SECTION 02721

BACKFLOW PREVENTION DEVICES

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Requirements for new reduced pressure zone assemblies and double check valve assemblies.

B. Refer to the *"Backflow Prevention and Cross-Connection Control Guidelines"* for City of Brentwood Water and Sewer Department for determination of applications and usage for reduced pressure zone assemblies and double check valve assemblies.

PART 2 - PRODUCTS

2.01 REDUCED PRESSURE ZONE ASSEMBLY (3/4" – 2")

A. The reduced pressure zone assembly shall consist of an internal pressure differential relief valve located in a zone between two positive seating check valves with captured springs and silicone seat discs. Seats and seat discs shall be replaceable in both check valves and the relief valve without use of special tools. Service of all internal check valve components shall be through top mounted access covers threaded to the main valve body. The check valve poppet assembly shall be guided via the use of a corrosion resistant plastic guide. The check valve and relief valve seats shall be push-in type. The relief valve cover shall be secured with stainless steel bolts and shall utilize a quarter turn locking joint to capture the spring load of the relief valve. The relief valve shall have an internal sensing line to sense the inlet water supply. All rubber elastomers shall be of chloramine resistant material.

B. The assembly shall include a strainer, two resilient seated isolation valves, four top-mounted resilient seated test cocks and an air gap drain fitting.

C. The assembly shall meet the requirements of: ASSE Standard 1013; NSF; CSA B64.4 and be UL classified.

D. Device shall be Watts Series LF919 or State of Tennessee approved equal.

2.02 REDUCED PRESSURE ZONE ASSEMBLY (3" AND GREATER)

A. The assembly shall consist of a pressure differential relief valve located in a zone between two positive seating check valves. The main body valve shall be manufactured from 300 Series stainless steel for corrosion resistance. The check

valves shall be of thermoplastic construction with stainless steel hinge pins, cam arm, and cam bearing. The check valve shall utilize a single torsion spring design to minimize pressure drop through the assembly. The check valves shall be modular and shall seal to the main valve body by the use of an O-ring. There shall be no brass or bronze parts used within the check assembly or relief valve. The use of seat screws to retain the check valve seat is prohibited. All internal parts shall be accessible through a single cover on the valve assembly securely held in place by a two-bolt grooved coupling. The differential relief valve shall be bottom mounted and supplied with a steel reinforced sensing hose. The assembly shall include two resilient seated shutoff valves and four ball type test cocks.

B. The assembly shall include a drain line. Where drain line is used, an air gap is required.

C. The assembly shall meet the requirements of: ASSE Standard 1013; AWWA Standard C511; and CSA B64.5 and be UL/FM approved.

D. Device shall be Watts Series 994 Lead Free or State of Tennessee approved equal.

2.03 DOUBLE CHECK VALVE ASSEMBLY (3" AND GREATER)

A. The Double Check Valve Assembly shall consist of two independent tri-link check modules within a single housing, sleeve access port, four test cocks and two drip-tight shutoff NRS valves. Tri-link checks shall be removable and serviceable without the use of special tools. The housing shall be constructed of 304 Schedule 40 stainless steel pipe with grooved end connections. Tri-link checks shall be stainless steel and have reversible elastomer EPDM discs and in operation shall produce drip-tight closure against reverse flow caused by back-pressure or back-siphonage. Test cocks shall be bronze body nickel plated. All springs shall be stainless steel.

B. The assembly shall meet the requirements of: ASSE 1015; AWWA C510; CSA B64.5; and be UL/FM approved.

D. Device shall be Watts Series LF757 or State of Tennessee approved equal.

2.04 INSULATED ENCLOSURES

A. Backflow prevention devices shall be mounted in a heated enclosure to prevent freezing.

B. The enclosure shall be or fiberglass (sizes ¾" – 3") or reinforced aluminum construction (4" and larger) providing access through doors for testing purposes. Enclosure shall also be removable for maintenance purposes. The enclosure shall be structurally lined with a unicellular, non-wicking insulation consisting of a sandwich laminate or applied by spray. It shall contain a thermostatically

controlled heat source mounted to the interior wall to provide protection to -30^{0}F. No wood or particle board shall be allowed. Power source will be protected with a ground fault circuit interrupted receptacle, NEMA 3R installed in the enclosure.

C. The enclosure shall contain drain openings sized to accommodate the maximum discharge of the reduce pressure zone assembly. Drain openings shall open to discharge under the most sever conditions. These openings are to be protected against intrusion of either wind, debris or animals. The enclosure shall be furnished with means of permanent anchor and lockable access doors and/or lid to protect from vandalism.

D. The enclosure shall be factory assembled and delivered to the site ready to install with no drilling, screwing or riveting of enclosure required on site.

E. The enclosure shall be WattsBox Insulated Enclosure Model WB or WSD approved equal.

PART 3 - EXECUTION

3.01 SETTING BACKFLOW DEVICES

A. Refer to the *"Backflow Prevention and Cross-Connection Control Guidelines"* for City of Brentwood Water and Sewer Department for installation and enclosure device requirements for reduced pressure zone assemblies and double detector check valve assemblies.

B. Reduced pressure zone assemblies shall be mounted above ground and include covers suitable to protect the device and all wetted piping from freezing. A 4-inch thick, wire reinforced, concrete pad is required on all commercial backflow devices. A concrete pad is optional on a residential backflow device. Freeze protection shall be accomplished with electric heater mounted integrally in the structure. Electrical service for backflow enclosures shall be furnished by the property owner and sized accordingly to handle the heat/electrical load for the insulated enclosure.

C. Double Check Assemblies shall be mounted in a precast, belowground vault with aluminum access hatch as reflected on the standard details.

D. All backflow devices shall be installed immediately after the meter. Backflow devices may be installed inside buildings in mechanical rooms provided there is no other connection to the water main between the meter and the backflow device.

END OF SECTION