

Contents

Foreword

1	Introduction, scope of report	1
1.1	General	1
1.2	Lessons learned	3
1.3	Scope of report	4
2	Terms, definitions and abbreviations	6
3	General and design/detailing considerations	11
3.1	General considerations	11
3.2	Design considerations	20
3.3	Detailing considerations	42
4	Considerations for installation and use on site	51
4.1	Prior to installation	51
4.2	During installation and concreting	57
4.3	After concreting	60
5	Material requirements	62
5.1	General	62
5.2	Material specification, properties and acceptance criteria for PP and PE	62
5.3	Additional general material requirements	67
5.4	Material specifications for other polymers	67
5.5	Background information on specified test methods	68
6	Component requirements	71
6.1	Dimensional requirements	71
6.2	Stiffness of duct	72
6.3	Longitudinal load resistance of duct system	73
6.4	Lateral load resistance of duct	74
6.5	Flexibility of duct system	74
6.6	Leak tightness of duct system	75
6.7	Concrete pressure on duct system	75
6.8	Wear resistance of duct	76
6.9	Wear resistance of duct under sustained load	78
6.10	Bond behaviour of duct	79
6.11	Precast segmental duct coupler system	79
6.12	Fracture resistance of duct system	80
6.13	Summary	81
7	System requirements	82
7.1	Leak tightness of anchorage-duct assembly	83
7.2	EIT performance of duct system	84
7.3	EIT performance of anchorage-duct assembly	85
7.4	Full-scale duct-system assembly	85

7.5	Leak tightness of assembled duct system	85
7.6	Summary	86
8	Approval	87
8.1	Approval process	87
8.2	Approval body	88
8.3	Basis for assessment	88
8.4	Documentation for approval	88
8.5	Testing for approval	89
9	Evaluation of conformity	92
9.1	General	92
9.2	Tasks and responsibilities of manufacturer	93
9.3	Tasks and responsibilities of independent body	95
10	References and standards	98
 Annexes		
A	Component assessment procedures	103
A.1	Dimensional requirements	105
A.2	Stiffness of duct	108
A.3	Longitudinal load resistance of duct system	111
A.4	Lateral load resistance of duct	115
A.5	Flexibility of duct system	119
A.6	Leak tightness of duct system	123
A.7	Concrete pressure on duct	126
A.8	Wear resistance of duct	129
A.9	Wear resistance of duct under sustained load	134
A.10	Bond behaviour of duct	137
A.11	Precast segmental duct coupler system	141
A.12	Fracture resistance of duct	144
B	System assessment procedures	148
B.1	Leak tightness of anchorage-duct assembly	150
B.2	EIT performance of duct system	153
B.3	EIT performance of anchorage-duct assembly	156
B.4	Full-scale duct-system assembly	159
B.5	Leak tightness of assembled duct system	163
C	Summary of requirements, methods of verification and acceptance criteria for polymer-duct systems – Recommended specification	165