ÇİFTÇİ TOWERS
TECHNICAL SPECIFICATIONS

1. LOAD BEARING SYSTEM

In the structural design, effective Turkish Standards and Turkish Earthquake Design Regulations are considered as the basis while international standards and regulations were employed. TS 498 Load Bearing Specifications, TS 500 Reinforced Concrete Specifications and DBYYHY 2007 Turkish Earthquake Regulations, ASCE 7-10 American Load Bearing Specifications, ACI 318-08 American Reinforced Concrete Specifications, AISC-360-10 American Steel Structures Specifications and IBC 2009 American Building Specifications and internationally accepted high structure specifications, LATBSDC (Los Angeles High Structure Specifications) and ATC 72 (Seismic Analysis and Design of High Structures) standards were used. Furthermore, regarding the calculations of specific points of the structure, internationally accepted standards were employed.

The load bearing system of the towers is "reinforced concrete", and the foundation system is "Mat Foundation". The lateral load carrying system has been designed as strong core walls and composite columns –that have good performance under the earthquake effects- which are connected to the core walls by rigid sloor slabs. The concrete quality of the reinforced concrete load bearing system is C50 (50 Mpa concrete compressive strength), with the reinforcement bars being S420 (steel tensile strength of 420 Mpa). High strength S460 (steel tensile strength of 460 Mpa) steel cores have been used inside the composite columns to increase the strength of the reinforced concrete columns.
The performance objectives of the buildings under the earthquake effects are higher than the performance criteria that are specified by Turkish Earthquake Code. The target performance of the buildings is minimum and reparable damages under the earthquakes that have possibility of exceedance 10% in 50 years and the 475 years return period. Target performance of the buildings under the biggest earthquake effect, which buildings can be affected in its lifetime, is that; even if there can be some local damages, there will not be any falling debris hazards, either within or outside the building and the buildings can be used after the earthquake with repair and strengthening. The biggest earthquake effect has 2475 years return period and %2 probability of exceedance in 50 years. These target performances are used for such important structures as special buildings at the international standards.
The steel-structure-mound above the ground floor embraces and welcomes all visitors and tenants under a widespread canopy. Mound is inspired by a shell structure characterized by its geometry to provide a minimum structural system elevation. Structural system is based on two dimensional moment frames working like a space frame structure because of its curvilinear geometry. Large span steel frames are providing more space for entertainment holes and restaurants under this canopy and pinned circular columns are completing structures soft image.

2. MECHANICAL SYSTEM

Mechanical Design Criteria

During the selection and the design of the mechanical systems, most current national and international standards have been implemented while energy efficient building design principle and global sustainability perspective conventional system solutions are supported by energy efficient engineering solutions.

Air Conditioning Systems

Considering the climate of Istanbul, the size of the structure and the energy load imposed by mixed functions, conventional heating and cooling was designed. With the conventional heating and cooling system and the current energy technologies, the general energy consumption was aimed to be reduced.
High efficient models of all cooling groups to be chosen to satisfy the requirement of the structure, boiler and related plumbing components have been applied to reduce carbon emissions according to "Energy Performance Regulations in the Buildings". For the purpose of reducing the energy consumption by the mechanical ventilation systems all air conditioning units are equipped with heat and humidity recovery systems. To achieve maximum pump efficiency pumps

with frequency converter are set a heating and cooling system at variable pressure and flow rate. Particularly considering heating and cooling loads, the glasses which are in fact architectural components were optimized in consideration of architectural and aesthetic requirements. All ventilation equipment can actively perform natural cooling by just spending fan power without operating the cooling coils batteries when atmospheric temperatures are at suitable levels. By establishing an integrated automation system and rated control, de-activating the non-operating equipment, programming the optimum operating times, remote control, outside air compensation or other techniques, the lifelong energy loss and wasting of the system through its entire service life has been minimized. The heating, cooling and ventilation requirements of the residential areas are provided by 4 pipe fan coil with variable speed EC fans and proportional control valf. The system's cooling and heating water requirements are provided by water cooled chiller unit and natural gas fired boilers.

Public Health (Sanitary)
Efficient fixtures are used in design of the domestic cold and domestic hot water services for water use reduction. At the master bathroom comfort floor heating provided. 60m^3/h capacity grey water treatment system was established. All residential washbasin/shower waste water and fan coil condensation water gathered with grey water waste piping. Then treated water will be used at garden irrigation system and retail reservoir. So 60m^3/h water saving will be achieved.

Fire Safety
Fire Safety strategy is developed according to the Regulation related to Protection of the Buildings against Fire and related international standards.

Fire Extinguishing Systems
The entire building will be protected by a sprinkler system in line with the Turkish Fire Protection Regulations and the related equipment of the fire extinguishing systems will constantly be monitored from the building control system so as to find out any failures to occur.

Smoke Control System
The general hallways where also the lift lobby in the Towers are connected and equipped with a smoke extract system and is designed to be activated instantaneously at the time of a fire according to fire scenario. In the parking lots, the jet fan ventilation system has been used for the purpose of extracting.

3. ELECTRICAL SYSTEM

Electrical Design Criteria
The electrical systems of the towers have been designed according to Turkish Standards (TS), European Norms (EN) and British Standards (BS).

Generator
The entire electrical requirements of the Complex has been designed with a 100% backup. 4 ea synchronized prime generator sets are used.

Satellite TV and Cable TV Distribution System
Using the UBB Satellite TV Distribution System to be established in the building, the users will be able to watch satellite broadcasting by directly connecting the satellite receivers through the TV/Sat/Rad outlets. Additionally, they will be able to access TV or Radio broadcastings by connecting their TVs or Radios to the TV or radio outputs of the same outlet.
Additionally, there is a Cable TV infrastructure in the building. The users may also receive Cable TV and Cable Modem services.

Safety System (Card Passage System)
In the building entries, there will be X-Ray Machine and Metal Detector. In the significant parts of the building such as power rooms and mechanical sections, there are card access systems. Inside the Units are also panic button and string call systems in toilets / bathrooms. Additionally, water leakage sensors are provided for wet areas.

Closed Circuit TV (IP CCTV)
By means of the closed circuit tv system, the entries and other significant security parts of the building are monitored and digitally recorded by a security system.

Fire Sensing and Emergency Announcing System
Within the building in general, fire sensing and emergency announcing systems are established, where such system communications with the other systems in the building such as lifts, building automation, security or ventilation so as to operate in an integrated manner in order to realize necessary discharge or other emergency scenarios.

Visual Digital Intercom System
Digital image intercom system can be displayed on the touch panels, thanks to which, any person arriving at the main entrance lobby can be monitored and communicate with him/her from the residential units.

Automatic Illumination System
A lighting automation system is provided for the entire building lighting in the common areas is controlled via automation system in order to save energy. In common areas, motion detectors will be also be used for the same purpose.

House Automation System
A house automation system has been designed to control illumination, air conditioning and black out motor curtains, with a possibility of expansion if necessary.

Invoicing System
An invoicing system has been established for electricity, heating, cooling and service cold and warm water systems of the Residential Units. Such expenses of the Residential Units will be invoiced automatically thanks to this invoicing system and transmitted to the consumers automatically.

Building Automation System
Building automation system is established generally for the purpose of monitoring and controlling the electrical and air conditioning systems within the building.

Data & Phone System
For the purpose of providing the Residential Units with phone and data services, 4xCat6 and two line fiber cable will be installed. Within the Residential Units, CAT6 data cable will be employed to provide distribution through structural cabling.

Parking Lot Management and Fee System
Entries to and exits from the residential parking lot will also be controlled through electrical barriers, while the barriers will be controlled by Proximity Cards and/or the TAG units to be installed onto the vehicles. Under vehicle inspection system and road blockers will also be provided.

4. FACADE SYSTEM

Glazing

- The biggest double glazing unit composition is (10mm + 8mm) laminated annealed outside glass +16mm air gap +8mm toughened inside glass
- Less than %16 reflective, occupants will be able see the outside view even the lights are on.
- 69% translucent, energy consumption for lighting has been minimized
- With sun and thermal filters energy gain in the summer and the energy loss in winter have been minimized. (Façade overall U value 1,4 W/m^2K, glass g value is less than 0,35.)
- Water and air tightness have been detailed in the highest standards. (Facade panel air tightness Class A4, the highest standard according to BS EN 12152; water tightness is Class R7, the highest standard according to BS EN 12154)
- High Fire Resistance (minimum 2hours fire and smoke separation between floors is provided. Class A1 andA2 materials are used in accordance with the Turkish fire regulation.)

Panels

- Thermally broken steel reinforced aluminum panel facade system.
- Full height glass panels
- Open able windows
- Sun control with sun shades on the south elevation
- Black out system integrated into facade panels

5. SOUND INSULATION

Impact noise insulation

• Impact noise isolator sheet under floor covering.
Environmental sound insulation
• Sound absorption sheets inside plasterboard partitions and ceilings.

Sound proofing between floors and flats

• Sound and fire proof barriers on slab level, special sound proof sheet between partition walls and facade panels.

6. RESIDENCE INTERNAL SPACE ARCHITECTURAL MATERIALS

Doors

• Unit Entrance Doors: Natural wood reinforced doors, natural color, matte or semi matte varnished.
• Unit Room Doors: In accordance with the selected concept, wooden doors with blind hinge.
• Single wing sliding door; In accordance with the selected concept, wooden door and frame

Walls

• Unit interior walls: Water based semi matte paint
• Wet spaces: Natural stone or imported ceramic tiles with 2 alternatives in line with the selected concept
• Wall flush Baseboard - Wooden for parquet flooring, Natural stone or ceramic applied according to the floor covering

Floor covering

• Doorway and corridors: Natural stone or imported laminated parquet covering
• Kitchen: Natural stone or imported ceramic tile covering
• Bathroom and toilets: Natural stone or imported ceramic tile covering
• Living Rooms: Imported laminated 18 mm thick wooden parquet or natural stone covering
• Bedrooms: Imported laminated, 18 mm thick wooden parquet
• Duplex Unit Inside Stairs: Metal construction covered by wood or natural stone

Ceilings

• Entry hall, living room, bedrooms and wet spaces within the unit: Gypsum board suspended ceiling, covered by two layers of paint

Kitchen

• Italian brand : Ernestomeda
• Quartz kitchen counter
• Blanco sink embedded on the counter
• Italian brand: Ernestomeda fixtures and accessories
• Miele brand kitchen utensils (electrical hob, hood, microwave or steam oven, dish washer, refrigerator)

Bathroom

• Special design bathroom systems
• Zuchetti brand washbasin
• Zuchetti brand shower basin
• Zuchetti brand bathroom fixtures
• Towel heating panel
• Electrical floor heating at master bathrooms
• Non-vaporizing Mirror

Shelves

• Unit cloakroom and electrical panel shelf
• Master Bedroom Walk in Closet

Utility Room and Maid's Bathroom

• Sink in the utility rooms at AB-CD type residences
• Sink, toilet and shower basin in the maid's bathrooms

Blackout

• Bedrooms and bathrooms located on the façade have an electrical blackout system,
• The blackout system infrastructure is provided in the remaining rooms.