## 6. STRUCTURAL REQUIREMENTS

6.1 A Geotechnical site investigation consisting of sufficient number of boreholes and test pits, in-situ and laboratory tests shall be conducted at the location of the building. The objective of the site investigation is to adequately characterize the subsurface of the location of the structure such that its engineering properties are identified (including physical, mechanical and chemical) to enable a successful design and construction of foundation system and to ensure its stability and serviceability.
Site investigation works shall be performed in accordance with International Standards (e.g., ASTM, AASHTO or BS).

6.2 Geotechnical analyses and foundation design shall be developed in light of detailed project requirements and geotechnical design parameters obtained from the geotechnical field and laboratory tests. Foundations are to be designed to satisfy the stability and serviceability conditions of the buildings. The foundation system will be chosen so as to fulfill the specific project requirements such that it offers a safe, functional, economical and durable system.

6.3 The foundation system of the buildings shall be designed in accordance with Standards and codes of practice listed below under paragraph 6.8, such that safety and serviceability are maintained during the lifetime of the structures. The foundations are to be stable and maintain an adequate bearing capacity to support the maximum expected structural loads and any other loads deemed significant during the structural design of the building with an appropriate factor of safety.
The expected total and differential settlements must be within the allowable limits dictated by the functional, architectural, structural, and mechanical conditions, and as dictated by the limits stated in the Authority's guidelines.

6.4 When applicable, the pavement works for building shall include the design of pavement to support the loads inside the building and the design of the parking lots adjacent to the building. Pavement design shall be performed in accordance with International Standards (e.g., AASHTO or BS). Authority approval of the pavement type and cross sections should be obtained.

6.5 The building shall be constructed that the total applied loads by following the load combinations of codes listed under paragraph 6.8, are safely transmitted to the ground without deformation and deflection of any part of the building, and without such ground movement impairing the stability of any part of another building. Building stability shall not be impaired by subsoil movement due to swelling or shrinking.

6.6 The structures shall be designed to have design strengths at all section at least equal to the required strengths calculated for the factored loads and forces in such combinations as stipulated in the ACI 318 Building codes for concrete structures and AISC code for steel structures.

6.7 Special consideration to the durability precautions against the aggressive environmental and to construction materials in the area should be respected in the design of building.

6.8 The structures shall be designed in accordance with the following standards and codes of Practice:

A- Reinforced Concrete Structures:
- ACI 318M-05 "Building Code Requirements for Structure Concrete".
- ACI 315-99 "Details and Detailing of Concrete Reinforcement".
- ACI 350.4R-04 "Design consideration for environmental engineering concrete structures.
- PCI MNL-120-04 " PCI Design Handbook – Precast & Presressed Concrete".
- ACI 201.2R-01 " Guide to durable concrete.
- ACI 530-05 "Building Code Requirements for Masonry Structures".
- ACI 360R-06 "Design of slab on ground"
- UBC 1997 – Uniform Building Code 1997 Edition.

B- Steel Structures:
- American Institute of Steel Construction AISC/ASD-13th edition, 2005
- American welding Society ANSI-AWS-D1.1 latest edition
- Uniform Building Code UBC 1997
- Steel Structures painting Council SSPC-2000

1. The design and construction of the Structural works shall be based on the following: