

# Environmental Noise Pollution: Tobin Bridge

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# Topic Overview

- Health Impacts of Noise
- Rules, Regulations and Recommendations
- Tobin Bridge Noise Pollution
- Review Dosimetry
- Use Public Health Principles to Enact Change
- Next Steps forward

***“Calling noise a nuisance is like calling smog an inconvenience. Noise must be considered a hazard to the health of people everywhere.”***

**--Former U.S. Surgeon general William Stewart, 1978**

**Noise is a hazard. Hazards require evaluation and controls.**

**Noise is defined as unwanted sound. Outside workplace = Environmental.**

**“Available assessments place the burden of disease from environmental noise as the second highest after air pollution”**

**--WHO Regional Office for Europe & JRC, 2011**

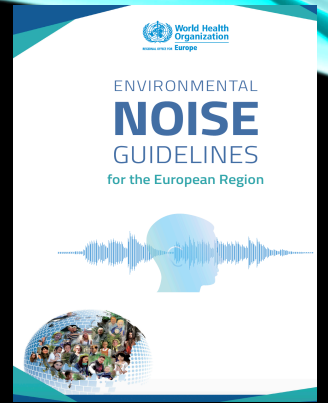
# IMPACTS OF NOISE

## Health Implications:


- Hypertension / Heart Disease
- Sleep disturbances
- Annoyance, Quality of life, well-being, and Mental Health
  
- **And Yes: Hearing Loss**
  - Direct: poor speech discrimination, distortion, tinnitus, hyperacusis
  - Indirect: Loneliness, Isolation, Depression, Cognitive Decline. Functional Limitations. Impaired social, academic and job performance

# Noise and Cardiovascular Disease

- Imperceptible Cardiovascular Activation
  - Endocrine and Autonomic Nervous System
  - Low grade fight or flight response
  - Heart and Blood pressure elevation



- Noise induced cardiovascular disease overall may be small but important in the context of population health and increasing exposure (Ex: urbanization)



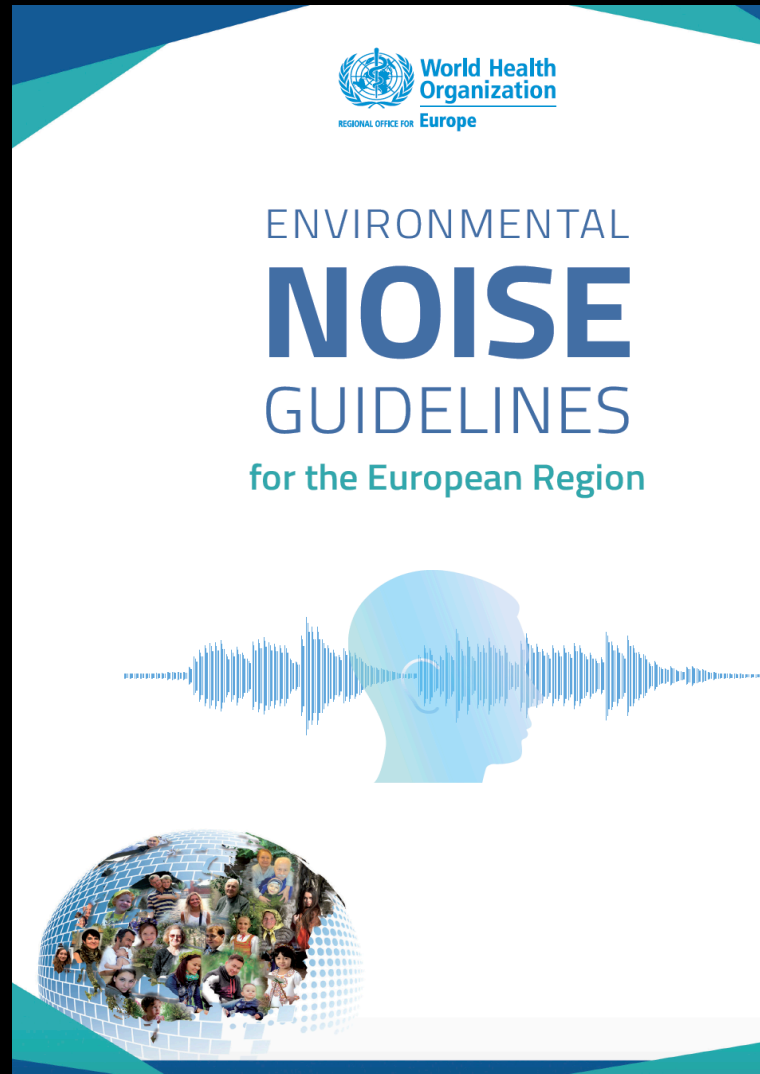
3.1 Road traffic noise

**Recommendations**

For average noise exposure, the GDG **strongly** recommends reducing noise levels produced by road traffic below  $53 \text{ dB } L_{\text{den}}$ , as road traffic noise above this level is associated with adverse health effects.

Summary of priority health outcome evidence	Benchmark level	Evidence quality
<p><b>Incidence of IHD</b></p> <p>The 5% relevant risk increase occurs at a noise exposure level of <math>59.3 \text{ dB } L_{\text{den}}</math>. The weighted average of the lowest noise levels measured in the studies was <math>53 \text{ dB } L_{\text{den}}</math> and the RR increase per 10 dB is 1.08.</p>	5% increase of RR	High quality

# World Health Organization




# Tobin Bridge

A Grassroots Project

Jim Medeiros

Victor Hillman



The background of the slide features a row of five classical, fluted columns supporting a dark, horizontal entablature. The scene is set against a sunset sky with a gradient from deep blue at the top to bright orange and yellow near the horizon. The columns are rendered in a light, slightly desaturated tone, creating a sense of depth and architectural grandeur.

# Pillars of Success

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- 1. Validate the Issue**
- 2. Community Engagement and Awareness**
- 3. Partner with Local Organizations**
- 4. Support from Elected Leadership**



# Environmental Noise Pollution



**Environmental Noise is a neglected issue.**

**Why now:**

- New Bunker Hill Housing Development
- Peace Park
  - 500K Grant
  - Arm distance away rule of thumb
  - Amplified sound for “Race and Equity” discussions

Tobin Sources:

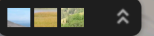
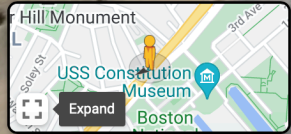
- Jake Braking
- Motorcycles
- Bridge expansion joints
- Refraction / Reflections
- Racing/After market exhausts
- Sirens



**Lowney Way**  
Boston, Massachusetts

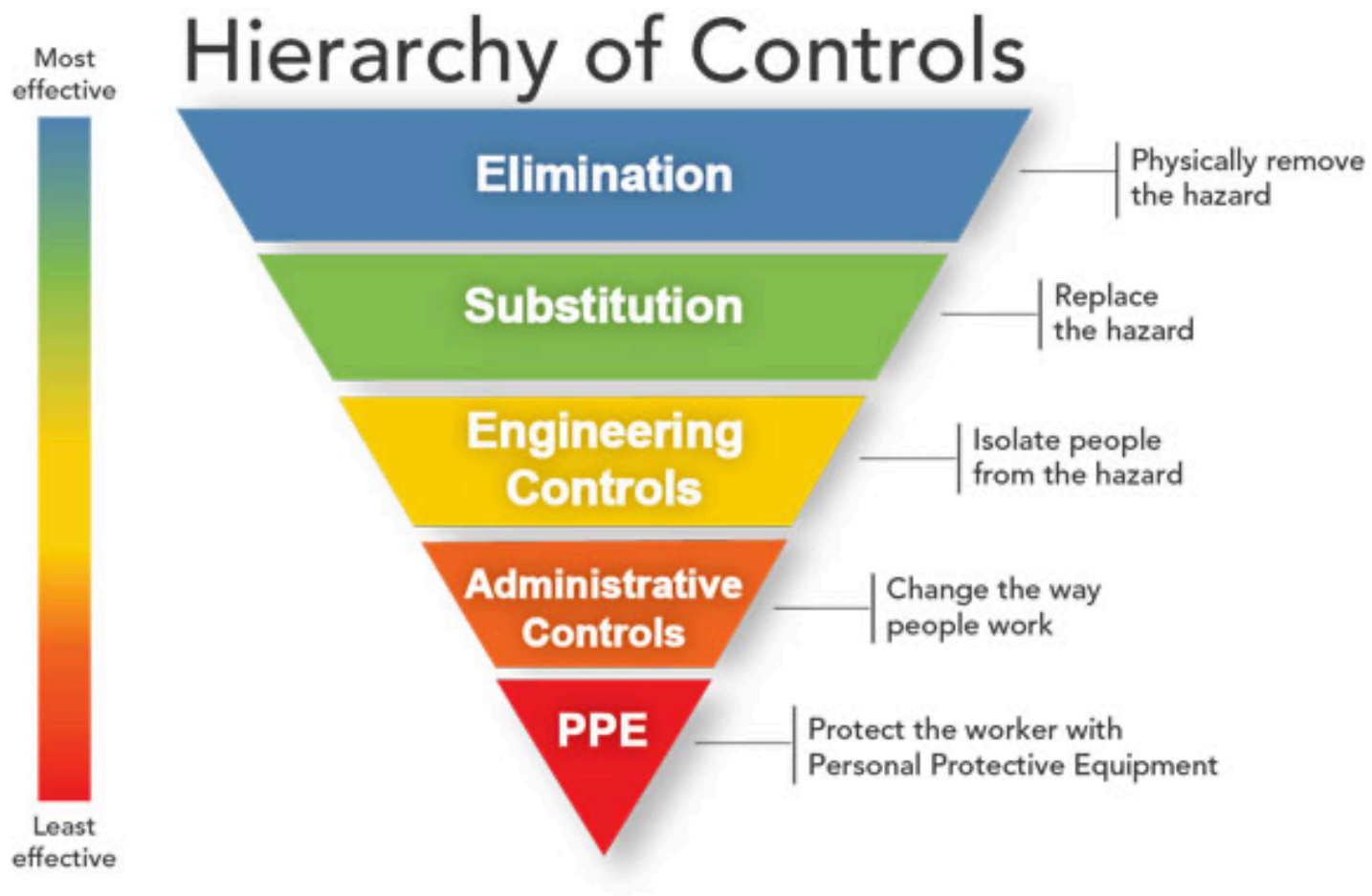
← Google

🔄 Street View





# Environmental Noise Pollution





Environmental  
Noise  
Pollution  
Tobin Bridge



## Stated Objectives:


### Prohibit Jake Braking (Elimination)

- Loud machine gun like pop
- Particularly intrusive sound disruption
- >35/day (M-F); worse since COVID (?)
- Reduce "Jaking" by working with the MassDOT to:
  - Post clear and visible speed limit signage
  - Post clear and visible signs to prohibit the practice of Jake Braking

### Adding Tobin Bridge to Noise Abatement Program: Type II, category - "To Be Studied". (Engineering)

- This is a long-term goal, comprehensively address the various noise sources
- <https://www.mass.gov/service-details/noise-abatement-programs>

# Mass Noise Abatement Program



PART OF [Filing environmental complaints](#) Show 1 more ▾ OFFERED BY [Massachusetts Department of Transportation](#)

## Noise Abatement Programs

MassDOT's mission is to provide the highest quality customer service to residents and visitors, with a focus on safety and efficiency. The noise generated by traffic throughout the state is of concern to us as well.

Loud traffic noise can be annoying, but it can also interfere with everyday activities like sleeping, having a conversation, or just relaxing.

MassDOT's goal is high-quality customer service. So our policies for noise reduction – or “noise abatement” – meet all state guidelines and Federal Highway Administration (FHWA) regulations (23 CFR 772).

Every MassDOT noise abatement plan begins with three questions:

- What effect will the noise have on the surrounding area?
- What noise abatement methods are possible?
- What noise abatement methods are cost effective?

To make sure we spend taxpayers' dollars wisely on safety programs across the state, we use MassDOT and FHWA criteria to measure a project's cost effectiveness. If enough people will receive a high enough benefit for the cost of the construction of noise abatement, the project is approved.

**CONTACT**

**MassDOT Highway Noise Abatement**

**Address**  
10 Park Plaza, Boston, MA  
02116  
[Directions](#) →

**Online**  
James Cerbone  
[James.Cerbone@dot.state.ma.us](mailto:James.Cerbone@dot.state.ma.us)  
a.us

- The Type II Noise Abatement program is an optional State effort to reduce the noise of interstate highways.
- We do this by building noise barriers along existing interstate highways, as funding allows.
- MassDOT completed a statewide study of areas most affected by noise from traffic along interstate highways. This study established a priority list ranking the 53 locations most affected by highway noise.
- We will examine the locations on both lists to determine the feasibility and reasonableness of future Type II barriers.

# Environmental Noise Pollution Tobin Bridge

## How we get there:

Sound surveillance (Link data with literature)

## Government Orgs:

- Boston Air Pollution Control Commission
- Boston Planning & Development Agency (BPDA) / Plan Charlestown / Rutherford Ave
- MassDOT

## Charlestown Community Organizations:

- Charlestown Coalition
- 02129 Neighborhood Alliance
- Charlestown Preservation Society

## Elected Officials:

- Lydia Edwards (Boston City Councilor, District 1)
- Dan Ryan (State Rep for Charlestown / Chelsea)

## Media:

- Charlestown Patriot-Bridge (online/print newspaper)
- Video





# CHARLESTOWN

PATRIOT-BRIDGE

## GUEST OP-ED

### It's too loud in Charlestown

By James Medeiros

What'd ya say? Can you speak louder?! That's what it's like trying to have a conversation when walking up Lowney Way by Peace Park. The noise coming off the Tobin Bridge can be deafening. I find myself searching for small spaces of relative quiet to get a few words in before the next sound assault is volleyed in the direction of Bunker Hill.

If you're like most people, you'll pause a conversation until you reach the tranquility of the Training Field, escape up a block like Mount Vernon or walk deeper into the Navy Yard. For those living by the Tobin it's something you learn to live with, just accept the reality of noise pollution created by a bridge bisecting a community with seemingly little regard for nearby residents.

The issue has become worse since the pandemic or maybe I'm just home more often to take in the acoustic nightmare. Less traffic means higher speeds for bouncing empty dump trucks rattling over metal bridge expansion

strips, more of "The Fast and Furious" inspired after-market car exhausts speeding to nowhere and an unwelcomed spring addition of motorcycles firing out of the lower-level tunnel with unconscionable reverberation. But the King George of obnoxious noise has to be the ROAR of semi-truck Jake Braking. I'm sure you'd recognize the sound if you heard it, a pulsating machine-gun-like-pop of exhaust that blasts the neighborhood about 35 times each weekday. I know because I've counted on more than one occasion.

Most people are aware noise pollution is annoying and a growing urban issue. Simply put it's a human hazard. Many are surprised to learn about the mounting evidence that links noise to harmful physiologic effects including hypertension, ischemic heart disease, cognitive impairment in children and sleep disturbances. When viewed from this perspective, noise pollution is not merely a nuisance but a public health concern. You can pile that nugget on top of the already well-documented health

consequences of air pollution created by transportation emissions.

With the confluence of the Bunker Hill Housing Redevelopment (BHHR) and reconstruction of Peace Park using a \$500K grant, an opportunity exists to highlight and address the neglected noise issue. The 7-10 story BHHR buildings along Decatur Street will likely be at eye-level or above the bridge spans which is bad news for the folks living in those apartments. Monthly Peace Park meetings hosted by the Charlestown Coalition on topics like "Race and Equity" require a microphone and speaker. Think about that for a moment, you can't hold critically important discussions in a public space without sound amplification. We should no longer accept the status quo or "It is what it is" mentality concerning the conspicuous Tobin Bridge noise pollution.

So, what can be done? We can start by prohibiting Jake braking on the bridge with clearly posted signage and ticketed enforcement. You may have already seen signs

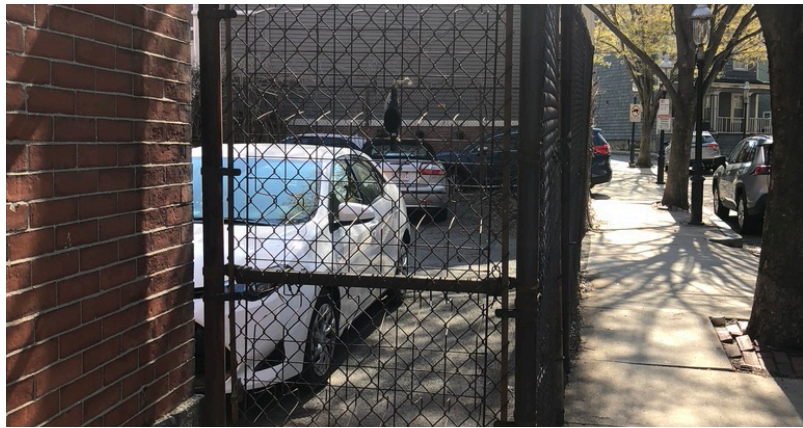
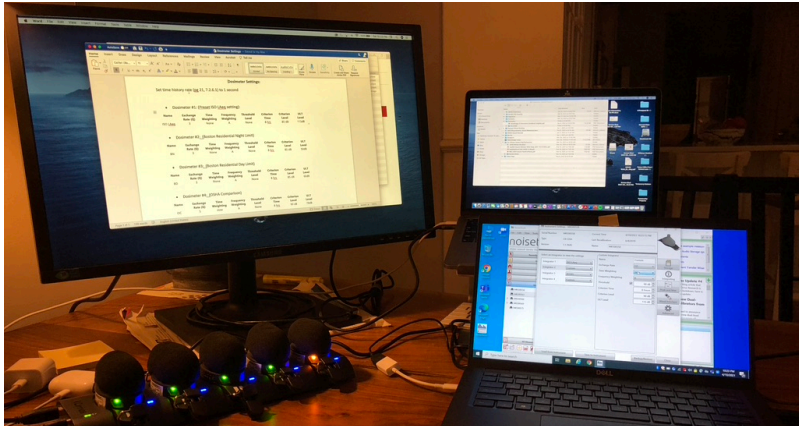
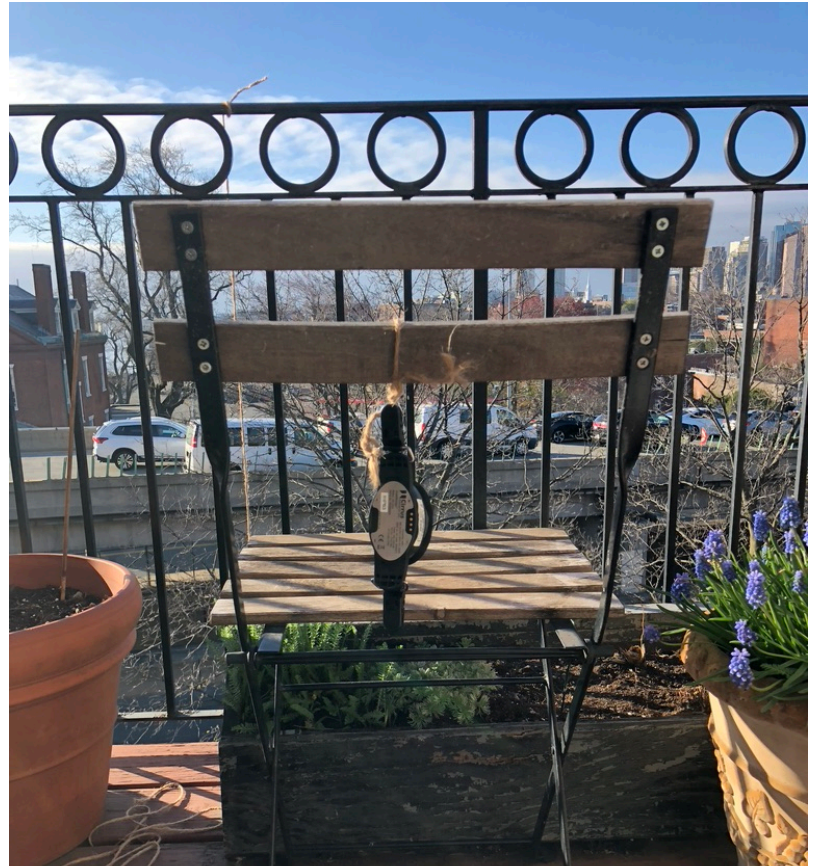
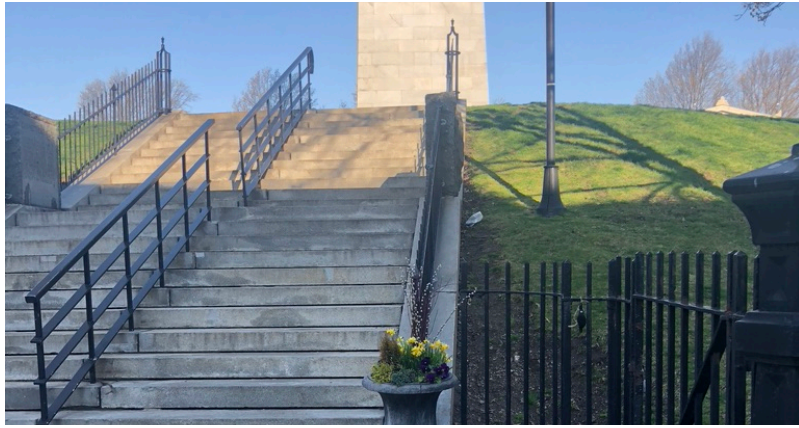
in other communities banning the practice of "Jaking." Jake brakes use the pressure produced by engine combustion to slow down the vehicle. Truckers preferentially use this method to save on maintenance costs associated with the wear and tear of traditional brake pads. Jaking augments traditional braking especially for heavier trucks moving at higher speeds. However, many trucks don't Jake. When traffic is free flowing, almost no truck follows the poorly posted speed limit of 45mph. That's right, the bridge speed limit is 45mph and trucks ought to travel slower to avoid use of Jake Brakes.

Secondly, to address all the remaining complexities of sound pollution, the MassDOT should add the Tobin to its existing noise abatement program for review ("To be Studied"). The MassDOT then can conduct a comprehensive evaluation to measure the impact of the noise on our community and what can be done to mitigate the disturbance in a cost-effective manner. On first blush, engi-

neering controls such as sound absorbing barriers seem feasible along Lowney Way/Peace Park to attenuate the amplification, reverberation, and reflections of sound as northbound traffic exits the tunnel.

We see these sound barriers erected in affluent suburban communities with far less population density and further away from the highway sources. Kudos to the Chelsea Council President Roy Avellaneda who fought for the permanent barriers now newly in place along the S-curves in Chelsea. The time has come to stop ignoring the noise pollution permeating up our city blocks, into our homes and parks. Although technically challenging, it can be done for Charlestown with a focused purpose, perseverance, partnerships and leadership. Otherwise, don't expect to hear the midnight ride of Paul Revere without a microphone and speaker.

For more information about sound mitigation efforts related to the Tobin Bridge contact: medeir-jm@gmail.com.



# Dosimetry

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# Dosimetry Data 12 – 21 April



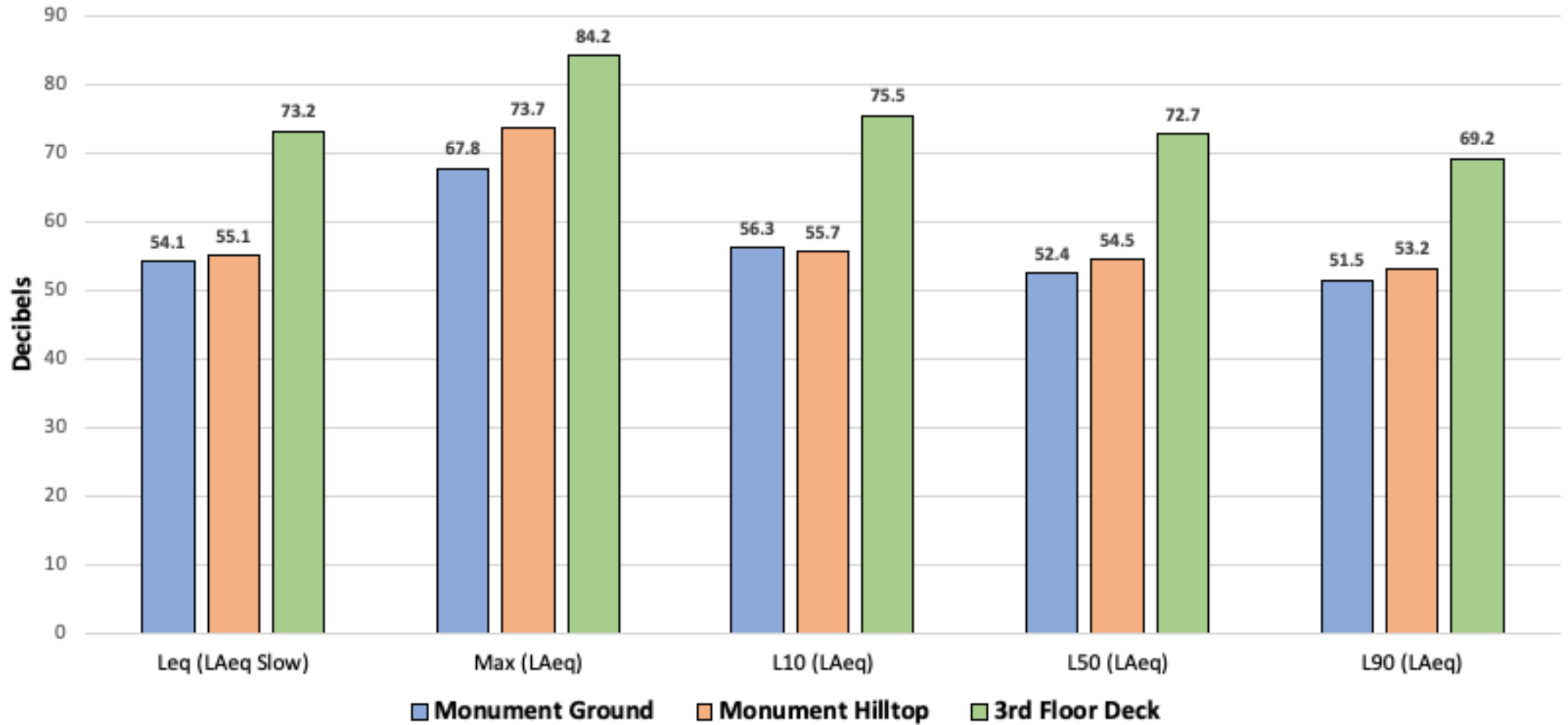
Date	Day of Week	Dosimeter	Location	On Time	Off Time	Duration	Laeq (dB)	LAS Max (dB)
12-Apr	Monday	558	3rd Floor	7:32 AM	2:21PM	6hr 49min	74.4	90.5
13-Apr	Tuesday	558	3rd Floor	7:50 AM	10:02AM	2hr 12min	74.8	97.9
13-Apr	Tuesday	563	Ground	7:43 AM	10:01AM	2hr 18min	73.8	99.7
14-Apr	Wednesday	558	3rd Floor	5:02 AM	7:00AM	1hr 58min	74.1	90.9
14-Apr	Wednesday	563	Ground	5:01 AM	7:00AM	1hr 58min	71.8	88.5
14-Apr	Wednesday	563	Ground	7:01 AM	12:00PM	4hr 58min	72.8	89.1
14-Apr	Wednesday	558	3rd Floor	4:12 PM	9:59 PM	5hr 46min	73.5	89.3
14-Apr	Wednesday	563	Ground	4:13 PM	6:11 PM	1hr 57min	72.0	87.2
14-Apr	Wed/Thurs	558	3rd Floor	10:00PM	1:53AM*	3hr 52min	68.3	84.5
15-Apr	Thursday	566	3rd Floor	5:03 AM	6:56 AM	1hr 53mn	74.1	92.2
15-Apr	Thursday	563	Ground	4:59 AM	6:59 AM	1hr 59min	71.9	93.2
15-Apr	Thursday	575	Ground	7:09 AM	3:34 PM	8hr 24min	73.4	89.3
17-Apr	Saturday	563	3rd Floor	7:43 AM	9:10 AM	1hr 26min	73.9	85.7
17-Apr	Saturday	575	Ground	7:41 AM	9:08 AM	1hr 27min	72.0	85.3
18-Apr	Sunday	558	3rd Floor	1230 AM	7:02 AM	6hr 31min	66.4	82.5
18-Apr	Sunday	563	Ground	5:38 AM	7:01 AM	1hr 23min	66.6	77.3
18-Apr	Sunday	563	Ground	7:01 AM	9:33 AM	2hr 31	69.5	82.8
19-Apr	Monday	558	3rd Floor	4:57 AM	7:10 AM	2hr 12min	72.6	89.8
19-Apr	Monday	563	Monument Ground	5:20 AM	7:01 AM	1hr 41min	53.7	67.8
19-Apr	Monday	575	Monument Hilltop	5:15 AM	7:01 AM	1hr 45min	54.8	73.5
20-Apr	Tuesday	558	3rd Floor	7:23 AM	10:08 AM	2hr 44min	75.3	91.4
20-Apr	Tuesday	563	Monument Ground	7:56 AM	10:00 AM	2hr 4min	56.2	76.3
20-Apr	Tuesday	569	Chestnut St Ground	7:59 AM	10:02 AM	2hr 2min	55.0	74.6
21-Apr	Wednesday	575	3rd Floor	6:16 AM	11:36 AM	5hr 20min	76.4	97.1
21-Apr	Wednesday	563	Ground	8:21 AM	11:33 AM	3hr 12min	73.9	89.8

# Rules, Regulations and Recommendations

<b>Boston</b>		
		Notes:
Daytime (At all other hours)	70 dBA	"Unreasonable or excessive noise shall mean" General Prohibition: "No person shall make or cause to be made any unreasonable or excessive noise in the City, by whatever means or from whatever means or from whatever source."
Night (11:00 PM - 7:00 AM)	50 dBA	
<b>Massachusetts</b>		
		Notes:
Noise level at a sensitive receptor's location	>10 dBA above ambient	Falls under MA Department of Environmental Protection (MassDEP) MassDEP noise pollution policy describes criteria that MassDEP uses to evaluate noise impacts at both the property line and the nearest occupied residence or other sensitive receptor. When noise is found to be a nuisance or a threat to health, MassDEP requires the source to mitigate its noise.
<b>EPA (Environmental Protection Agency)</b>		
Recommendations:		Notes:
Protect welfare and against adverse health effects	55 dBA (LDN)	This limit is a day–night 24-hr average noise level (LDN), with a 10-dBA penalty applied to nighttime levels between 2200 and 0700 hours to account for sleep disruption and no penalty applied to daytime levels.
Prevent Hearing Loss	70 dBA (LEQ24)	The limit is an equivalent continuous average exposure level over 24 hr [LEQ(24)]. Unlike the 55-dBA LDN limit designed to protect against all longterm health effects, the 70-dBA limit considers daytime and nighttime exposures to be equally hazardous to hearing.
Indoors	45 dBA (LDN) ?	
<b>WHO (World Health Organizations)</b>		
		Notes: 2018 WHO Noise Guidelines, Road Traffic
Average Exposure	53 dB LDEN	Noise above this level is associated with adverse health effects
Night	45 dB Lnight	Noise above this level is associated with adverse health effects

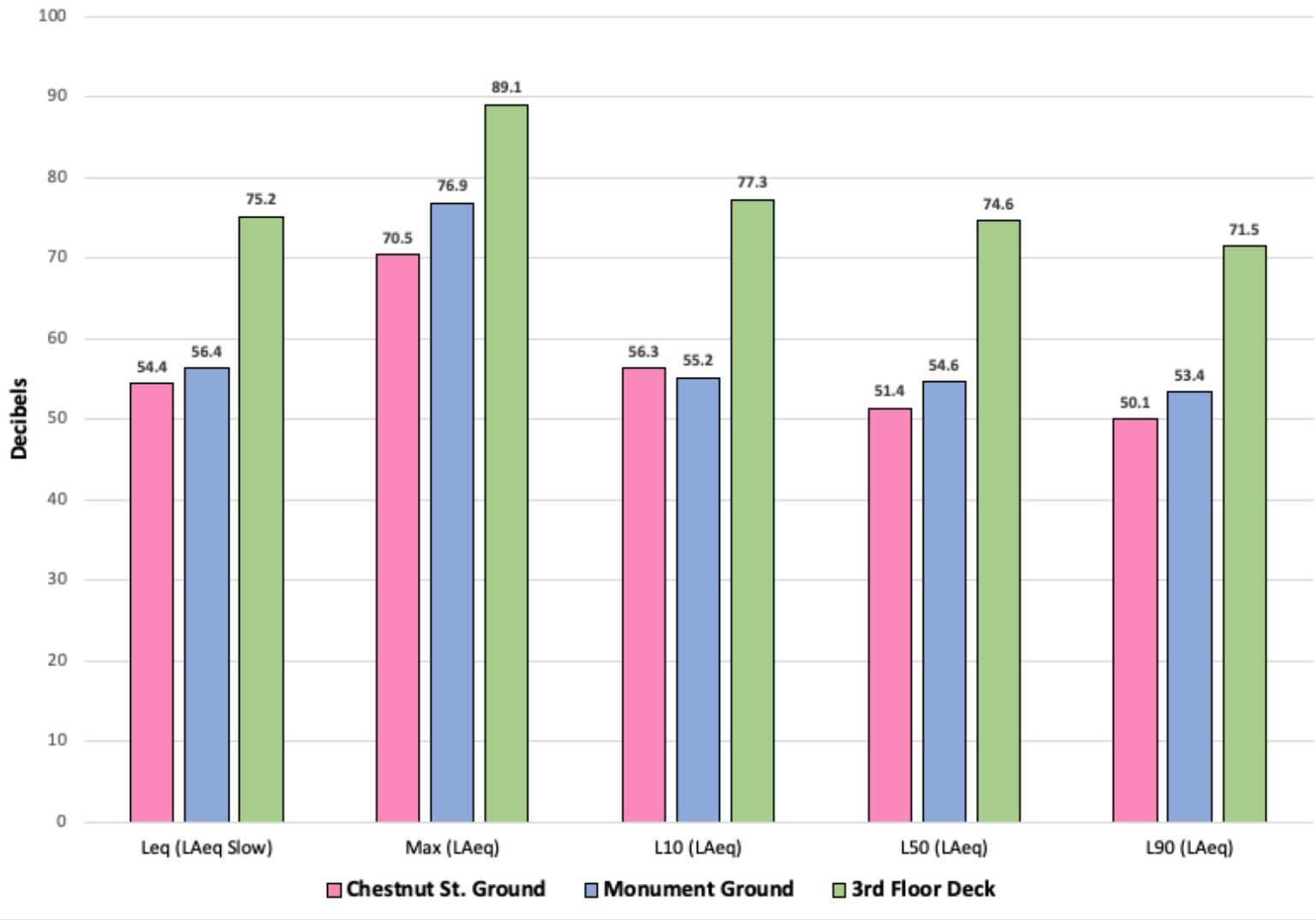
## Tobin Bridge vs. Ambient Noise

Monday 19 April 0600 - 0700

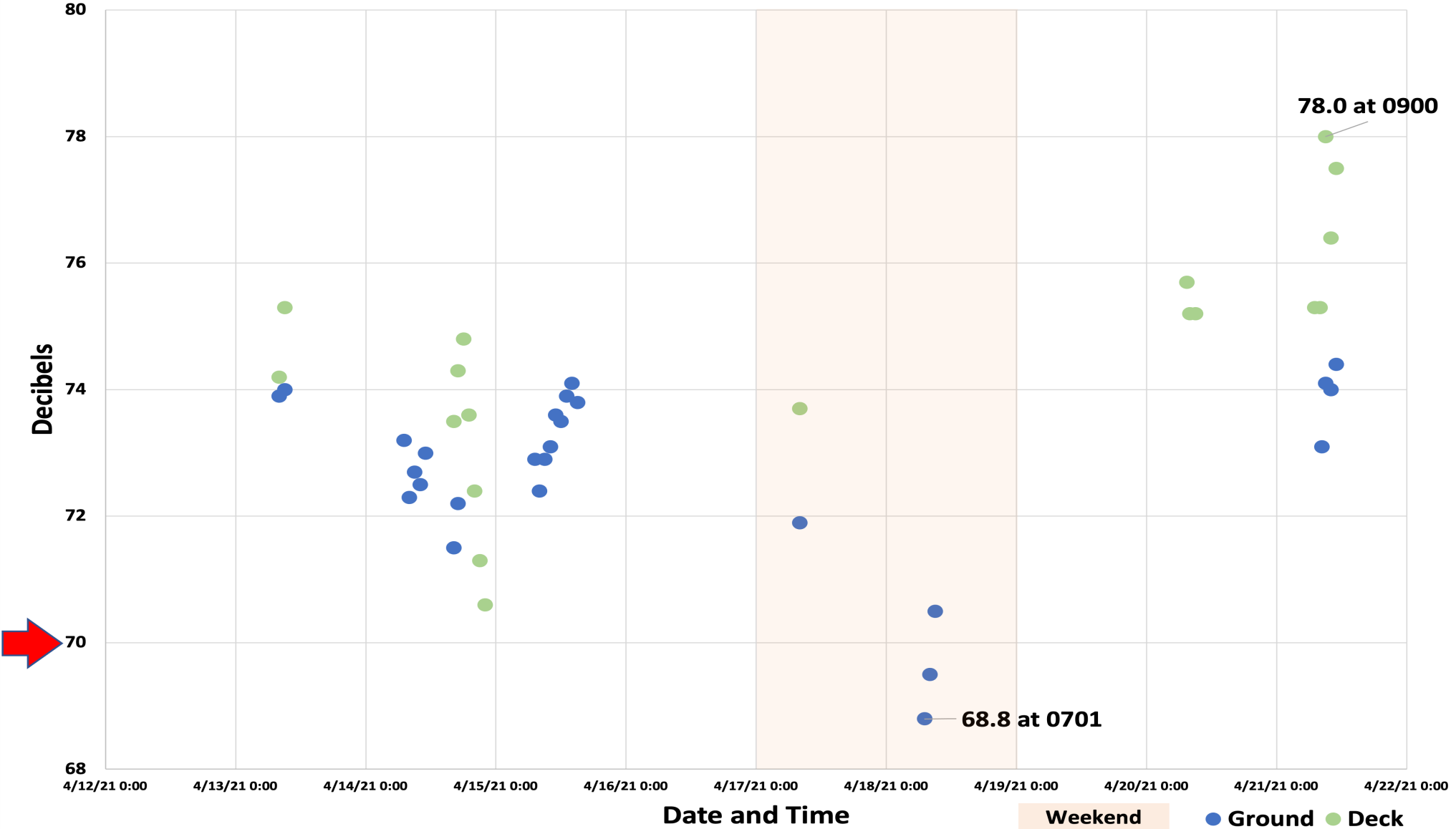


### Tobin Bridge vs. Ambient Noise

Tuesday 20 April 0800 - 0900

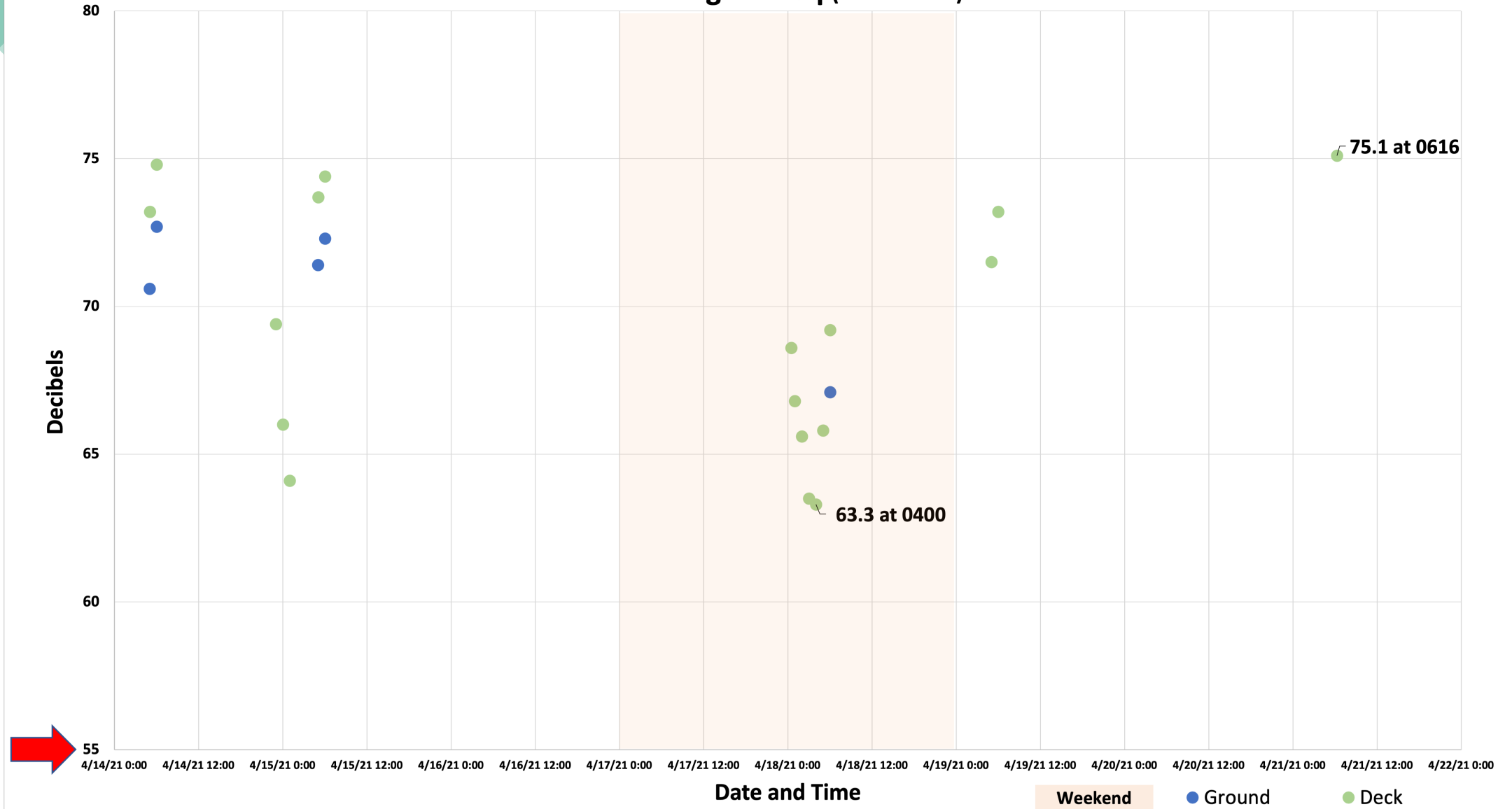


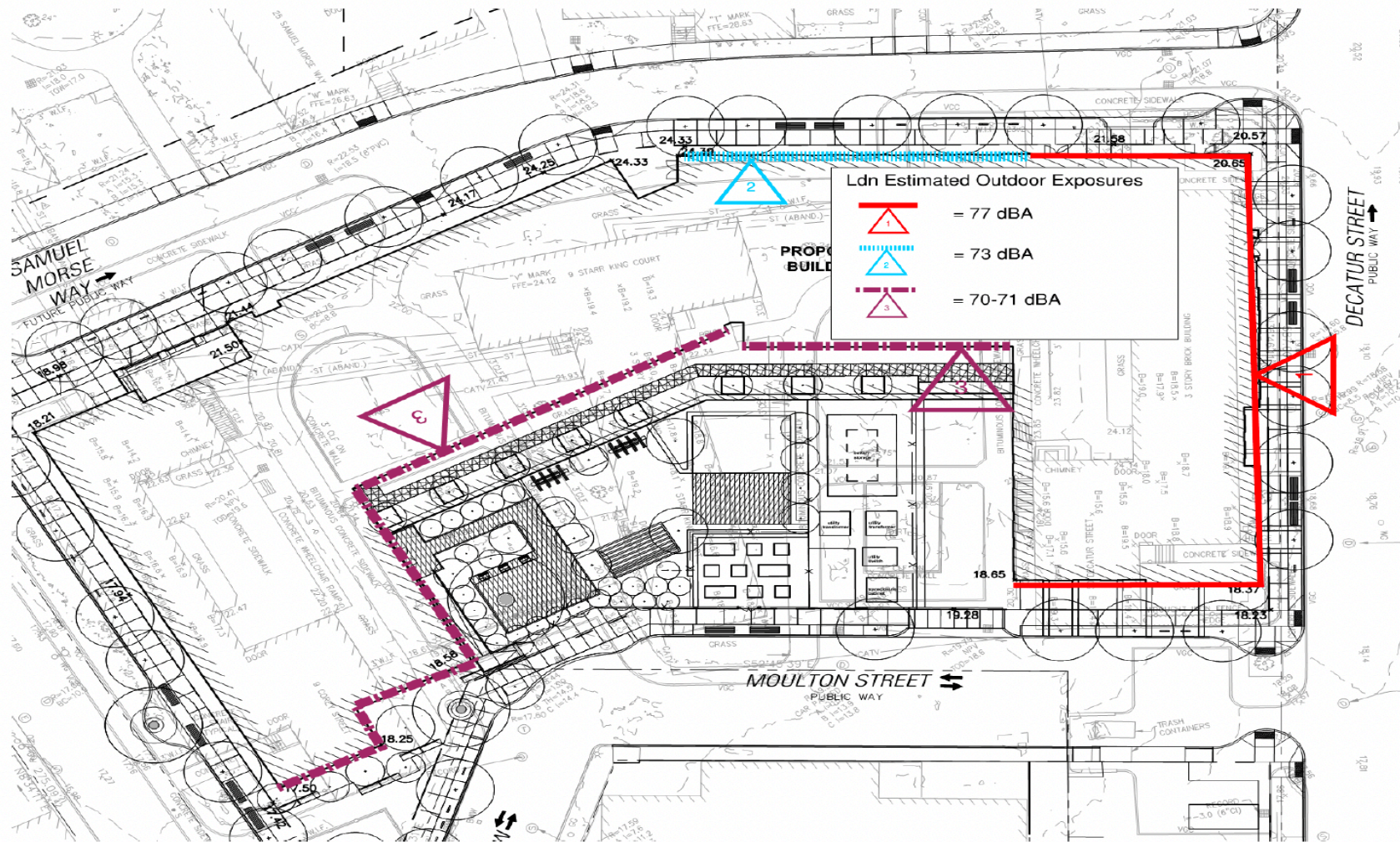
# Day LAeq (0700 - 2300)





# Night LAeq (2300 - 0700)





Building M

# Chelsea Record

Chelsea Massachusetts Newspaper

NEWS


## A Little Quiet: Sound barriers go up on Chelsea Curves

by [Seth Daniel](#) • September 17, 2020 • [0 Comments](#)

Council President Roy Avellaneda has long called for these barriers, but to no avail. MassDOT was apt to place them in suburban communities, but would never consider doing so in Chelsea or other urban areas. However, Avellaneda said he saw an opportunity to get them in the contract when the Chelsea Curves project was announced. He said after a long fight with MassDOT, he and other allies in Chelsea were able to get that mitigation item into the final contract.



## What's next?

- Follow-up with MassDOT
  - Additional Sound Surveillance Data from BHHR and Peace Park
  - Re-engage with city officials
  - Second Article in Patriot
  - Charlestown Noise Association
  - Neighborhood Petition
  - MassDEP
- 



Big Thanks to Victor Hillman

# References

1. *Environmental Noise Guidelines for the European Region (2018)*. <https://www.euro.who.int/en/publications/abstracts/environmental-noise-guidelines-for-the-european-region-2018>. Accessed 12 May 2021.
2. Goines, Lisa, and Louis Hagler. "Noise Pollution: A Modern Plague." *Southern Medical Journal*, vol. 100, no. 3, Mar. 2007, pp. 287–94, doi:10.1097/smj.0b013e3180318be5.
3. Hammer Monica S., et al. "Environmental Noise Pollution in the United States: Developing an Effective Public Health Response." *Environmental Health Perspectives*, vol. 122, no. 2, Feb. 2014, pp. 115–19, doi:10.1289/ehp.1307272.
4. Rick Neitzel, PHD, CIH, FAIHA. *Welcome to the ACGIH® TLV® for Audible Sound – Understanding the Proposed Notice of Intended to the ACGIH® TLV® For.*
5. *The Hidden Risks of Hearing Loss*. <https://www.hopkinsmedicine.org/health/wellness-and-prevention/the-hidden-risks-of-hearing-loss>. Accessed 11 May 2021.
6. US EPA, OAR. "Clean Air Act Title IV - Noise Pollution." *US EPA*, 3 June 2015, <https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iv-noise-pollution>.
7. *Workplace Noise: More than Just "All Ears" | | Blogs | CDC*. <https://blogs.cdc.gov/niosh-science-blog/2018/06/28/noise-effects/>. Accessed 11 May 2021.