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Drain and sewer systems outside buildings - Design -  
Part 2: Hydraulic design

## EESTI STANDARDI EESSÕNA

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ICS 93.030

English Version

## Drain and sewer systems outside buildings - Design - Part 2: Hydraulic design

Réseaux d'évacuation et d'assainissement à l'extérieur  
des bâtiments - Conception - Partie 2 : Conception  
hydraulique

Entwässerungssysteme außerhalb von Gebäuden -  
Planung - Teil 2: Hydraulische Planung

This European Standard was approved by CEN on 30 July 2017.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

This document (EN 16933-2:2017) has been prepared by Technical Committee CEN/TC 165 “Wastewater engineering”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2018 and conflicting national standards shall be withdrawn at the latest by March 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard EN 16933, *Drain and sewer systems outside buildings — Design*, contains the following parts:

- Part 1: Physical design<sup>1)</sup>
- Part 2: Hydraulic design.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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<sup>1)</sup> Currently in preparation.

## Introduction

Drain and sewer systems are part of the overall wastewater system that provides a service to the community. This can be briefly described as:

- removal of wastewater from premises for public health and hygienic reasons;
- prevention of flooding in urbanised areas;
- protection of the environment.

The overall wastewater system has four successive functions:

- collection;
- transport;
- treatment;
- discharge.

Collection and transport of wastewater is provided by drain and sewer systems.

EN 752:2017 provides a framework for the design, construction, maintenance, operation and rehabilitation of drain and sewer systems outside buildings. This is illustrated in the upper part of the diagram in Figure 1. EN 752:2017 is supported by more detailed standards for the investigation, design, construction, organization and control of drain and sewer systems.

Investigation and assessment standards include:

- EN 13508, *Investigation and assessment of drain and sewer systems outside buildings*.

Design and construction standards include:

- EN 16932<sup>2)</sup>, *Drain and sewer systems outside buildings — Pumping systems*;
- EN 16933<sup>3)</sup>, *Drain and sewer systems outside buildings — Design*;
- EN 1295<sup>4)</sup>, *Structural design of buried pipelines under various conditions of loading*;
- EN 1610, *Construction and testing of drains and sewers*;
- EN 12889, *Trenchless construction and testing of drains and sewers*;
- EN 15885, *Classification and characteristics of techniques for renovation, repair and replacement of drains and sewers*.

Management and control standards include:

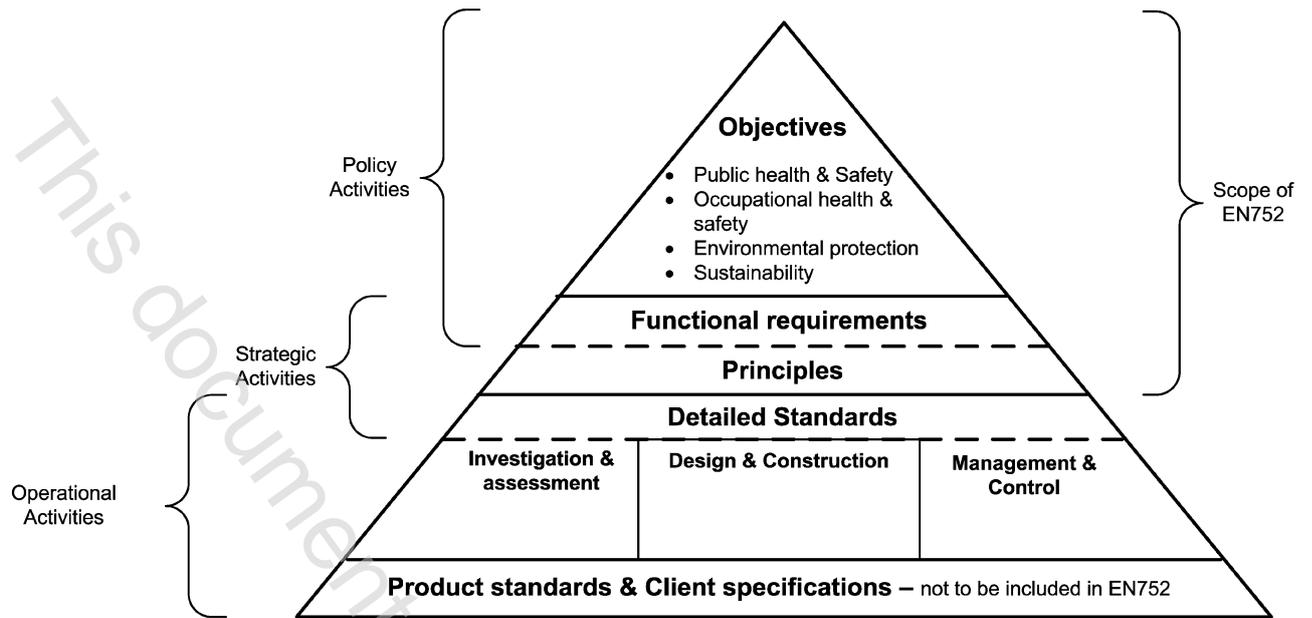
- EN 14654, *Management and control of operational activities in drain and sewer systems outside buildings*.

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<sup>2)</sup> Currently in preparation.

<sup>3)</sup> Currently in preparation.

<sup>4)</sup> Currently in preparation.



**Figure 1 — Relationship to EN 752:2017 and other drain and sewer standards [Source EN 752:2017]**

## 1 Scope

This European Standard specifies requirements for the design of drain and sewer systems outside buildings.

It is applicable to drain and sewer systems from the point where the wastewater leaves a building, roof drainage system, or paved area, to a point where it is discharged into a wastewater treatment plant or receiving water body.

This document specifies requirements for the hydraulic design of drain and sewer systems and the assessment of the capacity of existing drain and sewer systems.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 858-1, *Separator systems for light liquids (e.g. oil and petrol) — Part 1: Principles of product design, performance and testing, marking and quality control*

EN 858-2:2003, *Separator systems for light liquids (e.g. oil and petrol) — Part 2: Selection of nominal size, installation, operation and maintenance*

EN 1825-1, *Grease separators — Part 1: Principles of design, performance and testing, marking and quality control*

EN 1825-2:2002, *Grease separators — Part 2: Selection of nominal size, installation, operation and maintenance*

EN 16323:2014, *Glossary of wastewater engineering terms*

EN 752, *Drain and sewer systems outside buildings — Sewer system management*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16323, EN 752 and the following apply.

NOTE 1 Certain key definitions from EN 16323:2014 have been repeated below for clarity. The following additional terms used in this document are defined in EN 16323:

backdrop manhole;	catchment area;	combined sewer overflow;
combined system;	detention tank;	domestic wastewater;
drain;	dry weather flow;	extraneous flow;
foul wastewater;	gradient;	gravity system;
hydro-biological stress;	industrial wastewater;	infiltration (see Figure 2);
inspection chamber;	inverted syphon;	maintenance;
manhole;	outfall;	ramp manhole;
receiving water body;	rehabilitation;	relevant authority;
renovation;	repair;	replacement;
rising main;	runoff coefficient;	self-cleansing;
self-purifying capacity;	separate system;	septic wastewater;