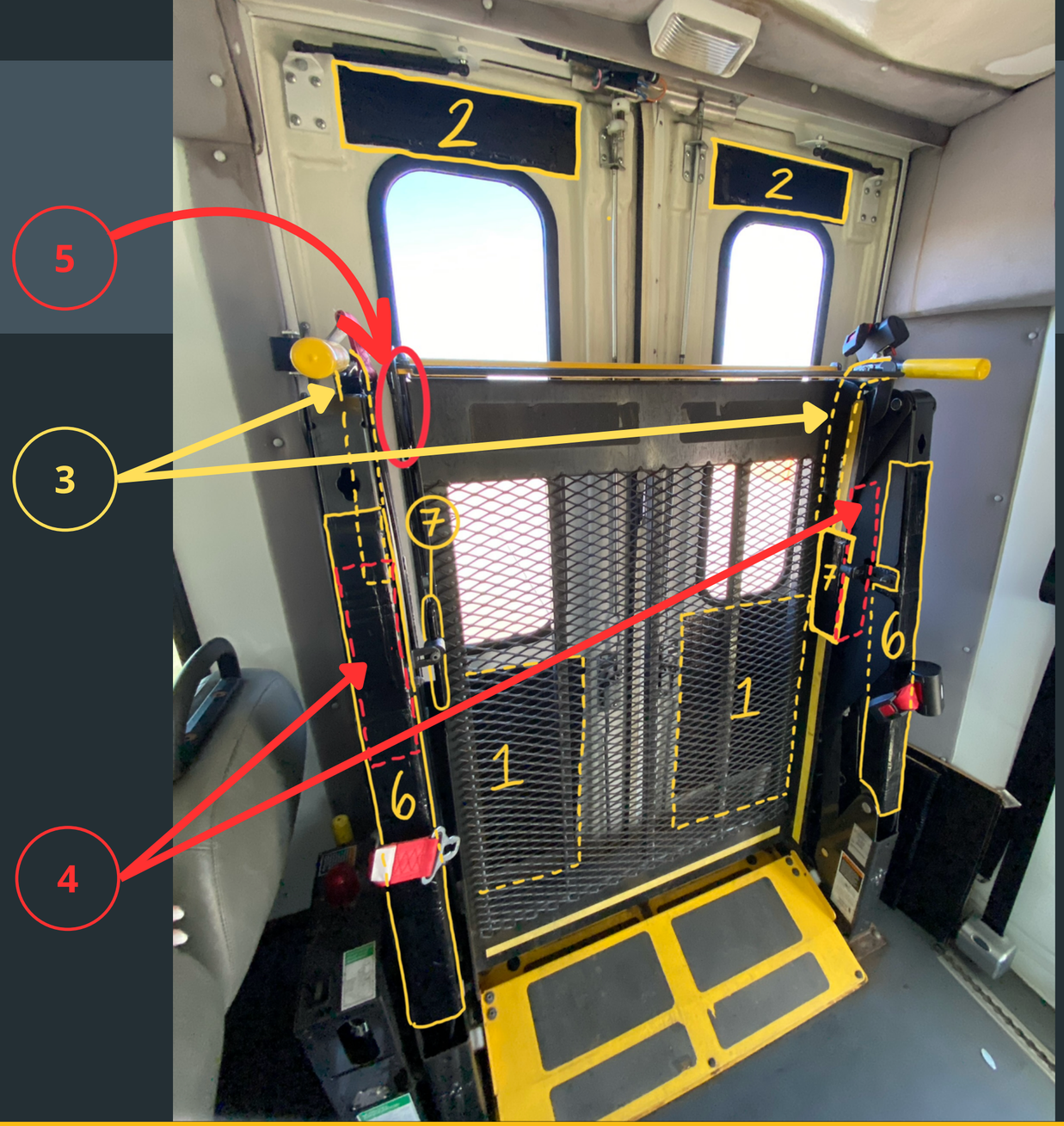
Wheelchair Lift Sound Damping Mat Installation Instructions

Instructions of Installation Created Based on Previously Conducted Experiments by KU SELF Students

LAWRENCE TRANSIT

Mat Location Overview

1. Double layer on lower door section
2. Double layer on upper door section
3. Double layer wrapped around each handle bar
4. Double layer on flat surface handle bars meet
5. One layer in small area where seatbelt rattles
6. Double layer wrapped around main posts
7. One layer on junction between stopper and platform



Sound Damping Mats

Amazon Bought
(good for ~4 buses)

- Siless Black- 1.27mm thick, 52sqft, 20 sheets, 23.6 x 15.94 inch each, ***~$70***

- Siless Silver Max- 3mm thick, 30sqft, 24 sheets, 15.35 x 11.81 inch each, ***~$70***

Required Materials

01 Pre-installation

1. Gloves

2. Scissors or Utility knife and straight edge

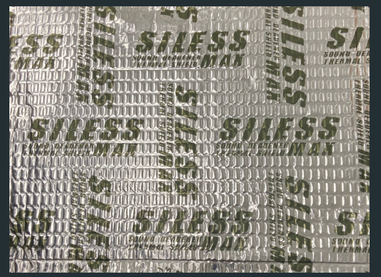
-Disposable Rag/Towel and cleaning spray or Clorox Wipes (for wiping down any area before application)

02 Installation

~5 Black Mats

~7 Silver Mats

-Installation Roller (or edge of scissors for flattening mats **very necessary for proper installation*)



How to Place Mats

01

Wipe Down Area

Thoroughly wipe down area where the mat(s) will be placed, clearing all dirt, stains, and marks that could cause issues for the adhesive, make area is dry for application.

02

Apply Silver Mat if Required

If the instructions say that the area requires a silver mat, once area of installation is dry, peel off the adhesive wrap, then apply the silver mat to the area, starting with one end and then slowly applying rest from that point to avoid 'bubbles'. Apply pressure to total mat for about 10 seconds for best results.

03

Apply Black Mat

After area is dry and you applied silver mat if needed, make sure the silver mat's face is clean, if not, clean the face and then dry it. Once dry, remove wrap covering the black mat's adhesive and then from one end apply rest from that point. Apply pressure for 10 seconds for best results.

04

Smooth Mat out

Once the black mat has been applied, smooth the mat out via a roller or similar object. Do this to the entire mat, making sure that no creases remain and the surface is a smooth as possible, this helps ensure that the mat stays on for as long as possible.

BE SURE to wipe down and dry all surfaces before applying mat!

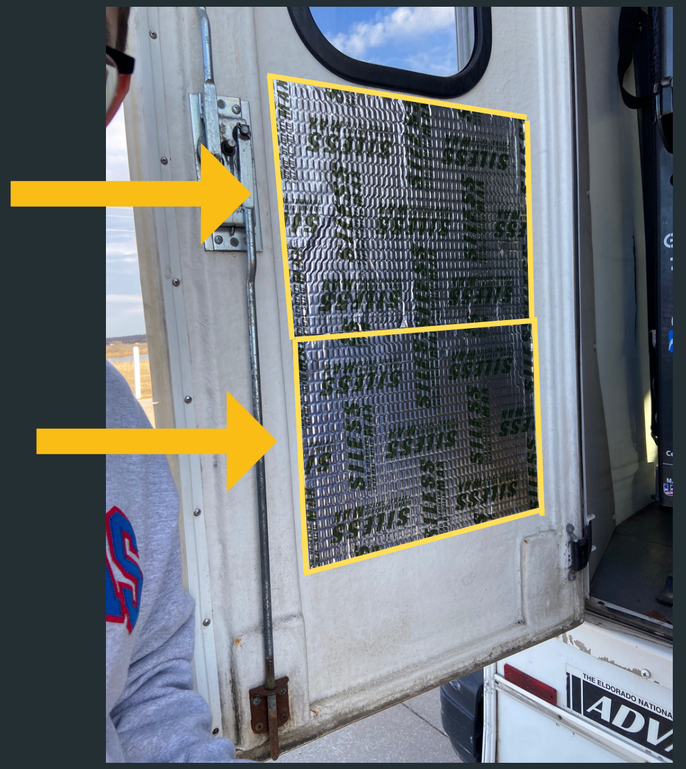
1. Lower Door

For each door:

-2 Silver Mats applied horizontally

-Wipe the faces of Silver mats

-Once dry, apply 1 black mat vertically to cover silver mats.



*Ensure there are minimal bumps after rolling and flattening mat layers in between applications!

2. Upper Door

For each door:

-Cut silver mat into two 14" X 3" pieces:

-Roll in location shown

-Cut black mat into two 15" X 4" pieces

-Wipe silver mat face clean

-Apply black on top of silver mat

*Ensure there are minimal bumps after rolling and flattening mat layers in between applications!

3. Handle Bars

*When lift is open

-Clean handlebars

-Cut Black Mat into two 5" X 13" Strips

-Place them towards front end as shown

-Apply to each handlebar and roll

-Ensure seam of mat is under the handle bars when lift is open

*Ensure there are minimal bumps after rolling and flattening mat layers in between applications!

4. Flat Surface Handle Bars Meet

*When lift is open

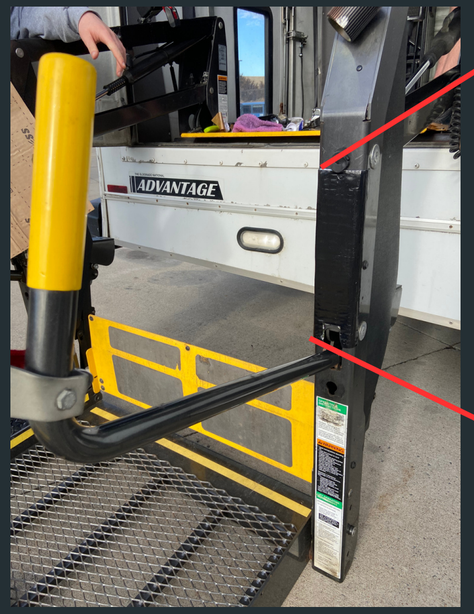
-Clean area

-Cut silver mat into two 11.5" X 3" pieces

-Cut rectangular window out of bottom, for handlebar and roll on silver mat

-Cut black mat into two 12" X 4" pieces with window out of bottom

-Roll black over silver mat



*Ensure there are minimal bumps after rolling and flattening mat layers in between applications!

5. Area Where Seatbelt Rattles

*When in closed position

-Clean area

-Small black mat piece cut to fit in between post and platform

-Mat rolled on where metal seatbelt would hit metal lift

*Ensure there are minimal bumps after rolling and flattening mat layers in between applications!

6. Main Posts

*When lift open

-Clean 2 main posts

-Cut long silver mats into strips 7.25" wide

-Roll on post so three sides are covered

-Cut long black mat into strips 7.5" wide

-Roll black over silver and tuck in excess mat around back of both posts

-Ensure mat does NOT cover any signs and is cut around bolts, gaps, and joints

*Ensure there are minimal bumps after rolling and flattening mat layers in between applications!

7. Junction Between Stopper and Platform

*When lift open

-Clean inside and outside of 2 junctions

-Ensure lift is extended when applying

-Cut 2 black mats into 12" X 8" pieces

-Roll on mat so that the center line of mat is folded over the junction and rolled on both sides of platform lip

*Ensure there are minimal bumps after rolling and flattening mat layers in between applications!

MAT IMPLEMENTATION RESULTS

How Sound Intensity Level Reduction Was Calculated

Intensity = 10^(L/10)

*L being difference in dB level

Example 1: M*at dampens sound by **3** dB....*
*Intensity = 10^(**3**/10) = 1.995 intensity*
(intensity is 1.995 times less great... 99.5% decrease in sound intensity level

→ 3dB decrease →

99.5% decrease in Sound Intensity

Example 2: M*at dampens sound by 6 dB...*
Intensity = 10^(6/10) = 3.981 intensity
(intensity is 3.981 times less great... 298% decrease in sound intensity level

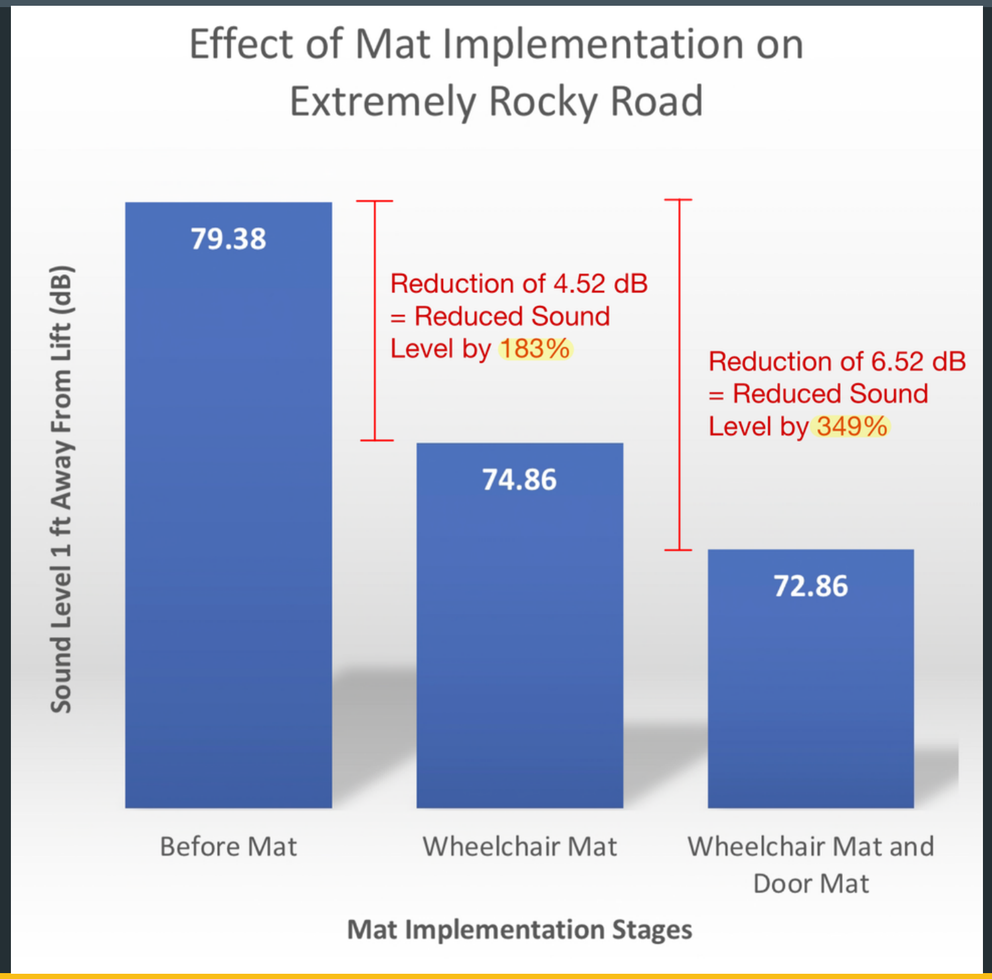
→ 6dB decrease →

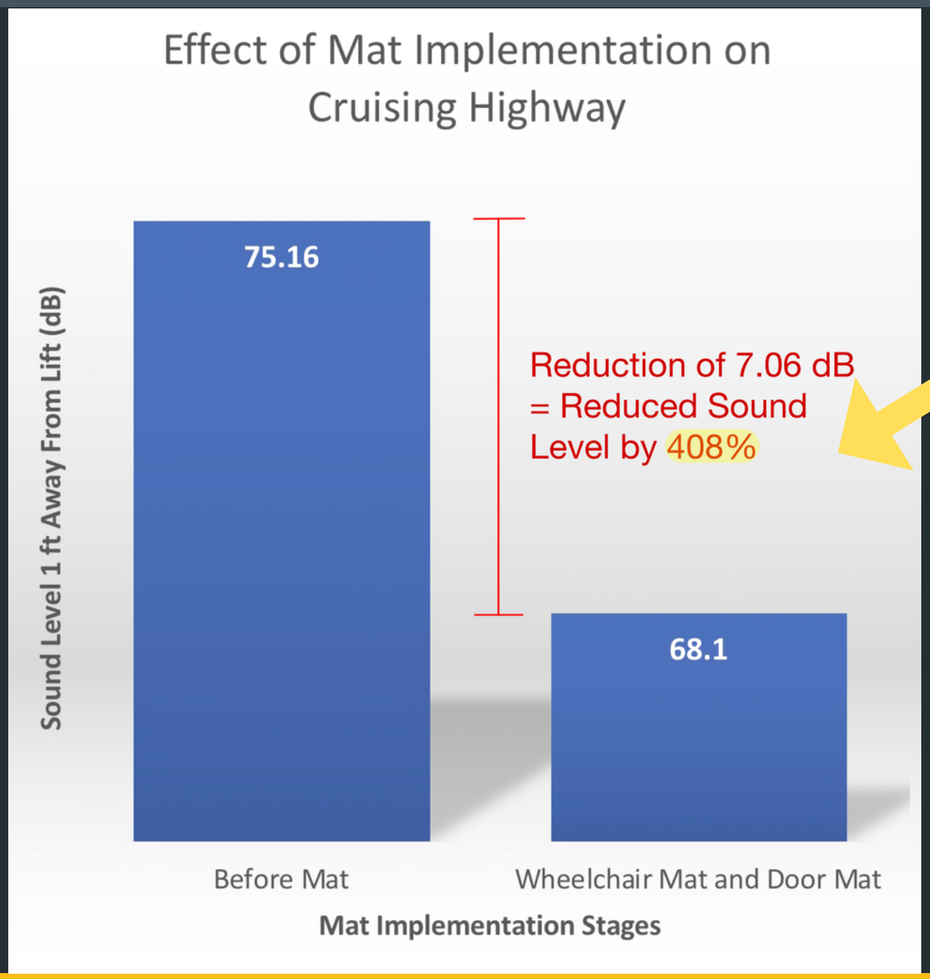
298% decrease in Sound Intensity

*Sound intensity level is not the same as sound perception (the human perception of sound intensity level)

*Derived Equation From Lumen Physics: https://courses.lumenlearning.com/atd-austincc-physics1/chapter/17-3-sound-intensity-and-sound-level/

Effect of Mat Implementation





With a SOUND LEVEL REDUCTION of ***408%*** with the Mat implemented on the lift AND the Door, we highly suggest doing the previous installation protocol for all cutaway buses.

Mat Installation Resources

Mat Installation Video:

https://www.google.com/search?q=sound+damping+mat+installation&rlz=1C1CHBF_enUS919US919&sxsrf=AJOqlzVSnzM2qsTLLEncUzHQ3wrcTnLX_g:1678208856314&source=lnms&tbm=vid&sa=X&ved=2ahUKEwiP9vSVp8r9AhUdFjQIHZJvAQUQ_AUoAnoECAEQBA&biw=1280&bih=569&dpr=3#fpstate=ive&vld=cid:f51de6bd,vid:ozQ_IeTl1Ms

Amazon Link to Silver Mat:

Amazon.com: Siless Max 120 mil (3mm) 30 sqft Car Sound Deadening mat - Butyl Automotive Sound Deadener - Noise Insulation and Vibration Dampening Material (30 sqft)

Amazon Link to Black Mat:

Amazon.com: Siless Black 50 mil 52 sqft Sound Deadening mat - Sound Deadener Mat - Car Sound Dampening Material - Sound dampener - Sound deadening Material Sound Insulation - Car Sound deadening : Automotive

Amazon Link to Installation Roller:

https://www.amazon.com/Noico-Installation-Automotive-Deadening-Insulation/dp/B015WJH4ZW