# 1 INTRODUCTION

## 1.1 GENERAL

### 1.1.1 Scope

1 This Section specifies the general clauses applicable to Works being carried out in accordance with this Specification.

2 The purpose of QCS is to provide as a general technical guide for acceptable construction work practices in the State of Qatar, considering this; any addition for technology, material, specification, standard that are not mentioned in this section or their modification, shall be subject to approval as stated in the introduction of QCS (00-02).

3 For voltages and frequencies, regulations and requirements of Kahramaa and relevant authorities should be taken into account.

4 Related Sections and Parts are as follows:

All Sections and Parts

### 1.1.2 Scope of the Qatar Construction Specification

1 The clauses in this Specification are applicable to each and every part of the Works. Their function is to bring together all those statements which are normally common to most types of work.

2 The Qatar Construction Specification applies to the entire Works, whether on the Site or in yards, workshops and factories employed elsewhere in connection with the Works.

### 1.1.3 References

1 The following standards are referred to in this Part:

BS 6100-0 .....Building and civil engineering. Vocabulary. Introduction and index. (And all parts cross referenced within this standard)

ISO 80000-1.....Quantities and Units. General. (And all parts cross referenced within this standard)

EN 1991-1-4.....Eurocode 1. Actions on structures. General actions.

EN 1992-1-1.....Eurocode 2. Design of concrete structures. General rules and rules for buildings

ASCE/SEI 7-10 .....Minimum Design Loads for Buildings and other Structures

Guide to the Design of Concrete Structures in the Arabian Peninsula, 2008

Seismic hazard and seismic design requirements for the Arabian Peninsula region. The 14th World Conference on Earthquake Engineering October 2008

Civil Aviation Authority wind records. Ministry of Communication & Transport, Department of Civil Aviation & Meteorology.

## 1.2 COMPLIANCE

### 1.2.1 Compliance with the Qatar Construction Specification

1 **If stated in the Project Documentation or directed by the Engineer that Qatar Construction Specification is compulsory,** the Contractor shall comply with the requirements of the latest version of the Qatar Construction Specification that is relevant to the type of work forming any part of the Contract.

2 Subjected to the approval of the Engineer, the Contractor shall adopt whichever permissible option or alternative that is best suited to the needs of the construction work being undertaken.

3 Should the latest version of the QCS and Contract contradict, then the more onerous requirements shall take precedence.

### 1.2.2 Compliance with the General Conditions of Contract

1 The Qatar Construction Specification is intended for use with the General Conditions of Contract.

2 The Contractor shall comply with the provisions of the General Conditions of Contract in the course of construction of the Works.

## 1.3 STANDARDS

### 1.3.1 References to Standards

1 Any standard referred to in this Specification shall be deemed to be the current version and/or the supersede standard(s) English version that was forty-two days prior to the date of return of Tenders.

2 Generally , the reference standard included in QCS corresponded to the standard that the principal developer published.

3 The Engineer shall approve any new specification or standard ; if any standard is not adequate with the specification stated in the Qatar Construction Specification and shall be fulfill or exceed applicable national standards. Any standard which been referenced in this specification is to be considered as a reference to any new specification or standard that fulfills or exceeds applicable national standard. The Engineer shall approve any new specification or standard

4 The Contractor shall have copies of all referenced standards applicable to the work being undertaken. Translations of standards not written in English shall be provided where necessary.

### 1.3.2 Government Published Specifications, Regulations, Notices and Circulars

1 The works shall be executed in accordance with all Government specifications, regulations, notices and circulars as defined in the QCS, the Contract, as instructed by the Engineer or delegated authority.

2 As a minimum any specification, regulation, notice or circular published by following entities shall be complied with:

- Any Authorities having Municipal jurisdiction
- Ashghal (Public Works Authority)
- Civil Aviation Authority
- Communications Regulatory Authority (CRA)
- Kahramaa QGEWC) - Qatar General Electricity and Water Corporation
- Ministry of Awqaf and Islamic Affairs (AWQAFM)
- Ministry of Environment and Climate Change [MOECC]
- Ministry of Municipality
- Ministry of Interior (MOI) - Civil Defense Department, Traffic Police, Department of Immigration, Security Systems Department, etc.
- Ministry of Transport
- Ministry of Communications and Information Technology
- Qatar General Organization for Standardization (QS)
- Ooredoo
- Qatar Energy (QE) (Qatar Petroleum-QP)
- Qatar Rail
- Qatar National Broadband Network (QNBN)
- Vodafone Qatar

3 The Contractor shall be deemed to have his own copy of the Government specifications, regulations, notices and circulars.

4 Where any standard publication, specification, regulation, notice, etc. or any correspondence refers to a Government Ministry, department, division, section, etc. it will be deemed to be the same as any successor Ministry, department, division, section, etc. which has or may subsequently be officially promulgated by the Government of the State of Qatar.

### 1.3.3 Survey Marks

1 The Contractor shall consult the Engineer prior to any earth or other works to determine if the work is likely to disturb survey marks. If the Engineer requires a survey mark to be moved the Contractor will be responsible for recreating the survey mark to an approved design and specification, and for resurveying the point using survey companies approved by the Engineer authority.

2 The Contractor shall be responsible for the protection of the survey marks within the boundaries of the site for the duration of the contract period and shall be liable for all costs of any remedial work required by the Engineer.

3 On the practical completion of the Works the Engineer will issue a certificate stating that all survey marks, whether disturbed or otherwise by the Contractor, have been reinstated or protected to the satisfaction of the Engineer.

4 In the event of failure to comply with the requirements of this Clause the Engineer, without prejudice to any other method of recovery, may deduct the costs of any remedial work after the practical completion date carried out by the Engineer, from any monies in its hands or which may become due to the Contractor.

## 1.4 TERMS AND DEFINITIONS

### 1.4.1 General

1 The following terms and conditions shall apply when used within, or in association with, the Qatar Construction Specification. Terms, which are restricted in their application to certain types of material or workmanship, are dealt with in the appropriate Section.

2 The definitions given in the General Conditions of Contract shall apply to this specification.

### 1.4.2 Approved

1 Means terms such as “approved’, “approved by”, “to the approval”, “as directed” and the like refer always to approval or directions given by the Engineer in writing, and means that the Engineer has been consulted and has confirmed that the item or procedure is acceptable in the specific context for which approval has been requested.

### 1.4.3 Contract

1 Means the binding agreement entered into between the parties and the Contractor for the construction of the Works.

### 1.4.4 Contract Documents

1 Means documents which together form the Contract

### 1.4.5 Contractor

1 Means the party responsible for the construction of the Works.

### 1.4.6 Drawings

1 The drawings included in the Project Documentation.

### 1.4.7 Engineer

1 Means the party appointed by the Owner to administer the Contract

### 1.4.8 Engineer’s Representative

1 Means the party appointed from time to time by the Engineer to perform duties on behalf of the Engineer whose authority and delegated powers shall be notified in writing to the Contractor by the Engineer.

### 1.4.9 Government

1 Means the Government of the State of Qatar, including its ministries and offices

### 1.4.10 Government Departments and Utility Services

1 Means any governmental, semi-governmental, administrative, fiscal or judicial ministry, department, commission, authority, tribunal, agency, municipality or body, and shall include the provider of electricity, gas, water, wastewater and other public services, and any party with a regulatory function under the laws of the State of Qatar.

### 1.4.11 Guarantee

1 A Guarantee is a written assurance that a material, product, component, item of equipment, finishing or any other part of the Works meets certain defined standards or quality criteria and/or lasts for a certain length of time.

2 A warranty is the same as a Guarantee as defined in Clause 1.4.17.1.

**1.4.12 Independent Agency**

1 Means a party where specified in the Contract Documents or as instructed by the Engineer as an Approved agency who is responsible for specific tasks assigned to that party by the Contract Documents

**1.4.13 Owner**

1 Means the party for whom the Project is being undertaken and to whom the handover of the final product will be made.

**1.4.14 Permanent Works**

1 Means the permanent works, forming part of the Works, to be designed and / or executed and completed by the Contractor under the Contract.

**1.4.15 Plant**

1 Means, irrespective of ownership, all plant, facilities, temporary structures and accommodation, equipment, tools, appliances, apparatus, machinery, vehicles and other things required for the design, execution and completion of the Works and the remedying of defects, whether imported or locally supplied, but excluding Temporary Works and any other things intended to form or forming part of the Permanent Works

**1.4.16 Project Documentation**

1 All documents associated with and applicable to the Project Contract.

**1.4.17 Singular and Plural**

1 Words importing the singular only also include the plural vice versa where the context requires.

**1.4.18 Site**

1 Means the places provided by the Owner where the permanent works are to be executed and to which Plant and Materials are to be delivered, any other places that may be specified in the Contract Documents or by an instruction of the Engineer as forming part of the Site

**1.4.19 Specifications**

1 All specifications contained in the Contract including any modifications or additions thereto as may from time to time be issued or approved in writing by the Engineer.

**1.4.20 Specified**

1 Specified in the Project Documentation.

### 1.4.21 Temporary Works

1 Means temporary works of every kind (other than Plant) required on the Site for the execution and completion of the Permanent Works and the remedying of Defects.

### 1.4.22 Works

1 Means all works, supplies and services of any kind, including Permanent Works and Temporary Works, required for the project and to satisfy the requirements of the Contract Documents.

## 1.5 ABBREVIATIONS AND SYMBOLS

### 1.5.1 General

1 Units shall generally be in accordance with the Systèm International d'Unités and the relevant provisions of ISO 80000-1.

2 The following abbreviations are used in this Specification:

| | | | | | |
|---|---|---|---|---|---|
| µ | - | microns | M | - | mega |
| A | - | ampere | m | - | metre |
| C | - | Celsius | m | - | milli |
| c | - | centi | N | - | Newton |
| d | - | day | No. | - | number |
| dia | - | diameter | nr | - | number |
| g | - | gram (me) | Pa | - | Pascal |
| h | - | hour | r | - | radius |
| ha | - | hectare | sec | - | second |
| J | - | joule | t | - | tonne |
| k | - | kilo | V | - | volt |
| l | - | litre | W | - | Watt |

3 Reference to a technical society, institution, association is made in the Specifications in accordance with the following abbreviations:

AASHTO --- American Association of State Highway and Transportation Officials
ACI --- American Concrete Institute
ANSI --- American National Standards Institute
ASME --- American Society of Mechanical Engineers
ASTM --- American Society for Testing & Materials
AWS --- American Welding Society
AWWA --- American Water Works Association
BS --- British Standard
BSI --- British Standard Institution
C & CA --- Cement and Concrete Association
CEE --- Commission of approval of Electrical Equipment
CIBSE --- Chartered Institution of Building Services Engineers
CIRIA --- Concrete Industry Research and Information Association

| | |
|---|---|
| CRA | --- Communication Regulatory Authority |
| CRSI | --- Concrete Reinforcing Steel Institute |
| CS | --- Concrete Society |
| DIN | --- Deutsches Institute fur Normung (German Institute for Standardization) |
| EIA | --- Electronic Industries Association |
| EN | --- European Standards (Euro-Norm) |
| FHWA | --- Federal Highway Authority |
| FM | --- Factory Mutual Engineering Division |
| GSO | --- Gulf Standards |
| ICE | --- Institution of Civil Engineers |
| IEC | --- International Electrotechnical Commission |
| IEE | --- Institution of Electrical Engineers |
| IEEE | --- Institute of Electrical and Electronic Engineering |
| ISO | --- International Organization for Standardization |
| LPC | --- Loss Prevention Council |
| LPCB | --- Loss Prevention Certification Board |
| NEMA | --- National Electrical Manufacturer's Association |
| NFPA | --- National Fire Protection Agency |
| PCI | --- Pre-stressed Concrete Institute |
| QCS | --- Qatar Construction Specification |
| QS | --- Qatar General Organization for Standardization |
| SIS | --- Swedish Standards Institute |
| UK DOT | --- United Kingdom Department of Transport |
| UPDA | --- Urban Planning and Development Authority |
| VDE | --- Verband Deutscher Elektrotechniker (Association for Electrical, Electronic and Information Technologies) |

### 1.5.2 Site Conditions

1 The Site conditions shall be assumed to be as follows for tendering purposes:

Maximum ambient temperature .....50°C

Minimum ambient temperature ..... 5°C

Design ambient temperature.....50°C

Maximum metal temperature under the sun .....85°C

Maximum ambient humidity .....100%

Minimum ambient humidity ..... 20%

Design ambient humidity.....100%

50-year return period Wind Speed:

(a) Nominal wind speed for 3 sec gust …… 38 m/s (A per ASCE 7-05 / IBC 2012)

(b) Mean hourly wind speed…… 25 m/s (as per BS 6399-2)

(c) Mean 10 minutes wind speed…… 27 m/s (as per EN 1991-1-4)

Yearly rainfall .....80 - 150 mm

2 The wind is very directional and that the W-NNW sector predominates for velocities greater than 8m/s (30km/h). However, the wind in coastal areas tends to exhibit a diurnal pattern, with onshore winds during daylight hours changing to offshore at night.

3 The temperature is relatively mild from October to May and hot from June to September.

4 The relative ambient humidity is generally low from October to May and generally high from June to September.

5 Under certain climatic conditions, considerable condensation may take place.

6 A considerable amount of salt is contained in the atmosphere which together with the relatively high ambient humidity, can produce sever corrosion problems.

7 Distribution and occurrence of rainfall events are very erratic. Rainfall events are generally of a high intensity with a short duration and usually occur between December and March.

8 The prevailing wind directions are from the north and west.

9 The seismic design for all building structure shall be based upon local seismic accelerations recommended as per ASCE 7-10, IBC 2012 or EN 1998-1:2004. Local seismic spectral accelerations based upon uniform hazard response spectra for 475 year and 2475 year return period as below.

| Peak Ground Acceleration (PGA) | | 0.2 second Spectral Acceleration (g) - $S_s$ | | 1 second Spectral Acceleration (g) – $S_1$ | |
|---|---|---|---|---|---|
| 475 year | 2475 year | 475 year | 2475 year | 475 year | 2475 year |
| 0.045 | 0.10 | 0.090 | 0.147 | 0.045 | 0.065 |

10 Wind tunnel test is recommended for buildings under below criteria

(a) Total building height exceeding 120m from ground.

(b) Structure with irregular geometry or shape.

(c) Unusual terrain or surrounding structure in the area.

(d) Any other factor as per design requirements or designer recommendation.

11 The ratio of the wind speed for any return period to the 50 year return period wind speed as per Peterka & Shahid Equation is

$$VT / V50 = [0.36+0.1 \ln (12T)]$$

12 Building structure design working life shall be minimum as specified below

| Design working life category | Indicative design working life (years) | Examples |
|---|---|---|
| 1 | 10 | Temporary structures [(a)] |
| 2 | 10 to 25 | Replaceable structural parts, eg. Gantry girders, bearings |
| 3 | 15 to 30 | Storage and similar structures |
| 4 | 50 to 75 | Building structures and other common structures |

| | | |
|---|---|---|
| 5 | 120 | Civil engineering structures like bridges, tunnel etc. |

(a) Structures or parts of structures that can be dismantled with intention of being reused, aren't temporary structures.

## 1.6 LANGUAGE

### 1.6.1 Contract Language

1 All communications, meetings and documentation shall be in English or Arabic as requested by the Engineer.

END OF PART