Noise Mitigation Program

Voluntary Residential Sound Insulation

Program Handbook

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Dear Homeowner:

Welcome! You have been selected to participate in the Fort Lauderdale-Hollywood International Airport, Voluntary Residential Sound Insulation Program (Sound Insulation Program). The Sound Insulation Program is designed to reduce the noise from aircraft making its way into your home, and improve your quality of life. These improvements will also reduce the impact of other noises (lawnmowers, loud neighborhood parties, etc.), provide better hurricane protection and lower your home’s energy costs.

We look forward to working with you to make sure you find your participation in this program a success.

Keeping you well informed is the key to the success of this Program. This Homeowner Handbook is designed to provide detailed information about the Sound Insulation Program and serve as a comprehensive resource guide. Please take some time to review this handbook completely, and you will find the answers to most of your questions as well as details about how the program will work for you.

If you can’t find the answers you need, or have comments or concerns about the program, please contact:

   Noise Mitigation Program Outreach Center  
   Telephone: (954) 924-2224

Thank you for your participation.
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## Contact

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SOUND INSULATION PROGRAM OVERVIEW

In December 2008, the Federal Aviation Administration (FAA) issued its Record of Decision (ROD) concerning the Final Environmental Impact Statement (FEIS) for the development and expansion of the South Runway 9R/27L. This type of statement makes recommendations about how to lessen the impact of airport expansion on nearby communities. The FAA has recommended sound insulation to substantially reduce the impact of aircraft noise in approximately 1,700 homes located in approved, eligible areas located south and west of the airport, within the City of Dania Beach, Florida.

HOMEOWNER BENEFITS AND IMPROVEMENTS

One of the goals of the Sound Insulation Program is to achieve a noticeable reduction in the amount of noise that enters your home. While no home can be completely “sound-proofed,” the quality of life in your home can be improved by reducing how much sound enters your living areas. These sound insulation improvements will also provide increased energy savings, and in some cases reduced maintenance costs on the new window and door products. Best of all, there is no direct cost to you for the sound insulation treatments. This program is funded by the FAA and Broward County Aviation Department’s (BCAD) Noise Mitigation Fund. No local tax dollars are used for this program.

Specific FAA approved sound insulation improvements to be made to your home are determined by your home’s existing sound insulating characteristics. Because every home is different, sound insulation improvements are customized to your home’s needs. These improvements may include:

- Upgrading windows and doors
- Caulking and weather-stripping doors and windows
- Increasing attic insulation
- Improving air ventilation or air conditioning systems
The Sound Insulation Program only covers improvements that reduce noise levels in your home. This is not a home-hardening or home remodeling program. Structural repairs, maintenance items, rehabilitation work, abatement of hazardous materials, environmental remediation, and weatherization not directly related to sound reduction is not part of this Sound Insulation Program.

In some cases, there may be home improvements that must be completed by you before the sound insulation treatments can be installed. These items are referred to as homeowner pre-work. Pre-work items will be identified at the time of the initial assessment visit by the Program Team, and will be subsequently identified as part of the Homeowner Participation Agreement. If applicable, and in order to participate in the Sound Insulation Program, you must address all pre-work items before the sound insulation construction. If the home is of standard construction and has been maintained, pre-work should be minimal or not required.
Residential Sound Insulation: The Basics

The FAA has specific guidelines and regulations that govern the implementation of any sound insulation program. Based on FAA design criteria in the Airport Improvement Program Handbook, there are two ultimate goals of sound insulation programs. The guidelines state that:

1. “The design objective in a residential noise insulation project generally should be to achieve the requisite Noise Level Reduction (NLR) when the project is completed. (This is mathematically equivalent to achieving a DNL of 45 dB in all habitable rooms.)”

2. “Since it takes an improvement of at least 5 dB in NLR to be perceptible to the average person, any residential noise insulation project should be designed to provide at least that increase in NLR as a marginal minimum.”

The noise level in your home is also determined by a number of technical factors, including aircraft over-flight, sideline noise, and reverse-thrust and takeoff.

Some types of building structures provide better noise reduction than others. For example, masonry construction provides a better noise buffer than wood frame construction. However, since sound follows the path of least resistance, the most critical areas in sound insulating a home are openings in the home’s exterior surfaces such as doors, windows and roof vents, as well as window air-conditioners. Professionals describe these as “noise paths”. Because sound travels through air, the most critical areas in sound insulating a home are penetrations through “noise paths” such as windows and doors. Replacement of your current windows and doors with acoustically rated products will result in noticeable differences in interior noise levels in your home.
In less technical terms, sound insulation can include any acoustical treatment that reduces noise finding its way inside the home from outside that same home. The specific noise that this Sound Insulation Program is concerned with is aircraft noise. The noise level in the home is determined by:

(1) the source of noise source, and

(2) the construction of the home, and how well the walls, roof, doors and windows block noise from entering the interior spaces.

Sound is measured in decibels, or dBA, a scale that accurately describes the sound perceived by humans. The human ear can perceive differences in sound levels that vary just 3-5 decibels. For every 10-decibel decrease, the sound level is cut in half.

The Sound Insulation Program seeks to strengthen the weakest noise paths into your home to provide a minimum sound reduction of 5 decibels, or 25 percent, in the interior areas of your home.

*Noise Paths to Your Home*
**YOUR PROFESSIONAL PROGRAM TEAM**

The Sound Insulation team includes specially trained architects, engineers, acoustical and environmental specialists, all working together to successfully plan and complete the sound insulation improvements to your home. Program Team members have completed sound insulation treatments in over 20,000 homes throughout the country. At various times of this process, members of this team will:

- Meet with you to discuss the Sound Insulation Program and document existing conditions in the home.
- Prepare a written scope of work with accompanying graphics and floor plans to illustrate the recommended acoustical treatments to your home, and discuss them with you.
- Prepare final design and bidding documents for the selection of a contractor in a publicly advertised bid process.
- Provide daily observation and comprehensive inspection of the construction work in your home from start-up through completion.
- If your home is selected, perform both a pre- and post-construction acoustical test to see if the improvements perform as expected.
- Provide warranties for all installed products and workmanship.
**Sound Insulation Program Eligibility and Requirements**

In order to be considered for the Program, a home must be:

- Located within the FAA approved Sound Insulation Program boundaries.
- Zoned as a residential property.
- Free of major building code violations.

**Project Area: Based on FAA’s Record of Decision (Mapping the Patterns of Noise Impacts to Your Communities)**
This is a voluntary program. To indicate your interest in participating, you will need to complete the Program Application before the deadline that was listed in your Letter of Invitation. Once the Program Team has presented you with a scope of work and construction plans for your home, you will need to execute the Homeowner Participation Agreement.

You must also agree to be available and allow access to your home during typical weekday working hours (Monday-Friday, 8 a.m. – 5 p.m.) for:

- Assessment Design Visits
- Hazardous Materials Screening
- Pre-Construction Measurements
- Installation of Products
- Construction Inspections
- Pre- and Post-Construction Acoustical Testing (if applicable)
- During the construction process, the homeowner or designated representative must be present at all times the contractor is at the home.

**Customized Acoustical Treatment Options**

The Sound Insulation Program offers a variety of acoustical treatments that are used by the Program Team to reduce interior noise levels in eligible spaces. Spaces considered eligible for treatment must be livable, occupied year-round and meet all code and standard building construction requirements.

Since each home is unique, the recommended treatments will be specifically designed to achieve the recommended noise level reduction for your home. Your treatment plan will include a variety of the following:
Windows and doors are the primary sound paths into a home. To reduce interior noise levels, your existing windows and exterior doors will be replaced with acoustically rated, hurricane impact windows and doors.

You will be offered a choice of either aluminum framed or vinyl-framed windows in a variety of colors.

If you currently have single-hung or double-hung windows in your home, your new replacement windows will be the same type of window. If you currently have jalousie or awning style windows, the Program Team will recommend a different style that best fits each window opening and provides better sound insulation.

Doors leading to the exterior of your home are typically the weakest or most open noise reduction paths into your home. For this reason, front and back doors are replaced with a solid door with a high quality seal. A variety of materials and styles of doors will be offered. The Sound Insulation Program will also replace existing French style and sliding glass doors with acoustically rated, hurricane impact French style and sliding doors.
Customized Acoustical Treatment Options (cont’d)

Heating, Ventilation, and Air Conditioning (HVAC)

In order for the sound insulation treatments to work properly, the windows and doors must remain closed. That’s why, to ensure proper ventilation, each home must have some type of HVAC system.

An HVAC system will be offered to participating homeowners as part of the acoustical treatment for homes where a HVAC system does not currently exist.

If you currently utilize through-the-wall air conditioning units or fans, they will be removed and the penetration sealed to match the existing wall.

If you currently have an HVAC system, modifications or additions to vents and ducts may be performed to ensure proper air filtration.


**CUSTOMIZED ACOUSTICAL TREATMENT OPTIONS (CONT’D)**

**ATTICS, WALLS AND CEILINGS**

Attic pull-down stairs, attic/roof hatches, and skylights may be sound insulated as noise paths if they are located in treatment-eligible spaces.

If located in an eligible space, pull-down stairs and attic/roof hatches may be weather-stripped or replaced, depending on their condition.

There are two methods of treating attic pull-down stairs: sound insulating the stairs from above the attic (the preferred treatment); or insulating the stairs from below the finished ceiling side. If the pull-down stairs are deteriorated, they may be replaced.

Skylights can be treated by the installation of a secondary window.

Gypsum board may be added to eligible walls and ceilings where the existing mass is not adequate. These recommendations will be discussed with the property owner, if needed.

**ELECTRICAL SERVICE**

As part of installing the recommended HVAC systems, modifications to the electrical systems in residences may be required. Based upon the assessment visit and evaluation of existing systems, electrical upgrades will be identified. Typical modifications include installations of new service panels, installation of new circuits and removal and reinstallation of lights/outlets where wall/ceiling treatments are recommended.

The project engineer will carefully evaluate existing systems for replacement or upgrade to accommodate treatment recommendations. In addition, the project engineer will coordinate with Florida Power & Light to ensure that the service loads for the neighborhood and individual properties can be provided.
SMOKE ALARMS

The Sound Insulation Program will also be installing smoke alarms into your home to provide an added measure of safety. These alarms will be hard-wired into your electrical panel as required by code. This will eliminate the need for battery replacements, because the alarms will not have batteries.

WARRANTY INFORMATION

Once the improvements to your residence have been completed, you will receive a warranty package. This package includes operation and maintenance manuals for all installed products, information about the product manufacturer and description, the scope and time of the warranty coverage for each item and a contact phone number for repairs.

THE PROCESS

The Sound Insulation Program process is more complex than for other home improvement projects in which you may have been involved. This multi-part process is designed to make sure that the plan for YOUR home is the best possible one, and that the quality of construction work and materials is protected. The steps in this process include:

1. Application - As an eligible property owner, you have been sent a Program Application Package. If you choose to participate, please complete and return the Program Application to the Program Team by the deadline listed in your invitation letter. You will only be offered program participation one time. Failure to respond by the application deadline will automatically remove you from the program. The Program Team will then
schedule your first assessment visit.

THE PROCESS (CONT’D)

2. Assessment Visits - The assessment visit happens at your home/residence with members of the Program Team. During the visit, the Program Team will explain the Sound Insulation Program in detail, document your home’s existing conditions, draw floor plans and measure all your windows and doors. The mechanical/electrical engineer will conduct a detailed evaluation of your home, including existing heating and air conditioning systems, electrical service and potential safety or code issues.

Since the program will be evaluating sound paths into the home, please be aware that the team will be looking in all the rooms, including attics and closets. You will be asked about the age, construction and maintenance of the home and systems. The Assessment Visit takes approximately two hours.
3. Pre-Construction Testing - During the design process, your home will be tested for hazardous materials including lead paint and asbestos. You may also be selected for an acoustical test. This test will document to the FAA that the Sound Insulation Program is meeting the noise reduction goals. This test takes approximately an hour.

4. Scope of Work Review Meeting - You will meet with the Program Team at your home to review the recommended construction plans and scope of work for your property. This meeting takes approximately an hour.

5. Homeowner Participation Agreement - Once you have agreed to the recommended scope of work, you will execute the Homeowner Participation Agreement. Your scope of work and construction plans will be finalized and placed into the bid
6. Construction Documents and Bidding - The final design and bid package will be prepared and released to interested contractors for public bidding by Broward County. The bids will be evaluated and the work will be awarded to the most responsive, qualified contractor. The bidding process takes approximately four months.

7. Pre-Construction Measurements - The selected contractor and the Program Team members will schedule an appointment with you at your property to review the specific scope of work for your home. The contractor will measure each window and door opening for the custom fabrication of the products. This visit takes approximately an hour. The manufacturing process takes approximately four months.

8. Pre-Construction Walk-Through - The contractor and the Program Team will visit your home 48 hours before the start of construction. During this 10-minute visit, the contractor will review with you the scope of work for your home, take pre-construction photographs and ensure the property has been prepared for construction. The Program Team will also review the “What to do Before Construction Checklist” with you.
The Process (cont’d)

9. Construction Process - The Program Team will notify you of your construction start date. You can expect the construction process to take approximately 30-40 days. The contractor will need access to your property during weekdays between the hours of 8:00 a.m. and 5:00 p.m. There will not be any work on weekends, holidays or evenings.

The contractor will be required to reach substantial completion on the scope of work for your property within 10 days. After substantial completion, the contractor will be given additional time to finalize the scope of work and conduct the necessary City of Dania Beach inspections. (See “What to Expect During Construction” for more information.)

10. Final Construction Inspection. You and the Program Team will conduct a final inspection of the residence. Upon final inspection and approval, you will receive a warranty package for all work performed.

11. Homeowner Survey. After the work has been completed, you will be asked to complete a satisfaction survey rating the work and materials received from the Sound Insulation Program.

12. Post-Construction Acoustical Testing. If you were selected to participate in the pre-construction acoustical testing, a post-construction acoustical test will be conducted on your home. The post-testing verifies the acoustical treatments are performing to meet the Sound Insulation Program’s goals.
WHAT TO DO BEFORE CONSTRUCTION BEGINS

To prepare for the start of construction in your home, you should:

• Remove all curtains, draperies, rods and other decorative treatments except shades or blinds from windows and doors.

• Move furniture a minimum of 48 inches away from window and door areas to allow adequate working space in front of and on each side. This is critically important in avoiding construction delays.

• Remove belongings stored in attics and other areas that are to receive insulation. These areas will be described in your treatment recommendations.

• Remove all valuables from the work area to protect them. Remove fragile items from walls or shelves and store them in a safe place. Vibrations from construction may cause items to fall.

• Clear the area around the electrical panel.

• Remove any window air conditioning units and/or through-window vents. Window air conditioners are not recommended
**What to Expect During Construction**

As with any home-related construction, you can expect some disturbance. Contractors will be very careful to perform the work in the least intrusive manner possible. However, some disruptions are necessary, including:

- Contractors and inspectors will be in and out of your home during the day.
- There will be noise during construction work hours and construction-related dust and dirt in the home.

During construction the contractors’ responsibilities include:

- Taking every precaution to protect your home and its contents.
- Using drop cloths and runners in construction areas and along access routes.
- Cleaning-up construction areas at the end of each workday, including but not limited to, vacuuming and removal of all construction debris.
- Ensuring that no exterior wall openings are left open overnight without installing a door or window that can be secured.
- Mounting temporary shades or blinds each evening until construction is completed.
- Ensuring there are no overnight outages of electrical power or air conditioning related to construction.
- Designating, if needed, a “room of refuge” for the homeowner, which will be weather-tight and free of any construction materials, debris or equipment for the duration of the project. The “room of refuge” location may change during the course of construction to accommodate the contractor’s schedule and progress.
Q. Who decides what work will be done in my home?
A. Acoustical treatments are determined by the Sound Insulation Program Team, which evaluates the needs of each home individually, on a house by-house basis. These treatments will be reviewed with Airport staff to insure their consistency with FAA reimbursement guidelines. Proposed treatments will then be reviewed with each homeowner before bid documents are prepared for construction.

Q. What if I want to make other repairs?
A. We request you do not undertake any repairs or remodeling while the home is in the construction phase of the Sound Insulation Program. Improvements that are not directly related to noise reduction are outside of the program’s scope, are NOT covered, and may NOT occur from the time Sound Insulation Program construction begins in your home until it is officially completed.

Q. How long will work take?
A. The Construction process typically lasts 30-45 days. Once construction begins, most homes are substantially completed within 10 working days. The Sound Insulation Program Consultant Team may elect to install mechanical systems (like central air conditioning) on a separate schedule from the doors and windows. Substantial completion is achieved when all products required under the base contract are installed, but does NOT include “punch list” time (construction review and follow-up modifications). From start to finish, it generally requires six weeks to completely finish all the work.

CONTINUED . . .
Frequently Asked Questions (cont’d)

Q. Are there any costs to me?
A. The FAA and the Broward County Aviation Department pay for the basic costs for labor and materials to install sound insulation treatments. The only costs to the homeowner would be to adjust or replace window dressings (blinds, draperies, etc.), or prepare the home for installation of the treatments (if needed).

Q. Who does the work?
A. The work is bid out to insured, licensed and bonded general contractors. Contractors must first bid for the work, and the contractor with the lowest, most responsive bid is awarded the job.

Q. I recently installed new windows and doors. Will I be reimbursed for these improvements?
A. Sorry, no. Improvements completed by the homeowner prior to participating in the Sound Insulation Program are not eligible for reimbursement.

Q. My new windows fog up! My old ones did not. Are the new windows defective?
A. No. The new windows are tighter-fitting, insulated windows that provide a weather-tight, energy-efficient seal. Sealing your home makes it more comfortable and quiet, but also keeps normal household moisture in. Any condensation (“fog”) on the windows is a sign of the windows’ effectiveness at restricting the escape of moisture and heat from your home.

Q. Will air conditioning be provided?
A. An air conditioning system MAY be installed with the sound insulation package IF your home does not already have one. Existing systems MAY be replaced or upgraded, depending on
the age of the system

**Frequently Asked Questions (cont’d)**

Q. **Can I keep my old windows and doors?**
A. No. Your old windows and doors will become the property of the contractor.

Q. **Why is the impact glass on the inside sash of the window?**
A. The impact glass is placed closest to the structure to provide the most protection. To achieve the sound level reduction required a dual-glazed window is used. The exterior pane of glass is considered “sacrificial”. You should know that impact glass could be broken, though it is much stronger than standard glass. If the interior window was standard glass and the exterior impact glass window broke, it would cause the interior glass to shatter into your home.

Q. **Can I receive French doors instead of sliding doors?**
A. No. The federal guidelines require the County to replace what exists. This is an acoustical program and not a home-hardening or remodeling program.

Q. **Do I need to be home during the construction process?**
A. Yes, you or a designated representative will need to be present during the construction process. You can expect the contractor to be in your home the entire day for the first 10 days. After they have reached substantial completion, the contractor will schedule appointments with you to finish the punch-list items or schedule a City of Dania Beach permit inspection.
Glossary of Terms

Acoustical
Conditions or products related to hearing, noise or sound.

BCAD
Broward County Aviation Department

Bid Package
A group of houses assembled together into one construction contract.

Condensation
The result of high humidity (moisture in the air) that produces a “fog” when it hits a colder surface such as a glass window.

Day-Night Level (DNL)
Average Annual Sound Levels that represent the sound levels over a 24-hour period, while taking into account quiet periods as well as aircraft overflights. For flights that occur after 10 pm and before 7 am, these events are counted twice. The DNL noise exposure contours in the affected residential neighborhoods are 70 DNL to 65 DNL.

Decibel (dB)
A unit of measure for the vibration (low rumble or high whistle) and strength (soft or loud) of sound waves. The higher the decibel level (vibration and strength), the louder the sound. Most sounds we experience in our day-to-day lives vary between 30 dB (a typical bedroom at night) and 100 dB (inside a nightclub).
Glossary of Terms (cont’d)

Eligibility
Qualified to participate in the Sound Insulation Program by having a home or property located in the designated treatment areas.

Homeowner Participation Agreement
An agreement between a homeowner and Broward County that authorizes the installation of sound insulation treatments at a given residential property.

Federal Aviation Administration (FAA)
The branch of the federal government which provides funding and oversight of the Sound Insulation Program project.

Field Team
Personnel from the engineers, architects, and program managers for the Sound Insulation Program who will go to each home to gather information and make treatment recommendations.

Final Environmental Impact Study (FEIS)
A plan to address environmental issues (such as aircraft noise and land-use compatibility) in the communities surrounding an airport. The FAA completed the FEIS in December 2008 for Fort Lauderdale-Hollywood International Airport.
Glossary of Terms (cont’d)

Noise Level Reduction (NLR)

Noise level reduction is measured in decibels, and is defined as a constant numerical value between the interior noise level and the exterior noise level. This measurement is taken before and after acoustical treatments to determine the overall improvement in noise level reduction. This value will be used to compare the post-construction interior noise levels in the home to the FAA goal of 45 DNL (Day-Night Level).

Noise Paths

The areas where environmental noise can travel from the outside through the home’s construction, with the greatest flow through doors, windows, vents, and/or lightly constructed wall and ceiling assemblies.

Project Representative

A full time construction management person who will observe the work of the contractor for conformance to the bid documents.

Program Team

The professionals selected by BCAD to complete the sound insulation of homes.

Punch List

A “to do” list made near the completion of construction work indicating the items that remain unfinished, or that do not meet the quality requirements specified in the scope of work. The Punch List must be satisfied prior to 100% completion.
Sound Insulation The application of residential sound insulation can include some or all of the following: replacing or supplementing windows and doors; installing attic insulation; caulking and sealing. FAA residential sound insulation programs, including this Sound Insulation Program, are voluntary programs. Program participation is not a requirement.

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