RECLAIMED WATER SYSTEM VALVES, HYDRANTS AND ACCESSORIES NOTES

62.1 GENERAL

All valves and appurtenances shall be products of well established firms who are fully experienced and qualified in the manufacture of the particular equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these SPECIFICATIONS as applicable.

62.2 RESILIENT SEAT GATE VALVES

62.2.1 GENERAL

All gate valves shall be resilient seat gate valves. Such valves shall be resilient seated, manufactured to meet or exceed the requirements of AWWA C509, latest revision, and in accordance with the following SPECIFICATIONS. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the valve.

62.2.2 MATERIAL

The valve body, bonnet, and bonnet cover shall be cast iron ASTM A126, Class B. All ferrous surface inside, and outside shall have a fusion–bonded epoxy coating. A 2" wrench nut shall be provided for operating the valve. All valves are to be tested in strict accordance with AWWA C509.

62.2.3 MISCELLANEOUS REQUIREMENTS

The valves shall be non–rising stem with the stem made of cast, forged, or rolled bronze as specified in AWWA C509. Two stem seals shall be provided and shall be of the o–ring type. The stem nut must be independent of the gate.

The resilient sealing mechanism shall provide zero leakage at the water working pressure when installed with the line flow in either direction.

62.3 BUTTERFLY VALVES – OMITTED

62.4 MASTER CONTROL ASSEMBLY

62.4.1 GENERAL

The MASTER CONTROL ASSEMBLY is the asembly used to connect a Reclaimed Water Distribution System to Reclaimed Water Transmission System. This is an above ground assembly consisting of, but is not limited to, a strainer, a manually operated rising–stem, gate valves, a butterfly valve with electric actuator, a flow meter, test ports, pipe stands, a telemetry unit with an antenna assembly, control panel, and electrical service.

62.4.2 LOCATION

The MASTER CONTROL ASSEMBLY must be located as near to the connection to the Reclaimed Water Transmission line as is practical. The ASSEMBLY must be contained within a utility easement with sufficient access to be serviced and maintained by the City. The utility easement must be a minimum 20–feet in width and 30–feet in length. The ASSEMBLY must be constructed to be parallel with the finished grade and be two–feet above the finished grade.

62.4.3 ELECTRICAL REQUIREMENTS

The ASSEMBLY will have a motorized butterfly valve of appropriate horsepower rating (as determined by the manufacturer) to be able to operate the valve. The valve assembly shall consist of a butterfly valve with an actuator. The actuator shall be an AUMA SG model or approved equal with voltage rating of single phase 240 volts AC.

The electrical service shall consist of electric meter, main circuit breaker (Square D enclosed, molded–case) in a NEMA–3R enclosure, telemetry RTU, and the control panel. The electrical service shall be mounted between two 5" x 8" x 8' reinforced concrete posts on aluminum or stainless steel strut. The anchors and all hardware used to mount or support the electrical service must be stainless steel. A Volt Guard VGX series surge protector shall be mounted directly to one of the concrete posts with the conduit fitting pointing down. The Volt Guard shall be connected to the load side of the main circuit breaker. The top of control panel shall be no higher than five–feet above the finished grade and no lower than four–feet above the finished grade. All electrical and control connections between the control panel and the CONTROL ASSEMBLY shall be done through rigid galvanized conduit exiting the bottom of the control panel traveling underground and coming up through the concrete slab near the point of connection. Liquid–tight–flexible metallic conduit shall be used from the end of the rigid galvanized conduit to point of connection to the CONTROL ASSEMBLY.

The control panel shall be 305 stainless steel enclosure rated NEMA 3R or better with a three–point single handle closure device. All components within the control panel shall be mounted on a back plate and not to the back of the enclosure. No components mounted on or conduits shall enter the enclosure from the sides or top of the enclosure. Component contained within the control panel shall consist of but not be limited to branch circuit breakers, a GFI protected 20–ampere 120–volt receptacle, the flow meter signal converter, the valve actuator control circuitry, actuator valve selector switch, and a terminal strip located near the bottom of the panel for exterior connections. All of the control panel interior wiring within the control panel shall be exposed and bundled with cable ties. The interior wiring shall be color–coded with the smallest acceptable wire size being AWG #10. All neutral wires shall be white and ground wires shall be green in color.

62.4.4 FLOW METER

The magnetic flow meter shall be of the low frequency electromagnetic induction type and shall produce a DC pulse signal directly proportional and linear to the liquid flow–rate. The meter shall be designed for operation on 120 VAC, 60 HZ with a power consumption of less than 20 watts for sizes through 12–inches.

The metering tubes shall be constructed of stainless steel. All magnetic flow meters (transducers) shall be designed to mount directly in the pipe between ANSI Class 150 flanges and shall consist of a flanged pipe spool piece. Meters shall have polyurethane liners with stainless steel electrodes or other approved materials for application of reuse water.

The electronics portion of the magnetic flow meter shall include both a magnetic driver to power the magnetic coils and a signal converter. The signal converter shall be mounted within the control panel. The converter shall include a separate customer section to isolate the electronics compartment and protect the electronics from the environment. A separate terminal strip for power connection shall be supplied. The electronics shall be of solid state, feedback type and utilized integrated circuitry. The convertor shall not be affected by quadrature noise, require zero adjustments or special tools for startup. Input and output signals shall be fully isolated. The convertor output shall be 4 to 20 ma DC into 900 ohms.

Meters shall be suitable for outdoor installation (NEMA 4X, IP67 Standards) and shall be furnished complete with grounding rings and installation hardware including studs, nuts, gaskets, and flanged adapter hardware.

The meter shall be hydraulically calibrated at a facility located in the United States and the calibration shall be traceable to the National Bureau of Standards. A computer printout of the actual calibration data giving indicated versus actual flows at a minimum of three (3) flow rates shall be provided with the meter. A certification letter shall accompany the computer printout of the calibration data for each meter referencing the meter's serial number. The accuracy of the metering system shall be 1% from 10 to 100% of flow for maximum flow velocities of 1 to 31 feet per second.

Complete zero stability shall be an inherent characteristic of the meter system to eliminate the need to zero adjust the system with full pipe flow.

The meter housing shall be made of aluminum, stainless steel, or epoxy–coated carbon steel and shall be of weather resistant design.

62.4.5 STRAINER

The strainer shall be the same size as the largest pipe in the reclaimed water distribution system being metered. The strainer shall be located immediately after the above ground gate valve on the transmission line side of the CONTROL ASSEMBLY.

The strainer housing can be stainless or bronze and the screen shall be constructed of stainless steel. The strainer shall have ANSI Class 150 flanges.

62.4.6 CHECK VALVE

A spring loaded check valve shall be located after the motorized valve and prior to the above ground gate valve on the distribution line side of the CONTROL ASSEMBLY.

62.4.7 TEST PORT

On all CONTROL ASSEMBLIES where the the flow meter is three–inches or larger, a two–inch weld–o–let test port with a lockable curb stop shall be installed on the side of the spool piece immediately after the flow meter.

62.4.8 PAINTING

All above ground reclaimed water piping and assemblies shall be painted as follows:
1 Coat THEMEC 69–color HI Build Epoxoline II (4–6 DFT)
1 Coat 73–color ENDURA–SHIELD (2–5 DTF)
Color: Pantone PURPLE

62.5 VALVE INSTALLATION

All valves shall be inspected upon delivery in the field to ensure proper working order before installation. They shall be set and jointed to the pipe in the manner as set forth in the AWWA Standards for the type of connection ends furnished. All valves and appurtenances shall be installed true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the City before they are installed.

Valves shall be installed in a vertical position and be provided with a standard valve box so arranged that no shock will be transmitted to the valve. The box shall be vertically centered over the operating nut, and the cast iron box cover shall be set flush with the road bed or finished surface.

After installation, all valves shall be subjected to the field test for piping as outlined in this Manual. Should any defects in materials or workmanship appear during these tests, CONTRACTOR shall correct such defects to the satisfaction of the City.

Flanged joints shall be made with hot dipped galvanized bolts, nuts, and washers. Mechanical joints shall be made with mild corrosion resistant alloy steel bolts and nuts.

All exposed bolts shall be painted the same color as the pipe. All buried bolts and nuts shall be heavily coated with two (2) coats of bituminous paint.

No butterfly valves are permitted on distribution system lines.

62.6 VALVE BOXES

All buried valves shall have cast–iron three piece valve boxes. Valve boxes shall be provided with suitable heavy bonnets and shall extend to such elevation at or slightly above the finished grade surface as directed by City. The barrel shall be two–piece, sliding type, having 5 1/4–inch shaft. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling and shall be complete with cast iron covers. Covers shall have "RECLAIMED" or "REUSE" cast into the top.

The actuating nuts for deeper valves shall be extended to come up to 4 foot depth below finished grade. Care shall be taken while constructing valve boxes to ensure that valve stems are vertical and the cast iron box has been placed over the stem with base bearing on compacted fill and top flush with final grade. Boxes shall have sufficient bracing to maintain alignment during back–filling. CONTRACTOR shall remove any sand or undesirable fill from valve box prior to final inspection.

62.7 AIR AND VACUUM RELEASE VALVES

All reclaimed potable water lines shall have air and vacuum release valves installed as they are indicated on the plans. The body/base of these valves shall be made from high strength light–weight non–corroding fiberglass reinforced nylon, and all operating parts are to be made of engineered corrosion resistance plastic materials. The rolling resilient seal shall provide smooth positive opening, closing, and leak free sealing over the fluctuation of pressure differentials. The valves shall be designed to allow larger than normal automatic orifice providing efficient air release and minimize potential debris build up and clogging.

All reclaimed water lines that require automatic air release only, shall have as shown on the plans. This valve shall be made from light weight non–corroding fiberglass reinforced nylon plastic, with all non–metallic operating parts. The rolling resilient seal shall provide smooth positive opening, closing, and lead free sealing over the fluctuation of pressure differentials. The valve shall be designed to allow larger than normal automatic orifice providing efficient air release and minimize potential debris build up and clogging.

62.8 FIRE HYDRANTS

Fire Hydrants are not permitted on reclaimed water systems.

ISSUE CODE		
MODIFIED	MJC	2–08–22
MODIFIED	MJC	5–22–18

CITY OF LAKE WALES
201 CENTRAL AVE 863–678–4182

REV.	DESCRIPTION

ISSUE CODE					
		A	PRELIMINARY	B	DESIGN
C	BIDS	D	CONSTRUCTION	E	APPROVAL

DESIGN BY:
CHK'D BY: DATE:
DRAWN BY: ENGR.
DRAWING TITLE
REUSE SPECS
JOB NO.
SHEET 2 OF 2 REV.