

WATER FLOW MEASUREMENT STANDARD

TABLE OF CONTENTS

	Page
I. Flow Measurements	2
1.0 Scope and Purpose	2
1.1 Scope	2
1.2 Purpose	2
1.3 Water Flow to be Measured	2
1.4 Reference Codes and Standards	2
1.5 Nomenclature	2
2.0 Piping Requirements	3
2.1 Meter Tube or Metering Section	3
2.2 Pipe Length	3
2.3 Circular Pipe	3
2.4 Pipe Internal Surface Roughness	3
2.5 Straightening Vanes	3
3.0 Contaminants or Disturbances In Water Flow.....	3
3.1 Particulates and/or Solids	3
3.2 Air Bubbles	3
3.3 Pulsating or Surging Flow	4
3.4 Swirl Flow in Pipe	4
4.0 Accuracy For Water Flow Measurement	4
5.0 Type of Primary Flow Measurement Devices and Methods	4
5.1 Pitot Tube	4
5.2 Other Flow Measurement Devices	4
6.0 Primary Device Calibration	4
7.0 Flow Signal Conditioning and Readout	4
7.1 Manometer	4
7.2 Other "DP" Readout Devices	5
7.3 Other Readout Devices	5
7.4 Calibration and Use	5
II. Appendix	6
II-A References, Standards and Codes	6
II-B Water Flow Laboratories	6
II-C Typical Fluid Flow Measurement Meter Run Piping Configurations	7
II-D Pitot Tap Installation	8
II-E Air-over Water Inverted "U" Tube Manometer	9
II-F Pitot Tube	10
II-G Flow Meter	14
II-G (a) Orifice Meter	14
II-G (b) Flow Nozzles	14
II-G (c) Venturi	14
II-G (d) Multiport Averaging Pitot Flow Meter	14
II-G (e) Vortex Shedding Meter	14
II-G (f) Turbine Meter	14
II-G (g) Variable Area Meter	14
II-G (h) Magnetic Flow Meter	15
II-G (i) Sonic and Ultrasonic Flow Meter	15
II-G (j) Positive Displacement Flow Meters	16
II-G (k) Open Channel Flow Measurement	16
II-G (l) Tracer Injection Measurement Method	16