

# DIN EN 1536:2015-10 (E)

## Execution of special geotechnical work - Bored piles (includes Amendment A1:2015)

<b>Contents</b>		<b>Page</b>
Foreword .....		4
<b>1</b>	<b>Scope .....</b>	<b>5</b>
<b>2</b>	<b>Normative references .....</b>	<b>10</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>11</b>
<b>4</b>	<b>Information needed for the execution of the work .....</b>	<b>16</b>
4.1	General .....	16
4.2	Special features .....	17
<b>5</b>	<b>Geotechnical investigation .....</b>	<b>18</b>
5.1	General .....	18
5.2	Specific requirements .....	18
<b>6</b>	<b>Materials and products .....</b>	<b>19</b>
6.1	Constituents .....	19
6.1.1	General .....	19
6.1.2	Bentonite .....	19
6.1.3	Polymers .....	20
6.1.4	Cement .....	20
6.1.5	Aggregates .....	20
6.1.6	Water .....	20
6.1.7	Additions .....	20
6.1.8	Admixtures .....	20
6.2	Support fluids .....	20
6.2.1	Bentonite suspensions .....	20
6.2.2	Polymer solutions .....	22
6.3	Concrete .....	22
6.3.1	General .....	22
6.3.2	Aggregates .....	23
6.3.3	Cement contents .....	23
6.3.4	Water/cement ratio .....	23
6.3.5	Admixtures .....	23
6.3.6	Fresh concrete .....	23
6.3.7	Sampling and testing on site .....	24
6.4	Grout .....	24
6.5	Reinforcement .....	25
6.6	Additional inserted products .....	25
<b>7</b>	<b>Considerations related to design .....</b>	<b>25</b>
7.1	General .....	25
7.2	Piles forming a wall .....	26
7.3	Excavation .....	27
7.4	Precast concrete elements .....	27
7.5	Reinforcement .....	27
7.5.1	General .....	27
7.5.2	Longitudinal reinforcement .....	28
7.5.3	Transverse reinforcement .....	28
7.6	Steel tubes and profile elements .....	29
7.7	Minimum and nominal cover .....	29

8	Execution .....	30
8.1	Construction tolerances .....	30
8.1.1	Geometrical tolerances .....	30
8.1.2	Installation tolerances for reinforcement cage .....	31
8.1.3	Tolerances for trimming .....	32
8.2	Excavation .....	32
8.2.1	General .....	32
8.2.2	Methods and tools .....	34
8.2.3	Excavations supported by casings .....	34
8.2.4	Excavations supported by fluids .....	36
8.2.5	Boring with continuous flight augers .....	36
8.2.6	Unsupported excavation .....	37
8.2.7	Enlargements .....	38
8.3	Reinforcement .....	38
8.3.1	General .....	38
8.3.2	Joints .....	38
8.3.3	Bending of reinforcement .....	38
8.3.4	Assembly of cages .....	39
8.3.5	Spacers .....	39
8.3.6	Installation .....	40
8.4	Concreting and trimming .....	40
8.4.1	General .....	40
8.4.2	Concreting in dry conditions .....	41
8.4.3	Concreting in submerged conditions .....	42
8.4.4	Extraction of casings .....	43
8.4.5	Permanent casings or linings .....	44
8.4.6	Concreting of continuous flight auger piles .....	44
8.4.7	Prepacked piles .....	45
8.4.8	Loss of immersion of tremie pipe or casing .....	45
8.4.9	Precast concrete elements and steel tubes or profiles .....	46
8.4.10	External grouting of bored piles .....	46
8.4.11	Trimming .....	47
8.5	Pile walls .....	47
9	Supervision, testing and monitoring .....	48
9.1	Construction controls .....	48
9.2	Bored pile testing .....	49
9.2.1	General .....	49
9.2.2	Pile load tests .....	49
9.2.3	Integrity tests .....	50
10	Records .....	50
11	Special Requirements .....	53
	Annex A (informative) Glossary .....	55
	Annex B (informative) Examples for details and frequencies for monitoring and testing .....	64
	Annex C (informative) Sample records .....	69
	Annex D (informative) Obligation of the provisions .....	76
	Bibliography .....	82