STOP INFILTRATION!

I&I BARRIER

US Patent No. 6,986, 226

The I&I Barrier is designed to stop water from leaking into your manholes through the grade rings. Many tests have proven that an excess amount of ground water is being infiltrated through the cone section at the chimney. That water is then processed at the treatment plants, which costs municipalities money, especially when the snow melts or it rains. The I&I Barrier is made of polyethylene, which is weather and puncture resistant. The I&I Barrier forms an interior wall that stops water from infiltrating into the manhole. Once installation is complete, there is no need for further adjustments since there are no bands used to hold it in place.

CITIES THAT HAVE BENEFITED FROM THE I&I BARRIER

West Fargo, ND

For five years now the City of West Fargo has used the I&I Barrier to stop unwanted water coming into the manholes. Excessive ground water filtering into the sanitary manholes has been a problem in the West Fargo area due to massive flooding in the spring and high ground water tables. The I&I Barrier has stopped this water from infiltrating into the sanitary manholes and kept it back out through the soil where it belongs. We have found several advantages to the I&I Barrier like:

- *Easy installation, no learning curve*
- *Stops water and sediment infiltration through the adjusting rings.*
- *Helps keep manholes clean during construction, keeps mortar mortar from falling into manholes.*
- *Easy to inspect*
- *Easily adjusted for different road variations. Bottom line: It saves contractor, engineer and cities time and money!*

We are happy with the I& I Barrier and will continue to use it for years to come!

Brock M. Storrusten, P.E.
City of West Fargo, ND

Rochester, MN

Four years ago, the City of Rochester, Minnesota began to rehabilitate their manholes and chose to install the I&I Barrier from Strike Products. Mike Viker, Crew Chief of Sanitary Sewer Collection System, and his crew like the easy installation process and the ability to make adjustments for each manhole. They use the I&I Barrier in the roadway as it allows for expansion. On a good day they are able to install 28 barriers. “The I&I Barrier is working for what it was designed to do and we are noticing the difference,” Viker said.

According to Viker, The City of Rochester had a study done by a consulting engineer firm that told them the majority of I&I coming into the manholes is from the adjusting rings. “So by removing the old adjusting rings and installing the I&I Barriers to the cone section and replacing the rings,” he said, “we get the most bang for our buck.”

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120 E. 15th Avenue • N. Kansas City, MO 64116
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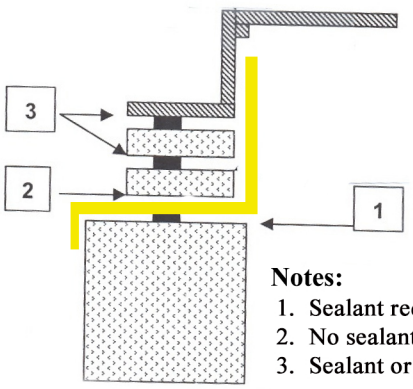
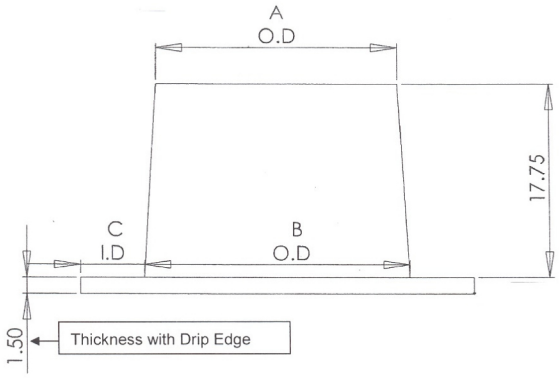


Notes:

1. Sealant required here
2. No sealant for drainage
3. Sealant or grout

SIZE	A	B	C
24/5	21.75”	23.875”	5.75”
24/6.5	21.75”	23.875”	7.25”
24/7	21.75“	23.875”	7.75“
24/8	21.375”	23.875”	9.25”
26/6	24.5”	25.75”	6.5”
27/5	24.75”	26.75”	6.25”
30/8	27.375”	29.25”	9”
32/8	29.75”	31.5”	9.5”
24” Tall			
24/7	21.75“	23.875”	7.75”
27/5	24.75”	26.75”	6.25”
24/8	21.375”	23.875”	9.25”



MATERIALS

PROPERTY	TEST METHOD	VALUE
Material	ASTM D-1248	MDPE
Melt Index	ASTM D-1238	4.5
Density	ASTM D	.938
Tensile strength at yield, psi	ASTM D-638	2800
Elongation at break, %	ASTM D-638	400
Flexural Modulus, tangent, psi	ASTM D-790	115,000
ESCR	ASTM D-1693	1000
UL-94 @ .060 & @ .120 thickness	UL-94	HB
Deflection Temp, 88 psi, °C	D-648	83
Deflection Temp, 264 psi, °C	D-648	42
Low Temp Impact, -40°C, ft-lb	ARM	68

This plastic resin produces a product that has excellent low temperature impact resistance, excellent environmental stress crack resistance and it is highly resistant to degradation from sunlight. UV resistance was tested in accordance with SAE Test Procedure J-1960. The material shows an increase in elongation at break values and 87% retention of tensile strength after 10,000 hours of exposure.

PERFORMANCE SPECIFICATION:

As there are no performance criteria specific to the I/I Barrier, we are defaulting to Federal Specification A-A-60005 dated March 2, 1998, which applies to Manhole Frames, Covers, Gratings, Steps, Sump and Catch Basins. Section 3.3.1 Traffic Loads, calls for a transverse proof-load strength of 25,000 pounds. Proof-load testing is being done in accordance with AASHTO Designation M-306 Standard Specification for Drainage Structure Castings. This specification outlines the test and required results as follows:

1) A 40,000-pound test load is concentrated on a 9 x 9 inch area of the product.
2) The load is maintained for one minute
3) Upon removal, the test sample is inspected. Any visible cracks or permanent deformation shall be cause for failure.

TESTING PROCEDURE

Seven test samples, 9” x 9” x 0.2” ± were prepared for testing. Six of the samples were loaded to 40,000 lbs. for one minute per AASHTO specification M-306. The seventh sample was loaded to 100,000 lbs. for three minutes. The samples were measured for thickness at four locations to the nearest 0.001” before and after loading for visible signs of cracking or permanent deformation. Test loading was performed using a Forney Model No. LT-810 load tester with a F96 load indicator, calibrated on January 16, 2002. Measuring was performed with a Mitutoyo 6” digital caliper Model CD 6BS, calibrated on April 4, 2002.

TESTING RESULTS

All seven samples showed no change in thickness and no visible cracking or obvious permanent deformation. Based on the above testing done in an independent test facility, we offer the following statement:

A 25,000 pound load distributed over the 533 square inch area of the I/I Barrier flange represents a 47 pounds per square inch load. Passing the proof-load testing of AASHTO Designation M-306 represents a load bearing capacity in excess of 494 pounds per square inch. When we multiply the 494 pounds per square inch value over the 533 square inches of bearing surface, we have a product load capacity of over 250,000 pounds or 125 tons. It is easy to see that 25,000 pounds will not be a problem. The testing done to the 100,000 pound loading more than verifies this correlation. In addition, backfilling around the manhole chimney structure and encapsulation of the cover frame in the roadbed prevent any lateral forces being transferred to the I/I Barrier. AMERICAN ENGINEERING TESTING, INC., ST. PAUL, MN