

# DIN EN 752:2017-07 (E)

## Drain and sewer systems outside buildings - Sewer system management

---

<b>Contents</b>		Page
European foreword.....		6
Introduction .....		8
<b>1</b>	<b>Scope.....</b>	<b>10</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>Objectives.....</b>	<b>14</b>
<b>4.1</b>	<b>General.....</b>	<b>14</b>
<b>4.2</b>	<b>Public health and safety.....</b>	<b>15</b>
<b>4.3</b>	<b>Occupational health and safety.....</b>	<b>15</b>
<b>4.4</b>	<b>Environmental protection .....</b>	<b>15</b>
<b>4.5</b>	<b>Sustainable development.....</b>	<b>16</b>
<b>5</b>	<b>Requirements .....</b>	<b>16</b>
<b>5.1</b>	<b>Functional requirements.....</b>	<b>16</b>
<b>5.1.1</b>	<b>Introduction.....</b>	<b>16</b>
<b>5.1.2</b>	<b>Protection from sewer flooding.....</b>	<b>18</b>
<b>5.1.3</b>	<b>Maintainability.....</b>	<b>18</b>
<b>5.1.4</b>	<b>Protection of surface receiving water bodies.....</b>	<b>18</b>
<b>5.1.5</b>	<b>Protection of groundwater .....</b>	<b>19</b>
<b>5.1.6</b>	<b>Prevention of odours and toxic, explosive and corrosive gases .....</b>	<b>19</b>
<b>5.1.7</b>	<b>Prevention of noise and vibration .....</b>	<b>19</b>
<b>5.1.8</b>	<b>Structural integrity and design working life.....</b>	<b>19</b>
<b>5.1.9</b>	<b>Watertightness.....</b>	<b>19</b>
<b>5.1.10</b>	<b>Sustainable use of products and materials.....</b>	<b>19</b>
<b>5.1.11</b>	<b>Sustainable use of energy.....</b>	<b>19</b>
<b>5.1.12</b>	<b>Maintaining the flow .....</b>	<b>19</b>
<b>5.1.13</b>	<b>Not endangering adjacent structures and utility services .....</b>	<b>19</b>
<b>5.1.14</b>	<b>Inputs quality.....</b>	<b>19</b>
<b>5.2</b>	<b>Determination of performance requirements for the drain and sewer system .....</b>	<b>20</b>
<b>5.2.1</b>	<b>Introduction.....</b>	<b>20</b>
<b>5.2.2</b>	<b>Environmental performance requirements.....</b>	<b>22</b>
<b>5.2.3</b>	<b>Hydraulic performance requirements .....</b>	<b>23</b>
<b>5.2.4</b>	<b>Structural requirements.....</b>	<b>24</b>
<b>5.2.5</b>	<b>Operational requirements.....</b>	<b>24</b>
<b>5.3</b>	<b>Design criteria.....</b>	<b>24</b>
<b>5.3.1</b>	<b>Introduction.....</b>	<b>24</b>
<b>5.3.2</b>	<b>Hydraulic design criteria.....</b>	<b>25</b>
<b>5.3.3</b>	<b>Environmental design criteria .....</b>	<b>27</b>
<b>5.3.4</b>	<b>Structural design criteria.....</b>	<b>28</b>
<b>5.3.5</b>	<b>Operational criteria.....</b>	<b>29</b>
<b>6</b>	<b>Integrated sewer system management.....</b>	<b>29</b>
<b>6.1</b>	<b>Introduction.....</b>	<b>29</b>
<b>6.2</b>	<b>Investigation .....</b>	<b>31</b>
<b>6.2.1</b>	<b>Introduction.....</b>	<b>31</b>
<b>6.2.2</b>	<b>Purpose of investigation.....</b>	<b>33</b>

6.2.3	Review of performance information .....	33
6.2.4	Determine the scope of the investigation .....	33
6.2.5	Review existing information .....	33
6.2.6	Inventory update .....	33
6.2.7	Hydraulic investigation .....	34
6.2.8	Environmental investigation.....	34
6.2.9	Structural investigation .....	34
6.2.10	Operational investigation.....	34
6.3	Assessment.....	35
6.3.1	Introduction.....	35
6.3.2	Assessment of the hydraulic performance.....	35
6.3.3	Assessment of environmental impact.....	36
6.3.4	Assess structural condition.....	36
6.3.5	Assess operational performance .....	36
6.3.6	Compare with performance requirements .....	36
6.3.7	Identify unacceptable impacts.....	36
6.3.8	Identify causes of performance deficiencies .....	36
6.4	Planning .....	37
6.4.1	Introduction.....	37
6.4.2	Develop integrated solutions .....	37
6.4.3	Assess solutions .....	38
6.4.4	Prepare action plans.....	39
6.5	Implementation.....	43
6.5.1	Introduction.....	43
6.5.2	Development of work programme .....	44
6.5.3	Development of work specification .....	45
6.5.4	Carrying out work.....	45
6.5.5	Measuring conformity.....	45
6.5.6	Review performance requirements and update plan .....	45
7	Health and safety .....	45
8	Design .....	47
8.1	General .....	47
8.2	Types of system .....	48
8.3	Physical layout.....	49
8.3.1	Preliminary investigations.....	49
8.3.2	Layout and profile .....	49
8.4	Hydraulic design .....	50
8.4.1	General .....	50
8.4.2	Foul drains and sewers.....	50
8.4.3	Surface water drain and sewer systems.....	50
8.4.4	Combined drain and sewer systems .....	51
8.5	Environmental considerations .....	52
8.5.1	General .....	52
8.5.2	Protection of surface receiving water bodies.....	53
8.5.3	Protection of groundwater.....	53
8.5.4	Prevention of septicity.....	53
8.5.5	Combined sewer overflows and surface water treatment.....	54
8.5.6	Surface water outfalls .....	55
8.5.7	Emergency overflows.....	55
8.6	Structural design.....	55
8.6.1	Introduction.....	55
8.6.2	Structural design of pipelines .....	56

8.6.3	Structural design of other components.....	56
8.6.4	Materials selection.....	56
8.7	Operational considerations.....	57
8.7.1	General.....	57
8.7.2	Control of inputs.....	57
8.7.3	Self-cleansing conditions.....	57
8.7.4	Access to drains and sewers.....	58
9	Construction.....	58
9.1	General.....	58
9.2	Pipelines.....	58
9.3	Ancillaries.....	58
9.4	Testing.....	59
10	Operation and maintenance.....	59
10.1	Introduction.....	59
10.2	Monitoring.....	60
10.3	Data requirements.....	61
10.4	Investigation and analysis of operational problems.....	61
10.5	Dealing with major incidents.....	62
10.6	Techniques for operation and maintenance of components.....	62
11	Qualifications and training.....	63
12	Sources of additional information.....	63
Annex A	(informative) Sources of additional information.....	64
A.1	National Standards Bodies.....	64
A.2	Austria.....	64
A.2.1	Regulatory Bodies.....	64
A.2.2	Other organizations.....	64
A.3	Denmark.....	64
A.3.1	Regulatory Bodies.....	64
A.3.2	Other organizations.....	65
A.4	Finland.....	66
A.4.1	Regulatory Bodies.....	66
A.4.2	Other organizations.....	66
A.5	France.....	66
A.5.1	Regulatory Bodies.....	66
A.5.2	Other organizations.....	67
A.6	Germany.....	67
A.6.1	Regulatory Bodies.....	67
A.6.2	Other organizations.....	68
A.7	Ireland.....	68
A.7.1	Regulatory Bodies.....	68
A.8	Italy.....	68
A.8.1	Regulatory Bodies.....	68
A.8.2	Other organizations.....	68
A.9	The Netherlands.....	69
A.9.1	Regulatory Bodies.....	69
A.9.2	Other organizations.....	69
A.10	Norway.....	70
A.10.1	Regulatory Bodies.....	70
A.10.2	Other organizations.....	70
A.11	Portugal.....	70
A.11.1	Regulatory Bodies.....	70

A.11.2	Other organizations .....	70
A.12	Sweden.....	71
A.12.1	Regulatory Bodies .....	71
A.12.2	Other organizations .....	71
A.13	Switzerland .....	71
A.13.1	Regulatory Bodies .....	71
A.13.2	Other organizations .....	72
A.14	United Kingdom .....	72
A.14.1	Regulatory Bodies .....	72
A.14.2	Other organizations .....	74
<b>Annex B (informative) Rehabilitation approaches.....</b>		<b>75</b>
<b>Annex C (informative) Operation and maintenance techniques.....</b>		<b>77</b>
C.1	Pipelines .....	77
C.1.1	General .....	77
C.1.2	Functional problems .....	77
C.1.3	Structural problems.....	77
C.2	Manholes and inspection chambers .....	78
C.3	Combined sewer overflows.....	78
C.4	Detention tanks.....	79
C.5	Separators, settling chambers and gullies.....	79
C.6	Pumping installations .....	79
C.7	Inverted siphons .....	79
C.8	Pest control.....	80
C.9	Making connections to existing drains and sewers.....	80
C.10	Control of disused drains and sewers.....	80
C.11	Control of building over or adjacent to sewers.....	80
<b>Annex D (normative) Physical layout of the system .....</b>		<b>82</b>
D.1	Preliminary investigations.....	82
D.1.1	General .....	82
D.1.2	Topography.....	82
D.1.3	Geotechnical survey.....	82
D.1.4	Groundwater .....	83
D.1.5	Existing drainage services.....	83
D.1.6	Other existing utility services .....	83
D.2	Layout and profile .....	83
D.2.1	Introduction.....	83
D.2.2	Layout .....	83
D.2.3	Accessibility .....	84
D.2.4	Depth.....	85
D.2.5	Need for pumping.....	85
D.2.6	Pumping installations .....	86
D.2.7	Drains and sewers near water abstraction areas .....	86
D.3	Access to drains and sewers .....	86
<b>Bibliography .....</b>		<b>88</b>