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Sistemi za odvod odpadne vode in kanalizacijo zunaj stavb - Upravljanje in nadzor aktivnosti - 3. del: Čiščenje

Drain and sewer systems outside buildings - Management and control of activities - Part 3: Cleaning

Entwässerungssysteme außerhalb von Gebäuden - Management und Überwachung von Maßnahmen - Teil 3: Reinigung

Réseaux d'évacuation et d'assainissement à l'extérieur des bâtiments - Gestion et contrôle des activités opérationnelles - Partie 3: Curage

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Drain and sewer systems outside buildings - Management and control of activities - Part 3: Cleaning

Réseaux d'évacuation et d'assainissement à l'extérieur des bâtiments - Gestion et contrôle des activités opérationnelles - Partie 3: Curage

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 14654-3:2019) has been prepared by Technical Committee CEN/TC 165 "Wastewater Engineering", the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 14654-1:2014.

The changes to the text in this document are editorial and relate to the separation of the duplicated text. There are no technical changes.

EN 14654 consists of the following parts, under the general title *Drain and sewer systems outside buildings — Management and control of activities*:

— *Part 1: General*; (the present document)

— *Part 2: Rehabilitation*

— *Part 3: Sewer cleaning*

— *Part 4: Control of inputs*

Other parts, dealing with other activities, may be added later.

In drafting this part of EN 14654, account has been taken of other available standards, in particular EN 752, *Drain and sewer systems outside buildings*" and EN 13508 *Investigation and assessment of drain and sewer systems outside buildings*".

1 Scope

This document establishes requirements for the management and control of activities in drain and sewer systems outside buildings and specifies requirements for development and implementation of work programmes, and the selection of techniques.

This document covers the management and control of sewer cleaning.

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

Drains and sewers below buildings are included provided that they do not form part of the drainage system of the building.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN 1829-1, *High pressure water jet machines - Safety requirements - Part 1: Machines*

EN 1829-2, *High-pressure water jet machines - Safety requirements - Part 2: Hoses, hose lines and connectors*

EN 13508-1:2012, *Investigation and assessment of drain and sewer systems outside buildings - Part 1: General Requirements*

prEN 14654-1:2019 *Drain and sewer systems outside buildings — Management and control of activities — Part 1: General*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16323:2014, prEN 14654-1:2019 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

Note 1 to entry: Certain key definitions from EN 16323:2014 have been repeated below for clarity. The following additional terms used in this European Standard are defined in EN 16323:2014.

— drain

— foul wastewater

— sewer

— sewer system

— receiving water body

— surface receiving water body

— wastewater treatment plant

3.1 General

3.1.1
cleaning activities
removal or partial removal of settled deposits, attached deposits, roots and other obstacles from a drain or sewer system

3.1.2
degree of cleaning
extent to which complete removal of deposits is achieved

3.1.3
removal
extraction of deposits after collecting at the working area or the intentional use of the flow in the drain or sewer to carry the re-entrained solids to a specified point of extraction

3.1.4
self-cleansing
ability of the flow in a drain or sewer to carry away solid particles which would otherwise be deposited in the pipe

[SOURCE: EN 16323:2014, 2.2.1.13]

3.1.5
supernatant liquor
liquor in a tank lying above the deposited solids

[SOURCE: EN 16323:2014, 2.1.2.16]

3.1.6
wastewater
water composed of any combination of water discharged from domestic, industrial or commercial premises, surface run-off and accidentally any sewer infiltration water

[SOURCE: EN 16323:2014, definition 2.3.10.65]

3.2 Deposits

3.2.1
attached deposits
material attached to the wall of elements of the drain or sewer system by physical or chemical bonding

3.2.2
settled deposits
material deposited by gravity in the invert or benching of elements of the drain or sewer system

3.3 Cleaning methods

3.3.1
cleaning ball
spherical device, having an indented surface, designed to be carried through a drain or sewer by the flow to facilitate removal of sediments

3.3.2
combined jetting
simultaneous use of high-pressure water jetting equipment together with a suction action, to remove obstructions or sediments from drains or sewers

[SOURCE: EN 16323:2014, 2.2.1.10]

3.3.3
flushing
use of a temporary and substantially increased flow to facilitate the removal of obstructions or sediments from drains or sewers

[SOURCE: EN 16323:2014, 2.2.1.16]

3.3.4
jetting
use of water under defined conditions of pressure, through a nozzle

[SOURCE: EN 16323:2014, 2.2.1.18]

3.3.5
rodding
use of appropriate device on the end of flexible rods to facilitate the removal of obstructions (or sediments) from drains or sewers

[SOURCE: EN 16323:2014, 2.2.1.11]

3.3.6
scouring plate
device used to clean a drain or sewer by concentrating the flow into a small cross section thereby increasing the flow velocity

3.3.7
winching
use of a device pulled through a drain or sewer to facilitate removal of sediments (or obstructions)

[SOURCE: EN 16323:2014, 2.2.1.12]

4 General

Cleaning activities in drains and sewers can be carried out pro-actively, to prevent problems occurring or to clean a drain or sewer before particular operations (e.g. an inspection or renovation work) or reactively in response to problems that have occurred.

The requirements for pro-active cleaning can be identified through a rehabilitation plan, a maintenance plan involving periodic monitoring or as part of an integrated sewer system management plan in accordance with EN 752. Consideration shall also be given to the feasibility of preventing deposition of sediments for example by rehabilitation of the sewer.

This document applies the process described in EN 14654-1 for implementing cleaning activities in the integrated drain and sewer system management plan. This document shall be used in conjunction with EN 14654-1.

5 Integrated sewer system management planning

5.1 Introduction

Cleaning activities are one aspect of the maintenance plan, as part of an integrated sewer system management plan. A maintenance plan, dealing with cleaning activities should be in place for the drain and sewer system prior to carrying out major programmes of sewer cleaning. However, this is not always possible if works are required urgently (e.g. in response to a sewer failure).

5.2 Cleaning aims

The principal aims of carrying out cleaning work can include:

a) Pro-active cleaning

1) to ensure that the performance of the drain or sewer system is acceptable;

2) to prolong the operational life and maintain the value of the asset;

3) to control septicity to reduce associated odour, health and potential corrosion problems;

4) to limit polluting discharges into receiving water bodies;

5) to enable inspection or renovation of the drain or sewer system;

6) to optimize the effectiveness of key components of the system at critical times (e.g. prior to heavy rain seasons, busy periods in tourist sites);

7) to facilitate inspection.

b) Reactive cleaning

1) to remove a blockage in order to restore the flow;

2) to restore the function of the drain or sewer system;

3) to remove sediments in order to reduce septicity and odour problems.

The nature of the aim can determine the degree of cleaning necessary.

6 Preparation of the cleaning programme

6.1 Introduction

The cleaning programme defines the approach to be taken to cleaning in each drain or sewer, either specifically or as part of a group of drains or sewers. The cleaning programme defines a series of projects, in line with the integrated sewer system management plan, to ensure that the drain and sewer system meets the performance requirements.

6.2 Review of the cleaning activities planning

A review should be undertaken of the cleaning aspects of the operations and maintenance plan within the integrated sewer system management plan.

6.3 Investigation

6.3.1 Introduction

The location of the sections of drains and sewers where proactive cleaning is to be carried out and the assessment of the cleaning frequencies shall be based on:

a) an understanding of the characteristics and structural condition of the drain and sewer system;

b) an analysis of its performance;

c) a review of the available information which may include the performance of similar systems elsewhere.

The different sections of the sewer shall be described according to the information collected in order to optimize the cleaning programme.

The scope of the investigations necessary to produce the cleaning programme will depend on the extent of the investigations carried out during the preparation of the integrated sewer system management plan and on the characteristics of the individual systems.

6.3.2 Review of previous investigations

A review should be undertaken of the information available. The review should include:

a) inventory data

   1) type of effluent (foul wastewater, surface water, combined sewage or specific effluents);

   2) sewer characteristics (shape, size, slope, depth, material, etc.), presence and characteristics of combined sewer overflows and other ancillaries;

   3) characteristics of the location of the sewer (e.g. aquifer protection zones, ground water level, trees, proximity of receiving water bodies);

b) condition information from inspection reports (e.g. visual inspection reports, CCTV reports, sediment measurements);

c) data on flows from measurements or the results of hydraulic models;

d) records of past cleaning (e.g. location of areas of persistent operational problems, working space and access constraints, effectiveness of previous techniques, personnel input and costs); and

e) performance data (e.g. sewer flooding, sewer blockages, collapses, odours, septicity problems, premature operation of combined sewer overflows, etc.).

6.3.3 Further investigations

Where there is insufficient information available to plan the cleaning programme, a programme of investigations shall be carried out to obtain the necessary information.

An example report form is given in Annex A.

Examples of investigations can include:

a) further inspection in parts of the system where the original assessment was based only on sample inspections;