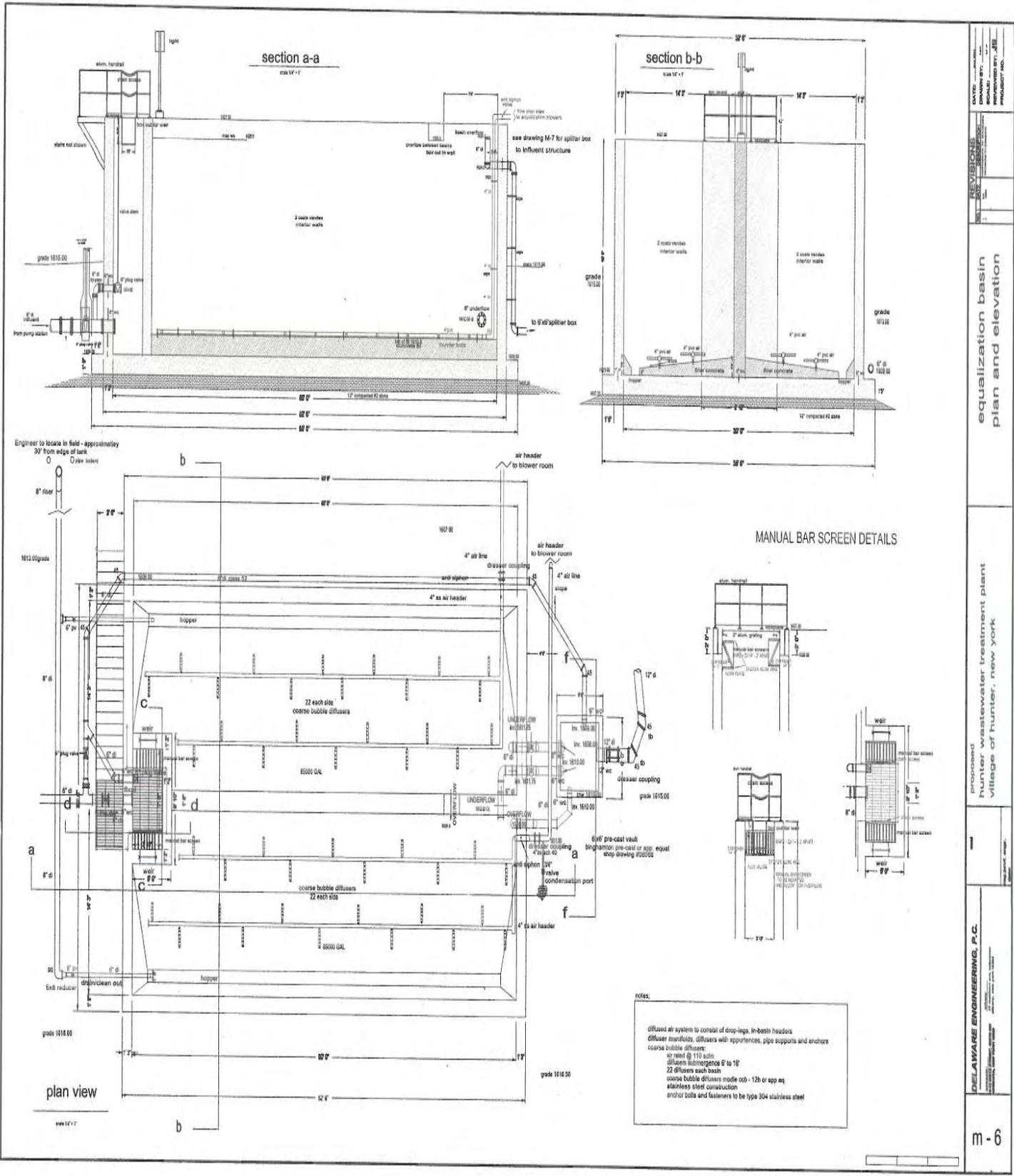


**Appendix F**  
**Equalization Tank Specification**

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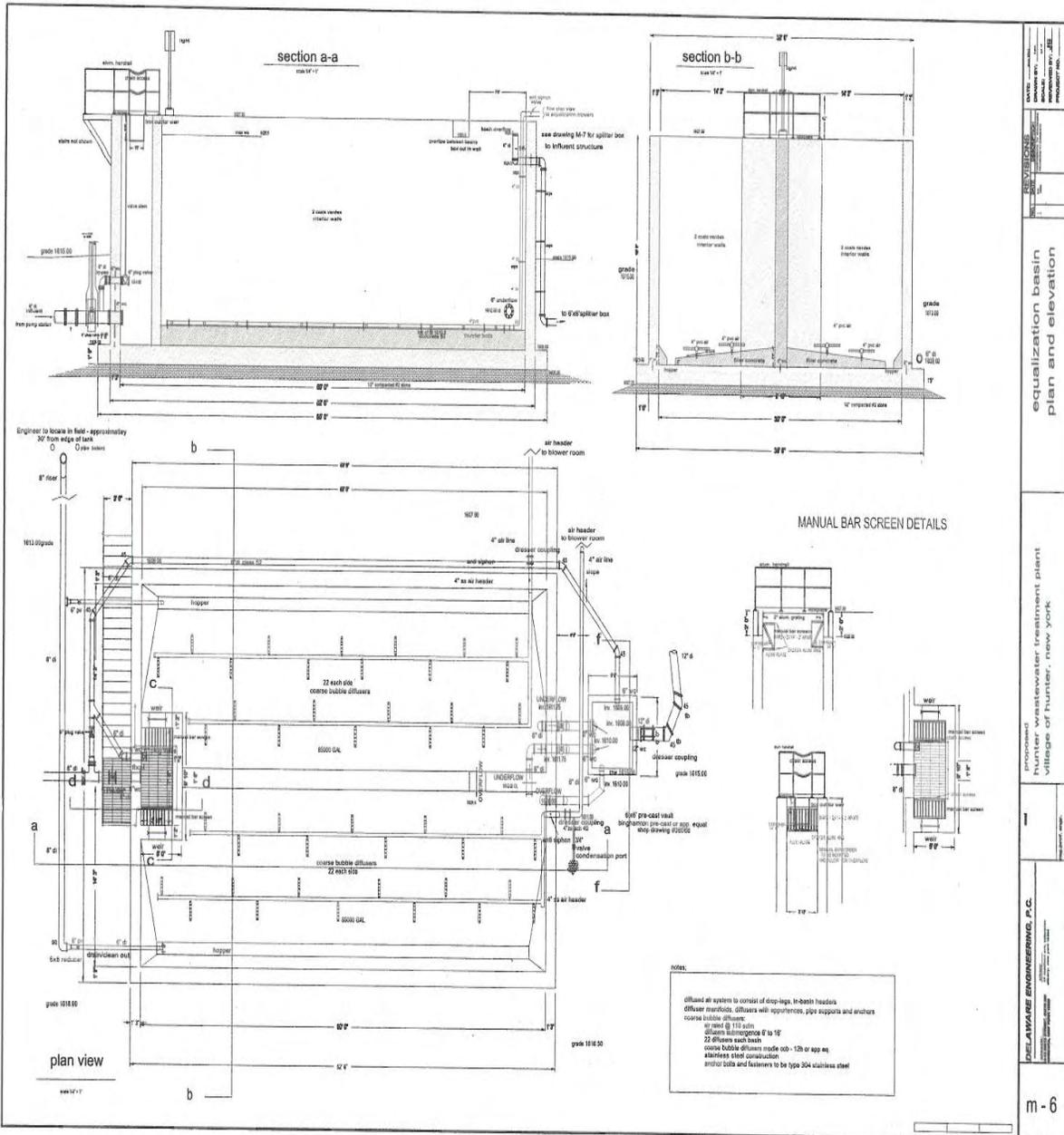
DATE: 11/15/00  
 DRAWN BY: J.E.  
 CHECKED BY: J.E.  
 SCALE: AS SHOWN  
 PROJECT NO.: 00-100-100-100

equalization basin  
 plan and elevation

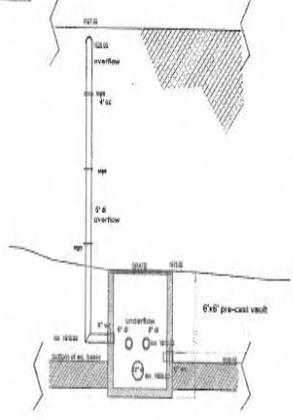
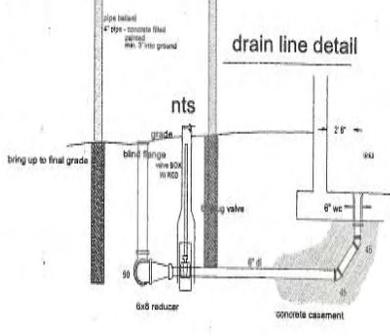
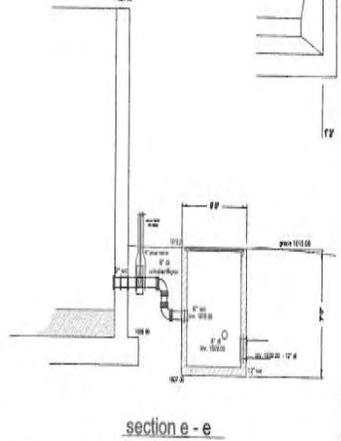
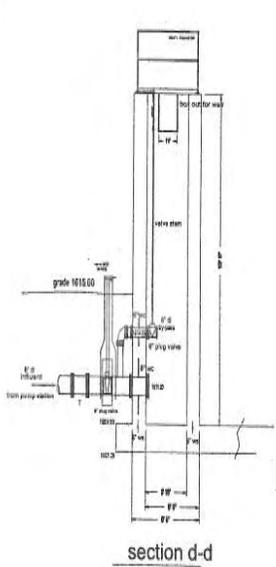
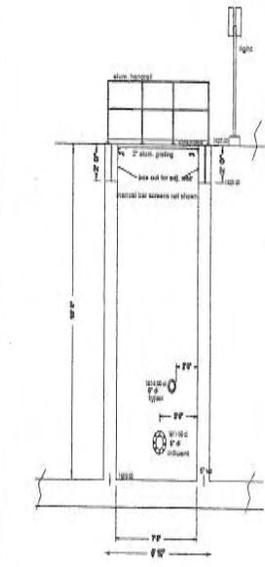
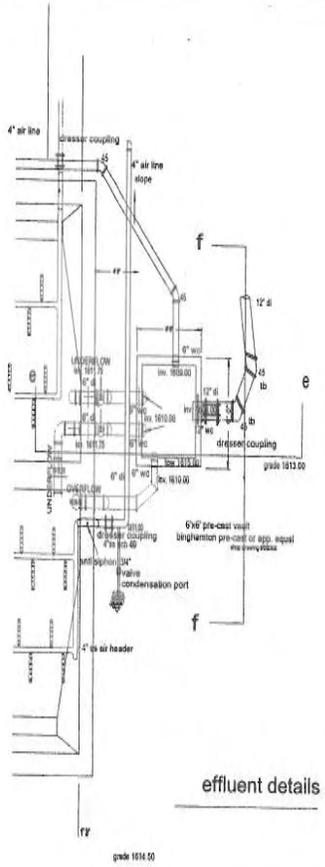
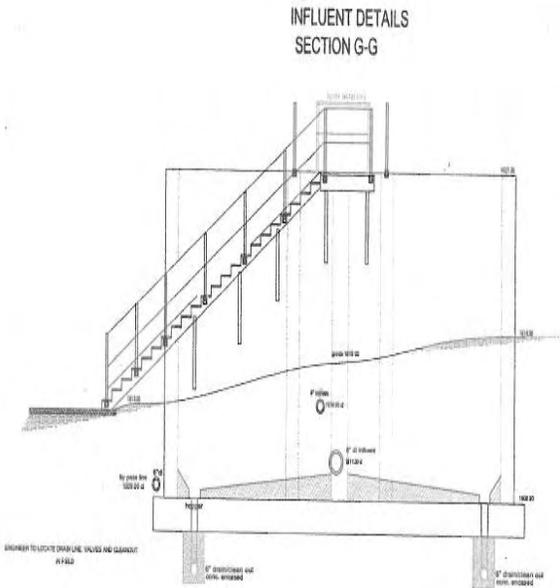
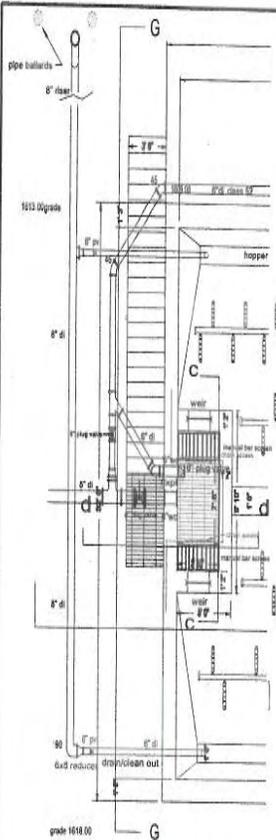
Proposed  
 Hunter wastewater treatment plant  
 Village of Hunter, New York

DELAWARE ENGINEERING, P.C.  
 1000 W. 10th Street  
 Dover, Delaware 19904  
 Phone: 302-691-1000  
 Fax: 302-691-1001  
 E-mail: info@delaware-engineering.com

m - 6



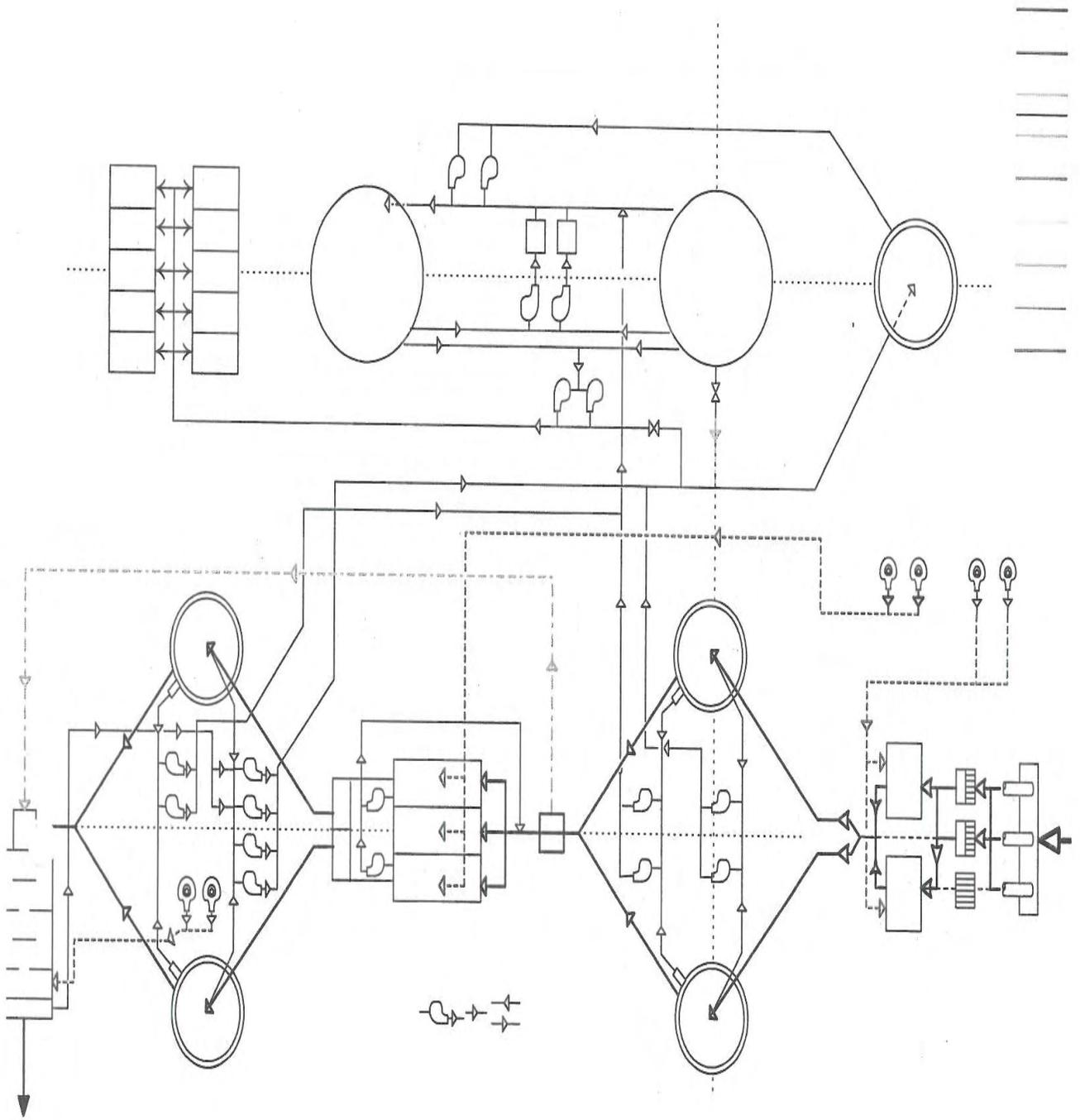
DATE: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 PROJECT NO.: \_\_\_\_\_  
 SHEET NO.: \_\_\_\_\_  
 SHEET TOTAL: \_\_\_\_\_  
 PROJECT TITLE: **equalization basin plan and elevation**  
 PROJECT LOCATION: **Village of Hunter, New York**  
 CLIENT: **DELAWARE ENGINEERING, P. C.**  
 PROJECT NO.: \_\_\_\_\_  
 SHEET NO.: \_\_\_\_\_  
 SHEET TOTAL: \_\_\_\_\_  
**m - 6**



engineer to locate in field approximately 30 feet from edge of tank

NAME: _____ DRAWING NO.: _____ REVISIONS: _____ SCALE: _____ DESIGNED BY: JEB CHECKED BY: _____ PROJECT NO.: _____	REVISIONS NO. DATE DESCRIPTION 1 2 3	equalization basin INFLUENT & EFFLUENT DETAILS	proposed hunter wastewater treatment plant village of hunter, new york	DELAWARE ENGINEERING, P.C. 1000 N. MARKET STREET, SUITE 200 WILMINGTON, DELAWARE 19801 TEL: 302-478-1000 FAX: 302-478-1001 WWW.DELAWAREENGINEERING.COM
--	--	---	--	---







41-04 35<sup>th</sup> Avenue, Long Island City, NY 11101

(800)245-6964 NY: (718)392-1112 FAX: (718)786-1008 WEB: www.modutank.com Email: info@modutank.com

February 4, 2009

E MAIL  
VIA FAX  
TEL

[pjkolako@gw.dec.state.ny.us](mailto:pjkolako@gw.dec.state.ny.us)  
(518) 402-9029  
(518) 402-8104

Mr. Paul J. Kolakowski  
NY DEC  
Environmental Engineer II  
625 Broadway  
Albany, New York 12233-3505

Reference: **Quotation # 020409-P-39**

BUREAU OF WATER PERMITS  
RECEIVED

FEB 09 2009

Dear Mr. Kolakowski:

Thank you for your inquiry regarding an equalization tank for your Catskill project. We offer the following in response:

<u>Item</u>	<u>Description</u>	<u>Unit Price*</u>
1	Model <b>MS 5810</b> ModuStor 57'10 " dia x 10'0" ht 191,500 gallon capacity with 3" freeboard - galvanized steel structure - 45 mil reinforced polypropylene liner - 45 mil reinforced polypropylene floating cover incorporating: - floatation logs - ballast pipe - polypropylene rope wind retention grid - 8 oz. geotextile liner underlay - mounting brackets for concrete ring wall installation  - Thru-the-Wall Piping Connections including steel wall panel with cutout - Wetted parts in PVC . - No bolt penetrations - Expansion joint in Neoprene - Internal elbow in PVC Sch 40	\$77,630.00
	2"      \$ 350.00 each	
	3"      \$ 500.00 each	
	4"      \$ 670.00 each	
	6"      \$ 880.00 each	
	8"      \$1,750.00 each	
	12"     \$2,800.00 each	

**NY DEC**

February 4, 2009

Page 2

\*Freight terms: FOB, point of shipment.

Estimated freight to Catskill area: \$800.00

Lead time: 6 weeks

Terms: 25% with order; 25% plus freight at notice of readiness to ship; balance Net 30.

All steel components, liners, covers, and piping accessories are warranted against defective materials and workmanship for one year from date of shipment. Defective parts will be repaired or replaced. Leaks caused by penetration of liner with piping connections or equipment or leaks caused by accidents or improper installation are not covered by the warranty. ModuTank Inc. is not liable for consequential damages due to cause. For critical applications tanks must be tested by purchaser before being placed into service, by filling them with clean water to check for liner integrity. Quotation does not include taxes, piping, site preparation, or installation.

The pricing quoted above is based on current prices for materials and is valid for only 30 days from date of quotation. If product is ordered after that date, pricing may be modified based on material costs at time of purchase. New pricing will be subject to approval by purchaser before start of fabrication.

Please note that the prices and rental fees quoted (rental as appropriate) do not include sales tax. ModuTank collects sales tax only for items which are shipped to a New York State location. For such items, sales tax will be listed as a separate item. For all shipments to locations other than those in New York State, payment of sales tax is the responsibility of the purchaser.

ModuStor tank quoted above consists of a galvanized steel structure, containing a durable, one-piece membrane liner, that holds the liquid. Tank is shipped as knocked-down modules and can be assembled by unskilled workers using ordinary hand tools. A crane or equivalent and scaffolding or ladders are required to lift components and to install liner and cover. Liner and cover for tank are shipped in one piece ready to deploy and install. Anchoring components are included in the price quoted.

Price shown for the tank does not include installation, which is normally arranged by the purchaser.

**NY DEC**

February 4, 2009

Page 3

We are enclosing our product brochure which describes our modular tanks and containment systems, applications, and case histories. We have also included plan, elevation and section views; samples of 45 mil reinforced polypropylene and 8 oz. geotextile with accompanying technical information.

We look forward to being of service to you.

Very truly yours,

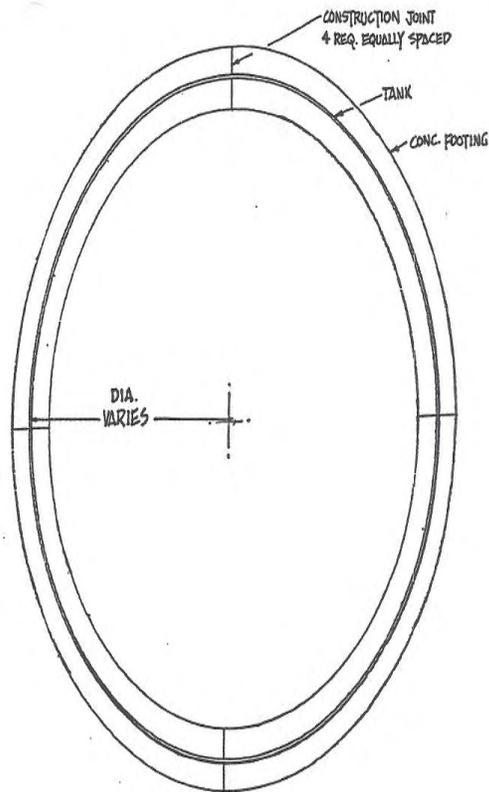


Reed Margulis

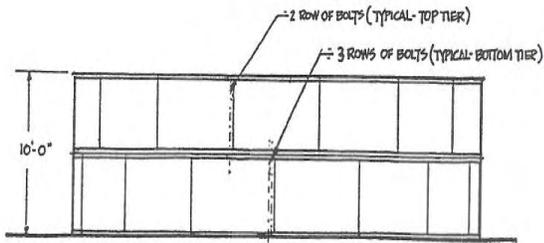
RM/bg

Encs.

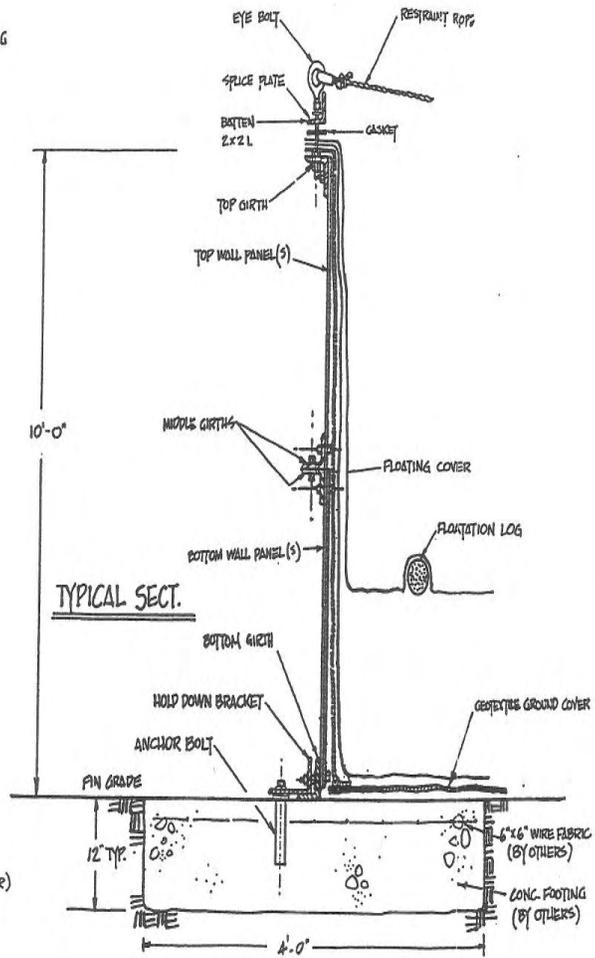
020409-P-39 ny dec



PLAN



ELEVATION



TYPICAL SECT.

**ModuTank Inc.**

41-04 33th Ave., Long Island City, NY 11101 800245-6364 Fax 718/786-1000

TYPICAL 2 TIER MODUSTOR ON CONCRETE FOOTING							REVISED
SINGLE LINER & FLOATING COVER							REVISED
DRAWN BY	TC	CHECKED	DATE	SCALE	DESIGN	APPROVAL	REVISED
			JUNE 2003	1/8"=1'-0"			

## CARLISLE REINFORCED POLYPROPYLENE GEOMEMBRANE™

### TYPICAL PROPERTIES AND CHARACTERISTICS

Physical Property	Test Method	Property Of Unaged Sheet	Property After Aging 30 days @ 185 °F
Tolerance on nominal thickness, %	ASTM D 5199	± 10	
Thickness over scrim, in. (mm) 36-mil 45-mil 60-mil	ASTM D 4637 Optical Method	0.008 (0.203) min. 0.013 (0.330) min. 0.018 (0.457) min.	
Mass per unit area, lb/ft <sup>2</sup> (g/ ft <sup>2</sup> ) (kg/m <sup>2</sup> ) 36-mil 45-mil 60-mil	ASTM D 5261	0.17 (77) (0.83) typical 0.21 (95) (1.03) typical 0.29 (132) (1.42) typical	
Breaking strength, lbf (kN) (grab tensile at strain rate of 12 in./min.) 36-mil 45 & 60-mil	ASTM D 751 Grab Method A	200 (0.9) min. 260 typ. 250 (1.1) min. 300 typ.	200 (0.9) min. 260 typ. 250 (1.1) min. 300 typ.
Elongation at break of fabric, %	ASTM D 751	25 typical	25 typical
Tearing strength, lbf (N) (2 in. / min. strain rate)	ASTM D 5884 (max. load)	55 (245) min. 100 (445) typical	55 (245) min. 100 (445) typical
Low temperature flexibility, °F (°C)	ASTM D 2136 1/8 in. mandrel 4 hour @ temp.	- 40 (- 40) max. - 50 (- 46) typical	
Linear Dimensional Change (shrinkage), %	ASTM D 1204		+/- 1.0 max. - 0.5 typical
Ozone resistance, 100 pphm, 168 hours	ASTM D 1149	No cracks	No cracks
Resistance to water (distilled) absorption After 30 days immersion 122 °F (50 °C) Change in mass, %	ASTM D 471 (coating compound)	1.0 max. 0.5 typical	
Hydrostatic resistance, lbf/in. <sup>2</sup> or psi (MPa) (Mullen burst) 36-mil 45-mil 60-mil	ASTM D 751 Procedure A	350 (2.4) min. 400 (2.8) typical 450 (3.1) typical 500 (3.4) typical	350 (2.4) min. 400 (2.8) typical 450 (3.1) typical 500 (3.4) typical
Field seam strength, lbf/in. (kN/m) Seam tested in peel after weld	ASTM D 4437 1 in. wide	30 (5.3) min. 60 (10.5) typical	
Water vapor permeance, Perms	ASTM E 96	0.10 max. 0.05 typical	
Puncture resistance, lbf (N) 36-mil & 45-mil 60-mil	ASTM D 4833 (index puncture)	85 (378) min. 110 (489) typical 120 (534) typical	
Resistance to xenon-arc weathering <sup>1</sup> Xenon-Arc, 10.080 kJ/m <sup>2</sup> total radiant exposure, visual condition at 10X	ASTM G 155 0.70 W/m <sup>2</sup> 80 °C B.P.T.	No cracks No loss of breaking or tearing strength	

<sup>1</sup> Approximately equivalent to 8000 hours exposure at 0.35 W/m<sup>2</sup> irradiance B.P.T. is black panel temperature 12/03



41-04 35<sup>th</sup> Avenue, Long Island City, NY 11101  
(800)245-6964 NY: (718)392-1112 FAX: (718)786-1008 WEB: www.modutank.com Email: info@modutank.com

**TYPICAL PHYSICAL PROPERTIES  
OF NONWOVEN POLYMERIC  
NEEDLEPUNCHED NONWOVENS**

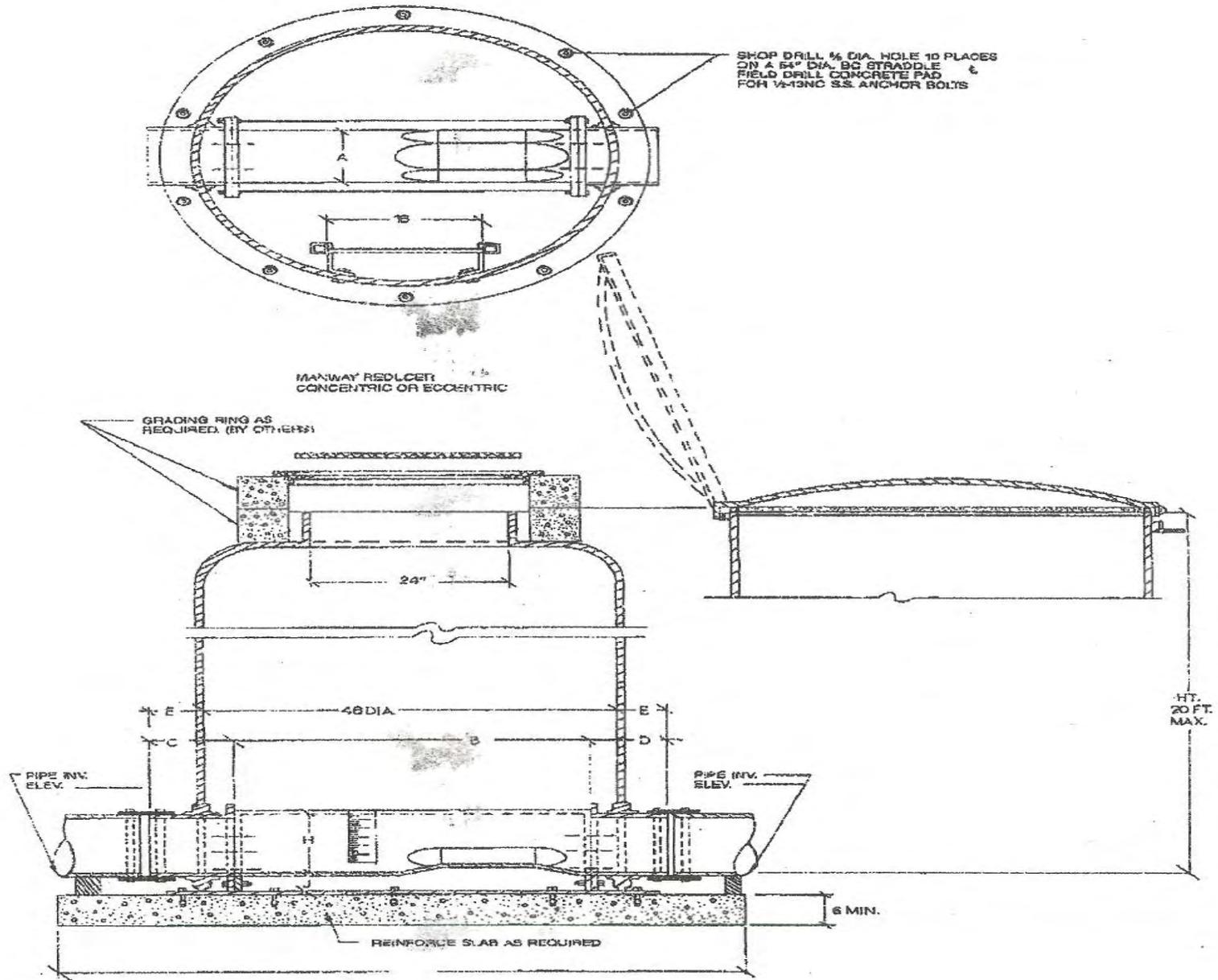
<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>VALUE</u>
WEIGHT PER UNIT		8 OZ./SQ. YARD
GRAB TENSILE	ASTM D-4632	203 LBS.
GRAB ELONGATION	ASTM D-4632	50%
MULLEN BURST	ASTM D-3786	330 PSI
PUNCTURE	ASTM C-4833	110 LBS.
TRAPEZOID TEAR	ASTM D-4533	80 LBS.
AOS	ASTM D-4751	70 U.S. SIEVE
PERMITTIVITY	ASTM D-4491	1.2 SEC-1
PERMEABILITY	ASTM D-4491	0.2 CM/SEC
WATER FLOW RATE	ASTM D-4491	80 GPM/FT <sup>2</sup>
UV RESISTANCE	ASTM D-4355	70% STRENGTH RETENTION 500 HRS +

Nonwoven needlepunched polymeric geotextiles are ideal for use in separating dissimilar soils, reinforcing soft soils, and in facilitating and controlling drainage. They are available in a wide range of weights. They are excellent for cushioning and protecting tank liners or geomembranes and are effective under riprap for erosion control. They offer unique advantages as a geotextile: strength, high resistance to creep, chemical inertness, and resistance to abrasion and degrading. Nonwoven geotextiles also have excellent filtration properties.

**Appendix G**  
**Flume Specification**

---

# Metering Manhole With Palmer Bowlus Flume







50 TANNERY ROAD, BUILDING 3  
 READINGTON INDUSTRIAL CENTER  
 BRANCHBURG, NEW JERSEY 08876  
 OFFICE: (908) 534-6111  
 FAX: (908) 534-5287  
 E-MAIL pep@pep-plastic.com  
 WEB SITE  
 http://www.pep-plastic.com

# QUOTE 7931

CUSTOMER NO. 8945

BILL QUOTE  
 TO

SHIP NEW YORK STATE D.E.C.  
 625 BROADWAY  
 TO ATTN: PAUL KOLAKOWSKI, P.E.  
 ALBANY, NY 12018

DATE		SHIP VIA		F.O.B.		TERMS	
05/19/09		DIRECT				CREDIT CARD	
REQUISITION NUMBER				SALES PERSON		OUR QUOTE NUMBER	
FRP MANHOLE & FLUME				LUKE		7931	
LN	QUANTITY	UNIT	ITEM NO.	DESCRIPTION		UNIT PRICE	AMOUNT
4	1	EA	99-WAR	WE CAN SUPPLY WITH A 4" PALMER BOWLUS FLUME OR WITH A 1" OR 2" PARSHALL FLUME OPTION A:		8563.00	8563.00
7	1	EA	99-WAR	10 FT X 48" DIAMETER FRP METERING MANHOLE WITH HINGED COVER/LID, LADDER, ANCHOR BOLTS, WITH A 4" PALMER BOWLUS FLUME, PIPE CONNECTIONS NEOPRENE BOOTS AND SS CLAMPS IF PIPE SIZE IS OTHER THEN 4" ADDER		940.00	940.00
9	1	EA	99-WAR	OPTION B: (SAME MANHOLE 10 FT X 48" DIAMETER) BUT: 1" OR 2" FRP PARSHALL FLUME WITH TRANSITIONS, PIPE CONNECTIONS, NEOPRENE BOOTS AND SS CLAMPS		10430.00	10430.00
				SUBMITTALS: 1 WEEK DELIVERY IS 5 TO 6 WEEKS AFTER RECEIPT OF APPROVAL DRAWINGS FREIGHT ESTIMATED: \$ 970			
NOTES:						SUBTOTAL	19933.00
						FRGT	0.00
						MISC	0.00
						TAX	0.00
						<b>TOTAL AMOUNT</b>	<b>19933.00</b>



50 TANNERY ROAD, BUILDING 3  
 READINGTON INDUSTRIAL CENTER  
 BRANCHBURG, NEW JERSEY 08876  
 OFFICE: (908) 534-6111  
 FAX: (908) 534-5287  
 E-MAIL pep@pep-plastic.com  
 WEB SITE  
 http://www.pep-plastic.com

# QUOTE 7931

CUSTOMER NO. 8945

BILL QUOTE  
 TO

SHIP NEW YORK STATE D.E.C.  
 TO 625 BROADWAY  
 ATTN: PAUL KOLAKOWSKI, P.E.  
 ALBANY, NY 12018

DATE		SHIP VIA		F.O.B.		TERMS	
05/20/09		DIRECT				CREDIT CARD	
REQUISITION NUMBER				SALES PERSON		OUR QUOTE NUMBER	
FRP MANHOLE & FLUME						7931	
LN	QUANTITY	UNIT	ITEM NO.	DESCRIPTION		UNIT PRICE	AMOUNT
4	1	EA	99-WAR	WE CAN SUPPLY WITH A 4" PALMER BOWLUS FLUME OR WITH A 1" OR 2" PARSHALL FLUME OPTION A: 10 FT X 48" DIAMETER FRP METERING MANHOLE WITH HINGED COVER/LID, LADDER, ANCHOR BOLTS, WITH A 4" PALMER BOWLUS FLUME, PIPE CONNECTIONS NEOPRENE BOOTS AND SS CLAMPS IF PIPE SIZE IS OTHER THEN 4" ADDER		8563.00	8563.00
7	1	EA	99-WAR	OPTION B: (SAME MANHOLE 10 FT X 48" DIAMETER) BUT: 1" OR 2" FRP PARSHALL FLUME WITH TRANSITIONS, PIPE CONNECTIONS, NEOPRENE BOOTS AND SS CLAMPS		940.00	940.00
9	1	EA	99-WAR	SUBMITTALS: 1 WEEK DELIVERY IS 5 TO 6 WEEKS AFTER RECEIPT OF APPROVAL DRAWINGS FREIGHT ESTIMATED: \$ 970 ALTERNATE # 1 JUST FLUME: FRP PALMER BOWLUS FLUME (WITHOUT MANHOLE) 4" SIZE		10430.00	10430.00
15	1	EA	99-WAR			1577.00	1577.00
NOTES:						SUBTOTAL	
						FRGT	
						MISC	
						TAX	
						<b>TOTAL</b>	
						<b>AMOUNT</b>	



50 TANNERY ROAD, BUILDING 3  
 READINGTON INDUSTRIAL CENTER  
 BRANCHBURG, NEW JERSEY 08876  
 OFFICE: (908) 534-6111  
 FAX: (908) 534-5287  
 E-MAIL pep@pep-plastic.com  
 WEB SITE  
 http://www.pep-plastic.com

# QUOTE 7931

CUSTOMER NO. 8945

BILL QUOTE  
 TO ,

SHIP NEW YORK STATE D.E.C.  
 TO 625 BROADWAY  
 ATTN: PAUL KOLAKOWSKI, P.E.  
 ALBANY, NY 12018

DATE		SHIP VIA		F.O.B.		TERMS	
05/20/09		DIRECT				CREDIT CARD	
REQUISITION NUMBER				SALES PERSON		OUR QUOTE NUMBER	
FRP MANHOLE & FLUME				LUKE		7931	
LN	QUANTITY	UNIT	ITEM NO.	DESCRIPTION	UNIT PRICE	AMOUNT	
18	1	EA	99-WAR	PIPE CONNECTIONS, NEOPRENE BOOTS & SS CLAMPS ALTERNATE # 3 JUST FLUME: 1" OR 2" PARSHALL FLUME WITH TRANSITIONS, PIPE CONNECTIONS NEOPRENE BOOTS, & SS CLAMPS (WITHOUT MANHOLE) ABOVE TWO ITEMS ADDED PER MAY 20, 2009 E-MAIL REQUEST	3444.00	3444.00	
NOTES:					SUBTOTAL	24954.00	
					FRGT	0.00	
					MISC	0.00	
					TAX	0.00	
					<b>TOTAL AMOUNT</b>	<b>24954.00</b>	

**SECTION 11208****METERING MANHOLES****PART 1 GENERAL****1.1 SECTION INCLUDES**

- A. Metering manholes.

**1.2 RELATED SECTIONS**

- A. Section 03300 - Cast-In-Place Concrete.
- B. Section 11206 - Palmer-Bowlus Flumes.
- C. Section 11207 - Parshall Flumes.
- D. Section 11286 - Slide Gates and Guides.

**1.3 REFERENCES**

- A. ANSI/AWWA F101 - Contact Molded, Fiberglass-Reinforced Plastic Wash Water Troughs and Launderers; American Water Works Association.
- B. ASTM D 256 - Standard Test Methods for Determining the Pendulum Impact Resistance of Notched Specimens of Plastics.
- C. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.
- D. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- E. ASTM D 2583 - Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
- F. ASTM D 3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes.

**1.4 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- B. Product Data: Test results of fiberglass reinforced plastic laminate.
- C. Shop Drawings: Show:
  - 1. Critical dimensions, jointing and connections, fasteners and anchors.
  - 2. Materials of construction.
  - 3. Sizes, spacing, and locations of structural members, connections, attachments, openings, fasteners, and loads.
- D. Manufacturer's installation instructions.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Store products indoors and protect from construction traffic and damage.

**PART 2 PRODUCTS****2.1 MANUFACTURER**

- A. Provide products manufactured by Warminster Fiberglass Company; P.O. Box 188, Southampton PA 18966-0188; **As distributed by PEP 50 Tannery Road Branchburg, NJ 08876**  
**Phone: 800-407-3726, Fax 908-534-5287 www.pep-plastic.com,**
- B. Requests for substitution will be considered in accordance with provisions of Section 01600.
- C. Substitutions: Not permitted.

**2.2 METERING MANHOLES**

- A. Fiberglass Laminate:
  - 1. Tensile strength (ASTM D 638): 14,000 psi.
  - 2. Flexural strength (ASTM D 790): 25,000 psi.
  - 3. Flexural modulus (ASTM D 790): 1,000,000 psi.
  - 4. Impact, notched, Izod (ASTM D 256): 15 ft-lb/in.
  - 5. Barcol hardness (resin-rich surface) (ASTM D 2583): 40 minimum, average.

6. Coefficient of thermal expansion, average (ASTM D 696): 0.000105 in/in/degree F.
7. Test coupons prepared in accordance with ASTM D 618.
8. Chemical resistance: Comply with ANSI/AWWA F101, Type II classification.
- B. Construction: Fiberglass reinforced plastic, complying with ASTM D 3753; factory-assembled, ready for installation except for field-installed equipment.
  1. Interior surface smooth and resin rich; free of pits, porosity, cracks, crazing, and dry glass.
  2. Exterior laminate: 1/2 inch thick, minimum, consisting of polyester resin with 25 percent minimum glass content.
  3. Cover: 1/4 inch thick fiberglass, hinged one side, with hasp for locking; provide soft neoprene sponge gasket for sealing.
  4. Inlet and outlet pipes: Integrally molded to manhole with laminates on both the interior and exterior surfaces; inlet and outlet boots with stainless steel straps to diameter of inlet and outlet pipe.
  5. Access ladder: Fiberglass; bolted to manhole wall.
  6. Mounting flange: 4 inch, integrally molded around circumference of manhole for anchoring to concrete pad.
  7. Gasket: 1/2 inch thick neoprene sponge pad.
  8. Size: 48 inch diameter, with 51 inch diameter cover.
  9. Size: Reduced manway, 21 inch diameter opening.
10. Size: Reduced manway, 24 inch diameter opening.
  11. Size: As indicated on drawings.
  12. Height: As indicated on drawings.
- C. Flume Assemblies: Laminate flumes into manholes to form a totally watertight assembly.
  1. For flumes longer than manhole diameter, cover flume with fiberglass plate of sufficient strength laminated to make watertight seal and to withstand loads when backfilled.
- D. Accessories:
  1. Anchor bolts: Type 304 stainless steel.
  2. Full open, hinged cover with locking latch.
  3. Staff gauge graduated in 50 divisions per foot mounted inside flume.
  4. Staff gauge graduated in inches mounted inside flume.
  5. Stilling well, 10 inches diameter.
  6. Bubbler tube.
  7. Tracks for probes, molded in.
  8. Bushing for ultrasonic transponder mounting.
  9. Bulkhead fittings.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify that dimensions are correct and project conditions are suitable for installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Ensure that products are installed plumb and true, free of warp or twist, within tolerances specified by the manufacturer and as indicated in the contract documents.
- C. Verify that concrete slab is level and smooth trowelled. Level with grout if necessary. Ensure that piping is self-supported by bedding.
- D. Handle manhole using slings of nylon or similar fabric. Do not drop or impact.
- E. Place sponge pad on concrete slab. Drill holes in accordance with template for stainless steel anchor bolts.
- F. Lower manhole onto pad and install anchor bolts.
- G. Check level of flume in both planes, and adjust as required.
- H. Connect piping. Do not lubricate neoprene boots. Secure with stainless steel clamps.
- I. Backfill with pea gravel, 1/4 inch to 3/4 inch diameter, specified in Division 2,

using uniform lifts not exceeding 12 inches.  
J. Where cut holes are required, seal as directed by the Engineer.

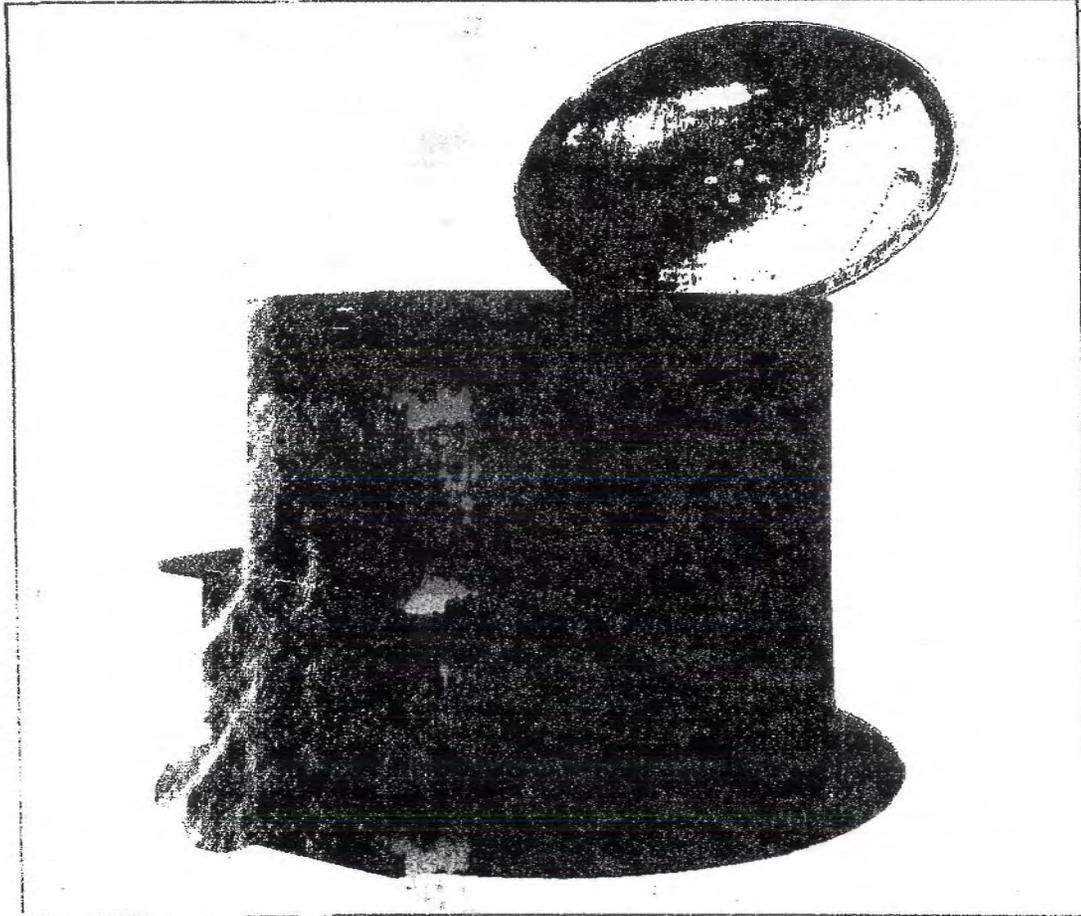
**3.3 ADJUST AND CLEAN**

- A. Clean surfaces in accordance with manufacturer's instructions.
- B. Remove trash and debris, and leave the site in a clean condition.

END OF SECTION

Print Page

**Fiberglass Reinforced Plastic Metering Manholes**



WFMM1000  
SPECIFICATION

