Deflection Lag Factor (D_L)

This represents the relaxation of the pressure from sidefill over time resulting in further deflection (ovalisation) of the pipe. The values are given in BS EN 1295 Table NA.6 reproduced in Table A2-4.

Flexible and semi-rigid pipe embedment properties								
Embedment class as Figure A2-1 and deflection coefficient K_x	Compaction M_p	Deflection lag factor D_L[2]	Strain factor Df for various pipe stiffness[1]					
	%		KN/m^2					
			1.25	2.5	5.0	10	15	30 or more
Class S1 K_x = 0.083	Uncompacted	1.5	4.7	4.5	4.3	4.0	3.75	3.0
	80	1.25	4.7	4.5	4.3	4.0	3.75	3.0
	85	1.0	4.7	4.5	4.3	4.0	3.75	3.25
	90	1.0	4.7	4.5	4.3	4.0	3.75	3.5
	95	1.0	-	-	-	-	3.75	3.5
Class S2 K_x = 0.083	Uncompacted	1.5	4.7	4.5	4.3	4.0	3.75	3.0
	80	1.25	4.7	4.5	4.3	4.0	3.75	3.0
	85	1.0	4.7	4.5	4.3	4.0	3.75	3.25
	90	1.0	4.7	4.5	4.3	4.0	3.75	3.5
	95	1.0	-	-	-	-	3.75	3.5
Class S3 K_x = 0.100	85	1.5	6.2	5.5	4.75	4.25	4.0	3.25
	90	1.25	7.75	6.6	5.5	4.7	4.25	3.5
	95	1.0	-	-	-	-	4.75	3.5
Class S4 K_x = 0.100	85	1.5	6.2	5.5	4.75	4.25	4.0	3.5
	90	1.25	7.75	6.6	5.5	4.7	4.25	3.5
	95	1.0	-	-	-	-	4.75	3.5
Class S5 K_x = 0.100	85	3.0	-	-	-	-	4.0	3.5
	90	2.0	-	-	-	-	4.25	3.5
	95	1.25	-	-	-	-	4.5	3.5
Class B1 K_x = 0.083	85	1.5	-	-	-	5.0	4.0	3.5
	90	1.25	-	-	-	5.5	4.25	3.5
Class B2 K_x = 0.083	85	2.0	-	-	-	5.5	4.25	3.5
	90	1.75	-	-	-	6.0	5.0	3.5

1) Pipe stiffnesses referred to in this table are initial values
2) Where the Consultant can be certain that initial pressurization will take place within one year of backfilling, a value of 1.0 may be taken for the deflection lag factor.

NOTE 1. For construction details of embedment classes see Figure A2-1.
NOTE 2. M_P indicates modified Proctor density and corresponds to the heavy compaction test in BS 1377.

Table A2-4 – Flexible and Semi-rigid Pipe Embedment Properties

Pressure from Earth Loading

This is given by:

$$\mathbf{Pe = \gamma H}$$

Where:

γ = density of backfill (kN/m^3), normally taken as 20kN/m^3