



## CULVERT PIPE LINER MGS-92-11M

**1.0 Description.** These specifications cover the purchase of polyethylene pipe liners (PPL) for lining existing culvert pipes for maintenance purposes.

### **2.0 Materials.**

**2.1 Liner Pipe.** Pipe shall be PE or PVC and shall comply with the requirements for the Type listed.

**2.1.1 Type I.** Type I PPL shall comply with the requirements of ASTM F 714 (Max. DR 32.5).

**2.1.2 Type II.** Type II PPL shall be manufactured from material meeting ASTM D 3350 Cell Classification 345464C and shall comply with the dimensional requirements of Table 1 of this specification or Table 2 if approved by the engineer.

**2.1.3 Type III.** Type III PPL shall comply with the requirements of ASTM F894 open profile, Class RSC 100 or RSC 160.

**2.1.4 Type IV.** Type IV PVC pipe shall meet the specifications of ASTM F-949, except that the PVC Pipe & Fittings shall be made of PVC compound having a minimum cell classification of 12454B in accordance with ASTM D 1784. The joining method for PVC pipe shall be by elastomeric material meeting the requirements of ASTM F-949. (Note: Clearance requirements limits the minimum size of Type IV to a 12" diameter and ASTM F-949-95a currently limits the maximum size to a 36" diameter.)

**2.2** The dimensions of PPL shall meet the requirements of Table 3 of this specification. The length shall not be less than that specified in the order.

**2.3** The PPL shall be capable of being joined into a continuous length by an approved interlocking method formed into the ends of the liner. Unless otherwise specified, the joints shall be soil-tight with no gaskets required.

**2.4** Unless otherwise specified in the bid request, each PPL shall have a male and a female end.

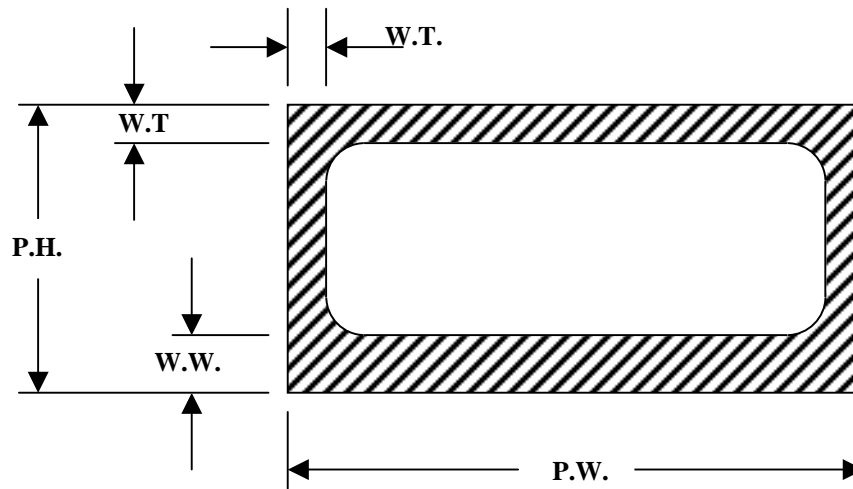
**2.5** Each length of pipe furnished shall be permanently marked by the manufacturer with the manufacturer's name, and applicable ASTM designation. The marking shall be such that it will not be obliterated during handling, shipment or placement.

**3.0 Ordering Information.** The inside diameter of the existing pipe to be lined and the lengths of PPL are to be shown in the order. If necessary, specific types may be ordered.

**4.0 Certification.** The supplier shall furnish a manufacturer's certification at destination stating that the PPL was manufactured and tested in accordance with the listed specifications and was found to meet the requirements of these specifications. The supplier shall further submit a statement stating that any PPL found to not comply with these specifications will be replaced with satisfactory material at the earliest date possible.

**5.0 Acceptance.** Inspection of PPL may be made at the point of manufacturer, intermediate storage points, or destination at the discretion of the department.

**TYPE II PPL**



**Table 1**  
**Standard Pipe Dimensions**

Nominal I.D. PPPL Size (inches) <sup>A B</sup>	Average O.D. (inches) <sup>A</sup>	Average Profile Height (P.H.) (inches) <sup>A</sup>	Average Profile Width (P.W.) (inches) <sup>A</sup>	Minimum Waterway Wall (W.W.) (inches)	Minimum Wall Thickness (W.T.) (inches)
10.000	11.200	0.600	0.740	0.070	0.060
12.000	13.470	0.740	0.920	0.080	0.070
13.500	15.360	0.930	1.160	0.090	0.080
15.000	16.850	0.930	1.160	0.090	0.080
18.000	20.240	1.120	1.400	0.110	0.100
21.000	23.650	1.330	1.660	0.130	0.110
24.000	27.060	1.530	1.910	0.140	0.120
27.000	30.340	1.720	2.150	0.160	0.140
30.000	33.820	1.910	2.390	0.180	0.150
36.000	40.650	2.330	2.910	0.210	0.180
40.000	45.200	2.600	3.250	0.230	0.200
42.000	47.470	2.740	3.420	0.240	0.210

<sup>A</sup> These dimensions shall be determined by taking at least three (3) measurements and averaging the results.

<sup>B</sup> A tolerance of  $\pm 1$  percent will be permitted on the nominal I.D. measurements

**Table 2**  
**Low Profile Pipe Dimensions**

Nominal I.D. PPPL Size (inches) <sup>A B</sup>	Average O.D. (inches) <sup>A</sup>	Average Profile Height (P.H.) (inches) <sup>A</sup>	Average Profile Width (P.W.) (inches) <sup>A</sup>	Minimum Waterway Wall (W.W.) (inches)	Minimum Wall Thickness (W.T.) (inches)
12L	13.20	0.600	0.740	0.080	0.070
15L	16.47	0.736	0.920	0.090	0.080
18L	19.85	0.925	1.160	0.100	0.090
21L	23.24	1.122	1.400	0.120	0.110
24L	26.85	1.327	1.660	0.140	0.120
27L	30.06	1.528	1.910	0.150	0.130
30L	33.43	1.717	2.150	0.170	0.150
36L	39.82	1.810	2.390	0.190	0.160
40L	44.65	2.323	2.910	0.230	0.200
42L	47.20	2.598	3.250	0.240	0.210

<sup>A</sup> These dimensions shall be determined by taking at least three (3) measurements and averaging the results.

<sup>B</sup> A tolerance of ± 1 percent will be permitted on the nominal I.D. measurements.

**Table 3**  
**Pipe Liner Dimensions**

Existing Pipe Size (ID) (inches)	Clearance *		Liner Maximum (inches)	ID Minimum (inches)
	Minimum (inches)	Maximum (inches)		
12.000	0.500	2.000	9.000	
15.000	0.500	3.000	11.000	
18.000	0.500	3.000	13.000	
21.000	0.500	3.000	15.000	
24.000	0.500	4.000	17.000	
27.000	1.000	4.000	20.000	
30.000	1.000	4.000	22.000	
33.000	1.000	4.000	24.000	
36.000	1.000	4.000	26.000	
42.000	1.000	6.000	30.000	
46.000	2.000	6.000	33.000	
48.000	2.000	6.000	35.000	
54.000	2.000	8.000	39.000	
60.000	2.000	9.000	43.000	
72.000	2.000	10.000	52.000	

\* Clearance is the difference between the inside diameter (ID) of the existing pipe and the outside diameter (OD) of the liner.