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NOTA - NOTES

 Decision No. 507-R-2009.

If you have any questions relating to the context of the Decision, you may contact Katic Fillmore by telephone at 819-953-8522 or by fax at 819-953-8353.

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DECISION NO. 507-R-2009

December 7, 2009

COMPLAINT by Glenn Stalker on behalf of the West Toronto Diamond Community Group against Metrolinx, operating as GO Transit, pursuant to section 95.3 of the *Canada Transportation Act*, S.C., 1996, c. 10, as amended.

File No. 8030/T1-09-1

INTRODUCTION

- [1] On June 9, 2009, the West Toronto Diamond Community Group (WTDCG) filed a complaint with the Canadian Transportation Agency (Agency) pursuant to section 95.3 of the *Canada Transportation Act* (CTA) against Metrolinx, operating as GO Transit (GO Transit) regarding noise and vibration arising from the construction of the West Toronto Diamond Grade Separation (the project).
- [2] This grade separation will extend approximately one kilometre in length and involves lowering the Weston Subdivision by up to 11m which requires the installation of 2,388 interlocking steel pipe piles to form both the outer and centre walls of the portion of the depressed corridor. The project is located within a constrained rail corridor within the urban area known as the West Toronto Junction which is one of the oldest parts of the city of Toronto. It is a densely populated urban environment with a mix of residential, commercial and industrial uses. The installation of the steel pipe piles commenced in January 2009 and is currently forecast to extend until July 2010.
- [3] The Agency reviewed the submissions of the parties and issued its findings in Decision No. LET-R-151-2009 (the Show Cause Decision). In the Show Cause Decision, the Agency found that the prolonged exposure of the local citizens to the noise and vibration generated by the pile-driving activities at the project site is unreasonable given the nature of the area in which the construction is taking place and the failure by GO Transit to implement sufficient mitigative measures. Accordingly, the Agency found that GO Transit is in breach of its obligation under section 95.1 of the CTA to cause only such noise and vibration as is reasonable. Prior to making its final decision on the corrective measures pursuant to subsection 95.3(1) of the CTA, the Agency provided GO Transit with an opportunity to show cause why it could not implement specific corrective measures. The Agency also provided the City of Toronto and the WTDCG with an opportunity to comment on GO Transit's submission.

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Submissions were received from GO Transit, the WTDCG and the City of Toronto.

ANALYSIS AND FINDINGS

- [4] In the Show Cause Decision, the Agency reinforced the principle that the interests of communities affected by noise and vibration must be considered at first instance by railway companies and urban transit authorities in determining how best to perform their activities in order to meet their obligation under section 95.1 of the CTA. In this regard, the Agency emphasizes that noise and vibration mitigation is a critical matter that must be addressed by railway companies and urban transit authorities early in the planning process of any project.
- [5] When the Agency provides a party with an opportunity to show cause, such as it did with GO Transit in the Show Cause Decision, it is clearly incumbent on that party to provide substantive supporting evidence to demonstrate the unreasonableness or impossibility of proposed corrective measures. In effect, the Agency is advising the party that the measures set out in the Show Cause Decision will be made the subject of a final and binding order, enforceable at law, unless the party can satisfy the Agency that the measures, as proposed by the Agency, go beyond what is reasonable or cannot be implemented. The onus is on the party called upon to make submissions to convince the Agency that its preliminary determination of appropriate corrective measures should be revised.
- [6] The Agency clearly set out the requirement for GO Transit to provide such evidence as it stated in the Show Cause Decision:
- If there are technical and commercial reasons why GO Transit cannot implement any of the measures set out in this show cause, GO Transit must provide detailed evidence for consideration by the Agency. The Agency will also consider submissions by GO Transit as to reasonable additional or alternative measures.
- [7] The Agency has reviewed GO Transit's submission and finds that GO Transit did not adequately respond to the Agency's show cause direction. In particular, GO Transit made only general representations as to impacts on the work schedule, productivity concerns, potential cost escalations, procurement restraints, limitations on its ability to effect contract changes and possible damages for breach of contract. GO Transit failed to file evidence to support these representations and has merely relied on unsubstantiated assertions. Therefore, GO Transit has not persuaded the Agency why a corrective measure order should not be made in this case, nor why the preferred methods of pile-driving to mitigate noise and vibration are not commercially feasible.
- [8] For example, GO Transit alleges that if the Agency were to issue an order specifying how the work is to be carried out, the project cost and duration would dramatically increase. GO Transit also maintains that changes to the scope of the work, the way the contractor carries out the work, and the project schedule will result in significant changes to the contract. This, according to GO Transit, would have an adverse impact on taxpayers. The only options, as perceived by GO Transit, are to negotiate in non-competitive circumstances, or to terminate the existing contract and retender the remaining work. However, GO Transit did not submit any specific evidence to substantiate its position.

- [9] Along the same line, GO Transit states that an Agency order specifically requiring the use of the (computer-controlled) PTC-Vibro hammer could potentially double the cost and scheduled time for completion, and refers to a statement to that effect from GO Transit's pile installation contractor, Bermingham Foundation Solutions and Anchor Shoring & Caissons Ltd (contractor), included in Appendix 1 attached to GO Transit's submission. GO Transit also states that the required use of the Giken hammer could result in potential contract claims in the multi-million dollar range, which would ultimately be borne by the taxpayer. However, all these statements were not supported by evidence.
- [10] Based on its finding of unreasonableness with respect to the noise and vibration from this project, the Agency's objective in making a corrective measure order is to mitigate that noise and vibration. Once a corrective measure order issues, it is the responsibility of GO Transit to take whatever steps are required to give effect to the order, including to effect changes to its project plans and activities, to renegotiate relevant contracts, to adjust the use of its equipment and to revise all related logistics in carrying out the project, to ensure that GO Transit fulfills its statutory obligation under section 95.1 of the CTA.
- [11] In addition, the Agency is of the opinion that the fact that there may be additional costs or delays to the project or a reduction in productivity in carrying out the corrective measures is a direct result of inadequate attention being given to noise and vibration at the initial planning stage of the project. The Agency is further of the opinion that GO Transit should have better assessed the potential noise and vibration impacts of the construction on the affected community and planned for the implementation of appropriate mitigative measures by taking this into account in its construction procurement process and contracts, and by building the associated costs into the project budget.
- [12] It is equally important to note that the role of the Agency is not to manage the project, but to consider and order corrective measures to be implemented by GO Transit related to noise and vibration, with the related monitoring information that GO Transit must convey to the public to demonstrate it is carrying out mitigative measures and that the measures are effective.
- [13] The Agency will now address each corrective measure set out in the Show Cause Decision and provide its final ruling on the corrective measures that GO Transit is, by this Decision, required to implement.

1. Giken Hammer

- [14] In the Show Cause Decision, the Agency proposed that GO Transit extend the use of the Giken hammer, in conjunction with vibratory hammer use, for the entire length of pile-driving activities and not just until the scheduled 250 piles are installed, especially in the more sensitive areas.

Position of GO Transit

- [15] GO Transit submits that there are only two Giken hammers available in the world that have the capacity to install the required 914 mm piles, and that the other is on contract in the United Kingdom. Furthermore, GO Transit asserts that the Giken hammer has only one/sixth the productivity rate of an impact hammer.
- [16] GO Transit has currently scheduled the Giken hammer to be used to install 250 piles before the contract ends in March 2010. GO Transit submits that continuing its use would require negotiating an extension to the agreement between the contractor and Giken. GO Transit's contractor confirms that the Giken hammer can be employed beyond the present six-month contract term provided that the company could negotiate an extension to the contract for the continued use of the equipment.

- [17] GO Transit indicates that it is "prepared to consider the feasibility of extending the use of the Giken hammer, subject to determining the full implications and negotiating fiscally responsible terms". GO Transit also indicates the current project schedule is based on overlapping activities between various contracts, but the duration and sequence of activities would completely change using the Giken hammer. GO Transit submits that the extended use of the Giken hammer would require a "complete re-planning of the balance of the current piling contract."
- [18] GO Transit is of the opinion that an Agency order to increase the use of the Giken hammer would have "extensive contractual and financial implications due to the long extension of the contract duration, and the periods of unproductive time" and it states that it would have to consider the impact on taxpayers.

Position of the WTDCG

- [19] The WTDCG supports the extensive use of the Giken hammer as it will protect the community and establish a standard for excellence in urban infrastructure projects in which GO Transit can demonstrate leadership and expertise.
- [20] The WTDCG points out that the delays from GO Transit are not solely due to mitigation measures and the use of alternative technologies. The WTDCG argues that it was the condition of the site around the NRT Building that dictated the use of the Giken hammer in order to safely drive piles along the building's foundation. The WTDCG is of the opinion that now that GO Transit's contractor has experience using the Giken hammer, some efficiencies may be realized as part of that experience.
- [21] Furthermore, the WTDCG states that as GO Transit has not provided any real explanation as to why the project cannot be delayed and the Giken hammer cannot be used. The WTDCG encourages GO Transit to pursue the use of the Giken hammer as a technical solution to meet its obligations under section 95.1 of the CTA with respect to both noise and vibration.

Position of the City of Toronto

- [22] The City of Toronto asserts that GO Transit has not provided hard evidence that support the assertion that there would be additional costs and delays to the project.

Agency finding

- [23] The Agency finds that the Giken hammer is the least disruptive technology for use in this project and, although it is less productive than other pile-driving methods, it is preferred, considering the nature of the area where the construction takes place. Accordingly, the Agency will require GO Transit to use the Giken hammer to the greatest extent possible, particularly in the most sensitive areas and during the most sensitive hours of activities on the project.
- [24] GO Transit will be required to immediately initiate and pursue all necessary contractual requirements to ensure that the Giken hammer remains in use in this project for the duration of the steel pipe pile-driving activities. The Agency will also require GO Transit to notify the Agency, the WTDCG, and the City of Toronto if it is not able to secure an extension to the contract, with an explanation of the reasons why it was not possible to secure the extension.

2. Vibratory hammer

- [25] In the Show Cause Decision, the Agency proposed that GO Transit use a vibratory hammer to completely install the piles by modifying the hammer's frequency settings and, where this is not possible, drive the piles to the maximum depth possible considering soil conditions and then finish the pile-driving activities with an impact hammer.

Position of GO Transit

- [26] GO Transit submits that conventional (non-computer controlled) vibratory hammers were considered unsuitable for widespread use on this project due to the limited ability to control vibration frequency ranges, with associated potential damage to adjoining infrastructure, such as homes, businesses and utilities. GO Transit explains that increasing the frequency of a vibratory hammer and correspondingly increasing the energy, generally causes more noise while decreasing the frequency increases vibrations. GO Transit maintains that it is the inability to control the frequency of the conventional vibratory hammer, particularly on start up and shut down, that renders it unsuitable for use in the project. GO Transit is also concerned that a major shift from impact to vibratory installation would decrease noise but increase vibrations in the community.
- [27] GO Transit states that the (computer-controlled) PTC-Vibro hammer was used to install piles between April 2009 and August 2009, and, although it was removed from the site in August 2009, GO Transit confirms that it has since been returned to service. As noted above, GO Transit's contractor states that it may be possible to use the PTC-Vibro hammer to drive many of the remaining piles to a certain depth and then either drill out or auger the piles and continue driving with the PTC-Vibro hammer or complete the final portion with an impact hammer. The contractor further states that this would likely require a second PTC-Vibro hammer which would take approximately three months for delivery and that both the time and cost to complete the project could double.
- [28] GO Transit asserts that the use of the PTC-Vibro hammer to partially install the pile and the impact hammer to finish driving requires separate installation cranes at each hammer. GO Transit submits that, due to site and clearance restrictions, and the need to control vibrations, two cranes cannot work in the same area at the same time, which will affect productivity and scheduling, and add to the cost of installation.
- [29] GO Transit maintains that an Agency order to increase the use of the PTC-Vibro hammer would create major contractual and financial issues which could adversely affect taxpayers and that ordering changes to the contract would limit the ability to negotiate acceptable terms. However, GO Transit indicates that, subject to being able to negotiate acceptable terms with the contractor, GO Transit is prepared to consider increasing the use of the PTC-Vibro hammer.

Position of the WTDCG

- [30] The WTDCG states that when Giken piling cannot be accomplished reasonably, it supports the use of the PTC-Vibro hammer, coupled with limited use of impact hammering to completion.
- [31] In response to GO Transit's statement that two cranes cannot work in the same area at the same time, the WTDCG indicates that GO Transit had two cranes set up for the April to August 2009 operation of the PTC-Vibro hammer.
- [32] The WTDCG asserts that none of GO Transit's remarks support a significant limitation on the use of vibratory technology. The WTDCG maintains that GO Transit's contractor is now skilled in the use of this technology and refers to the contractor's statement that the PTC-Vibro hammer could be used on site. Furthermore, WTDCG notes and supports the new information provided by GO Transit's contractor that would suggest that the use of impact hammers could be reduced on site through augering the piles and then finishing them with a PTC-Vibro hammer.
- [33] The WTDCG strongly encourages GO Transit to consider its contractor's recommendation to auger piles when ground resistance is encountered and complete piling with the PTC-Vibro hammer as a strategy to completely obviate the use of diesel impact hammers.

Position of the City of Toronto

- [34] The City of Toronto submits that GO Transit has not provided hard evidence that supports the assertion that there would be additional costs and delays to the project with the use of the PTC-Vibro hammer.
- [35] Furthermore, the City of Toronto requests the Agency to consider whether two cranes would be necessary or if piles could be installed in batches so as to allow one crane to be replaced with another crane at intervals.

Agency finding

- [36] The Agency accepts GO Transit's submission that conventional or non-computer controlled vibratory hammers are not suitable for widespread use in this project due to the limited ability to control vibration frequency range which could potentially cause damage to adjoining infrastructure, such as homes, businesses and utilities. However, this does not preclude GO Transit from employing a conventional vibratory hammer in areas that can be demonstrated to be less sensitive to vibrations or where GO Transit can mitigate the impact of vibrations.
- [37] The Agency is of the opinion that the use of the computer-controlled PTC-Vibro hammer is preferable to the impact hammer in this project. Therefore, the Agency will require GO Transit to continue to use the PTC-Vibro hammer and to increase its use to make it the primary method for installing piles for the duration of the project, wherever possible.

- [38] However, as pointed out by the contractor, augering the piles part-way through the pile-driving process, may allow the PTC-Vibro hammer alone, and thus only one crane, to completely install each pile. Therefore, the Agency will require GO Transit to use a PTC-Vibro hammer to install the steel pipe piles, by augering them, if needed and where possible, to complete their installation. Where this is not possible, the Agency will require GO Transit to use the PTC-Vibro hammer to drive the piles to the maximum depth possible considering the soil conditions and only then use an impact hammer to finish the pile-driving activities.
- [39] The Agency accepts that the use of two cranes is required when two different hammers are being employed to drive each pile, but that in some locations of the project it may not be feasible to have both cranes on location at the same time. In such cases, GO Transit is encouraged to consider installing piles in batches.

3. Impact hammer and related mitigative measures

- [40] In the Show Cause Decision, the Agency proposed that GO Transit:
- a) use an impact-vibration hammer which switches automatically from one mode to another depending on soil resistance. Alternatively, use the impact hammer on the project only in conjunction with a vibratory or Giken hammer and only where it has been demonstrated that no other method is technically or commercially feasible;
 - b) de-power the impact hammer and decrease the hammer energy wherever possible and use shrouds, skirts and rubberized chasers. Any opening in the shroud should always be positioned down the tracks and not toward any residential area; and,
 - c) employ moveable noise barriers to deflect noise away from nearby residential areas by moving them to current pile-driving locations and by setting them up around the shrouds to deflect noise from the fourth, open side of the shroud.

Position of GO Transit

- [41] GO Transit submits and the contractor confirms that the combination vibratory-impact hammer is not commercially available in a size that will successfully install piles on this project and that it is an experimental concept that has not translated into a working tool.
- [42] However, GO Transit confirms that it can use a computer-controlled PTC-Vibro hammer to drive piles part of the way and then switch to an impact hammer, which has been done successfully in vibration sensitive areas, although the contractor indicates that productivity was reduced by approximately 50 percent. The contractor further confirms that the PTC-Vibro hammer may be able to fully install piles by augering out the centre of the piles during installation.
- [43] GO Transit also submits that the alternative of using the Giken hammer in combination with another type of hammer is not feasible, "since the pile passes through the Giken hammer that uses hydraulic mechanism".

- [44] With respect to the mitigative measures used in conjunction with the impact hammer, the contractor confirms that the impact hammers have been de-powered, or de-stroked, to reduce noise levels in vibration and noise sensitive areas. GO Transit submits that although de-powering reduces noise levels, it has increased noise duration as it takes 20 to 30 percent more time to install each pile. GO Transit confirms that it will continue to de-power impact hammers, to use only as much power as is necessary to install the pile.
- [45] GO Transit states that full shrouds have been installed on all impact hammers since June 8, 2009. In addition, GO Transit asserts that the shrouds used on this project close fully around the impact hammer. These shrouds, according to GO Transit, were specially designed and developed at a cost of \$75,000. However, GO Transit points out that the shrouds must be opened to prevent overheating at regular intervals and that the opening is determined by the orientation of the pile-driving rig which itself is fixed by site conditions and proximity of rail facilities. GO Transit asserts that the shrouds have decreased productivity by up to 30 percent as the crews need to take extra time to set them up and maintain tolerances for accurate pile installation. Furthermore, GO Transit submits that, since June 8, 2009, skirts made from sound absorbing material have been used to enclose the pile template to further reduce noise levels and that the chasers have been filled with rubber to minimize reverberation and resultant noise. Finally, GO Transit indicates that moveable sound walls are used in sensitive areas, where space and safety permit.

Position of the WTDCG

- [46] The WTDCG asserts that the need to vent the shrouds is an operational limitation that reduces their effectiveness, as it is the operational need, or inconsistent use of the shrouds, that results in the shrouds being open at times at the final stages of pile-driving when the noise is highest. Furthermore, the WTDCG suggests that the hammer is not shrouded when driving the pile at maximum height which further diminishes the effectiveness of using shrouds.
- [47] With respect to the use of moveable sound barriers, the WTDCG notes that they had only been moved on three occasions. The WTDCG suggests that the design of these barriers, which is non-continuous and open on all sides, would have only the most minor effect on deflecting some noise energy.
- [48] The WTDCG submits that the other noise mitigation measures do not address the inappropriate use of impact hammering in an urban environment and that the use of these measures has not been sufficiently effective to allow reasonable use of impact hammers.
- [49] Further, according to the WTDCG, GO Transit has not provided sufficient evidence or specific details to explain how mitigation measures delay the project.

Position of the City of Toronto

- [50] The City of Toronto states that the contractor's comments in Appendix 1 of GO Transit's submission suggest that the combination vibratory-impact hammer technology is evolving and therefore the City of Toronto requests that the Agency require GO Transit to utilize this technology when it becomes available.

- [51] The City of Toronto states that GO Transit's comments to the effect that mitigation measures are already in place and do not require an Order, should be disregarded as these and similar statements are irrelevant in light of the Agency's finding that GO Transit is in breach of its obligations under section 95.1 of the CTA. Furthermore, the City of Toronto submits that voluntary compliance with the mitigation measures is not sufficient to permit the City of Toronto and the residents of the affected area to be satisfied that their concerns will be addressed. The City of Toronto maintains that GO Transit's compliance with the measures has not been uniform and has routinely been sacrificed in favour of scheduling or cost concerns. Accordingly, the City of Toronto submits that these measures should be made mandatory by the Agency.
- [52] The City of Toronto argues that the onus was on GO Transit to clearly show with appropriate and compelling evidence why these measures should not or could not be implemented. The City of Toronto submits that GO Transit merely repeating the same statements set out in its original pleadings is not sufficient.
- Agency finding
- [53] The Agency accepts that an impact-vibration hammer which switches automatically from one mode to another depending on soil resistance is not commercially available in a size that will successfully install piles on this project. Accordingly, the Agency will not make an order to use such technology which, at this stage, is unavailable for use.
- [54] The Agency also accepts that when the Giken hammer is employed, it must be used to install the entire pile and, as such, the Agency finds that the Giken hammer cannot be used in conjunction with other hammers.
- [55] However, the Agency accepts the evidence of GO Transit's contractor that piles can be fully installed using vibratory technology to drive the piles to a certain depth and then augering out the centres, thereby allowing the PTC-Vibro hammer to completely install the piles. In such case, a combination of two hammers would not be needed. The Agency is of the opinion that augering piles during installation, would be consistent with the objectives of the Agency to minimize the noise and vibrations caused by the project. Accordingly, the Agency will require GO Transit, wherever possible, and notwithstanding loss of productivity, to auger piles to maximize the use of the PTC-Vibro hammer in order to eliminate the use of the impact hammers as much as possible on the project.
- [56] The Agency does recognize that there may be exceptional circumstances where there is no alternative but to use the impact hammer for installation of some piles or to finish driving some piles. In these situations, the Agency will require GO Transit to continue using mitigative measures including de-powering the hammer, and using shrouds with any opening positioned down the tracks wherever possible, skirts, rubberized chasers and moveable sound barriers. In addition, the Agency will require GO Transit to report publicly on its Web site, the planned use and circumstances necessitating the use of the impact hammer and on the actual use of the impact hammer.
- [57] With respect to the moveable barriers, the Agency accepts GO Transit's submission that these cannot be employed in some areas due to site and safety constraints. However, the Agency notes residents' concerns that the barriers have only been moved three times throughout the project and is of the opinion that GO Transit must make greater use of moveable barriers to ensure the maximum potential of the barriers is realized. In addition, the Agency will require GO Transit to report publicly on the use of the moveable barriers on its Web site and where it is of the opinion that it cannot use the barriers, it is to report on the site and safety constraints that preclude their use.

4. Limited hours for pile-driving activities

- [58] In the Show Cause Decision, the Agency proposed that GO Transit:
- a) restrict the hours of work for installing piles to 40 hours per week from between 8:00 a.m. and 4:00 p.m. on weekdays;
 - b) negotiate an agreement with the City of Toronto to allow for road closures during the weekday hours to complete the required work at that location between 8:00 a.m. and 4:00 p.m. on weekdays; and,
 - c) negotiate agreements with other railway companies to allow for train blocks during the weekday hours to complete the required work at that location between 8:00 a.m. and 4:00 p.m. on weekdays.

Position of GO Transit

- [59] GO Transit asserts that, since the beginning of the project in January 2009, it has voluntarily restricted pile-driving with impact hammers to between the hours of 7:30 a.m. to 4:00 p.m. on weekdays, "with rare exceptions". GO Transit also indicates that, in practice, actual pile-driving activities start closer to 8:00 a.m. because the contractor must complete various start up tasks prior to commencing the pile-driving.
- [60] GO Transit calculates that the cumulative time that impact hammers worked before 8:00 a.m. is only 3.75 hours over nine months. However, Appendix 3 of GO Transit's submission shows that this 3.75 hours is made up of 26 instances of starting work up to 10 minutes before 8:00 a.m. GO Transit further submits that it has only extended work with the impact hammer past 4:00 p.m. on weekdays for a total of 45.5 hours over 190 working days and for five hours on one Saturday. Appendix 2 of GO Transit's submission indicates that the impact hammer was used for pile-driving activities later than 4:00 p.m. on 24 occasions between February 23, 2009 and October 5, 2009.
- [61] GO Transit submits that formally changing the start time from 7:30 a.m. to 8:00 a.m. would require a contract change, and that the contractor could claim additional costs and a schedule extension due to the imposition of shorter hours.
- [62] GO Transit notes that the hours of work restrictions apply only to the impact hammers and that other construction activities, including use of the Giken hammer, take place between 7:00 a.m. and 7:00 p.m. in accordance with the City of Toronto construction bylaw. GO Transit asserts that it requires the flexibility to work longer hours when necessary and it submits that it has "demonstrated to date that this flexibility has been used responsibly".
- [63] GO Transit points out that it has successfully negotiated full road closures with the City of Toronto and train blocks with railways companies, and is confident that future closures can be negotiated. GO Transit states that, although these closures extend beyond the 7:30 a.m. to 4:00 p.m. time frame in order to accommodate other construction activities, the use of the impact hammer is still restricted to between 7:30 a.m. and 4:00 p.m. unless it is absolutely necessary to extend beyond 4:00 p.m.

- [64] GO Transit asserts that it should not be ordered to negotiate road closures between the hours of 8:00 a.m. and 4:00 p.m. because it is not possible to carry out all the required work in such short time blocks and it would result in inefficiencies.

Position of the WTDCG

- [65] The WTDCG proposes that, as GO Transit acknowledges that pile-driving does not normally begin until 8:00 a.m., there should be no reason why GO Transit cannot respect an Agency order limiting pile-driving activities to between 8:00 a.m. and 4:00 p.m. with normal safety, equipment warm-up and related matters beginning at 7:30 a.m.. The WTDCG maintains that piling outside of the set hours is very disruptive and stressful when individuals are not provided advance warning and that weekend pile-driving is opposed by community members.
- [66] The WTDCG affirms that the responsible use of the Giken hammer could include extended hours providing GO Transit's contractors with greater flexibility in its application.

Position of the City of Toronto

- [67] With respect to the hours of work, the City of Toronto again takes the position that voluntary compliance with the mitigation measures, including restricted hours of work, is not sufficient to permit the City of Toronto and the residents to be satisfied that their concerns will be addressed. The City of Toronto maintains that GO Transit's compliance with the measures such as hours of work has not been uniform and has routinely been sacrificed in favour of scheduling or cost concerns. The City of Toronto submits that these measures should be made mandatory by the Agency.
- [68] The City of Toronto states that the hours associated with any permitted road closure will be expressly subject to the final outcome of this proceeding and the terms of any further agreement between GO Transit and the City of Toronto.

Agency finding

- [69] The Agency finds that, although GO Transit maintains that it has, for the most part, limited its use of pile-driving equipment to between 8:00 a.m. and 4:00 p.m. on weekdays, and only commences preliminary start-up work at 7:30 a.m., GO Transit's records indicate that between February and October 2009 there have been 26 instances of pile-driving activities occurring before 8:00 a.m. and 24 instances after 4:00 p.m.
- [70] The Agency is of the opinion that, subject only to exceptional occasions and on the terms set out below, no pile-driving using the PTC-Vibro, conventional vibratory or impact hammers is to take place outside the hours of 8:00 a.m. to 4:00 p.m. on weekdays. The Agency accepts that daily lead time is required to prepare workers and equipment for the day's activities and as such, work may begin at 7:30 a.m. but the actual pile-driving and its associated noise and vibration must not start before 8:00 a.m. As such, the Agency finds that GO Transit may continue its current practice of working from 7:30 a.m. to 4:00 p.m. However, the Agency will require that pile-driving activities associated with the use of the PTC-Vibro, conventional vibratory or impact hammers not commence before 8:00 a.m. nor extend after 4:00 p.m.

- [71] The Agency recognizes that the implementation of these corrective measures may result in delays in the completion of the project. To allow GO Transit flexibility to enable it to minimize these delays as much as possible, the Agency finds it appropriate that GO Transit make full use of the Giken hammer. To that end, the Agency further finds that given the duration of the project and the nature of the area, it is reasonable to allow the Giken hammer to be used outside of the weekday hours of 8:00 a.m. to 4:00 p.m. and, in accordance with the current City of Toronto noise bylaw (Chapter 591 of the Municipal Code), from 7:00 a.m. to 7:00 p.m. on weekdays (excluding statutory holidays) and between 9:00 a.m. and 7:00 p.m. on Saturdays.
- [72] The Agency notes that on exceptional occasions, when it is not possible to use the Giken hammer, GO Transit may have to use the PTC-Vibro, conventional vibratory or impact hammers outside of the hours of 8:00 a.m. to 4:00 p.m. on weekdays. In such circumstances, the Agency will require GO Transit to provide on its Web site 14 days' prior notice including specific details of the constraints that preclude the use of the Giken hammer. In addition, GO Transit will be required to report within its communications program any actual use of the PTC-Vibro, conventional and impact hammers.
- [73] The Agency notes that GO Transit has successfully negotiated road closures with the City of Toronto and train blocks with other railway companies and, accordingly, all future agreements must be consistent with the limited hours for pile-driving activities set out in this Decision.

5. Noise and Vibration Monitoring

- [74] In the Show Cause Decision, the Agency proposed that GO Transit prepare a method to provide weekly noise and vibration level measurements, including equipment to be employed, method of measurement and associated metrics, and the criteria for selecting the location of noise measurements.

Position of GO Transit

- [75] GO Transit submits that it has a noise and vibration monitoring program currently in place, and that it could be enhanced to the level described by the Agency, with a reasonable time period to put this in place, as the contract for these services would have to be tendered.

Position of the City of Toronto

- [76] The City of Toronto submits again that these measures should be made mandatory by the Agency as voluntary compliance with the mitigation measures is not sufficient to permit the City of Toronto and the residents to be satisfied that their concerns will be addressed.

Agency finding

- [77] During this proceeding, GO Transit, the WTDCG and the City of Toronto used different methods of measuring noise. In order to assess future levels of noise, it is important that one comprehensive methodology be used to measure that noise. Therefore, the Agency will require that GO Transit provide to the Agency for approval, within 14 days from the date of this Decision, a proposed methodology for an enhanced noise and vibration monitoring program which includes weekly noise measurements, the equipment to be employed, method of measurement and associated metrics, and the criteria for selecting the locations of the measurements.

[78] The WTDCG and the City of Toronto are to be provided with a copy of GO Transit's proposed methodology and will have 7 days to provide comments on the proposal, following which the Agency will rule on the methodology to be employed by GO Transit.

6. Communications

- [79] In the Show Cause Decision, the Agency proposed that GO Transit:
- a) develop a more comprehensive communication system including a Web site which is updated daily, to communicate information to local residents including detailed information about the current pile-driving activities and associated equipment on the site, projected activities and their location for the following two weeks, as well as any periods of inactivity;
 - b) provide at least 2 weeks' notice of any change to the project plans, including the schedule for pile-driving activities and any projected periods of inactivity;
 - c) have an e-mail address and phone line, both to be answered by a person knowledgeable about the project and its schedule, for residents to communicate particular concerns about the current and projected pile-driving activities. GO Transit is to investigate and respond within 48 hours; and,
 - d) post on the Web site a weekly report containing the results of noise and vibration measurements as well as an assessment of the effectiveness of mitigative measures implemented; any complaints received, and how they were addressed and resolved and, any changes to the project schedule.

Position of GO Transit

[80] GO Transit submits that it has had a Web site available since 2003, with high level explanation of the project. GO Transit asserts that this Web site has incorporated new elements since early spring to include materials from information sessions; typical questions and responses and a collection of community newsletters. GO Transit also submits that it distributes, door-to-door in the community, newsletters with project updates and progress, as well as any upcoming changes to schedules or the nature of the work that could have an impact on nearby residents. GO Transit indicates that approximately 1,200 to 1,500 copies of each newsletter edition are distributed throughout the community and that it intends to continue communicating with residents through its Web site and these newsletters.

[81] GO Transit states that the Web site could be further enhanced to provide additional information. Furthermore, GO Transit is willing to post information on complaints, provided it is in compliance with privacy protection legislation, but points out that how this information would be presented would have to be determined.

[82] GO Transit submits that there are some restrictions that limit its ability to ensure that two weeks' prior notice of a change to project plans be given, including the fact that construction work is by nature difficult to precisely schedule, the project schedule is continuously refined and that both weather conditions and noise mitigation measures can delay or interrupt scheduled construction activities.

- [83] GO Transit states that, as a public agency, it must follow an approval process for communications materials which adds to the lead time required to provide accurate, comprehensive information to residents. GO Transit further states that it works hard to provide as much lead time as possible, and will continue to maintain this recommendation as a guideline.
- [84] GO Transit maintains that prior to the start of construction, it recognized the benefits of having an on-site person for community liaison and that this person is thoroughly involved in the project status, is in regular communication with GO Transit's senior staff for the project, is able to provide immediate information about the projects including daily progress updates, and can respond to questions well within the forty-eight hour period that the Agency recommends. As well, GO Transit indicates that it supplemented this function with a team of students during the summer, when people spend more time outdoors.

Position of the WTDCG

- [85] The WTDCG submits that GO Transit's communications to the community have been strong on public relations (PR) and weak on the real information residents need to plan around noise and vibration impositions in their community. It contends that GO Transit's community communications strategy has been an outright failure and that the PR representative did not follow through with adequate notifications. It suggests that greater coordination between project managers and PR representatives is needed to issue timely notices of schedule changes. In addition, the WTDCG submits that the existing channels of communication provide for only one way transmission of information on the project and that there is no complaint resolution process.
- [86] The WTDCG affirms that an expanded Web site with daily updates on work in progress and projected activities for two weeks would be "a welcomed change" that provides real information to people and will contribute to a perceived sense of control over how to manage the construction in their community. The WTDCG states that no reason is provided by GO Transit as to why this cannot be achieved.
- [87] The WTDCG submits that weekly reported noise and vibration measures, which have not, to date, been provided to the community, are needed to ensure that GO Transit is accountable for fulfilling its obligations under section 95.1 of the CTA. The WTDCG states that these measurements should be conducted in a manner that satisfies the Agency that accurate and meaningful measurements are being employed.

Position of the City of Toronto

- [88] The City of Toronto submits, again, that voluntary compliance with the mitigation measures is not sufficient, that compliance with the measures has not been uniform and that these measures should be made mandatory by the Agency.

Agency finding

- [89] Based on the submissions of the parties, it is evident to the Agency that a more effective communications program is required.
- [90] The Agency is also of the opinion that a program should be developed in consultation with the WTDCG and the City of Toronto in order that the community has input into how best GO Transit can comply with this requirement to ensure that the needs of residents and businesses for information are appropriately met. In order to ensure that the communications program is effective, the Agency will require GO Transit to consult with the WTDCG and the City to develop such a program and that the program be in place within 28 days from the date of this Decision.
- [91] The Agency also finds it appropriate to require GO Transit, within 7 days from the date of this Decision, to post on the current Web site and to update daily all scheduled pile-driving activities for the project and their location, as well as any scheduled periods of inactivity (project plans) for a projected period of no less than 14 days from the date of posting, which project plans cannot be changed except in exceptional circumstances.
- [92] The Agency accepts that, in some exceptional circumstances, 14 days notice of any change to the project plans may not be possible. In such instances, the Agency will require GO Transit to give prompt advance notice of such change, including the reasons why 14 days' notice could not be provided.

ORDER

- [93] In light of the foregoing, GO Transit is ordered to implement the following corrective measures, **effective immediately unless otherwise provided:**

1. Giken Hammer:

- a) extend the use of the Giken hammer for the duration of the steel pipe pile-driving activities on the project and for more than the previously scheduled 250 piles. To that end, GO Transit is required to pursue an extension of the contract for the use of the Giken hammer with the supplier for the duration of the pile-driving activities. If GO Transit is not able to secure an extension to the contract with the supplier, GO Transit is to notify the Agency, the WTDCG, and the City of Toronto with an explanation of the reasons why it was not possible to secure the extension.
- b) use the Giken hammer in more sensitive areas.
- c) use the Giken hammer, in addition to weekday pile-driving activities, for pile-driving activities that take place outside the standard hours of 8:00 a.m. to 4:00 p.m. on weekdays.

2. PTC-Vibro Hammer:

- [94] **Within 14 days from the date of this Decision, use a PTC-Vibro hammer as the primary method to install the steel pipe piles by augering them, if needed and where possible, to complete their installation. Where complete installation with a PTC-Vibro hammer and augering is not possible, drive the piles to the maximum depth possible, considering soil conditions, with the PTC-Vibro**

hammer and only then use an impact hammer to finish the pile-driving activities. This does not preclude GO Transit from employing a conventional vibratory hammer in areas that are less sensitive to vibrations or where GO Transit can mitigate the impact of vibrations.

3. Impact Hammer and Related Mitigative Measures

- a) use an impact hammer on the project only in conjunction with a PTC-Vibro hammer or where no other method is possible.
- b) where the impact hammer must be used, de-power the impact hammer and decrease the hammer energy wherever possible and use shrouds, skirts and rubberized chasers. If shrouds are opened, any opening must be positioned, wherever possible, down the tracks and not toward any residential area.
- c) where the impact hammer must be used, employ moveable noise barriers, wherever possible, to deflect noise away from nearby residential areas by moving them to current pile-driving locations.

4. Limited Hours for Pile-Driving Activities

- a) use the Giken hammer, the preferred method of pile-driving, between the hours of 7:00 a.m. and 7:00 p.m. on weekdays (excluding statutory holidays) and between 9:00 a.m. and 7:00 p.m. on Saturdays.
- b) restrict the hours of work for installing piles with the PTC-Vibro, conventional vibratory and impact hammers to between 8:00 a.m. and 4:00 p.m. on weekdays.
- c) negotiate agreements with the City of Toronto to allow for road closures such that pile-driving activities undertaken with the PTC-Vibro, conventional vibratory and impact hammers are limited to between 8:00 a.m. and 4:00 p.m. on weekdays.
- d) negotiate agreements with other railway companies to allow for train blocks such that pile-driving activities undertaken with the PTC-Vibro, conventional vibratory and impact hammers are limited to between 8:00 a.m. and 4:00 p.m. on weekdays.
- e) on those exceptional occasions when pile-driving activities must take place outside of the hours of 8:00 a.m. and 4:00 p.m. on weekdays and it is not possible to use the Giken hammer, the PTC-Vibro, conventional vibratory and impact hammers may only be used following 14 days prior notice on GO Transit's Web site of the proposed activity, including specific details of the constraints that preclude the use of the Giken hammer. In addition, GO Transit must report, within its communication program, the actual use of the PTC-Vibro, conventional vibratory and impact hammers.

5. Noise and Vibration Monitoring

- a) **within 14 days from the date of this Decision**, prepare and submit to the Agency, for approval, a proposed methodology for an enhanced noise and vibration monitoring program to provide weekly noise and vibration level measurements, including equipment to be employed, method of measurement and associated metrics, and the criteria for selecting the location of measurements.
- b) at the same time as it submits its proposal to the Agency, provide copies to the WTDCG and the City of Toronto, which will then have seven days from receipt of the proposal to submit their comments regarding the proposed methodology.

6. Communications

- a) **within 7 days from the date of this Decision**, post on the current Web site and update daily all scheduled pile-driving activities for the project and their location, as well as any scheduled periods of inactivity (project plans) for a projected period of no less than 14 days from the date of posting, which project plans cannot be changed except following notice as set out in c) below.
- b) **within 28 days from the date of this Decision**, consult with the WTDCG and the City of Toronto, and implement a more comprehensive communication program, which must include:
 - i. an enhanced Web site, which is updated daily, to communicate information to local residents and businesses including, without limitation, detailed information about the current pile-driving activities and associated equipment on the site; the project plans for a projected period of no less than 14 days from the date of posting, which project plans cannot be changed except following notice as set out in c) below; and, the locations and projected locations of moveable barriers and any constraints that preclude the use of moveable barriers at any location; and,
 - ii. an e-mail address and phone line, both to be answered by a person knowledgeable about the project and its schedule, for residents and businesses to communicate particular concerns about the current and projected pile-driving activities and to which GO Transit must investigate and respond within 48 hours.
- c) in the event of exceptional circumstances which necessitate a temporary change in the project plans and prior to such change being implemented, GO Transit is to post such change on the current, and thereafter the enhanced, Web site, together with the anticipated duration of the change and the reasons necessitating the change; and if required, revise the project plans to reflect such change.
- d) **within 14 days following the approval by the Agency of the noise and vibration monitoring methodology**, commence posting on the Web site a weekly report containing the results of noise and vibration measurements as well as an assessment of the effectiveness of implemented mitigative measures; and, subject to compliance with privacy protection legislation, any complaints received, and how they were addressed and resolved.

ENFORCEMENT

- [95] GO Transit is reminded that the Agency is a quasi-judicial tribunal that makes decisions on a wide range of economic matters involving transportation falling within the purview of the CTA and has the powers, rights and privileges of a superior court to exercise its authority. Pursuant to section 33 of the CTA, an Agency decision can be made an order of a superior court by the Agency or any party. The Agency's decision is then enforceable in the same manner as a superior court order, such as, through contempt of court proceedings.
- [96] In addition, pursuant to section 26 of the CTA, the Agency may require a person to do or refrain from doing anything that the person is or may be required to do or is prohibited from doing under any legislation that is administered in whole or in part by the Agency. Therefore, should GO Transit fail to implement the corrective measures set out in this Decision and where the Agency determines that circumstances warrant, it may exercise its discretion under section 26 of the CTA and order GO Transit to cease and desist pile-driving activities at the project site.
- [97] Further, if the noise continues to be unreasonable despite the implementation of the corrective measures ordered by the Agency, this may constitute a change in facts and circumstances. In such case, the Agency could, pursuant to section 32 of the CTA and on its own motion or on application of a party, review its decision and consider other measures.

(signed)

J. Mark MacKeigan
Member

(signed)

Geoffrey C. Hare
Member

(signed)

John Scott
Member