2 QCS GREEN BUILDING

2.1 SCOPE

2.1.1 General

1 This section specifies minimum recommended environmental performance requirements that apply to the design, construction and operations of new buildings.

2 The minimum recommended environmental performance requirements could be applied at least to 8 building typologies (Section 2.2.1) and have been specified for minimum recommended environmental performance criteria (Table 1).

3 The recommended environmental performance criteria apply to all new buildings for those building typologies specified and shall apply to:

(a) Buildings under design but not yet constructed (i.e. pre-construction);

(b) Buildings under construction; and

(c) Buildings constructed prior to hand over.

4 For buildings under construction or constructed and not handed over, the minimum environmental performance requirements shall apply as far as is reasonably possible without the need to undertake a major re-design and retrofit. Where building owners, designers or contractors, etc. judge that any re-design or retrofit to meet the environmental performance requirements specified herein is not reasonable, the relevant Qatari authorities / government agencies reserve the right to ask for a justification to explain such a decision.

5 The Engineer shall specify the applicable Green Building Assessment System for the QCS's Building typologies and to assess compliance with QCS's Green Building Requirements.

6 The minimum recommended environmental performance requirements specified herein have been derived from the Global Sustainability Assessment System (GSAS) v2.1-2013. The Engineer may approve any other equivalent environmental performance requirements using other international environmental assessment sustainability system (such as: LEED, BREEAM,,,,).

7 The Engineer shall ensure compliance with QCS's minimum sustainable building requirements or higher specified by the relevant authorities or the Engineer.

8 QCS encourage the use of any environmental or sustainability performance criteria in addition to those environmental performance criteria specified to help design, construct and operate better buildings.

2.1.2 References

1 The following documents are referred to in this section:

- Global Sustainability Assessment System (GSAS) v2.1-2013, Gulf Organisation for Research and Development, Qatar
- KAHRAMMAA Energy and Water Conservation Code 2016
- ASHRAE 62.1, ASHRAE 90.1, ASHRAE 55, ANSI/ASHRAE/ASHE 170.
- CIBSE GUIDES A & B
- International Mechanical Code, IMC 2015
- ISO 17772: Energy performance of buildings — Indoor environmental quality ,
- EN 16798: Energy performance of buildings - Ventilation for buildings
- Leadership in Energy and Environmental Design (LEED)
- BRE Environmental Assessment Method (BREEAM)

2.2 QCS GREEN BUILDING REQUIREMENTS

1 The values listed herein for the Commercial, Health Centres, Education, Mosques, and Light Industries Schemes and Typologies shall be considered as the minimum requirements for the applicable criteria (Table 3).

2.2.1 Types of Buildings

1 COMMERCIAL: Types include Spaces that Serves various functions such as offices, conference rooms, foyers, retail spaces, and ancillary areas, with built up area of 10000 m^2 or more.

2 GOVERNMENTAL BUILDINGS: Types include Capitol, Diplomatic Buildings, Statehouses, Courthouses, Municipalities, Post offices, etc.

3 PUBLIC BUIDLINGS: Types include:

(a) RAIL BUILDINGS: Types include spaces that serve various functions of a railway station such as but not necessarily limited to platform/concourse, offices, station control room, ticketing, retail, food/beverage areas, and ancillary areas.

(b) SPORTS: Facilities include indoor or outdoor competition areas, fitness suites, locker facilities, retail spaces, offices, restaurants, and common areas

(c) EDUCATION BUILDINGS: Types include educational facilities for students in kindergarten through 12th grade as well as college and university facilities. This includes classrooms, libraries, auditoriums, cafeterias, kitchens, offices, and other spaces that are part of academic buildings.

(d) MOSQUES AND OTHER RELIGIOUS BUILDINGS: Types include the building containing the congregational worship areas.

(e) HOSPITALS AND HEALTH CENTERS BUILDINGS: Types include specialist hospitals, general hospitals, out-patient hospitals, and primary care health centres.

4 LIGHT INDUSTRIES BUILDINGS: Types include both operational and office areas as well as the general building as a whole.

2.2.2 QCS Green Building Categories & Criteria

1 The minimum QCS's requirements unless other values specified by the Engineer or the relevant authorities.

Table 1: Recommended Green Building Categories & Criteria

QCS Category	Criteria	Minimum Requirements *	Building Typologies
ENERGY	Energy Demand Performance	EPC ≤ 1.0 The minimum building's elemental performance shall, at least, meet Kahrammaa energy conservation requirements 2016 and, the overall building energy performance shall be, at least, 15% better than ASHRAE 90.1 -2013 i.e.	Commercial, Governmental Education, Mosques & other religious buildings, Light Industry, Health Centres, Railways, Sports
	Energy Delivery Performance		

QCS Category	Criteria	Minimum Requirements *	Building Typologies
WATER	Water Consumption	WPC ≤ 1.0 The minimum fixtures performance shall, at least, meet Kahrammaa water conservation requirements 2016 and, the overall building water performance shall be at least 10% better than IGCC-2015 i.e.	Commercial, Governmental, Education, Mosques, Light Industries, Health Centres, Railways, Sports
INDOOR ENVIRONMENT	Thermal Comfort	PMV ≤ 2.0 PMV levels may be calculated in accordance with either ANSI/ASHRAE/ASHE Standard 170 or ASHRAE Standard 55 or equivalent international standard	Commercial, Light Industry, Governmental
		80 ≤ ADPI	Education, Mosques
		Comply with ASHRAE Standards	Health Centres
		Comply with ASHRAE Standards	Railways
		PMV ≤ 2.0 office spaces	Sports
		worst case heat load ≤ 1.6 Exposed Spectator Seating	
	Natural Ventilation	Natural Ventilation Can be Utilized(x) 0 < X (month of the year)	Commercial, Governmental, Education, Mosques, Light Industry
		Comply with ASHRAE Standard	Health Centres
		Natural Ventilation Can be Utilized(x) 0 < X (month of the year)	Sports
		Comply with ASHRAE Standard	Railways (above ground)
	Mechanical Ventilation	no existence of equipment with efficiency less than specified in ASHRAE 90.1-2010	Commercial, Education, Mosques, Light Industry Health Centres, Railways
	Low-Emitting Materials	VOC_emi_total ≤100%	Commercial, Governmental Education, Mosques, Light Industry Health Centres, Sports, Railways
CULTURAL & ECONOMIC VALUE	Support of National (GCC) Economy	% of Construction Expenditure Benefiting National Economy (x) 20 ≤ X	Commercial, Governmental Education, Mosques, Light Industry Health Centres, Railways, Sports
	Cultural Identity & Heritage	To be defined & assessed by the concern Authority	Commercial, Governmental Education, Mosques, Light Industry Health Centres, Railways

QCS Category	Criteria	Minimum Requirements *	Building Typologies
MANAGEMENT & OPERATION	Recycling Management	Recycling Management Plan demonstrates Compliance	Commercial, Governmental Education, Mosques, Light Industry Health Centres, Sports, Railways
MATERIALS	Regional Materials	Performance Indicator (X) **X < 30**	Commercial, Governmental Education, Mosques, Light Industry Health Centres, Railways, Sports

2.2.3 Submittal Requirements

1 Building owners, designers or contractors, etc. shall provide the relevant authorities with a report that shows how the minimum environmental requirements have been met. The report shall include:

(a) All raw data used to performance calculations;

(b) All calculations used to derive results against the environmental criteria specified (and / or copies of relevant GSAS calculator tools where appropriate);

(c) All specifications where relevant of construction materials, equipment, fixtures and fittings, etc;

(d) Details of suppliers / service providers with evidence that purchases have been made or services commissioned, etc.

(e) All other information necessary to demonstrate how the environmental performance requirements have been met.

END OF PART