

OOWA'S Guidance Document Series: Sand Filter Bed Design and Installation

Produced by the OOWA Onsite Technical Committee

Version 2.0 – May 2025
GD 02: Sand Filter Bed Guidance Document

Drafted: 2015
Issued: 2015

Table of Contents

1.0	Objective	1
2.0	Background	1
3.0	Current Filter Bed Practices	2
3.1	Filter Sand Compliance	2
3.2	Even Distribution	3
3.3	Loading Rates for Filter Basal Area and Extended Contact Area	4
3.4	The 75% Rule	8
3.5	Proper Backfilling Practices	8
3.6	Life Expectancy	9
4.0	References	10

1.0 Objective

The requirements of the Ontario Building Code (OBC) 8.7.5 are not being applied consistently throughout the Province, both in terms of design and installation practices. In 2013, OOWA solicited input from the industry with respect to these inconsistencies, and general issues and challenges associated with the use of Filter Beds. Based on the feedback received, six primary issues were identified, as follows:

1. Filter Sand Compliance
2. Even Distribution
3. Loading Rates
4. 75% Rule
5. Proper Backfilling Practices
6. Life Expectancy

This document has been prepared to discuss these issues, the ways in which the OBC is being inconsistently applied, and provide guidance as to how the OBC should be applied and as to other considerations that would constitute best practices.

2.0 Background

The Filter Bed is a commonly used type of leaching bed in Ontario, as permitted within Subsection 8.7.5 of the Ontario Building Code (OBC). The Filter Bed originated from a study conducted by the Ministry of the Environment (MOE) by Chowdhry which was published in 1974. Design guidelines for Filter Beds were then incorporated in the 1982 MOE Manual of Policy, Procedures and Guidelines for Private Sewage Disposal Systems, and were subsequently incorporated into 8.7.5 of the OBC.

The Filter Bed consists of a 750 mm depth of filter sand. A vertical separation of 900 mm is required between the base of the stone distribution layer in the Filter Bed, and any underlying rock, water table, or soil with a T time greater than 50 min/cm. Loading rates in the OBC vary from 50 L/m² to 100 L/m² depending on the daily design flow and the level of pre-treatment provided. Specifications for filter sand gradation limits are also provided in the OBC and are based on the Chowdhry study and 1982 MOE Guidelines.

The Chowdhry study investigated different loading rates (49 L/m² per day and 73 L/m² per day), as well as five different grades of filter sand. All sand filters were tested for at least 12 months at 49 L/m² before the loading rate was increased to 73 L/m². This study showed that 750 mm of filter sand, under-drained with a stone-pipe layer, can be an effective treatment unit, delivering a final effluent of < 10 mg/L BOD₅ and TSS (tertiary quality). The coarsest fraction of filter sand investigated, however