

Engineer's Report-March 2024
East Lake Cottages Leisure Village –12 Single Family Units + Community
Building With Small Public Water System, Private Sewer, Stormwater Systems

Land Use

The project will be owned by Janet Jonson, constructed, and managed by IJConstruction2,LLC. The 16.15 acre property is at Drake Road and East Shore Drive Rt.34 Lansing, New York Town of Lansing tax parcel 37.1-1-9.2. The land is predominantly forested. The proposed 12 cottage units will be small 1000sf footprint units. Successful prototype buildings and communities in Caroline Hector. The new community will be served by municipal water and private on-site sewage. A SWPPP is being prepared and submitted to the Town and subsequently to the State.

Soil and Site Conditions

The area proposed for the small homes is heavily wooded positively drained and suitable for the proposed building and driveway construction. The soils are listed in the EAF and Stormwater report.

Site Soils: The predominant soil types throughout the site are Conesus Lansing gravely silt loams (CfB and LbB) and Silty clay loams and silt loam (IcB, LtB, and OaA) in the hydrologic soil groups B and C. Soils data indicates a permeability rate of between 0.2-2.0 in/hr. Soils data was obtained from the USDA Web Soil Survey.

Site Topography: The site as a whole has a flat uniform slope of between 2-4% primarily moving downhill from east to west. The area of disturbance will be approximately 1.51-AC.

Transportation

1. There will be no highway dedication associated with this project.
2. The driveway will be constructed of crushed stone or gravel then topped with a double layer of oil and stone treatment.
3. A driveway entrance off Drake road will allow for easier entrance and exit on a low volume road as compared with the alternative East Shore Drive . Storm water will be transported to three bioretention areas distributed throughout the site.
4. Transit route for TCAT regularly services the population through Lansing to and from commercial and employment area farther south in the Town of Lansing, Cornell, and the City of Ithaca. The additional vehicle traffic will be inconsequential at 120 vehicles daily and 12 vehicles per hour estimated in the morning and evening peak period. The farmer's market most likely on Saturdays could generate another 50 vehicle trips in and out.

Public Services

1. Based on the prototype populations little demand will be put on school Services. It is estimated that at most 5 children might be in that age group that could be serviced by Lansing Elementary or Middle and High School by bus.
2. Increased demand will be present for fire protection and emergency medical care well within the capacity and response area of the Lansing Fire District. The ponds will create an additional source of water for fire fighting in the general area.

Lighting

Only low level lighting of walks and building entrances are anticipated.

Utility Services

1,2,3. Electricity, telephone, water, and cable will require only minor extension from existing service lines along East Shore Drive to serve the new 12 units and maintenance building.

Flood Hazard

All buildings are well above the 100 year flood plain..

Agriculture

This property is not part of an Ag District. The development planned is well removed from any agriculture or horse rearing activities. There should be no conflict of noise or odors.

Sewerage

The sewer plan for the private site will be reviewed by the Tompkins County Health Department Overall daily loads will be less than 1000 gallons per day. The central system for the property with one owner will be a collection system consisting of a 1500 gallon two compartment septic tank with filter for four cottages draining to a 4"SDR35 PVC line running to a second 1500 gallon septic tank prior to entering a distribution box feeding either a sand filter followed by an adsorption field or alternatively an advanced Elgin module system in accordance with State DEC regulations

Water System

The distribution system will be a NSF approved high density polyethylene 2 inch pipe loop in the same trench with a ¾" service to an individual dwelling and 1" service line to the community building as shown on the utility plan circling the site and with isolation gate valves for reliability and ability to feed water in two directions and for easy access.

General Information

- a. The water system will be supplied by a service connection to the Southern Cayuga Lake Intermunicipal Commission (Bolton Point) to a hot box housing a master meter and backflow preventer. The site plan anticipates four crossings of the sewer service lines and the water distribution lines. These crossings should separate the water and sewer lines by 18 inches vertically with any water joints at least 10 feet horizontally distant.
- b. The owner of proposed project is Janet Jonson, IJConstruction2,LLC, 2 Jon Stone Circle, Ithaca, New York 14850

Extent of Water Works System

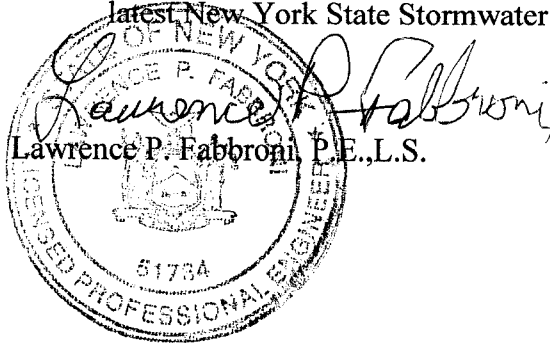
- a. The total build out is the 12 small homes and maintenance building with an expected population of 24 people. The maximum daily water use expected based

on 175 prototype units in Caroline and Hestor New York is an average of 80 gallons per unit (see attached records). This totals 960 total gallons per day.

- b. The surrounding general area is not expected to change in any dramatic fashion from its residential or open nature in the future given the large acreages north of Gul Stream.

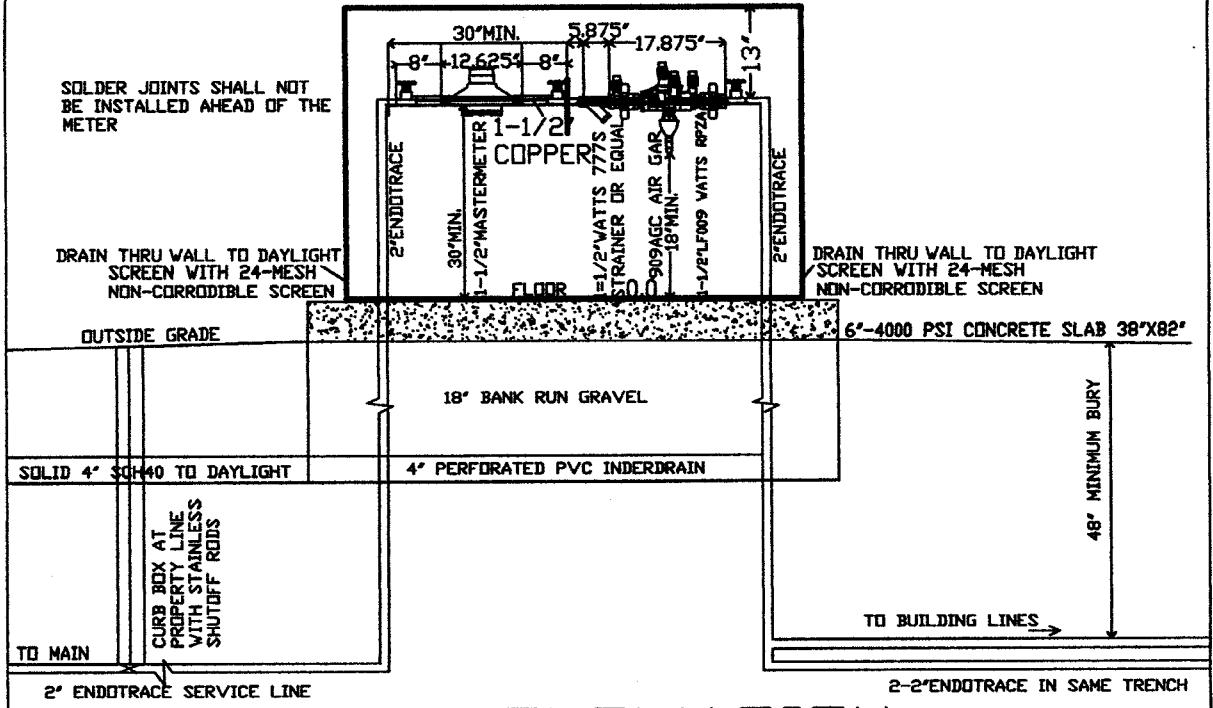
Stormwater Quality & Quantity

A complete SWPPP is being prepared for this project in compliance with the latest New York State Stormwater Regulations.

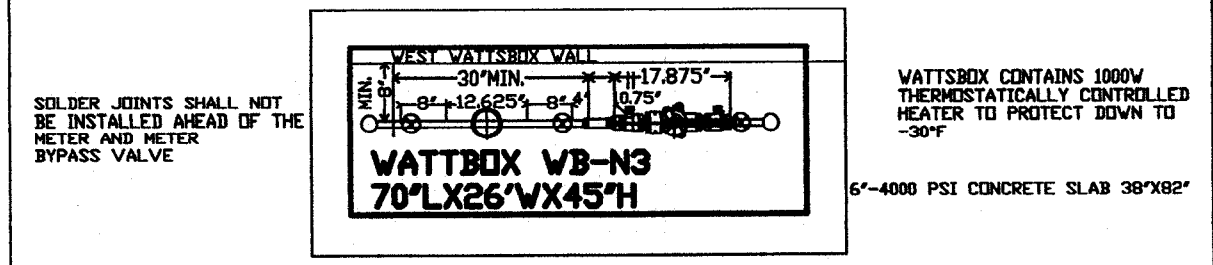


Lawrence P. Fabroni, P.E., L.S.

WATTBOX WB-N3 70" LX 26" WX 45" H



EAST ELEVATION



PLAN

NOTE: BACKFLOW PREVENTOR LOCATION IS IN WATTS HOT BOX SHOWN ON SITE PLAN



PLUMBING DETAILS
RPZ & ACCESSORIES

PROCEDURES FOR LEAKAGE TESTING AND DISINFECTION OF PLANNED WATER DISTRIBUTION SYSTEM EXTENSION OF PRIVATE SERVICE ON TAX PARCEL 37.1-1-9.2 ON THE WEST SIDE OF SR 34 IN THE TOWN OF LANSING FOR A PROJECT TO BE WHOLLY OWNED BY JANET JONSON AND MANAGED BY LISA BONNIWELL

WATERMAIN PRESSURE & LEAKAGE TESTING

Concurrent tests for pressure and leakage shall be performed in accordance with current ANSI/AWWA Specification C605-05. Tests for leakage and pressure shall run concurrently. All pipelines shall be tested hydrostatically for two (2) hours at a pressure of at least 100PSI (note AWWA STD.) in all portions of the line being tested. Any damaged or defective pipe, fittings, or valves disclosed by the pressure test shall be repaired or replaced and the test repeated until an acceptable test is obtained.

The allowable leakage shall be tested and determined as outlined in AWWA C605-05, Sections 7.3.3, 7.3.4, 7.3.5, and 7.3.6. If any pipe section has a leakage greater than the allowable amount, the Contractor shall, at his own expense, locate and repair the defective material. All visible leaks, regardless of amount, shall be repaired.

Leakage shall not exceed that allowed in the following table:

ALLOWABLE LEAKAGE FOR PIPE IN GALLONS PER HOUR PER 1000 FEET

Pipe Size	Test Pressure at Lowest Point in Line (PSI)		
	50	75	100
2"	0.20	0.25	0.29

Other test pressures

$$\text{Quantity of makeup water in GalPH} = \frac{\text{Length tested(ft.)} \times \text{Diameter(in.)} \times \text{sq.root of Pressure}}{148,000}$$

PIPE DISINFECTION

All pipe and fittings connected to and forming part of a potable water supply shall be sterilized in a manner acceptable to the Engineer. Sterilization shall be accomplished after the pipe has passed the hydrostatic tests. The method proposed by the Contractor shall be in full accordance with the requirements of the ANSI/AWWA Specification C651 and County Health Department.

All new piping shall be filled with not less than fifty (50), nor more than seventy-five (75) parts per million (ppm) of available chlorine and held in contact for not less than twenty-four (24) hours. Final tests after twenty-four (24) hours contact time shall show a minimum residual chlorine content of twenty-five (25) ppm in all parts of the system. All chlorine introduced into the system shall be totally dissolved. The introduction of solid hypochlorite directly into the system is prohibited.

Sample chlorine solution for disinfection work

Material Required for 500 Gallons of solution

Solution Strength	50ppm	75ppm
Calcium Hypochlorite (lbs.)	0.3	0.45
Laundry Bleach(5.25% available chlorine)(gallons)	0.5	0.75

After the main has been disinfected and flushed three (3) samples of water shall be collected from the end of the main segment tested (Microbac or other certified custody) and analyzed for total coliform in accordance with the approved NYS Department of Health procedures. Analysis shall be performed by a NYSDOH approved laboratory. If drinking water standards for total coliform are not met. The sterilization procedures shall be repeated.



Reference
Polyethylene (PE) SDR Pressure Rated Tube

Polyethylene (PE) SDR Pressure Rated Tube

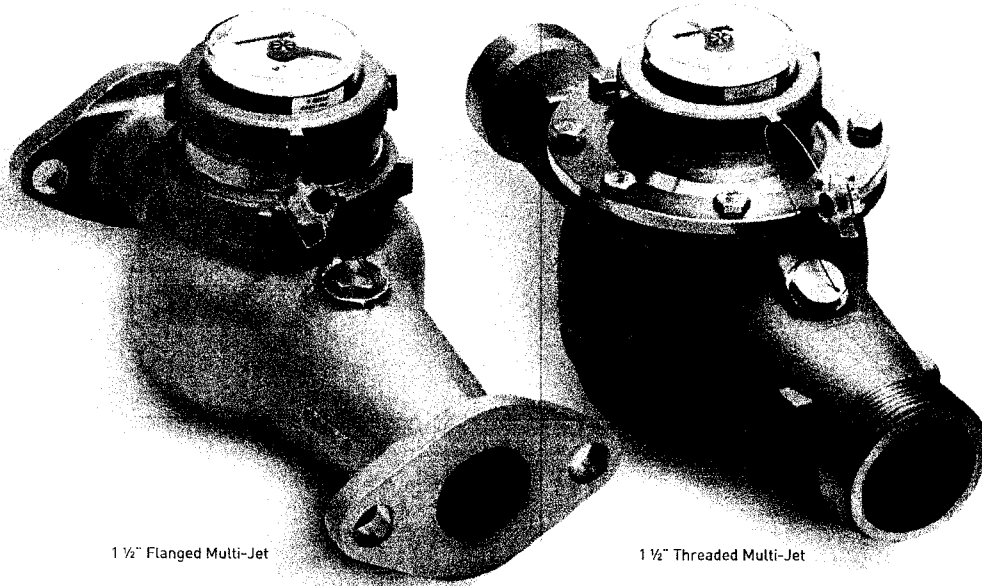
(2306, 3206, 3306) SDR 7, 9, 11.5, 15 C=150

psi Loss per 100 Feet of Pipe (psi/100 ft.)

Sizes 1/2" through 6" Flow 1 through 600 gpm

Size I.D.	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"	
Flow gpm	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss	Velocity fps	psi Loss
1	1.06	0.43	0.60	0.11	0.37	0.03	0.21	0.01	0.16	0.00	0.10	0.00	0.07	0.00	0.04	0.00	0.03	0.00	0.01	0.00
2	2.11	1.55	1.20	0.39	0.74	0.12	0.43	0.03	0.32	0.02	0.19	0.00	0.13	0.00	0.09	0.00	0.05	0.00	0.02	0.00
3	3.17	3.28	1.80	0.83	1.11	0.26	0.64	0.07	0.47	0.03	0.29	0.01	0.20	0.00	0.13	0.00	0.08	0.00	0.03	0.00
4	4.22	5.58	2.41	1.42	1.48	0.44	0.86	0.12	0.63	0.05	0.38	0.02	0.27	0.01	0.17	0.00	0.10	0.00	0.04	0.00
5	5.28	8.43	3.01	2.15	1.86	0.66	1.07	0.17	0.79	0.08	0.48	0.02	0.34	0.01	0.22	0.00	0.13	0.00	0.06	0.00
6	6.34	11.81	3.61	3.01	2.23	0.93	1.29	0.24	0.95	0.12	0.57	0.03	0.40	0.01	0.26	0.01	0.15	0.00	0.07	0.00
7	7.39	15.71	4.21	4.00	2.60	1.24	1.50	0.33	1.10	0.15	0.67	0.05	0.47	0.02	0.30	0.01	0.18	0.00	0.08	0.00
8	8.45	20.12	4.81	5.12	2.97	1.58	1.72	0.42	1.26	0.20	0.76	0.06	0.54	0.02	0.35	0.01	0.20	0.00	0.09	0.00
9	9.50	25.01	5.41	6.37	3.34	1.97	1.93	0.52	1.42	0.24	0.86	0.07	0.60	0.03	0.39	0.01	0.23	0.00	0.10	0.00
10	10.56	30.40	6.02	7.74	3.71	2.39	2.15	0.63	1.58	0.30	0.96	0.09	0.67	0.04	0.43	0.01	0.25	0.00	0.11	0.00
11	11.61	36.26	6.62	9.23	4.08	2.85	2.36	0.75	1.73	0.35	1.05	0.11	0.74	0.04	0.48	0.02	0.28	0.00	0.12	0.00
12	12.67	42.59	7.22	10.84	4.45	3.35	2.57	0.88	1.89	0.42	1.15	0.12	0.80	0.05	0.52	0.02	0.30	0.00	0.13	0.00
14	14.78	56.64	8.42	14.42	5.20	4.45	3.00	1.17	2.21	0.55	1.34	0.16	0.94	0.07	0.61	0.02	0.35	0.01	0.16	0.00
16	16.89	72.52	9.63	18.46	5.94	5.70	3.43	1.50	2.52	0.71	1.53	0.21	1.07	0.09	0.69	0.03	0.40	0.01	0.18	0.00
18	19.01	90.17	10.83	22.95	6.68	7.09	3.86	1.87	2.84	0.88	1.72	0.26	1.21	0.11	0.78	0.04	0.45	0.01	0.20	0.00
20			12.03	27.89	7.42	8.62	4.29	2.27	3.15	1.07	1.91	0.32	1.34	0.13	0.87	0.05	0.50	0.01	0.22	0.00
22			13.24	33.27	8.17	10.28	4.72	2.71	3.47	1.28	2.10	0.38	1.47	0.16	0.95	0.06	0.55	0.01	0.24	0.00
24			14.44	39.08	8.91	12.07	5.15	3.18	3.78	1.50	2.29	0.45	1.61	0.19	1.04	0.07	0.60	0.02	0.27	0.00
26			15.64	45.32	9.65	14.00	5.58	3.69	4.10	1.74	2.49	0.52	1.74	0.22	1.13	0.08	0.66	0.02	0.29	0.00
28			16.85	51.98	10.39	16.06	6.01	4.23	4.41	2.00	2.68	0.59	1.88	0.25	1.22	0.09	0.71	0.02	0.31	0.00
30			18.05	59.05	11.14	18.24	6.44	4.80	4.73	2.27	2.87	0.67	2.01	0.28	1.30	0.10	0.76	0.03	0.33	0.00
35					12.99	24.26	7.51	6.39	5.52	3.02	3.35	0.89	2.35	0.38	1.52	0.13	0.88	0.03	0.39	0.00
40					14.85	31.08	8.58	8.18	6.30	3.86	3.82	1.15	2.68	0.48	1.74	0.17	1.01	0.04	0.44	0.01
45					16.71	38.62	9.65	10.17	7.09	4.80	4.30	1.42	3.02	0.60	1.95	0.21	1.13	0.06	0.50	0.01
50					18.56	46.94	10.73	12.36	7.88	5.84	4.78	1.73	3.35	0.73	2.17	0.25	1.26	0.07	0.56	0.01
55					11.80	14.74	8.67	6.96	5.26	2.06	3.69	0.87	2.39	0.30	1.39	0.08	0.61	0.01		
60					12.87	17.32	9.46	8.18	5.74	2.43	4.02	1.02	2.60	0.36	1.51	0.09	0.67	0.01		
65					13.94	20.08	10.24	9.49	6.21	2.81	4.36	1.18	2.82	0.41	1.64	0.11	0.72	0.01		
70					15.02	23.03	11.03	10.88	6.69	3.23	4.69	1.36	3.04	0.47	1.76	0.13	0.78	0.02		
75					16.09	26.17	11.82	12.36	7.17	3.66	5.03	1.54	3.25	0.54	1.89	0.14	0.83	0.02		
80					17.16	29.49	12.61	13.93	7.65	4.13	5.36	1.74	3.47	0.60	2.02	0.16	0.89	0.02		
85					18.23	32.99	13.40	15.58	8.13	4.62	5.70	1.95	3.69	0.68	2.14	0.18	0.94	0.02		
90					19.31	36.67	14.18	17.32	8.61	5.14	6.03	2.16	3.91	0.75	2.27	0.20	1.00	0.03		
95							14.97	19.14	9.08	5.68	6.37	2.39	4.12	0.83	2.39	0.22	1.06	0.03		
100							15.76	21.05	9.56	6.24	6.70	2.63	4.34	0.91	2.52	0.24	1.11	0.03		
110							17.34	25.11	10.52	7.44	7.37	3.14	4.77	1.09	2.77	0.29	1.22	0.04		
120							18.91	29.49	11.47	8.74	8.04	3.68	5.21	1.28	3.02	0.34	1.33	0.05		
130									12.43	10.14	8.71	4.27	5.64	1.48	3.28	0.40	1.44	0.05		
140									13.39	11.63	9.38	4.90	6.08	1.70	3.53	0.45	1.55	0.06		
150									14.34	13.21	10.05	5.56	6.51	1.93	3.78	0.52	1.67	0.07		
160									15.30	14.89	10.72	6.27	6.94	2.18	4.03	0.58	1.78	0.08		
170									16.25	16.65	11.39	7.01	7.38	2.44	4.28	0.65	1.89	0.09		
180									17.21	18.51	12.06	7.80	7.81	2.71	4.54	0.72	2.00	0.10		
190									18.17	20.46	12.73	8.62	8.25	2.99	4.79	0.80	2.11	0.11		
200									19.12	22.50	13.40	9.48	8.68	3.29	5.04	0.88	2.22	0.12		
225											15.08	11.78	9.76	4.09	5.67	1.09	2.50	0.15		
250											16.75	14.32	10.85	4.98	6.30	1.33	2.78	0.18		
275											18.43	17.08	11.93	5.94	6.93	1.58	3.05	0.22		
300													13.02	6.97	7.56	1.86	3.33	0.25		
325													14.10	8.09	8.19	2.16	3.61	0.29		
350													15.19	9.27	8.82	2.47	3.89	0.34		
375													16.27	10.54	9.45	2.81	4.16	0.38		
400													17.36	11.87	10.08	3.16	4.44	0.43		
425													18.44	13.28	10.71	3.54	4.72	0.48		
450													19.53	14.76	11.34	3.93	5.00	0.54		
475															11.97	4.35	5.28	0.59		
500															12.60	4.78	5.55	0.65		
550															13.86	5.70	6.11	0.78		
600															15.12	6.70	6.66	0.91		

Note: Dark shaded area of chart indicates velocities over 5' per second. Use with caution
Velocity of flow values are computed from the general equation $V = 408 \sqrt{Q}$



1 1/2" Flanged Multi-Jet

1 1/2" Threaded Multi-Jet

Maximize your revenue stream across a wide range of small commercial applications with Master Meter's Intermediate Multi-jets and capture accurate low flow readings where turbine meters fall short.

Technical Specifications:

- **AWWA Standard** - Meets or exceeds all sections of AWWA Standard C-708, most recent revision. Optional NSF/ANSI Standard 61 certified no lead main case available.
- **Design/Operation** - Velocity-type flow measurement. Water that is evenly distributed by multiple converging inlet ports flows past an impeller in the measuring chamber, creating an impeller velocity directly proportional to water flow rate. The meter's register integrates that velocity into totalized flow. The register assembly is removable under line pressure permitting seamless, simplified upgrades in reading technology.
- **Measuring Chamber** - The measuring chamber housing and measurement element are built with an advanced synthetic polymer. Measurement surfaces are not wear surfaces, providing sustained accuracy despite the presence of entrained solids in the water. A long life, synthetic sapphire bearing serves as a wear surface with radially balanced water flows. The chamber housing is constructed in two parts to allow access to the impeller. Bottom plates available in Bronze, Cast Iron (CI) or Engineered Plastic.

Features & Benefits:

- Clean, elegant measurement design is highly sensitive to leaks and low flow while limiting wear for excellent revenue protection.
- Measures with only moving part moving part that is hydro-dynamically balanced on a sapphire bearing to preserve accuracy for the life of the meter.
- Exceptional capabilities for passing entrained solids and operating in environments with high mineral content.
- Proprietary design produces smooth, laminar flow profile for improved, sustained accuracy.
- Rugged basket strainer built from advanced polymer materials for superior wear mitigation.
- Creates an exceptional measurement foundation on which to add Dialog 3G Mobile, FixedLinx, and GridLinx AMI data solutions.
- Accuracy meets or exceeds the AWWA C-708 Standard. Optional NSF Certification Available.



Technical Specs (Cont'd):

- **Register Sealing** - Direct read and DIALOG® registers are IP-68 rated, permanently sealed with a scratch resistant glass lens, stainless steel base and wrap-around gasket to prevent intrusion of dirt or moisture. Available in USG, CF or M³. Equipped with center mounted low flow leak indicator with high sensitivity resulting from direct one to one linkage to measuring element and large center sweep hand with one hundred (100) clearly marked gradations on the periphery of the dial face.
- **Strainer** - A rugged, 360-degree advance polymer basket strainer protects the critical measuring element from damage. The unique strainer design smoothes the flow of water entering into the meter

creating a laminar flow that is gentle on the meter's internal components. Tough materials operating in a smooth, balanced environment enable the meters to perform more accurately over time. Utilities' investments last longer while capturing more revenue.

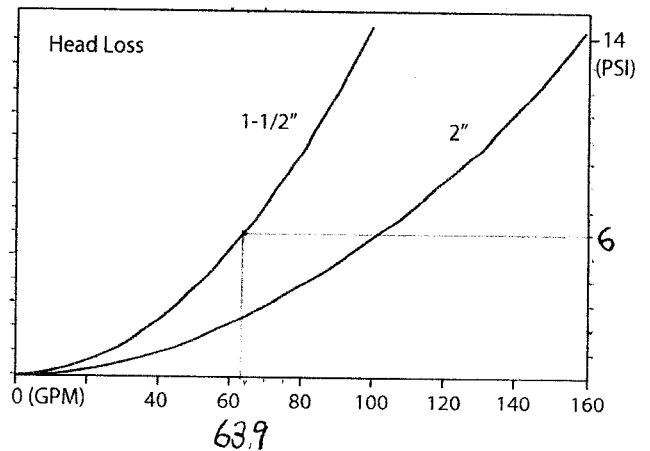
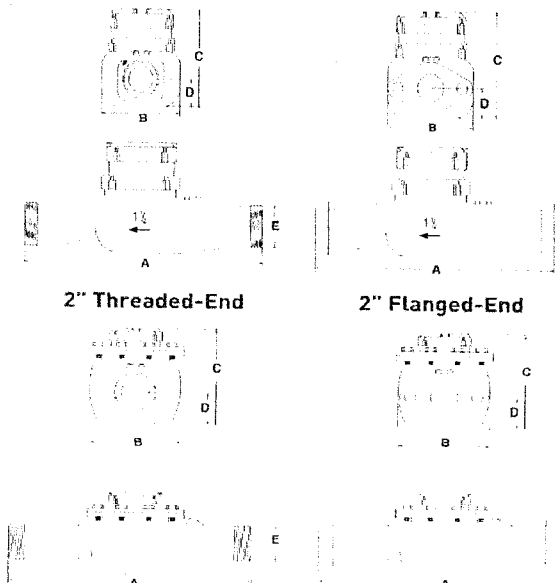
- **Magnetic Drive** - A reliable, direct magnetic drive provides linkage between measurement element and register. No intermediate gearing is required; no gearing is exposed to water.
- **Tamper Detection** - The Master Meter Multi-jet adjusting port and register are concealed to prevent tampering and removal of the register. This design also provides a visual indication of tampering attempts.

METER OPERATING CHARACTERISTIC/DIMENSION	1 1/2" Threaded	1 1/2" Flanged	2" Threaded	2" Flanged
Flow Rating (gpm)	100	100	160	160
Continuous Flow (gpm)	75	75	120	120
Normal Flow Range (gpm)	5-100	5-100	8-160	8-160
Low Flow (gpm)	1 1/2	1 1/2	2	2
Maximum Working Pressure (psi)	150	150	150	150
Maximum Working Temperature (°F)	110	110	110	110
Length (A below)	12 1/2"	13"	15 1/2"	17"
Width (B below)	5 3/4"	5 3/4"	5 3/4"	5 3/4"
Height, standard register with lid (C below)	6 3/4"	6 3/4"	7 3/4"	7 3/4"
Height with DIALOG register	7 3/4"	7 3/4"	8 3/4"	8 3/4"
Height, bottom to center line (D below)	1 3/4"	1 3/4"	2 3/4"	2 3/4"
Meter Casing Spuds, Nominal Threadsize* (E below)	2"	N/A	2 1/2"	N/A
Weight (lbs)	11	12	20	24
Packed To Carton	1	1	1	1
Carton Weight (lbs)	12	14	22	26

1 1/2" Threaded-End

1 1/2" Flanged-End

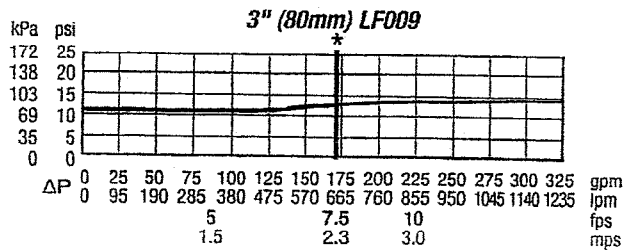
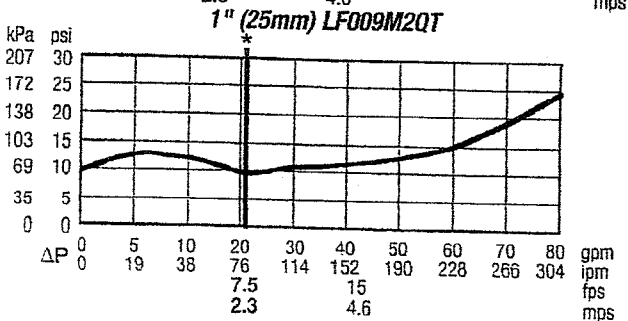
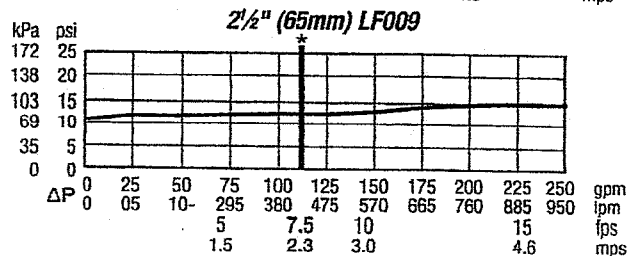
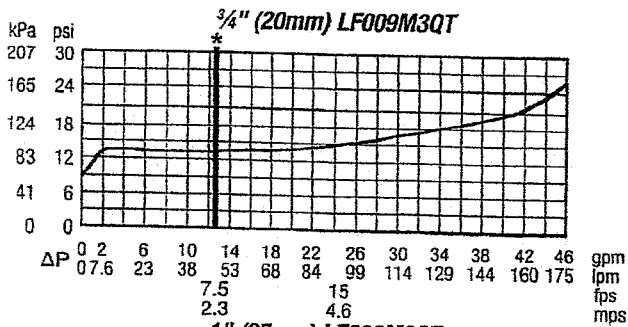
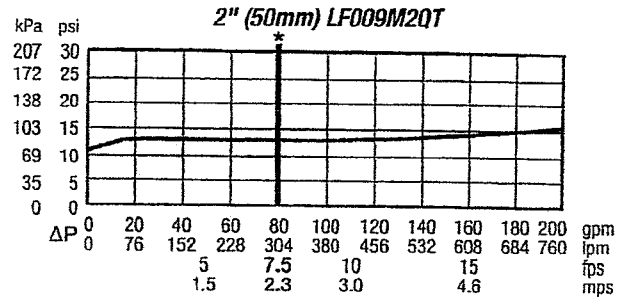
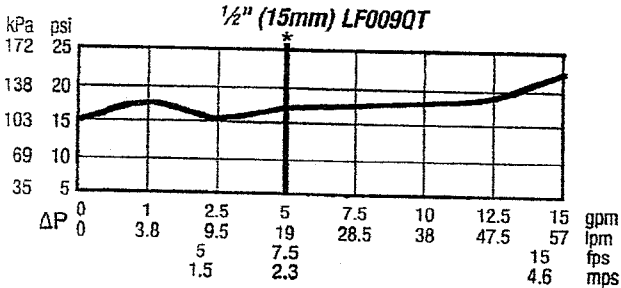
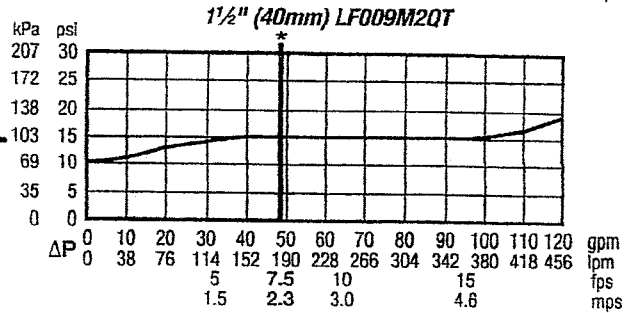
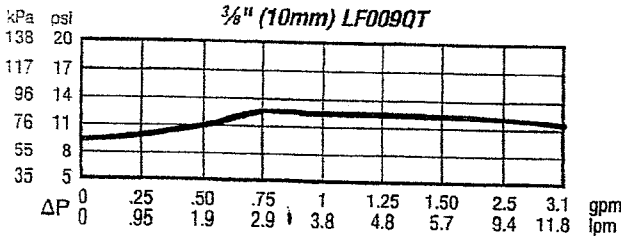
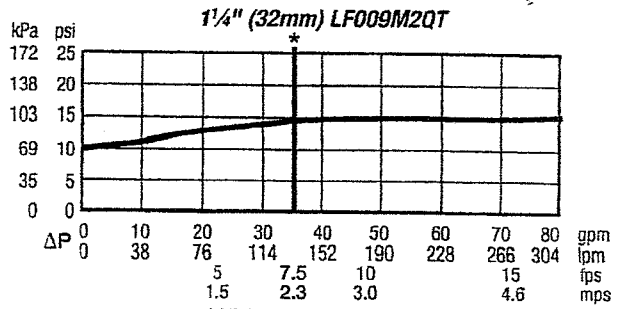
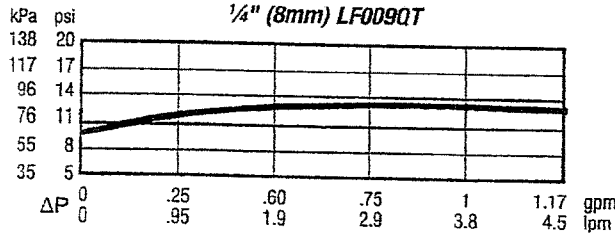
Accuracy and Head Loss Chart



Capacity

Performance as established by an independent testing laboratory.

*Typical maximum system flow rate (7.5 feet/sec., 2.3 meters/sec.)



A Watts Water Technologies Company



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