December 9, 2022

Subject: Comments regarding the General Proposed Changes for the Next Edition of Ontario's Building Code

Dear Commission Members,

Thank you for allowing and reviewing Eljen Corporation's comments on the proposed changes to the next edition of Ontario's Building Code. Upon review of the changes, we are encouraged by the inclusion of Combined Treatment and Dispersal Systems (CTD) in the revision.

Eljen Corporation helped bring CTD technology to the market in the early 1980s. It always excites us and encourages us when regulatory authorities codify this technology group. We have produced many different types of CTD technology and actively manufacture three different CTD technologies for various markets. Currently, we sell and service one of those CTD technologies in Ontario.

We manufacture three different CTD technologies due to regulations. Different regulations throughout North America require us to have different products for different markets. This is a by-product of regulations for CTD systems that the regulatory authority codified strictly. For instance, a state in the United States requires that CTD systems have a minimum width of three feet. While prescriptive to their code, this regulation unfairly limits other CTD technology to the market. My recommendation to all regulatory entities trying to codify CTD systems is ensure the code allows for future development of the technology and techniques. Prescriptive codes prevent future innovations.

In a review of the proposed changes, we recommend the following:

8.6.2.2 – In the proposed rules, CTD systems will have their vertical separation moved from 450mm to 600mm to line up the CTD regulations with the Treatment Standards that are currently codified.

Eljen assumes the goal to line up the Treatment portion of CTD systems with the current Treatment technology regulations.

Treatment systems typically "dump" their treated effluent into a small area. Using these types of dispersal techniques applies greater hydraulic pressures directly at the point of dispersal. In turn, the industry requires greater vertical separation to prevent Fecal Coliform and Pathogens from entering the water table.

When reviewing all of the CTD technologies currently available in Ontario, the dispersal mechanisms are not point-loaded; however, the CTD units used disperse effluent throughout the system. This technique provides for much lower hydraulic pressures and application rates on the soil. The effluent gets the proper retention time and additional treatment provided by the soil. 450 mm of soil is proper, conservative, and has not caused a public health safety incident. Arbitrarily changing it to line up with another technology group's distribution shortcomings does not make sense.

We recommend the language in 8.6.2.2 should read:

> ***(2)*** *A treatment unit that is used in conjunction with a leaching bed constructed as a shallow buried trench, Type A dispersal bed, Type B dispersal bed or the treatment component of a combined treatment and dispersal bed shall be designed such that the effluent from treatment unit or the treatment component does not exceed the maximum concentrations set out opposite a Level IV treatment unit in Columns 2 and 3 of Table 8.6.2.2.*

8.7.1.2 – The proposed regulations state that a competent person shall design and install Combined Treatment and Dispersal systems. This is an excellent inclusion in the rule. We recommend that the portion of this rule is not tied to Treatment Units as they are a very different technology group. As such, both technology groups should have their own individual category. Much like treatment (ATUs, package plants, etc.) and dispersal (stone and pipe, chambers, etc.), technologies now have their own categories.

We recommend that CTD technologies have their own category under the proposed code, and the technology group is not lumped in with Treatment technologies.

8.9.2.4 – In an effort for consistency, we recommend changing the following:

> ***8.9.2.4. Sampling of Treatment Units***
>
> ***(1)*** *Every person operating a treatment unit that is used in conjunction with a leaching bed constructed as a shallow buried trench, Type A dispersal bed or Type B dispersal bed shall,*

Change to:

> ***8.9.2.4. Sampling of Treatment Units and Combined Treatment and Dispersal Systems***
>
> ***(1)*** *Every person operating a treatment unit that is used in conjunction with a leaching bed constructed as a shallow buried trench, Type A dispersal bed or Type B dispersal bed, or a combined Treatment and Dispersal system shall,*

8.7.9 – This section represents the heart of the CTD changes/inclusion in the Building Code. Are proposed changes do the following:

- Acknowledges differences between CTD technologies within the group
- Distinctly separates the technology from other technology groups
- Allows for reduced materials (cited as a reason for a change in another technology group)

In the first section, there is an attempt to tie CTD technology to Treatment Plants. As stated previously, we recommend CTDs have their own category.

We recommend the following:

> ***(1)*** *The treatment unit used in conjunction with a leaching bed constructed as a combined treatment and dispersal bed shall provide an effluent quality that does not exceed the maximum concentrations set out opposite a Level IV treatment unit in Columns 2 and 3 of Table 8.6.2.2.*

Change to:

> ***(1)*** *A combined treatment and dispersal bed shall provide an effluent quality that does not exceed the maximum concentrations set out opposite a Level IV treatment unit in Columns 2 and 3 of Table 8.6.2.2.*

Section 3 is somewhat prescriptive and may need to be interpreted better. To date, CTD technologies are incredibly versatile and can be used in multiple applications. To remove confusion and highlight the technologies modularity, we recommend:

(3) *The contact area of the dispersal surface shall be rectangular in shape with the long dimension parallel to the site contours and the treatment unit shall be protected in the manner described in Sentence 8.7.3.3.(2) or as per the manufacturer's instructions.*

Change to:

(3) *The contact area of the dispersal surface shall be not less than calculated from Sentence 8.7.9.1 and be regular or irregular in shape with the long dimension parallel to the site contours and the treatment components shall be protected in the manner described in Sentence 8.7.3.3.(2) or as per the manufacturer's instructions.*

Section 4 of the current proposed changes to the Building Code needs a great deal of attention. Over the last decade, CTD systems underwent exhaustive review in the BMEC authorization process. BMEC established a well-defined process for sizing the dispersal area for all CTD technologies during that process. Installers, Designers, Engineers, and Regulators have trained, designed, and installed systems under those original BMEC authorizations for CTD technology. We see little reason to move away from a well-established, actively working protocol.

We recommend:

(4) *A layer of sand shall be installed directly beneath the treatment unit that shall,*

(a) be comprised of a sand that has,

(i) a percolation time of at least 6 and not more than 10 min, and

(ii) not more that 5% fines passing through a 0.074 mm (No. 200) sieve,

(b) have a minimum thickness of 300 mm, and

(c) have an area that is not less than the area determined by the formula:

$$A = QT/400$$

where,

A = the area of contact in square metres between the base of the sand layer and the underlying soil or sand,

Q = the total daily design sanitary sewage flow in litres, and

T = the lesser of 50 and the percolation time of the underlying soil. and,

(d) be constructed such that the bottom of the treatment unit is at least 600 mm above the high ground water table, rock or soil with a percolation time of 1 min or less or greater than 50 min.

Change to:

(4) *A layer of sand shall be installed directly between, beside and at the extremities of the treatment components of the combined treatment and dispersal system. That sand shall,*

(a) be comprised of sand that has,

(i) a percolation time of at least 6 and not more than 10 min, and

(ii) not more that 5% fines passing through a 0.074 mm (No. 200) sieve,

(b) have a minimum thickness not less than the thickness of the treatment component, and

(c) cover an area which once added to the area occupied by the treatment component is not less than the area determined by the formula:

$$A = QT/850 \text{ for soils with a percolation time of 15 min or less}$$

Or

$$A = QT/400 \text{ for soils with a percolation time greater than 15 min}$$

where,

A = the area of contact in square metres between the base of the sand layer and the underlying soil or sand,

Q = the total daily design sanitary sewage flow in litres, and

T = the lesser of 50 and the percolation time of the underlying soil. and,

(d) be constructed such that the bottom of the treatment component to the high ground water table, rock or soil with a percolation time of 1 min or less or greater than 50 min is at least:

(i) 450 mm for soil with a percolation time greater than 6 and lower or equal to 50 min.

(ii) 600 mm for soil with a percolation time lower than 6 or greater than 50 min.

Section 5 requires a minor update to separate Treatment, black box technologies, from Combined Treatment and Dispersal Technologies. We recommend:

***(5)** Either imported sand meeting the specification of 8.7.9.1.(4)(a) or specified system sand or other filtering medium used in the treatment unit shall be used to fill in the area between the assembly of pipes, modules, or conduits.*

Change to:

***(5)** Either imported sand meeting the specification of 8.7.9.1.(4)(a) or specified system sand or other filtering medium used in the treatment component shall be used to fill in the area between the assembly of pipes, modules, or conduits.*

Section 6 of the proposed changes make a similar change as section 4. It moves away from already pre-established norms when dealing with CTD systems. To eliminate confusion in the market and further separate CTD Technology and ATUs, we recommend the following:

***(6)** The effluent shall be evenly distributed within the specified system sand layer to within 300 mm of the perimeter of the sand layer in Sentence (4).*

Change to:

***(6)** The treatment components of the combined treatment and dispersal system shall be placed individually or by groups forming rows evenly distributed over the dispersal area, subject to adjustment to ensure:*

(a) minimum clearances are provided in accordance with Sentence 8.2.1.6; and

(b) minimum separation distances are provided as required by the treatment components configuration

(c) it is raised or partially raised when the native soil has a percolation time of 50 min or greater

Section 7 of the proposed code changes also moves away from previously tested, established, and implemented uses of CTD systems under the BMEC authorizations. The place of measurement should be from the center of the actual CTD component. We recommend:

***(7)** The perimeter of the treatment unit pipes, modules, or conduits shall not be located closer than the minimum horizontal distances set out in Table 8.2.1.6.B. and these distances shall be increased when required by Sentence 8.7.4.2.(11).*

Change to:

***(7)** The center of any distribution pipe of the treatment component of a combined treatment and dispersal systems shall not be located closer than the minimum horizontal distances set out in Table 8.2.1.6.B. and these distances shall be increased when required by Sentence 8.7.4.2.(11).*

We recommend a simple change to Section 8 to clearly define the technology. Our recommendation is:

(8) The combined treatment and dispersal bed shall not be installed in an area where the original ground has a slope in excess of 25%.

Combined Treatment and Dispersal Unit, means a type of treatment unit consisting of a series of pipes, modules, conduits, or other proprietary unit, which when combined with a layer of system sand, provides a specific degree of sanitary sewage treatment to reduce the contaminant load from that of sanitary sewage to a given effluent quality.

Dispersal Surface, means the layer of soil or leaching bed fill, constructed wholly in ground or raised or partly raised above ground, as required by local conditions, to which effluent from a Combined Treatment and Dispersal Unit is applied.

Change to:

***(8)** The combined treatment and dispersal bed shall not be installed in an area where the original ground has a slope in excess of 25%.*

The Treatment Component of a Combined Treatment and Dispersal System, consists of a series of pipes, modules, conduits, or other proprietary product combined with a layer of system sand, which provides a specific degree of sanitary sewage treatment to reduce the contaminant load from that of sanitary sewage to a given effluent quality.

The Dispersal Component of a Combined and dispersal system, means the layer of sand or leaching bed fill, constructed wholly in ground or raised or partly raised above ground, as required by local conditions, to which effluent from a Combined Treatment and Dispersal Unit is applied.

We appreciate the time the Commission will take to review our recommendations and look forward to participating in the proposed code changes as the code moves forward. Don't hesitate to contact me with any questions or comments.

Respectfully,

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