

## Memorandum

To: CHAIR AND COMMISSIONERS

CTC Meeting: November 6-7, 2002

Reference No.: 4.2  
Information Item

From: ROBERT L. GARCIA  
Chief Financial Officer

Prepared by: Gary Winters  
Division Chief  
Environmental

Ref: **STATUS REPORT ON NOISE ABATEMENT PILOT STUDY**

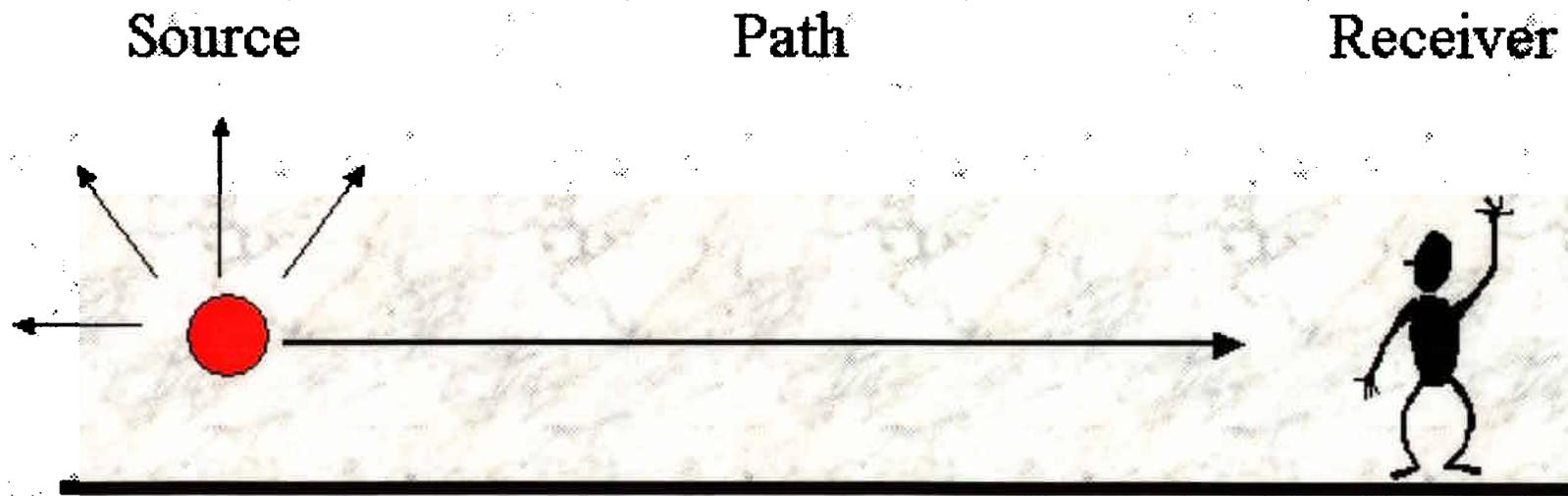
A VERBAL PRESENTATION WILL BE MADE AT THE NOVEMBER 6-7, 2002 CTC MEETING ON THIS ITEM

# TIRE PAVEMENT NOISE

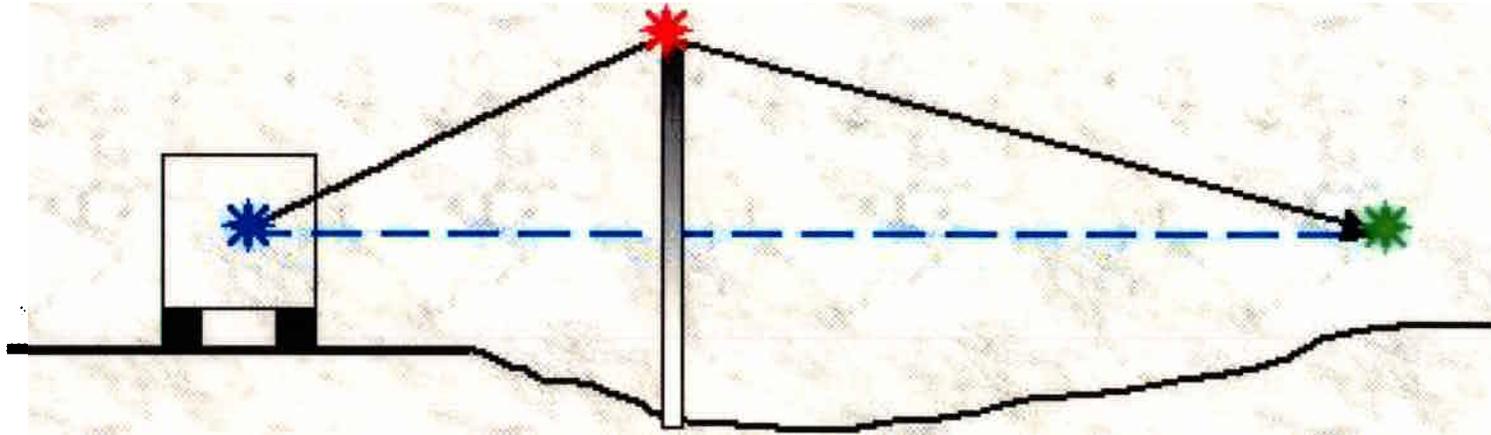


Activities

# Source-Path-Receiver Concept



3 dBA change is just perceptible



Caltrans builds sound walls to achieve readily noticeable 5 dBA change

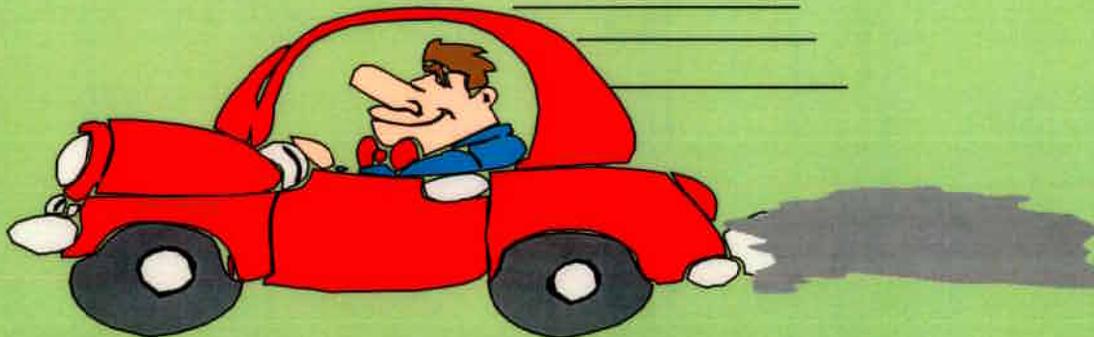
# Typical Vehicular Noise Sources

Exhaust



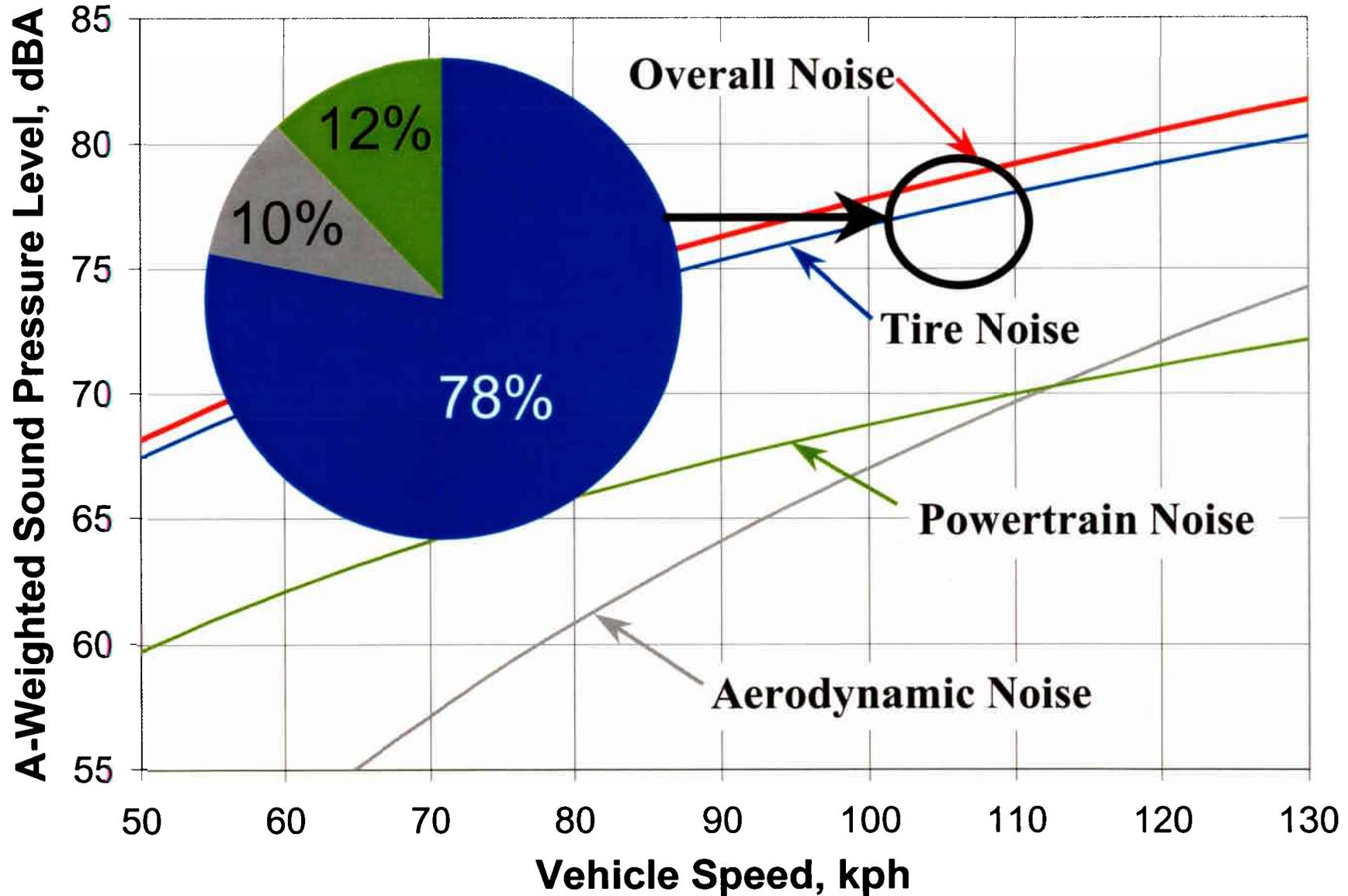
Mechanical:  
Engine, Drive  
train, Brakes

Aerodynamic

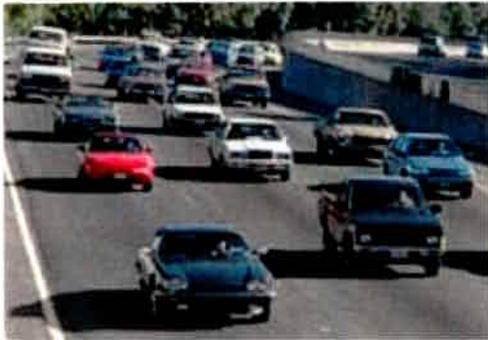


Tire/Pavement

# Typical Highway Noise Source Breakdown for Light Vehicles

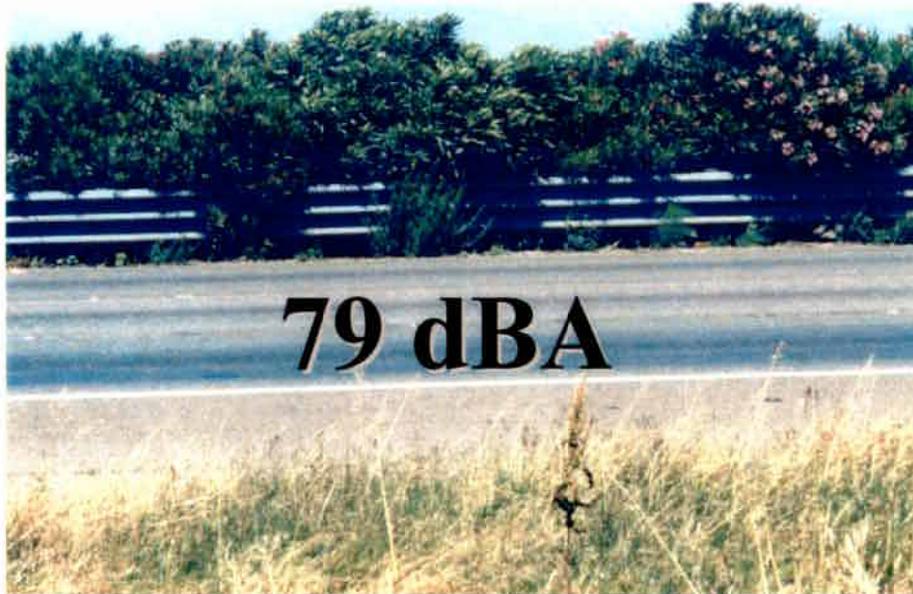


# Source --- Path --- Receiver

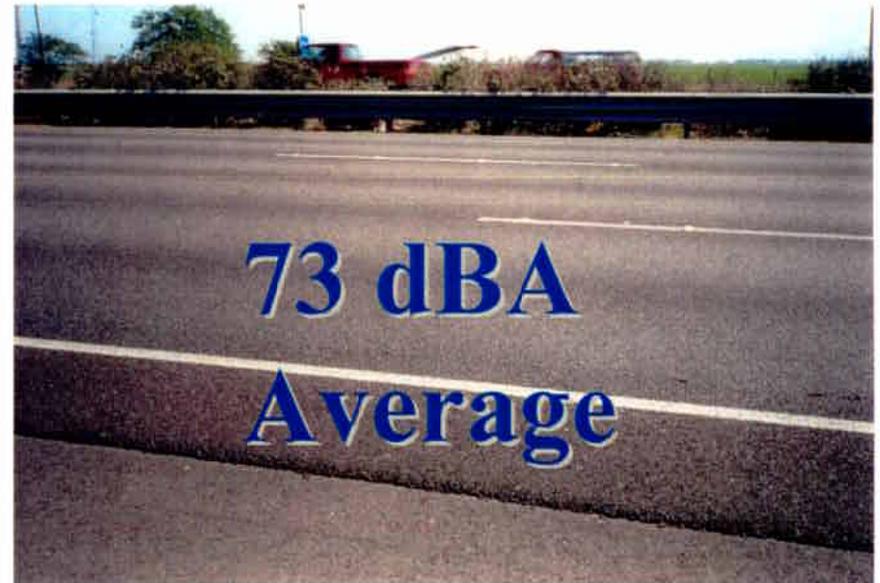


# Noise Level Changes

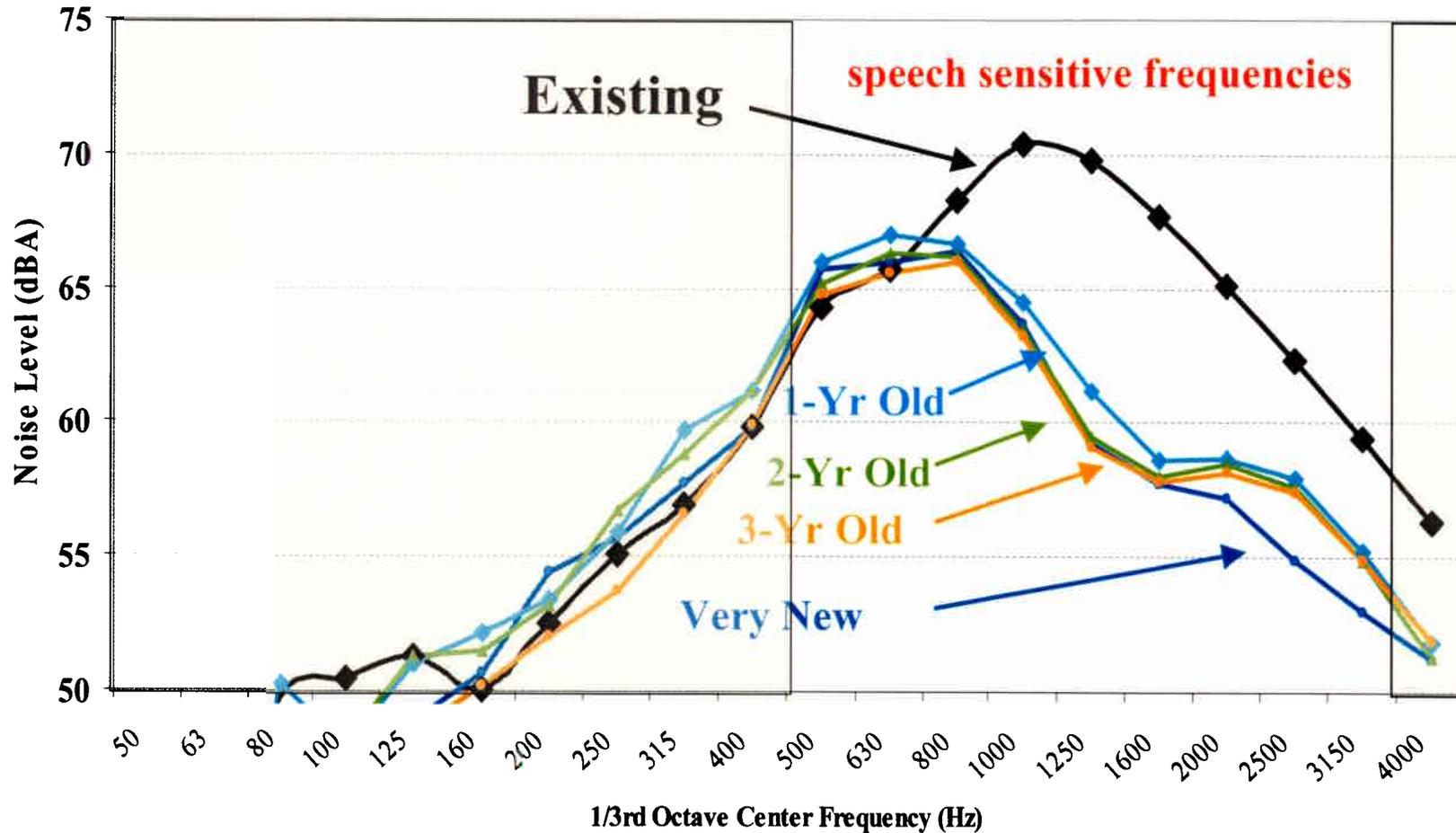
**Old AC Pavement**



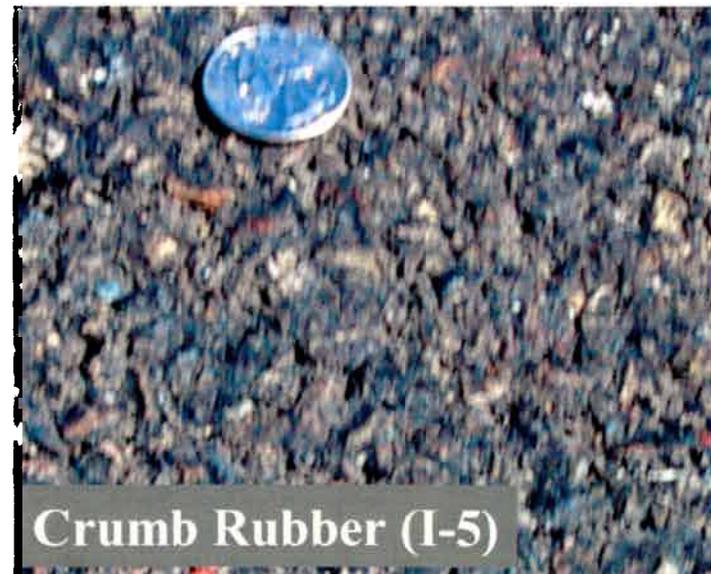
**New OGAC Pavement**



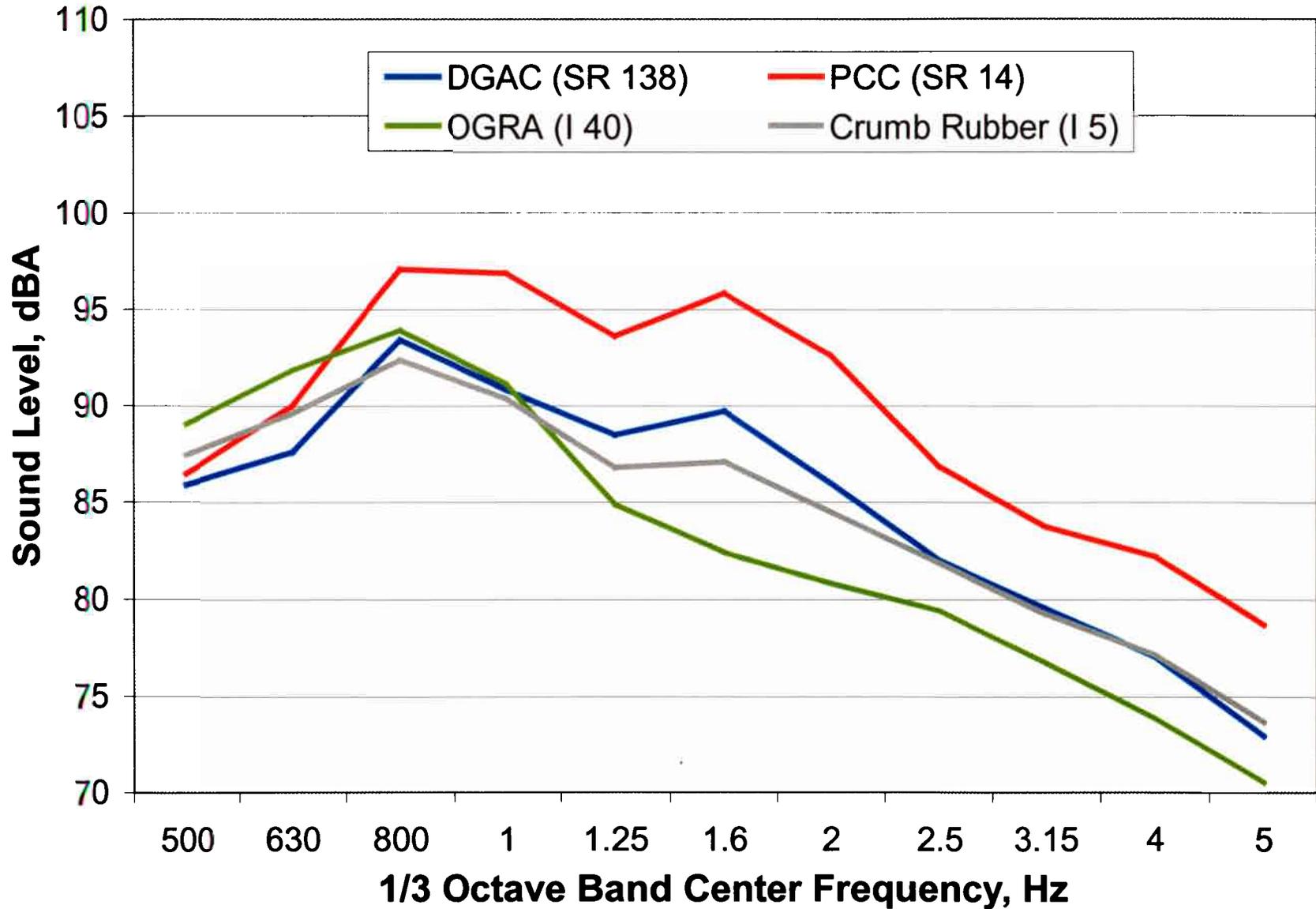
# A-Weighted Spectral Data



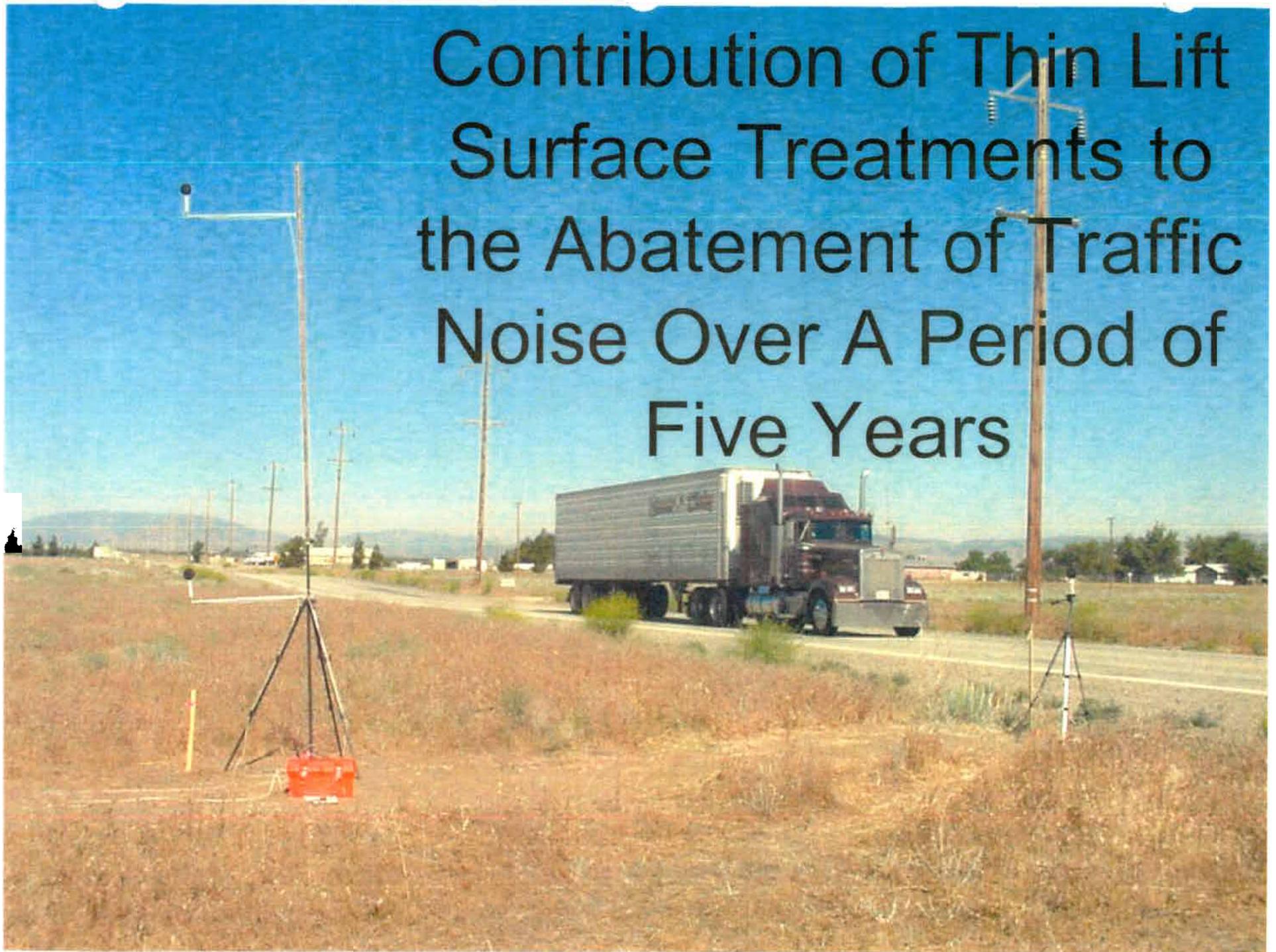
# Close-up Photos of Pavement Surfaces



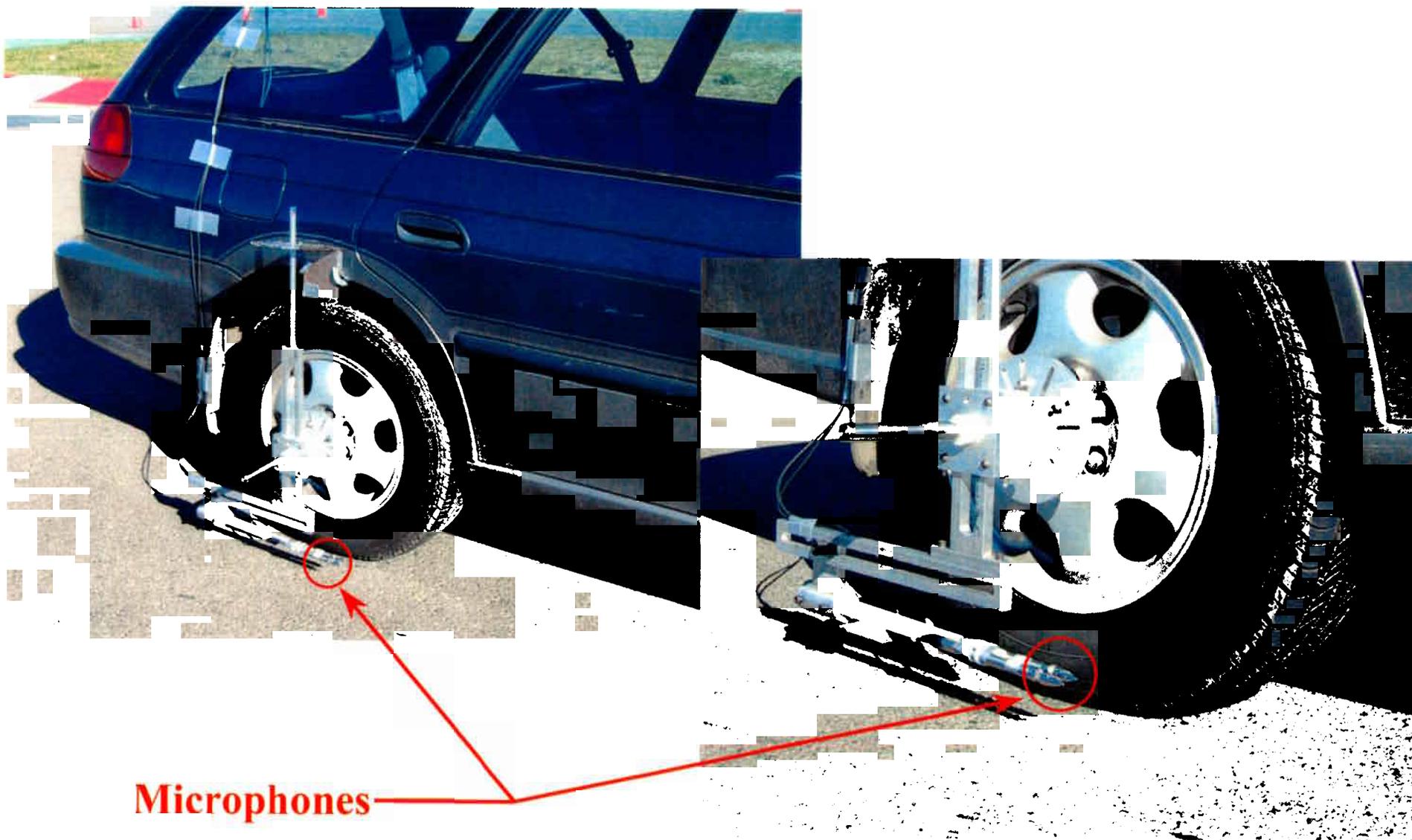
# Comparison of Different Pavements



# Contribution of Thin Lift Surface Treatments to the Abatement of Traffic Noise Over A Period of Five Years



# On-Board Tire/Road Noise Measurement



# Quiet Pavements

- Quiet pavements recognized as a traffic **noise abatement tool** in many countries:

France	Australia	Denmark
Germany	Sweden	The Netherlands
United Kingdom	Norway	Italy
Japan	Finland	

- **UK** to implement quiet pavements on 80% of their roadways by 2010
- Quiet pavements consist of 1 or 2 layers of porous, **open grade asphalt concrete** *lowering levels by 4 to 8 dB*

# Quiet Pavement Issues Worth Consideration

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- Larger portion of community benefits
  - Pavement longevity (lifecycle costs)
  - Pavement become louder with age ?
  - Weather – freeze/thaw cycles

# Potential Application of Open Graded Asphaltic Concrete



# Quiet Pavement - Gaining Acceptance



- Communicating - FHWA
- Research Efforts – USDOT & TRB
- Technology Transfer

# Conclusions

- Tire/pavement major contributor to overall traffic noise
- Caltrans study have documented 6 dBA reduction with new OGAC overlay
- Caltrans applying new technologies to measure acoustical differences
- Caltrans conducting in-depth studies around the state to quantify noise levels between pavements
- European countries consider pavement as noise reduction technique
- Caltrans is working with the FHWA and other partners to allow pavement to be used as a noise reducing alternative