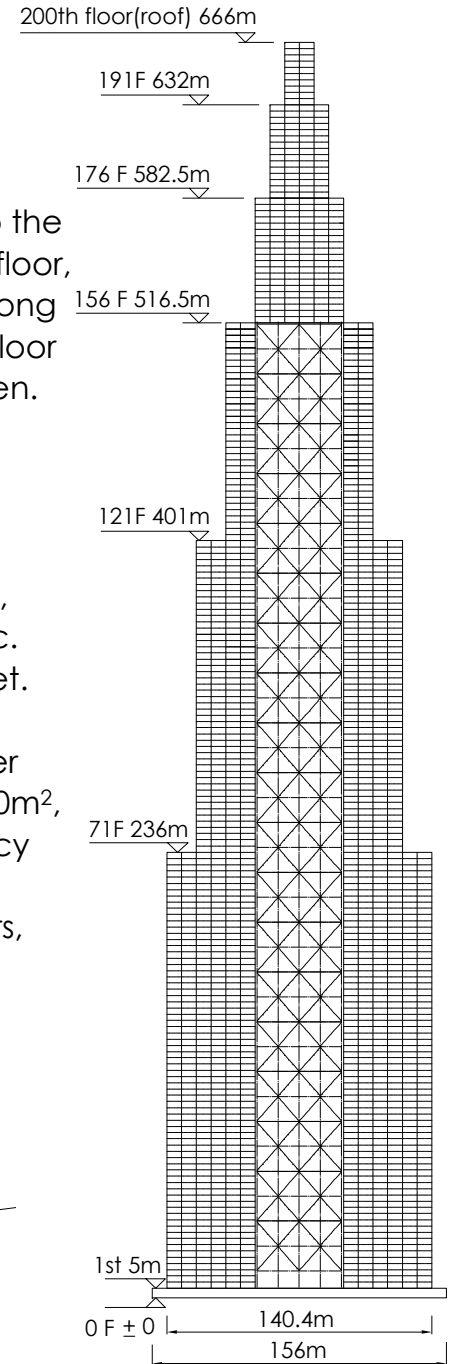
“Space blocks” lie to the core area of 1-120th floor, two 4m wide, 12km long streets from ground floor to 121 floor sky garden.

Each block is about $2,200\text{m}^2$, shops, agriculture markets, restaurants, cinemas, schools, gardens, etc. on both sides of street.

“Space blocks” cover building area $350,000\text{m}^2$, with rated occupancy capacity of 25,000 salesclerks, customers, students and visitors. Maximum capacity reaches 55,000.

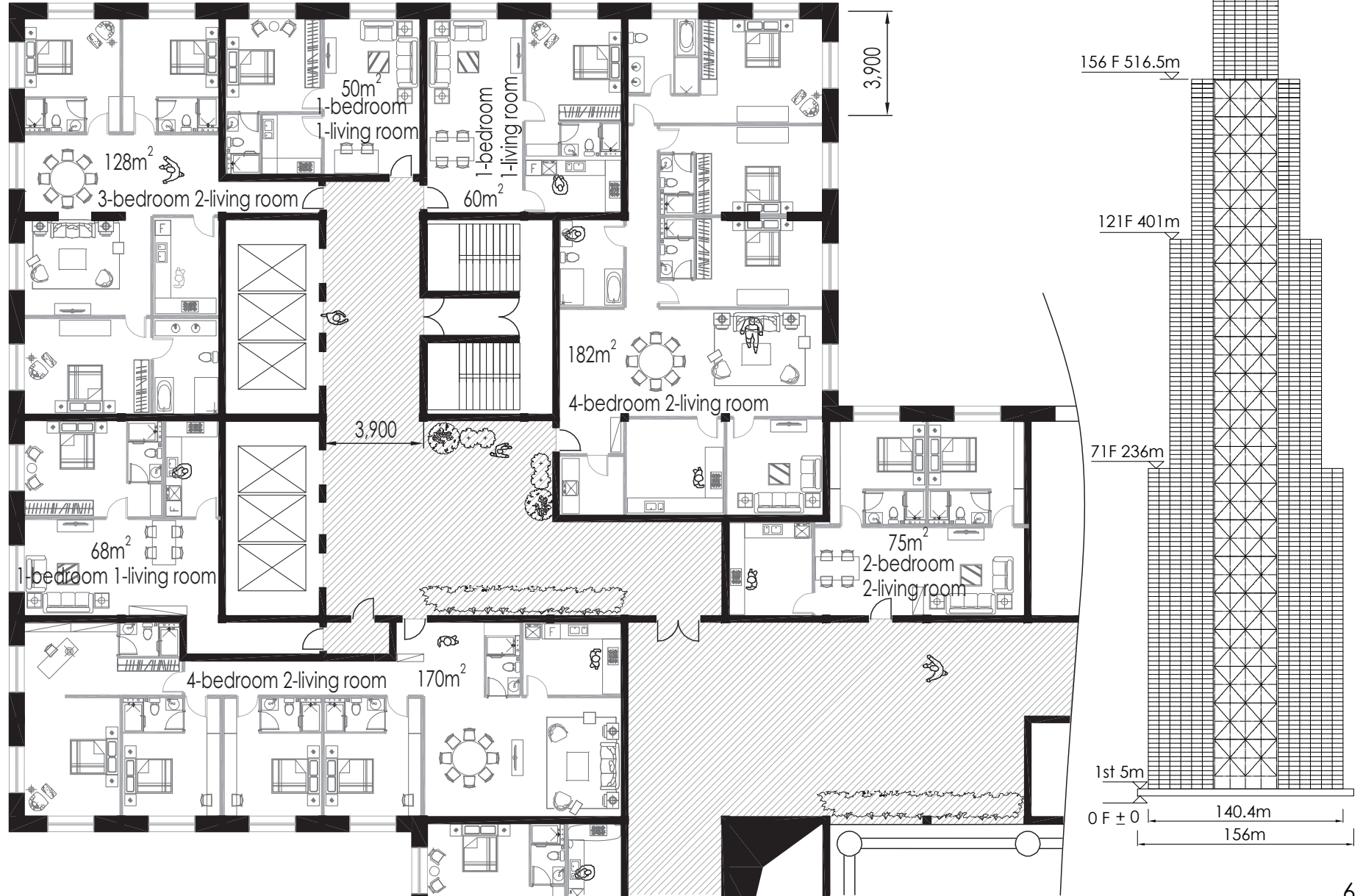


Street grade schematic diagram (length 23m)



1~120F RESIDENCE PLAN

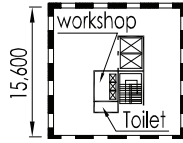
6,690 apartments from 50 m² to 225 m², for 30,000 inhabitants.



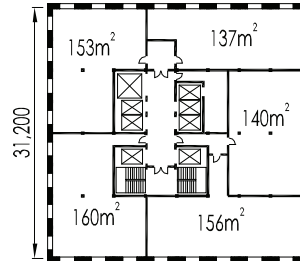
121~155F: Offices, 210,000 m² , for 15,000 people

156~190F: Hotels, 790 suites

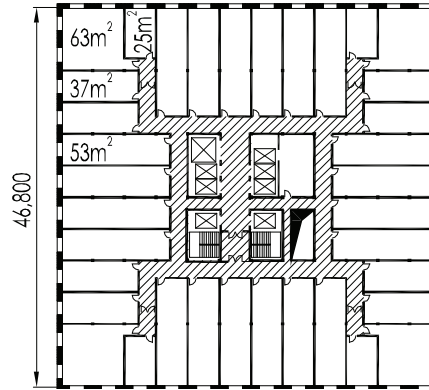
191~200F: Restaurants for 800 people



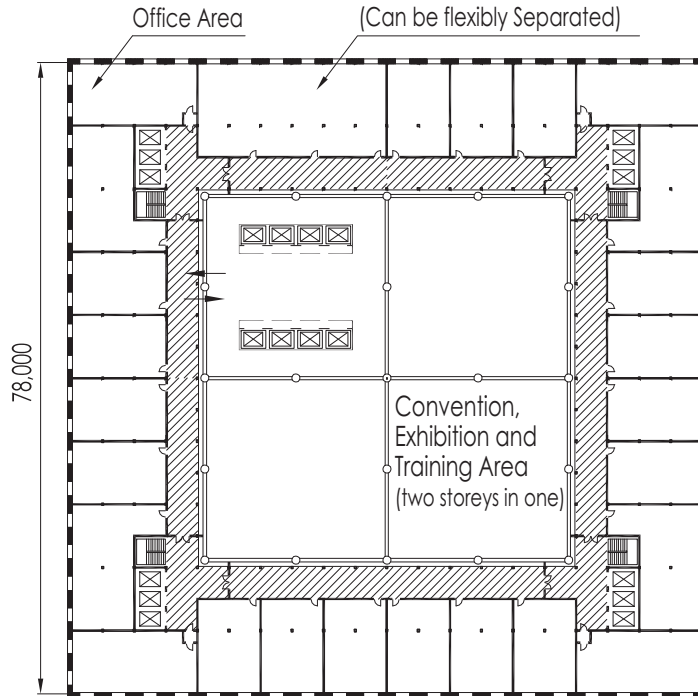
191-200F
Restaurant
240 × 10 = 2,400m²



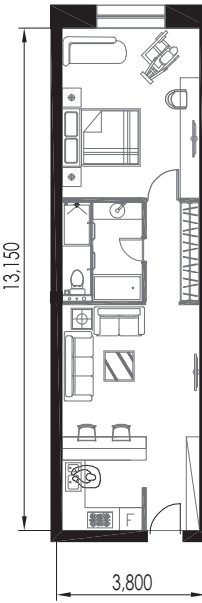
176-190F Seven-star hotel
973 × 15 = 14,600m²
70 guest rooms



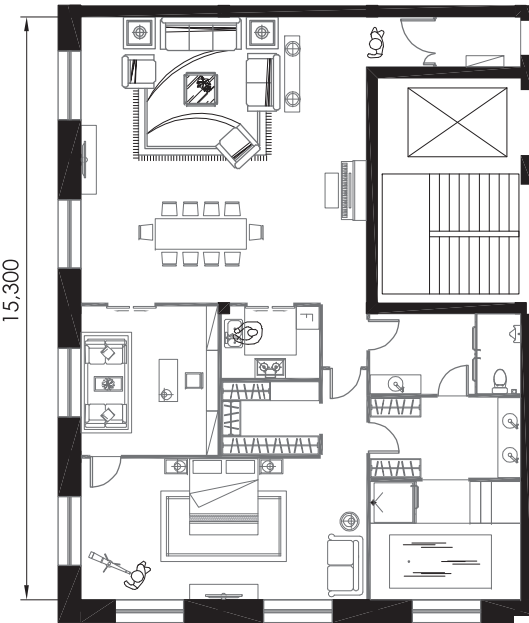
156-175F
Five-star hotel
2,190 × 20 = 43,800m²
720 guest rooms



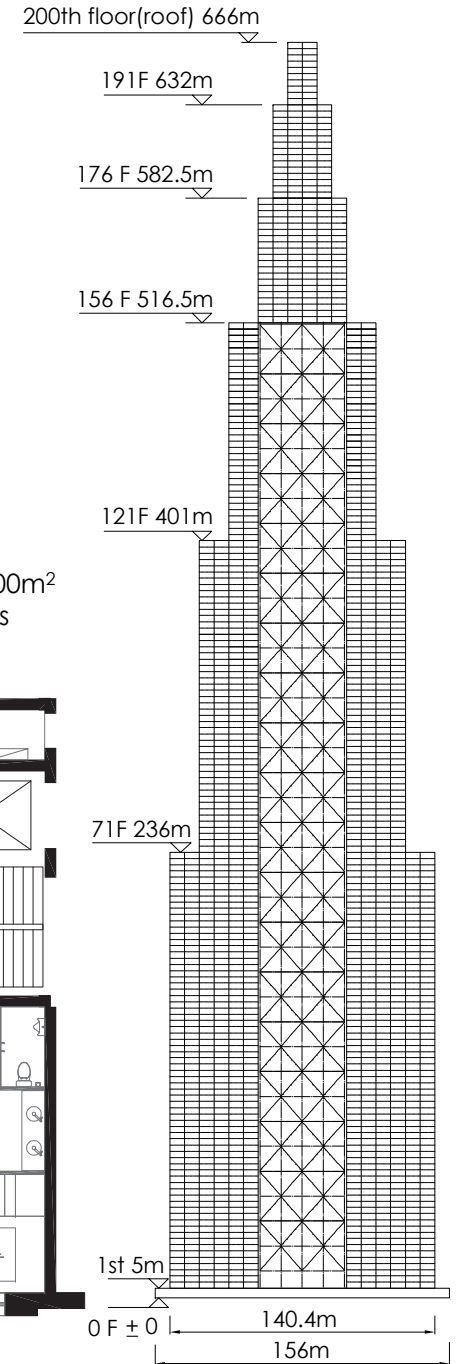
121-155F Office
6,084 × 35 = 213,000m²



Five-star
guest room



Seven-star suites





COMFORT

- 100% fresh air, no mixed with return air, eliminate infection. 3-stage filtered fresh air, 99% nano-particulates be filtered. Indoor air is 20-100 times cleaner than outdoor air. Central vacuuming system keeps indoor air quality.
- Space blocks and all rooms remain at 20~27 °C all year round, glass wall enable sunshine lighting up the streets.
- The clear height of residences and office is 2.8m, the clear height of space blocks are 5.6m, 9m, 12m respectively.
- Four 4m wide streets start from the ground to the floor 121 at 400m, the total length of street is 12km, shops, agriculture markets, handcraft shops, restaurants, amusement parks, sports centers, natatorium, cinemas, opera houses, museums, libraries, training centers, schools, kindergartens, clinics, banks, police stations, etc. on both sides of street, same as city downtown. Botanical garden, natural parks, fishponds, waterfalls, sand beach can be found in some floors, same as the suburban.
- 16 large observation elevators and 31 high-speed elevators can serve 30,000 people every hour.

SAFETY

- Level 9 earthquake resistance, scale model will be tested by national authorized institution.
- BROAD unique technologies "diagonal bracing, light weight, factory-made" ensure the highest earthquake resistance level with minimum materials.
- Trapezoidal construction structure corresponds the law of mechanics, which can withstand earthquake and storm.
- Sky gardens locate on floor 71, 121, 156, 176 and 191 (12,000m² in total), also function as the helipads, which are able to evacuate tens of thousand people during fire emergency, provide extra fire protection than conventional skyscrapers.

ENERGY CONSERVATION

- 150mm exterior insulated walls, triple-paned windows, exterior solar shading, interior window insulation and heat recovery fresh air, 80% more energy efficient than conventional buildings.
- Adopting “distributed energy system”, turbines provide power independently, exhaust from turbines is the source for cooling, heating and sanitary hot water. 50% more energy efficient than the power grid.
- Indoor HVAC is controlled by occupancy sensor, fan speed will be automatically adjusted to the lowest load when people left.
- Elevator generates electricity when ascending unload and descending full load, also choose the floor outside the elevator, and other electricity saving methods can save 75% more electricity than conventional elevator.
- LED lamp, 90% more energy efficient than incandescent lamp and 50% more energy efficient than fluorescent lamp.
- Separated drainage system, rain water is used for plant irrigation, bathing water will be directly drained after settled, bathroom sewage and kitchen waste go to biogas tank, biogas is used as fuel for air conditioning, and solid wastes become organic fertilizers.

SUSTAINABILITY

- Annual energy conservation 60,000 ton oil equivalent
- Saving 600,000 ton construction materials
- Saving 1.4 sq. kilometers land (volume ratio 50)
- On-site construction waste is less than 1% of the total weight
- Zero raise dust on-site
- Zero water consumption on-site
- Recycle processes of living garbage from the building
- All steel structure, reuse after abandoned

BROAD TECHNOLOGIES + GLOBAL COOPERATION

- "BROAD SUSTAINABLE BUILDING", 100% fabricated in the factory
- Fabrication term is about 4 months, installation is about 2 months on-site
- Building structure and fire protection are designed by BROAD, cooperated with national authorized anti-earthquake institutions and top design institutions in China
- Interior decoration is designed by BROAD, cooperated with foreign top design institutions
- All materials and applications are provided by world top companies, air conditioning and ventilation system are provided by BROAD



March 6, 2010
"BROAD Pavilion in World Expo" built in one day



June 2010
"New Ark Hotel" built in one week