

VIA EMAIL ONLY jmicik@mavis.com

28 June 2026

Mr. James Micik
Mavis Tire Supply, LLC
100 Hillside Avenue
White Plains, NY 10603

Re: Acoustical Analysis of Site Sound Emissions
Proposed Mavis Tire Center #2296
460 Prospect Avenue, Township of West Orange, Essex County, NJ
OAA File 5042A

Dear Mr. Micik:

As requested, Ostergaard Acoustical Associates (OAA) has carried out acoustical analyses to evaluate the potential site sound emissions of major noise sources associated with a proposed Mavis Tire Center located in West Orange, New Jersey. Site sound emissions must comply with applicable noise regulations. This study is based on the drawing *Site Plan* prepared by Dynamic Engineering, last revised on 25 June 2026.

The project site is located on the eastern side of Prospect Avenue, just northeast of the intersection of Rooney Circle and Prospect Avenue. The property currently accommodates a two-story commercial building to be demolished. The site is located in the B-2, General Business, zoning district. An urgent care center and an event venue also in the B-2 district are located directly north and south of the site, respectively. West of the site across Prospect Avenue are various commercial retailers in the P-C, Planned Commercial, district as well as an electrical utility station in the O-R, Office Research, district. Of most acoustical interest are the residences abutting the site to the east in the PURD, Planned Unit Residential Development, district. The nearest of these residences is located about 70 feet from the closest service bay.

The proposed plan calls for an approximately 6,200 ft² retail facility, utilizing seven garage doors to provide access to vehicle service bays. The site is accessible via a primary driveway connecting to Prospect Avenue; there is also a shared driveway (Blueberry Bend) along the southern portion of the site. In coordination between OAA and Mavis, plans have been updated to call for an additional 6-foot-tall solid privacy fence, connecting the southeast corner of the building with the masonry trash enclosure, to provide additional noise mitigation in the direction of residential receptors to the east. The tire center will contribute steady and intermittent sound to off-site receptors. The primary noise source of interest is the interior sound emitted from servicing



vehicles, such as an impact wrench. Steady sound is produced by rooftop HVAC equipment. Patron activity sound is generally not considered the responsibility of the property owner.

Local and State noise codes regulate site sound emissions. West Orange Township discusses noise in §4-4: Noise. This code section is qualitative in nature, generally prohibiting excessively loud and disturbing noise; no quantitative limits are given. The State of New Jersey Noise Control Regulation, found at N.J.A.C. 7:29, generally requires that steady sound from commercial or industrial properties contributes no more than 65 dB(A) at or within the property line of any residential or commercial receptor. During the nighttime hours (2200-to-0700 hours), the limit drops to 50 dB(A) at residential receptors, while the limit for commercial receptors remains 65 dB(A). There are no limits for industrial receptors. Note the daytime code limit is designed to protect speech communication, whereas the nighttime code limit is designed to mitigate sleep disturbances. The State regulation also provides limits in octave frequency bands that correspond to the 65 dB(A) and 50 dB(A) limits. The frequency bands cover the audible spectrum, from low-pitched sounds to high-pitched sounds; the limits are more permissive at lower frequencies because human hearing is less sensitive at low frequencies. In addition, impulsive noise, which is any noise less than one second in duration, is limited to 80 dB(A) measured using a sound level meter's fast response, regardless of receptor type or time of day. It should be noted that regulatory limits apply at or within the nearest receptor property line. No limit applies at vacant properties or intervening right-of-way corridors that accommodate railroads, rivers, or roads.

As stated above, regulatory limits apply at or within the property line of the receptor. Enforcement guidelines issued by the State* provide further direction indicating that compliance measurements should be made at the location of the affected person. This is defined as a location where recreation, repose, and conversation may reasonably occur. In other words, it is most appropriate to evaluate site sound where a complaint may reasonably occur, such as at upper-story window elevations or at locations 5 feet above grade within landscaped and/or hardscaped residential property areas (e.g. lawns, decks, pools, patios, etc.). No limits apply at intervening roads or rights-of-way. Exceedance of code limits without a formal complaint does not automatically result in a noise code violation. Professional experience is often relied upon to determine the likelihood of a noise complaint.

In summary, Township noise ordinances call for minimization of noise disturbances. Meeting State noise limits accomplish this. Therefore, OAA used State noise code limits as project noise goals.

* Guidelines for the Investigation of Noise Complaints Pursuant to the State of New Jersey *Noise Control* Regulation (N.J.A.C. 7:29) and the *Model Noise Control Ordinance*, 14 January 2025.

As the proposed tire center is anticipated to be operational only during daytime hours, operational sound should not exceed 65 dB(A) at nearby receptors. Because HVAC equipment will operate during the nighttime hours, it should meet the more stringent nighttime noise code limit of 50 dB(A) at residential receptors. While OAA acknowledges that commercial noise limits apply, the focus of this analysis was on the residential receptors as these receptors are closer and are more likely to be sensitive than commercial uses.

Impact wrenches are the primary noise source associated with vehicle servicing. Based on OAA survey data at another Mavis Tire facility, impact wrench activity with the garage doors open produces maximum sound levels of 73 dB(A) at a distance of 50 feet. Impact wrench noise is primarily high-frequency sound. Given the proposed 6-foot solid fence will attenuate about 10 dB at higher frequencies, results indicate that such activity will be below the daytime noise code limit of 65 dB(A) at residential receptor vantage points. With the garage door closed, results will reduce by an additional 10 dB. Specific calculations are included in Attachment A at the end of this report.

Rooftop equipment serving the building includes two 10-ton rooftop units, one 5-ton rooftop unit, and exhaust fans. The proposed rooftop units are manufactured by Trane and have sound power levels ranging from 82 to 86 dB(A). The exhaust fan is a downblast centrifugal 2,500 cfm fan with a sound power level of 74 dB(A). There is also a small toilet exhaust fan which produces negligible sound. The rooftop is surrounded by a tall parapet, which attenuates RTU noise. Analyses show that the total HVAC equipment sound level is well below 50 dB(A) at the nearest residences. Calculations are included at the end of this report in Attachment A.

Overall, the results of this acoustical analysis indicate that the project will fully comply with all State noise code limits. HVAC equipment is shown to meet nighttime noise code limits and service bay activity during the day is shown to meet daytime noise code limits. Given the results of this analysis, no negative acoustical impact is expected from the proposed Mavis Tire Center.



I trust that the above is helpful. As always, if there are any questions, please let me know.

Regards,

OSTERGAARD ACOUSTICAL ASSOCIATES

A handwritten signature in black ink, reading "Benjamin C. Mueller".

Benjamin C. Mueller, P.E., Principal
bmueller@acousticalconsultant.com

JCM:bcm

ATTACHMENT A: ACOUSTICAL CALCULATIONS

	Octave Band Center Frequency, Hz								A [†]
HVAC Equipment Analysis	63	125	250	500	1000	2000	4000	8000	
Rooftop unit, Trane T/YSK060 5-ton, Outdoor L _w [‡]	84	84	82	80	77	73	69	67	82
Attenuation due to distance, 170 feet, plus L _w to L _p [§]	-43	-43	-43	-43	-43	-43	-43	-43	
Attenuation of rooftop parapet	-5	-5	-5	-5	-5	-5	-5	-5	
Total 5-ton rooftop unit L _p at residential façade	36	36	34	32	29	25	21	19	34
Rooftop unit, Trane T/YSK120 10-ton, Outdoor L _w	86	87	87	83	81	77	73	67	86
Attenuation due to distance, 138 feet, plus L _w to L _p	-41	-41	-41	-41	-41	-41	-41	-41	
Attenuation of rooftop parapet	-5	-5	-5	-5	-5	-5	-5	-5	
Total 10-ton rooftop unit L _p at residential façade	40	41	41	37	35	31	27	21	40
Rooftop unit, Trane T/YSK120 10-ton, Outdoor L _w	86	87	87	83	81	77	73	67	86
Attenuation due to distance, 95 feet, plus L _w to L _p	-38	-38	-38	-38	-38	-38	-38	-38	
Attenuation of rooftop parapet	-5	-5	-5	-5	-5	-5	-5	-5	
Total 10-ton rooftop unit L _p at residential façade	43	44	44	40	38	34	30	24	43
Exhaust Fan, Flo Aire Centrifugal Downblast, Outdoor L _w	74	78	80	69	65	63	58	52	74
Attenuation due to distance, 110 feet, plus L _w to L _p	-39	-39	-39	-39	-39	-39	-39	-39	
Attenuation of rooftop parapet	-5	-5	-5	-5	-5	-5	-5	-5	
Total exhaust fan L _p at residential façade	30	34	36	25	21	19	14	8	30
Summed rooftop units + exhaust fan at L _p at residential façade	46	47	47	43	40	36	32	27	45
N.J.A.C. 7:29 Nighttime Noise Code Limits	71	61	53	48	45	42	40	38	50
Margin of compliance	25	14	6	5	5	6	8	11	5

[†] A denotes the A-weighted sound level.

[‡] Sound power levels, L_w, are given in dB re 1 picowatt.

[§] Sound pressure levels, L_p, are given in dB re 20 μPa.

	Octave Band Center Frequency, Hz								A**
Impact Wrench Analysis (Bay Doors Open)	63	125	250	500	1000	2000	4000	8000	
Impact Wrench L _p at 50 feet, bay door open	63	57	59	63	67	66	65	66	73
Attenuation from solid fence	-3	-5	-6	-8	-10	-12	-14	-16	
Impact Wrench at residential property line	60	52	53	55	57	54	51	50	61
N.J.A.C. 7:29 Daytime Noise Code Limits	82	74	67	63	60	57	55	53	65
Margin of compliance	22	22	14	8	3	3	4	3	4

Impact Wrench Analysis (Bay Doors Closed)									
Impact Wrench L _p at 50 feet, bay door closed	64	62	54	53	55	51	47	46	54
Attenuation from solid fence	-3	-5	-6	-8	-10	-12	-14	-16	
Total Impact Wrench at residence	61	57	48	45	45	39	33	30	49
N.J.A.C. 7:29 Daytime Noise Code Limits	82	74	67	63	60	57	55	53	65
Margin of compliance	21	17	19	18	15	18	22	23	16

** A denotes the A-weighted sound level.