

SECTION 6 - SUB-SECTION I

WATER AND SANITARY SEWAGE

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A - Water System Design Principles and Guidelines

1. Operational requirements

- 1.1 The water supply system to the site must supply water to the building for kitchen and sanitary uses, water for fire extinguishing as well as cleaning the area of the site and the installations
- 1.2 The designer must keep in mind the following points:
 - 1.2.1 The water supply system will be fully standalone.
 - 1.2.2 Complete dependency of the number of users, both people and installations, upon the external water supply.

2. Basic assumptions

- 2.1 External water supply system, will be supplied near to the building area by the Customer. The contractor will implement connection of water supply inside the building .
- 2.2 The water system within the area and in the installations will be designed for maximum conservation and saving of water, without affecting operational requirements.

3. Work and site description

- 3.1 In principle, the installation's water system will be connected to the existing water system of Jordan River site. The Customer/ land owner will provide water infrastructure up to the plot's boundary.
- 3.2 The water distribution system in the installation is intended to serve four main objectives:
 - 3.2.1 Distribution of water to the building (for drinking and for sanitary use of the installation's workers)
 - 3.2.2 Washing water for installations;
 - 3.2.3 Ensure water supply, in the quantities and pressures needed, for fire protection.

4. Water supply system infrastructure specifications

- 4.1 The water supply system includes the following functions:
 - 4.1.1 Connection of the water system to the existing water infrastructure outside the plot;
 - 4.1.2 Main water supply system within the plot area up to the building and installations in the site;
 - 4.1.3 Water supply system diameter will be determined by the designer and according to local design code
 - 4.1.5 Automatic fire-extinguishing sprinkler system in the building;
 - 4.1.8 Fire cabinets comprising hydrants and fire hose reels will be installed inside and outside the building according to the Fire-fighting Authority requirements.
- 4.2.1 Surveying or using existing surveys according to the master design of the water networks and the location of the water installations.
- 4.2.2 Surveys and examinations regarding the quantity of water necessary for drinking, for sanitary purposes and for fire extinguishing (by sprinklers and hydrants), and proposing several alternative solutions.
- 4.2.3 Detailed designing of the water networks, piping, trenches, etc. including cross-sections and details;
- 4.2.4 Detailed designing of the fire-extinguishing network and the water system
- 4.2.5 Designing the connections to existing infrastructure and to building and installations, including details.
- 4.2.6 Technical specification and computerized bill of quantities to implement the work and to order the materials. The specification will include a list of drawings relevant to the specification and the bill of quantities.

5. Drinking and sanitary water design data

5.1 The details of the design data are as follows:

5.1.1 About 10 permanent employees will work in the installation 24/7.

5.1.2 The layout of the pipes will be as marked in the plans and according to the cross-sections appearing in the plans.

5.1.3 Each pipe in the plans may have an alternative.

The designer must specify at the PDR the kind of pipes used in each alternative. The appropriate diameters will be given for each alternative.

5.1.4 The fire extinguishing, sprinkler and hydrant pipes will be marked with a different color from the drinking water pipes and from the water for sanitary purposes, and they will be drawn on a separate layer.

6. Fire extinguishing water design data

6.1 The detailed design data for water for fire extinguishing will be according to local standard design codes, the design must be approved by the customer

7. System design standards and specifications

7.1 Updated Instructions for Sanitary Installations (H.L.T.).

7.2 General specification for building works (Chapter 07 - General Specification for Sanitary Installations).

7.3 General specification for building works (Chapter 57 - General Specification for Water, Sewage and Channeling works).

7.4 Guidelines from the local fire-fighting authorities.

7.5 The sprinkler system will be automatic and computerized.

B - Sewage Infrastructure Design Principles and Guidelines

1. Operational requirements

- 1.1 The infrastructure for sanitary sewage in the plot area is required to evacuate all ordinary wastewater from the building (flushing water).
- 1.2 The designer must take into consideration the following points:
 - 1.2.1 Complete consideration for any number of users of the sanitary needs of the system (without compromise).
 - 1.2.2 The designed system must evacuate the sewage to the existing sewage system outside the plot area, or collect it within the plot and evacuate it mechanically to the municipal sewage system.

2. Basic assumptions

- 2.1 The sanitary sewage infrastructure will be based on two alternatives regarding elimination of waste water.
 - 2.1.1 Connection to the IAA main sewage pipe, in a place as close as possible to the plot area (the distance or location of the line has not yet been defined).
 - 2.1.2 Central collecting tank, following the updated regulations of the relevant authorities, and pumping from the tanks in the plot area, to be designed and implemented by the contractor.
- 2.2 Should the sewage system be based on tanks and pumping from the tanks within the plot area, this will be designed so that the pumping will not interfere with the normal work of the installation and that it will enable evacuation of the sewage from the system in an orderly manner and without nuisances such as odors, flooding, etc.

3. Work and site description

- 3.1 The sewage infrastructures will include the sanitary sewage and the flushing water collected from the building and the other installations in the site.
- 3.2 Design of the sewage infrastructure and the location of the collecting installations will be based on the existing topography of the grounds within the plot and outside, while preserving the quality of the environment.

4. Sewage system infrastructure specifications

- 4.1 Infrastructure for the system will include the following functions:
 - 4.1.1 Collecting network for sewage from the sanitary drains of the building and from washing installations.
 - 4.1.2 Local collection installations or, alternatively, connection of the network to an existing sewage main outside the boundaries of the plot.
- 4.2 Design of the sewage system infrastructure will include:
 - 4.2.1 Geodesic measurements or using existing surveys and plans in the master plan of the sanitary sewage network (piping), placement of settling pits/ tanks and collecting installations.
 - 4.2.2 Presentation of surveys and examinations regarding the amount of sewage and proposals for several alternative solutions by the Contractor at the PDR;
 - 4.2.3 Detailed design of the sanitary sewage network, pipes, trenches, etc., including cross-sections and details.
 - 4.2.4 Connection plans with the sewage and drainage pipes designed or implemented by others, with full coordination.
 - 4.2.5 Detailed design of local collection installations, including cross-sections and details.

4.2.6 Technical specification and computerized bill of quantities for work implementation and materials order (see general guidelines). The specifications will include a list of drawings relevant to the specification and the bill of quantities.

4.3 Design of the sewage system will comply with the regulations and requirements of quality of the environment.

5. Sanitary requirements design data

5.1 Details of the design data are as follows:

5.1.1 About 10 -15 permanent employees will work daily in the installation. About 70% of employees are men and 30% women.

5.1.2 All pipes will be underground and connected to the central infrastructure outside the area of the plot.

5.1.3 The layout of the pipes will be designed with adequate gradients.

6. System design standards and specifications

6.1 Updated Instructions for Sanitary Installations (“H.L.T.”).

6.2 General specification for building works (Chapter 07 - General Specification for Sanitary Installations).

6.3 General specification for building works (Chapter 57 - General Specification for Water, Sewage and Channeling works).

6.4 Israeli Standard IS 884 for underground sewage and channeling.