Dead loads:

All structural members and all permanent materials forming part of the structures shall be considered as dead load.

2. Live loads

The Live Load for all structural members shall be calculated according to UBC 1997 edition.

3. Wind Loads

Wind pressures on the structures and buildings shall be calculated according to UBC 1997 edition with Basic Wind Speed of 80mph , exposure C.

4. Seismic Loads

Earthquake analysis is according to UBC 1997 edition and Seismic Zone 2A according to Dubai Municipality.

5. Temperature Variations:+/- 30 degrees C.

6.9 STRUCTURAL MATERIAL

1- Concrete

- All reinforced concrete should have a minimum crushing strength on cylinder at 28 days F'c=300 Kg/cm2
- All plain concrete should have a minimum crushing strength on cylinder at 28 days F'c=140 Kg/cm2.
- All exposed reinforced concrete structures shall be made with Ordinary Portland cement complying with ASTM C150 Type I.
- All buried concrete structures in direct contact with soil and water table shall be made with Moderate Sulphate Resisting cement complying with ASTM C150 Type II.
- All sewerage structures and septic tanks shall be made with Sulphate-Resisting Portland Cement complying with ASTM C150 Type V.

2- Reinforcement:

- All reinforcement shall be deformed high tensile steel having minimum yield strength F_y= 420N/mm^2 and shall conform to ASTM A615 grade 60 or BS4449 grade 460 type 2.

3- Structural steel

- Structural steel plates and hot rolled sections are to conform to ASTM A572 grade 50, with minimum yield stress 345 N/mm^2 or equal or to ASTM A36 grade 50, with minimum yield stress 250 N/mm^2 or equal
- Cold-Formed Structural Steel Tubing: ASTM A 500, Grade C. Having a minimum yield stress of 345 N/mm2 or equal
- Anchor Bolts are to conform to ASTM A 572M, Grade 50 or Anchor Bolts are to conform to ASTM A 307, Grade C.
- High-Strength Bolts, Nuts, and Washers: ASTM A 490M, Type 1, or DIN 6914 grade 10.9 heavy hex steel structural bolts, heavy hex carbon-steel nuts, and hardened carbon-steel washers, uncoated.
- Shear Connectors: AWS D1.1, type B, minimum yield strength 345 N/mm^2 [50 ksi] at 0.2% offset, made from steel to ASTM A108, with mechanical properties to ASTM A370.
- Welding Materials: Conform to AWS Code and AWS Filler Metal Specifications. Select materials that are suitable for use with types of steel to be joined. Unless otherwise indicated, connections are designed for:
- Metal-Arc Welding Electrodes: to E70XX series of the Specification for Mild Steel Covered Arc-Welding Electrodes, AWS A5.1, or the Specification for Low-Alloy Steel Covered Arc-Welding Electrodes, AWS A5.5.
- Bare Electrodes and Granular Flux used in the submerged-arc process are to conform to F7 X-EXXX AWS flux classifications of the Specification for Base Mild Steel Electrodes and Fluxes for Submerged Arc Welding, AWS A5.17, or A5.23 or the of AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings".

6.10 WATERPROOFING

Adequate waterproofing system will be applied depending on site condition.

- Cold applied damp-proofing coating should be applied to all reinforced concrete surfaces in direct contact with earth and that are not waterproofed.
- Full tanking system should be applied to all reinforced concrete structures under water table and up to 50cm above max. water table.
- Chemical waterproofing coating should be applied to internal surfaces of concrete water tanks.

6.11 Construction, Contraction and Expansion joints will be provided in Cast in situ reinforced concrete slabs in order to relief the structure from stresses due to the shrinkage and the temperature variations