



POLYETHYLENE CULVERT PIPE FIELD SECTION 1047 APPENDIX A POLYETHYLENE PIPE (HDPE) PIPE INSPECTION GUIDE

This guide will assist in the inspection of all types and configurations of Polyethylene (HDPE) pipe, couplings and fittings. Answer each question and take the action indicated for the answer given. If no condition is provided for a particular answer, move on to the next question. **IT IS THE RESPONSIBILITY OF THE INSPECTOR TO CONFIRM THAT THIS INSPECTION GUIDE IS IN ACCORDANCE WITH CURRENT SPECIFICATION.**

Every lot should be visually inspected. The lot that appears to have the defects, or a lot selected at random if all lots appear to be of equal quality, shall be inspected in greater detail to generally establish the Quality Control practices of the manufacturer. And at least one pipe per size offered in the lot shall be inspected in detail using this inspection guide. The manufacturer may provide the definition of a lot. If no definition is provided, a lot will be one day's production. Or, if at the project, a lot shall be the entire quantity shipped.

If this inspection guide is used to inspect a rejected pipe, it shall be submitted with the notification to the manufacturer of the failure to meet specification.

Has any of the material or pipe included in this lot been rejected during a previous inspection visit?
If Yes, the entire lot is unacceptable. Yes No

Is this manufacturer approved for production of HDPE pipe? (refer to FS-1047, Table 1)
If No, stop, the pipe is unacceptable. Yes No

Is the pipe accompanied by a bill of lading or delivery receipt at this location?
If No, stop, the pipe is unacceptable. Yes No

Does the bill of lading or delivery receipt contain an itemized list of the sizes and lengths of pipe?
If No, stop, the pipe is unacceptable. Yes No

Does the bill of lading or delivery receipt contain a MoDOT sample ID or is it accompanied by a Material Shipping Report Form?
If No, stop, the pipe is unacceptable. Yes No

Is the pipe marked (in accordance with AASHTO M 294) with the following: the manufacturer's name or trademark?
If No, stop, the pipe is unacceptable. Yes No

the nominal pipe size?
If No, stop, the pipe is unacceptable. Yes No

the designation of "AASHTO M 294"?
If No, stop, the pipe is unacceptable. Yes No

the Plastic Pipe Institute (PPI) seal?
If No, stop, the pipe is unacceptable. Yes No



the plant designation code? If No, stop, the pipe is unacceptable.	Yes	No
the date of manufacture or an appropriate code? (If unsure, contact the manufacturer.) If No, stop, the pipe is unacceptable.	Yes	No
Do the markings repeat on the pipe on intervals not exceeding 10 feet? If No, stop, the pipe is unacceptable.	Yes	No
Are there any visible cracks, holes, creases, foreign materials, or other injurious defects that would be an indication of poor workmanship? If Yes, stop, the pipe is unacceptable.	Yes	No
Does the pipe have either, corrugated surfaces inside and out, or a corrugated surface outside and a smooth inner liner? If No, stop, the pipe is unacceptable (unless otherwise specified).	Yes	No
Are the color, density, and other physical properties uniform along the length of the pipe? If No, stop, the pipe is unacceptable.	Yes	No
Are the ends of the pipe cut squarely and cleanly (where applicable)? If No, stop, the pipe is unacceptable.	Yes	No
The average inside diameter shall be measured using a tapered plug gage and the procedure set forth in ASTM D 2122. In the event that a tapered plug gage is not available, the measurement shall be made using a suitable device accurate to at least 1/8" (standard tape measure). Eight measurements should be taken equally spaced around the circumference of the pipe. This should be done on two sections of the pipe (upstream and downstream ends). Average these 16 measurements to obtain the average inside diameter.		
Is the average inside diameter within the specified tolerance of the nominal pipe size? (refer to Table 3 or Table 4, attached) If No, stop, the pipe is unacceptable.	Yes	No
The wall thickness is measured using a cylindrical or ball anvil tubing micrometer (preferably accurate to within 0.001 in.). A minimum of 8 measurements are made at closely spaced intervals to ensure that the minimum and maximum wall thicknesses have been determined. The values are then averaged to obtain the average wall thickness.		
Is the wall thickness greater than or equal to the corresponding minimum specified wall thickness? (refer to Table 1 or Table 2, attached) If No, stop, the pipe is unacceptable.	Yes	No
Has 10 percent of the pipe in the same lot of pipe been rejected? If Yes, stop, the entire lot of pipe is unacceptable.	Yes	No



Couplings and Fittings (where applicable)

Are the couplings for fittings made of the same base material as the pipe?

If No, stop, the couplings or fittings are unacceptable.

Yes No

Do the corrugations of the couplings or fittings have the same corrugation configuration in the pipe ends that are being connected?

If No, stop, the couplings or fittings are unacceptable.

Yes No

Does the coupling or fitting reduce the inside diameter of the pipe being joined by more than 1/2"?

If Yes, stop, the coupling or fitting is unacceptable.

Yes No

If the coupling is a "split coupling," does it engage at least two full corrugations?

If No, stop, the coupling is unacceptable.

Yes No

Is the fitting length within 1/2" of the manufacturer's specified dimension?

If No, stop, the fitting is unacceptable.

Yes No

Do the fittings noticeably reduce or impair the overall integrity or function of the pipe line?

If Yes, stop, the pipe is unacceptable.

Yes No



TABLE 1	
Minimum Wall Thickness (English)	
Nominal Size of Pipe (in.)	Wall Thickness (in.)
12	0.04
15	0.04
18	0.05
21	0.06
24	0.06
27	0.06
30	0.06
36	0.07
42	0.07
48	0.07
54	0.08
60	0.08

TABLE 2	
Minimum Wall Thickness (SI)	
Nominal Size of Pipe (mm)	Wall Thickness (mm)
300	0.9
375	1.0
450	1.3
525	1.5
600	1.5
675	1.5
750	1.5
900	1.7
1050	1.8
1200	1.8
1350	2.0
1500	2.0



TABLE 3				
Diameter Dimensional Tolerances (ENGLISH)				
Specified Inside Diameter, Inch	Lower Tolerance, Inch	Lower Tolerance, mm^a	Upper Tolerance, Inch	Upper Tolerance, mm^a
12	11 13/16	300	12 17/32	318
15	14 25/32	375	15 11/16	398
18	17 23/32	450	18 13/16	478
21	20 11/16	525	21 15/16	557
24	23 5/8	600	25 3/32	637
27	26 19/32	675	28 7/32	717
30	29 9/16	751	31 11/32	796
36	35 15/32	901	37 15/32	952
42	41 3/8	1051	43 15/32	1104
48	47 9/32	1201	49 15/32	1257
54	53 3/16	1351	55 15/32	1409
60	59 3/32	1501	61 15/32	1561

^a The metric dimensions have been hard converted from their English counterparts.

TABLE 4				
Diameter Dimensional Tolerances (METRIC)				
Specified Inside Diameter, mm	Lower Tolerance, mm	Lower Tolerance, Inch^a	Upper Tolerance, mm	Upper Tolerance, Inch^a
300	296	11 5/8	314	12 11/32
375	369	14 17/32	392	15 7/16
450	443	17 7/16	470	18 1/2
525	517	20 3/8	549	21 19/32
600	591	23 9/32	627	24 11/16
675	665	26 3/16	705	27 25/32
750	739	29 3/32	784	30 7/8
900	887	34 29/32	937	36 7/8
1050	1034	40 23/32	1087	42 13/16
1200	1182	46 17/32	1237	48 11/16
1350	1330	52 11/32	1387	54 5/8
1500	1478	58 5/32	1537	60 1/2

^a The English dimensions have been hard converted from their metric counterparts.

