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The Villages - Executive Committee
c/o Ms. Palmina Maccari, Villages Manager
Coldwell Banker Real Estate Management Leaders
201 County Court Boulevard, Suite 600
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April 9, 2021

Rosedale Village – Sound Barrier Fence Review (SBFR)
Brampton, Ontario

Ms. Palmina Maccari,

As requested, a condition review of the Sound Barrier Fence (SBF) along Sandalwood Parkway and Dixie Road to were undertaken on the 4th and 11th of November. The purpose of the review was to compare fence condition to that of a Staff Report produced by the City of Brampton dated October 6th, 2020.

With respect to the Staff Report by the City of Brampton (Public Works & Engineering-2020-252), I respectively disagree with the Overview Statement "These Noise Walls are currently in fair condition with minor repairs required at some locations." – In my professional opinion the noise walls are in poor to very poor condition and will require replacement in the short term (1 to 3) years.

My opinion is based on the following points:

1. For clarification purposes, fence panel refers to the wood posts and vertical pickets between the posts. When the wood fences (noise walls) were constructed 25 years ago, there was no known standard employed – these wood fence panels are 6.5' high and on average are 8' long. The height of these fences is grossly inadequate to mitigate noise from Sandalwood Parkway's six lanes of traffic. In comparison, the newer concrete sound barriers along Highway 410, where there are only 4 lanes of traffic, are 11' high and are located on top of a higher berm compared to the one along Sandalwood Parkway.
2. Wood is not an ideal material for fence construction as it has a relatively short life expectancy, typically 15 to 20 years; even pressure treated wood's life expectancy is considered low at only 20 – 25 years. It is a known fact that wood embedded in concrete has a reduced life expectancy due to rot; life expectancy can be reduced by up to fifty percent (50%). The wood noise walls along Sandalwood Parkway and Dixie Road have their wood posts embedded in concrete which has lead to accelerated post rot/deterioration.
3. The wood posts are considered to be the structural "backbone" of the fence; loss of strength due to post rot will eventually lead to failure/collapse of the fence. Eighty-six percent (86%) of the accessible wood posts reviewed along the Sandalwood Parkway fence have various degrees of wood rot at their bases, typically at the concrete interface. This rot allowed the blade on a 14cm screwdriver to penetrate up to 14cm into the post.
4. Approximately thirty percent (30%) of the accessible wood posts reviewed along the Sandalwood Parkway fence have steel support brackets installed at the base of the posts to provide added strength as severe rot has weaken the post. The fastening bolts for these bracket supports have breached the wood preservative and will accelerate the internal rot.
5. Twenty-four percent (24%) of the wood fence panels reviewed along the Sandalwood Parkway can easily be swayed by applying minimal force along the post/panels; this swaying is the result of the decreased strength of the wood post at their bases.
6. Fifty percent (50%) of the wood posts reviewed along the Dixie Road fence have various degrees of wood rot at their bases, typically at the concrete interface. Rot allowed the blade on a 14cm screwdriver to penetrate up to 12cm into the post. Again, once the wood rot has passed the preservative outer layer of the surface wood it allows water to reach the inner post wood accelerating the rot process. Two fence panels along Dixie Road have had wood support propped-up against them to prevent collapse.
7. The deteriorated posts along Sandalwood Parkway resulted in the collapse of 5 fence panels (total length 40') in 2018 during a wind storm; further fence panel collapses should be anticipated. The Villages has spent tens of thousands of dollars on repairs. Economically, the cost of repairs and maintenance are at a point where replacement is the only logical option.

Two thirds of the reviewed fence posts having various degrees of rot at their interface into the concrete foundation. The steel brace repairs are considered a waste of money as the bolt installation 'punctures' the wood preservative allowing water to enter the post initiating internal rot. The securing of the steel brace into the concrete foundation at numerous locations has cause the concrete to fail.

In my professional opinion, the time for temporary fixes is over and the wood sound barrier fences along Sandalwood Parkway and Dixie Road should be replaced with a concrete sound barrier, identical to that located along the west side of the property parallel to Highway 410.

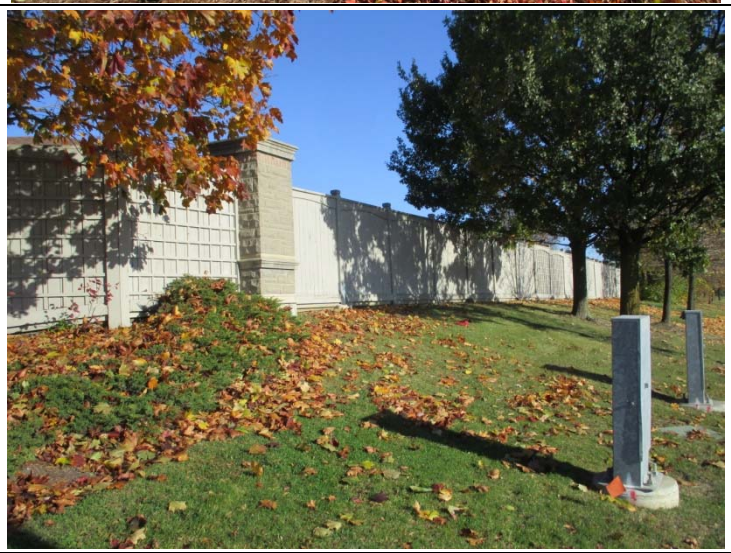
The pages that follow have photographs documenting the condition of the wood support posts along both the Sandalwood Parkway and Dixie Road sound barrier fences.

Should the Executive have any questions regarding this Review, please contact me at your convenience.

Sincerely,

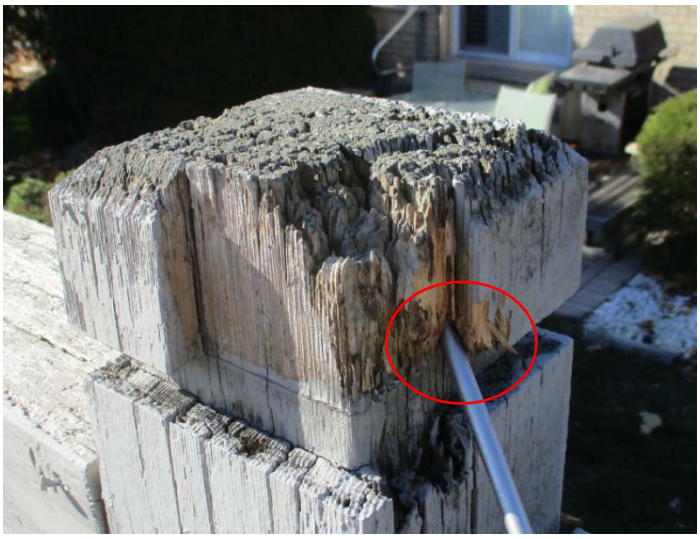
Bruce Pichler P.Eng
Consulting Engineer
Pichler Engineering Limited

Professional Engineers Ontario

Ref. No.	Observation and Comment	Photo
1	General overview of the sound barrier fence east of the entrance to Rosedale Village. Referred to as “Entrance A” in the City of Brampton report (Appendix A - Rosedale Village Noise Walls).	
2	Masonry portion of sound barrier fence; located east of the south entrance to Rosedale Village.	
3	General overview of west end of sound barrier fence along Sandalwood Parkway.	

Ref. No.	Observation and Comment	Photo
4	Typical view of wood sound barrier fence along Sandalwood Parkway, west end.	
5	Typical view of wood sound barrier fence along Sandalwood Parkway, west-central end.	
6	Typical view of wood sound barrier fence along Sandalwood Parkway, central area.	

Ref. No.	Observation and Comment	Photo
7	Typical view of wood sound barrier fence along Sandalwood Parkway, east end. Access to the fence east of this point was not possible due to plant growth.	
8	Typical steel support brace for rotted wood post. Rot of wood will continue where the bolt holes penetrate the post.	
9	Wood rot at the top of the fence wood post. This was typical on approximately twenty-five percent of the posts.	

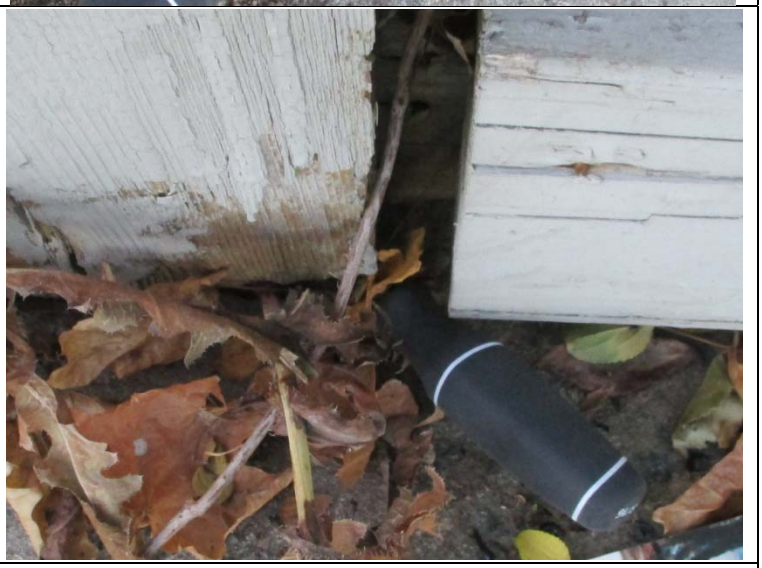
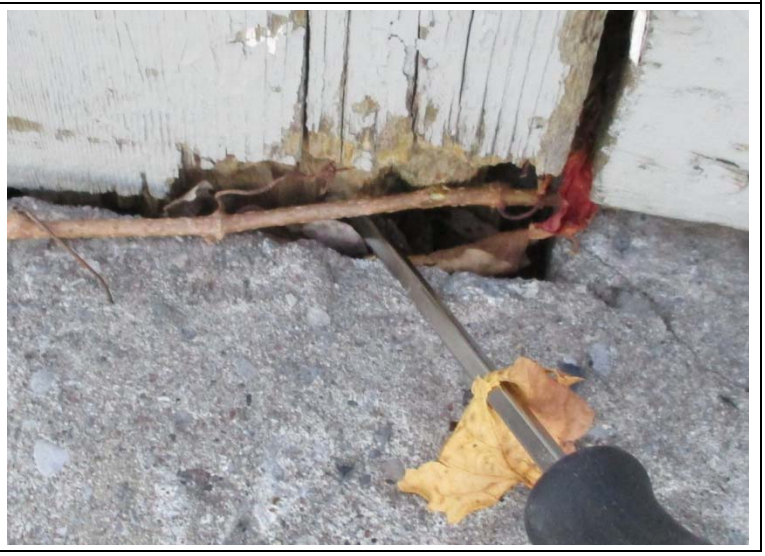
Ref. No.	Observation and Comment	Photo
10	Another example of wood rot at the top of a fence post. Wood is typically “punky” and will allow screwdriver shank to penetrate 2 to 3+ cm into the wood.	
11	Typical base of post and concrete foundation. The deteriorated wood post is readily visible. Rot at the base of the wood post where it intersects the concrete was not at over 66% of the wood posts reviewed.	
12	Base of another wood post at the concrete/wood interface. Note the deteriorated wood post condition and poor condition of the foundation concrete.	

Ref. No.	Observation and Comment	Photo
13	Although not common, several of the concrete foundation pours were deteriorated. Likely cause poor concrete and/or stresses induced from the “swelling” of the wood post in the concrete.	
14	Example of typical wood rot at the base of the fence post where it enters the poured concrete foundation. The depth of rot at this location was tested at all accessible fence posts using the screwdriver, starting at Reference Number 17.	
15	Another example of concrete foundation failure where the post was inserted into the concrete.	

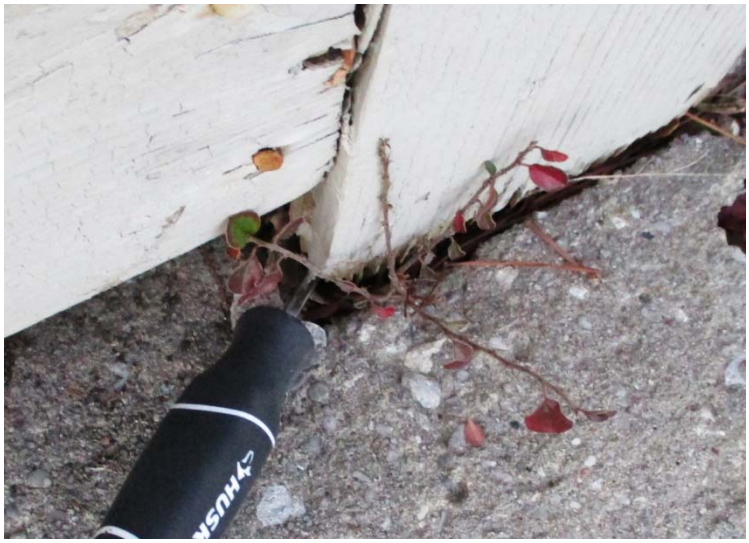
Ref. No.	Observation and Comment	Photo
16	Screwdriver that was employed to determine wood post rot via screwdriver penetration. The shank and blade are 14 centimeters in length.	
17	Example of a braced fence post where rot extends diagonally 14 centimeters into the post. Note also the poor condition of the concrete foundation.	
18	Example of a fence post at a directional change where rot extends approximately 2 centimeters into the post. Additional rot is noted in the portion of the post just above the foundation.	

Ref. No.	Observation and Comment	Photo
19	Example of another fence post where rot extends 7 centimeters into the post.	
20	Example of another fence post where rot extends 12 centimeters into the post.	
21	Example of another fence post where rot extends 3 centimeters into the post.	

Ref. No.	Observation and Comment	Photo
22	Another example of a braced fence post where rot extends diagonally 3 centimeters into the post.	
23	Example of another fence post where rot extends 7 centimeters into the post where a longitudinal crack exists; see Reference Number 24.	
24	General view of the fence post noted in Reference Number 23 where a longitudinal crack is present in the post; this will allow water to enter the post beyond the depth of the wood preservative coating resulting in rot.	

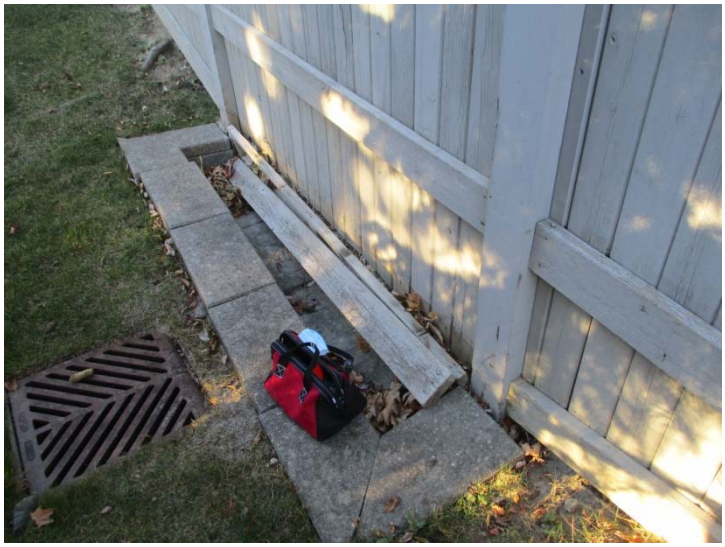
Ref. No.	Observation and Comment	Photo
25	Example of another fence post where rot extends 9 centimeters into the post.	
26	Example of another fence post where rot extends 14 centimeters into the post.	
27	Example of another fence post where rot extends 4 centimeters into the post.	

Ref. No.	Observation and Comment	Photo
28	Example of another fence post where rot extends 9 centimeters into the post.	
29	Example of another fence post where rot extends 14 centimeters into the post.	
30	Example of another fence post where rot extends 9 centimeters into the post.	

Ref. No.	Observation and Comment	Photo
31	Example of another fence post where rot extends 12 centimeters into the post.	
32	Example of another fence post where rot extends 7 centimeters into the post.	
33	Inside view of the sound barrier fence at the east end of Sandalwood Parkway; the diagonal section of the fence is the transition point for the sound barrier fence that runs northward along Dixie Road.	

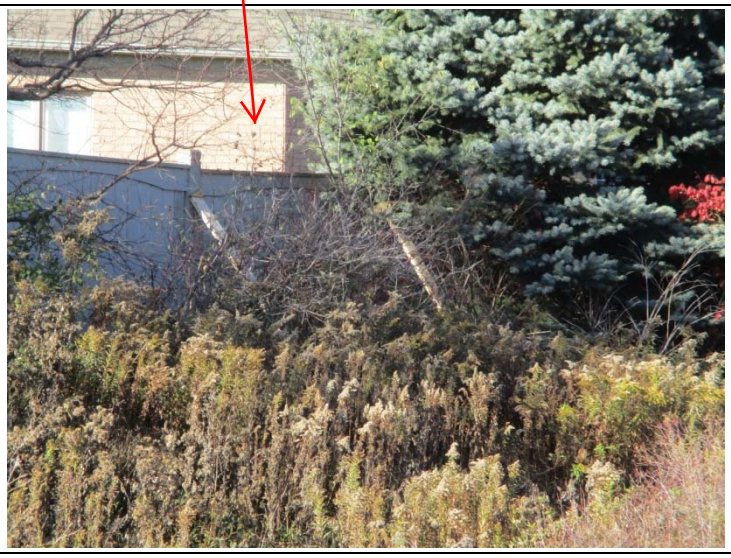
Ref. No.	Observation and Comment	Photo
34	General overview of the south end of the sound barrier wood fence running northwards parallel to Dixie Road.	
35	Example of another fence post where rot extends 12 centimeters into the post.	
36	Example of another fence post where rot extends 3 centimeters into the post.	

Ref. No.	Observation and Comment	Photo
37	Example of another fence post where rot extends 2 centimeters into the post.	
38	Example of another fence post where rot extends 3 centimeters into the post.	
39	Example of another fence post where rot extends 6 centimeters into the post.	

Ref. No.	Observation and Comment	Photo
40	Smaller dry fitting retaining wall approximately 30 metres north of the diagonal transition point of the sound barrier fence at the Sandalwood Parkway and Dixie Road.	
41	Example of another fence post where rot extends 3 centimeters into the post.	
42	Example of another fence post where rot extends 11 centimeters into the post.	

Ref. No.	Observation and Comment	Photo
43	Example of another fence post where rot extends 9 centimeters into the post.	
44	Example of another fence post where rot extends 6 centimeters into the post.	
45	Example of another fence post where rot extends 5 centimeters into the post.	

Ref. No.	Observation and Comment	Photo
46	Example of another fence post where rot extends 3 centimeters into the post.	
47	Example of another fence post where rot extends 3 centimeters into the post.	
48	Diagonal masonry sound barrier fence located at the Sandalwood Parkway and Dixie Road intersection. Access was not gained due to plant growth adjacent to the fence at this location, north of this location along the Dixie Road and for a portion of the west end of the fence along Sandalwood Parkway.	

Ref. No.	Observation and Comment	Photo
49	General view of the south end of sound barrier fence noted in Reference Number 34; photo taken east of the fence. Note a section of the fence was braced due to excessive movement/sway; see Reference Number 50.	
50	Closer view of the bracing support for a section of fence circled in Reference Number 49. Bracing was required due to excessive movement/swing of the fence a result of rot at the wood post base.	
51	General view of the north end of sound barrier fence noted in Reference Number 34; photo taken east of the fence.