5.7. Sprinkler and Deluge Systems - acceptance test and maintenance

5.7.1. Automatic Sprinkler and Deluge Systems shall be inspected and maintained as per minimum guidelines in accordance with **Table 9.34.** However, detailed acceptance, inspection tests and maintenance shall be as per **NFPA 13, NFPA 15 and NFPA 25.**

Table 9.34.: Sprinkler and Deluge Testing, Inspection and Maintenance

ITEM	REQUIREMENTS
1. ACCEPTANCE TEST	**1. FLUSHING** i. The underground Piping shall be flushed. ii. The piping between the fire department connection and the check valve in the inlet pipe shall be flushed with a sufficient volume of water in order to remove any construction debris and trash accumulated in the piping prior to the completion of the system and prior to the installation of the Civil Defence connection. iii. The minimum flow rate shall not be less than the hydraulically calculated water demand flow rate of the system plus hose demands. **2. HYDROSTATIC TEST** i. The piping network shall be tested hydrostatically at not less than 13.8 bar (200 psi) of pressure for 2 hours, or at 3.5 bar (50 psi) in excess of the maximum pressure where the maximum pressure is in excess of 10.3 bar (150 psi). The pressure shall be maintained for 2 hours. ii. When deluge systems are being hydrostatically tested, plugs shall be installed in fittings and replaced with open sprinklers after the test is completed, or the operating elements of automatic sprinklers shall be removed after the test is completed. iii. For pre-action systems, in addition to the standard hydrostatic test, an air pressure leakage test at 40 psi (2.7 bar) shall be conducted for 24 hours. Any leakage that results in a loss of pressure in excess of 1½ psi (0.1 bar) for the 24 hours shall be corrected. iv. The piping, joints and discharge devices shall show no leakage. v. Any leakage that results in a loss of pressure in excess of 0.1 bar (1½ psi) during a continuous 24-hour period shall be corrected. vi. The installing contractor shall furnish a certificate for flushing and hydrostatic test prior to the start of the fire pump and field acceptance test. vii. Hose connections and Civil Defence breeching inlet connections shall be tested for compatibility. (All UAE Civil Defence connections are instantaneous coupling type). viii. The piping between the breeching inlet connection and the check valve in the inlet pipe shall be tested hydrostatically in the same manner. **3. FIELD ACCEPTANCE TEST** i. The waterflow detecting devices including the associated alarm circuits shall be flow tested through the inspector's test connection and shall result in an audible alarm on the premises within 5 minutes after such flow begins and until such flow stops. ii. Testing shall be conducted while fire pumps are running for wet riser systems. iii. At least one remote sprinkler head shall be burst open with a heating device and associated system functions such as the alarm gong operation, fire pump operation, flow switch operation etc. shall be tested and verified. iv. The automatic operation of a deluge or pre-action valve shall be tested in accordance with the manufacturer's instructions. v. Each pressure-regulating device shall be tested to verify that the installation is correct, that the device is operating properly, and that the inlet and outlet pressures at the device are in accordance with the design. vi. All control valves shall be fully closed and opened under system water pressure to ensure proper operation. vii. Signs, both in English and Arabic shall be verified on site. viii. The consultant shall hand over one set of stamped record drawings and one copy of the completed test report to the building owner.