



Fiberglass Fabricators, Incorporated

Standard Specification for Parshall Flumes

1. Scope

- 1.1. This specification shall govern all work necessary to furnish fiberglass Parshall Flumes including all anchorage hardware required for proper installation of the system components.

2. General

- 2.1. Parshall flumes are primary metering devices for measuring flow of water or wastewater in open channels. They operate on the principle that, if a restriction of specified shape and form be placed across a channel, a rise in upstream liquid level will result, which is a function of the rate of flow through the restricted section. A standard level measuring device can then be used for totalizing, indicating, and/or recording the flow.
- 2.2. The contractor shall furnish and install as shown on the plans a fiberglass reinforced plastic Parshall flume. The flume shall have a throat width and depth as specified on the plans. The flume shall be accurate in dimensions and shall include in one integrally molded piece, the approach, the throat and the downstream section. The inside of the flume shall be smooth and free of any irregularities. The outside surface of the flume shall include necessary flanges and/or other anchoring devices for firm, permanent anchorage to the concrete.
- 2.3. The flume shall be shipped in one piece, ready for setting into the channel form work. The flume shall be furnished with suitable blocking and tie straps bolted to the flume to maintain the sides of the flume vertical during pouring of the concrete. Such blocking shall not be removed from the flume until the concrete backing is thoroughly cured.
- 2.4. The flume liner shall be fabricated using general purpose resin with glass reinforcement as described in this specification. Wall thicknesses shall not be less than 3/16" for 3" through 9" flumes and not less than 1/4" for flumes 12" and larger.

3. Materials

3.1. All materials shall be new and shall be specifically designed or selected for the function and service specified. No material may be used in the project that has not been approved by the engineer.

3.2. Resin Requirements

Resin shall be general purpose, corrosion resistant polyester unless otherwise specified containing no bulk extenders or fillers except for viscosity control. Ultraviolet light inhibitors shall be added to the laminate.

3.3. Laminate Minimum Physical Properties

Minimum physical properties for the product shall conform to those presented in Table 1 below:

Table 1. Laminate Minimum Physical Properties

Property @ 70°F	Value	Test Method
Tensile Strength (103 psi)	12.6	ASTM D638
Tensile Modulus (106 psi)	1.27	ASTM D638
Flexural Strength (103 psi)	21.3	ASTM D790
Flexural Modulus (166 psi)	0.9	ASTM D790
Barcol Hardness	35	ASTM D2583
Shear Strength (10^3 psi)	13.0	ASTM D732
Glass Content	30% by weight	

Exterior surface shall be a resin-rich coat with ultraviolet protection. A paraffinated wax additive shall be used in the top coat to eliminate the air inhibition (14-18 mils thick). Standard color will be blue-green.

Cut edges or drilled holes must be deburred and resin sealed.

4. Submittals

4.1. Final approval for incorporation into the project will be made only after the review of shop drawings, specifications, and data as follows:

- a. Shop drawings complete with all dimensions, details of connecting piping, and the size and location of any required openings.
- b. Specifications for all components.
- c. Details of the major fabricated components showing the arrangement of components and labeled with member sizes and materials of construction.
- d. Structural calculations for all components.
- e. Manufacturer's recommended procedures for jobsite storage of equipment, handling, and erection.

4.2. Design Calculations

As part of the shop drawings for all components, the fabricator must supply any and all analyses pertinent to the composite design. A complete laminate analysis will be submitted for the calculated loads identifying the various factors of safety for each lamina used in the proposed laminate schedule. Factors of safety will be evaluated using criteria such as Tsai-Hill or equivalent theories.

5. Quality Assurance

5.1. Qualifications

Contractor shall have a minimum of five (5) years of history of successful installations of similar design. Past job list with customer contact information will be supplied if required.

5.2. Manufacturer's Quality Control

All fabrication shall be carefully inspected at the factory by inspectors who shall use whatever means necessary to assure the proper fit of all field connections and compliance with all material and fabrication requirements of the specifications.

5.3. Warranty

Manufacturer shall warrant the Parshall Flumes to be free of defects in materials and workmanship for a minimum of one (1) year after installation with a maximum of eighteen (18) months from date of shipment.

- 5.4. The contractor shall be responsible for verifying all field dimensions to develop and approve shop drawings.

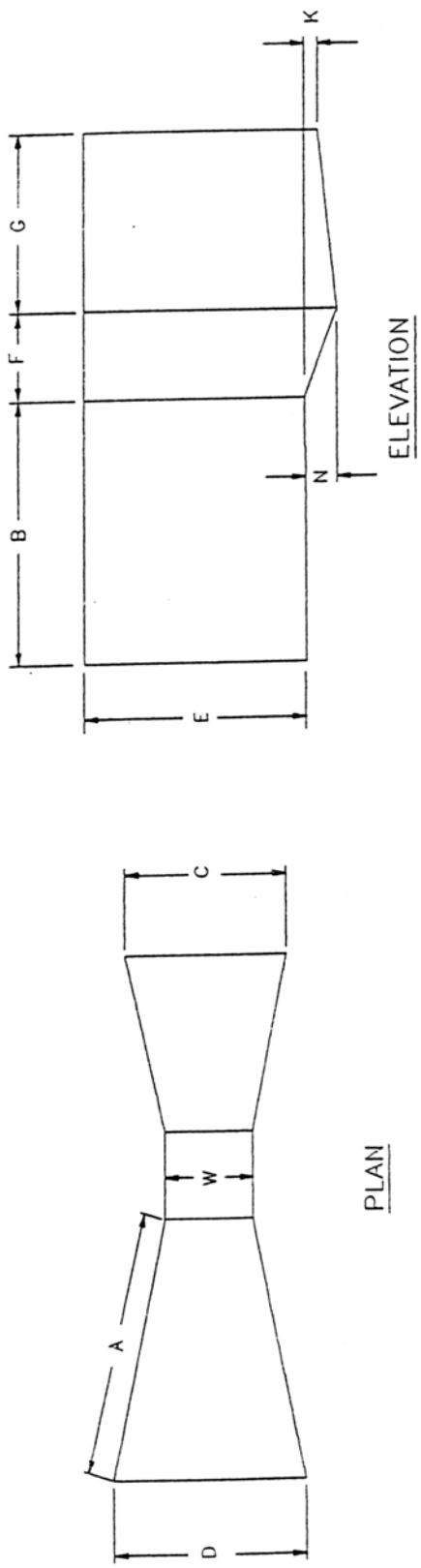
6. Manufacture

- 6.1. Materials, equipment, and components in this section shall be the products of:

Fiberglass Fabricators, Incorporated
P.O. Box 17068
964 Douglas Pike
Smithfield, RI 02917

7. Installation, Storage, Handling, and Maintenance

- 7.1. The manufacturer shall provide detailed written instructions for the installation, long term storage, handling, and maintenance for the products provided.



W	DIMENSIONS						SHIPPING			
	F	B	G	D	C	E	A	K	N	WEIGHT
3"	6"	18"	12"	10-3/16"	7"	24"	18-3/8"	1"	2-1/4"	40#
6"	12"	24"	24"	15-5/8"	15-1/2"	24"	24-3/8"	3"	4-1/2"	75#
9"	12"	34"	18"	22-5/8"	15"	30"	34-5/8"	3"	4-1/2"	85#
12"	24"	52-7/8"	36"	33-1/4"	24"	36"	54"	3"	9"	250#
18"	24"	55-7/8"	36"	40-3/8"	30"	36"	57"	3"	9"	275#
24"	24"	58-7/8"	36"	47-1/2"	36"	36"	60"	3"	9"	300#
36"	24"	64-3/4"	36"	61-7/8"	48"	36"	66"	3"	9"	325#
48"	24"	70-5/8"	36"	76-1/4"	60"	36"	72"	3"	9"	400#
72"	24"	82-3/8"	36"	105"	84"	36"	84"	3"	9"	500#
96"	24"	94-1/8"	36"	122-3/4"	108"	36"	96"	3"	9"	600#

FOR FLUMES OF SPECIAL DEPTHS OR SHAPES
CONSULT FIBERGLASS FABRICATORS, INC.

CAPACITY (GPM)		
W	MIN	MAX
3"	14	493
6"	21	1750
9"	42	3993
12"	49	7229
18"	70	11042
24"	188	14854
36"	271	22618
48"	583	30450
72"	1167	46611
96"	1569	62611

FIBERGLASS FABRICATORS, INC.
964 DOUGLAS PIKE SMITHFIELD, RI 02917
PARSHALL FLUMES

SCALE	N/A	DR. BY	JD	DRAWING NO.
DATE	XX-XX-XX	CK. BY	DJ	F-001