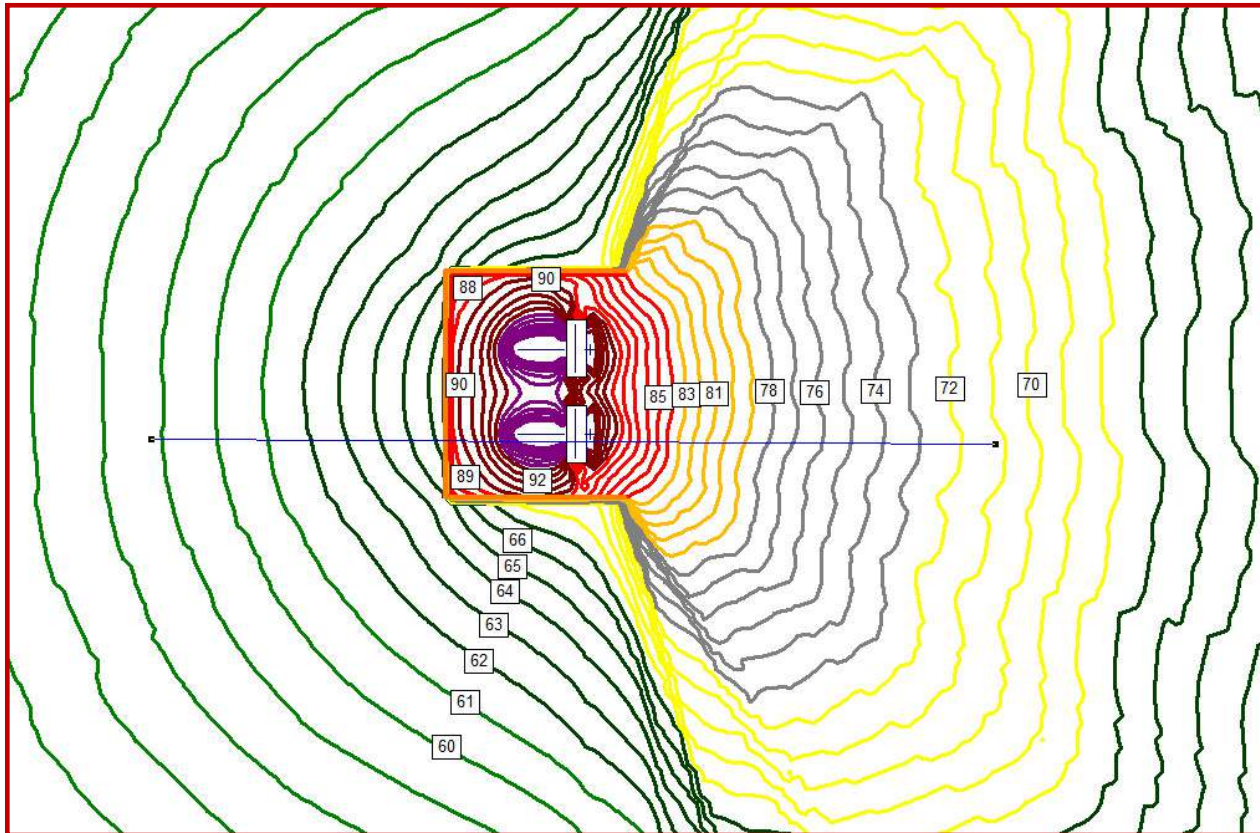




## *The Science Behind The LSE<sup>®</sup> Noise Barrier System*



# **Sound-Absorptive Performance**

# Why Absorptive Noise Barriers Are Better



ORANGE COUNTY  
**REGISTER**  
COMMUNICATIONS

## Caltrans offers to consider changes to I-5 sound wall

State Department of Transportation responds to San Clemente's request for further environmental review of a new 16-foot-tall wall on the west side of the freeway that some residents and businesses on the east side say increases noise for them and blocks their ocean views.

BY FRANK SHYONG / THE ORANGE COUNTY REGISTER

Officials with the [California Department of Transportation](#) affirmed the legality of an I-5 sound wall in San Clemente that has triggered complaints from residents and businesses but offered to work with city and county officials to study the project further and consider changes.

In a letter to Mayor Jim Evert dated Jan. 26, Caltrans District 12 Director Cindy Quon wrote, "The department would like to work with city staff to further define the scope of the study area and establish the project limits."

San Clemente resident Marshall Morgan took this photo from his driveway on Calle Alcazar to show how a new 16-foot-tall sound wall on the west side of I-5 blocks his view.

The re-examination would look at the project's impact area and could include new noise readings. Caltrans spokeswoman Tracey Lavelle said Thursday that the agency won't know how to proceed until it receives a response from the city.

Evert and City Manager George Scarborough did not respond to interview requests Thursday.

Some residents and businesses on the east side of I-5 have appealed repeatedly to the City Council for relief since the wall was erected on the west side of the freeway above Avenida del Presidente. Those on the east side say the 16-foot-tall wall blocks ocean views and bounces freeway noise in their direction.

The wall was built to shield homes west of I-5 from noise, with the added benefit of preventing vehicles from going off the side onto Del Presidente, which has happened at least three times since 2001. Some residents south of where the wall ends have expressed disappointment that it didn't extend farther.

Lavelle said changes could include extending and lowering the existing wall, though Caltrans told the city in October that the wall is the height required to meet a mandatory level of sound reduction for residents west of I-5.

The city recently sent a letter to Caltrans asking the agency to reopen environmental review of noise factors for that wall and a second, see-through wall planned for the west side of the nearby El Camino Real overpass. The city contends the agency failed to comply with the [California Environmental Quality Act](#) by not adequately notifying residents on both sides of the freeway when it solicited neighborhood input about putting up the new walls in a \$5.3 million project.

Caltrans has said the project qualified for a "categorical exemption" from the Environmental Quality Act because Caltrans concluded the sound walls would not have significant effects. Public-outreach efforts by the [Orange County Transportation Authority](#) went beyond state and federal requirements, Caltrans said.

Orange County Supervisor Patricia Bates wrote a letter to Caltrans supporting the city's appeal.

**“Those (neighbors) on the east side say the 16-foot-tall (concrete) wall ... bounces freeway noise in their direction.”**

# Why Absorptive Noise Barriers Are Better



## Transportation

### Prospect Park residents irate over Mn/DOT's new sound wall

By Andy Mannix Thu., Jan. 12 2012 at 9:49 AM

Categories: [Transportation](#)

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Late last fall, as part of 2011's epic construction overhaul in the Twin Cities, Mn/DOT built a noise wall along I-94 in Minneapolis, just east of the Mississippi River.

The purpose was to reduce highway noise to the nearby neighborhoods, but Prospect Park residents are complaining that it did just the opposite.

Neighbors say that because the new wall is excessively high, it's ricocheting noise over a smaller wall on the other side of the highway -- amplifying the sound, rather than muffling it. And they are not happy. Here's what one resident wrote on a neighborhood message board:

One morning I woke up thinking that it must be very windy outside, and soon realized that it was the highway - not the wind - that I could hear inside my bedroom. I dread opening the windows this summer and for the first time in 13 years I've thought about selling and leaving this neighborhood.

John DeWitt, transit chair for the Prospect Park's neighborhood association, says they started hearing complaints about the noise wall last week, and plan to meet about it later this month.

"We really don't know a whole lot yet, but there certainly have been complaints from people north of the freeway that it's much worse than it used to be," says DeWitt.

Peter Wasko, noise specialist for Mn/DOT, says the problem neighbors are describing is called "reflection," a rare phenomenon in which the "noise is reflecting off of the wall of one side of the highway and directing that noise to the other side."

Mn/DOT will determine if the complaints have merit, then figure out if they need to take action, Wasko says.



Mn/DOT says they will assess the situation, and figure out if the complaints have merit.

**“Neighbors say (the reflective concrete wall) is ricocheting noise over the smaller wall – amplifying the sound rather than muffling it. And they are not happy.”**

# Noise Barrier Types



## Types of Noise Barriers

There are two types of noise barriers:

**Absorptive (NRC)** – Barriers made from materials that absorb sound, preventing it from reflecting back off the barrier. i.e. non-reflective.

**Reflective (STC)** – Barriers that block sound from passing through them, but also reflect sound.

# Noise Barrier Types



## Absorptive Barriers

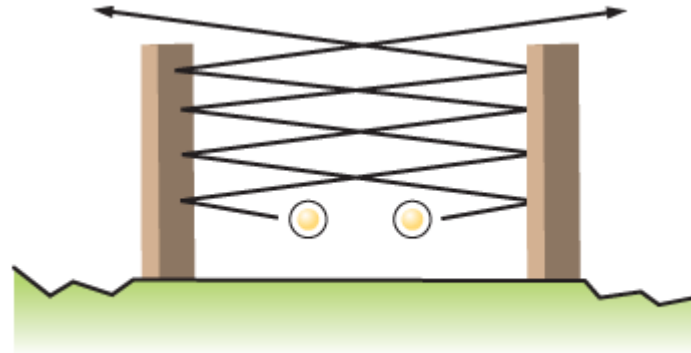
Absorption capability of a barrier is designated by NRC (Noise Reduction Coefficient), with 1.0 being considered fully absorptive. An NRC rating of .90 or higher is considered high for absorptive barriers.

Sound Fighter Systems'  
LSE<sup>®</sup> Absorptive Noise Barriers  
have an NRC of 1.05

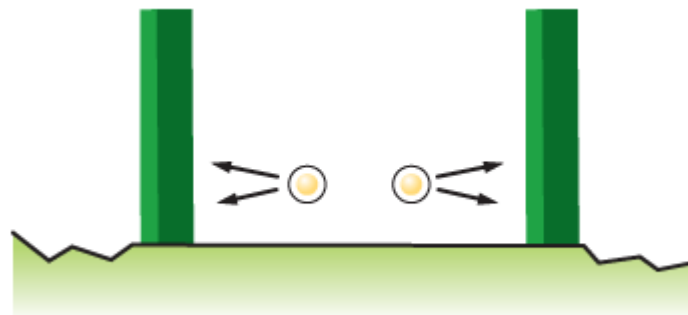
# Why Absorptive Noise Barriers Are *Better*



It is common to see multi-sided enclosures around pumps and treatment equipment. Reflective sound walls reduce the enclosure's acoustical performance. The result is less-than-optimal performance and increased noise levels on and adjacent to the site.



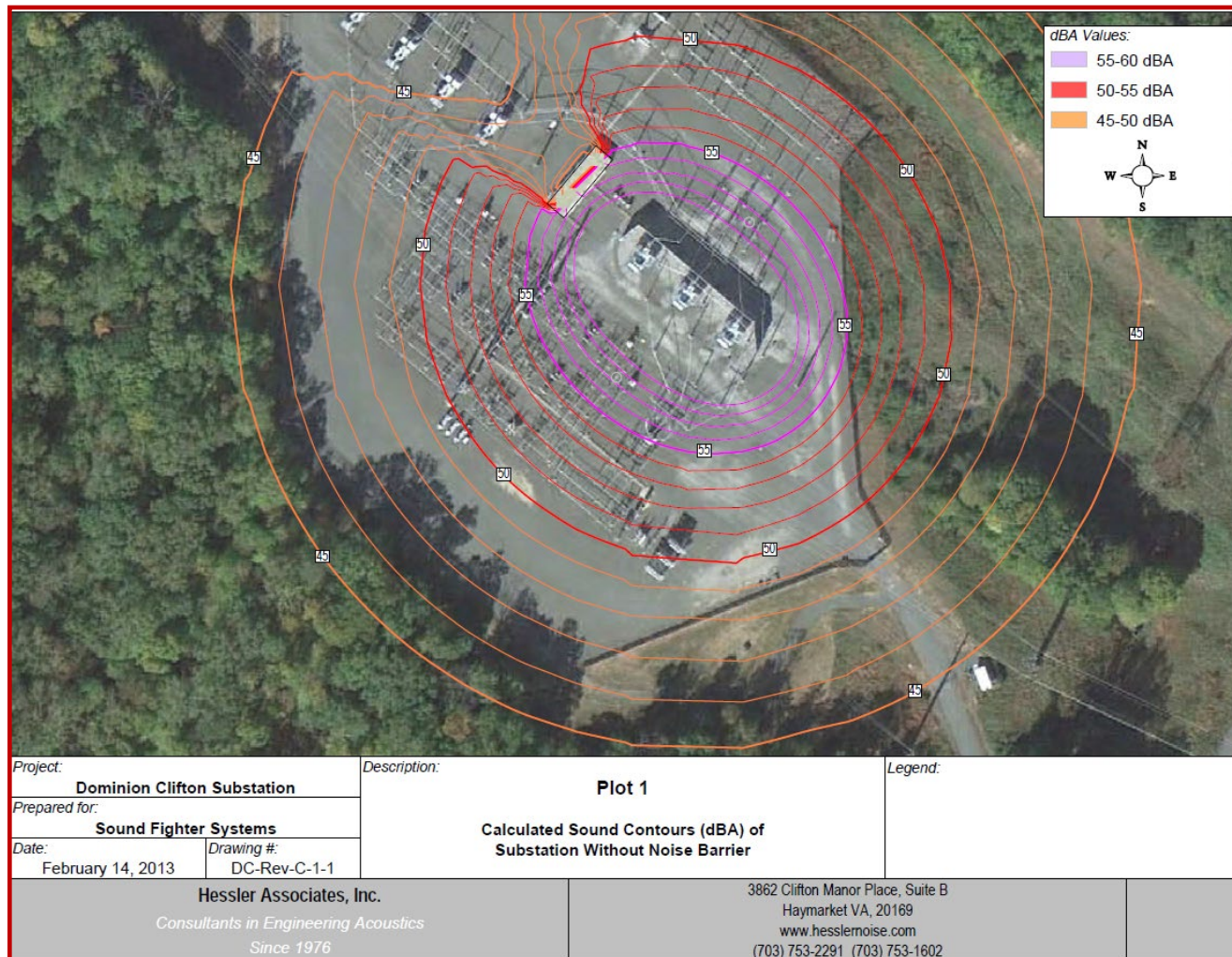
Absorptive multi-sided enclosures reduce reflections and maximise the effectiveness of the enclosure. Thus, the noise level around the site is reduced.



# Why Absorptive Noise Barriers Are Better



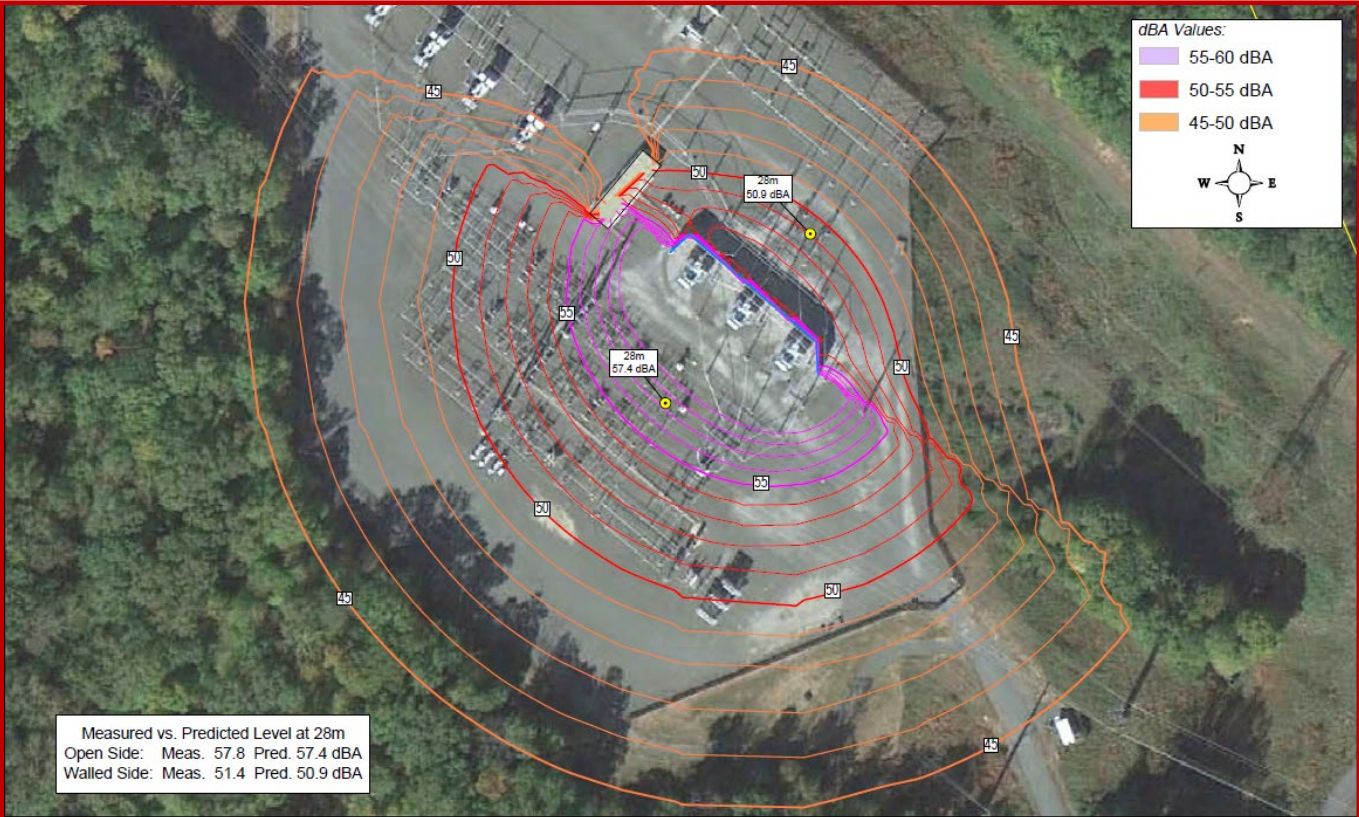
## Transformer Station *before* LSE Barrier System Installed



# Why Absorptive Noise Barriers Are Better



## Transformer Station *after* LSE Barrier System Installed

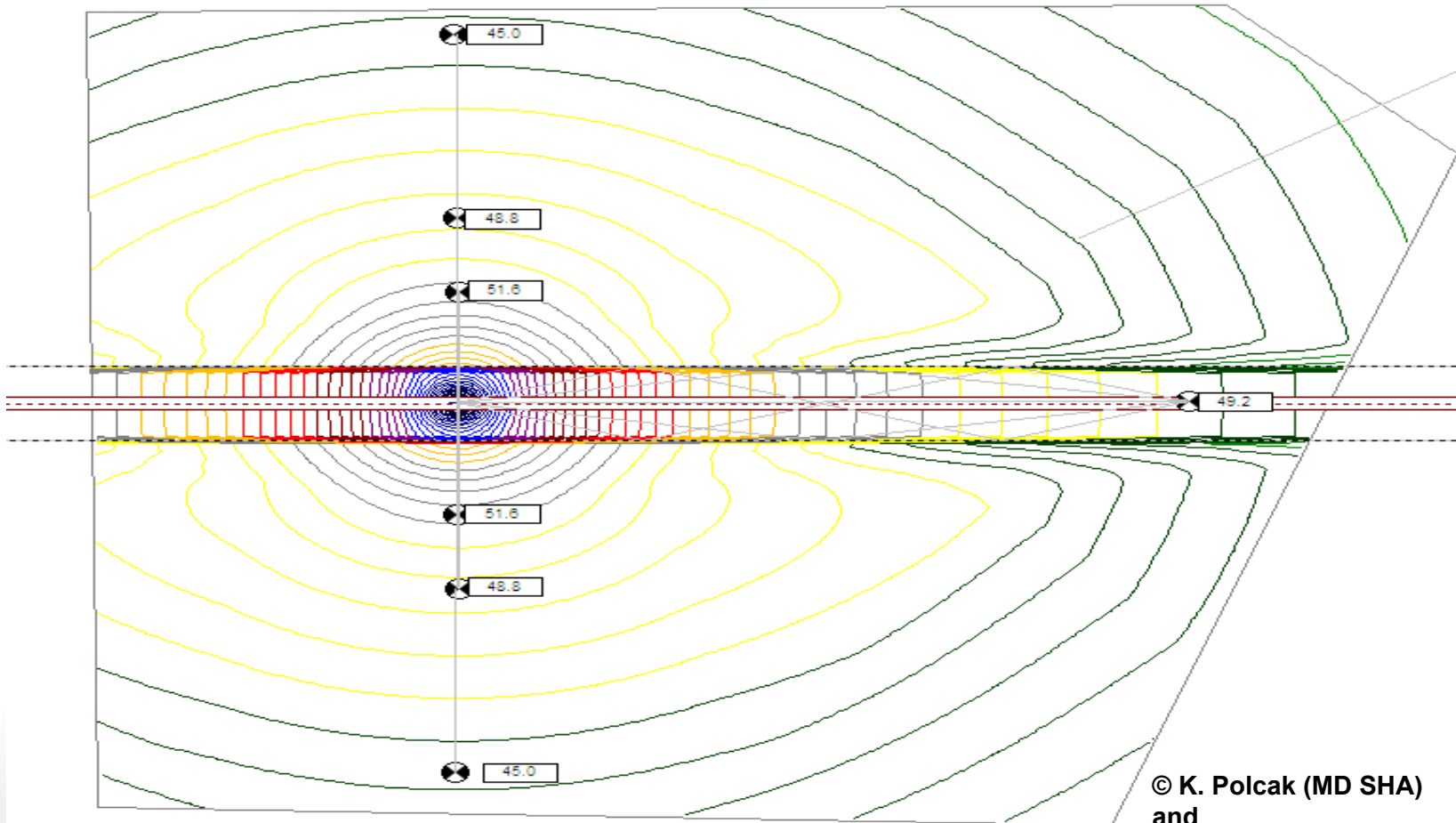


Project: <b>Dominion Clifton Substation</b>		Description: <b>Plot 2</b>  <b>Calculated Sound Contours (dBA) of Substation After Noise Barrier Installation</b>	Legend: ● Calibration Point
Prepared for: <b>Sound Fighter Systems</b>			
Date: February 14, 2013	Drawing #: DC-Rev-C-2-2		
Hessler Associates, Inc. Consultants in Engineering Acoustics Since 1976		3862 Clifton Manor Place, Suite B Haymarket VA, 20169 www.hesslernoise.com (703) 753-2291 (703) 753-1602	

# Why Absorptive Noise Barriers Are *Better*



Parallel Highway Walls >> BOTH Reflective

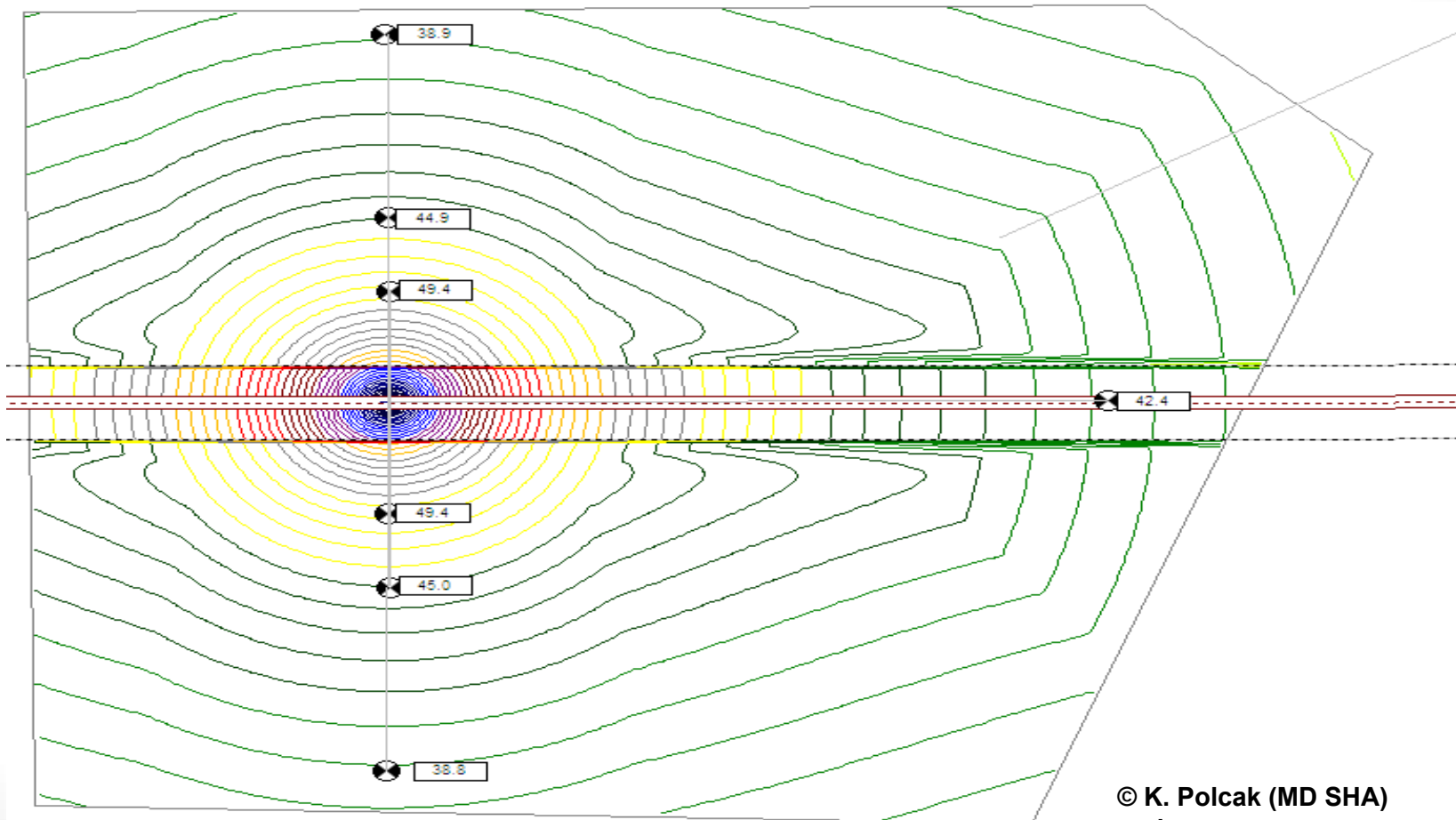


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and  
R.J. Peppin (Scantek, Inc.)

# Why Absorptive Noise Barriers Are *Better*



Parallel Highway Walls >> BOTH **Absorptive**

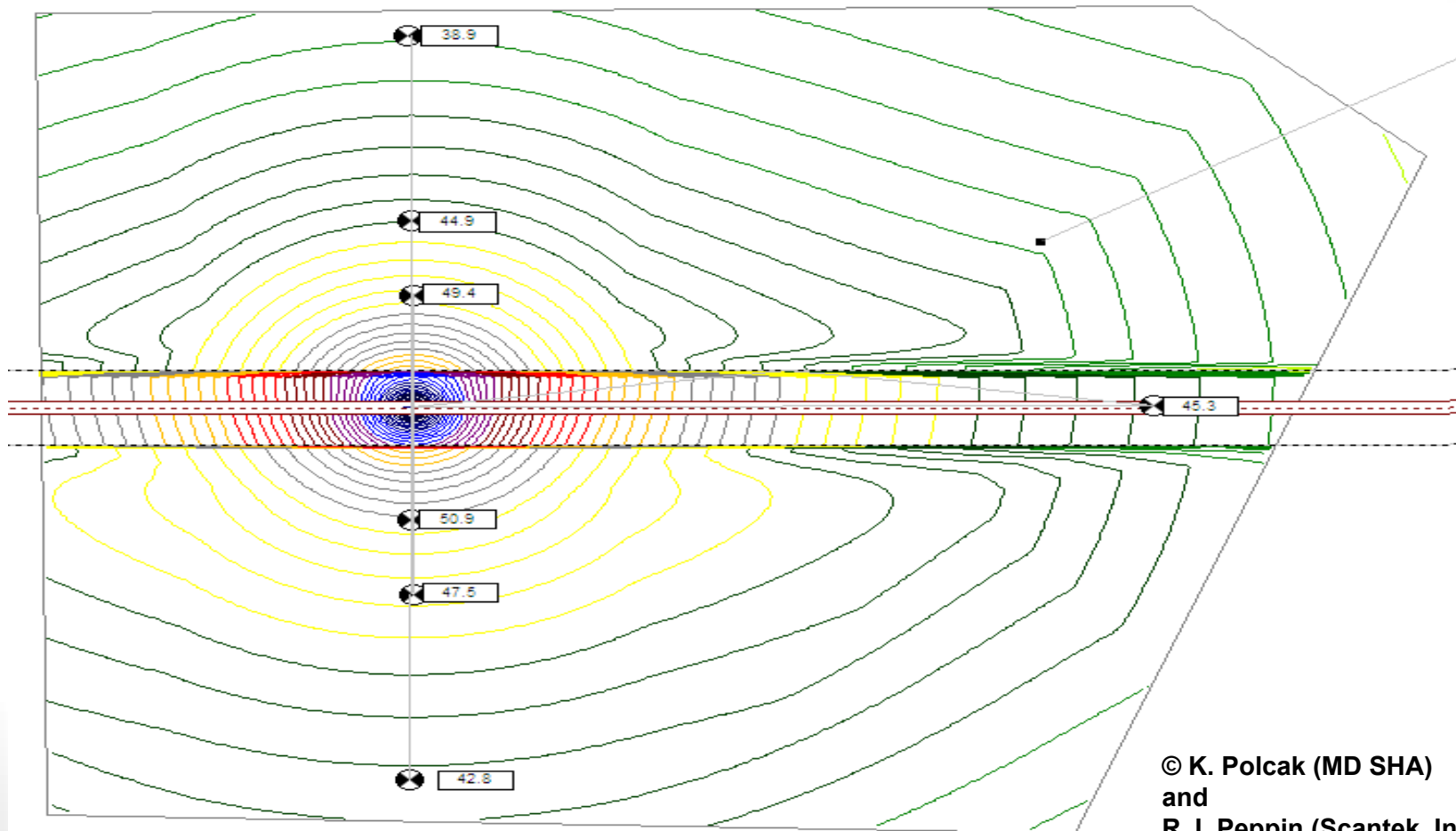


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and  
R.J. Peppin (Scantek, Inc.)

# Why Absorptive Noise Barriers Are *Better*



Parallel Highway Walls >> Top **Absorptive**, Bottom **Reflective**



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and  
R.J. Peppin (Scantek, Inc.)

# Why Absorptive Noise Barriers Are Better



## *Conclusions of the Transportation Research Board (TRB) Study:*

- In most circumstances, it is better to have a barrier than not
- **It is better to have absorption than not**
- **Use of reflective barriers might be worse than nothing** in some instances:
  - Curves
  - Residents in multi-story buildings
- Differences in sound absorption coefficient (MRC) of less than perhaps 0.3 is virtually meaningless.
- Before putting in reflective barriers do a study to see if it makes sense

# LSE Acoustic Performance



- **Sound Transmission Class (STC)**

This measures acoustical energy transmitted through the barrier wall or the amount of noise that passes through.

- **Noise Reduction Coefficient (NRC)**

This measures the amount of acoustic energy absorbed by the barrier wall.

# LSE Acoustic Performance



## Noise Absorption Test

Test Result

Noise Reduction Coefficient

**1.05**

Test Method

ASTM C 423-90a

ASTM E 795-92

## Sound Transmission Loss Test

Test Result

Sound Transmission Loss

**33**

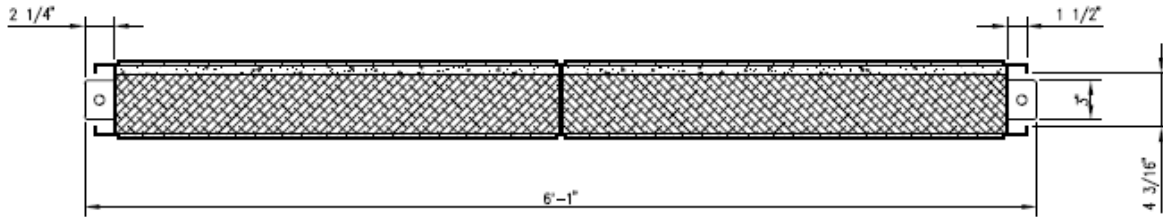
Test Method

ASTM E 90-90

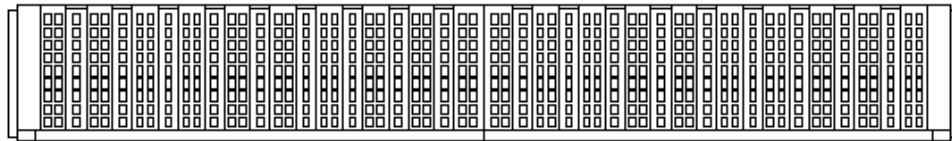
ASTM C 423-90a

ASTM E 1332-90

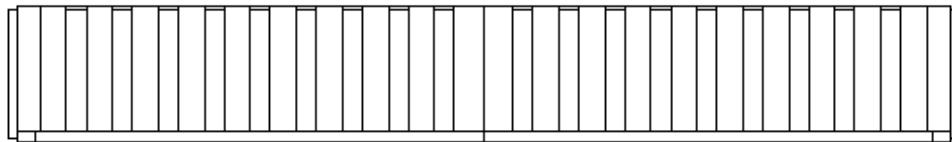
# The LSE Absorptive Panel



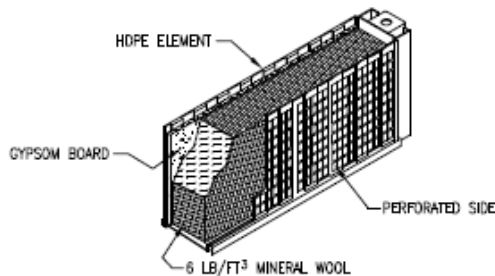
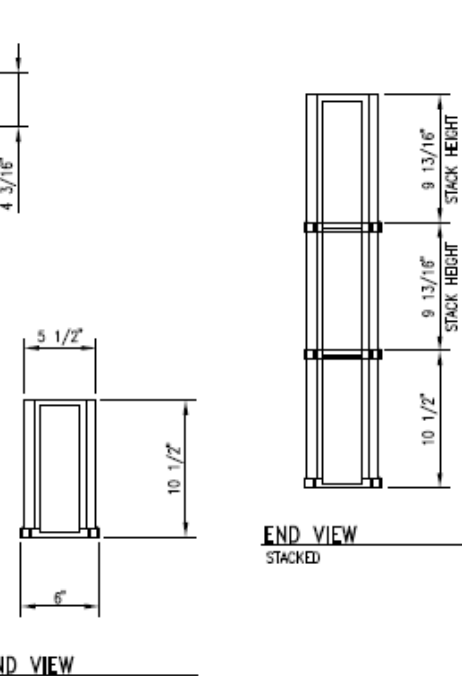
TOP VIEW




FRONT VIEW



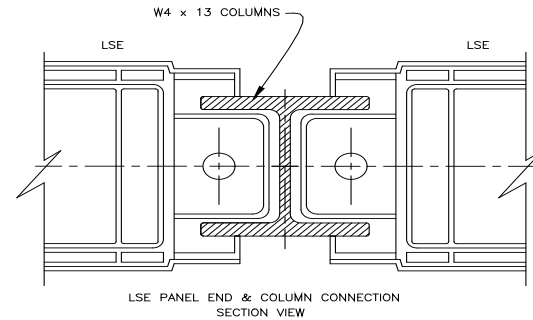
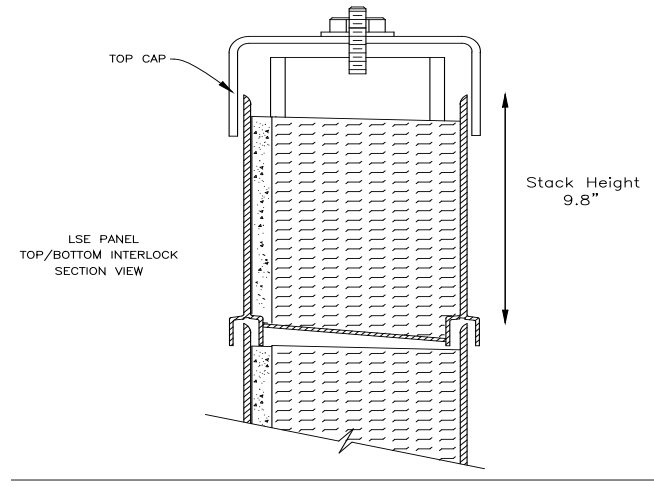
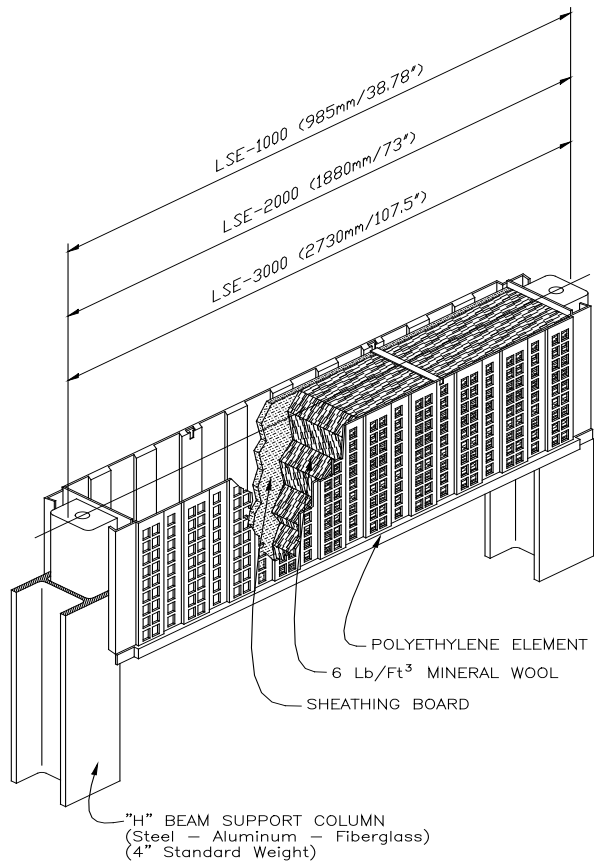
BACK VIEW



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SOUND FRIGHTER® SYSTEMS, LLC		LSE NOISE BARRIER SYSTEM	
 P.O. Box 7215 Newark, Louisiana 71105-7215 TEL: 318-461-4640 FAX: 318-465-7271 Website: www.sff.com		LSE2000 PANEL	
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LSC2000.dwg		1	
N.T.S.		1	

# The LSE Absorptive Panel



# Sound-Absorptive Technology for All Types of Outdoor Noise Mitigation Applications



# Sound-Absorptive Technology for All Types of Outdoor Noise Mitigation Applications



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# Sound-Absorptive Technology for All Types of Outdoor Noise Mitigation Applications



# Durability:

## Hurricane Katrina

### I-10 New Orleans, LA



# Options: Unlimited colors



**Beige**  
SF-001



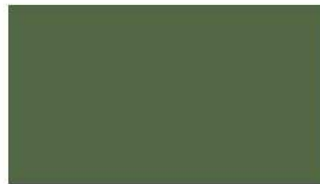
**Taupe**  
SF-002



**Dark Bronze**  
SF-003



**Moss**  
SF-004



**Courtyard**  
SF-005



**Hunter Green**  
SF-006



**Aloof Gray**  
SF-007



**Standard Gray**  
SF-008



**Charcoal**  
SF-009



**Snowfall**



**Paris White**



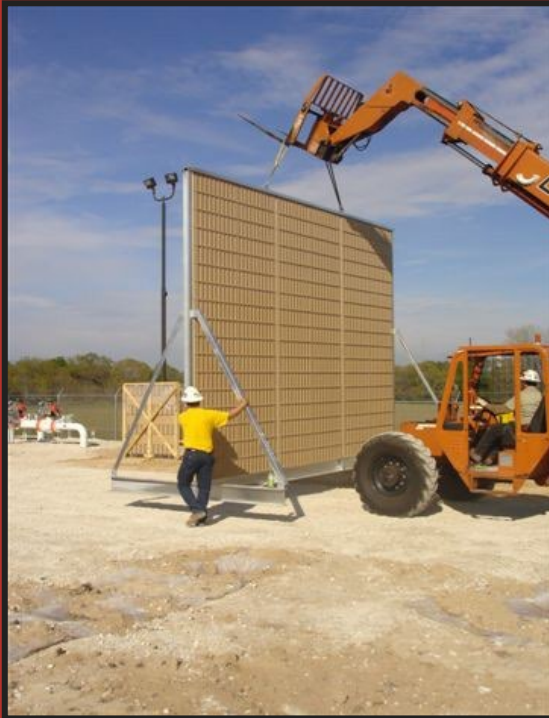
**Sandstone**

# LSE Wall Features



- Cost Competitive with Concrete
- Modular Construction
- Sound Absorbing
- Light-weight
- Attractive
- Easy to Install
- Many colors to choose from or custom color match
- Rodent proof
- Mold and Mildew Resistant
- Fully Engineered
- Strong and Durable
- Excellent Transmission Loss
- Excellent Noise Absorption
- Self-draining
- Water/Moisture Resistant
- Will Not Rust, Rot, or Stain
- Long Lasting
- Non-corrosive

# Portable LSE Noise Barriers



- 100% Absorptive LSE Sound Wall
- 18' wide x 14' tall
- Easy to assemble, move and disassemble

- Durable
- Weatherproof
- Maintenance free
- Available in any color

- Will not rot or rust
- Custom sizes available
- Permanent LSE sound walls available



# Sound Fighter Systems

The World's best  
*Absorptive* Sound Walls  
for the World's Toughest  
*Outdoor* Noise Problems

[www.soundfighter.com](http://www.soundfighter.com)