

# Bonded system - 80-90° L-bends with foam pads

calculations according to Design Manual chapter 4

LOGSTOR

Version: 1.0.4

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## Conditions

Flow temperature, T <sub>f</sub>	120	°C
Installation temperature, T <sub>ins</sub>	10	°C
Soil cover, H	0.9	m

Insulation class **Series 1**

## Steel material properties

Expansion coefficient, $\alpha$	0.0000123	°K <sup>-1</sup>
Modulus of elasticity, E	207,143	MPa

## Soil parameters

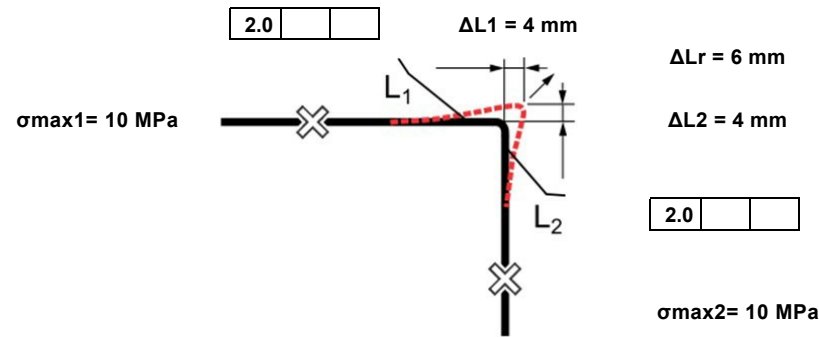
Soil density, $\rho$	19	kN/m <sup>3</sup>
Soil friction angle, $\phi$	32.5	°
Friction coefficient, $\mu$	0.40	

## Example

Nominal size	DN 65	
Steel pipe diameter, d	76.1	mm
Wall thickness, s	2.9	mm
Casing diameter, D	140	mm

Dist. to anchor point, L1  
Dist. to anchor point, L2

3
3



## Multiple calculations

Input				Output													
Node no.	L1	L2	Nominal size	d	D	ΔL1	F1 min	Foam pads for ΔL1			ΔL2	F2 min	Foam pads for ΔL2			ΔLr	Number of layers
	m	m		mm	mm	mm	m	1	2	3	mm	m	1	2	3	mm	
C7.1 C7.2 C10.1 0 0 0 0 0 0 0	2	2	DN 25	33.7	90	2.7	1.1	1.5			3	1.1	1.5			4	1
	2	3	DN 25	33.7	90	2.7	1.1	1.5			4	1.2	1.5			5	1
	4	2	DN 25	33.7	90	5.2	1.3	1.5			3	1.1	1.5			6	1
	9	5	DN 32	42.4	110	11.1	1.6	2			6	1.5	1.5			13	1
	5	3	DN 32	42.4	110	6.5	1.5	1.5			4	1.3	1.5			8	1
	3	7	DN 32	42.4	110	4.0	1.3	1.5			9	1.6	2			10	1
	3	2	DN 40	48.3	110	4.0	1.4	1.5			3	1.3	1.5			5	1
	2	9	DN 40	48.3	110	2.7	1.3	1.5			11	1.8	2			12	1
	9	1	DN 40	48.3	110	11.3	1.8	2			1	1.1	1.5			11	1
	4	5	DN 40	48.3	110	5.2	1.5	1.5			6	1.6	2			8	1

See LOGSTOR Design Manual:

<https://www.logstor.com/documentation>