

# NEWYORK CITY TRANSIT NOISE REDUCTION REPORT

Prepared Pursuant to the Rapid Transit Noise Code  
and Public Authorities Law 1204-a

## Abstract

This report shall include, but not be limited to an itemized summary of all monies spent, bids requested and received, contracts let, and actual work done on noise abatement programs during the previous period. Any and all subway noise measurements made during the previous period shall be included, with, whenever possible, analyses of such measurements. Such annual reports shall include a detailed analysis of all future noise abatement activities planned for the upcoming twelve months. Following the first twelve-month interval these reports shall also include comprehensive statements of progress made on all planned noise abatement activities included in the previous annual report.

## **Introduction**

MTA New York City Transit (NYCT) has investigated noise issues that may affect the health, safety, or quality of life of our customers and employees and the communities we serve, and has expedited any necessary mitigation actions, for many decades. Noise abatement efforts have been undertaken by technical experts from the Departments of Subways, Stations, Buses, Office of System Safety and MTA Construction & Development (C&D). Beginning in 2015, annual noise reduction reports have been posted on the MTA website, and this effort has been continued by MTA C&D since then.

This annual report, prepared pursuant to the requirements of Public Authorities Law 1204-a, provides an update for the previous year on capital investments and improved maintenance that contribute most to reducing subway system noise. All subway noise measurements made during the previous period shall be included, with, whenever possible, analyses of such measurements. The annual report shall also include a detailed analysis of all future noise abatement activities planned for the next twelve months.

## **Noise Abatement Program**

MTA NYCT's ongoing noise abatement program was begun in 1974. It calls for noise related improvements where appropriate as part of other important capital and operating programs. This has included such major programs as track reconstruction (welded rail and resilient rail fastener installation), station reconstruction (station acoustic treatments), car overhauls (traction motor retrofit, air conditioning retrofit/overhaul) and Scheduled Maintenance System work (ring damped wheels and wheel truing machines). This policy was adopted, and continues to be favorably implemented, because it is most efficient to undertake treatments which contribute to noise reduction in concert with other activities. By including noise abatement activities as integral parts of other vital NYCT programs, such as track replacement, they will not take a back seat to other high priority projects which may otherwise fail to contribute to noise abatement efforts.

There have been several MTA NYCT programs which were designed to exclusively address noise abatement. Many projects have also provided noise abatement benefits indirectly. Examples of the abatement treatments have included traction motor noise reduction (5-7 dBA noise reduction), resilient rail fastener installation on steel elevated structures (3-5 dBA noise reduction), and ring damped wheel installation (15-20dBA screech noise reduction). Programs which provide benefits in addition to noise abatement have included new car purchases, rail welding (9-10 dBA noise reduction, while at the same time decreasing the wear on wheels and rails, and providing a smoother ride), and car air conditioning and rail lubrication (reduces wheel and rail wear on curved track).

MTA NYCT's noise abatement programs are summarized below. These initiatives are organized by the four specific categories in which noise occurs. They are: 1) in-car, 2) elevated structures, 3) curve and brake screech and 4) stations. These represent the areas which are most significantly affected by a particular treatment, although many treatments provide benefits which overlap environments.

## **In-Car Environment**

By purchasing new subway cars and overhauling older cars, MTA NYCT has provided significant reductions to in-car noise, while reducing the amount of noise which emanates from cars. MTA NYCT's existing fleet consists of two Divisions, namely Division A and Division B. The lines that are represented in Division A include all the numbered lines as well as the Times Square Shuttle; Division B consists of all the lettered lines as well as the Rockaway and Franklin Avenue Shuttles.

For each of these Divisions, new cars are being introduced into the fleet for each line. For Division A, older R62 and R62A models were replaced by R142 and R142A. With this changeover, there was a measurable reduction in noise. A 2010 systemwide noise study indicated that the R62 model, manufactured in 1983-85, had an average sound level of 73.2 dBA. This is in comparison to the newer model R142A that had an average sound level of 69.7 dBA. This satisfies the suggested goal of 80 decibels for new cars cited in the Rapid Transit Noise Code. The results of Division B were even clearer that MTA NYCT is continually improving its fleet when it comes to noise reduction in passenger cars. For instance, the average sound level was found to be 80 dBA for a R32A versus 63.9 dBA for a newer R160B; this is a 16.1 dBA reduction in interior noise level.

Many older cars also meet the 80dBA noise level goal, including over 1,000 cars purchased in the 1970's. Currently, the newer R211 subway car models are being phased in and will replace all R44 cars on the Staten Island Railway and all R46 subway cars.

Other improvements have been made which reduce in-car noise. The use of controllers that more closely synchronize acceleration and deceleration of individual cars in a train reduces the incidence of locked wheels, thereby reducing a major cause of flat wheels. The use of improved door and window components provides better seals to insulate the car interior from outside noise. Some cars also have noise abating material installed under the floor.

The installation of welded rail and resilient rail fasteners has had a significant impact on in-car noise levels. Resilient rail fasteners are installed on reconstructed tangent (straight) track and unguarded (gentle) curves on subway concrete track (Type II) and elevated track (Type III). Welded rail is installed only on tangent track and unguarded curves in the subway, and open-cut and at-grade sections of the track system.

## **Elevated Structure Environment**

There are several treatments which can contribute to noise abatement on elevated structures. These treatments include the installation of resilient rail fasteners, wheel dampeners, wheel truing and the use of rail lubricants to reduce curve screech. Resilient rail fasteners with improved noise reducing characteristics now replace steel tie plates placed between the rail and the ties during elevated structure track replacement. Prefabricated track panels are constructed with resilient rail fasteners in place. NYCT installs resilient rail fasteners in Type III track installations at all tangent track and unguarded curve locations.

The occurrence of flat wheels can significantly contribute to an increase in the noise level of a train. In some cases, the increase can be as great as 10 dBA. Flat wheels generally occur because of poor controller operation, which causes unsynchronized acceleration and deceleration from car to car within the train. This in turn results in wheels dragging rather than rolling evenly on the rails. There are two related strategies for reducing flat wheels. One is to prevent them before they occur. Car controllers replaced as part of the completed car overhaul program have significantly reduced the incidence of flat wheels. The improvements made in controller maintenance and increased track testing of cars are also factors in assuring that controllers do not contribute to wheels flattening. The second strategy is to true wheels after they become flat. Wheel truing, a procedure in which the surface of the wheel is ground to correct flats, is an important part of MTA NYCT operations. Wheel truing also eliminates other imperfections created by irregular wheel wear which may cause them to generate excessive noise.

### **Curve and Brake Screech**

Screech noise is generated by friction between wheels and rails, usually on tight curves. It can also be caused by friction from braking. The primary ways to reduce screech noise are through ring damped wheels, rail lubrication and composition brake shoes. Resilient rail fasteners may also reduce rail screech to some extent, but their effectiveness in reducing noise is better addressed in the sections covering elevated structures, stations, and in-car environments.

Ring damped wheels have shown to be an effective means to reduce wheel screech on curves. Rail lubrication of curves is used by MTA NYCT to reduce curve screech. All guarded curves with a radius of less than 1500 feet are equipped with lubricators with Maintenance of Way (MOW) personnel working year-round to keep the lubricators operational and in a good state of repair.

Old cast iron brake shoes have been replaced by new composition brake shoes that lower the screech associated with braking. Composition brake shoes provide a more constant level of friction and, to some extent, sound damping.

### **Station Environment**

The station environment benefits from almost all noise treatments. This includes station acoustic treatments such as noise absorbing barriers installed between tracks and acoustic material installed over and under subway platforms and on ceilings over tracks. The other noise abatement treatments which lower noise in stations are the installation of welded rail with resilient rail fasteners, running trains with quieter traction motors and equipping cars with composition brake shoes and ring damped wheels. In addition, if the station is adjacent to a curve, rail lubrication of that curve will decrease screech noise as trains enter or leave the station.

The Station Reconstruction and Rehabilitation Programs such as the Enhanced Station Initiative are designed to reconstruct or refurbish all elements of a station. Noise reduction is one of the many types of improvements these programs produce. MTA NYCT has instituted a policy to include station acoustic treatments where appropriate as part of these programs.

## **2025 Noise Abatement Program Progress**

### **Resilient Rail Fasteners**

Resilient rail fasteners reduce noise by absorbing vibration from wheel-rail interaction and is the best method to reduce vibration and vibration-generated noise in supporting structures. Resilient fasteners can reduce noise by 3 to 5 dBA underground and 6 to 8 dBA on elevated tracks. NYCT installed 31,632 regular resilient rail fasteners in 2024 and 21,057 regular resilient rail fasteners in 2025, plus 12,756 super resilient rail fasteners in 2024 and 8,248 super resilient rail fasteners in 2025. In 2026, 27,374 regular resilient rail fasteners are planned for installation, and 10,722 super resilient rail fasteners are planned.

### **New Low Vibration Track (LVT)**

A new type of LVT is being installed throughout the NYCT System to determine its cost effectiveness. Several locations have been completed, and preliminary results show a marked improvement in vibration-generated noise. The Culver Viaduct LVT installation, completed in 2013, was for 18,000 track-feet. The #7 Line Extension LVT track installation, completed in 2014, was for 13,600 track-feet. In 2016, 23,006 track-feet LVT was added when the 2nd Avenue Subway Line opened for business. In 2017, 13,629 track-feet LVT was added, in 2018, 656 track-feet LVT was added throughout the System, 2019, 2020 and 2021 did not include any LVT. A total of 41,649 track-feet of regular track was replaced in 2019, none was replaced in 2020 but a total of 33,739 track-feet was replaced in 2021. In 2022, 2023, 2024, and 2025 zero track-feet of low vibration track was added, and none is projected for 2026.

### **Continuous Welded Rail (CWR)**

A proven noise reduction technique, welded rail continues to be installed with approximately 28,319 track-feet added throughout the system in 2020 which is approximately 56,638 feet of CWR. This includes continuous welded rail where rails are welded together to form one uninterrupted rail that may be several miles long. Because there are few joints, this form of track is very strong, gives a smooth ride, and needs less maintenance; trains can travel on it at higher speeds and with less friction. This technique can result in up to 8 to 10 dBA of noise reduction when used with resilient fasteners. CWR is installed on tracks underground and at-grade, but not on elevated track due to thermal expansion issues and need to modify structure and rail fixation. In 2024, 16,698 feet of CWR was installed and 47,497 88 track feet of CWR were installed in 2025 The projected total for 2026 is 61,746 feet.

## Top of Rail Friction Modifiers

Top of rail friction modifiers is a technique that lubricates contact surfaces of the rail to reduce squeal, which can be very effective under certain circumstances: 4 units of top-of-rail friction modifiers were added in 2024 and 23 units of top-of-rail friction modifiers were added in 2025; 24 units are planned for installation in 2026.

A new state-of-the-art lubrication delivery technology called the DropsA Lubrication System is being installed throughout the system.

### DropsA Lubrication System: IoT-Enabled Precision for Rail Maintenance

DropsA specializes in centralized lubrication systems and has developed an advanced, computerized rail lubrication system designed to reduce wear and tear on both rails and wheels. This state-of-the-art system precisely applies a programmed amount of lubricant to the rails, ensuring optimal performance, longevity, and efficiency in railway operations.

A key feature of the DropsA system is its IoT integration, which provides real-time monitoring, and automated alerts in the event of system malfunctions or maintenance needs. This smart technology significantly reduces the need for manual inspections, improves operational efficiency, and enhances safety.

### Key Capabilities of the DropsA Lubrication System

- **Automated, Computer-Controlled Lubrication:** Ensures precise and consistent lubricant application, minimizing waste and maximizing effectiveness.
- **IoT Integration & Remote Monitoring:** The system continuously transmits data, allowing operators to monitor lubrication levels and track performance.
- **Fail-Safe Operation with Instant Alerts:** The system provides automatic notifications in case of malfunctions or errors, reducing response time and enhancing reliability.
- **Modular & Scalable Design:** Can be implemented across various rail networks, from small-scale installations to extensive railway systems.
- **Environmental Adaptability:** Adjusts lubrication based on real-time weather conditions, track usage, and environmental factors to ensure optimal application.
- **Wireless Connectivity:** Uses secure Wi-Fi or cellular networks for seamless communication between components and the main control system.
- **Weather-Resistant & Durable Design:** Built to withstand extreme environmental conditions for long-term reliability.

### Benefits of the DropsA System for Rails and Wheels

1. **Extends Equipment Lifespan:** Reduces friction between wheels and rails, minimizing wear and tear.
2. **Improves Safety:** Ensures consistent lubrication, preventing rail failures.
3. **Reduces Maintenance Costs:** Lowers the need for frequent manual inspections and repairs.
4. **Boosts Operational Efficiency:** Eliminates downtime caused by lubrication failures, ensuring uninterrupted railway operations.

5. **Environmentally Sustainable:** Optimized application minimizes excess lubricant usage, reducing environmental impact.

## **Installed Locations**

### **DropsA Sumo Pump with Zone Box System**

- West 8th St (BMT Brighton, A3, A4 Tracks)
- 21st St Van Alst
- 57th St
- 121st St on the BMT J Line
- Westchester Sq on the Lex
- Hoyt-Schermerhorn

### **DropsA Electric Barrel Pump System**

- 14th St (Lexington Line, N/B Track Lube House)
- 14th St (Lexington Line, S/B Track Lube House)
- 18th Ave (West End Line, Lube House)
- 4th Ave/9th St (IND Prospect Line)
- Sheepshead Bay (BMT Brighton Line)
- 9th Ave (BMT West End)
- Simpson St (IRT White Plains)
- Hoyt-Schermerhorn
- Cortlandt

## **Projected Installation**

Currently, the only projected installation is Hammel Wye on the A Line. While NYCT aims to implement this system throughout the network, current budget constraints limit expansion.

## **Ring-Damped Wheels**

All NYCT revenue subway car wheels continue to be outfitted with ring-damped wheels, which reduces bell-like ringing of wheels. Ring-Damped Wheels are economical and achieve between 15 to 20dBA screech noise reduction (both level and duration).

## **Wheel Truing**

Flat wheels sometimes develop over time and can cause extreme noise conditions, in addition to potentially causing damage to rail and/or the subway car itself. When it is ascertained through inspection that flat wheels exist the wheels are removed from the truck of the subway car and sent for wheel truing.

Wheel truing machines are in 8 of our 15 Maintenance shops (239<sup>th</sup> Street, Corona, 207<sup>th</sup> Street, Jamaica, Concourse, East NY, Coney Island Overhaul Shop, 207th Street Overhaul Shop) and 1850 cars wheels were trued in 2022; 2,273 cars wheels were trued in 2023; 2,428 cars wheels were trued in 2024; and 2,680 cars wheels trued in 2025.

### Fan Plants and Electric Substations

In addition to incorporating noise reduction techniques for new fan plants and substations, MTA NYCT has added silencers and vibration isolators to several existing above-ground fan plants to reduce emergency ventilation fan noise and ground-borne vibration to adjacent structures. In addition, in September 2022 a noise study was conducted at Maspeth Substation in Brooklyn to better ascertain noise levels in underground stations and what mitigation measures can be taken to minimize noise impacts for future installations. No noise complaints originating from operation of fan plants and electric substations were made in 2023, 2024, or 2025.

### Buses

All recent, current, and future bus purchases require sustainable design incorporating the latest noise reduction methods available, such as state-of-the-art mufflers, to reduce the noise level exposure of passengers and bus operators as well as adjacent pedestrians, vehicles, housing, and businesses. Future studies may be performed to ascertain the effectiveness of current operations regarding noise mitigation.

### Annual and Projected Noise Abatement Financials

<b>Noise Abatement Financials 2025</b>			
Regular Resilient Rail Fasteners (feet)	21,057 Total	2025 Construction Cost	\$2,878,491.90
Super Resilient Rail Fasteners (feet)	8,248 Total	2025 Construction Cost	\$3,051,430.08
Track-feet of LVT installed (feet)	0 Total	2025 Construction Cost	\$0.00
Track Feet replaced (feet)	29,811 Total	2025 Construction Cost	\$7,747,509.51
Feet of Welded rail installed	47,497 Total	2025 Construction Cost	\$5,604,475.50
Number top-of-rail friction modifiers	23 Total	2025 Lubrication Cost	\$368,000.00
<b>2025 Material Cost</b>			<b>\$19,649,906.99</b>
<b>2025 Labor Cost</b>			<b>\$124,800,000.00</b>

<b>Noise Abatement Projected Financials 2026</b>			
Regular Resilient Rail Fasteners (feet)	27,374 Total	2026 Construction Cost	\$3,742,039.47
Super Resilient Rail Fasteners (feet)	10,722 Total	2026 Construction Cost	\$3,966,859.10
Track-feet of LVT installed (feet)	0 Total	2026 Construction Cost	\$0.00
Track Feet replaced	38,754 Total	2026 Construction Cost	\$9,297,011.41
Feet of Welded rail installed	61,746 Total	2026 Construction Cost	\$6,725,370.60
Number top-of-rail friction modifiers	24 Total	2026 Lubrication Cost	\$384,000.00
<b>2026 Projected Material Cost</b>			<b>\$24,115,280.58</b>
<b>2026 Projected Labor Cost</b>			<b>\$137,280,000.00</b>

## **Response to Noise Complaints**

MTA C&D measures and quantifies noise on transit equipment/structures for maintenance and troubleshooting purposes, but also in residences impacted by the operation of the subway system, critical infrastructure, and construction activity from NYCT capital projects. In 2025, Environmental Services responded to three new noise and vibration complaints from residents located in Manhattan and Staten Island.

In July 2025, C&D Environmental Services conducted noise measurements at the Whitehall Street and Rector Street stations on both northbound and southbound platforms in response to a commuter noise complaint received by NYCT. Visual inspections were also performed by NYCT Maintenance of Way (MOW) personnel. Elevated noise levels were detected at Rector Street Station, while no elevated readings were identified at Whitehall Street Station. Following these findings, repairs were implemented at Rector Street Station to address the noise concerns. The corrective work included lubrication house repairs and rail replacement.

In November 2025, residents at 22 Wilson Avenue in Staten Island submitted noise and vibration complaints. C&D Environmental Services conducted noise and vibration measurements along the Staten Island Railway right-of-way and within the residence. Repairs, including the welding of two field joints, are expected to be completed by the end of the first quarter of 2026 as part of MTA C&D capital project T-80289, Mainline Track & Switch Replacement.

Additional information and noise measurement data can be found in the appendix section of this report.

## **Conclusion**

MTA NYCT has continued to make substantial progress in abating noise in the system. Transit's fleet is now entirely composed of new and overhauled cars, and new subway cars that are in the process of being phased in, such as the new R211 trains on the A line. Based on noise studies conducted by the MTA, it has been established that the noise exposure of the riding public is substantially less than the maximum acceptable dose established by OSHA for 8 hours continuous exposure (85 dBA, 8-hour time weighted average).

In the area of track, MTA NYCT continues its capital program to improve its inventory of mainline track. Through the installation of welded rail, resilient rail fasteners and rail lubricators, substantial progress has been made in reducing noise. Rail welding and the installation of resilient rail fasteners are continuing in the next capital program as part of the normal replacement track program. Car equipment maintenance is also being undertaken to ensure that noise emissions are minimal by means of ring damped wheels and wheel truing. A total cost of \$19,649,906.99 was spent on materials and \$124,800,000.00 was spent on labor for noise mitigation efforts; a projected material cost of \$24,115,280.58 and a projected labor cost of \$137,280,000.00 is expected for 2026.



## Construction & Development

**Date:** July 2, 2025  
**To:** Robert Sarno, Assistant Chief Track Officer, Elevated Maintenance, MoW, NYCT  
**From:** Stacy Konstantellis, Principal Environmental Specialist, Environmental Services, C&D  
**Re:** Noise Measurements, Rector Street & Whitehall Street Stations, R Line

On July 1, 2025, Environmental Services conducted noise measurements on both the northbound and southbound platforms at the referenced stations in response to a commuter complaint received by NYCT. Prior to this, Maintenance of Way (MoW) personnel performed a visual inspection, and noise measurements were requested to verify their findings.

Significantly elevated levels of noise were recorded on the noise meter at Rector Street station on both the northbound and southbound platforms. The source of the noise and maximum noise levels are documented in the table below. In addition, brake squealing was observed at Rector Street station, producing sounds at frequencies of 630 Hz, 2.5 kHz, and 3.15 kHz.

Rector Street has an ambient noise level of 56.2 dB(A). Elevated levels of noise were not measured at Whitehall Street station.

<u><b>Rector Street Northbound Platform</b></u>		<u><b>Rector Street Southbound Platform</b></u>	
<b>Train &amp; Heading</b>	<b>L<sub>MAX</sub></b>	<b>Train &amp; Heading</b>	<b>L<sub>MAX</sub></b>
Southbound R	101.84 dB(A)	Southbound R	103.53 dB(A)
Northbound W	99.7 dB(A)	Northbound R	101.14 dB(A)
Northbound R	101.92 dB(A)	Southbound W	102.22 dB(A)
Northbound W	101.02 dB(A)	Southbound R	103.53 dB(A)
Southbound W	102.03 dB(A)	Southbound R	98.96 dB(A)

If any further information is needed, please contact Gideon Dunkley of my staff at 646-316-9224.

cc: G. Dunkley  
K. Schnur  
M. Qadri



## Construction & Development

**Date:** November 25, 2025  
**To:** Katerina Patouri, Assistant Director, Government & Community Relations, NYCT  
**From:** Stacy Konstantellis, Principal Environmental Specialist, Environmental Services, DSO, C&D   
**Re:** Noise and Vibration Measurements, 22 Wilson Avenue, Staten Island

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Environmental Services conducted noise and vibration measurements on the Staten Island Railway right of way and at 22 Wilson Avenue between November 17-19, 2025. A geophone was placed adjacent to the tracks on the right of way directly in front of 22 Wilson Avenue and a second geophone was placed further down the right of way in front of 28 Wilson Avenue. Both geophones were located nearby clearly identifiable rail gaps. The highest vibration level measured trackside that is attributable to passing trains is 0.5309 in/sec PPV in front of 22 Wilson Avenue and 0.2768 in/sec PPV in front of 28 Wilson Avenue. Inside the residence at 22 Wilson Avenue, the highest measured vibration level is 0.0137 in/sec PPV.

Noise measurements were also made trackside and inside the residence. Noise levels from a passing train reached 102.3 dB(A) trackside, and 75.7 dB(A) inside the residence. The background sound level was measured at 50.5 dB(A) trackside and 43.7 dB(A) inside the residence.

High levels of vibration are to be expected on the right-of-way. The vibration levels measured in the residence are perceptible but are significantly attenuated from source to receiver. According to published criteria, these levels of vibration have no risk of architectural damage to normal buildings.

Rail gaps were observed during the measurement that most likely contribute to elevated levels of noise in the residence. A track inspection is recommended if one has not taken place already.

If any further information is needed, please contact Gideon Dunkley of my staff at 646-316-9224.

cc: L. Acosta  
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