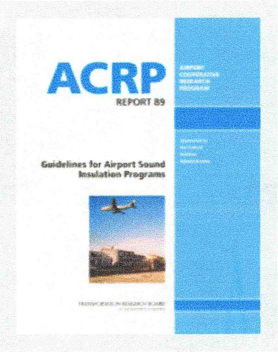

Guidelines for Airport Sound Insulation Programs (2013)

DETAILS

312 pages | 8.5 x 11 | PAPERBACK
ISBN 978-0-309-28341-0 | DOI 10.17226/22519

CONTRIBUTORS

Michael K. Payne, Rita A. Smith, Deborah Murphy Lagos, Jack Freytag, Mark Culverson, Jean Lesicka, James Leana, Robert R. Smith, A. Vernon Woodworth, and Robert Valerio; Airport Cooperative Research Program; Transportation Research Board; National Academies of Sciences, Engineering, and Medicine

SUGGESTED CITATION

National Academies of Sciences, Engineering, and Medicine 2013. *Guidelines for Airport Sound Insulation Programs*. Washington, DC: The National Academies Press. https://doi.org/10.17226/22519.

FOREWORD

By Theresia H. Schatz
Staff Officer
Transportation Research Board

ACRP Report 89: Guidelines for Airport Sound Insulation Programs provides updated guidelines for sound insulation of residential and other noise-sensitive buildings for potential use by airport and non-airport sponsors to develop and effectively manage their aircraft noise insulation projects. Noise-sensitive buildings are defined as "residences (single family and multi-family), schools, hospitals, churches, and other non-compatible structures identified in the sponsor's NCP and approved by the FAA as a project in the NCP," by the *AIP Handbook,* FAA Order 5100.38C, paragraph 812.A.

As the guidelines were being finalized, Program Guidance Letter (PGL) 12-09, "AIP Eligibility and Justification Requirements for Noise Insulation Projects," was released by the FAA on August 17, 2012. The PGL replaced existing guidance on the implementation of AIP-funded noise insulation projects as had previously been provided per Section 812 of the *AIP Handbook,* FAA Order 5100-38C. At the time that the *ACRP Report 89* guidelines were finalized, there were outstanding questions regarding the PGL. These outstanding questions and related issues are discussed throughout the text with advice to users to contact their ADO project manager regarding any further guidance or information that has been provided since the publication of these guidelines.

This research will be very helpful to improve current practices and ensure compliant airport sound insulation programs. The research significantly expands information available on best practices and current standards and requirements for sound insulation of homes as well as for other eligible noise-sensitive buildings. The guidelines are a very useful tool for airport staff, consultants, and FAA offices to use with the AIP guidance provided in the *AIP Handbook* as updated by PGLs from time to time.

To assist sponsor-approved noise programs, FAA published AC 150/5000-9A in July 1993 that announced the availability of the *Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations* (the guidelines). The guidelines themselves were published in 1992 for military and FAA airport programs to serve as a project management handbook for studying, initiating, and implementing sound insulation measures developed under airport noise compatibility programs. The guidelines were updated in 2005 by the U.S. Navy for application at military airports. The Navy updated the guidelines to meet their current program objectives and to reflect current building codes and insulation product specifications. This research has developed updated guidance for sponsors to effectively manage noise insulation programs of eligible structures in conformance with FAA Noise Compatibility Program (NCP) and Airport Improvement Program (AIP) funding requirements.

This research was conducted under ACRP Project 02-24 by the Jones Payne Group in association with URS Group, Freytag & Associates, Larson Manufacturing, CSDA Archi-

CHAPTER 10

Construction Contracting

The perceived success and reputation of an SIP depend heavily on the construction phase of the program since this is when the sponsor either fulfills or disappoints the expectations of the program's participants. This is also when the sponsor contractually transfers significant control of the program to the construction contractor. For this reason, it is imperative that sponsors select a construction delivery approach responsive to the program's needs while addressing the unique nature of sound insulation.

Sound insulation programs are unique in the sense that:

1. Public funds are expended for capital improvement of private property by a contractor with no direct contractual relationship to the property owner. The construction contractor acts as a third party, responsible for executing and delivering on agreements, understandings, and expectations established contractually between the sponsor and property owner.
2. Due to the magnitude of the work and limitations on available funds and delivery resources, sound insulation programs typically require many years to complete. Use of public funds often mandates using a competitive bidding process to select a construction contractor, with contracts awarded to the lowest responsible bidder(s). SIPs tasked with providing consistent and responsive improvements to private property by means of multiyear projects completed by a variety of contractors have a considerable challenge. This challenge is met by providing contractor orientation regarding the unique third-party relationship to the homeowner, establishing consistent interpretation of contract provisions, and integrating the contractor into the sponsor's program delivery approach.
3. Fast-paced residential SIPs demand skill sets and capabilities beyond those of the industry-standard construction contractor. For example, many residential contractors will have the construction trade skills to complete the residential renovation work but lack the significant administrative skills necessary to succeed on a government-funded project. Conversely, in many instances, contractors experienced in delivery of government-funded projects are not experienced with residential renovation work.
4. Rather than providing construction on a single property for a single client, SIP contracts typically include 25 to 100 properties, each with a different owner. As a result, a sound insulation project essentially consists of multiple mini-projects, each with its own completion schedule. The magnitude of properties and involved parties significantly increases the quantity of issues to be addressed to keep stakeholders satisfied.
5. Construction contracts are required to meet the requirements of PGL 12-09, which stresses that AIP-funded projects, including SIPs, "meet all federal procurement and contract requirements including the Buy American Preference requirements of Title 49 United States Code 50101."[1] These requirements are addressed further in PGL 10-02, Guidance for Buy American

[1] U.S. DOT, FAA, PGL 12-09, August 17, 2012, Attachment A, §812 (c)(2), p. 1-5.

the traditional design–bid–build single prime approach. When considering a delivery approach for sound insulation, it is prudent to review the sponsor's existing procedures to determine what level of complexity the sponsor can currently support. Evaluate what changes the sponsor would be willing to consider in support of a more tailored construction delivery approach.

10.2.3 Public Relations and Accountability

The high number of individual properties contained in a residential SIP means a high number of stakeholders. Additionally, since public funds are involved, there is significant political influence and interest and thus a high level of accountability. Accordingly, the construction delivery approach needs to recognize this reality and provide well-defined, well-coordinated lines of communication to accommodate the many stakeholders, accomplish day-to-day project coordination, and resolve issues in a timely manner.

As previously presented, sound insulation programs garner significant public attention. During the construction phase of a program, when contractors must deliver on stakeholder's expectations of the process and finished product, public relations issues are heightened. Accordingly, construction delivery approaches must support timely resolution of issues that affect the participants' and public's perception of the program.

10.2.4 Risk Management

Construction projects are fraught with risk. The SIP sponsor should develop a construction delivery approach that provides for the management and control of these risks. Risks unique to sound insulation are discussed in the following.

1. Residential SIPs involve renovation on a fast-paced commercial scale, with the additional burden of administrative requirements associated with public funds. Very few contractors have the mix of skill sets required to meet all these needs. This issue can be effectively managed by using experienced sound insulation construction managers as a buffer between the sponsor and the contracting community. Other risk management tools include specifying minimum qualifications or conducting prequalifications for general contractors. Some airports use submission of a construction plan as a weighted portion of the bid to verify that the contractor has grasped the scope of work and has a sound plan for delivering it. Offering smaller projects that contractors must successfully complete prior to bidding on larger projects is an effective means of mitigating the risk of under-qualified contractors.
2. A single contractor's poor performance can significantly harm the reputation of a sound program. The construction delivery approach should minimize this potential by providing timely options for handling poor performance or by reducing poor performance through a series of qualifying activities.
3. SIPs are conducted in occupied homes or schools and require property owner presence during construction. Homeowners who have arranged for vacation time or secured someone to be on-site during construction (or users of schools needing to start classes) may be upset if the schedule does not proceed as they have been informed. The construction delivery approach chosen by the sponsor needs to address contractor performance in regard to staying on schedule. Methods to address this issue should be discussed with the sponsor's legal advisors as part of designing the program. A few examples are:
   a. Designing time into the specified contract schedule where no new houses are started and any delays can be rectified before continuing.
   b. Not allowing work to start on a property before all of the product has arrived and been verified.
   c. Quantified performance reviews conducted on each awarded contract that affect the ability to bid again.

d. Restrictions on the amount of work one contractor can undertake and successful completion of the first contract before being awarded any additional work.
e. Daily construction observation so that delays can be noted and resolved before they become an issue.

10.2.5 Scale and Cost

The selected construction delivery approach should match the anticipated scale and pace of the SIP. Most publicly funded programs are judged for reasonableness based on percentages—for example, the ratio of soft costs (administration, design, engineering, outreach) to hard costs (construction). The larger the program, the more room there is in the budget to spread the costs of sophisticated delivery systems that are costly. More complex delivery systems that may meet more community goals need a minimum economy of scale to make them sustainable from a cost standpoint, whereas the most commonly used design–bid–build approach can be used successfully on small or large programs.

10.2.6 Continuity

SIPs typically have durations from a just a few years to over 15 years. An array of construction general contractors, subcontractors, suppliers, and service providers will develop in the community to support completion of the projects. It may take from several months to several years to fully develop the construction-related resources required to successfully support a significant SIP. Based on this reality, program continuity from inception to completion is crucial to maintaining a responsive construction community. Continuity facilitates warranty service work from the contractors and manufacturers since they are present for the continuing work.

That continuity comes in two main forms. First is the presence of a reliable stream of biddable contracts for contractors. This maintains interest and facilitates a contractor investing in building the labor and other resources needed to complete the work. Secondly, a program's policies and procedures for design and construction delivery should provide a framework for ensuring some level of consistency from contract to contract and year to year. This allows contractors to achieve proficiency along with efficiency. Many programs use a pilot phase as a means of testing and adjusting their delivery approach and ramping up a project from inception to an established program. This preliminary effort to thoughtfully establish an approach serves the program well in contractor interest and straightforward management.

10.3 Approach Evaluation and Selection Process

A brief summary of typical construction delivery approaches and the considerations that should go into formulating a delivery approach are presented in Sections 10.1 and 10.2. Steps in the process for selecting a delivery approach and customizing that approach to suit the individual program's needs are:

1. Evaluate the sponsor's existing procurement capability and flexibility for alternative approaches.
2. Assess the capability of in-house or SIP staff (including consultants) in regard to construction delivery expertise.
3. Determine anticipated pace and duration of the program.
4. Determine what kind of management control the sponsor wants to maintain during construction.
5. Determine what management control the sponsor feels comfortable delegating, and to whom.

with all supporting documentation, sponsor assurances, and certifications. Some regional airport offices have prepared variations of these forms and instructions for use by airports in their regions. Before completing a form, please check with the appropriate airport's regional or district office to determine which form to use.

The completed SF-424 must be accompanied by the supporting documents listed in the following, as appropriate. The FAA may request, on a case-by-case basis, additional information to support other federal and local requirements.[5]

A. Program Narrative and Cost Estimates

A narrative summary statement of the project must be provided. The summary must include a description and justification for the project to be accomplished. Additionally, estimates showing the basis for the project budget must be furnished in sufficient detail to determine whether the project costs appear to be reasonable.[6]

B. Map

Applicants must provide a map, at least 8½ in. × 11 in., that depicts and identifies the limits of the proposed project. The map should show the boundaries and proposed property rights (i.e., avigation easement) of each parcel of land included in the project.[7]

C. Identification of Environmental Requirements

All AIP projects must be either categorically excluded or accompanied by an environmental assessment that resulted in a finding of no significant impact (FONSI) or by an environmental impact statement prepared in accordance with FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects.[8] Noise compatibility projects must receive appropriate FAA environmental determinations prior to consideration for AIP funding. FAA Order 5050.4B indicates which noise compatibility projects require an environmental assessment or environmental impact statement and which are categorically excluded.[9] A link to the most current version of this document is available on the FAA website (currently http://www.faa.gov/airports/environmental/). For example, a historic structure may be proposed for sound insulation, thereby necessitating a determination of potential environmental impacts due to the treatments. This is discussed further in Chapter 6 of these guidelines.

D. Federal Register

The FAA may accept a sponsor's application at any time. Special directions are published annually in the Federal Register, which provides a deadline for submission of applications under the AIP. This announcement is for the upcoming fiscal year and covers only sponsor entitlement and cargo funds. The announcement typically states that "Absent an acceptable application by May 1, [current year], FAA will defer an airport's entitlement funds until the next fiscal year." This notice applies to "those airports that have had entitlement funds apportioned to them, except those non-primary airports located in designated Block Grant States."[10] Sponsors are advised, as appropriate, to comply with the schedule in the Federal Register. However, regions may request sponsors' submissions at an earlier date to meet regional needs.[11]

---

[5] U.S. DOT, FAA, FAA Order 5100.38C, *Airport Improvement Program Handbook,* June 28, 2005. Appendix 6. §1011, p. 172.
[6] U.S. DOT, FAA, FAA Order 5100.38C, *Airport Improvement Program Handbook,* June 28, 2005. Appendix 6. §1011 (a), pp. 172-173.
[7] U.S. DOT, FAA, FAA Order 5100.38C, *Airport Improvement Program Handbook,* June 28, 2005. Appendix 6. §1011 (b), p. 173.
[8] U.S. DOT, FAA, FAA Order 5100.38C, *Airport Improvement Program Handbook,* June 28, 2005. Appendix 6. §1011 (c), p. 173.
[9] U.S. DOT, FAA, FAA Order 5100.38C, *Airport Improvement Program Handbook,* June 28, 2005. Appendix 6. §805, p. 134.
[10] U.S. DOT, FAA, Great Lakes Region Airports Division, Regional Guidance Letter 5100.20, December 12, 2007, §8, p. 4.
[11] See note 4. §1012, p. 173.