

ENGINEER'S REPORT

REGARDING

Water Management Solutions Acqua Flow System

At

**Golden Bay Club Condominium
Sunny Isles Beach, Florida**



PREPARED BY:

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Water Management Solutions -Acqua Flow System

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A. INTRODUCTION

Basulto & Associates, Inc. was requested to perform onsite testing of an installed Acqua Flow (WMS) System at Golden Bay Club Condominium located at 17050 North Bay Road, Sunny Isle Beach, Florida.

Scope of work: This investigation was performed to determine if the installation of the WMS system is adversely affecting the operation of the plumbing fixtures in the building.

Site visit and testing was performed by René I Basulto, PE with the assistance of Excel Plumbing Inc., a Florida Certified Plumbing Contractor. This report was prepared by Rene I. Basulto, PE.

B. MATERIALS AVAILABLE FOR REVIEW

1. IAPMO R&T Lab test report dated December 3, 2015 on the effects of the WMS system on the meters.
2. IAPMO R&T Lab Certificate of Listing dated March 2016.
3. Mars Company test report dated February 15, 2013.

C. BACKGROUND

Acqua Flow (WMS System) consist of a stainless steel in-line water system that is installed downstream of a water meter. Each WMS System is designed for the actual water pressure designated. The purpose of the system is to reduce turbulence of the water and minimize entrained air effects within the water meter thereby providing a more accurate measurement of flow to the water consumer.

The device acts as a partial flow restrictor and increases the pressure at the meter allowing it to operate smoother and evenly for the flow rates at the higher pressures. Producing a smooth laminar flow through the meter improves the accuracy of flow measurement and extends the meter life due to the reduced friction within the measuring chamber of the meter. Additionally, by increasing the pressure at the meter, entrained air is compressed and causes the meter to limit part of the air damage that is normal and allows the meter to mostly measure only water.

The tested subject building has two WMS devices downstream of each of two 3" meters connected in parallel. The lines connect together and run to a domestic water pump package system located on the second floor of the building. The devices were installed as a retrofit to the existing domestic water distribution system.

The subject building is a residential condominium, 12 stories high. The domestic water piping downstream of the domestic water pumps and into the dwelling units is of CPVC material. Each dwelling unit has a master shut-off valve for the potable water distribution system within the unit. We tested the most hydraulically remote unit on the 12th floor to determine available static and residual pressures in the system and determine the flow to the fixtures.

D. ANALYSIS

Pressure readings were taken at the domestic water pump package, before the pumps and downstream of the pumps. Readings were also taken at subject most hydraulically remote unit, and at hose bibbs on the 12th floor corridor.

Pressure reading at the pump indicate a pressure of 58 psig at the pump and 90 psig at the discharge of the pumps with one of the three pumps running.

Pressure readings at the 12th floor hose bibbs indicate a static and residual pressure of 50 psig (no change between static and residual with fixtures flowing in adjacent unit).

The pressure reading in the hydraulically most remote dwelling unit indicate static pressure of 50 psig with a residual pressure of 45 psig with all the fixtures in the subject unit flowing simultaneously. A measured pressure drop of 5 psi with all fixtures flowing the unit.

The subject units has two full baths rooms, a kitchen sink, dishwasher and washing machine. One bathroom has shower, lavatory and water closet. The other bathroom has same in addition to a bidet. The water closets are flush tank type. All the fixtures within the unit were observed to flow properly with substantial discharge pressure. The calculated flow at the measure pressure indicate that the pressure is sufficient to sustain the required flow in the fixtures pursuant to the Florida Plumbing Code.

The most critical fixture in the dwelling unit requires no more than 20 psi to properly function. In accordance with the Florida Plumbing Code, Table 604.3, the minimum pressure requirements for the type of fixtures installed in the dwelling unit is 20 psi. The available pressure even with all the fixtures flowing was 45 psi. This is more than adequate pressure for the fixtures and faucets to function properly, and in compliance with the Florida Building Code.

The independent testing laboratory reports reviewed indicate that there is negligible pressure loss across the devices. The measured pressure loss is insignificant and does not affect building performance in retrofit applications.

The devices are installed downstream of the meters. The meters are not adjusted, modified, or tampered with during installation. The operation of the devices does not affect the meter's operation other than extending its life and reducing turbulence, vibration and premature deterioration of the measuring chamber.

E. FINDINGS

Within the bounds of reasonable engineering certainty, and subject to change if additional information becomes available, it is my professional opinion that:

1. The installed devices do not adversely affect the building's domestic water distribution system design criteria.
2. The pressure and flow available at the hydraulically most remote fixture greatly exceeds the minimum pressure requirements for proper operation of the fixture.
3. The pressure available at the hydraulically most remote fixture greatly exceeds the minimum pressure requirements in the Florida Plumbing Code (Table 604.3). The flow is also in compliance with FPC.
4. The installation of the device does not adversely affect the operation of the plumbing fixtures.



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