4 COLD WATER STORAGE

4.1 GENERAL

4.1.1 Scope

1 This Part specifies the requirements for cold water storage systems.

2 Related Sections and Parts are as follows:

This Section

Part 1..... General
Part 2..... Water Distribution
Part 6..... Commissioning of Systems

Section 1 General

3 The following standards are referred to in this Section:

ASTM D1998.....Standard Specification for Polyethylene Upright Storage Tanks

BS 6920.....Suitability of non-metallic materials and products for use in contact with water intended for human consumption with regard to their effect on the quality of the water

EN 13575 .....Static thermoplastic tanks for the above ground storage of chemicals. Blow moulded or rotationally moulded polyethylene tanks. Requirements and test methods.

NSF61 .....Drinking Water System Components – Health Effects

Regulations of Internal Water Installations and Connection Works; Water Installations Code (issued by Qatar General Electricity & Water Corporation QGEWC "KAHRAMAA")

4.1.2 System Description

1 Storage tanks and systems shall comply with Regulations of Internal Water Installations and Connection Works issued by Qatar General Electricity & Water Corporation QGEWC "KAHRAMAA".

2 Cold water storage tanks shall impart no taste, colour, odour or toxicity to the water nor promote or foster microbial growth under the conditions where the tank is going to be installed.

3 The tank shall be supported on a firm level base capable of withstanding the weight of the tank when filled with water to the rim.

4 Where possible and practicable, tanks shall be positioned in locations where they can be easily accessed for inspection, cleaning and maintenance.

5 Tanks positioned outside buildings shall be provided with a suitable shade.

6 Where two or more tanks are coupled together in series, the inlet and outlet shall be at opposite ends of the series.

7 Tanks shall not be buried or sunk in the ground without the prior approval from the Qatar General Electricity & Water Corporation QGEWC "KAHRAMAA").

8 Each tank shall be fitted with a 25 mm diameter outlet for connection to a washout pipe. The outlet shall be flush with the bottom of the tank. The floor of tank shall be laid at a slight fall towards the outlet. A washout pipe and a stop-tap shall be fitted to the outlet. The washout pipe shall be run to a point as detailed in the Documentation.

9 Every pipe supplying water to a cold water tank shall be fitted with a float operated valve or some other equally effective device, as detailed in Part 2 of this Section, to control the inflow of water and maintain it at the required level. The float valve shall be securely fixed to the tank and be installed so that the level of water in the tank when full under normal conditions is not less that 25 mm below the level of the warning or overflow pipe. A stopvalve complying with the relevant provisions of Part 2 of this Section shall be fitted to the pipework immediately upstream of the float valve to shut off supply of water to that valve.

10 Distribution pipes for tanks shall be connected so that the lowest point of the outlet is not less than 50 mm above the bottom of the tank.

11 Connections to distribution pipes feeding hot water apparatus shall be set at a level of at least 25 mm above connectors to pipes feeding cold water outlets.

12 Any tank with an effective capacity of up to 4500 litres shall be fitted with a warning type overflow pipe. Tanks with an effective capacity exceeding 4500 litres shall be fitted with one or more overflow pipes. For capacities exceeding 4500 litres, either the lowest pipe will be a warning type overflow pipe, or a device shall be fitted that gives an audible or visual alarm when water in the tank reaches a level at least 50 mm below the lowest point of the lowest overflow pipe.

13 The invert level of the overflow pipe shall be not less than 75 mm below the invert level of the inlet pipe.

14 Overflow pipes shall be made of a rigid corrosion resistant material. No overflow or warning pipe shall rise in level outside the cistern.

15 Warning type overflow pipes shall discharge water immediately the water in the tank reaches the overflow level and shall discharge to a conspicuous position; these shall be outside the building where appropriate.

16 The overflow pipe or pipes should be able to convey water away from the tank at a rate equal to or greater than the rate of flow of water into the tank. Notwithstanding, warning type overflow pipes shall be not be less than 20 mm in diameter.

4.1.3 Submittals

1 The Contractor shall provide manufacturers' specifications for all items to be supplied under this Part.

2 The Contractor shall provide design calculations and shop drawings for the fabrication and erection of sectional type storage tanks, unless otherwise detailed in the manufacturer's data sheets.

3 The Contractor shall provide design calculations and shop drawings for the fabrication and erection of tank support assemblies unless otherwise detailed in the manufacturer's data sheets.

4 The submittal shall include catalogue pages, erection descriptions and manufacturer data.

5 Unless the positions of the discharges for the overflow pipes are described in the Project Documentation, the Contractor shall submit his proposals for their positioning to the Engineer for approval.

4.1.4 Quality Assurance

1 Fabricated cold water storage tanks and associated equipment shall be provided by experienced and approved manufacturers and fabricators as designated in the Project Documentation and to the written approval of the Engineer.

4.2 TANK CONSTRUCTION

4.2.1 General Requirements

1 Cold water storage tanks shall be constructed in accordance with the Rules and Regulations for Plumbing Works as prepared by QGEWC "KAHRAMAA").

2 The tanks shall be constructed with one of the following materials/methods:

(a) fibre glassed reinforced plastic
(b) GRP sectional panel
(c) reinforced concrete (underground storage).
(d) Polyethylene as per ASTM D1998 or EN 13575:2012; non-toxic, solvent free and comply with the local and international food and hygiene standard (All internal components materials or materials of internal coating shall be tested and approved by WRC, DVGW, KIWA, NSF61, SIRIM, or other world worldwide known quality body certifiers in contact with potable water at 50 ºC. as per the requirement of BS 6920 “Suitability of Non Metallic Products for use in contact with Water Intended for Human Consumption with regards to their effect on the quality of Water” or equivalent).

3 Tanks smaller than 6m in length shall have a removable close-fitting vermin proof cover. Tanks greater than 6m in length shall have two or more securable manhole covers.

4.3 FILTERS

4.3.1 General Requirements

1 Filters shall be of a type as detailed in the Project Documentation.

2 As a minimum, filters shall be able to remove the following:

(a) harmful bacteria
(b) giardia cysts
(c) chlorine tastes and odours
(d) sediment to 1 micron.

3 Filters shall have the following characteristics:

(a) inhibit the growth of bacteria and other micro-organisms
(b) clean and maintain.

4 Filters shall not unduly affect distribution rates.

END OF PART