OOWA's Frequently Asked Questions Series:
From Inspectors on Key Inspection Points

Produced by the OOWA Onsite Technical Committee

Version 1.0
FAQs From Inspectors on Key Inspection Points

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Overview:

This Frequently Asked Questions (FAQ's) document has been prepared to provide information and clarification of the intent of the Ontario Building Code (OBC) regarding some common questions that have been brought forward by our members. These questions are primarily from building inspectors and relate to key inspection points during the installation process. We hope this document provides some clarity and consistency on these items.

1.0 Question:

How many inspections should be completed?

Answer:

The OBC requires a minimum of three inspections of a sewage system to be completed as follows:

1. Readiness to construct the sewage system,
2. Substantial completion of the installation of the sewage system prior to backfill, and
3. Completion of construction of the sewage system. (OBC Division C, 1.3.5.1.(2).)

Readiness to construct a sewage system is commonly referred to as a base cut or subgrade inspection and is completed after the base of the leaching bed has been excavated and prepared but before any fill is placed. Some municipalities may choose to complete test pits to satisfy the readiness to construct stage, refer to Question 2.0 for further discussion on this item.

A substantial completion inspection of the sewage system is conducted when all of the components of the system have been installed but before they are backfilled. Refer to Question 3.0 for details on what items should be reviewed during this inspection stage.

A completion of construction inspection is required to permit the issuance of an occupancy permit. The installation must be complete for this final inspection and the sewage system must be operational. This means that all components should be plumbed, backfilled, seeded and/or sodded, and pumps if present should be wired and operational.

Additional inspections can also be added if a bylaw is passed by the authority having jurisdiction. A common inspection that is added is a test hole inspection that is completed prior to the issuance of a building permit to ensure the design meets the requirements of the OBC.

2.0 Question:

Is a base cut inspection necessary? (Base cuts vs test pits)

Answer:

The OBC requires an inspection at "readiness to construct". This may be interpreted in different ways by different municipalities. The intent of the readiness to construct inspection is to confirm that the subsurface conditions are suitable for the proposed installation. A Subgrade (base cut) inspection will help the inspector confirm that the dimensions, elevations, slope, scarification, clay seal (if applicable), and loading area requirements of the proposed leaching bed are met. They can also help the inspector confirm that the assumptions used for design, such as T-time or elevation of groundwater, are appropriate.

Some municipalities may choose to supervise the excavation of test pits to satisfy the readiness to construct inspection required. Information collected during a test pit inspection may be used to determine if a further subgrade or base cut inspection is required, such as:

i. Percolation rate (greater than 15 min/cm),
ii. Soil type (smearing, structure, fill soils, complex/varying soil, etc.),
iii. Amount of soil (less than 250 mm)
iv. Separation distance to limiting layer (bedrock, high ground water, impervious soils).

Where none of these conditions are present, the inspector may be satisfied with test pits at the "readiness to construct" stage. Municipalities should develop their own protocols for satisfying this critical first inspection stage.

3.0 Question:

What Inspection details should be recorded for Municipal record keeping? Is the following list sufficient?

a. Tank labelling
b. Layout matches design – distribution pipes, etc.
c. Aggregate quality
d. Clearances

Answer:

Upon being notified by the property owner and/or installer that the Class 4 sewage system has been installed, an inspection of the sewage system must be completed prior to backfill. The purpose of the inspection is to confirm compliance with the OBC and the building permit.

Inspection activities may include, but are not limited to:

- Taking measurements of sewage system components, (sand/stone area, pipe/chamber length) to confirm compliance with the design and the OBC;
- Taking measurements to site specific features, (structures, property lines, wells, water course);
- Checking the slope on the distribution pipe;
- Verifying the leaching bed material, (stone/filter sand/imported sand depth and specification);

- Inspecting the septic tank and/or treatment unit, which may include observation of baffles, safety devices, partition wall, effluent filter, confirming capacity or make/model, overall construction and design;
- Confirming the presence of an acceptable means of subsurface detection in the leaching bed e.g. tracer wire, magnetic means etc.;
- Verify the quality of the filter sand or system sand. This may be completed via visual means or by requesting sieve analysis documentation from the owner or installer. The sieve analysis should be completed by an accredited laboratory and should be recent enough that the inspector has confidence it is representative of the material on site.
- Completion of an "as-built" site sketch is recommended. This could include location of key components, dimensions and sizes, and clearance distances to site features where appropriate. Identifying any alterations or changes from the design as shown on the sewage system permit is key.
- A "Notice of Final Inspection" can be issued to the owner and copies retained with the Principal Authority and Municipality.

In the event that the sewage system does not meet the requirements of the OBC, or hasn't met the intent of the design, the sewage system may not pass inspection. The inspector will notify the property owner, applicant, and installer of the deficiencies and re-inspect the system once notified that the deficiencies have been corrected.

4.0 Question:

When measuring the stone clearance distance and comparing it to the minimum horizontal distances set out in Table 8.2.1.6.B, is the toe edge or the top of the stone layer used for this measurement?

What if the installer adds more stone than necessary to clean up the load, does this extra also need to meet the setback?

Answer:

When considering OBC Table 8.2.1.6.B. and Sentences 8.7.7.1.(9) and 8.7.8.2.(1) the minimum clearance distances should be measured from the toe edge of the stone layer. For all other types of leaching beds the minimum clearance distances are measured from the centreline of the distribution pipe or leaching chamber. These distances shall be increased when required by Division B, Sentence 8.7.4.2.(11) if the bed is raised above natural grade.

If more stone then necessary is added to a Type A or B dispersal bed it would also have to meet the minimum clearance distances in Table 8.2.1.6.B. The clearance distance is measured to the edge of the stone, regardless of whether additional stone is added.

5.0 Question:

How deep can concrete tanks be submerged and anchored into the water table and be expected to remain stable during pump outs?

Answer:

Theoretically a tank can be fully submerged in the water table, provided it is suitably anchored to prevent uplift. A buoyancy calculation should always be completed by a qualified professional to determine the amount of ballast required to keep the tank stable. The buoyancy calculation should consider the weight of the tank (empty) as well as the depth and type of backfill on top of the tank. Sewage in the tank should not be relied upon to provide sufficient ballast as it will be removed during pump out. Tank manufacturer recommendations and shop drawings should be referred to when completing buoyancy calculations.

If installing a tank in the water table, consideration should also be given to vulnerable parts of the tank like the inlets and outlet opening, access hatches, seams etc. Again, the tank manufacturer should be contacted for further information and guidance on submerging these parts of the tank,and what mitigating measures, if any, should be taken.

6.0 Question:

Does the forcemain from a sewage lift station (pump tank) need to meet the clearance to the property line or dwelling? For example, in the scenario where the tanks are on the opposite side of the dwelling from the sewer discharge.

Answer:

The OBC does not identify any minimum mandatory clearance distances for forcemains or gravity sewers connecting buildings to tanks or tanks to other sewage system components. Part 8 of the OBC does identify clearance distances for septic tanks, holding tanks and distribution piping. Distribution piping is a defined term and only refers to the perforated or open jointed pipe installed in the leaching bed. It does not refer to the forcemain or gravity sewer connecting the tank to the leaching bed. Where possible forcemains and gravity sewers should be kept as far as possible from any water source and appropriate pipe and bedding should be used to minimize the risk of leaks and failure.

Part 7 (Plumbing) of the OBC should be consulted for best practices regarding pipe type (Subsection 7.2.5.) and spatial separation from water service lines (Article 7.3.5.7.) and piping and venting arrangements within the sewage lift station (Article 7.4.6.3.). If the sewage lift station is installed before the septic tank, it would be considered part of the "plumbing" system and should be designed in accordance with Article 7.4.6.3. of the OBC.

7.0 Question:

Is tertiary equivalent to Level IV treatment?

Answer:

The OBC Table 8.6.2.2. requires sewage treatment units other than a septic tank to produce Level II, Level III, or Level IV effluent quality. One way to demonstrate compliance with Table 8.6.2.2. is through certification to the CAN/BNQ 3680-600 Standard. The CAN/BNQ 3680-600 Standard is a rigorous, yearlong certification completed in a cold climate representative of Ontario. If treatment units are not CAN/BNQ 3680-600 certified,

they may follow an alternate process to demonstrating equivalence as identified in Appendix A-8.6.2.2. of the OBC.

Prior to 2017, Table 8.6.2.2 referred to effluent quality as either "secondary" or "tertiary". At that time, the OBC included Supplementary Standard SB-5 which listed "secondary" and "tertiary" effluent quality sewage treatment units approved for use in Ontario. Supplementary Standard SB-5 was removed from the OBC when it was updated on January 1, 2017. The terms secondary and tertiary effluent quality no longer have any meaning in relation to the OBC or residential sewage treatment in Ontario.
Building Materials Evaluation Commission (BMEC) systems are approved outside of the OBC. BMEC systems are not necessarily CAN/BNQ 3680-600 certified treatment units.
Technologies that are certified to CAN/BNQ 3680-600 and are approved for use in Ontario are listed on the BNQ website:
https://www.bnq.qc.ca/en/certification/environment/onsite-residential-wastewater-treatment-technologies.html

8.0 Question:

Should I be doing anything differently for homeowner installed systems?

Answer:

Homeowner installed systems may require a more rigorous evaluation for permit approval and inspection unless the property owner possesses a valid BCIN or is a Professional Engineer with experience designing onsite sewage systems. It is challenging for a property owner who is unfamiliar with the OBC and its ongoing updates and who is not engaged in the industry to understand the requirements of the Code, which often leads to additional time spent processing permit applications and inspecting installations. Applications led by the property owner should be carefully scrutinized to ensure the intent of the Code is met. Installation by property owners can also be challenging and time consuming as property owners are usually unfamiliar with the equipment and components of the sewage system. A different fee schedule could be developed to reflect the additional time and effort required for property owner-led permit applications and installations.