

City of Toronto Equipment Noise Suppression Programme

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In 1973 Toronto City Council considered a Noise Control Study and directed that a programme of noise control be adopted to begin a guiding principle of which noise would be controlled at its source.

As a result, the City of Toronto Noise By-law was passed in February 1975. A key part of the noise control programme was the adoption of a policy that the City would purchase acoustically designed equipment for use in its Operations and Sanitation Sections. The objective of this policy was to establish guideline noise levels to encourage private contractors to use the quietest available equipment on road construction, utility upgrading and maintenance work within the City boundaries. Further steps taken towards achieving a quieter environment included a social perception survey, and ongoing testing of construction machinery to establish practical noise emission levels for various kinds of construction equipment such as air compressors, jack hammers, backhoes etc. The information obtained resulted in an amendment to the Noise By-law in 1987, which included guideline noise emission levels for construction equipment. These levels were considered stringent by the construction industry, however any cogent opposition was not presented, largely because such equipment in use by the City already met the required guideline levels.

Although no noise level criteria are available for refuse compaction equipment per se, studies of noise levels produced by City refuse compactors resulted in the vehicles being retrofitted with quieter hydraulic power systems. This modification resulted in lower engine operating speeds which significantly reduced a very intrusive component of noise produced during the compaction cycle (Noise levels which had previously been in the range of 85 to 90 dBA have been reduced to a consistent level between 76 and 80 dBA under load conditions). Notwithstanding these improvements, recent noise level monitoring of City refuse compactors has confirmed that further work should be done at the manufacturing stage to deal with excessive banging noises from the hydraulic system, which produces peak levels in excess of 90 dBA during the compaction cycle. Other equipment used in the construction industry, such as portable electrical generators, portable arc-welders, water pumps, backhoe tractors, and pile drivers are now being manufactured in response to nation-wide noise ordinances which are well within City of Toronto By-law requirements. Regrettably the same cannot be said of caisson drills. Complaints related to noise produced by these machines have confirmed that even recently manufactured units are excessively noisy under load conditions, producing noise levels measured at 15 metres in excess of 90 dBA. These noise levels are produced largely by the hydraulic pumps and engines.

During the past decade a technology known as hydro-demolishing has been developed for repairing salt damaged concrete in parking garages. This process, as well as greatly reducing the duration of the repair work, also transmits marginal noise through the structure of a building, with the added desirable benefit of minimal dust and vibration. In situations where there is mixed residential and commercial usage of a property conventional means of repair work such as multiple concrete breakers has sometimes resulted in the need for staggered hours to accommodate the needs of both groups i.e. late evening work to 11:00 p.m. Initially the power units for the high pressure pumps was problematic in

the outside environment, producing noise levels when under load conditions well in excess of 90 dBA at 15 metres.

Ongoing noise complaints and a cooperative effort with the users of this technology has resulted in a significant reduction in noise level emissions from the power units. (The levels have been reduced to the range of 80 to 85 dBA measured at 15 metres). The response by residents in the vicinity of work sites has been encouraging.

Schedule A of the recently amended Noise By-law outlines maximum permissible sound levels for typical equipment used by the City and private industry.

SCHEDULE "A"

<u>Type of Equipment</u>	<u>Measurement Distance (metres)</u>	<u>Permissible Max. Sound Level (dBA)</u>
<u>AIR COMPRESSORS</u>		
- 70 L/second	7	73
<u>LEAF BLOWERS</u>		
	15	70
<u>PNEUMATIC PAVEMENT BREAKERS</u>		
• 36 kg, manufactured prior to Jan. 1/81	7	92
• 27 kg, manufactured prior to Jan. 1/81	7	90
• all manufactured since Jan. 1/81	7	86
<u>REFUSE COMPACTING EQUIPMENT</u>		
	7	80
<u>HEAVY CONSTRUCTION EQUIPMENT</u> (dozers, backhoes, mobile cranes, pile augers, trencher)		
• Greater than 75 kilowatts:		
• manufactured 1/1/79-31/12/80	15	88
• manufactured 1/1/81 and after	15	85
• Less than 76 kilowatts:		
• manufactured 1/1/79-31/12/80	15	85
• manufactured 1/1/81 & after	15	83

In addition to the ongoing enforcement of the Noise By-law for machines used in the City of Toronto by both public and private sector construction, for the most part, a cooperative effort with the industry has facilitated the achievement of, and compliance with, sound regulations respecting equipment. This has resulted in appreciable reduction of noise from these machines, to an extent where complaints have been significantly reduced.