I. GENERAL CONTRACT REQUIREMENTS

A. Contractor shall perform inspections and testing as identified in the current Fire Code of New York State (19 NYCRR Part 1225) which incorporates by reference NFPA 25 (2008) for Water-Based Fire Protection Systems. Contract requirements include, but are not limited to: wet and dry-pipe sprinkler systems; water storage tanks and fire pumps. See Appendix A for a listing of building sites covered under the scope of this contract.

B. Definitions:

   **Inspection:** A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free from physical damage.

   **Testing:** A procedure used to determine the status of a system as intended by conducting periodic physical checks on water-based fire protection systems such as water flow tests, fire pump tests, alarm tests, and trip tests of dry pipe, or pre-action valves. These tests follow up on the original acceptance test at intervals specified in the appropriate chapter of NFPA 25.

C. Notification Requirement

   1. Prior to any work commencing on sprinkler systems that are part of this contract, the contractor shall contact the owner to arrange a site visit to the property. Site visits will not be allowed without prior notification to the owner.

   2. The owner, fire department districts and central offices, code enforcement official and central supervisory station shall be notified by the contractor when the system is taken out of operation and when it is returned to operation.

D. Contractor Qualification

   1. Inspections, testing and maintenance shall be carried out by qualified personnel and implemented in accordance with procedures established in NFPA 25, in this document and in accordance with the manufacturer’s instructions.

   2. All work shall be performed by personnel who have developed competence through training and experience. Both the company and the personnel performing the service must have at least five years of experience on similar size and type equipment.

   3. Provide proof of qualifications at the request of the owner prior to bid award that establish contractor qualifications to perform the work. Five references of previous projects that are of similar scope are to be provided.

   4. Proof of liability insurance and workmen’s compensation insurance are to be provided at the time of bid as part of the bid submittal.
II. SPRINKLER SYSTEM INSPECTION GENERAL REQUIREMENTS

Visual Examinations – Quarterly (four times per year)

The contractor shall visually inspect sprinkler all system components for proper operation, position and condition as appropriate and as required by NFPA 25. The components shall include but not be limited to the following:

**Control Valves** – The valves are: accessible and in the normally open or closed position, properly sealed, locked or supervised, free from external leaks and properly identified.

**Check valves** – Visually inspected to ensure free from leaks and verified direction of water flow.

**Backflow preventer** - control valves open, relief port not discharging.

**Pressure regulating valves** – Verify that the valves are in the open position, not leaking and are maintaining downstream pressures in accordance with design criteria.

**Alarm Valves/System Riser Check Valves** - visually inspected, gauges reading properly, no damage, not leaking, trim valves operational.

**Dry-Pipe Valves** – exterior inspected, trim valves operational, gauges, no leaks.

**Sprinkler heads** – visually inspect for any corrosion, physical damage, obstructions to spray pattern, check for sprinkler heads with any paint other than manufacturers, concealed covers, spare replacement heads, wrenches and storage cabinet.

**Piping** – check for proper pitch, good condition, damage, no leaks or corrosion, hangers and braces properly attached.

**Alarm Devices** – Water motor gongs, flow switches, tamper switches, and pressure switches shall be inspected for damage, all electrical connections are secured and the devices visually in good condition.

**Water Storage Tanks** – Verify water level, water supervision alarms, heating systems, water temperature, exterior of tank, paint or coatings, supporting structure, vents, foundation, ladders for damage or weakening, control valves, auto fill valves, pumps and air pressure in pressure tanks.

**Sprinkler Fire Pumps** – verify the pump assembly is in operating condition and is free from physical damage; verify power source, control valves, temperature of pump room, no leaks, and pressure gauges correct.

**Fire Department Connections** – Connections should be accessible and visible, caps or plugs in place, threads clean, undamaged and lightly lubricated with graphite. The connection is drained through the ball drip valve assuring it will not freeze.

**Hydraulic Nameplate** – provided at riser, all information complete

III. SPRINKLER TESTING GENERAL REQUIREMENTS

The following NFPA 13 sprinkler system components shall be inspected and tested in the following manner: (Owner representative must be present during annual, three year and five year inspections)

A. QUARTERLY (four times per year)

1. Inspect fire department connections. Connections should be accessible and visible at all times. Caps or plugs should be in place and threads clean, undamaged and lightly
lubricated with graphite. The connection should be drained through the ball drip from the check valve to assure it will not freeze.

2. Inspect the control valves to confirm that they are in the proper position and locked.

3. Water supply valves, including post indicator and roadway valves, are to be checked to assure that they are open.

4. Determine dry pipe system priming water level by slowly opening the priming water level test valve. If only air escapes, close the test valve and add priming water. The upper priming valve is then closed and the lower priming valve opened, which allows the water to run into the dry pipe valve. Again, check the test valve. If water does not run out, repeat the procedure. When sufficient water has been added so that water drains from the test valve, allow it to drain until air begins to escape, and then close the valve securely. Also, be sure the upper and lower priming valves are closed securely.

5. Flow test main drains. Record the pressure of the gauge on the lower side of the sprinkler valve (static pressure). Open the main drain fully; after the flow has stabilized, note and record the pressure on the gauge and record (residual pressure). If the pressure readings vary significantly from those readings previously recorded, there is indication that something may be wrong with the water supply such as a closed valve or blocked pipe. Loss of pressure of more than ten percent should be investigated immediately to determine its cause. The effect that the drop in pressure will have on the sprinkler system operation should also be determined to assure that the system will perform satisfactorily.

6. Wet Pipe System: Test alarms by opening the inspector's test connection. This simulates the flow of water from one sprinkler head and will activate the water motor alarm as well as the flow switch or pressure switch. Note – when freezing weather prohibits using the inspector's test, the alarm by-pass connection can be used. However, use of the alarm by-pass does not test the operation of the valve clapper and is not considered as good a test as using the inspector's test connection and therefore is only allowed as a test during freezing weather.

7. Dry Pipe System: Test low air pressure alarm. Close the water supply valve so the system will not accidentally trip. Slowly release air from the system by gently opening the inspector's test valve. The low air pressure alarm should sound when the pressure drops to that recommended by the manufacturer. Do not allow pressure to drop sufficiently to trip the dry pipe valve. Test water flow alarm. Open the alarm by-pass valve. Use of the inspector's test connection is not desirable as it will cause the dry pipe valve to trip.

B. ANNUAL

1. Wet Pipe Sprinkler System: Test the freezing point of anti freeze solutions if used. This is done by measuring the specific gravity with a hydrometer. Adjust the solution as necessary to maintain the freezing point of the solution below the estimated minimum temperature.

2. Dry Pipe Sprinkler System: Trip test the dry pipe valve, preferably in the spring. Before the trip test, the main drain valve should be fully opened and the water supply flushed.
out until the water flows clean. If a hydrant is located on the system supply, it should be flushed before the main drain is flushed to reduce the amount of potential debris getting into the dry pipe system. Each dry pipe valve, including quick opening devices if provided, should be trip tested. This test should be done in the spring after freezing weather, with the water supply control valve only partially open. Once the valve trips, the water control valve can be quickly closed so that the system is not filled with water. The valve is tripped by opening the inspector’s test valve which releases air pressure within the system. Dry valve must be internally cleaned before resetting, digital photos must be taken before and after valve is cleaned. Copies are to be provided to the owner. After the test, open the main drain valve to drain the system. Remove the valve cover and thoroughly clean the valve interior. Replace worn or damaged parts as required, reset the valve, and replace the cover. Add priming water and open the air supply to fill the system with air. When the air pressure has reached its proper level, open the main drain to reduce the chance of a water hammer tripping the system, and then slowly open the water supply valve. When the water supply valve is fully open, slowly close the main drain.

3. Cold weather valve, if used, should be closed before freezing weather and piping drained. Valve should be opened in spring.

4. Low point drains should be drained thoroughly before cold weather and after any system trip.

5. Fire Pump Test: An annual test of each pump assembly shall be conducted under minimum, rated, and peak flows of the fire pump by controlling the quantity of water discharged through approved test devices and in accordance with NFPA 25.

C. 3 YEAR TEST

Trip test the dry pipe valve – FULL FLOW TEST
The dry pipe valve should be trip tested with the water supply valve fully open. The test should be terminated when clear water flows from the inspector’s test connection. A full trip test should also be conducted whenever the sprinkler system is altered. The full flow trip test should not be done during freezing weather. Dry valve must be internally cleaned before resetting, digital photos must be taken before and after valve is cleaned. Copies are to be provided to the owner.

D. 5 YEAR INSPECTION

Remove a representative sample of sprinklers with temperature classification of Extra High (325 degrees F) or greater which are located in an area in which the temperature frequently exceed the maximum allowable ceiling temperature. Provide new sprinklers in their place, and send the removed sprinklers to a laboratory for operational testing in accordance with NFPA 13. If sprinklers fail to perform satisfactorily during the operational test, all of the Extra High heads should be replaced.
E. BLOCKAGE INVESTIGATION (Perform every five years minimum or more often as needed)

It is important that the sprinkler system piping be maintained free of obstructions. Periodically, sprinkler systems including valves and piping are to be examined internally.

1. The system shall be inspected internally for signs of blockages, corrosion, pipe wall thickness loss and scale buildup every five years and immediately if any unfavorable conditions such as listed below in Item 2 are present.

2. The system shall be examined for unfavorable conditions that could result in a malfunction of the system. The contractor shall examine the system for:
   - Defective screens at pump intakes
   - Debris and obstructive material discharged during routine water tests, such as from hydrant water flow tests or 2-inch main drain tests.
   - Debris found in dry-pipe valves, check valves and fire pumps during maintenance
   - Heavy discoloration of water during 2-inch drain tests, or plugging of the inspector's test connection
   - Plugged piping, which is found during system alterations or after system failure during fires.
   - Failure to flush underground mains following installation or repairs.
   - A record of broken water mains in the area.
   - Abnormally frequent false tripping of the dry valve
   - Pinhole leaks
   - A 50 percent increase in the time it takes water to travel to the inspector's test connection from the time the valve trips during a full flow trip test of a dry pipe sprinkler system when compared to the original system acceptance test
   - Check Valves- Shall be inspected internally to verify that all components operate correctly, move freely and are in good condition.

3. The internal investigation of piping and branch line conditions shall be conducted on each system by opening a flushing connection at the end of one main and by removing a sprinkler toward the end of one branch line to investigate for the presence of foreign matter. The consultant shall examine available sprinkler testing reports and logs for each sprinkler system. Discussions with the owner shall be conducted to determine the history of the sprinkler system in terms of operational problems and/or repairs. If there are serious deficiencies found with the sprinkler system based on an internal inspection that will cause the system to malfunction and not operate properly in the event of a fire, the owner shall be immediately notified in order to initiate an impairment procedure in accordance with NFPA 13.

4. Water Storage Tanks - Perform interior inspection for pitting, corrosion, spalling, rot or other forms of deterioration, waste material, aquatic growth and local or general failure of interior coatings.
5. Digital photos must be taken of internal components inspected. Copies are to be provided to the owner.

IV. REPORTING REQUIREMENTS

A. Records shall be completed for all inspections, tests and procedures including results from sprinkler head testing performed. Records shall indicate the procedures performed, the organization that performed the work, the results and the date completed.

It is required as part of this contract that the contractor complete and submit to the owner National Fire Sprinkler Association forms “Inspection, Testing and Maintenance of Fire Sprinkler Systems” or equivalent as deemed acceptable by OWPDD as appropriate for the inspection and testing work being performed. The required forms are available from the National Fire Sprinkler Association located in Patterson, New York.

B. Meet with the Owner’s Representative after each testing and inspection visit is completed to discuss the findings. The “Owner’s Representative” shall be identified by the facility Plant Superintendent or Chief Safety Officer. Each operational and maintenance issue found during the service shall be identified in the report forms and necessary remedial action, if any, explained to the owner by the contractor.

C. The contractor shall complete all inspection and testing report forms in a complete and legible manner. A copy of each report shall be delivered to the owner’s representative. A second copy or the report shall be physically left at the building inspected. The contractor shall keep a copy of the inspection for the permanent record.

V. MINOR REPAIRS AND ADJUSTMENTS

A. As part of this contract, the contractor shall perform all routine adjustments as necessary during the course of the testing and inspection to ensure proper operation of the equipment.

B. Minor repairs to the sprinkler system shall be made by the contractor. Minor repairs are to be identified prior to the work being done and submitted to the owner for approval. Once approved by the owner, the work shall be done prior to the next quarterly inspection. If the repair is deemed to be of a serious nature and required to maintain the system operational and effective, it should immediately be brought to the attention of the owner so that proper action can be taken.

APPENDIX A - LIST OF BUILDINGS

(Facility to attach list of buildings here)