LAX Community Noise Roundtable

Work Program C6 – Briefing on ACRP Report 105: Guidelines for Ensuring Longevity in Airport Sound Insulation Programs

March 12, 2014

ACRP Report 105:

- **Is the product of ACRP Research Project 02-31 - Assessment of Sound Insulation Treatments**

- **The objectives of this research were to:**

  - **(1) evaluate the degree and causes of deterioration, if any, in the acoustic performance of homes and buildings that were sound insulated during early sound insulation programs; and**

  - **(2) provide guidance to help airports determine the expectation of the durability and attenuation performance of currently available sound insulation techniques, treatment, and materials that are available today.**

- **Ferdows Fazeli and Ben Sharp of Wyle Laboratories conducted the research**

ACRP Report 105:

- **Offers best practices for airport sound insulation programs to reduce or eliminate future deterioration issues**

- **Complements ACRP Report 89: <u>Guidelines for Airport Sound Insulation Programs</u> (2013)**

- **Notes that FAA provides one-time funding for treatments that must be maintained by the homeowner**

- **Ensures that sound insulation program treatments continue to be effective well into the future**

- **Is a useful guide for sound insulation program managers and their consultants designing and implementing sound insulation programs**

ACRP Report 105 covers:

- **Section 1 - Durability issues**

- **Section 2 - Program management**

- **Section 3 - Design process and bid documents**

- **Section 4 - Current and future products**

- **Section 5 - Construction administration**

- **Section 6 - Quality control**

- **Section 7 - Maintenance**

Section 1 – Durability

- **"Durability is typically defined as the ability of a material, product, or building to maintain its intended function for its intended life expectancy with intended levels of maintenance under intended conditions of use."**

Findings:

- Tests conducted at multiple sites at two sound insulation programs found there has been less deterioration in sound insulation performance over the years than expected

- Test results corroborate the findings from a 2013 survey of U.S. sound insulation programs by Sharp, Gurovich, Fazeli, and Miller

- Deterioration in performance was more likely due to homeowner modifications, poor maintenance, extreme weather, and in some cases, poor installation, rather than in the deterioration of the sound insulation products themselves

Findings (cont.):

- Does not imply that there have not been problems with products or installation procedures

- Indicates that the problems were identified by the program manager and then corrected by the product manufacturer or contractor

- Lessons learned over time as a part of these programs have improved products and installation

Findings (cont.):

- **Problems are easy to detect during closeout inspection and warranty period, but some may appear later**

- **It is important to discuss these issues with homeowners and have them conduct periodic inspections**

- **Identify the problems once they become apparent**

- **Contact the contractor and manufacturer as soon as the problems become noticeable**

- **Many of the durability issues can be avoided through proper installation techniques**

Common Issues that can/have been resolved:

- **Delamination of Doors**
- **Warpage of the entire door panel**
- **Automatic door bottom seals**
- **Difficulties installing the door leaf within the existing door frame**
- **S-88 smoke seals or bulb seals peeled off easily**
- **Misalignment of aluminum windows**
- **Improper operation of hardware**
- **Weather strip deterioration**
- **Condensation in double window assemblies**
- **Sagging of casement windows**
- **Dirt buildup on sliding tracks**
- **Oversized windows that sag**

Common Issues that can/have been resolved:

- Incorrect maximum sizes for 3-lite sliders

- Incorrect glass thickness

- Failure to install tension clips on self-storing doors

- Corrosion of aluminum windows

- R-values of thermal insulation deteriorating over time due to settling

- Compliance with building codes and other applicable local or federal regulations

- Achieving a healthy interior environment

- Double sliding glass doors were massive and difficult to open

Methods to prevent durability issues:

- **Proper design; especially as it relates to climate**

- **Specify materials with proven durability**

- **Provide accurate and sufficient construction details**

- **Conduct robust construction management and contractor training**

- **Utilize strong quality assurance and quality control procedures**

- **Ensure homeowner is trained/understands how to maintain the sound insulation treatments**

The balance of ACRP Report 105:

- **Section 2 - Program management**

- **Section 3 - Design process and bid documents**

- **Section 4 - Current and future products**

- **Section 5 - Construction administration**

- **Section 6 - Quality control**

- **Section 7 - Maintenance**

Provides "How to" guidance on every aspect of a sound insulation program to ensure the longevity of the treatments

Conclusion

- **The research indicates that sound insulation treatments have held up well over time**

- **Initial problems with products and/or installation techniques appear to have been identified and largely resolved**

- **Sound insulation programs have benefitted from a sharing of lessons learned**

- **Homeowners are responsible for the long-term maintenance and operation of the sound insulation treatments**

- **ACRP Report 105 provides valuable guidance for ensuring the longevity of sound insulation programs**

Resources:

- **To download ACRP Report 105: <u>Guidelines for Ensuring Longevity in Airport Sound Insulation Programs</u>, go to:**

  http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_105.pdf

- **To download ACRP Report 89: <u>Guidelines for Airport Sound Insulation Programs</u>, go to:**

  http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_089.pdf

Questions?