

Appendix 1	SAMPLE TDR ORDINANCE
Appendix 2	SECTION 163.3175 AND SAMPLE COMPREHENSIVE PLAN LANGUAGE
Appendix 3	SAMPLE REAL ESTATE DISCLOSURE
Appendix 4	SAMPLE AVIGATION EASEMENT
Appendix 5	SAMPLE EXTERIOR LIGHTING GUIDELINES
Appendix 6	RESIDENTIAL NOISE REDUCTION GUIDELINES
Appendix 7	SAMPLE AIRPORT INFLUENCE DISTRICT ORDINANCES
Appendix 8	AICUZ COMPATIBILITY GUIDELINES

## 2.03.07 Overlay Zoning Districts

4. Transfer of **development** Rights (TDR).
  - a. Purpose, Intent and Applicability.
    - i. *Purpose.* The primary purpose of the TDR process is to establish an equitable method of protecting and conserving lands determined to have significant environmental value, including large connected wetland systems and significant areas of habitat for listed species; and  
To provide a viable mechanism for property owners of such environmentally valuable lands to recoup lost value and **development** potential which may be associated with the application of environmental preservations standards to such lands.
    - ii. *Intent .* These TDR provisions are intended to accomplish the above stated purpose through an economically viable process of transferring **development** rights from less suitable non-RFMU sending areas and **RFMU sending lands** to more suitable non-RFMU receiving areas and **RFMU receiving lands** .
    - iii. *Applicability .* These TDR provisions shall be applicable to those areas specifically identified in (b), (c) and (d) below. These TDR provisions shall not be applicable to the any transfer of **development** rights within the RLSA District.
  - b. Transfer of **development** rights from urban areas to urban areas. An owner of land located within areas designated as urban on the Future Land Use Map, including agriculturally zoned properties, which may or may not be identified with the ST overlay, may elect to transfer some or all of the residential **development** rights from one **parcel** of land to another **parcel** , as an alternative to the **development** of the sending lands. The lands to which the **development** rights are to be transferred shall be referred to as receiving lands and those lands from which **development** rights are transferred shall be referred to as sending lands, as provided herein and shall be located within the urban designated areas of the county.
    - i. The **development** rights shall be considered as interests in real property and be transferred in portions or as a total as provided in this section. Once used, the residential **development** rights shall not be used again and the residential **development** rights of the subject lands providing them shall be considered severed forever.
    - ii. The transfer of **development** rights to be used shall be subject to all of the requirements of the basic zoning district to which they are transferred unless specifically approved otherwise as provided by law.
    - iii. The minimum area of land eligible for the transfer of **development** rights shall be equal to the minimum **lot** size for the sending zone. For the purposes of this section, legal non-conforming **lots** of record may be eligible to transfer **density** , with

the minimum area of the receiving land equal to the area of the legal non-conforming **lot of record**, excluding submerged land.

iv. Upon the approval of the transfer of residential **development** rights by a super majority vote of the board of county commissioners, the property owner of the sending land shall dedicate in fee simple the land to the county or a state or federal agency; however, the lands may be dedicated in fee simple to a private, not-for-profit conservation or environmental organization in accordance with F.S. § 704.06, as amended, with the approval of the board of county commissioners.

v. The maximum number of residential units which may be requested for transfer shall be compiled on the basis of the permitted **density** pursuant to the underlying zoning category of the sending land.

vi. Maximum number of residential units which eligible lands may receive.

a) Lands in all residential zoning districts and residential components of planned unit **development** zoning districts are eligible to receive residential **development** units provided that the maximum number of residential units which may be transferred to the receiving land does not exceed ten percent of the maximum number of residential units permitted under the receiving property's basic zoning district. For the purpose of determining the number of residential units which a **parcel** of land is capable of receiving, the following formulas shall apply:

i) RSF-1 through RSF-5 districts, up to and including five units per acre:

Units per base **density**  $\times$  10% = .1 to .5 units per acre

ii) RMF-6 district, up to and including six units per acre:

6 units  $\times$  10% = 0.6 units per acre

iii) RMF-12 district, seven to and including 12 units per acre:

12 units  $\times$  10% = 1.20 units per acre

iv) RMF-16 district:

16 units  $\times$  5% = 0.80 units per acre

v) RT district:

16 units  $\times$  5% = 0.80 units per acre

26 units  $\times$  5% = 1.30 units per acre

vi) PUD district:

Residential tract units  $\times$  5% = permitted units per acre

b) For the purpose of calculating the final fractional residential unit of the total number of residential units

eligible for transfer to an eligible **parcel** of land, the following shall apply: Any fractional residential unit shall be converted upward if one-half or more of a whole unit, or downward if less than one-half of a whole unit, to the nearest whole unit value.

vii. Procedure for obtaining transfer of residential **development** rights. Any owner of eligible land may apply for a transfer of **development** rights either separately or concurrently with rezoning, zoning ordinance amendments, preliminary **subdivision** plat or **development** plan. Prior to the approval of any transfer of **development** rights or the issuance of any **building** permits in connection with the use of any transfer of **development** rights, the petitioner shall submit the following information and data, as applicable to the petition, to the **development** services director for his review and subsequent action by the board of county commissioners

- a) Name and address of property owner of sending land.
- b) Name and address of property owner of receiving land.
- c) Legal description of sending land from which transfer of residential **development** rights is petitioned.
- d) Survey of sending land from which transfer of residential **development** rights is requested.
- e) Legal description of receiving land which receives the transfer of residential **development** rights.
- f) Survey of the land which receives the transfer of residential **development** rights.
- g) Three copies of an executed deed of transfer of ownership of the sending property to the county or a state or federal agency; however, the lands may be dedicated in fee simple to a private, not-for-profit conservation or environmental organization in accordance with F.S. § 704.06, as amended, with the approval of the board of county commissioners in a form approved by the county attorney.
- h) The owner of the sending land shall provide a guarantee, agreeable to and approved by ordinance of the board of county commissioners, that the sending land will be utilized only for the purposes of increasing public recreational and/or educational opportunities, creation of linkages between public or private **open space**, protection of critical habitat/ecosystems, or other public purpose as specified in the ordinance of adoption. Such a guarantee shall be recorded with the clerk of the circuit court of Collier County, Florida as a recorded restriction of the use of such land and shall be binding upon all present and

subsequent owners, heirs, or assigns of such property. Such restrictions may not be amended, deleted, or otherwise altered, except by a majority vote of the BCC.

viii. Time limitations on board of county commissioners' approval of transfer of residential **development** rights or authorization to proceed with the processing of a **building** construction permit. The board of county commissioners' approval of a transfer of residential **development** rights or the County Manager or his designee authorization to proceed with the processing of a **building** or construction permit shall be valid so long as such approval is permitted by law. The failure to act on the part of the petitioner to exercise the transfer of residential **development** rights or obtain and exercise an authorized **building** or construction permit within the time period provided by law shall automatically terminate such approval and the county shall be held harmless for any damages arising out of the petitioner's failure to act.

ix. Sequential use of residential units approved for transfer by the board of county commissioners. Upon the issuance of any permit for the construction of residential unit(s) upon the receiving land, the first residential units built thereon shall be considered to be the residential units approved for transfer by the board of county commissioners, and the succeeding residential units constructed shall be considered the residential units permitted under the basic zoning district regulations.

c. **TDR credits from RFMU sending lands** : General Provisions

i. Creation of **TDR credits** .

a) **TDR credits** are generated from **RFMU sending lands** at a rate of 1 **TDR credit** per 5 acres of RFMU Sending Land or, for those legal non-conforming **lots** or **parcels** of less than 5 acres that were in existence as of June 22, 1999, at a rate of 1 **TDR credit** per legal non-conforming **lot** or **parcel** .

b) For **lots** and **parcels** 5 acres or larger, the number of **TDR credits** generated shall be calculated using the following formula:

# of acres x 0.2 = # of **TDR credits** generated.

Where the number of **TDR credits** thus calculated is a fractional number, the number of **TDR credits** created shall be rounded to the nearest 1/100th.

ii. Receipt of **TDR credits** from **RFMU sending lands** . **TDR credits** from **RFMU sending lands** may be transferred into Urban Areas, the Urban Residential Fringe, and **RFMU receiving lands** , as provided in Sections 2.03.07. (4)(d) and (e) below.

iii. Prohibition on transfer of fractional TDRS. While fractional **TDR credits** may be created, as provided in (i) above, **TDR**

**credits** may only be transferred from **RFMU sending lands** in increments of whole, not fractional, **dwelling units** . Consequently, fractional **TDR credits** must be aggregated to form whole units, before they can be utilized to increase **density** in either non-RFMU Receiving Areas or **RFMU Receiving lands** .

iv. Prohibition on transfer of **development** rights.

a) **TDR credits** shall not be transferred from **RFMU sending lands** where a conservation easement or other similar **development** restriction prohibits the residential **development** of such property.

b) **TDR credits** shall not be transferred from **RFMU sending lands** that were cleared for agricultural operations after June 19, 2002, for a period of twenty-five (25) years after such clearing occurs.

d. Transfer of **development** rights from **RFMU sending lands** to non-rfmu receiving areas.

i. Transfers to urban areas.

a) Maximum **density** increase. In order to encourage residential in-fill in urban areas of existing **development** outside of the Coastal High Hazard Area, a maximum of 3 residential **dwelling units** per gross acre may be requested through a rezone petition for projects qualifying under this residential infill provisions of the Future Land Use Element **density** Rating System, subject to the applicable provisions of Chapters 2 and 9 of this Code, and the following conditions:

i) The project is 20 acres or less in size;

ii) At time of **development** , the project will be served by central public water and sewer;

iii) The property in question has no common site **development** plan in common with **adjacent** property;

iv) There is no common ownership with any **adjacent parcels** ; and

v) The **parcel** in question was not created to take advantage of the in-fill **residential density** bonus and was created prior to the adoption of this provision in the Growth Management Plan on January 10, 1989.

vi) Of the maximum 3 additional units, one (1) dwelling unit per acre shall be transferred from **RFMU sending lands** at Site Plan or Plat Approval.

b) **Development** s which meet the residential infill conditions i) through v) above may increase the base **density** administratively through a Site **development** Plan or Plat approval by a maximum

of one dwelling unit per acre by transferring that additional **density** from **RFMU district** Sending Lands.

ii. Transfers to the urban residential fringe. **TDR credits** may be transferred from **RFMU sending lands** located within one mile of the Urban Boundary into lands designated Urban Residential Fringe at a rate of 1.0 **dwelling units** per acre, allowing for a **density** increase from the existing allowable base **density** of 1.5 **dwelling units** per acre to 2.5 dwelling unit per gross acre.

e. Transfers from **RFMU sending lands** to **RFMU receiving lands** .

i. Maximum **density** on **RFMU receiving lands** when **TDR credits** are transferred from **RFMU sending lands** .

a) The base **residential density** allowable shall be as provided in sections 2.03.08 A.2.a.(2)(a) and 2.03.08 A.2.b.(3)(a).

b) The **density** achievable through the transfer of **TDR credits** into **RFMU receiving lands** shall be as provided for in section 2.03.08 (A)(2)(a)(2)(b)(i) outside of **rural villages** and sections 2.03.08 (A)(2)(b)(3)(b) and 2.03.08 (A)(2)(b)(3)(c)(i) inside of **rural villages** .

ii. Remainder uses after **TDR credits** are transferred from **RFMU sending lands** . Where **development** rights have been transferred from **RFMU district** Sending Lands, such lands may be retained in private ownership and may be used as set forth in section 2.03.08 A.4.b.

f. Procedures applicable to the transfer of **TDR credits** from **RFMU sending lands** .

i. General. The transfer of **TDR credits** from **RFMU sending lands** does not require the approval of the County. However, those **development** s that utilize such **TDR credits** are subject to all applicable permitting and approval requirements of this Code, including but not limited to those applicable to site **development** plans, plat approvals, PUDs, and DRIs.

ii. County-maintained central TDR registry. In order to facilitate the County's monitoring and regulation of the TDR Program, the County shall serve as the central registry of all **TDR credit** purchases, sales, and transfers, as well as a central listing of **TDR credits** available for sale and purchasers seeking **TDR credits** . No **TDR credit** generated from **RFMU sending lands** may be utilized to increase **density** in any area unless the following procedures are complied with in full.

a) **TDR credits** shall not be used to increase **density** in either non-RFMU Receiving Areas or **RFMU receiving lands** until severed from **RFMU sending lands** . **TDR credits** shall be deemed to be severed from **RFMU sending lands** at such time as a **TDR credit** Certificate is

obtained from the County and recorded. **TDR credit** Certificates shall be issued only by the County and upon submission of the following:

- i) a legal description of the property from which the **RFMU TDR credits** originated, including the total acreage;
  - ii) a title search, or other evidence, establishing that prior to the severance of the **TDR credits** from the **RFMU sending lands**, such Sending Lands were not subject to a conservation restriction or other **development** restriction that prohibited residential **development**;
  - iii) a legal instrument, prepared in accord with the form provided by the County, that limits the allowable uses on the property after the severance of **TDR credits** as set forth in section 2.03.08 A.4.b.; and
  - iv) a statement identifying the price, or value of other remuneration, paid to the owner of the **RFMU sending lands** from which the **TDR credits** were generated and that the value of any such remuneration is at least \$25,000 per **TDR credit**, unless such owner retains ownership of the **TDR credits** after they are severed, unless the **RFMU** or non- **RFMU receiving lands** on which the **TDR credits** will be utilized and the **RFMU sending lands** from which the **TDR credits** were generated are owned by the same persons or entities or affiliated persons or entities; and
  - v) a statement attesting that the **TDR credits** are not being severed from **RFMU sending lands** in violation of section 2.03.07(D)(4)(c)(iv)(b) of this Code.
- b) A PUD or DRI utilizing **TDR credits** may be conditionally approved, but no subsequent application for site **development** plan or **subdivision** plat within the PUD or DRI shall be approved, until the developer submits the following:
- i) documentation that the developer has acquired all **TDR credits** needed for that portion of the **development** that is the subject of the site **development** plan or **subdivision** plat; and
  - ii) a TDR transaction fee sufficient to defray the expenses of the County in administering the Central TDR Registry.
- c) The developer shall provide documentation of the acquisition of full ownership and control of all **TDR credits** needed for the

**development** and of recordation of the **TDR credit** Certificates for all such **TDR credits** prior to the approval of any site **development** plan, **subdivision** plat, or other final local **development** order, other than a PUD or DRI.

d) Each **TDR credit** shall have an individual and distinct tracking number, which shall be identified on the TDR Certificate that reflects the severance of the **TDR credit** from RFMU Sending Land. The County TDR Registry shall maintain a record of all **TDR credits** , to include a designation of those that have been expended.

g. Proportional utilization of **TDR credits** . Upon the issuance of approval of a site **development** plan or **subdivision** plat that is part of a PUD or DRI, **TDR credits** shall be deemed to be expended at a rate proportional to percentage of the PUD or DRI's approved gross **density** that is derived through **TDR credits** . All PUDs and DRIs utilizing **TDR credits** shall require that the rate of **TDR credit** consumption be reported through the monitoring provisions of sections 10.02.12 and 10.02.07(C)(1)(b) of this Code.

## CHAPTER 163

### INTERGOVERNMENTAL PROGRAMS

#### **163.3175 Legislative findings on compatibility of development with military installations; exchange of information between local governments and military installations.--**

(1) The Legislature finds that incompatible development of land close to military installations can adversely affect the ability of such an installation to carry out its mission. The Legislature further finds that such development also threatens the public safety because of the possibility of accidents occurring within the areas surrounding a military installation. In addition, the economic vitality of a community is affected when military operations and missions must relocate because of incompatible urban encroachment. Therefore, the Legislature finds it desirable for the local governments in the state to cooperate with military installations to encourage compatible land use, help prevent incompatible encroachment, and facilitate the continued presence of major military installations in this state.

(2) Each county in which a military installation is either wholly or partially located and each affected local government must transmit to the commanding officer of that installation information relating to proposed changes to comprehensive plans, plan amendments, and proposed changes to land development regulations which, if approved, would affect the intensity, density, or use of the land adjacent to or in close proximity to the military installation. Each county and affected local government shall provide the military installation an opportunity to review and comment on the proposed changes.

(3) The commanding officer or his or her designee may provide comments to the county or affected local government on the impact such proposed changes may have on the mission of the military installation. Such comments may include:

(a) If the installation has an airfield, whether such proposed changes will be incompatible with the safety and noise standards contained in the Air Installation Compatible Use Zone (AICUZ) adopted by the military installation for that airfield;

(b) Whether such changes are incompatible with the Installation Environmental Noise Management Program (IENMP) of the United States Army;

(c) Whether such changes are incompatible with the findings of a Joint Land Use Study (JLUS) for the area if one has been completed; and

(d) Whether the military installation's mission will be adversely affected by the proposed actions of the county or affected local government.

(4) The county or affected local government shall take into consideration any comments provided by the commanding officer or his or her designee when making such decision regarding comprehensive planning or land development regulation. The county or affected local government shall forward a copy of any such comments to the state land planning agency.

(5) To facilitate the exchange of information provided for in this section, a representative of a military installation acting on behalf of all military installations

within that jurisdiction shall be included as an ex officio, nonvoting member of the county's or affected local government's land planning or zoning board.

(6) The commanding officer is encouraged to provide information about any community planning assistance grants that may be available to a county or affected local government through the federal Office of Economic Adjustment as an incentive for communities to participate in a joint planning process that would facilitate the compatibility of community planning and the activities and mission of the military installation.

(7) As used in this section, the term:

(a) "Affected local government" means a municipality adjacent to or in close proximity to the military installation as determined by the state land planning agency.

(b) "Military installation" means a base, camp, post, station, airfield, yard, center, home port facility for any ship, or other land area under the jurisdiction of the Department of Defense, including any leased facility. Such term does not include any facility used primarily for civil works, rivers and harbors projects, or flood control projects.

## Clay County

### Camp Blanding Joint Training Center Land Use Compatibility Amendment

This comprehensive plan amendment is being proposed because:

1. The county's comprehensive plan must address coordination with Camp Blanding, per s.163.3175, F.S.
2. The county's comprehensive plan must address land use compatibility with Camp Blanding, per s.163.3177(6)(a), F.S.

To address these requirements, the County has partnered with Camp Blanding to identify land use compatibility issues and the specific geographic area within which these issues manifest themselves. The following proposed amendment addresses the identified issues and the geographic area of concern within which the coordination and compatibility policies would apply.

1. **Goal 1 Protection of Camp Blanding:** Protect the current and long-term viability of the Camp Blanding Joint Training Center (CBJTC) as an important military installation which supports rewarding job opportunities, adds diversity to the County's economy and contributes to a high quality of life for County residents and visitors.
2. **Objective 1 Land Use Compatibility:** Ensure that future development within the Camp Blanding Military Zone (CBMZ) will not negatively impact the current and long-term viable use of this facility, will protect the public health, safety and welfare by ensuring land use activities are compatible with the testing and training mission of Camp Blanding by allowing only compatible land uses with this Zone.

**Policy 1.1 Camp Blanding Area of Influence:** The County hereby establishes the Camp Blanding Military Zone (CBMZ) as an overlay on the Future Land Use Map. The CBMZ extends three miles outside the boundary of Camp Blanding. The CBMZ is depicted on Figure \_\_ of the Future Land Use Map Series. The CBMZ is the area of the County affected by the testing and training mission of the military at Camp Blanding and where land use activities which negatively affected that mission must be avoided. The CBMZ is the area of the County within which review comments on proposed comprehensive plan amendments, proposed land development code changes and all development orders and permits will be sought from the Base Commander. Within the CBMZ the County will apply growth management policies and regulatory techniques to guide land use activities and construction in a manner compatible with the long-term viability of Camp Blanding and the protection of public health and safety.

**Policy 1.2 Residential Density Increases:** The County finds that existing development entitlements are not incompatible with the testing and training mission of Camp Blanding and that an increase in residential development would

create incompatibles. Therefore, the County will not approve comprehensive plan amendments and rezonings to increase residential density within the CBMZ to greater than one unit per ten acres. This policy does not apply to applications for development approval that have been accepted by the County prior to the effective date of this policy.

For the area known as Kingsley Lake, no comprehensive plan amendments to increase residential density will be considered.

**Policy 1.3 Building Heights:** Within the CBMZ building heights shall not exceed 35 feet above ground level.

**Policy 1.4 Cell Towers:** Within the CBMZ cell towers shall be limited to monopoles. Cell tower height shall not exceed 30 feet above the adjacent tree line. If there is no adjacent wooded area, height shall be limited to 100 feet. Cell towers shall not be located within the designated flight approach zones depicted on Figure \_\_ of the Future Land Use Map Series. Applications for cell tower approval shall include written evidence from the CBJTC representative that the location and height of the tower does not adversely affect the operations and mission of Camp Blanding. An application will not be accepted by the County without such evidence. A cell tower shall not be approved by the County if Camp Blanding certifies that the tower would constitute an unacceptable encroachment and interference with safe operations related to the mission of the Camp.

**Policy 1.5 Lighting Standards:** Within the CBMZ, all artificial lighting equipment, including but not limited to flood light and searchlights, whether temporary or permanent installations, shall be fully shielded with positive optical control so that all light emitted by the fixture, either directly from the lamp or indirectly from the fixture, is projected below a horizontal plane extending from the bottom of the light fixture. No building permit shall be granted within the CBMZ unless this requirement is met. In addition, lights or illumination used in conjunction with street, parking, signs or use of land and structures shall be arranged and operated in such a manner that it is not misleading or dangerous to aircraft operating within the CBMZ. The purpose of these lighting standards is to reduce distractions to training pilots.

**Policy 1.6 Avigation Easement:** The County shall require the dedication of an avigation easement for all new development within the CBMZ. An application for a Future Land Use Map amendment, planned unit development, rezoning, recording of plat, subdivision of land and all development orders and permits, including building permits, shall include a copy of a fully executed Avigation Easement, in recordable form. The Avigation Easement shall be recorded in the public records of the County within 30 days of final approval by the County of any such application. The Avigation Easement will be returned to the applicant if final approval is not obtained.

**Policy 1.7 Real Estate Disclose Form:** A Military Influence Area Notice Acknowledgement (MIANA) disclosing the fact that a parcel is located within the CBMZ shall be affixed to all listing agreements, sales and rental contracts, lease agreements for leases greater than three months, subdivision plats, planned unit developments and other zoning and subdivision actions, and marketing materials, such as brochures. No person shall sell, or otherwise transfer, lease or offer to lease or offer to sell, or otherwise transfer a structure or land within the CBMZ, unless the prospective transferee or lessee has been given a MIANA in writing, at the time of first showing a property for sale or lease and, in addition, the signed Acknowledgement shall be included in the contract of sale, transfer, or lease agreement for leases greater than three months, as a part of the legal instrument that conveys the real property interest in the land. Whenever an owner or a lessor has entered into a contract with an agent for the purpose of selling or leasing a structure or land within the aforementioned zones, the agent, on behalf of the owner or lessor, is required to ensure compliance with the requirements of this section. Any person who knowingly violates the provisions of this policy, including the agent of such person, shall be subject to enforcement by the County and shall be jointly and severally liable to the purchaser or lessee in an amount to be determined by the Court. Nothing in this policy shall affect the validity or enforceability of any sale, transfer, or lease or contract for the sale, transfer, or lease of any interest in real property, nor shall anything in this policy create a defect in the sale, transfer, or lease agreement.

3. **Objective 2 Planning Coordination:** Achieve a high degree of intergovernmental coordination and communication to ensure that planning programs work in concert to promote the continued existence of Camp Blanding Joint Training Center and avoid incompatible land use activities.

**Policy 2.1 Planning Board Membership:** The County finds that it is important to ensure close coordination with CBJTC and that this coordination can be fostered through the inclusion of a representative of Camp Blanding as an ex officio, non-voting member of the County Planning Board. The County shall request that the commanding officer of Camp Blanding designate a representative to serve in this capacity. The designated representative shall be notified of all meetings and provided with copies of agenda packages related to the CBMZ, as well as any special planning studies, such as the Evaluation and Appraisal Report.

**Policy 2.2 Review of Proposed Actions:** The County shall refer to Camp Blanding for review and comment prior to final action by the County all proposed comprehensive plan amendments, proposed land development code changes, applications for planned unit developments, rezonings, waivers, exceptions, variances and similar applications which, if approved, would affect the intensity, density, or use of land within the CBMZ.

**Policy 2.3 Scope of Camp Blanding Review:** Camp Blanding will review proposed actions enumerated in Policy 2.2 and provide comments to the County

on the impact such actions may have on the mission of Camp Blanding and on public safety within the CBMZ.

**Policy 2.4 Support for Buffering Activities:** The County affirms its support of the Camp Blanding to Osceola National Forest Ecological Greenway because it furthers compatible land uses within a portion of the CBMZ and helps buffer Camp Blanding from incompatible land use activities.

**AIRPORT ENVIRONS  
REAL ESTATE SALE/LEASE DISCLOSURE**

Pursuant to Section 58-2(d) of the Escambia County Code of Ordinances, any owner of real property who sells or leases that real property within the established Airfield Influence Planning Districts (AIPDs) or noise zones surrounding local military installations or within the established Real Estate Disclosure Area surrounding Pensacola Regional Airport, as described in Article 11 of the Land Development Code, is required to disclose to any buyer or lessee that the property is subject to varying degrees of accident potential and/or noise from aircraft. For properties within the AIPDs or military noise zones, Article Eleven requires that the notice be provided in all advertising materials and/or brochures concerning the sale or lease of the property, but no later than the signing of a contract for sale or lease. For properties within the Real Estate Disclosure Area surrounding the Pensacola Regional Airport, Article 11 requires that the notice be given as soon as practicable, but no later than the signing of a contract for sale or lease.

To: \_\_\_\_\_  
(Buyer or Lessee)

The Property at: \_\_\_\_\_  
(Street Address & Zip Code)

\*\*\*\*\*

**(Following to be completed by Seller or Landlord)**

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**Is located within an AIPD for the following Airfield:**

- \_\_\_\_\_ NAS Pensacola
- \_\_\_\_\_ NOLF Saufley
- \_\_\_\_\_ NOLF Site 8

**Is located adjacent to the following Airport:**

- \_\_\_\_\_ Pensacola Regional Airport

**Is located within the following Noise Zone:**

Military Noise Zone

- \_\_\_\_\_ Noise Level 1 [65 – 70dB Day-Night Average Sound Level (Ldn)]
- \_\_\_\_\_ Noise Level 2 (70 – 75dB Ldn)
- \_\_\_\_\_ Noise Level 3 (Greater than 75db Ldn)

Pensacola Regional Airport Noise Zone

- \_\_\_\_\_ Noise Level A [65-70dB Day-Night Average Sound Level (Ldn)]
- \_\_\_\_\_ Noise Level B (70 – 75db Ldn)
- \_\_\_\_\_ Noise Level C (Greater than 75dB Ldn)

**Is located within the following AIPD Zone:**

- \_\_\_\_\_ AIPD-1 (AICUZ Accident Potential Zones)
- \_\_\_\_\_ AIPD-1 – Area "A"
- \_\_\_\_\_ AIPD-1 – Area "B"
- \_\_\_\_\_ AIPD-2

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**CERTIFICATION:**

**AS TO SELLER/LANDLORD:**

\_\_\_\_\_  
Signature  
\_\_\_\_\_  
Printed Name  
\_\_\_\_\_  
Signature  
\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Witness  
\_\_\_\_\_  
Printed Name  
\_\_\_\_\_  
Witness  
\_\_\_\_\_  
Printed Name

**AS TO BUYER/LESSEE:**

\_\_\_\_\_  
Signature  
\_\_\_\_\_  
Printed Name  
\_\_\_\_\_  
Signature  
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Printed Name

\_\_\_\_\_  
Witness  
\_\_\_\_\_  
Printed Name  
\_\_\_\_\_  
Witness  
\_\_\_\_\_  
Printed Name

# REAL ESTATE DISCLOSURE FORM INSTRUCTIONS AND REMITTAL ADDRESSES

- (1) Written notice that real property to be sold or leased is within an established Airfield Influence Planning District and/or noise zone shall be disclosed to the purchaser/lessee as soon as possible after the start of the transaction. Inclusion of the Airfield Influence Planning District and/or Accident Potential Zone and Noise Zone, together with the name of the applicable base, should be included in the advertisements for the property. However, disclosure of this information is required in writing no later than at the signing of the contract for sale or lease.

As proof of compliance with this disclosure requirement, the owner and the buyer or lessee shall execute the attached disclosure form. However, a "blanket disclosure," i.e., a copy of the lessor's original execution of the form, may be used in subsequent lease transactions so long as each subsequent lessee signs a disclosure form.

- (2) The determination as to whether the real property lies within an Airfield Influence Planning District, Accident Potential Zone and/or Noise Zone shall be made by the Planning and Zoning Department upon the written request of the property owner or agent and shall be provided within five business days. The request must include the street address as to the leased property and both the street address and the legal description contained in the deed for such real property in the event of a sale.

Alternatively, the information may be obtained by accessing the Escambia County Web Page ([www.myescambia.com](http://www.myescambia.com)). Open the drop-down "Quick Links" menu at the top of the page. Click the link "Access GIS Maps" and follow the instructions. (If you experience problems navigating the site, please contact the GIS Department at (850) 595-3598.)

- (3) After the closing of a sale, a copy of the fully executed disclosure form shall be filed with the deed in the official records of Escambia County, Florida. For both a sale and a lease, a copy of the executed disclosure shall be sent to either:

For Naval Air Station Pensacola Real Estate Disclosure Area:

Naval Air Station Pensacola  
Attention: AICUZ Officer  
c/o Commanding Officer  
190 Radford Blvd.  
Pensacola, Florida 32508-5217

Or, for NOLF Saufley and NOLF Site 8 Real Estate Disclosure Area:

Aviation/Community Planner  
JPATS Coordinator  
Operations Code 31  
Naval Air Station Whiting Field  
7077 USS Lexington Court  
Milton, FL 32570-6016

Or, for Pensacola Regional Airport Real Estate Disclosure Area:

Airport Director  
Pensacola Regional Airport  
2430 Airport Blvd., Suite 225  
Pensacola, FL 32504

Prepared by:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**AVIGATION EASEMENT**

THIS GRANT OF AN AVIGATION EASEMENT made this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between \_\_\_\_\_, whose mailing address is \_\_\_\_\_ ("Grantor," which term shall include the singular and plural, masculine and feminine), and Escambia County, a political subdivision of the State of Florida, acting by and through its duly authorized Board of County Commissioners, whose mailing address is 223 Palafox Place, Pensacola, Florida 32502 ("Grantee").

**WITNESSETH**

WHEREAS Grantor is the owner of certain real property located in Escambia County, Florida; and

WHEREAS, Grantee requires, as a condition precedent to the development or use of the property, conveyance from Grantor of an Avigation Easement; and

WHEREAS Grantor has agreed to grant an Avigation Easement to Grantee in and over Grantor's property under the terms and conditions set forth in this instrument;

NOW, THEREFORE, Grantor, for good and valuable consideration the receipt and sufficiency of which is acknowledged, does grant to Grantee and Grantee's heirs, assigns, successors, and legal representatives, a perpetual Avigation Easement in and over the following described property (Property):

See legal description attached as Exhibit A

This Avigation Easement is granted with the following express terms and conditions:

1. Grantor grants, bargains, sells, and conveys to Grantee, its successors and assigns, for the use and benefit of Grantee and any civilian or military airfields that may be located in Escambia County and any operators, owners, or users of civilian or military Aircraft that may operate in the airspace in and above Escambia County, a perpetual Avigation Easement for the free and unobstructed flight of Aircraft ("Aircraft" being defined for the purpose of this instrument as any contrivance now known or hereafter invented, used, or designed for flight in and through the air) in and through the airspace above, over, and across the surface of the Property, together with the right to create or cause in the airspace such noise, vibrations, odors, vapors, exhaust, smoke, dust

or other effects that may be inherent in the operation of Aircraft, and for the use of the airspace by Aircraft for launching from, maneuvering about, and landing at local civilian or military airfields.

2. Nothing in this instrument shall operate to preclude claims by Grantor, his heirs, assigns, successors, and legal representatives, for any physical injuries or damages caused by Aircraft crashing into or otherwise coming into direct physical contact with the Property or persons located thereon.

3. Grantor, for himself, his heirs, assigns, successors, and legal representatives, expressly releases and forever discharges Grantee, its elected or appointed officials, representatives, agents, employees, and any operators, owners, or users of civilian or military Aircraft or airfields, from any and all liability whatsoever, including any and all suits, claims, debts, obligations, costs, expenses, actions, or demands, vested or contingent, known or unknown, whether for injuries to persons or damages to property, which Grantor may own, hold, or assert by reason of noise, vibrations, odors, vapors, exhaust, smoke, dust or other effects that may be inherent in the operation of Aircraft, caused or created by the flight or passage of Aircraft in or through the airspace subject to the easement described in this instrument. Additionally, Grantor, for himself, his heirs, assigns, successors, and legal representatives, waives any and all right to sue Grantee, its elected or appointed officials, representatives, agents, or employees, and any operators, owners, or users of civilian or military Aircraft or airfields, and agrees to dismiss any and all such suits that may be now or subsequently asserted against Grantee, its elected or appointed officials, representatives, agents, or employees, and any operators, owners, or users of civilian or military Aircraft or airfields, for injuries to persons or damage to property arising from noise, vibrations, odors, vapors, exhaust, smoke, dust or other effects that may be inherent in the operation of Aircraft, caused or created by the flight or passage of Aircraft in or through the airspace subject to the easement described in this instrument. Grantor acknowledges that the above-stated consideration is all that Grantor will receive for this easement and no promise for any other or further consideration has been made by anyone. Grantor further acknowledges that Grantor is executing this instrument solely in reliance upon his own knowledge, belief, and judgment and not upon any representations made by any party released or others in their behalf.

4. Grantor shall not build, construct, cause or permit to be built or constructed, or permit to remain on the Property any building or structure that would interfere with the rights conveyed by this instrument or that would violate any local, state, or federal law or regulation regarding the operation of Aircraft or airfields.

5. Grantor shall not use or permit the use of the Property in such a manner as to create electrical, electronic, or other interference with radio, radar, microwave, or other similar means of Aircraft communications, or to make it difficult for pilots to distinguish between airfield navigation lights and visual aids and other lights, or to result in glare or other condition that would impair the vision of pilots, or to otherwise endanger the operation of Aircraft.

6. In the event of any violation of the rights and restrictions contained in this instrument, Grantee shall have the right, at its sole option after giving five (5) days prior notice to Grantor, to use any and all means to remedy the violation. Additionally, Grantee shall have a perpetual

easement for ingress to and egress from the Property for the purpose of inspecting or removing any instrumentality that may be causing or contributing to a violation of the rights and restrictions conveyed by this instrument.

7. Grantor acknowledges that the Property is located in an area impacted by Aircraft noise and that present and future Aircraft noise may interfere with the unrestricted use and enjoyment of the Property. Grantor further acknowledge that Aircraft noise may change over time by virtue of greater numbers of Aircraft, louder Aircraft, variations in airfield operations, and changes in airfield and air traffic control procedures.

8. This Avigation Easement and all of the terms and conditions described in this instrument shall run with the land in perpetuity and shall be binding upon Grantor and his heirs, assigns, successors and legal representatives.

9. In the event that one or more of the provisions contained in this instrument or any part thereof or any application thereof shall be held invalid, illegal, or unenforceable in any respect by a court of competent jurisdiction, the validity, legality and enforceability of the remaining provisions shall not be affected or impaired and shall remain in full force and effect.

10. In the event that any civilian or military airfield adjacent to the Property ceases to operate, or if such other circumstances subsequently arise that would obviate the purpose underlying this instrument, then Grantor, his heirs, assigns, successors, and legal representatives, may petition the Board of County Commissioners of Escambia County to terminate this Avigation Easement. If the Board of County Commissioners approves the termination of this Avigation Easement, then it shall promptly execute and record in the public records an appropriate document reflecting the termination.

11. Grantor, for himself and his heirs, assigns, successors, and legal representatives, covenants with Grantee, its successors and assigns, that Grantor is lawfully seized and possessed of the Property in fee simple, has a good right and full power to grant, bargain, sell and convey this Avigation Easement over the Property.

IN WITNESS WHEREOF Grantor has executed this instrument on the date first above written.

**GRANTOR:**

Witness \_\_\_\_\_  
Print Name \_\_\_\_\_

By: \_\_\_\_\_  
(name of corporation/other business entity)

Print Name \_\_\_\_\_

Witness \_\_\_\_\_  
Print Name \_\_\_\_\_

STATE OF FLORIDA  
COUNTY OF ESCAMBIA

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_, by \_\_\_\_\_. He/She is ( ) personally known to me, ( )  
produced current \_\_\_\_\_ as identification.

\_\_\_\_\_  
Signature of Notary Public

\_\_\_\_\_  
Printed Name of Notary Public

(Notary Seal)

**GRANTOR:**

Witness \_\_\_\_\_  
Print Name \_\_\_\_\_

By: \_\_\_\_\_  
(name of corporation/other business entity)

Print Name \_\_\_\_\_

Witness \_\_\_\_\_  
Print Name \_\_\_\_\_

STATE OF FLORIDA  
COUNTY OF ESCAMBIA

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_ by \_\_\_\_\_. He/She is ( ) personally known to me, ( )  
produced current \_\_\_\_\_ as identification.

\_\_\_\_\_  
Signature of Notary Public

\_\_\_\_\_  
Printed Name of Notary Public

(Notary Seal)

**ACCEPTANCE**

This Avigation Easement accepted by Escambia County, Florida on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, as authorized by the Board of County Commissioners of Escambia County, Florida at its meeting held on the \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.

**BOARD OF COUNTY COMMISSIONERS  
ESCAMBIA COUNTY, FLORIDA**

\_\_\_\_\_  
Chairman

ATTEST: Ernie Lee Magaha  
Clerk of the Circuit Court

\_\_\_\_\_  
Deputy Clerk

(Seal)

\*\*\*\*\*

This Avigation Easement utilizes the form provided by Escambia County in accordance with Section 3, Ordinance No. 2004-52. Therefore, acceptance is executed by the Planning and Zoning Director on behalf of the County, without further action required by the Board.

Accepted on behalf of Escambia County,  
Florida, on the \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_ by

\_\_\_\_\_  
Planning and Zoning Director

STATE OF FLORIDA  
COUNTY OF ESCAMBIA

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by \_\_\_\_\_. He/She is ( ) personally known to me, ( ) produced current \_\_\_\_\_ as identification.

\_\_\_\_\_  
Signature of Notary Public

\_\_\_\_\_  
Printed Name of Notary Public

(Notary Seal)

# FRAMEWORK FOR OUTDOOR LIGHTING IMPROVEMENT ORDINANCES

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Here are suggestions for the components of a comprehensive outdoor lighting ordinance. All ordinances should address misdirection of light and glare, excessive brightness of light, and the indiscriminate all-night usage of light. These are the causes of dangerous and annoying glare, light trespass, and the unnatural brightening of the night sky.

Excessive brightness can be limited by alternate methods. The simplest method is to limit the number of lumens allowed in a given area of land, such as an acre. A lumen is a unit of measure of the intensity of light produced by a lamp (bulb) as [indicated by the manufacturer](#). This method greatly simplifies compliance determination.

Appropriate lighting levels are also somewhat subjective and different communities may have different standards. Alternate methods and varying levels of restrictions are provided below and some will be more appropriate for some communities than others. However, the vision impairment caused by excess illumination should be given utmost consideration.

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## ***DEFINITIONS***

Acre or net acre -- any 43,560 contiguous square feet or total of portions thereof within the same parcel if dissected by existing roads or land dedicated for roads.

Fixture -- The assembly that holds the lamp (bulb) in a lighting system. It includes the elements designed to give light output control, such as a reflector (mirror) or refractor (lens), the ballast, housing, and the attachment parts.

[Full-cutoff](#) (fco) -- a light fixture which cuts off [all](#) upward transmission of light.

Glare -- discomfort experienced by an observer with a direct line of sight to a light source which often results in visual impairment.

HID lighting -- high intensity discharge lighting, a family of bulb type including mercury vapor, metal halide, high pressure or low pressure sodium, which glow when an electric current is passed through a gas mixture inside the bulb.

Horizontal (or vertical) footcandles -- The amount of light striking a vertical or a horizontal plane.

Inventory of lighting -- a list of lamps indicating the bulb type, bulb wattage, and manufacturer through which the rated lumens can be determined.

Light source -- the bulb and lens, diffuser, or reflective enclosure.

Light trespass -- light projected onto a property from a fixture not located on that property.

Lumen -- measure of brightness of the illumination exiting a bulb, [provided by manufacturer](#).

Luminaire -- The complete lighting unit, including the lamp, the fixture, and other parts.

[Non-cutoff](#) -- a light fixture which does not cut off all upward transmission of light.

### ***DIRECTIONAL CONTROL***

All luminaires of 1800 or more lumens shall be full cutoff as installed. For luminaires under 1800 the bulb must be frosted glass or installed behind a translucent cover, except floodlights which must be aimed no higher than 45 degrees below horizontal. This can be accomplished by the use of [full-cutoff \(fco\) fixture design](#), [shielding](#), visors, louvers, or other devices.

### ***REASONABLENESS OF INTENSITY***

The maximum allowable total lumens generated on each parcel is 80,000 lumens per net acre with full-cutoff (fco) lighting. Parcels less than one net acre are allowed fco lumens in a portion equal to the parcel's portion of a net acre. Lights mounted on the underside of a roof 15 or more feet from any edge of the roof count 1/4 toward the limit. Lights on the underside of a roof less than 15 feet from the edge of the roof count 1/2 toward total lumens.

### **ALTERNATIVES**

Some communities may wish to establish different lumen per acre maximums according to various zoning designations. For instance, commercially zoned areas in a business district could have a higher lumen per acre maximum than commercially zoned areas adjacent to residential areas.

In certain instances the amount of lighting allowed under the lumen per acre cap may not be sufficient for an application of outdoor lighting that meets minimum illumination levels recommended by the Illuminating Engineering Society. In such cases a community may wish to allow lighting sufficient to meet IES recommendations, provided that properly conducted testing, reviewed by a lighting engineer, indicates such IES recommendations are not exceeded, with the fees to be reimbursed to the community by the applicant.

Some communities may wish to adopt illumination maximums based upon the recommendations of the IES rather than using a lumens per acre method. Doing so requires night site visits by personnel knowledgeable in the proper method of measuring illumination levels with an accurate light meter.

### ***LIGHT TRESPASS***

The maximum illumination at five feet inside an adjacent residential parcel or public right-of-way, or beyond, from light emitted from an artificial light source is .1 horizontal footcandles and .1 vertical footcandles. Said illumination at 10 feet inside an adjacent commercial or industrial parcel or on a public roadway, or beyond, shall not exceed .1 horizontal footcandles or .1 vertical footcandles. No line of sight to a bulb is permitted 5 feet or more beyond a residential or public right-of-way property line by an observer viewing from a position that is level with or higher than the ground below the fixture. Compliance is achieved with fixture shielding, directional control

designed into the fixture, fixture location, fixture height, fixture aim, or a combination of these factors.

### ***SIGNAGE***

All illuminated signs must be lighted internally or lighted by top-mounted lights pointed downward. No sign may be illuminated with fixtures not shielded from upward transmission of light. The maximum size of the signs and minimum distances between signs should be established. Off-premise signs must be turned off after 10:30 p.m., and on-site signs turned off upon closing if after 10:30p.m. Signs should be white or light colored lettering on dark backgrounds. Lights that flash, pulse, rotate, move, or simulate motion are not permitted. Above includes billboards.

### **ALTERNATIVES**

Some communities may require that the lights of off-premise signs be turned off earlier in winter, such as by 10:00 p.m., and later in summer, such as 11:00p.m.

Some communities may disallow lighting for signs over a certain size, or disallow lighting on all signs.

### ***SEARCH LIGHTS***

The use of search lights except by civil authorities for public safety is prohibited.

### ***COMMUNICATIONS TOWER LIGHTING***

The nighttime use of white lighting or white strobe lighting is prohibited. (Nighttime white strobe lighting is not required by the FAA.) Applicants must show proof of any such FAA requirement.

### ***TEMPORARY LIGHTING***

The temporary use of low wattage or low voltage lighting for public festivals, celebrations, and the observance of holidays are exempt from regulation except where they create a hazard or nuisance from glare. Light trespass requirements remain in effect. Permits are required for commercial activities such as carnivals and are valid for up to 7 consecutive days. Where possible lighting should be fco.

### ***ALL-NIGHT LIGHTING***

Lighting at places of business or public venues, except for security, shall be turned off no later than one hour after closing. Such lights should be confined to that needed for basic security. The lights of vacant parking lots shall not remain lighted except for illuminating entryways by the fixtures closest to building entrances.

### ***SPORTS LIGHTING***

[Sports lighting](#) is exempt from the lumens per net acre limitations as to the playing field only. Full-cutoff fixture design is required and light trespass requirements apply. No outside sporting or entertainment event will start after 10:00p.m. or extend beyond 11:00 p.m.

### **ALTERNATIVES**

Some communities may prefer other time limits for concluding outdoor events, depending on such things as the location of the venue relative to residential areas.

Some communities may wish to require that sports lighting be located no closer than a minimum distance from any residence. In order to minimize light trespass from glare it may also be desirable to establish a maximum mounting height.

### ***EXEMPTIONS***

Airport lighting for navigational purposes is exempt. Continuous colored tube lighting (neon lighting) is exempt except for the requirement that lighting should not remain on after the business has closed or if installed on signage.

### ***EFFECTIVE DATE***

Lighting already installed when these regulations were adopted is exempt except:

Lighting found by a government agency to create public hazard can be ordered removed or altered at any time.

On the effective date of the ordinance, any light installation which provides for re-aiming of the fixture shall be aimed in compliance with this ordinance without delay.

Upon repair or replacement of any component of any luminaire, or relocation of any luminaire, the requirement that such luminaire be made full-cutoff shall apply.

Upon installation of any new luminaire, this ordinance shall fully apply. An inventory of existing lighting submitted by the applicant will be required when the application for installing new luminaire(s) is made.

Any lighting not in compliance with this ordinance 7 years hence shall be immediately brought into compliance.

### ***ENFORCEMENT***

It is unlawful to sell, lease, loan, or give any light fixture which would cause non-compliance. It is unlawful to install or cause to be installed any light fixture which would cause non-compliance. It is unlawful to operate any light fixture which would cause non-compliance. A permit for the repair, installation, or alteration of any HID light is required beforehand. An inventory of existing lights is required with the application for permit.

Nothing in these regulations shall prevent filing an action for relief from light trespass or glare as a nuisance, or from other relief under any laws which may currently exist. If other laws place added restrictions regarding lighting, they shall apply.

The provisions of this ordinance are severable, and if any provision of this ordinance or the application thereof is held invalid, the invalidity shall not affect other provisions or applications of this ordinance.

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U.S. Department  
of Transportation  
Federal Aviation  
Administration

# Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations

89-7

## **1.0 EXECUTIVE SUMMARY**

### **1.1 Introduction**

The effect of aircraft noise on communities surrounding airfields concerns airport operators and their neighbors. Since 1973, when the Department of Defense initiated the Air Installation Compatible Use Zones (AICUZ) Program, there has been a systematic attempt to minimize the negative impact of local community growth on air operations and of these operations on communities. Similarly, in 1981 the FAA published Part 150 of the Federal Aviation Regulations establishing a single system of noise measurement appropriate to human response to aviation noise and identifying land uses normally compatible with various levels of noise exposure.

There are substantial mutual benefits in having communities located near airfields. Such benefits include improved economic development for the community and provision of services to the air installation. However, there are also continuing problems associated with having close neighbors, not the least of which is noise impact. Airfield neighbors become annoyed at the noise generated by flight operations and they exert pressure on airfield operators to take appropriate action to minimize the noise.

The need to safeguard military and civilian flight operations must be balanced with the need to protect local residents from excessive aircraft noise exposure. This challenge can be addressed in several ways. Solutions can be directed at the noise source, by developing quieter aircraft and by modifying flight procedures and flight tracks. Because military aircraft are designed for the performance of specific functions, it is not usually feasible to quiet them. Both military and civilian airport operators, however, do consider flight procedure and flight track changes to minimize noise impact.

The alternative is to protect the community members from noise impact where they live – in their homes and other activity centers – through land-use controls and sound insulation. The Navy's AICUZ program and the FAA's Land-Use Compatibility guidelines identify compatible land usage and encourage land-use controls. These recommendations appear in Tables 1-1 and 1-2. This guide provides a project management handbook for studying, initiating, and implementing residential sound insulation programs in neighborhoods around military and civilian airports.

The information presented in this guide is based on fundamental acoustic principles supported by practical experience gained in numerous residential sound insulation projects across the country. The most successful solutions to problems typically encountered in these projects have been incorporated.

The two primary goals of a residential sound insulation project are the improvement of the noise environment for community members and better relations between the installation and its neighbors. These goals, and the methods used to achieve them, must take into account the sometimes conflicting needs of the parties concerned. The existence of federal recommendations for noise exposure provides clear-cut, objective noise goals which can be aimed toward and complied with.

### **1.2 Use of This Handbook**

This handbook is divided into four sections plus appendices. The Executive Summary, Section 1.0, provides an introduction to the Guidelines, this discussion of how to use the text, and a brief discussion of some of the topics covered in the handbook. Specific instructions are highlighted and useful data tables are reproduced from other Guidelines sections. Section 1.3 describes dwelling categories, their noise reduction, and common geographic distribution patterns. Suggested dwelling type modifications are given in Section 1.4. A brief discussion of project costs follows in Section 1.5.

The material in the Executive Summary is a condensed version of some of the topics covered more completely in the body of the handbook. It is intended to provide an overview of the general types of sound insulation and their associated costs. It is not intended to be an adequate substitute for a full explanation of the concepts and practices involved in a home sound insulation program which is provided in the main body of the document.

It is assumed that not all readers will need to study all parts of this document. The guidelines have been structured to make it easy to find topics of particular interest to a wide variety of users. The reader is urged to become familiar with the background material and detailed instructions provided in the sections which apply to his or her specific needs.

Table 1-11

**Air Installation Compatible Use Zone Suggested Land-Use Guidelines  
(Department of Defense)**

SLUCM No.	Land Use Name	Noise Zones/DNL Levels in L <sub>dn</sub>						
		A 0-55	B 55-65	C-1 65-70	C-2 70-75	D-1 75-80	D-2 80-85	D-3 85 +
10	<b>Residential</b>							
11	Household units.							
11.11	Single units — detached	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
11.12	Single units — semidetached	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
11.13	Single units — attached row	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
11.21	Two units — side-by-side	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
11.22	Two Units — one above the other	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
11.31	Apartments — walk up	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
11.32	Apartments — elevator	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
12	Group quarters	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
13	Residential hotels	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
14	Mobile home parks or courts	Y	Y*	N	N	N	N	N
15	Transient lodgings	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	35 <sup>1</sup>	N	N
16	Other residential	Y	Y*	25 <sup>1</sup>	30 <sup>1</sup>	N	N	N
20	<b>Manufacturing</b>							
21	Food and kindred products — manufacturing	Y	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
22	Textile mill products — manufacturing	Y	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
23	Apparel and other finished products made from fabrics, leather, and similar materials — manufacturing	Y	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
24	Lumber and wood products (except furniture) — manufacturing	Y	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
25	Furniture and fixtures — manufacturing	Y	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
26	Paper and allied products — manufacturing	Y	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
27	Printing, publishing, and allied industries	Y	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
28	Chemicals and allied products — manufacturing	Y	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
29	Petroleum refining and related industries	Y	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N

\*The designation of these uses as "compatible" in this zone reflects individual Federal agencies' consideration of general cost and feasibility factors as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider. For an indication of possible community reaction in residential environments at various levels of cumulative noise, Table D-1 in Appendix D should be consulted.

**NOTES FOR TABLE 2**

- a) Although local conditions may require residential use, it is discouraged in C-1 and strongly discouraged in C-2. The absence of viable alternative development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals.
- b) Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB (Zone C-1) and 30 dB (Zone C-2) should be incorporated into building codes and be considered in individual approvals. Normal construction can be expected to provide a NLR of 20 dB, thus the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. Additional consideration should be given to modifying NLR levels based on peak noise levels.
- c) NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, design and use of berms and barriers can help mitigate outdoor noise exposure particularly from ground level sources. *Measures that reduce noise at a site should be used wherever practical in preference to measures which only protect interior spaces.*

Table 1-2<sup>2</sup>

Federal Aviation Administration Definitions of  
Land-Use Compatibility With  
Yearly Day-Night Average Sound Levels

Land use	Yearly day-night average sound level (L <sub>dn</sub> ) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
<b>Residential</b>						
Residential, other than mobile homes and transient lodgings.....	Y	N(1)	N(1)	N	N	N
Mobile home parks.....	Y	N	N	N	N	N
Transient lodgings.....	Y	N(1)	N(1)	N(1)	N	N
<b>Public Use</b>						
Schools.....	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes.....	Y	25	30	N	N	N
Churches, auditoriums, and concert halls.....	Y	25	30	N	N	N
Governmental services.....	Y	Y	25	30	N	N
Transportation.....	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking.....	Y	Y	Y(2)	Y(3)	Y(4)	N
<b>Commercial Use</b>						
Offices, business and professional.....	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment.....	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general.....	Y	Y	25	30	N	N
Utilities.....	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication.....	Y	Y	25	30	N	N
<b>Manufacturing and Production</b>						
Manufacturing, general.....	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical.....	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry.....	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding.....	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction.....	Y	Y	Y	Y	Y	Y
<b>Recreational</b>						
Outdoor sports arenas and spectator sports.....	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters.....	Y	N	N	N	N	N
Nature exhibits and zoos.....	Y	Y	N	N	N	N
Amusements, parks, resorts and camps.....	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation.....	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

\*The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

KEY TO TABLE 1

SLUCM—Standard Land Use Coding Manual.

Y (Yes)—Land Use and related structures compatible without restrictions.

N (No)—Land Use and related structures are not compatible and should be prohibited.

NLR—Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35—Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structures.

NOTES FOR TABLE 1

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Section 2.0 covers the basic concepts involved in improving the acoustic performance of residences exposed to aircraft noise. It includes a statement of the goals of a sound insulation project. The terms and metrics used to describe noise levels and sound insulation are defined in this section. The paths by which sound enters a dwelling, the effects of aircraft noise intrusion, and fundamental sound insulation concepts are also described.

Section 3.0 examines project formulation and implementation methods. This section addresses issues concerned with identifying which houses need to be treated and the types of treatment available. Dwelling categories are defined and explained, and a comprehensive nationwide dwelling type data base is provided. Instructions for performing acoustic measurements are given along with the criteria for determining appropriate noise reduction objectives.

Sound insulation techniques useful for the various parts of a dwelling are presented as options to be combined in the total dwelling treatment package. Recommended modification packages are identified along with costs to implement them. A detailed example shows how to develop project costs from the information provided.

Section 4.0 provides guidelines on project management and implementation, discussing program management in greater detail. All aspects of program planning, initiation, implementation, supervision, and follow-up evaluation are covered.

Worksheets for developing detailed cost estimates are provided in Appendix A. Other appendices provide a bibliography, glossary, and sample forms for surveys and inspection.

### **1.3 Dwelling Category Summary**

The sound insulation modifications required to achieve a specific acoustic goal depend on the existing sound insulation characteristics of the dwelling. The existing sound insulation performance of a dwelling is determined by the construction methods and materials used, as well as the condition of the home. Section 3.2 explains how to categorize dwellings based on these acoustically significant building features. Table 1-3, taken from Section 3.2.3 and presented here, shows the External Wall Rating (EWR) of a number of these construction elements. EWR is a measure of sound insulation capability and is explained in Section 2.3.

Because construction practices vary from one geographic region to another, it is desirable to identify those that are typical in different parts of the country. Figure 1-1 shows eleven regions where the housing types near major airports are similar. Section 3.2.2 gives more information on these regions and the dwelling patterns found in them. Table 1-4 presents the results of national housing surveys showing the most typical dwelling categories for each of the 11 regions.

Table 1-5 gives the average house size in each geographical region, which influences the sound insulation cost of a dwelling.

### **1.4 Recommended Modification and Construction Practices**

Section 3.5, Sound Insulation Methods, gives detailed instructions on how to modify an existing house or alter the design of a new house to improve its sound insulation performance. There are many specific techniques used in acoustic treatments which must be performed properly and with careful attention to detail, in order for them to be effective. Acoustic windows, for example, must be installed according to the manufacturer's detailed instructions or their insulation performance will be seriously degraded. In general, acoustic insulation construction requirements are stricter than those necessary for standard home construction. The reader is urged to study the principles and practices of Section 3.5 for a thorough understanding of sound insulation construction.

Summary Tables 1-6 through 1-13 provide guidelines for improving the sound insulation performance of different building elements. They will be useful for easy reference after the reader has become familiar with the supporting information in Section 3.5.

### **1.5 Dwelling Modification Packages and Costs**

Based on the compatible land-use recommendations given in Tables 1-1 and 1-2, it is possible to set sound insulation goals for dwellings exposed to aircraft noise. This involves knowing the external noise environment, the required noise reduction for residences, and the existing noise reduction of the dwelling.

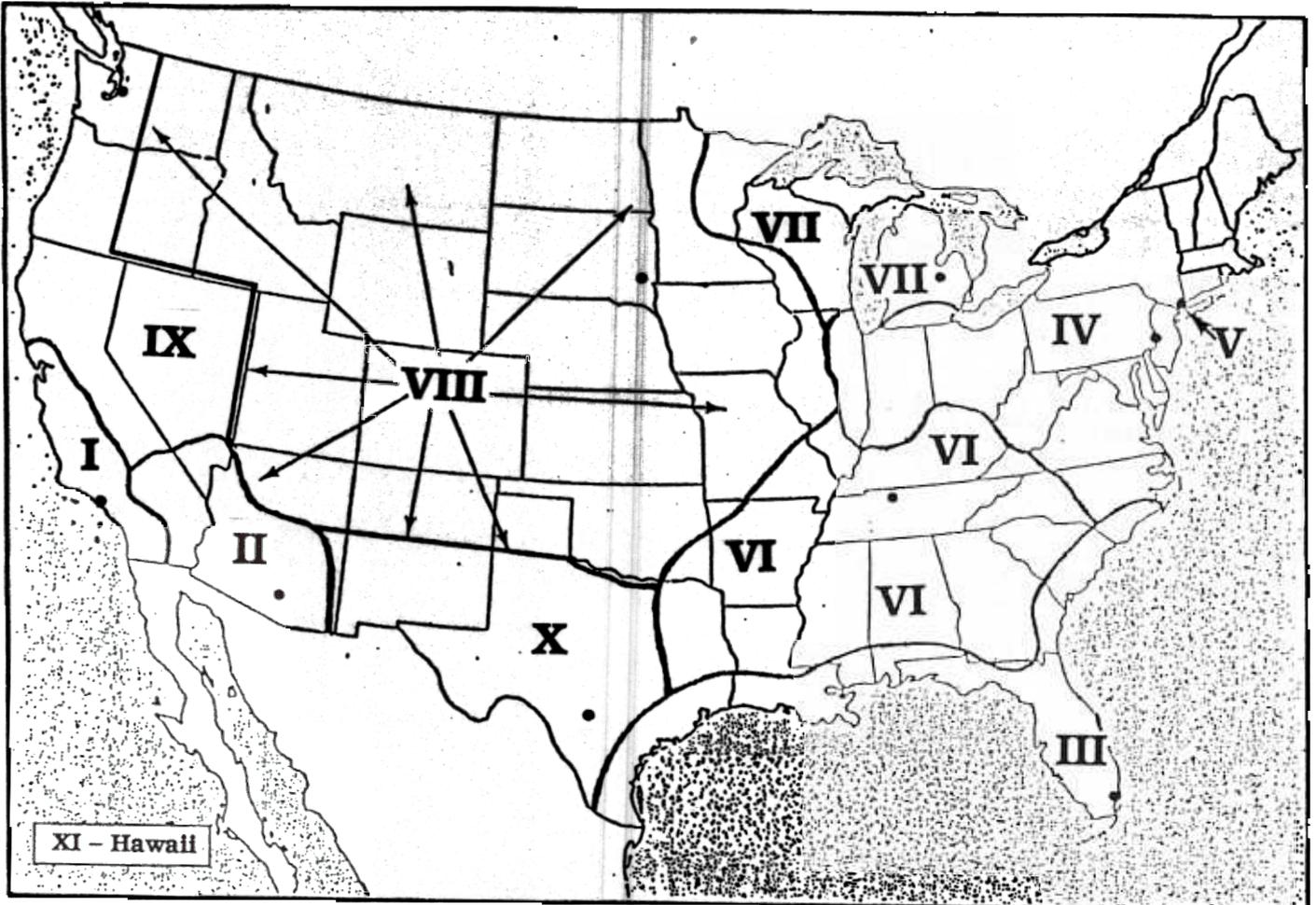
Airport operators can provide mapped noise exposure contours (Sections 2.1 and 2.2) showing

Table 1-3

EWR Ratings for Common Construction Elements

<b>BASIC CATEGORIES</b>		
<b><u>EXTERIOR WALLS</u></b>		<b><u>EWR (dB)</u></b>
1. Aluminum or Wood Siding		37
2. Stucco		43
3. Brick or Veneer		54
4. Concrete		58
5. Hollow Concrete Block		49
<b><u>ROOFS</u></b>		
1. Vented Attic (With/Without Absorption)		50/47
2. Single Joist - Light		41
3. Single Joist - Heavy		44
4. Exposed Roof - Light		33
5. Exposed Roof - Heavy		39
<b>SUBCATEGORIES</b>		
<b><u>FLOORS</u></b>		
1. Slab		∞
2. Vented Crawlspace		49
3. Basement		49
<b><u>WINDOWS</u></b>		
1. Double-Strength Glazing		25/28*
<b><u>DOORS</u></b>		
1. Hollow Core (HC)		20/22*
2. Solid Core (SC)		24/27*
3. Sliding Glass (SGD)		27/31*

\* Poor/Good Weatherstripping Condition



- Indicates location of airport used in field survey described in Reference 3

Figure 1-1. Regions of Differing Construction Practices.

(Repeated as Figure 3-3.)

Table 1-4  
(Repeated as Table 3-2)

Percentages of Dwellings in Each Construction Category  
and Floor Constructions for Each Region

Construction Category*	Region and Airport										
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
	LAX	TUS	JAX	PHL	LGA	BNA	LAN	FSD	SEA	SAT	HNL
Siding/VA	15	--	35	30	15	15	40	55	70	60	--
" /SJL	--	--	15	35	50	--	45	30	20	--	100
" /ECL	--	--	--	--	--	--	--	--	5	--	--
Stucco/VA	80	5	--	--	--	--	--	--	--	5	--
" /SJL	5	5	--	--	--	--	--	--	--	--	--
Brick/VA	--	80	15	10	5	80	10	--	5	35	--
" SJL	--	10	--	10	10	5	5	--	--	--	--
" /SJH	--	--	--	--	15	--	--	--	--	--	--
Concrete/VA	--	--	--	5	--	--	--	10	--	--	--
" /SJL	--	--	--	10	5	--	--	5	--	--	--
HC Block/VA	--	--	30	--	--	--	--	--	--	--	--
" /SJL	--	--	5	--	--	--	--	--	--	--	--
Slab Floor	50	100	70	15	5	--	10	5	--	90	100
Crawlspace	50	--	30	5	10	15	--	--	70	10	--
Basement	--	--	--	80	85	85	90	95	30	--	--

\* VA - Vented Attic; LAX = Los Angeles, CA LAN = Lansing, MI  
 SJL - Single-Joist Roof, Light; TUS = Tucson, AZ FSD = Sioux Falls, SD  
 SJH - Single-Joist Roof, Heavy; JAX = Jacksonville, FL SEA = Seattle, WA  
 ECL - Exposed Ceiling, Light PHL = Philadelphia, PA SAN = San Antonio, TX  
 LGA = LaGuardia, New York, NY HNL = Honolulu, Oahu, HI  
 BNA = Nashville, TN

Table 1-5  
(Repeated as Table 3-48)

1987 Average Dwelling Size for New Construction

Region	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
Sq. Ft.	1,765	1,765	1,800	1,815	1,840	1,800	1,795	1,785	1,765	1,800	1,765

**Table 1-6  
(Repeated as Table 3-8)**

**Summary of Methods for Improving Window Sound Insulation**

1. Increase glazing thickness up to 1/2 inch to increase mass and to reduce vibration.
2. Use laminated glazing, typically two layers of glazing with a 30 mil polyvinyl butyral interlayer, to achieve limpness and provide damping which reduces coincidence effects. For double-lite constructions, place the laminated lite on the warm side of the window because cold climate conditions may result in loss of damping effect for the interlayer. Laminated glazing constructions can result in an increase of 3 dB in the STC rating over monolithic glazing of the same thickness.
3. Use double-lite constructions with at least a 2-inch-wide spacing between the lites. Each doubling of the airspace between the lites results in an increase of 3 dB in the STC rating. Glazing thickness should be in a ratio of 2:1 so lites have different resonance frequencies.
4. Do not use lightweight frames where flanking sound paths may limit window transmission loss performance. Use separate heavy aluminum frames connected together with a thermal break.
5. Mount lites in soft neoprene edge gaskets which wrap around the bottom of the glazing sash channel. This minimizes structureborne sound transmission between the glazing and the window sash.
6. Operable double windows with separate sashes provide greater transmission loss than a single sash with double glazing. Non-operable windows have STC ratings which are 3 dB higher than operable windows of similar construction.
7. Do not evaluate windows needed to isolate low-frequency noise (such as occurs with aircraft overflights) based on STC ratings alone. This is because the STC rating does not include transmission loss performance below 125 Hz, where aircraft noise may be significant. For example, single lites with STC ratings identical to double-lite constructions will generally perform better at low frequencies due to their greater overall weight. Installation is critical in order to maintain the sound isolation performance of the window assembly.
8. Windows need to fit with a minimum perimeter gap between the window frame and opening. All voids need to be caulked and closed off with wood trim and blocking. Ensure that all sound flanking and air infiltration paths have been closed off. Remember, if air can pass through, so can sound.

**Table 1-7  
(Repeated as Table 3-9)**

**Summary of Methods for Improving Door Sound Insulation**

1. Increase the weight of the door. This results in higher transmission loss characteristics.
2. Use solid-core wood doors or hollow-core metal doors filled with fibrous fill. Special acoustical wood and metal doors are available which can be specified for optimum results.
3. Fill hollow metal door frames with fiberglass or use solid wood door frames. Caulk around door frames at the wall.
4. Door frames and hardware should be reinforced to handle the extra weight of acoustical doors. Use ball-bearing hinges and long screws for attachment to framing members.
5. Provide full seals and weatherstripping at the perimeter of the door jamb and head to minimize perimeter air infiltration.
6. Provide a drop seal at the door bottom which makes full contact with a raised threshold. The drop seal should be adjustable to compensate for misalignment of the door.
7. Vision lites should have similar transmission loss characteristics to the door. Use two layers of 1/4-inch laminated glass separated by an airspace. Provide full seals and gasketing at the window perimeter.
8. Add a second sliding glass door in parallel with the existing sliding glass door. Position the new sliding glass door so it is a minimum of 2 inches from the existing sliding glass door.

**Table 1-8  
(Repeated as Table 3-12)**

**Summary of Methods for Improving Attic and Ceiling Sound Insulation**

1. Install baffles on attic vents where practical.
2. Add acoustically absorptive material to a thickness equal to R-19 to the attic space to reduce reverberant sound level buildup. Apply material evenly throughout the attic space, taking care to keep it away from eave vents and openings.
3. Add one layer of 5/8-inch fire-code gypsumboard to the interior finish ceiling for dormer, non-attic, lightweight, or deteriorated roofs.
4. For greater noise control in attics add 5/8-inch plywood or gypsumboard to the rafters or add plywood flooring to the joists. Use absorptive material equivalent to R-19 between the rafters or joists.
5. Cover exposed beam ceilings with interior finish ceilings or partial enclosures.
6. For higher noise insulation on non-attic roofs: strip off existing exterior surface, add 3.5-inch rigid insulation assembly, 1/2-inch plywood sheathing, and new roofing material.
7. Remove whole-house attic exhaust fans and repair the interior ceiling to match the existing conditions.

**Table 1-9  
(Repeated as Table 3-13)**

**Summary of Methods for Improving Interior Wall Sound Insulation**

1. Use heavy gypsumboard such as fire-rated products in 5/8-inch thickness. Adding one layer of 5/8-inch gypsumboard increases the wall STC rating by 3 dB.
2. Use a discontinuous construction between the existing wall and the new wall finish. This can be achieved by adhesive attachment of gypsumboard and sound-deadening board to the existing wall or by furring out a separate wall. Increases of 6 dB and 12 dB, respectively, to the STC rating are achieved.
3. Use light-gauge metal channel studs (25-gauge or lighter) because they are less stiff than wood or load-bearing metal studs. The use of wide (3.5-inch) metal channel studs will increase the transmission loss at low frequencies.
4. Use 3-inch-thick sound-absorbing blankets in the wall cavity. Install blankets tightly between studs using friction fit or with fasteners to the studs to prevent sagging.
5. Cut new gypsumboard so that it fits tightly against walls, floor, and ceiling.
6. Apply acoustical caulking around perimeter of new gypsumboard and around all electrical outlets and switches to eliminate sound flanking.

**Table 1-10  
(Repeated as Table 3-15)**

**Components of Ducted Air Heating, Cooling and Ventilation System**

- 1. Circulation fan capable of supplying the required air volume exchange through the ducting in each room.**
- 2. For climates where heating is necessary, forced hot air heating, cooling, and ventilation capabilities through appropriate heating and cooling coils and condenser unit.**
- 3. Fresh air inlet located on the shaded side of the dwelling provided that side is not exposed directly to the flight path. It should also be adjacent to a return air plenum to facilitate mixing the fresh air with the recirculated air.**
- 4. Supply and return air diffusers in each room to circulate the air. The supply air diffusers should be adjustable to allow redirection or shut-off of the airflow. In systems without a furnace, the return plenum should be located near the ceiling to encourage recirculation of rising warm air. Furnaces have return-air plenums as part of the system.**
- 5. Flexible ducting connecting the fan air supply vents and the return plenum to each room and to the exterior. Sheetmetal ducting should be used to provide superior sound insulation in attics and crawlspaces.**
- 6. Control switch with on/off and at least two fan speeds, the lower of which provides the minimum required air circulation. The switch should permit air to be circulated without activating the heating or cooling elements. Existing radiant heat can be used as a "backup" system.**

**Table 1-11  
(Repeated at Table 3-16)**

**Recommendations for Noise and Vibration Control in Residential HVAC Systems**

- 1. Mount the motor/fan at grade level on factory-supplied vibration isolators to minimize vibration transmitted to the house.**
- 2. If fans or other pieces of equipment are located in the attic, use mounting bases and vibration isolators to reduce structureborne noise and vibration transmission. Due to local building code restrictions it may not be possible in some areas to locate mechanical equipment for heating or cooling in the attic.**
- 3. Install flexible duct connectors to limit vibration transmitted to the ductwork or the dwelling structure.**
- 4. Use of standard sheetmetal ductwork in attics and crawlspaces. Ductwork is exposed to higher levels of aircraft noise in these spaces. Do not use flexible ductwork in attic spaces since it does not have as good sound-insulating properties as standard sheetmetal.**
- 5. Supply grilles in the rooms should be of the opposed-blade type and be designed for low noise.**
- 6. A duct sound trap (muffler) should be installed just inside the fresh-air inlet opening. The sound trap will reduce any aircraft noise that passes through this opening and will eliminate the possibility of aircraft noise being transmitted via the duct path.**

Table 1-12  
(Repeated as Table 3-18)

Summary of Methods for Improving Noise Reduction in Manufactured Homes

**Roofs:**

1. Upgrade attic insulation to R-19, or better, where feasible.
2. Remove skylight and repair roof to existing condition.

**Walls:**

3. Add mass under exterior siding, or under interior decorative finish surface, by mounting sheathing, gypsumboard, or sound-deadening board.

**Windows and Doors:**

4. Mount secondary windows and sliding glass doors at least 2 inches away from existing elements on the dwelling exterior.
5. Replace existing windows and doors with highest STC rated products available.

**Air Infiltration Paths:**

6. Seal gaps and openings in external envelope.
7. Baffle vents.
8. Repair or replace weatherstripping.
9. Check and repair seals between modular units in double and triple-wide homes. Re-level home if necessary to prevent recurring problem.

**Ventilation:**

10. Upgrade existing system, as necessary, to provide air replenishment, circulation, heating and/or cooling to enable homeowner to keep windows and doors closed year-round.

Table 1-13  
(Repeated as Table 3-14)

Suggested Guidelines for Design of New Construction

1. Do not build homes where DNL is 75 dB or greater.
2. Orient homes on the lot so noise-sensitive areas, such as TV rooms and bedrooms, are shielded from the flight track.
3. Use more massive external cladding, such as brick or other masonry, in place of siding wherever practical.
4. Where siding is used, or the noise exposure is high, use sound-deadening board, multi-layer gypsumboard, or a furred-out interior wall construction as discussed in Section 3.5.2.4.
5. Use heavy roofing materials, preferably with an attic rather than single-joint construction. Use R-19 or better insulating batts in the attic and R-11 to R-15 insulating batts in the walls. Use open-beam ceilings with extreme caution.
6. Use acoustical windows of an appropriate STC rating, properly installed.
7. Avoid large picture windows and sliding glass doors on sides of the dwelling which face the flight track.
8. Use solid-core doors with storm doors or, preferably, specialty acoustical doors.
9. Give careful attention to weatherstripping and seals.
10. Eliminate unnecessary openings such as through-the-wall air conditioners, vents, chimneys, skylights, and whole-house attic fans. Baffle or shield those that are used.
11. Provide a forced-air HVAC system with fresh air replenishment as described in Section 3.5.3.2.

the expected noise levels in residential communities around airfields. Tables 1-1 and 1-2 define the required noise reduction for each noise impact zone.

The existing noise reduction can be determined either by acoustic field measurements (Section 3.3) at a dwelling, or by using calculations based on the EWR and STC ratings of the building components and materials. The wall ratings in Table 1-3 cannot be used directly for these estimates because they do not account for the presence of windows or doors. STC, or Sound Transmission Class, ratings are conceptually similar to EWR ratings. They are discussed in Sections 2.3 and 3.5. The noise reduction provided by different dwelling categories and various construction schemes is given in Sections 3.2.3, 3.5.1, and 3.5.2.

Twenty-six different housing categories have been identified as representing most of the common types of residences across the country. A computerized cost optimization model has been used to identify the most cost-effective package of dwelling modifications satisfying the noise reduction goals for each house. This design tool was exercised for each of four noise impact zones. The 26 housing types are defined in Table 1-13. Of these 26, the most common types found in each of the 11 geographic regions of the country are listed in Table 1-14. Table 1-15 defines the modification codes used in the tables which follow it. Then Tables 1-16 to 1-41 provide, room by room, suggested modifications for each house. Section 3.6.1 discusses this information and the decisions involved in the design process.

At the bottom of each column in the modifications tables, a cost per square foot is provided to show the expense of implementing the suggested modifications package. This figure can be multiplied by the size of the house, in square feet of living space, to give the total cost of remodeling the dwelling. Table 1-5 provides the average size of homes in different parts of the country.

Construction material costs and labor rates vary from one part of the country to another. For this reason it is desirable to find local costs which are equivalent to the baseline costs given in the modifications tables. Table 1-43 gives geographic cost factors to facilitate calculating the equivalent cost in each region of the country. To use these factors, simply identify the target region, find the appropriate cost multiplier in Table 1-43, and

multiply the modification cost by this factor. Either the cost per square foot or the whole house cost can be used for this calculation.

In order to estimate the cost of using these construction features in new construction rather than remodeling, multiply the remodeling cost by 0.70.

A sample cost development sheet is provided here as Figure 1-2. Its use is discussed in Section 3.6.3, where a full example is provided.

To use the Single Noise Zone Modification Cost Worksheet, the following information is needed:

- Geographical Region – if needed to identify typical house types or sizes (Tables 1-4 and 1-15).
- Noise Exposure Zone.
- Number of Houses of each type.
- Cost to modify each type of house in given noise zone (Tables 1-17 to 1-42).
- House size (Table 1-5, if necessary).
- Geographical Cost Factor (Table 1-43).

The cost to modify houses in the specified noise zone can be calculated according to the instructions in Section 3.6.

Table 1-14  
(Repeated as Table 3-19)

Table of Housing Configurations Used in EWR Cost Optimization Program

Ident.	Ext. Wall	Roof	Window	Foundation	Door
<b>One-story Houses:</b>					
A	Stucco	VA	AL; 1/8 oper.	Crawl	SC
B	"	SJL	1/8 dual pane	Slab	SC
C	Brick	VA	AL; 1/8 oper.	Slab	SC
D	"	VA	1/8 dual pane	Basement	SC
E	"	VA	1/8 dual pane	Slab	SC
F	"	SJL	1/8 dual pane	Crawl	SC
G	"	SJH	1/8 dual pane	Crawl	SC
H	"	VA	1/8 oper.	Crawl	SC
I	Siding	VA	1/8 dual pane	Basement	SC
J	"	VA	1/8 oper.	Crawl	SC
K	"	VA	1/8 oper.	Slab	SGD
L	"	ECL	Jalousie	Slab	SGD
M	"	VA	1/8 oper.	Slab	SC
N	"	SJL	1/8 dual pane	Slab	SC
O	"	SJL	1/8 oper. w/st.	Basement	SC
P	"	ECL	1/8 dual pane	Crawl	SC
Q	"	SJL	1/8 oper.	Slab	SGD
R	Block	VA	AL; 1/8 oper.	Slab	SC
S	Concrete	VA	1/8 dual pane	Crawl	SC
T	"	SJL	1/8 dual pane	Crawl	SC
<b>Manufactured Home:</b>					
U	Siding	VA	1/8 oper.	Crawl	HC
<b>Two-story Townhouses:</b>					
V	Siding	VA	1/8 dual pane	Basement	SGD
W	Brick	VA	"	"	SGD
<b>End Unit Townhouse:</b>					
X	Siding	VA	1/8 dual pane	Basement	SGD
<b>Two-story Detached Dwelling:</b>					
Y	Siding	VA	1/8 dual pane	Basement	SC
Z	Brick	VA	"	"	SC

**Notes:**

- Where there is a sliding glass door (SGD), the other exterior door is solid core (SC).
- One side of all dwellings is "shielded", usually the back side.

VA = Vented Attic  
 SJL = Single Joist, Light  
 ECL = Exposed Ceiling, Light  
 SC = Solid Core Door  
 HC = Hollow Core Door  
 SGD = Sliding Glass Door

Table 1-15  
(Repeated as Table 3-47)

Most Common Dwelling Types in Each Region

Region	I	II	III	IV	V	VI	VIII	VII	IX	X	XI
<b>Dwelling Type*</b>	A	C	M	O	O	D	I	O	J	K	L
	B	E	R	I	I	I	O	I	I	E	Q
	J	B	C	T	F	F	S	D	O	J	K
	K	F	N	D	D	E	T	F	T	B	N
M	U	U	F	N	J	M	N	D	D		

\* Ranked from most to least common.

Table 1-16  
(Repeated as Table 3-20)

Housing Modification Description Codes

**Door Modifications**

**Description**

SC+SEald	Solid Core + Vinyl Bulb Seal
SC+WSTRP	Solid Core + Weatherstrip
SC+SE+ST	Solid Core + Vinyl Bulb Seal + Storm Door
SG+WSTRP	Sliding Glass + Weatherstrip
RSTC35	Door having an STC Rating of 35
RSTC40	Door having an STC Rating of 40
RSTC45	Door having an STC Rating of 45
HC+STORM	Hard Core + Storm Door
HC+WS+ST	Hard Core + Weatherstrip + Storm Door

**Window Modifications**

**Description**

8p+STORM	1/8-inch Pane + Storm Window
8p+STC25	1/8-inch pane + Window having an STC Rating of 25
RSTC35	Window having an STC Rating of 35
RSTC40	Window having an STC Rating of 40
RSTC45	Window having an STC Rating of 45

**Wall Modifications**

**Description**

STUC+GYP	Stucco + 5/8-inch Gypsumboard
STUC+2GY	Stucco + 2 Layers Gypsumboard
STUC+MG	Stucco + Metal Stud + Gypsumboard
STUC+MGA	Stucco + Metal Stud + Gypsumboard + Absorption
WDGY+GYP	Wood/Gyp + 5/8-inch Gypsumboard
WDGY+2GY	Wood/Gyp + 2 Layers Gypsumboard
WDGY+RGA	Wood/Gyp + Resilient Chan. + Gypsumboard + Absorption
WDGY+MG	Wood/Gyp + Metal Stud + Gypsumboard
WDGY+MGA	Wood/Gyp + Metal Stud + Gypsumboard + Absorption
HBLK+GYP	Hollow Block + Gypsumboard
HBLK+2GY	Hollow Block + 2 Layers Gypsumboard
HBLK+RGA	Hollow Block + Resilient Chan. + Gypsumboard + Absorption
HBLK+MGA	Hollow Block + Metal Stud + Gypsumboard + Absorption
BRIK+GYP	4-inch Face Brick + Gypsumboard
BRIK+2GY	4-inch Face Brick + 2 Layers Gypsumboard
BRIK+MG	4-inch Face Brick + Metal Stud + Gypsumboard
BRIK+MGA	4-inch Face Brick + Metal Stud + Gypsumboard + Absorption

**Roof Modifications**

**Description**

VP+Absrp	Vented Pitched + Absorption
VP+Ab+GY	Vented Pitched + Absorption + Gypsumboard
SJL+GYP	Single Joist (Light) + Gypsumboard
SJL+A+RG	Single Joist (Light) + Resilient Chan. + Gypsumboard
ELt+GYP	Exposed Ceiling (Light Joist) + Gypsumboard
EL+Ab+GY	Exposed Ceiling (Light Joist) + Absorption + Gypsumboard
EL+Spc B	***** Needs Clarification *****

**Floor Modifications**

**Description**

FB+A+STd	Floorboard + Absorption + Storm Door (Basement)
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Table 1-17  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type A

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	19.8	19.8	19.8	19.8
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		SC+SEald RSTC45	RSTC35 RSTC45 RSTC35	RSTC40 RSTC45 RSTC45 STUC+MGA STUC+MG VP+Absrp
Dining Room	NR BEFORE	21.0	21.0	21.0	21.0
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		8P+STC25 8P+STC25  VP+Absrp	RSTC35 RSTC45	RSTC40 RSTC45 STUC+2GY STUC+MGA VP+Absrp
Kitchen	NR BEFORE	18.7	18.7	18.7	18.7
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	SC+SEald RSTC35	SC+SEald RSTC40  VP+Absrp	RSTC40 RSTC45	RSTC40 RSTC45  VP+Absrp
Bedroom #1	NR BEFORE	23.2	23.2	23.2	23.2
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC35 RSTC35  VP+Absrp	RSTC35 RSTC40	RSTC35 RSTC45 STUC+GYp STUC+MGA VP+Absrp
Bedroom #2	NR BEFORE	23.0	23.0	23.0	23.0
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		RSTC35  VP+Absrp	RSTC40	RSTC45 STUC+GYp VP+Absrp
Library/Den	NR BEFORE	19.5	19.5	19.5	19.5
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		RSTC35  VP+Absrp	RSTC45 STUC+GYp	RSTC45 STUC+GYp VP+Absrp
Cost Per Dwelling Sq. Ft.	C/D. Sq.Ft.	\$0.34	\$6.40	\$10.18	\$15.65

\* 5 dB shielding assumed.

Table 1-18  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type B

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	21.0	21.0	21.0	21.0
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		SC+SEald RSTC35 RSTC35	RSTC35 RSTC35 RSTC35 STUC+GYP  S JL+A+RG	RSTC40 RSTC45 RSTC45 STUC+RGA STUC+RGA S JL+A+RG
Dining Room	NR BEFORE	23.0	23.0	23.0	23.0
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC40 RSTC40 STUC+GYp	RSTC35 RSTC35  S JL+A+RG	RSTC45 RSTC40 STUC+2GY STUC+2GY S JL+A+RG
Kitchen	NR BEFORE	19.4	19.4	19.4	19.4
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		SC+SE+ST RSTC35	RSTC40 RSTC45  S JL+A+RG	RSTC40 RSTC45  S JL+A+RG
Bedroom #1	NR BEFORE	24.6	24.6	24.6	24.6
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC35 RSTC35	RSTC35 RSTC35  S JL+A+RG	RSTC40 RSTC40 STUC+RGA STUC+2GY S JL+A+RG
Bedroom #2	NR BEFORE	24.5	24.5	24.5	24.5
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		RSTC35	RSTC35  S JL+A+RG	RSTC40 STUC+2GY S JL+A+RG
Library/Den	NR BEFORE	21.5	21.5	21.5	21.5
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		RSTC35	RSTC35 STUC+GYp S JL+A+RG	RSTC45 STUC+RGA S JL+A+RG
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$7.29	\$11.33	\$17.46

\* 5 dB shielding assumed.

Table 1-19  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type C

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	19.9	19.9	19.9	19.9
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		SC+SE+ST RSTC35	RSTC35 RSTC35 RSTC35	RSTC40 RSTC45 RSTC40 BRIK+GYP VP+Absrp
Dining Room	NR BEFORE	21.3	21.3	21.3	21.3
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		8P+STC25 8P+STC25	RSTC35 RSTC35	RSTC40 RSTC45 BRIK+2GYP VP+Absrp
Kitchen	NR BEFORE	19.0	19.0	19.0	19.0
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	SC+SE+ST 8P+STorm	SC+SEald RSTC35	RSTC35 RSTC40	RSTC40 RSTC45 VP+Absrp
Bedroom #1	NR BEFORE	23.6	23.6	23.6	23.6
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC35 RSTC35	RSTC35 RSTC35	RSTC40 RSTC40 BRIK+MGA VP+Absrp
Bedroom #2	NR BEFORE	23.3	23.3	23.3	23.3
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		8P+STC25	RSTC35	RSTC40 VP+Absrp
Library/ Den	NR BEFORE	19.9	19.9	19.9	19.9
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		8P+STC25	RSTC35	RSTC45 VP+Absrp
Cost Per Dwelling Sq.Ft.	C/D. Sq. Ft.	\$0.22	\$4.45	\$8.33	\$12.11

\* 5 dB shielding assumed.

Table 1-20  
 Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
 One-Story House: Type D

Room	Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1	21.5	21.5 SC+SE+ST 8G+STC25 8G+STC25 BRIK+GYp	21.5 RSTC35 RSTC40 RSTC40	21.5 RSTC40 RSTC45 RSTC40 BRIK+MGA BRIK+RGA VP+Absrp
	NR AFTER	21.5	26.9	32.0	34.6
Dining Room	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	24.1	24.1	24.1 RSTC40 RSTC40	24.1 RSTC45 RSTC45 BRIK+MGA VP+Absrp
	NR AFTER	24.1	24.1	33.8	36.1
Kitchen	NR BEFORE Door 1 Window 1 Wall 1 Roof 1 Floor 1	19.9	19.9 SC+SEald RSTC40	19.9 RSTC35 RSTC40	19.9 RSTC40 RSTC45 VP+Absrp
	NR AFTER	19.9	25.6	31.9	34.4
Bedroom #1	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	26.2	26.2	26.2 8G+STC25 8G+STC25	26.2 RSTC40 RSTC45 VP+Absrp
	NR AFTER	26.2	26.2	30.7	35.8
Bedroom #2	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	26.0	26.0	26.0 8G+STC25 VP+Absrp	26.0 RSTC40 BRIK+MG VP+Absrp
	NR AFTER	26.0	26.0	30.5	35.0
Library/Den	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	22.7	22.7 8G+STC25	22.7 RSTC40	22.7 RSTC45 VP+Absrp
	NR AFTER	22.7	27.2	32.8	35.1
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$3.23	\$8.97	\$12.96

\* 5 dB shielding assumed.

Table 1-21  
 Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
 One-Story House: Type E

Room	Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	21.6	21.6	21.6	21.6
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		SC+SE+ST 8G+STC25 8G+STC25 BRIK+GYP	RSTC35 RSTC35 RSTC35	RSTC35 RSTC35 RSTC40 BRIK+2GYP BRIK+GYP VP+Absrp
Dining Room	NR BEFORE	24.1	24.1	24.1	24.1
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER			RSTC35 RSTC35	RSTC35 RSTC35 BRIK+GYP BRIK+GYP VP+Absrp
Kitchen	NR BEFORE	20.0	20.0	20.0	20.0
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		SC+SE+ST 8G+STorm	SC+SE+ST RSTC35	RSTC40 RSTC45 VP+Absrp
Bedroom #1	NR BEFORE	26.3	26.3	26.3	26.3
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER			RSTC35 RSTC35	RSTC35 RSTC35 BRIK+GYP VP+Absrp
Bedroom #2	NR BEFORE	26.1	26.1	26.1	26.1
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER			RSTC35	RSTC35 BRIK+GYp VP+Absrp
Library/Den	NR BEFORE	22.8	22.8	22.8	22.8
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		8G+STC25 BRIK+GYp	RSTC35	RSTC40 BRIK+GYp VP+Absrp
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$3.96	\$6.04	\$13.15

\* 5 dB shielding assumed.

Table 1-22  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type F

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	21.1	21.1	21.1	21.1
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		RSTC35 8G+STC25 8G+STC25 BRIK+GYp BRIK+GYp	RSTC35 RSTC40 RSTC40	RSTC40 RSTC45 RSTC45 BRIK+MGA BRIK+MGA S JL+A+RG
Dining Room	NR BEFORE	23.3	23.3	23.3	23.3
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		8G+STC25 8G+STC25 BRIK+2GY BRIK+GYp	RSTC35 RSTC35 S JL+GYp	RSTC40 RSTC40 BRIK+2GY BRIK+GYp S JL+A+RG
Kitchen	NR BEFORE	19.6	19.6	19.6	19.6
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		SC+SE+ST 8G+STC25	RSTC40 RSTC40 S JL+GYp	RSTC40 RSTC45 S JL+A+RG
Bedroom #1	NR BEFORE	25.0	25.0	25.0	25.0
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER			RSTC35 RSTC35 S JL+GYp	RSTC40 RSTC40 BRIK+2GY BRIK+GYp S JL+A+RG
Bedroom #2	NR BEFORE	24.9	24.9	24.9	24.9
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER			RSTC35 S JL+GYp	RSTC40 BRIK+GYp S JL+A+RG
Library/Den	NR BEFORE	22.1	22.1	22.1	22.1
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		8G+STC25 BRIK+2GY	RSTC35 S JL+GYp	RSTC40 BRIK+GYp S JL+A+RG
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$6.71	\$9.69	\$16.50

\* 5 dB shielding assumed.

Table 1-23  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type G

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1	21.4	21.4 SC+SE+ST 8G+STC25 8G+STC25 BRIK+GYP	21.4 RSTC35 RSTC40 RSTC35 BRIK+GYp	21.4 RSTC35 RSTC40 RSTC40 BRIK+2GY BRIK+2GY SJH+A+RG
	NR AFTER	21.4	26.3	30.8	34.6
Dining Room	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	23.8	23.8 8G+STC25 8G+STC25	23.8 RSTC35 RSTC35	23.8 RSTC40 RSTC35 BRIK+GYP BRIK+GYP SJH+A+RG
	NR AFTER	23.8	27.7	31.1	35.0
Kitchen	NR BEFORE Door 1 Window 1 Wall 1 Roof 1 Floor 1	19.8	19.8 SC+SE+ST 8G+STC25	19.8 RSTC35 RSTC35	19.8 RSTC40 RSTC45 SJH+A+RG
	NR AFTER	19.8	25.5	29.9	35.8
Bedroom #1	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	25.7	25.7	25.7 RSTC35 RSTC35	25.7 RSTC40 RSTC35 BRIK+GYP BRIK+GYP SJH+A+RG
	NR AFTER	25.7	25.7	31.4	36.1
Bedroom #2	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	25.6	25.6	25.6 RSTC35	25.6 RSTC35 BRIK+GYP SJH+A+RG
	NR AFTER	25.6	25.6	31.6	35.6
Library/Den	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	22.5	22.5 8G+STC25	22.5 RSTC35	22.5 RSTC40 BRIK+GYp SJH+A+RG
	NR AFTER	22.5	26.6	30.4	36.1
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$3.64	\$8.05	\$15.20

\* 5 dB shielding assumed.

Table 1-24  
 Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
 One-Story House: Type H

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	19.9	19.9	19.9	19.9
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		SC+SE+ST 8P+STC25 8P+STC25 BRIK+GYp	RSTC35 RSTC35 RSTC35 BRIK+GYp	RSTC40 RSTC45 RSTC45 BRIK+GYp BRIK+GYp VP+Ab+GY
Dining Room	NR BEFORE	21.2	21.2	21.2	21.2
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		8P+STC25 8P+STC25 BRIK+GYp	RSTC40 RSTC35 BRIK+GYp	RSTC45 RSTC40 BRIK+GYp BRIK+GYp VP+Ab+GY
Kitchen	NR BEFORE	19.0	19.0	19.0	19.0
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		RSTC40 8P+STC25	RSTC35 RSTC35	RSTC40 RSTC45 VP+Ab+GY
Bedroom #1	NR BEFORE	23.5	23.5	23.5	23.5
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		8P+STC25 8P+STC25 BRIK+GYp BRIK+GYp	RSTC35 RSTC35	RSTC40 RSTC40 BRIK+GYp BRIK+GYp VP+Ab+GY
Bedroom #2	NR BEFORE	23.3	23.3	23.3	23.3
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		8P+STC25 BRIK+GYp	RSTC35	RSTC40 BRIK+GYp VP+Ab+GY
Library/Den	NR BEFORE	19.9	19.9	19.9	19.9
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		8P+STC25 BRIK+GYp	RSTC40	RSTC45 VP+Ab+GY
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$7.85	\$8.59	\$14.73

\* 5 dB shielding assumed.

Table 1-25  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type I

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	21.0	21.0	21.0	21.0
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		SC+SEald RSTC40 RSTC40	RSTC35 RSTC45 RSTC40 WDGY+2GY	RSTC40 RSTC45 RSTC45 WDGY+MGA WDGY+MGA VP+Ab+GY
Dining Room	NR BEFORE	22.4	22.4	22.4	22.4
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC40 RSTC45 WDGY+GYp	RSTC40 RSTC45 WDGY+MGA	RSTC45 RSTC45 WDGY+RGA WDGY+MGA VP+Ab+GY
Kitchen	NR BEFORE	18.9	18.9	18.9	18.9
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	RSTC35 RSTC40	RSTC35 RSTC45	RSTC40 RSTC45	RSTC40 RSTC45 VP+Ab+GY
Bedroom #1	NR BEFORE	24.1	24.1	24.1	24.1
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER			RSTC40 RSTC45 WDGY+RGA	RSTC45 RSTC45 WDGY+2GY WDGY+MGA VP+Ab+GY
Bedroom #2	NR BEFORE	24.1	24.1	24.1	24.1
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER			RSTC45 WDGY+GYp	RSTC45 WDGY+MGA VP+Ab+GY
Library/Den	NR BEFORE	20.3	20.3	20.3	20.3
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		8G+STC25 WDGY+GYp	RSTC45 WDGY+RGA	RSTC45 WDGY+MGA VP+Ab+GY
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$1.02	\$7.62	\$13.40	\$18.15

\* 5 dB shielding assumed.

Table 1-26  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type J

Room	Building Element	Modification by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	17.9	17.9	17.9	17.9
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER	HC+WS+ST 8P+STC25 8P+STorm      22.8	HC+WS+ST RSTC40 RSTC35      24.9	RSTC35 RSTC45 RSTC40 WDGY+2GY      30.2	RSTC40 RSTC45 RSTC45 WDGY+MGA WDGY+MGA VP+Ab+GY      35.7
Dining Room	NR BEFORE	20.3	20.3	20.3	20.3
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER	       20.3	RSTC35 RSTC35      25.5	RSTC40 RSTC45  WDGY+MGA      30.3	RSTC45 RSTC45 WDGY+RGA WDGY+MGA VP+Ab+GY      35.2
Kitchen	NR BEFORE	15.8	15.8	15.8	15.8
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	HC+WS+ST 8P+STC25     20.7	RSTC35 RSTC45     24.5	RSTC40 RSTC45     24.7	RSTC40 RSTC45  VP+Ab+GY     25.0
Bedroom #1	NR BEFORE	22.2	22.2	22.2	22.2
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER	       22.2	RSTC35 RSTC40      26.9	RSTC40 RSTC45  WDGY+RGA      30.2	RSTC40 RSTC45 WDGY+2GY WDGY+MGA VP+Ab+GY      34.9
Bedroom #2	NR BEFORE	22.2	22.2	22.2	22.2
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	       22.2	RSTC40       27.4	RSTC45 WDGY+GYp      29.8	RSTC45 WDGY+MGA VP+Ab+GY      37.0
Library/Den	NR BEFORE	18.5	18.5	18.5	18.5
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	RSTC40     23.4	RSTC35 WDGY+GYp     26.7	RSTC45 WDGY+RGA     29.9	RSTC45 WDGY+MGA VP+Ab+GY     34.7
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$3.34	\$9.13	\$13.40	\$18.06

\* 5 dB shielding assumed.

Table 1-27  
 Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
 One-Story House: Type K

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	19.6	19.6	19.6	19.6
	Door 1 Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		SG+WS+SG 8P+STC25 8P+STC25	SG+WS+SG RSTC45 RSTC40 WDGY+2GY	SG+WS+SG RSTC45 RSTC45 WDGY+MGA WDGY+MGA VP+Ab+GY
Dining Room	NR BEFORE	20.3	20.3	20.3	20.3
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC35 RSTC35	RSTC40 RSTC45 WDGY+MGA	RSTC45 RSTC45 WDGY+MGA WDGY+MGA VP+Ab+GY
Kitchen	NR BEFORE	18.1	18.1	18.1	18.1
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	SC+SE+ST RSTC40	RSTC35 RSTC45	RSTC40 RSTC45	RSTC40 RSTC45 VP+Ab+GY
Bedroom #1	NR BEFORE	22.3	22.3	22.3	22.3
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC40 RSTC45	RSTC35 RSTC45 WDGY+RGA	RSTC35 RSTC40 WDGY+MG WDGY+MGA VP+Ab+GY
Bedroom #2	NR BEFORE	22.2	22.2	22.2	22.2
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		RSTC35	RSTC45 WDGY+GYp	RSTC40 WDGY+MG VP+Ab+GY
Library/Den	NR BEFORE	18.5	18.5	18.5	18.5
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	8P+STC25 WDGY+2GY	RSTC45 WDGY+GYp	RSTC45 WDGY+RGA	RSTC45 WDGY+MGA VP+Ab+GY
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$2.96	\$8.97	\$13.30	\$17.79

\* 5 dB shielding assumed.

Table 1-28  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type L

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER	16.2 SG+WStrp RSTC35 RSTC30  ELt+GYp 23.2	16.2 SG+WS+SG RSTC45 RSTC35 WDGY+GYp ELt+GYp 25.8	16.2 SG+WS+SG RSTC45 RSTC45 WDGY+MGA WDGY+RGA EL+Ab+GY 29.9	16.2 SG+WS+SG RSTC45 RSTC45 WDGY+MGA WDGY+MGA EL+Spc B 33.6
Dining Room	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER	16.5 RSTC30 RSTC30  ELt+GYp 22.5	16.5 RSTC35 RSTC45 WDGY+GYp ELt+GYp 25.3	16.5 RSTC40 RSTC45 WDGY+2GY WDGY+MGA EL+Ab+GY 30.5	16.5 RSTC45 RSTC45 WDGY+MGA WDGY+MGA EL+Spc B 36.0
Kitchen	NR BEFORE Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	15.7 SC+WStrp RSTC40  ELt+GYp 20.4	15.7 RSTC40 RSTC45 ELt+GYp 23.4	15.7 RSTC40 RSTC45 EL+Ab+GY 24.3	15.7 RSTC40 RSTC45 EL+Spc B 25.0
Bedroom #1	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER	17.9 RSTC30 RSTC35  ELt+GYp 24.2	17.9 RSTC30 RSTC45 WDGY+GYp ELt+GYp 25.2	17.9 RSTC40 RSTC45 WDGY+GYp WDGY+MGA EL+Ab+GY 30.2	17.9 RSTC40 RSTC45 WDGY+MG WDGY+MGA EL+Spc B 35.6
Bedroom #2	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	17.8 RSTC30  ELt+GYp 23.6	17.8 RSTC45 WDGY+GYp ELt+GYp 26.4	17.8 RSTC45 WDGY+MGA EL+Ab+GY 31.5	17.8 RSTC45 WDGY+MG EL+Spc B 35.1
Library/Den	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	15.2 RSTC30  ELt+GYp 20.6	15.2 RSTC45 WDGY+2GY ELt+GYp 25.7	15.2 RSTC45 WDGY+MG EL+Ab+GY 29.5	15.2 RSTC45 WDGY+MGA EL+Spc B 34.6
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$7.39	\$10.27	\$18.15	\$22.77

\* 5 dB shielding assumed.

Table 1-29  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type M

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1	19.5	19.5 RSTC35 RSTC40	19.5 RSTC35 RSTC45 RSTC40 WDGY+2GY	19.5 RSTC40 RSTC45 RSTC45 WDGY+MGA WDGY+MG VP+Absrp
	NR AFTER	19.5	25.0	30.4	35.2
Dining Room	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	20.3	20.3 RSTC35 RSTC35	20.3 RSTC40 RSTC45 WDGY+MGA	20.3 RSTC45 RSTC45 WDGY+RGA WDGY+MGA VP+Absrp
	NR AFTER	20.3	25.6	30.5	35.0
Kitchen	NR BEFORE Door 1 Window 1 Wall 1 Roof 1 Floor 1	18.1 RSTC35 8P+STC25	18.1 RSTC40 RSTC40	18.1 RSTC40 RSTC45	18.1 RSTC40 RSTC45 VP+Absrp
	NR AFTER	23.0	24.7	24.8	25.0
Bedroom #1	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	22.3	22.3 RSTC35 RSTC40	22.3 RSTC35 RSTC45 WDGY+RGA	22.3 RSTC40 RSTC45 WDGY+MG WDGY+MGA VP+Absrp
	NR AFTER	22.3	27.0	30.1	35.6
Bedroom #2	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	22.2	22.2 RSTC35	22.2 RSTC45 WDGY+GYp	22.2 RSTC45 WDGY+MGA VP+Absrp
	NR AFTER	22.2	26.8	30.0	36.7
Library/Den	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	18.5 RSTC40	18.5 RSTC35 WDGY+GYp	18.5 RSTC45 WDGY+RGA	18.5 RSTC45 WDGY+MGA VP+Absrp
	NR AFTER	23.5	24.9	30.1	35.4
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.72	\$8.02	\$13.24	\$17.00

\* 5 dB shielding assumed.

Table 1-30  
 Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
 One-Story House: Type IV

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1	20.6	20.6 SC+SEald RSTC35 RSTC35	20.6 RSTC35 RSTC40 RSTC35 WDGY+GYp WDGY+GYp	20.6 RSTC40 RSTC45 RSTC45 WDGY+MG WDGY+MG
	NR AFTER	20.6	SJL+A+RG 26.3	SJL+A+RG 30.7	SJL+A+RG 35.0
Dining Room	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	21.9	21.9 RSTC40 RSTC40	21.9 RSTC40 RSTC40 WDGY+GYp WDGY+GYp	21.9 RSTC45 RSTC45 WDGY+MGA WDGY+MG
	NR AFTER	21.9	SJL+A+RG 26.9	SJL+A+RG 29.5	SJL+A+RG 35.2
Kitchen	NR BEFORE Door 1 Window 1 Wall 1 Roof 1 Floor 1	18.6	18.6 RSTC40 RSTC45	18.6 RSTC40 RSTC45	18.6 RSTC40 RSTC45
	NR AFTER	18.6	SJL+A+RG 25.0	SJL+A+RG 25.0	SJL+A+RG 25.0
Bedroom #1	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	23.3	23.3 RSTC40 RSTC35 WDGY+GYp	23.3 RSTC40 RSTC40 WDGY+GYp WDGY+GYp	23.3 RSTC45 RSTC45 WDGY+MG WDGY+MG
	NR AFTER	23.3	SJL+A+RG 28.0	SJL+A+RG 30.1	SJL+A+RG 35.0
Bedroom #2	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	23.4	23.4 RSTC40 WDGY+GYp	23.4 RSTC40 WDGY+GYp	23.4 RSTC40 WDGY+MGA
	NR AFTER	23.4	SJL+A+RG 30.5	SJL+A+RG 30.5	SJL+A+RG 36.1
Library/Den	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	20.0	20.0 RSTC35 WDGY+GYp	20.0 RSTC40 WDGY+RGA	20.0 RSTC45 WDGY+MGA
	NR AFTER	20.0	SJL+A+RG 26.1	SJL+A+RG 30.6	SJL+A+RG 35.5
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$12.01	\$15.45	\$18.34

\* 5 dB shielding assumed.

Table 1-31  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type O

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	20.6	20.6	20.6	20.6
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		SC+SE+ST RSTC45 RSTC35  S JL+GYp	RSTC35 RSTC45 RSTC40 WDGY+MGA WDGY+GYp S JL+GYp	RSTC40 RSTC45 RSTC45 WDGY+MGA WDGY+MGA S JL+A+RG FB+A+STd
Dining Room	NR BEFORE	21.9	21.9	21.9	21.9
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC40 RSTC45  WDGY+2GY S JL+GYp	RSTC40 RSTC45 WDGY+GYp WDGY+MGA S JL+GYp	RSTC45 RSTC45 WDGY+MGA WDGY+MGA S JL+A+RG FB+A+STd
Kitchen	NR BEFORE	18.6	18.6	18.6	18.6
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	RSTC35 RSTC45	RSTC40 RSTC45  S JL+GYp	RSTC40 RSTC45  S JL+GYp	RSTC40 RSTC45  S JL+A+RG FB+A+STd
Bedroom #1	NR BEFORE	23.3	23.3	23.3	23.3
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC45 RSTC45 WDGY+GYp WDGY+GYp S JL+GYp	RSTC35 RSTC45 WDGY+GYp WDGY+MGA S JL+GYp	RSTC45 RSTC45 WDGY+MG WDGY+MGA S JL+A+RG FB+A+STd
Bedroom #2	NR BEFORE	23.3	23.3	23.3	23.3
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		RSTC45 WDGY+2GY S JL+GYp	RSTC45 WDGY+2GY S JL+GYp	RSTC45 WDGY+MGA S JL+A+RG FB+A+STd
Library/Den	NR BEFORE	20.0	20.0	20.0	20.0
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		RSTC40 WDGY+GYp S JL+GYp	RSTC45 WDGY+MGA S JL+GYp	RSTC45 WDGY+MGA S JL+A+RG FB+A+STd
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$1.10	\$13.45	\$16.28	\$20.34

\* 5 dB shielding assumed.

Table 1-32  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type P

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	18.4	18.4	18.4	18.4
	Door 1	SC+SE+ST	RSTC35	RSTC40	RSTC40
	Window 1	8G+STC25	RSTC35	RSTC45	RSTC45
	Window 2 *	8G+STC25	WDGY+GYp	RSTC40	RSTC45
	Wall 1				WDGY+MG
	Wall 2 *				WDGY+MG
	Roof 1	EL+Ab+GY	EL+Ab+GY	EL+Ab+GY	EL+SpC B
Floor 1					
NR AFTER	24.8	26.0	29.6	34.8	
DiningRoom	NR BEFORE	19.4	19.4	19.4	19.4
	Window 1 *	8G+STC25	RSTC35	RSTC45	RSTC45
	Window 2	8G+STC25	RSTC35	RSTC45	RSTC40
	Wall 1 *		WDGY+GYp	WDGY+RGA	WDGY+MGA
	Wall 2			WDGY+2GY	WDGY+MGA
	Roof 1	EL+Ab+GY	EL+Ab+GY	EL+Ab+GY	EL+SpC B
	Floor 1				
NR AFTER	24.4	26.1	29.7	35.5	
Kitchen	NR BEFORE	17.2	17.2	17.2	17.2
	Door 1	SC+SE+ST	RSTC40	RSTC40	RSTC40
	Window 1	8G+STC25	RSTC45	RSTC45	RSTC45
	Wall 1				
	Roof 1	EL+Ab+GY	EL+Ab+GY	EL+Ab+GY	EL+SpC B
	Floor 1				
NR AFTER	22.3	24.3	24.3	25.0	
Bedroom #1	NR BEFORE	19.9	19.9	19.9	19.9
	Window 1 *	8G+STC25	RSTC35	RSTC45	RSTC45
	Window 2	8G+STC25	RSTC35	RSTC45	RSTC45
	Wall 1 *			WDGY+RGA	WDGY+MG
	Wall 2			WDGY+2GY	WDGY+MG
	Roof 1	EL+Ab+GY	EL+Ab+GY	EL+Ab+GY	EL+SpC B
	Floor 1				
NR AFTER	25.4	26.3	29.8	34.7	
Bedroom #2	NR BEFORE	20.0	20.0	20.0	20.0
	Window 1	8G+STC25	RSTC35	RSTC45	RSTC45
	Wall 1			WDGY+RGA	WDGY+MG
	Roof 1	EL+Ab+GY	EL+Ab+GY	EL+Ab+GY	EL+SpC B
	Floor 1				
NR AFTER	25.6	26.6	30.5	35.0	
Library/Den	NR BEFORE	18.1	18.1	18.1	18.1
	Window 1	8G+STC25	RSTC35	RSTC45	RSTC45
	Wall 1		WDGY+GYp	WDGY+MGA	WDGY+MGA
	Roof 1	EL+Ab+GY	EL+Ab+GY	EL+Ab+GY	EL+SpC B
	Floor 1				
NR AFTER	22.1	25.3	30.9	35.2	
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$6.74	\$11.34	\$18.04	\$22.80

\* 5 dB shielding assumed.

Table 1-33  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type Q

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	19.3	19.3	19.3	19.3
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		SG+WStrp RSTC35 RSTC35  SJL+A+RG	SG+WS+SG RSTC40 RSTC40 WDGY+GYp WDGY+GYp SJL+A+RG	SG+WS+SG RSTC45 RSTC45 WDGY+MGA WDGY+MGA SJL+A+RG
Dining Room	NR BEFORE	20.0	20.0	20.0	20.0
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC35 RSTC35  SJL+A+RG	RSTC45 RSTC40 WDGY+2GY WDGY+GYp SJL+A+RG	RSTC45 RSTC45 WDGY+MGA WDGY+MGA SJL+A+RG
Kitchen	NR BEFORE	17.9	17.9	17.9	17.9
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	RSTC40 8P+STC25	RSTC40 RSTC45  SJL+A+RG	RSTC40 RSTC45  SJL+A+RG	RSTC40 RSTC45  SJL+A+RG
Bedroom #1	NR BEFORE	21.7	21.7	21.7	21.7
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		RSTC35 RSTC35  SJL+A+RG	RSTC45 RSTC40 WDGY+2GY WDGY+GYp SJL+A+RG	RSTC45 RSTC45 WDGY+MGA WDGY+MGA SJL+A+RG
Bedroom #2	NR BEFORE	21.7	21.7	21.7	21.7
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		RSTC35  SJL+A+RG	RSTC40 WDGY+GYp SJL+A+RG	RSTC40 WDGY+MGA SJL+A+RG
Library/Den	NR BEFORE	18.3	18.3	18.3	18.3
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	8P+STC25 WDGY+2GY	RSTC35 WDGY+GYp SJL+A+RG	RSTC45 WDGY+RGA SJL+A+RG	RSTC45 WDGY+MGA SJL+A+RG
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$3.08	\$7.63	\$16.50	\$18.37

\* 5 dB shielding assumed.

Table 1-34  
 Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
 One-Story House: Type R

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE	19.9	19.9	19.9	19.9
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		SC+SEald RSTC40	RSTC35 RSTC40 RSTC35 VP+Absrp	RSTC40 RSTC45 RSTC40 HBLK+MGA HBLK+GYp VP+Absrp
Dining Room	NR BEFORE	21.2	21.2	21.2	21.2
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		8P+STC25 8P+STC25	RSTC35 RSTC35 VP+Absrp	RSTC45 RSTC45 HBLK+GYp HBLK+RGA VP+Absrp
Kitchen	NR BEFORE	18.9	18.9	18.9	18.9
	Door 1 Window 1 Wall 1 Roof 1 Floor 1 NR AFTER	SC+SE+ST 8P+STC25	SC+SE+ST 8P+STC25	RSTC35 RSTC40 VP+Absrp	RSTC40 RSTC45 VP+Absrp
Bedroom #1	NR BEFORE	23.5	23.5	23.5	23.5
	Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1 NR AFTER		8P+STC25 8P+STC25	RSTC35 RSTC35 VP+Absrp	RSTC35 RSTC45 HBLK+GYp HBLK+2GY VP+Absrp
Bedroom #2	NR BEFORE	23.2	23.2	23.2	23.2
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		8P+STC25 HBLK+RGA	RSTC35 VP+Absrp	RSTC40 HBLK+2GY VP+Absrp
Library/Den	NR BEFORE	19.8	19.8	19.8	19.8
	Window 1 Wall 1 Roof 1 Floor 1 NR AFTER		8P+STC25	RSTC40 VP+Absrp	RSTC45 HBLK+2GY VP+Absrp
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.38	\$4.66	\$8.94	\$15.51

\* 5 dB shielding assumed.

Table 1-35  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
One-Story House: Type S

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1	21.5	21.5 SC+SE+ST 8G+STC25 8G+STC25 BRIK+GYp BRIK+GYp	21.5 SC+SE+ST RSTC40 RSTC35	21.5 RSTC40 RSTC40 RSTC40 BRIK+2GY BRIK+2GY VP+Absrp
	NR AFTER	21.5	26.9	29.5	35.1
Dining Room	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	24.1	24.1	24.1 RSTC35 RSTC35	24.1 RSTC40 RSTC40 BRIK+2GY BRIK+GYp VP+Absrp
	NR AFTER	24.1	24.1	32.7	36.0
Kitchen	NR BEFORE Door 1 Window 1 Wall 1 Roof 1 Floor 1	19.9	19.9 SC+SE+ST 8G+STorm	19.9 RSTC35 RSTC35	19.9 RSTC40 RSTC45 VP+Absrp
	NR AFTER	19.9	25.1	31.1	35.1
Bedroom #1	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	26.2	26.2	26.2 RSTC35 RSTC35	26.2 RSTC35 RSTC35 BRIK+GYp BRIK+GYp VP+Absrp
	NR AFTER	26.2	26.2	33.4	34.9
Bedroom #2	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	26.0	26.0	26.0 RSTC35	26.0 RSTC35 BRIK+GYp VP+Absrp
	NR AFTER	26.0	26.0	33.5	35.0
Library/Den	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	22.7	22.7 8G+STC25 BRIK+GYp	22.7 RSTC35	22.7 RSTC40 BRIK+GYp VP+Absrp
	NR AFTER	22.7	27.2	31.9	35.3
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$4.37	\$7.33	\$14.08

\* 5 dB shielding assumed.

**Table 1-36**  
**Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,**  
**One-Story House: Type T**

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1	21.1	21.1 RSTC35 8G+STC25 8G+STC25	21.1 RSTC35 RSTC35 RSTC35	21.1 RSTC40 RSTC45 RSTC45 BRIK+2GY BRIK+2GY SJL+A+RG
	NR AFTER	21.1	26.3	32.4	35.5
Dining Room	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	23.3	23.3 8G+STC25 8G+STC25 BRIK+RGA BRIK+RGA	23.3 RSTC35 RSTC35	23.3 RSTC40 RSTC40 BRIK+2GY BRIK+GYp SJL+A+RG
	NR AFTER	23.3	26.6	33.5	35.5
Kitchen	NR BEFORE Door 1 Window 1 Wall 1 Roof 1 Floor 1	19.6	19.6 SC+SE+ST 8G+STC25	19.6 SC+SE+ST RSTC40	19.6 RSTC40 RSTC45 SJL+A+RG
	NR AFTER	19.6	24.8	27.6	34.7
Bedroom #1	NR BEFORE Window 1 * Window 2 Wall 1 * Wall 2 Roof 1 Floor 1	25.0	25.0	25.0 RSTC35 RSTC35	25.0 RSTC40 RSTC40 BRIK+2GY BRIK+GYp SJL+A+RG
	NR AFTER	25.0	25.0	34.4	35.8
Bedroom #2	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	24.9	24.9	24.9 RSTC35	24.9 RSTC40 BRIK+GYp SJL+A+RG
	NR AFTER	24.9	24.9	34.5	35.9
Library/Den	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	22.1	22.1 8G+STC25 BRIK+MGA	22.1 RSTC35	22.1 RSTC40 BRIK+GYp SJL+A+RG
	NR AFTER	22.1	25.8	32.5	34.9
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$6.33	\$9.32	\$16.33

\* 5 dB shielding assumed.

Table 1-37  
Noise Reductions, Modifications, and Cost/Dwelling Sq.Ft.,  
Manufactured Home: Type U

Room	Building Element	Modifications by Noise Zone			
		MH L65	MH L70	MH L75	MH L80
Living Room	NR BEFORE	18.3	18.3	18.3	18.3
	Door 1 Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER	HC+WS+ST 8G+STC25 8G+STC25	HC+WS+ST RSTC35 RSTC35 WDGY+2GY WDGY+2GY VP+Absrp	HC+WS+ST RSTC45 RSTC45 WDGY+2GY WDGY+2GY VP+Absrp FV+Baf+A	HC+WS+ST RSTC45 RSTC45 WDGY+2GY WDGY+2GY VP+Absrp FV+Baf+A
Kitchen	NR BEFORE	23.3	23.3	23.3	23.3
	Window 1 Window 2 * Wall 1 Wall 2 * Roof 1 Floor 1 NR AFTER		RSTC45 RSTC45 VP+Absrp	RSTC45 RSTC45 VP+Absrp FV+Baf+A	RSTC45 RSTC45 VP+Absrp FV+Baf+A
Bedroom #1	NR BEFORE	19.8	19.8	19.8	19.8
	Door 1 Window 1 Window 2 Wall 1 Wall 2 Wall 3 * Roof 1 Floor 1 NR AFTER		HC+WS+ST RSTC35 RSTC35 WDGY+GYp WDGY+GYp VP+Absrp	HC+WS+ST RSTC45 RSTC45 WDGY+2GY WDGY+2GY WDGY+2GY VP+Absrp FV+Baf+A	HC+WS+ST RSTC45 RSTC45 WDGY+2GY WDGY+2GY WDGY+2GY VP+Absrp FV+Baf+A
Bedroom #2	NR BEFORE	21.7	21.7	21.7	21.7
	Window 1 Window 2 Wall 1 Wall 2 Wall 3 * Roof 1 Floor 1 NR AFTER		RSTC35 RSTC35 WDGY+GYp VP+Absrp	RSTC45 RSTC45 WDGY+2GY WDGY+2GY WDGY+2GY VP+Absrp FV+Baf+A	RSTC45 RSTC45 WDGY+2GY WDGY+2GY WDGY+2GY VP+Absrp FV+Baf+A
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$1.38	\$11.11	\$18.79	\$18.79

\* 5 dB shielding assumed.

**Table 1-38**  
**Noise Reduction, Modifications, and Cost/Dwelling Sq.Ft.,**  
**Two-Story Townhouse: Type v**

Room	Building Element	Modifications by Noise Zone			
		60 - 65 dB	66 - 70 dB	71 - 75 dB	76 - 80 dB
Living Room	NR BEFORE Door 1 * Window 1 * Wall 1 * Roof 1 Floor 1	25.5	25.5	25.5 SC+SE+MT RSTC35	25.5 RSTC40 RSTC45 WDGY+RGA
	NR AFTER	25.5	25.5	30.2	35.8
Dining Room	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	24.4	24.4	24.4 RSTC40 WDGY+GYp	24.4 RSTC45 WDGY+RGA
	NR AFTER	24.4	24.4	31.6	35.1
Kitchen	NR BEFORE Door 1 Window 1 Wall 1 Roof 1 Floor 1	19.8 SG+WS+SG 8G+STorm	19.8 SG+WS+SG 8G+STorm	19.8 SG+WS+SG RSTC45	19.8 SG+WS+SG RSTC45
	NR AFTER	19.8	26.0	29.2	29.2
Bedroom #1	NR BEFORE Window 1 Wall 1 Roof 1 Floor 1	25.0	25.0	25.0 RSTC35 WDGY+GY	25.0 RSTC45 WDGY+MGA
	NR AFTER	25.0	25.0	30.4	35.3
Bedroom #2	NR BEFORE Window 1 * Wall 1 * Roof 1 Floor 1	28.8	28.8	28.8	28.8 RSTC45 WDGY+2GY
	NR AFTER	28.8	28.8	28.8	34.7
Bedroom #3	NR BEFORE Window 1 * Wall 1 * Roof 1 Floor 1	28.3	28.3	28.3 8G+STC25	28.3 RSTC45 WDGY+RGA
	NR AFTER	28.3	28.3	30.4	35.1
Basement	NR BEFORE Window 1 * Window 2 * Wall 1 * Roof 1 Floor 1	32.7	32.7	32.7	32.7 RSTC35 RSTC35
	NR AFTER	32.7	32.7	32.7	43.4
Cost Per Dwelling Sq.Ft.	C/D. Sq.Ft.	\$0.00	\$0.50	\$2.95	\$6.40

\* 5 dB shielding assumed.



# Airport Influence District

Sections 800-822, Article 8, Chapter 146, Aurora Municipal Code  
(Includes up to Ordinance 2006-06, Effective April 8, 2006)

## City of Aurora

Planning Department  
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Departments>Planning Department>Ordinances & Design Standards>Airport Influence District.pdf

## **DIVISION 1. AIRPORT DISTRICTS, IN GENERAL**

### **Sec. 146-800. Airport Districts.**

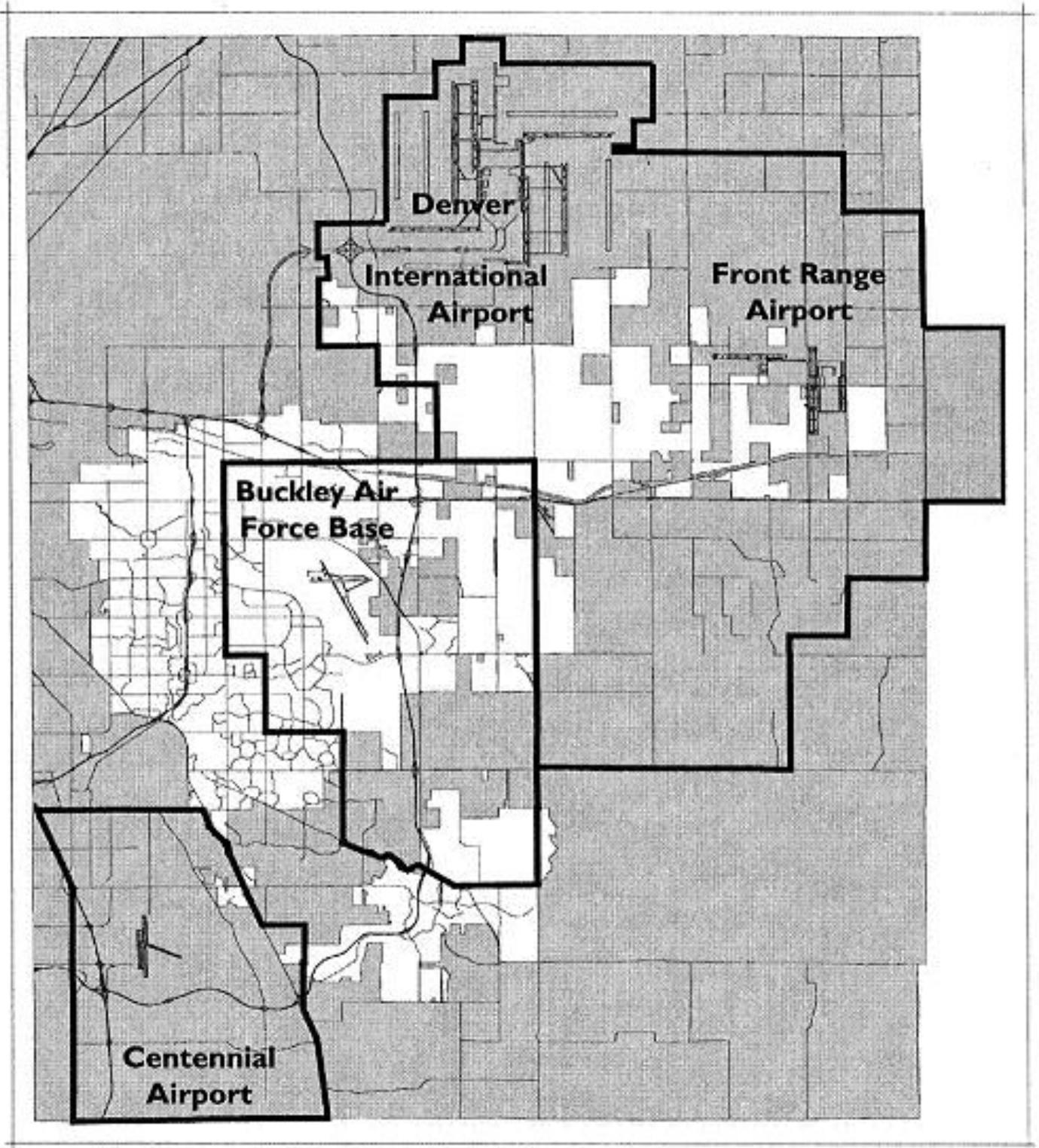
There are certain areas within the city that are subject to high aviation noise levels and possible crash hazards generated by aviation activities that endanger the lives and property of occupants of land in the vicinity of four airports:

- Buckley Air Force Base--Military airport
- Centennial Airport--General aviation airport
- Front Range Airport--General aviation airport
- Denver International Airport--Commercial airport

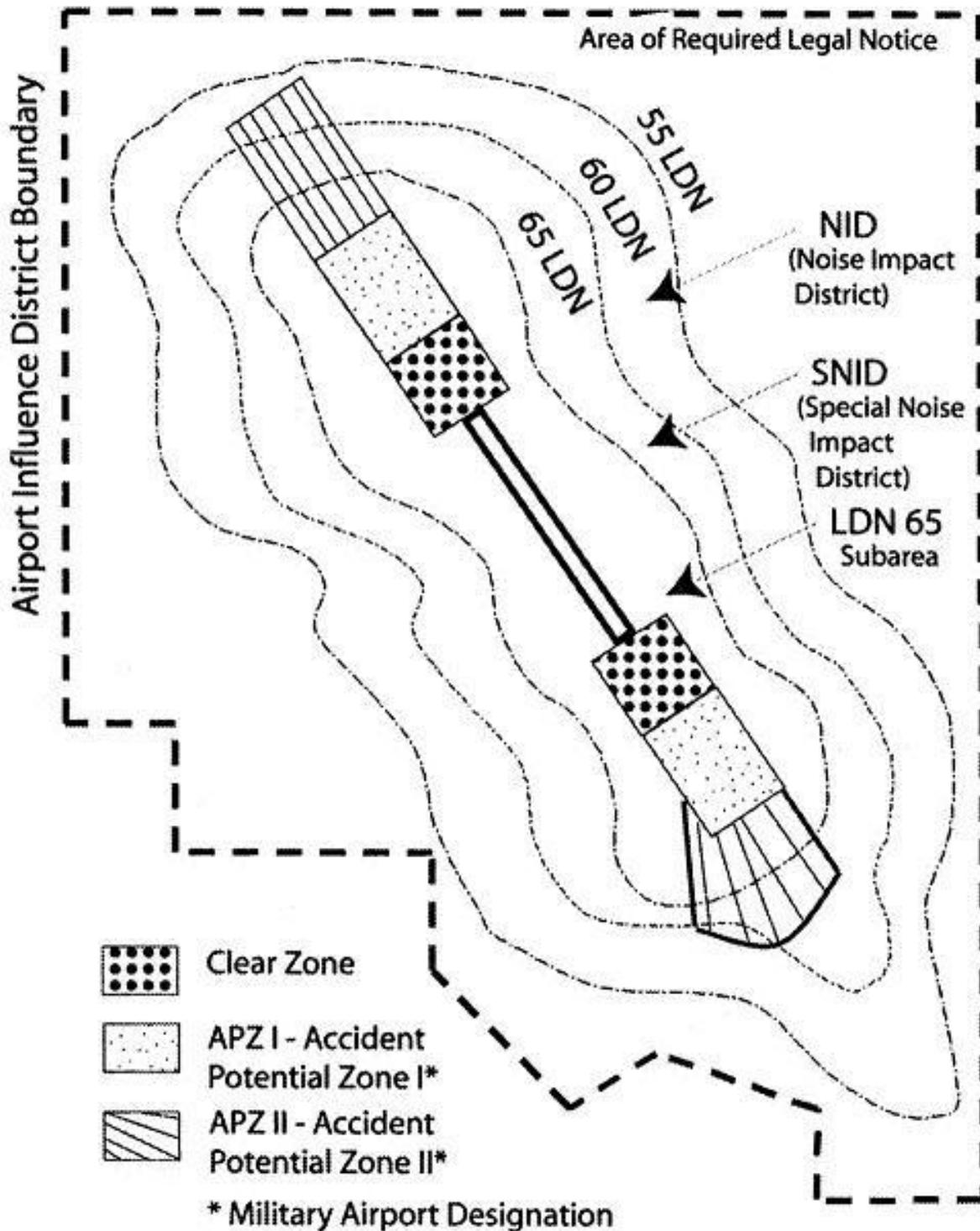
Airport districts are created in and around these airports for the following purposes:

1. To minimize exposure of residential and other land uses to aircraft noise;
2. To minimize risks to public safety from potential aircraft accidents;
3. To protect property values;
4. To promote sound land use planning and zoning practices in areas encompassed by airport influence districts;
5. To restrict incompatible land use within the airport influence districts; and
6. To promote and protect the public health, safety, and welfare.

The city council finds and determines that there are certain areas within the city that are subject to high aviation noise levels and possible crash hazards generated by aviation activities which endanger the lives and property of occupants of land in the vicinity of airports. The city council intends to maintain an open process of negotiation and interpretation of airport influence districts and to inform citizens of potential impacts of airport influence districts on them and their properties. The council recognizes that a number of factors must be evaluated in determining whether proposed uses in affected areas are acceptable.



**Figure 8.1: Airport Influence Districts**



**Figure 8.2: Components of Typical Airport Influence District**

*(Ord. No. 2001-72, 12-3-2001; Errata of 2-7-2002, 1, 2; Errata of 9-27-2002)*

## **DIVISION 2. BUCKLEY AIR FORCE BASE DISTRICT**

### **Sec. 146-801. Regulations.**

- (A) Nothing contained in these district regulations shall require any change or alteration in:
1. A lawfully constructed building or structure in existence at the time of the adoption of the ordinance from which this district derives.
  2. Site plans, or residential subdivision plats, or amendments thereto that were formally approved by the city prior to the adoption of this district, provided such plans, use, and construction are commenced, pursued, and completed in compliance with all other provisions of this Code including the requirements for noise level reduction measures in sections 146-808(C), 146-809(C), and 146-810(B).
- (B) This district is intended to regulate the following:
1. The erection or establishment of any new building or use.
  2. The addition or expansion to an existing structure, when such addition is greater than 1,000 square feet.
  3. The moving or relocation of any building or structure to a new site or new location.
  4. The change from one use to another of any building, structure, or land, or the re-establishment of a nonconforming use after its discontinuance for a period of one year or more from the effective date of the ordinance from which this district derives.
- (C) *Overlay Zone.* This district shall be applied as an overlay zone. The application of this district is in addition to the provisions of the underlying zone districts. Where the provisions of this overlay district conflict with those of the underlying zone district, the requirements of this overlay district shall control.

*(Ord. No. 2001-72, 12-3-2001; Errata of 9-11-2002, 19)*

### **Sec. 146-802. FAR Part 77 Surfaces.**

All development within the city shall comply with any and all height restrictions in the underlying zone, together with FAR part 77 standards and procedures for determining and avoiding obstructions and eliminating hazards to air navigation.

*(Ord. No. 2001-72, 12-3-2001)*

**Sec. 146-803. Interpretation of District Boundaries.**

The boundaries of the district shall be determined by scaling distances on the AICUZ map. Where interpretation is needed as to the exact location of the boundaries of the airport districts, as shown on the AICUZ map, the director of planning shall make the necessary determination of the boundary. A property owner contesting the location of a district boundary affecting his or her property shall be given a reasonable opportunity to present his or her case to the director of planning, and to submit his or her own evidence if he or she so desires. The decision of the director of planning may be appealed to the city council, provided notice of such appeal shall be filed with the city manager within 10 calendar days after the director's decision. The city council shall have the power to overrule the director's decision by a vote of a majority of the council members present and voting.

*(Ord. No. 2001-72, 12-3-2001)*

**Sec. 146-804. Variances.**

The city council may, after receiving a recommendation from the planning and zoning commission and after conducting a public hearing, grant variances from the provisions for this district. The planning and zoning commission shall submit its recommendation on the requested variance after conducting a public hearing on the request. Such a variance shall be granted only if the spirit of this section is observed, public welfare and safety secured, and substantial justice done. The basis of such variance may be one or more of the following:

- (A) Unique, unnecessary, or unreasonable hardships that would be imposed on the property owner by strict enforcement of the requirements of this district.
- (B) Reliance by the applicant on preexisting terms and conditions of development, expressed in the form of deed restrictions, agreements with the air force, or other binding documents.
- (C) Demonstrable evidence that failure to obtain a variance will significantly undermine the ability to repay bonded obligations and assessments.
- (D) The low number of public customers or visitors to any particular facility.

*(Ord. No. 2001-72, 12-3-2001)*

**Sec. 146-805. Subareas.**

To carry out the purpose of this district, the air installation compatible use zone (AICUZ), as bounded and defined on the map entitled "Air Installation Compatible Use Zone Map" (exhibit A), is on file in the office of the director of planning, together with all references, notations, and other information shown thereon which is adopted by reference and declared to be a part of this section. The AICUZ consists of the following overlay subareas:

- (A) CZ, clear zone subarea
- (B) APZ I, accident potential zone I subarea

- (C) APZ II, accident potential zone II subarea
- (D) LDN 65 subarea, areas contained within the LDN 65 noise contour line.
- (E) Special noise impact district, areas contained between the LDN 60 and LDN 65 noise contour lines.
- (F) Noise impact district, areas contained within the noise impact boundary
- (G) Airport influence district, being that area located within the city, which lies east of the following described line: commencing at the southeast corner of section 26, T3S, R66W, County of Adams, State of Colorado; thence westerly along the southern section line of sections 26, 27, 28, and 29 to Chambers Road; thence south along Chambers Road to Jewell Avenue extended; thence east along Jewell to South Buckley Road; thence south along Buckley Road to East Hampden Avenue; thence east along East Hampden Avenue to South Himalaya Road; thence south on Himalaya to Smoky Hill Road; thence east along Smoky Hill Road to the south line of section 19, T5S, R65W; thence east along sections 19, 20, and 21 to the southeast corner of section 21; thence north along the east line of section 21, 16, 9, and 4 of T5S, continuing north along the east line of sections 33, 28, 21, 16, 9, 4 of T4S, and section 33, T3S, to the northeast corner of section 33, T3S, 65W; thence west along the north section lines of section 33, 32, 31, 36, 35 to the point of beginning.

(Ord. No. 2001-72, 12-3-2001)

**Sec. 146-806. Clear Zone.**

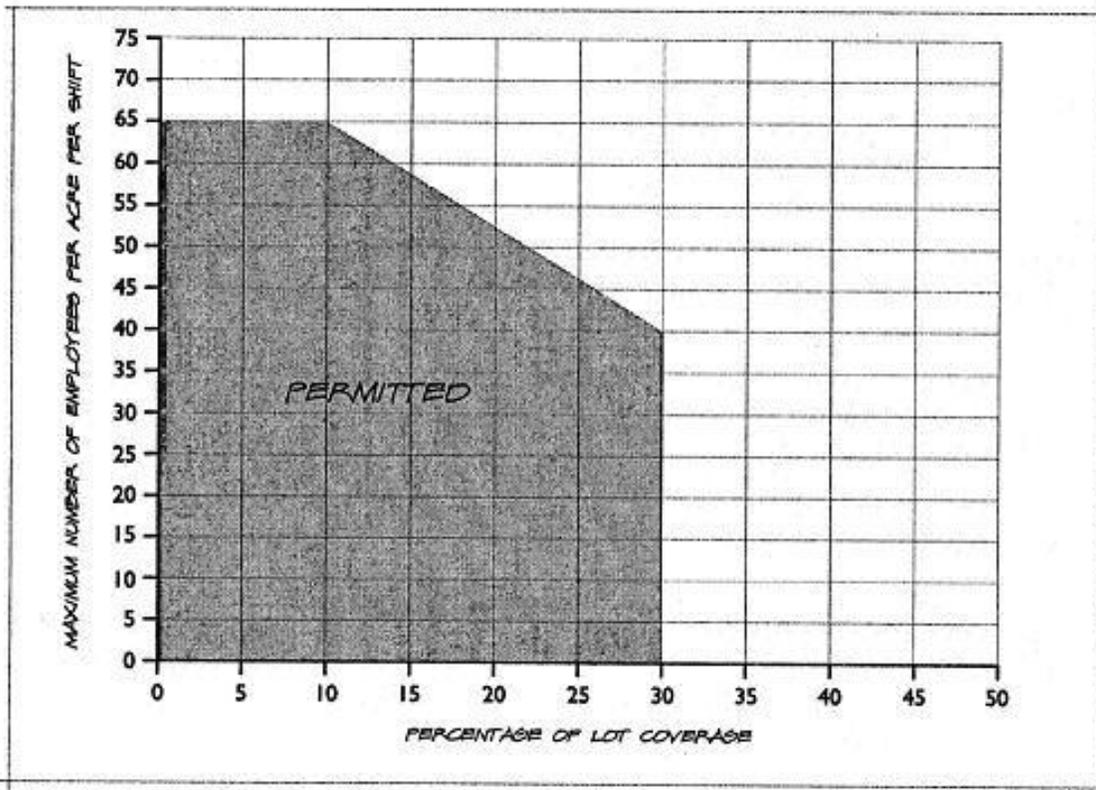
- (A) *Description.* The clear zone subarea is composed of lands in which accident potential is so great that all land uses shall be prohibited, except those necessary for the continued operation of airports and aircraft.
- (B) *Permitted Uses.* Only airports and aircraft operations are permitted uses in any clear zone subarea, provided that such uses are permitted in the underlying zone district:

(Ord. No. 2001-72, 12-3-2001)

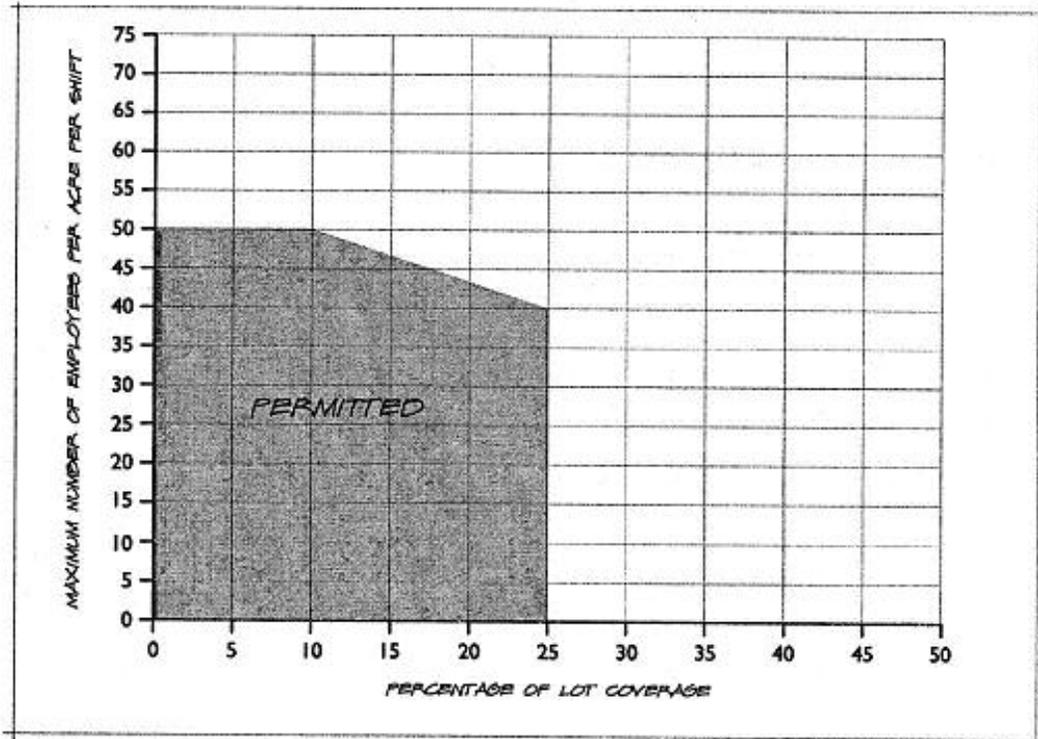
**Sec. 146-807. Accident Potential Zones I and II (APZ I, APZ II).**

- (A) *Description.* These subareas are designated to regulate land use and reduce hazards in an area characterized by high noise levels and a significant accident potential resulting from aircraft operations. Residential uses shall be highly restricted.
- (B) *Development Standards.* The following development standards shall be used as criteria for evaluating site plans in any APZ I. Applications and uses that do not meet these standards may apply for a variance from the standards as a part of the site plan. Such variances shall be considered by the city council in its review of the site plan.

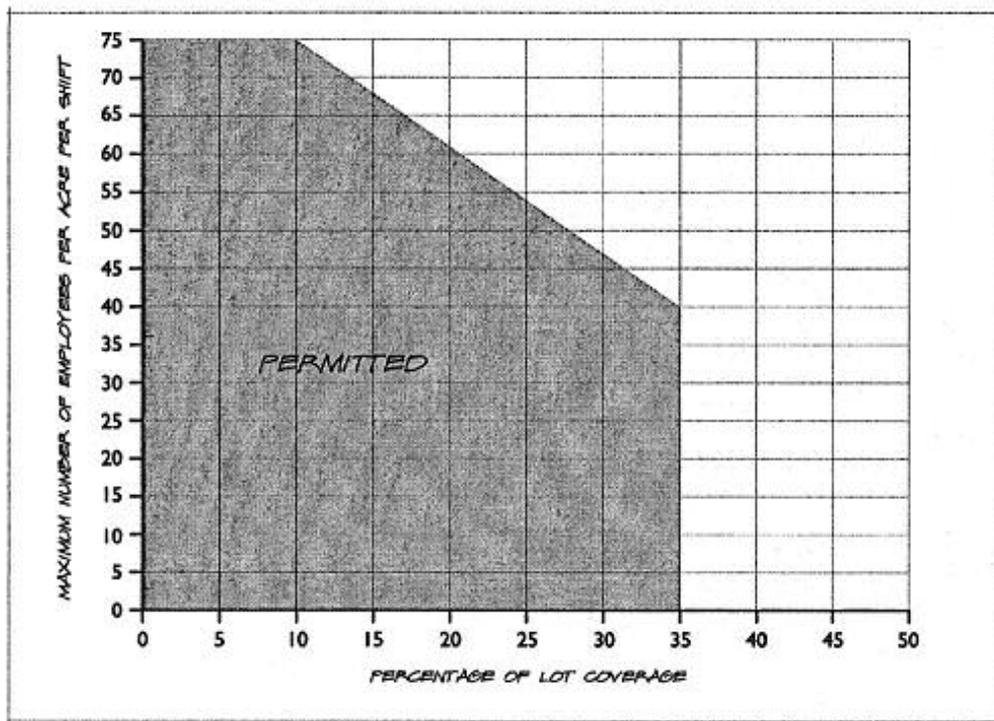
1. APZ I-N (North) lot coverage. The maximum lot coverage of structures and buildings within APZ I-N shall be as permitted by the graph in Fig. 8.3.
2. APZ I-S (South) lot coverage. The maximum lot coverage of structures and buildings within APZ I-S shall be as permitted by the graph in Figure 8.4.
3. APZ II-N (North) lot coverage. The maximum lot coverage of structures and buildings within APZ II-N shall be as permitted by the graph in Figure 8.5.
4. APZ II-S (South) lot coverage. The maximum lot coverage of structures and buildings within APZ II-S shall be as permitted by the graph in Figure 8.6.



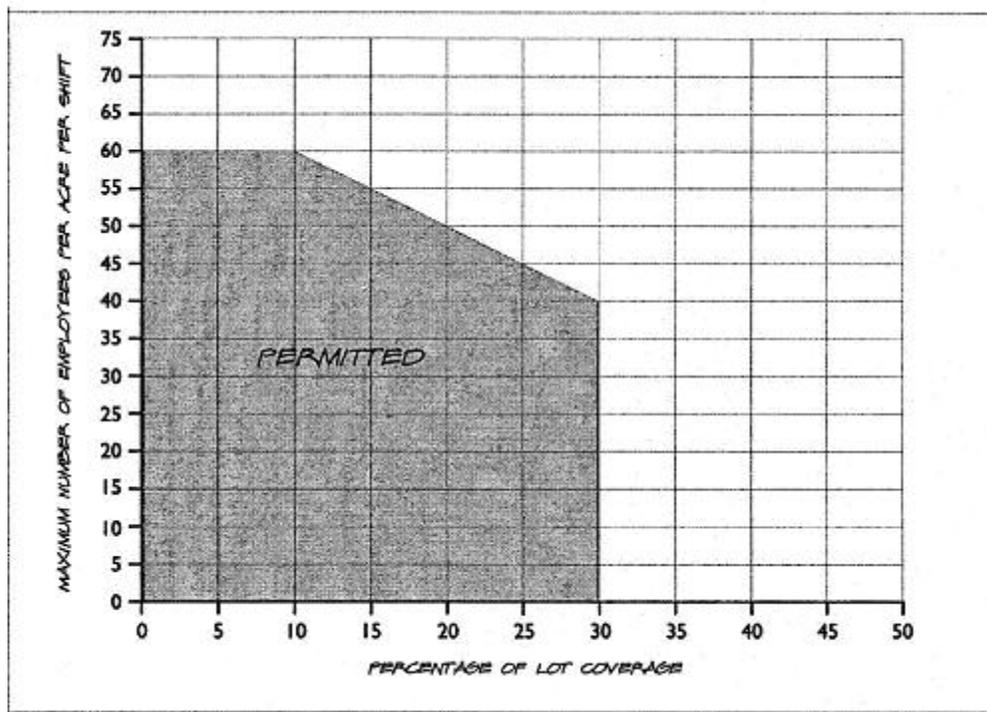
**Figure 8.3: APZ I-N**



**Figure 8.4: APZ I-S**



**Figure 8.5: APZ II-N**



**Figure 8.6: APZ II-S**

5. *Height restrictions.* Height restrictions shall be as set forth in the underlying zone districts, provided the permitted height does not exceed that established by FAR part 77 surfaces for military airports.
6. *Crash corridor.* To the greatest extent practicable, the centerline area of the APZ I shall be maintained in an open condition. Structures and human activity, as permitted by this district, shall be placed toward the perimeter of the APZ area.
7. *Emissions.* The development shall not:
  - a. Release into the air any substance that would impair visibility or otherwise interfere with the operation of the aircraft;
  - b. Produce substantial light emissions, either direct or indirect (reflective) which would interfere with pilot vision; or
  - c. Produce emissions that would interfere with aircraft communication systems or navigational equipment.
8. *Hazardous materials.* The development shall not involve the use or storage of significant amounts of materials which are explosive, flammable, toxic, corrosive, or otherwise exhibit hazardous characteristics, except as permitted by this subdivision.

9. *Other prohibitions.* The development shall not:
- Have high people density characteristics or promote population concentration;
  - Involve utilities and services required for area-wide population upon which disruption would have an adverse impact (telephone, gas, etc.);
  - Concentrate people who are limited in their ability to respond to emergency situations such as children, elderly, the handicapped; or
  - Pose hazards to aircraft operations.

(C) *Prohibited Uses in an Accident Potential Zone.* The following uses shall be prohibited in any APZ zone district:

<b>Table 8.1 Schedule of Uses in APZ Subareas</b>		
	<b>(A)</b>	<b>(B)</b>
	<b>Uses</b>	<b>X -- Prohibited</b>
1.	Aboveground bulk storage of flammable liquids or gases	X
2.	Child care facilities	X
3.	Dog kennels	X
4.	Handicapped care facilities	X
5.	Hospitals and health care facilities	X
6.	Hotels and motels	X
7.	Indoor recreational facilities	X
8.	Museums, theaters and similar establishments	X
9.	Nursing and rest homes	X
10.	Outdoor recreational facilities and activities which may concentrate people	X
11.	Places of worship	X
12.	Public and fraternal meeting facilities	X
13.	Residential uses <sup>1</sup>	X
14.	Restaurants and other eating and drinking establishments, except such establishments that provide seating, customer service counter space or any combination thereof for no more than 12 <sup>2</sup> persons. For purposes of this subsection, three feet of customer service counter space shall equal customer service counter space for one person	X
15.	Retail and wholesale operations and facilities which may concentrate people	X
16.	Schools	X
17.	Spectator sport stadiums	X
18.	Storage or sale of explosives, other than small caliber ammunition	X

<sup>1</sup> Except that in APZ II, residential housing shall be permitted at one unit per acre outside the LDN 65 contour

<sup>2</sup> 16 persons in APZ II.

(Ord. No. 2001-72, 12-3-2001)

**Sec. 146-808. LDN 65 Subarea.**

(A) *Description.* The LDN 65 subarea is composed of areas located within the LDN 65 noise contour, as shown on the air installation compatible use zone map, which are subjected

to noise levels of duration and frequency creating hazard to both physical and mental health.

- (B) *Prohibited Uses.* Residential uses are prohibited in the LDN 65 subarea.
- (C) *Development Standards.* The following development standards shall apply to uses permitted in LDN 65 subarea:
  - 1. A habitable building addition to existing residential structures within the LDN 65 subarea may be permitted. However, any such addition greater than 1,000 square feet shall provide and include noise level reduction measures in the design and construction of all such building additions to achieve an interior noise level reduction of 30 dB in A-weighted levels, as determined or calculated in accordance with article 10 of chapter 22 of this Code.
  - 2. Within the LDN 65 subarea, any permitted office, commercial or other nonresidential structures where the public is received shall provide and include noise level reduction measures in the design and construction of all such areas to achieve an interior noise level reduction of 25 dB in A-weighted levels, as determined or calculated in accordance with article 10 of chapter 22 of this Code.

(Ord. No. 2001-72, 12-3-2001)

**Sec. 146-809. Special Noise Impact District (SNID).**

- (A) *Description.* The special noise impact district (SNID) is composed of those areas located between the LDN 60 and LDN 65 noise contour lines as shown on the air installation compatible use zone map.
- (B) *Permitted Uses.* Provided that it is allowed in the underlying zone, new residential uses or structures may be permitted within the special noise impact district. However, such uses or structures shall not be permitted unless and until there has been a public hearing, approval, and authorization by the city council for such uses or structures.
- (C) *Noise Level Reduction Measures.* New residential uses or structures authorized by the city council within the special noise impact district shall provide and include noise level reduction measures in the design and construction of all such habitable structures to achieve the interior noise level reduction established by the city council. Such noise reduction shall in no event be less than a 30-decibel reduction in A-weighted levels, determined or calculated in accordance with article 10 of chapter 22 of this Code. Noise reduction measures shall include central air conditioning or an equivalent thereof.

(Ord. No. 2001-72, 12-3-2001)

**Sec. 146-810. Noise Impact District (NID).**

- (A) *Description.* The noise impact district (NID) is composed of those areas located between the LDN 55 and LDN 60 noise contour lines as shown on the air installation compatible use zone map.

- (B) *Noise Level Reduction Measures.* New residential uses or structures permitted by the underlying zone and within the noise impact district shall provide and include noise level reduction measures in the design and construction of all such habitable structures to achieve an interior noise level reduction of 25 decibels in A-weighted levels, as determined or calculated in accordance with article 10 of chapter 22 of this Code. Noise reduction measures shall include central air conditioning or an equivalent thereof.

(Ord. No. 2001-72, 12-3-2001; Ord. No. 2006-06, 4-8-2006)

**Sec. 146-811. Airport Influence District.**

- (A) *Description.* The airport influence district is composed of that area designated by section 146-805 of this code.
- (B) *Height Restrictions.* Development in the airport influence district shall comply with height restrictions in the underlying zone district, which do not intrude into FAR part 77 surfaces for military airports.
- (C) *Easement.* An avigation easement with the city as sole grantee shall be conveyed to the city by any person subdividing lands or initiating construction of any structure on already subdivided lands within the airport influence district. Such avigation easement shall be an easement for right-of-way for unobstructed passage of aircraft above the property. Such easement shall waive any right or cause of action against the city arising from noise, vibrations, fumes, dust, fuel particles and other effects caused by aircraft and airport operations. The avigation easement shall be in a form approved by the city attorney and shall be recorded in the office of the appropriate county clerk and recorder before permit or plat approval is granted.
- (D) *Notice.* Vendors of real property located within the airport influence area shall provide the following notice to prospective purchasers:
- i. In 14-point bold type on a single sheet of paper which is signed by the prospective purchaser prior to entering into a contract for purchase:

**NOTICE OF AIRPORT IN VICINITY**

This property is located in the vicinity of an airport, within what is known as an airport influence district. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

- ii. and cause the following notice to be recorded with the clerk and recorder of the appropriate county.

## NOTICE

The property known as (legal description and address) is located within an area that has been officially designated as an airport influence district by the City of Aurora. As a result of this designation the property is subject to one or more of the following:

(1) An aviation easement has been granted to the City of Aurora recorded in book \_\_\_\_\_, at page \_\_\_\_\_, \_\_\_\_\_ County, Colorado, which allows for the unobstructed passage of aircraft above the property, and provides for the waiver of any right or cause of action against the City of Aurora due to noise, vibrations, fumes, dust, or fuel particles caused by aircraft or airport operations.

(2) The use and enjoyment of the property may be affected by aircraft noise, vibrations, fumes, smoke, dust, or fuel particles from aircraft operation.

(3) The City of Aurora has required that noise mitigation construction techniques be employed in the construction of this home to mitigate the noise to which the property is exposed. The vendor certifies that the applicable noise mitigation measures have been installed as required. This paragraph (3) is only applicable if the property is located in the NID or SNID subareas.

(4) The noise to which the property may be subject from aircraft operation may exceed 65 LDN, the maximum acceptable level set by the Federal Department of Housing and Urban Development for residential land use (only if located within the LDN 65 contour).

(5) The involved property is located within an area that has been designated as an accident potential zone II. Such property may be characterized by high noise levels and accident potential resulting from aircraft operations (only if located within APZ II).

(6) The involved property is located within an area that has been designated as an accident potential zone I. Such property may be characterized by high noise levels and significant accident potential resulting from aircraft operations (only if located within APZ I).

iii. This requirement to provide notice to prospective purchasers and record such notice shall only apply to the transaction between the developer or home builder and the initial home purchaser and does not apply upon any subsequent sale of the property.

*(Ord. No. 2001-72, 12-3-2001; Ord. No. 2006-06, 4-8-2006)*

### **DIVISION 3. GENERAL AVIATION AIRPORT INFLUENCE DISTRICT: CENTENNIAL AIRPORT, FRONT RANGE AIRPORT**

#### **Sec. 146-812. Application of Regulations.**

(A) Nothing contained in this district shall require any change or alteration in a lawfully constructed building or structure in existence at the time of adoption of the ordinance from which this district derives.

- (B) This district is intended to regulate the following:
1. The erection or establishment of any new building or use.
  2. Any addition or expansion or series of additions that would add more than 1,000 square feet to an existing habitable building or structure.
  3. The moving or relocation of any habitable building or structure to a new site or new location.
  4. The change from one use to another of any building, structure, or land or the re-establishment of a nonconforming use after its discontinuance for a period of one year or more from the effective date of the ordinance from which this district derives.
- (C) *Overlay Zone.* This district shall be applied as an overlay zone. The application of this district is in addition to the provisions of the underlying zone districts. Where the provisions of this district conflict with those of the underlying zone district, the regulations of this district shall control.

(Ord. No. 2001-72, 12-3-2001; Errata (2) of 12-30-2002, 8)

**Sec. 146-813. Subareas.**

- (A) *Subarea Boundaries.* The boundaries of the subareas created under this subdivision shall be determined by scaling distances on the general aviation compatible use zone map. Where interpretation is needed as to the exact location of the boundaries of the subarea, the director of planning shall make the necessary determination of the boundary. A property owner requesting a determination as to the location of a subarea boundary affecting his or her property shall be given a reasonable opportunity to present his or her application to the director of planning, and to submit his or her own evidence if he or she so desires. The decision of the director of planning may be appealed to the city council, provided such appeal shall be filed with the city manager within 10 days of the director's decision. The city council shall have the power to overrule the director's decision by a vote of the majority of council members present and voting.
- (B) *General Aviation Compatible Use Zone.* To carry out the purpose of this district, the general aviation compatible use zone is created and established, as bounded and defined on the map entitled "General Aviation Compatible Use Zone Map" (exhibit A) on file in the office of the director of planning, together with all references, notations, and other information shown thereon, and such map is adopted by reference and declared to be part of this article as if such map and information thereon were fully described and set forth in this article. The general aviation compatible use zone consists of the following overlay subareas:
1. LDN 55 subarea.
  2. LDN 65 subarea.
  3. LDN 60 subarea.

4. Airport influence district.

(Ord. No. 2001-72, 12-3-2001)

**Sec. 146-814. LDN 65 Subarea.**

- (A) *Description.* The LDN 65 subarea is composed of lands located within an LDN 65 noise contour generated by aircraft operating into and out of the involved general aviation airport.
- (B) *Uses Prohibited.* No new residences, hospitals, places of worship, libraries, cultural centers, child care centers, preschools, non-airport-related educational facilities, or similar facilities shall be permitted within the LDN 65 subarea.
- (C) *Noise Level Reduction.* Office, commercial, or other nonresidential uses or structures where the public is received, which are permitted by the underlying zone, shall provide and include noise level reduction measures in the design and construction of all areas where the public is received to achieve an interior noise level reduction of 25 decibels in A-weighted levels as determined or calculated in accordance with article 10 of chapter 22 of this Code.

(Ord. No. 2001-72, 12-3-2001)

**Sec. 146-815. LDN 60 Subarea.**

- (A) *Description.* The LDN 60 subarea is composed of lands that are located within an LDN 60 noise contour generated by aircraft operations into and out of the involved general aviation airport.
- (B) *Uses Prohibited.* No new residential uses or structures shall be permitted within the LDN 60 subarea.

(Ord. No. 2001-72, 12-3-2001)

**Sec. 146-816. LDN 55 Subarea.**

- (A) *Description.* The LDN 55 subarea is composed of lands located between the LDN 55 and LDN 60 noise contours, inclusive, generated by aircraft operations into and out of the involved general aviation airport.
- (B) *Noise Level Reduction Measures.* New residential uses or structures permitted by the underlying zone and within the LDN 55 subarea shall provide and include noise level reduction measures in the design and construction of all habitable structures to achieve an interior noise level reduction of 25 decibels in A-weighted levels as determined or calculated in accordance with article 10 of chapter 22 of this Code. Noise reduction measures shall include central air conditioning or an equivalent thereof.

(Ord. No. 2001-72, 12-3-2001)

## **Sec. 146-817. Airport Influence District.**

(A) *Description.* The airport influence district is composed of lands located within an area affected by noise or safety hazards associated with aircraft operations at general aviation airports.

(B) *Height Restrictions.* Development in the airport influence district shall comply with height restrictions in the underlying zone district, which do not intrude into FAR part 77 surfaces for civil airports.

(C) *Easement.* Within the airport influence district, an aviation and hazard easement shall be conveyed to the city and the airport by any person subdividing lands or initiating construction of any structure on already subdivided lands within the airport influence district. The city and the respective involved general aviation airport shall be the grantees of such aviation easement. Such aviation easement shall be an easement for right-of-way for unobstructed passage of aircraft above the property. Such easement shall waive any right or cause of action against the city and the airport arising from noise, vibrations, fumes, dust, fuel particles, and other effects caused by aircraft and airport operations. The aviation easement shall be in a form approved by the city attorney and shall be recorded in the office of the appropriate county clerk and recorder before permit or plat approval is granted.

(D) *Notice.* Vendors of real property located within the airport influence district shall provide the following notice to prospective purchasers:

- i. In 14-point bold type on a single sheet of paper which is signed by the prospective purchaser prior to entering into a contract for purchase:

### **NOTICE OF AIRPORT IN VICINITY**

This property is located in the vicinity of an airport, within what is known as an airport influence district. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

- ii. and cause the following notice to be recorded with the clerk and recorder of the appropriate county.

### **NOTICE**

The property known as: (legal description and address) is located within an area which has been officially designated as an airport influence district by the City of Aurora. As a result of this designation, the property is subject to the following:

- (1) An aviation and hazard easement has been granted to the City of Aurora and (name of airport) airport recorded in book (book number) at page (page number), (county) County, Colorado, which allows for the unobstructed passage of aircraft above the property and provides for the waiver of any right or cause of action against the City of

Aurora and the airport due to noise, vibration, fumes, smoke, dust, or fuel particles caused by aircraft or airport operations.

(2) The use and the enjoyment of the property may be affected by aircraft noise, vibrations, fumes, smoke, dust, or fuel particles from aircraft operation.

(3) The City of Aurora has required that noise mitigation construction techniques be employed in the construction of this home to mitigate the noise to which the property is exposed. The vendor certifies that the applicable noise mitigation measures have been installed as required. This paragraph is only applicable if the property is located in the LDN 55 subarea.

iii. This requirement to provide notice to prospective purchasers and record such notice shall only apply to the transaction between the developer or home builder and the initial home purchaser and does not apply upon any subsequent sale of the property.

*(Ord. No. 2001-72, 12-3-2001)*

#### **DIVISION 4. AIRPORT INFLUENCE DISTRICT OF DENVER INTERNATIONAL AIRPORT**

##### **Sec. 146-818. Application of Regulations.**

- (A) Nothing contained in this district shall require any change or alteration in a lawfully constructed building or structure in existence at the time of the adoption of the ordinance derived from this district.
- (B) This district is intended to regulate the following:
  - 1. The erection or establishment of any new building or use;
  - 2. The addition or expansion to an existing habitable building or structure when such addition or expansion is greater than 1,000 square feet;
  - 3. The relocation of any habitable building or structure to a new location;
  - 4. The change of use in any building, structure, or land, or the re-establishment of a nonconforming use after its discontinuance for a period of one year or more from the effective date of the ordinance derived from this district.
- (C) This district shall be applied as an overlay zone. The application of this district is in addition to the provisions of the underlying zone districts. Where the provisions of this district conflict with those of the underlying zone district, the regulations of this district shall control.

*(Ord. No. 2001-72, 12-3-2001)*

**Sec. 146-819. Subareas.**

- (A) *Interpretation of Area Boundaries.* The boundaries of the areas described in this district shall be determined by scaling distances on the airport noise contour map. Where interpretation is needed as to the exact location of the boundaries of the airport areas shown on the airport noise contour map, the director of planning shall make the determination. A property owner contesting the location of an area boundary affecting his or her property shall be given a reasonable opportunity to present his or her case to the director of planning and to submit his or her own evidence. The decision of the director of planning may be appealed to the city council, provided that the appeal is filed with the city manager within 10 days of the director's decision. The city council shall have the power to overrule the director's decision by a vote of a majority of the council members present and voting.
- (B) *Commercial Aviation Compatible Use Zone.* To carry out the purpose of this district, the commercial aviation compatible use zone is created and established, as bounded and defined on the map entitled "Commercial Aviation Compatible Use Zone Map" (exhibit A). Such map is on file in the office of the director of planning, together with all references, notations, and other information shown thereon. The commercial aviation compatible use zone consists of the following overlay districts:
1. LDN 65 subarea
  2. Commercial airport noise areas. (LDN 60)
  3. Noise impact boundary areas.
  4. Airport influence district.

(Ord. No. 2001-72, 12-3-2001)

**Sec. 146-819.1 LDN 65 Subarea.**

- (A) *Description.* The LDN 65 subarea is composed of lands located with the LDN 65 noise contour generated by aircraft operating into and out of Denver International Airport.
- (B) *Uses Prohibited.* No new residences, hospitals, places of worship, libraries, cultural centers, child care centers, preschools, non-airport related educational facilities, or similar facilities shall be permitted within the LDN 65 subarea.
- (C) *Noise Level Reduction.* Office, commercial, or other nonresidential uses or structures where the public is received, which are permitted by the underlying zone, shall provide and include noise level reduction measures in the design and construction of all areas where the public is received to achieve an interior noise level reduction of 25 decibels in A-weighted levels as determined or calculated in accordance with Article 10 Chapter 22 of this code.

(Ord. No. 2006-06, 4-8-2006)

**Sec. 146-820. Commercial Airport Noise Areas (CANAs).**

- (A) *Description.* The CANA subarea is composed of lands that are located within an LDN 60 noise contour generated by aircraft operations into and out of the Denver International Airport.
- (B) *Uses Prohibited.* No new residential uses or structures shall be permitted within the commercial airport noise areas.
- (C) *Noise level reduction measures.* A habitable building addition to an existing residential structure within the commercial airport noise areas may be permitted. However, any such addition greater than 1,000 square feet shall provide and include noise level reduction measures in the design and construction of the building addition. Such measures shall achieve an interior noise level reduction of 30 dB in A-weighted levels, as determined or calculated in accordance with article 10 of chapter 22 of this Code.

(Ord. No. 2001-72, 12-3-2001; Errata of 9-11-2002, 21)

**Sec. 146-821. Noise Impact Boundary Areas (NIBAs).**

- (A) *Description.* The NIBA subarea is composed of lands that are located within an LDN 55 noise contour generated by aircraft operations into and out of the Denver International Airport.
- (B) *Noise Level Reduction Measures.* Residential uses or structures permitted by the underlying zone and within the noise impact boundary areas shall provide and include noise level reduction measures in the design and construction of all habitable structures. Such measures shall achieve an interior noise level reduction of 25 dB in A-weighted levels, as determined or calculated in accordance with article 10 of chapter 22 of this Code. Noise reduction measures shall include central air conditioning or equivalent.

(Ord. No. 2001-72, 12-3-2001; Ord. No. 2006-06, 4-8-2006)

**Sec. 146-822. Airport Influence District.**

- (A) *Description.* The airport influence district is composed of lands located within an area affected by noise or safety hazards associated with aircraft operations at commercial aviation airports. Within the City of Aurora, the airport influence district around Denver International Airport (DIA) is defined as the NIBA.
- (B) *Height Restrictions.* Development in the airport influence district shall comply with height restrictions in the underlying zone district, which do not intrude into FAR part 77 surfaces for civil airports.
- (C) *Easement.* Within the airport influence district, an aviation and hazard easement shall be conveyed to the city and the airport by any person subdividing lands or initiating construction of any structure on already subdivided lands within the airport influence district. The city and the respective involved commercial aviation airport shall be the grantees of such aviation easement. Such aviation easement shall be an easement

for right-of-way for unobstructed passage of aircraft above the property. Such easement shall waive any right or cause of action against the city and the airport arising from noise, vibrations, fumes, dust, fuel particles, and other effects caused by aircraft and airport operations. The aviation easement shall be in a form approved by the city attorney and shall be recorded in the office of the appropriate county clerk and recorder before permit or plat approval is granted.

- (D) *Notice.* Vendors of real property located within the airport influence district shall provide the following notice to prospective purchasers:
- i. In 14-point bold type on a single sheet of paper which is signed by the prospective purchaser prior to entering into a contract for purchase:

#### NOTICE OF AIRPORT IN VICINITY

This property is located in the vicinity of an airport, within what is known as an airport influence district. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

- ii. and cause the following notice to be recorded with the clerk and recorder of the appropriate county.

#### NOTICE

The property known as: (legal description and address) is located within an area which has been officially designated as an airport influence district by the City of Aurora. As a result of this designation, the property is subject to the following:

- (1) An aviation and hazard easement has been granted to the City of Aurora and (name of airport) airport recorded in book (book number) at page (page number), (county) County, Colorado, which allows for the unobstructed passage of aircraft above the property and provides for the waiver of any right or cause of action against the City of Aurora and the airport due to noise, vibration, fumes, smoke, dust, or fuel particles caused by aircraft or airport operations.
- (2) The use and the enjoyment of the property may be affected by aircraft noise, vibrations, fumes, smoke, dust, or fuel particles from aircraft operation.
- (3) The City of Aurora has required that noise mitigation construction techniques be employed in the construction of this home to mitigate the noise to which the property is exposed. The vendor certifies that the applicable noise mitigation measures have been installed as required. This paragraph (3) is only applicable if the property is located in the NIBA subarea.

- iii. This requirement to provide notice to prospective purchasers and record such notice shall only apply to the transaction between the developer or home builder and the initial home purchaser and does not apply upon any subsequent sale of the property.

(Ord. No. 2001-72, 12-3-2001; Ord. No. 2006-06, 4-8-2006)

## Santa Rosa County ARTICLE 11. AIRPORT ENVIRONS\*

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**\*Editor's note:** Ord. No. 2005-07, § 1, adopted April 14, 2005, repealed Art. 11, §§ 11.00.00--11.11.00, in its entirety. Said ordinance further provided for a new Art. 11 to read as herein set out. See the Code Comparative Table for a detailed analysis of inclusion.

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### 11.00.00. Findings.

The Board of County Commissioners of Santa Rosa County has considered, among other things, the character of the operations conducted and proposed to be conducted at the various airports in the applicable areas of Santa Rosa County, the nature of the terrain and the character of the area within the airport hazard area; the current uses of property and the uses for which it is applicable, and the board finds as follows:

- A. There exist airports within Santa Rosa County and in proximity to Santa Rosa County whose operations are potentially inimical to the health, safety and general welfare of the citizens of Santa Rosa County;
- B. Airport hazards endanger the lives and property of users of airports and occupants and owners of property in their vicinity;
- C. Airports produce noise which is not compatible with residential uses and certain commercial and industrial uses;
- D. Obstructions reduce the size of the area available for the landing, taking off and maneuvering of aircraft, thus tending to destroy or impair the utility of the airport and the public investment therein;
- E. The creation or establishment of an airport hazard injures the community served by the airport in question; and
- F. In the interest of the public health, safety and general welfare, the creation or establishment of airport hazards must be prevented.

(Ord. No. 2005-07, § 1, 4-14-05)

### 11.01.00. Applicability.

The regulations on land use set forth herein are applicable to all lands within the delineated zones and surfaces set forth in this article. The delineated zones shall be an overlay district established and delineated on the adopted zoning maps.

(Ord. No. 2005-07, § 1, 4-14-05)

### 11.02.00. Conflicting regulations.

In the event of conflict between any regulations in this article and any other regulations applicable to the same property, the more stringent limitation or regulation shall govern and prevail.

(Ord. No. 2005-07, § 1, 4-14-05)

11.03.00. Public airport zones and surfaces.

The following definitions describe special zones or surfaces within, adjacent to or near a public airport. These special zones or surfaces are used to protect specific airspace areas or specific ground areas within the airport environ. All imaginary surfaces shall be consistent with the most recent applicable definitions set forth in Federal Air Regulations (FAR) Part 77 (Obstructions to Navigable Airspace).

A. *Primary surface*: means an area longitudinally centered on a runway, extending two hundred (200) feet beyond each paved end. For Peter Prince Field, the primary surface is the areas within two hundred (200) linear feet from the edge of the runway end and a width of five hundred (500) feet.

B. *Runway Protection Zone (RPZ)*: The RPZ extends from each end of the primary surface to enhance the protection of people and property on the ground. The Runway Protection Zone is trapezoidal in shape and centered about the extended runway centerline. The RPZ dimension for a particular runway end is a function of the type of aircraft and the approach visibility minimum associated for that runway end. For Peter Prince Airport, the dimensions for the RPZ shall be that which is established within the most recent Peter Prince Airport Master Plan approved by the board of county commissioners. The dimensions for Peter Prince Airport's Runway Protection Zone for runways 18 and 36 are as follows (and as illustrated below):

Peter Prince Runway Protection Zone Dimensions

TABLE INSET:

RPZ Dimensions	Measurement
Inner Width	500 feet
Outer Width	700 feet
Length	1,000 feet

C. *Approach Surface (AS)*: A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end. The approach surface for Runway 18 and 36 for Peter Prince Field is as follows:

The approach surface extends for a horizontal distance of:

Inner width: Five hundred (500) feet

Outer width: One thousand five hundred (1,500) feet

Length: Five thousand (5,000) feet

Slope 20:1

D. *Approach surface floor (ASF)*: The ground or water surface beneath the approach surface. For Peter Prince Airport (public), for purposes of this ordinance, the approach surface floor shall extend five thousand (5,000) feet from the ends of the primary surface established as of July 1, 2004. The approach surface floor may extend beyond the approach surface established within the most recent Peter Prince Airport Master Plan. Any portion of the approach surface floor extending beyond the outer end of the

approach surface will have the samewidth as the greatest width of the approach surface.

E. *Horizontal surface*: The horizontal surface is a horizontal plane located one hundred fifty (150) feet above the established airport elevation, covering an area from the transitional surface to the conical surface. The perimeter is constructed by swinging arcs from the center of each end of the primary surface and connecting the adjacent arcs by lines tangent to those areas. For Peter Prince Airport, the horizontal surface extends ten thousand (10,000) feet in radii from the end of the primary surface.

F. *Conical surface*: A surface extending outward and upward from the periphery of the horizontal surface at a slope of twenty (20) to one (1) for a horizontal distance of four thousand (4,000) feet.

G. *Conical surface floor (CSF)*: The ground or water surface beneath the conical surface.

H. *Transitional surface*: Transitional surfaces extend outward and upward at right angles to the runway centerline and are extended at a slope of seven (7) feet horizontally for each foot vertically (7:1) from the sides of the primary and approach surfaces. The transitional surfaces extend to where they intercept the horizontal surface at a height of one hundred fifty (150) feet above the runway elevation.

I. *Public Airport Zone (PAZ)*: The Public Airport Zone is an overlay district that addresses land use compatibility with airport operations and structure height within the immediate airport vicinity most affected by take-off and landing patterns and airport ground activities. It covers an area extending one-half ( 1/2) mile from the runway. The Public Airport Zone includes any portion of imaginary surfaces defined by Federal Aviation Regulations (FAR, Part 77) that lie within its half-mile perimeter. Serving principally to protect the airport from the encroachment of incompatible development, the Public Airport Zone also serves to protect health, safety, and quality of life for people living, working, or visiting the area most affected by airport activities.

J. *Public airport influence area (PAIA)*: The public airport influence area (PAIA) extends a distance of two (2) miles from the runway centerline and contains those areas defined by Federal Aviation Regulations (FAR, Part 77) as imaginary surfaces. It serves principally to addresses land uses and structure heights that may create potential threat to flight safety and operation for aircraft approaching or departing an airport.

K. *Public Airport Notification Zone*: Public Airport Notification Zones are those areas within which notification of airfield proximity is required when property is sold or leased. The notification zone for Peter Prince is the same area as the Public Airport Zone.

*11.03.01. Height limitations within public airport environs.*

A building, structure, use or tree that penetrates any of the Federal Aviation Administration's designated imaginary surfaces or zones constitutes an obstruction, as defined by Federal Air Regulations (FAR), Part 77. Height of buildings, structures, or trees within environs surrounding a public airport shall not create an unreasonable threat to aircraft operations and safety.

A. Any property or area located in more than one (1) of the zones or surfaces described in this section shall be considered to be only in the zone or surface with the more restrictive height limitation.

B. Except as otherwise provided, no structure shall be constructed or maintained, or tree permitted to grow within any zone or surface created herein in excess of the height limitations established herein. In addition, no structure or obstruction will be permitted within Santa Rosa County that could potentially change minimum obstruction clearance altitude, minimum descent altitude or a decision height.

C. A structure or tree will not exceed thirty-five (35) feet in height; or, if greater than thirty-five (35) feet in height, will not penetrate the approach, transitional, horizontal, or conical surface zones of the airport for any existing or planned approaches as defined by FAR, Part 77. The height of structures and trees within a public airport environ shall comply with restrictions set forth in Table 11-1.

Table 11-1  
Height Restrictions for Peter Prince Airport Environ

TABLE INSET:

Structure Type	Runway Protection Zone (RPZ)	Approach Surface Floor	PAZ	Conical Surface Floor	PAIA
Single Family Residential Structure	Structure Not Allowed	1	1	1	1
Multiple Family Residential Structure	Structure Not Allowed	1	Structure Not Allowed	1	1
Non-Residential (Habitable Space)	Structure Not Allowed	1	1	1	1
Non-Residential Facade (Non-Habitable Space), Steeples, Chimneys, Smoke Stacks	Structure Not Allowed	50'	50'	1	1
Communication Towers/Radio or TV Transmission Towers	Structure Not Allowed	Structure Not Allowed	Structure Not Allowed	150'	150'
Water Tower	Structure Not Allowed	Structure Not Allowed	50'	150'	150'
Above Ground Local Utility or Electric Service Lines	Structure Not Allowed	1	1	1	1
Regional Electric Transmission Lines	Structure Not Allowed	150'	Structure Not	150'	150'

			Allowed		
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1 Height restricted by applicable zoning category unless otherwise restricted by this ordinance.

*11.03.02. New public or private airports.*

Development or expansion of any public or private airport, airfield, or landing strip, developed or expanded after the effective date of this article, requires the establishment of a public airport overlay zone (PAZ) through an ordinance adopted by the county commission. Airports or runways shall only be located on property assigned an industrial zoning category on the official zoning map. Airports owned or controlled by a military branch are not public airport for the purposes of this article.

All new public or private airports, heliports, or landing fields shall be designed so that the incidence of aircraft passing near preexisting dwellings or places of public assembly is minimized. New public or private airports shall be located in areas where air traffic will not expose residential uses to more than fifty-five (55) decibel (day/night average) noise levels.

*11.03.03. Use restrictions.*

Notwithstanding any provision of Article 6 of this ordinance, the permitted land use for any property within a Public Airport Zone or public airport influence area shall be modified as set forth in Table 11-2.

A. Any property or area located in more than one (1) of the zones or surfaces described in Section 11.03.00 shall be considered only in the zone or surface with the more restrictive or limited use.

B. Incompatible uses or activities: Uses or activities determined to be incompatible with airport operations, or contribute to a potential threat to flight safety, are prohibited within the designated zone or surface. An "N" appearing under a zone or surface category in Table 11-2 means that the use or activity is incompatible and not allowed.

C. Compatible uses or activities: Article 6 provides generalized description of permitted uses and activities for each zoning category. Table 11-2 provides a more detail description of uses and activities that are determined to be compatible with airport operations and aircraft flight safety for public airports. A land use is a permissible use within an airport zone or imaginary surface category if such use is allowed within the underlying zoning category, as defined in Article 6, and if denoted as a compatible use within Table 11-2. A land use is compatible in an airport zone or imaginary surface if denoted by a "Y" in Table 11-2.

D. Conditional uses or activities: Certain land uses are incompatible with and prohibited within a airport environ zone or surface except when a development complies with conditions or specific development standards that create compatibility. Land uses denoted with a "C" in Table 11-2 are not allowed unless determined to be compliant with conditional use criteria set forth in Section 11.03.05.

Table 11-2

## Use Restrictions within Public Airport Environs Zones and Surfaces

TABLE INSET:

Land Use	RPZ	ASF	PAZ	PAIA
Residential				
Single Family Dwelling	N	Y	Y	Y
Multifamily Dwellings, Including Duplexes	N	N	N	Y
Transient Lodging Including Hotels And Group Quarters	N	N	Y	Y
Industrial/Manufacturing				
Food And Kindred Products; Textile Mill Products; Paper Mills; Any Use Industrial Activity Generating Smoke Or Steam Reaching 150 Feet Above Ground Level	N	N	N	N
Apparel; Chemicals & Allied Products Activities; Petroleum Refining & Related Rubber & Misc. Plastic Products	N	N	N	C
Lumber & Wood Products; Furniture & Fixtures; Paper And Allied Products; Printing & Publishing; Stone, Clay & Glass Products; Primary Metal Industries; Fabricated Metal Products; Product Assembly; Motor Freight	N	N	Y	Y
Professional, Scientific & Control Instruments	N	N	Y	Y
Any Manufacturing Sensitive To Ground or Air Vibration	N	N	N	C
Printing And Publishing	N	Y	Y	Y
Aerospace Product, Parts Manufacturing, Or Related Activities	N	N	Y	Y
Business and Professional Services				
Finance; Real Estate; Insurance; Personal Services; Business Services; Professional Services; Indoor Recreation Services	N	N	Y	Y
Telemarketing Bureaus	N	N	N	Y
Hospitals, Medical Offices	N	N	C	Y
Communications And Utilities				
Telecommunication Towers	N	N	N	Y
Water Impoundments; Wet Stormwater Ponds	N	N	Y	Y
Agriculture				
Aviaries; Pigeonry Including Pigeon Lofts Or Racing	N	N	N	N
Outdoor Aquaculture And Fish Hatcheries	N	N	N	N
Agriculture Except Livestock	Y	Y	Y	Y

Livestock Farming; Animal Productions; Animal Breeding; Kennels	N	C	Y	Y
Crop Farming Requiring Disturbance of Soil	N	Y	Y	Y
Forestry Activities	N	C	Y	Y
Exotic Farm Animals (Ostrich, Emus, Alpaca, etc.)	N	N	N	Y
Mining And Extraction				
Mining Activities (Including Borrow Pits)	N	Y	Y	Y
Commercial/Retail Trade				
Wholesale Trade; Building Material; Hardware; Farm Equipment (Retail); Auto, Marine, Aviation (Retail)	N	N	Y	Y
General Merchandise (Retail); Food Retail; Apparel And Accessories (Retail); Shopping Centers	N	N	Y	Y
Furniture; Home Furnishings (Retail)	N	N	Y	Y
Eating & Drinking Establishments	N	N	C	Y
Eating & Drinking Establishments, Outdoor Seating	N	N	N	Y
Fire Work Sales	N	N	N	Y
Outdoor Food Vendors	N	N	Y	Y
Warehousing And Storage Services	N	Y	Y	Y
Personal & Business Services				
Finance; Real Estate; Insurance; Personal Services; Business Services; Professional Services; Indoor Recreation Services	N	N	Y	Y
Repair Services; Contract Construction Services	N	Y	Y	Y
Automobile Service Stations	N	N	Y	Y
Conservation				
Wetland Mitigation	N	N	C	C
Nature Exhibits, Zoos	N	N	Y	Y
Public, Public Assembly, Quasi-Public Services				
Government Services	N	N	Y	Y
Educational Services (Including Private Schools); Cultural Activities; Libraries	N	N	C	Y
Civic Or Non-Profit Social Organizations	N	N	Y	Y
Cemeteries	N	N	Y	Y
Religious Buildings; Chapels	N	N	Y	Y
Public Assembly	N	N	C	Y

Outdoor Recreation And Entertainment				
Playground; Neighborhood Parks	N	C	Y	Y
Community & Regional Parks	N	N	Y	Y
Spectator Sports Including Arenas Or Stadiums	N	N	Y	Y
Golf Courses; Driving Ranges (no lighted facilities)	N	N	Y	Y
Lighted Golf Courses; Driving Ranges	N	N	N	Y
Riding Stables; Equestrian Facilities	N	N	N	Y
Entertainment Assembly; Amphitheater; Music Shell	N	N	N	Y
Amusement Or Theme Parks; Miniature Golf, Go-Carts	N	N	Y	Y
Resorts And Campgrounds; RV Parks	N	N	N	Y
Outdoor Gun Clubs, Shooting Or Archery Ranges	N	N	N	C
Movie Theatres, Live Theatre, Auditoriums, Concert Halls	N	N	N	Y
Outdoor Movie Theatres, Light/Laser Shows	N	N	C	C
Transportation, Communication And Utilities				
Wet stormwater ponds	N	Y	N	Y
Railroads	N	Y	Y	Y
Automobile Or Truck Parking	N	C	Y	Y
Unpaved Local Streets	C	Y	Y	Y
Highways And Paved Streets	N	C	Y	Y
Solid Waste Disposal (Landfills, Incineration, Etc.)	N	N	N	N

Abbreviations/Acronyms Associated with Table 11-2

RPZ - Runway protection zone for public airfield

ASF - Approach surface floor

PAZ - Public airport zone

PAIA - Public airport influence area

C - Conditional use

N - Use located in a zone or surface is incompatible with airport activities and is prohibited.

Y - Use is compatible within the zone or surface indicated.

*11.03.05. Conditional use criteria.*

This subsection section is used in conjunctions with Table 11-2 for the purposes of placing regulatory conditions on proposed development or uses to establish land use compatibility with public airport operations. This criteria is to be applied to those land uses denoted under a zone or surface as a conditional use.

A. The site size, dimensions, location, topography and access are adequate for the needs of the proposed use, considering the proposed building mass, parking, and traffic as well as noise, vibration, odor or dust generated by airport activities.

B. The negative impacts of the proposed use on aircraft flight safety and on the use of airport facilities can be mitigated through application of other Code standards, or other reasonable conditions of approval. A property owner demonstrates that exhaust, emissions, light, glare, or dust will not reduce the effective use of the airport or increase risk for hazards or accidents within the Public Airport Zone.

C. All required public facilities have adequate capacity to serve the proposal.  
(Ord. No. 2005-07, § 1, 4-14-05)

#### 11.04.00. Military airport zones and surfaces.

The following definitions describe special zones within, adjacent to or near a military airport. These special zones are used to protect specific airspace areas or specific ground areas within the military airport environ.

A. *Accident Potential Zone 1:* Accident Potential Zone (APZ) 1 is an area beyond the clear zone that exhibits a measurable potential for accidents relative to the clear zone. The APZ may curve to follow flight tracks.

B. *Accident Potential Zone 2:* APZ 2 is an area beyond APZ 1 that exhibits a measurable potential for aircraft accidents relative to APZ 1 or the clear zone. The APZ may curve to follow flight tracks.

C. *Approach Surface:* The area longitudinally centered on each runway centerline, with an inner boundary two hundred (200) feet from the end of the runway and the same width as the primary surface then extending outward for a distance of fifty thousand (50,000) feet expanding uniformly in width to sixteen thousand (16,000) feet at the outer boundary. Height limits within the approach surface commence at the height of the runway end and increases at the rate of one (1) foot vertically for every fifty (50) feet horizontally for a distance of twenty-five thousand (25,000) feet at which point it remains level at five hundred (500) feet above airport elevation to the outer boundary.

D. *Clear Zone:* The clear zone is an area immediately beyond the end of a runway and exhibits the greatest potential for occurrence of aircraft accidents.

E. *Conical surface:* A surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20:1 for a horizontal distance of seven thousand (7,000) feet to a height of five hundred (500) feet above the established airfield clearance.

F. *Inner-horizontal surface:* The area encompassing the runway, primary surface and clear zone with an outer perimeter formed by swinging arcs from the end of each runway centerline and connecting adjacent arcs by lines tangent to these arcs. The radius of the arcs are seven thousand five hundred (7,500) feet. No structure or obstruction will be permitted in the inner-horizontal surface of a greater height than one hundred fifty (150) feet above airport elevation.

G. *Military Airport Zone (MAZ):* The Military Airport Zone (MAZ) is an overlay district providing regulatory measures and zoning standards to achieve land use compatibility and protection of public health and safety in the areas exposed to impacts generated by military flight or ground activities occurring at, near, or above military airports.

For Naval Air Station Whiting Field North and South, and for Naval Outlying Landing Fields Spencer, Harold, Santa Rosa, Holley, and Pace, the MAZ boundaries extend one-half ( 1/2) mile from the perimeter of each airfield and encompass all Air Installation Compatible Use Zones (AICUZ) and noise zones. For NOLF Choctaw, MAZ boundaries

encompass that area bounded by the Yellow River to the north, Eglin Air Force Base to the east, East Bay to the west, and the East Bay River to the south.

H. *Military airport influence area (MAIA)*: An MAIA extends two (2) miles from a runway. It serves principally to address land uses and structure heights that may create potential threat to flight safety and operation for aircraft approaching or departing an airport or within a local flight pattern.

I. *Military Airport Notification Zone*: Military Airport Notification Zones are those areas within which notification of airfield proximity is required when property is sold or leased. For Naval Air Station Whiting Field North and South, and for Naval Outlying Landing Field Holley, the notification zone boundaries extend one (1) mile from the perimeter of each airfield. For Naval Outlying Fields Spencer, Harold, Santa Rosa and Pace, the notification zone boundaries extend one-half ( 1/2) mile from the perimeter of each airfield. For NOLF Choctaw, the notification zone boundaries encompass that area bounded by the Yellow River to the north, Eglin Air Force Base to the east, East Bay to the west, and the East Bay River to the south.

J. *Noise contour*: A line connecting points of similar day-night average sound levels measured from a specific noise source.

K. *Outer-horizontal surface*: The area extending outward from the outer periphery of the conical surface is five hundred (500) feet above airport elevation.

L. *Primary surface*: An area longitudinally centered on each runway and extending two hundred (200) feet beyond the runway end. The width of the primary surface varies for the type of aircraft accommodated as follows:

1. Jets and large turbo-prop aircraft--One thousand five hundred (1,500) feet.
2. Prop and small turbo-prop aircraft--One thousand (1,000) feet.

M. *Transitional surface*: The area with an inner boundary formed by the side of the primary surface and the approach surface then extending outward at a right angle to the runway centerline and extended centerline until the height matches the adjoining inner horizontal surface, conical surface and outer horizontal surface height limit. The height limit at the inner boundary is the same as the height limit of the adjoining surface and increases at the rate of one (1) foot vertically for every seven (7) feet horizontally to the outerboundary of the transitional surface, where it again matches the height of the adjoining surface.

(Ord. No. 2005-07, § 1, 4-14-05)

*11.04.01. Height limitations within military airport environs.*

A. Any property or area located in more than one (1) of the zones or surfaces described in this section shall be considered to be only in the zone or surface with the more restrictive height limitation.

B. Except as otherwise provided, no structure shall be constructed or maintained, or tree permitted to grow within any zone or surface created or referenced herein in excess of the height limitations established herein. In addition, no structure or obstruction will be permitted within Santa Rosa County that could potentially change minimum obstruction clearance altitude, minimum descent altitude or a decision height.

C. A structure will not exceed thirty-five (35) feet in height; or, if greater than thirty-five (35) feet in height, will not penetrate any existing or planned inner horizontal surface,

conical surface, outer horizontal surface, approach clearance surface, or transitional surface established pursuant to FAR, Part 77, for military airports.

D. A building, structure, use or tree that penetrates any imaginary surfaces or zones for military airports, as defined by Federal Aviation Regulation, Part 77, constitutes an obstruction. Height of buildings, structures, or trees within military airport environs shall not create an unreasonable threat to aircraft operations and safety. Height limitations established for each designated zones or surfaces for military airport environs are provided within Table 11-3.

Table 11-3  
Height Restrictions for Military Airport Zones

TABLE INSET:

Structure Type	Clear Zone	APZ	APZ 2	MAZ	MAIA
Single Family Residential Structure	Structure Not Allowed	35'	35'	35'	1
Multiple Family Residential Structure	Structure Not Allowed	Structure Not Allowed	Structure Not Allowed	Structure Not Allowed	1
Non-Residential (Habitable Space)	Structure Not Allowed	35'	50'	50'	1
Non-Residential Facade (Non-Habitable Space), Steeples, Chimneys, Smoke Stacks	Structure Not Allowed	35'	50'	50'	
Communication Towers/Radio or TV Transmission Towers	Structure Not Allowed	Structure Not Allowed	Structure Not Allowed	Structure Not Allowed	150'
Water Tower	Structure Not Allowed	Structure Not Allowed	Structure Not Allowed	Structure Not Allowed	50'
Above Ground Local Utility or Electric Service Lines	Structure Not Allowed	1	1	1	1
Regional Electric Transmission Lines	Structure Not Allowed	Structure Not Allowed	Structure Not Allowed	Structure Not Allowed	150'

1 Height restricted by applicable zoning category unless otherwise restricted by this ordinance.

11.04.02. Use restrictions.

Notwithstanding any provision of Article 6 of this ordinance, the permitted land use for any property within a Military Airport Zone or a Military Airport Influence Area shall be modified as set forth in Table 11-4.

A. Any property or area located in more than one (1) of the zones or surfaces described in Section 11.04.00 shall be considered only in the zone or surface with the more restrictive or limited use.

B. Incompatible uses or activities: Uses or activities determined to be incompatible with airport operations, or contribute to a potential threat to flight safety, are prohibited within the designated zone or surface. An "N" appearing under a zone or surface category in Table 11-4 means that the use or activity is incompatible and not allowed in that zone or area.

C. Compatible uses or activities: Article 6 provides generalized description of permitted uses and activities for each zoning category. Table 11-4 provides a more detail description of uses and activities that are determined to be compatible with airport operations and aircraft flight safety. A "Y" appearing under a zone or surface category in Table 11-4 means that the use or activity is permitted if the property or area is assigned a zoning category pursuant to Article 6 and a future land use designation pursuant to the Future Land Use Map of the Comprehensive Plan.

D. Conditional uses or activities: The land uses permitted by Article 6 are incompatible with and prohibited within a zone or surface except if such use complies with conditions or standards creating compatibility. A conditional use established under this section is only allowed where the underlying zoning allows such use pursuant to Article 6. Such uses or activities classified as a conditional use are denoted in Table 11-4 by a "C" under the applicable zone or surface. Conditional use criteria or additional development standards are described in Section 11.04.04.

Table 11-4  
Potential Compatible Uses within Military Airport Zones

TABLE INSET:

Land Use	CZ	APZ 1	APZ 2	MAZ	MAIA
Residential					
Single Family Dwelling	N	C, 1	C, 2	Y	Y
Multifamily Dwellings, Including Duplexes	N	N	N	N, 7	Y
Transient Lodging Including Hotels and Group Quarters	N	N	N	Y	Y
Industrial/Manufacturing					
Food and Kindred Products; Textile Mill Products; Paper Mills; any Use Industrial Activity Generating Smoke or Steam Reaching 150 Feet Above Ground Level	N	N	N	N	N

Apparel; Chemicals & Allied Products Activities; Petroleum Refining & Related Rubber & Misc. Plastic Products	N	N	N	N	C
Lumber & Wood Products; Furniture & Fixtures; Paper and Allied Products; Printing & Publishing; Stone, Clay & Glass Products; Primary Metal Industries; Fabricated Metal Products; Product Assembly; Motor Freight	N	N	Y	Y	Y
Professional, Scientific & Control Instruments	N	N	N	Y	Y
Printing and Publishing	N	Y	Y	Y	Y
Aerospace Product, Parts Manufacturing, or Related Activities	N	N	C	Y	Y
Services					
Finance; Real Estate; Insurance; Personal Services; Business Services; Professional Services; Indoor Recreation Services	N	N	Y	Y	Y
Telemarketing Bureaus	N	N	N	N	Y
Warehousing and Storage Services	N	Y	Y	Y	Y
Hospitals, Medical Offices, Nursing Homes	N	N	N	C, 4	Y
Communications and Utilities					
Telecommunication Towers	N	N	N	N	Y
Water Impoundments; Wet Stormwater Ponds	N	C	C	Y	Y
Agriculture					
Aviaries; Pigeonry Including Pigeon Lofts or Racing	N	N	N	N	N
Outdoor Aquaculture and Fish Hatcheries	N	N	N	N	N
Agriculture Except Livestock	Y	Y	Y	Y	Y
Livestock Farming; Animal Productions; Animal Breeding; Kennels	N	C, 5	C, 5	Y	Y
Crop Farming Requiring Soil Disturbance	N	Y	Y	Y	Y
Forestry Activities	N	C	Y	Y	Y
Exotic Farm Animals (Ostrich, Emus, Alpaca, etc.)	N	N	N	N	Y
Mining And Extraction					
Mining Activities (Including Borrow Pits)	N	Y	Y	Y	Y
Commercial/Retail Trade					
Wholesale Trade: Building Material; Hardware; Farm Equipment (Retail); Auto, Marine, Aviation (Retail)	N	N	N	Y	Y

General Merchandise (Retail); Food Retail; Apparel and Accessories (Retail); Shopping Centers	N	N	Y	Y	Y
Furniture; Home Furnishings (Retail)	N	N	C	Y	Y
Eating & Drinking Establishments	N	N	N	C	Y
Eating & Drinking Establishments, Outdoor Seating	N	N	N	C	Y
Fire Work Sales	N	N	N	N	Y
Outdoor Food Vendors	N	N	N	Y	Y
Personal & Business Services					
Finance; Real Estate; Insurance; Personal Services; Business Services; Professional Services; Indoor Recreation Services	N	N	Y	Y	Y
Repair Services; Contract Construction Services	N	Y	Y	Y	Y
Automobile Service Stations	N	N	Y	Y	Y
Conservation					
Wetland Mitigation	N	C, 6	C, 6	C, 6	C, 6
Nature Exhibits, Zoos	N	N	N	Y	Y
Public, Public Assembly, Quasi-Public Services					
Government Services	N	N	N	Y	Y
Educational Services (Including Private Schools); Cultural Activities; Libraries	N	N	N	C	Y
Civic or Non-Profit Social Organizations	N	N	Y	Y	Y
Cemeteries	N	Y	Y	Y	Y
Religious Buildings; Chapels	N	N	N	Y	Y
Public Assembly	N	N	N	N	Y
Outdoor Recreation And Entertainment					
Playground; Neighborhood Parks	N	C	C	Y	Y
Community & Regional Parks	N	N	N	Y	Y
Spectator Sports Including Arenas or Stadiums	N	N	N	Y	Y
Golf Courses; Driving Ranges (no lighted facilities allowed)	N	N	Y	Y	Y
Lighted Golf Courses; Driving Ranges	N	N	N	N	Y
Riding Stables; Equestrian Facilities	N	N	N	N	Y
Entertainment Assembly; Amphitheater; Music Shell	N	N	N	N	Y

Amusement or Theme Parks; Miniature Golf, Go-Carts	N	N	Y	Y	Y
Resorts And Campgrounds; RV Parks	N	N	N	N	Y
Outdoor Gun Clubs, Shooting or Archery Ranges	N	N	N	N	C
Movie Theatres, Live Theatre, Auditoriums, Concert Halls	N	N	N	N	Y
Outdoor Movie Theatres, Light/Laser Shows	N	N	N	N	C
Transportation, Communication and Utilities					
Wet stormwater ponds	N	N	N	N	Y
Railroads	N	Y	Y	Y	Y
Automobile or Truck Parking	N	C	Y	Y	Y
Unpaved Local Streets	C	Y	Y	Y	Y
Highways and Paved Streets	N	C	Y	Y	Y
Solid Waste Disposal (Landfills, Incineration, etc.)	N	N	N	N	N

1. Density limited to one (1) unit per five (5) acres. Subdivision design and building location may be subject to Article 4.
2. Density not to exceed two (2) units per one (1) acre or existing zoning density, whichever is less. Subdivision design and building location may be subject to Article 4.
3. No more than four (4) units per individual building.
4. Must be located outside any existing or future noise zone with a fifty-five (55) DNL1 or greater.
  - 1 DNL: Day/night average sound level means the twenty-four (24) hour average sound level in decibels obtained after the addition of ten (10) decibels to the night-time sound level measured from 10:00 p.m. to 7:00 a.m.
5. Grazing allowed but feedlots and intensive stock yards are prohibited.
6. Mitigation must occur outside the APZ unless alternative site is not approved by the applicable state agency.
7. Multifamily up to four (4) units per building may be allowed within the NOLF Holley MAZ.

Abbreviations/Acronyms for Table 11-4

- CZ--Clear zone for a military airport or airfield.  
APZ1--Accident potential zone category one.  
APZ2--Accident potential zone category two.  
MAIA--Military Airport Influence Area.

*11.04.03. Conditional use criteria.*

This section is to be used with Table 11-4 for the purposes of placing regulatory conditions on proposed development or uses to establish land use compatibility with military airport operations. This criteria is to be applied to those land uses denoted under a zone or surface as a conditional use.

- A. The site size, dimensions, location, topography and access are adequate for the needs of the proposed use, considering the proposed building mass, parking, and traffic as well as noise, vibration, odor or dust generated by military airport or ground activities.

B. Noise, vibration, odor or dust generated by military airport or ground activities can be mitigated through application of other Code standards, or other reasonable conditions of approval.

C. The negative impacts of the proposed use on aircraft flight safety and on the use of airport facilities can be mitigated through application of other Code standards, or other reasonable conditions of approval. A property owner demonstrates that exhaust, emissions, light, glare, dust will not reduce the effective use of the airport or increase risk for hazards or accidents within the Public Airport Zone.

D. All required public facilities have adequate capacity to serve the proposal.

E. The use is not located underneath the normal entry or departure flight track within the MAZ.

Within zones A, B1 and C1 for OLF Holley, single family dwellings, up to a density of four (4) units per acre, may be placed or constructed on any existing or future lot despite the fact that it does not conform with the minimum lot requirements set forth in Table 11-4.

Within zone B1 for OLF Spencer, one (1) single family dwelling may be constructed on a lot which was of record or subject to a written contract for purchase as of September 1, 2002, despite the fact that it does not conform with the minimum lot requirements set forth in Table 11-4, providing that all other applicable regulations and ordinances are complied with. The location of any single family home constructed on such nonconforming lot shall be reviewed and approved by the planning department so as to minimize airport hazards.

(Ord. No. 2005-07, § 1, 4-14-05; Ord. No. 2006-04, § 1, 2-15-06)

#### 11.05.00. Nonconforming uses.

Limitations which restrict non-conforming uses and/or non-complying buildings and structures in order to realize the legislative intent and purpose of this ordinance and the adopted Comprehensive Plan of Santa Rosa County shall adhere to and follow procedures and standards set forth in Article 9.

#### 11.06.00. Permits.

No new structure or use may be constructed or established or any existing use or structure substantially changed or altered or repaired within a Military Airport Zone or Public Airport Zone unless a permit has been granted by the building inspection department. Each application for a permit shall indicate the purpose for which the permit is desired with sufficient particularity to permit a determination as to whether the resulting use, structure or growth would conform to the regulations herein prescribed. If the determination is affirmative, the permit shall be granted. No permit shall be granted that would allow the creation of an airport hazard.

(Ord. No. 2005-07, § 1, 4-14-05)

#### 11.07.00. Disclosure.

No person shall sell, lease, nor offer for sale or lease any property within a Military Airport Notification Zone or Public Airport Notification Zone unless the prospective buyer or lessee has been duly notified through one (1) or more of the following requirements.

A. *Disclosure with sale or lease contract.*

1. Sale of residential property. Any contract for the sale of residential property that is located in whole or part within a Public Airport Notification Zone or a Military Airport Notification Zone, shall include, as an attachment to the contract of sale, a military or public airport disclosure notice, in a form approved by Santa Rosa County. The military or public airport disclosure notice shall be dated and signed by the purchaser(s) and the seller(s) If the seller is represented by a real estate agent, the agent shall witness the signature(s) of the seller(s). The seller is responsible for providing a copy of the signed Disclosure Notice to the NAS Whiting Field Aviation Planning Office. A disclosure notice form will be made available by the planning and zoning department.

2. Lease of residential property. Any contract for the lease of a residential dwelling for more than seven (7) months shall be subject to the notification requirements set forth in Subsection A.1.

3. Consumer protection. The failure of a sales contract to comply with the requirements of Subsection A.1. shall enable a party to the contract who is aggrieved by such failure to rescind the contract any time prior to settlement. The failure of a lease contract to comply with the requirements of Subsection A.2. shall enable a party who is aggrieved by such failure to rescind the contract any time prior to the contract termination date. The right of rescission provided by this subsection is not an exclusive remedy, and any other right or cause of action available to a party to the sales or lease contract shall remain.

*B. Realty sales offices and marketing.* Sales offices used to market or sell new residential homes or mobile homes, including pre-construction sales, which will be constructed on lots located in a Military Airport Notification Zone or a Public Airport Notification Zone, must display a map illustrating public airport or military installation property boundaries, accident potential zones, clear zones, runway protection zones, and noise zones (fifty-five (55) decibel). This display requirement also applies to temporary realty sales offices. Pamphlets illustrating the same information appearing on paper not less than eight and one-half (8 1/2) inches by eleven (11) inches shall also be made available and placed in public view.

1. Display requirements. The map shall be no smaller than twenty-four (24) inches by thirty-six (36) inches and must be prominently displayed in a public area of the office and copies of such map must be available on paper which is eight and one-half (8 1/2) [inches] by eleven (11) inches or larger in dimension. The display and pamphlet must include a statement that additional information regarding Military Airport Zones, Public Airport Zones and zoning is available at the Santa Rosa County Planning and Zoning Department and include its most current telephone number. The location of the residential development shall be denoted on the map or pamphlet.

2. Temporary permits. A temporary permit shall not be issued for a realty sales office located in Santa Rosa County unless it contains a requirement for compliance with Subsections B.1. and B.4.

3. Site plan permits. A site plan approval for any commercial or office use within Santa Rosa County shall include a statement that any realty sales office use shall comply with the display requirements of this section.

4. Marketing brochures. Any real estate office or business within Santa Rosa County that produces a marketing brochure for residential home sales or rental units located on property wholly or partially within a Military Airport Notification Zone or Public Airport Notification Zone shall include in said brochure the following statement:

"Some or all of the property within this residential development lies within a Military Airport Notification Zone or Public Airport Notification Zone. Information regarding such overlay zones, including airport noise impacts, can be obtained from the Santa Rosa County Department of Planning, Zoning, and Development, Milton, Florida."

C. *Covenants and restrictions.* Residential plats proposed within a Military Airport Notification Zone or Public Airport Notification Zone shall incorporate disclosure requirements within covenants and restrictions as set forth within Article 4.

(Ord. No. 2005-07, § 1, 4-14-05)

11.08.00. Outdoor lighting standards and glare control to promote flight safety.

*11.08.01 Purpose and intent.*

The purpose and intent of the provisions for the regulations of outdoor lighting within military and public airport environs is to reduce the potential for aircraft accidents related to pilot vision impairment or pilot confusion created by outdoor lighting.

Accordingly, it is the intent of this Code to encourage outdoor lighting practices and systems that will minimize light pollution, glare, and flash illumination that may interfere with a pilot's or navigator's ability to control or navigate aircraft. The intent is also to promote optimum conditions for effective night-time military flight operations and ground training.

*11.08.02 Definitions.*

*Fully shielded:* For the purposes of this article, fully shielded shall mean an outdoor light fixture shielded in such a manner that all light emitted by the fixture, either directly from the lamp or indirectly from the fixture, is projected below a horizontal plane extending from the bottom of the light fixture.

*Glare:* The sensation produced within the visual field by luminance that is sufficiently greater than the luminance to which the eyes are adapted, causing annoyance, discomfort, or loss in visual performance and visibility.

*11.08.03 Prohibited lights or sources of glare.*

A. *Countywide.* The following lighting is prohibited in Santa Rosa County unless duly authorized as temporary lighting or issued a special event permit:

1. When projected above a horizontal plane, beacons, search lights, laser source lights, strobe light, or any similar high intensity light used for promotional purposes.
2. Laser light shows except as approved by the county through a special event permit.
3. Public outdoor display of fireworks or pyrotechnics.

B. *Military Airport Zones (MAZ) or Public Airport Zones (PAZ).* The following lighting or glare that can cause distraction, flash blindness, vision impairment, or visual interference while piloting or navigating an aircraft are prohibited within a MAZ or PAZ:

1. Series, lines, rows, or patterns of lights, whether supported by cables or other physical means, or laid upon a ground or building, that may resemble navigational or flight safety aids, landing pads, or lighting common to general or military aviation.
2. Lighting designed for the creation of sky glow to attract attention, in excess of the lighting used to provide safety, security, and utility.
3. Outdoor floodlighting by flood light projection above the horizontal plane.

4. Lighting fixtures and architectural detailing that use luminous tube lighting (neon, argon or krypton) on a building exterior or roof.
5. Internally lit awnings.
6. External illumination for signs.

*11.08.04 Lighting standards within military airport or public airport zones.*

The following standards apply to all non-military lands within an MAZ or PAZ, unless otherwise stated.

A. *Outdoor lighting limitation within MAZs.* Outdoor lighting shall only be used to accommodate minimum illumination for general safety, security and utility within a MAZ, but shall not be used for outdoor public assembly, commercial sales, product display, industrial activities, or other uses occurring outdoors or outside an enclosed building.

B. *Outdoor recreation and commercial facilities.* Outdoor lighting shall not be used to illuminate golf courses, golf practice driving ranges, and athletic fields or courts located within a Military Airport Zone or Public Airport Zone.

C. *Parking lot lighting standards.* Lighting standards (poles) shall be sized in such a manner that the top of any luminary does not exceed twenty-four (24) feet above adjacent grade. For all parking lots, outdoor lighting shall be fully-shielded and use low pressure sodium light fixtures. Applicable only to a MAZ, parking lot lighting for non-residential uses shall be turned off within one (1) hour after a business or establishment is closed and shall not be turned on until one (1) hour prior the business or establishment opening.

D. *Type of lighting.* The use of low-pressure (LPS) sodium lighting for outdoor, unroofed areas shall be required for all non-military development within a Military Airport Zone or Public Airport Zone.

E. *Landscape, decorative, and architectural lighting.*

1. Luminaires used to illuminate flags, statutes, steeples, monuments, and other tall narrow objects shall be illuminated with the type of luminaire that directs the narrowest beam capable of illuminating the object.
2. Lighting on buildings for aesthetic purposes shall be directed downward from the top. No lighting will be placed on buildings for aesthetic purposes except as may be exempt in this article for holiday seasons.

F. *Fixed lights must be fully-shielded.* All light fixtures that are required to be shielded shall be installed in such a manner that the shielding is effective as described Section 11.08.12, definitions, for fully or partially shielded fixtures.

G. *[Moveable lights].* Moveable lights, such as spot lights attached to infrared-sensitive cameras, must be mounted such that the lights cannot be directed higher than twenty (20) degrees below the horizontal, measured from the center of the light beam.

H. *Automobile canopies.* All luminaires mounted on the under surface of automobile canopies for service stations, drive-in restaurants, or other commercial or industrial uses shall be fully shielded and utilize flat glass or flat plastic (acrylic or polycarbonate) covers.

*11.08.05 Advertising signs.*

Within any MAZ or PAZ, outdoor internally illuminated advertising signs shall be constructed with an opaque background and translucent letters and symbols. (Opaque means that the material must not transmit light from an internal illumination source.) Such signs shall be turned off at 9:00 p.m. or when the business is closed, whichever is later.

*11.08.06. Outdoor lighting plan.*

Within a Military or Airport Influence Area, except as exempted herein, an outdoor lighting plan shall be submitted with a site plan or subdivision application for any non-residential use to determine compliance with the requirements of this article. The outdoor lighting plan shall be prepared by a professional engineer. Prior to approving a site plan or subdivision plan for which an outdoor lighting plan is required, the applicant must submit to the county a letter from the military installation indicating any comments or concerns.

*11.08.07. Exemptions.*

The following outdoor lighting is exempt from this article:

- A. Search lights, laser source lights, or any similar high-intensity lighting used in emergencies by police and fire personnel or at their direction; or for meteorological data gathering purposes undertaken with approval by the county.
- B. Airport lighting which is required for the safe and efficient movement of aircraft during flight, takeoff, landing, and taxiing is exempt from the provisions of this section. All other outdoor lighting at airport facilities shall comply with the provisions of this article.
- C. Holiday or decorative lights illuminated November 20 through January 15 each year, so long as such lights placed on property or buildings within a Military Airport Zone or Public Airport Zone are not determined to adversely affect pilot vision or comprehension.

*11.08.08. Nonconforming uses.*

Limitations which restrict non-conforming uses and/or non-complying buildings and structures in order to realize the legislative intent and purpose of this ordinance and the adopted Comprehensive Plan of Santa Rosa County shall adhere to and follow procedures and standards set forth in Article 9.

*11.08.09 Temporary lighting permits.*

Outdoor lighting which is inconsistent with this section may be allowed on a temporary basis for special events, construction activities, or temporary outdoor lighting needs for public assembly or public safety so long as the outdoor lighting does not create a potential distraction, flash blindness, vision impairment, or visual interference for aircraft pilots or navigators and would not cause a potential unreasonable risk for flight safety or interfere with any public or military airport operation or withground activities at military installations.

- A. The planning director may grant a permit for temporary lighting, as defined herein, if he/she finds the following:
  - 1. The purpose for which the lighting is proposed is not intended to extend beyond thirty (30) days;
  - 2. The proposed lighting is designed in such a manner as to minimize light pollution and trespass as much as is feasible;
  - 3. The proposed lighting will comply with the general intent of this article;

4. The permit will be in the public interest.

B. The application for the temporary lighting permit shall include the following information:

1. Name and address of applicant and property owner;
2. Location of proposed fixtures;
3. Type, wattage and lumen output of lamp(s);
4. Type and shielding of proposed fixtures;
5. Intended use of the lighting;
6. Duration of time for requested exemption;
7. The nature of the exemption;
8. Such other information as the planning director may request.

C. The planning director shall endeavor to rule on the application within five (5) business days from the date of submission of the request and notify the applicant in writing of his/her decision. The planning director may grant one (1) renewal of the permit for an additional thirty (30) days if he/she finds that, because of an unanticipated change in circumstances, a renewal would be in the public interest. The planning director is not authorized to grant more than one (1) temporary permit and one (1) renewal for a thirty (30) day period for the same property within one (1) calendar year.

D. Prior to issuing a temporary outdoor lighting permit, the planning director shall consider comments and recommendations from the county airport manager or from the local military installations, as may be applicable.

(Ord. No. 2005-07, § 1, 4-14-05)

#### 11.09.00. Appeals.

A. Any person aggrieved, or taxpayer affected, by any decision of an administrative official or agency made in its administration of the regulations adopted under this article, or any governing body of a political subdivision, which is of the opinion that a decision of such an administrative official or agency is an improper application of airport zoning regulations of concern to such governing body or board, may appeal to the board of adjustment the decisions of such administrative official or agency. Appeals shall be made and heard pursuant to Section 2.03.00 et seq. of this ordinance.

B. An appeal shall stay all proceedings in furtherance of the action appealed from, unless the agency or official from which the appeal is taken, certifies to the board of adjustment (BOA), after the notice of appeal has been filed with it, that by reasons of the facts stated in the certificate a stay would, in its opinion, cause imminent peril to life or property. In such cases, proceedings shall not be stayed otherwise than by an order of the BOA on notice to the agency from which the appeal is taken and on due cause shown.

(Ord. No. 2005-07, § 1, 4-14-05)

## Attachment 4

## LAND USE COMPATIBILITY

Table A4.1. Land Use Compatibility With Respect To Noise And Accident Potential.

SLUCM NO.	LAND USE NAME	ACCIDENT POTENTIAL ZONES			NOISE ZONES			
		CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
10	Residential							
11	Household units							
11.11	Single units; detached	N	N	Y <sup>1</sup>	A <sup>11</sup>	B <sup>11</sup>	N	N
11.12	Single units; semidetached	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.13	Single units; attached row	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.21	Two units; side-by-side	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.22	Two units; one above the other	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.31	Apartments; walk up	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.32	Apartments; elevator	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
12	Group quarters	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
13	Residential hotels	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
14	Mobile home parks or courts	N	N	N	N	N	N	N
15	Transient lodgings	N	N	N	A <sup>11</sup>	B <sup>11</sup>	C <sup>11</sup>	N
16	Other residential	N	N	N <sup>1</sup>	A <sup>11</sup>	B <sup>11</sup>	N	N
20	Manufacturing							
21	Food & kindred products; manufacturing	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
22	Textile mill products; manufacturing	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
23	Apparel and other finished products made from fabrics, leather, and similar materials; manufacturing	N	N	N <sup>2</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
24	Lumber and wood products (except furniture); manufacturing	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
25	Furniture and fixtures; manufacturing	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
26	Paper & allied products; manufacturing	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
27	Printing, publishing, and allied industries	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
28	Chemicals and allied products; manufacturing	N	N	N <sup>2</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
29	Petroleum refining and related industries	N	N	N	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
30	Manufacturing							
31	Rubber and misc. plastic products; manufacturing	N	N <sup>2</sup>	N <sup>2</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
32	Stone, clay and glass products manufacturing	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
33	Primary metal industries	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
34	Fabricated metal products; manufacturing	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks manufacturing	N	N	N <sup>2</sup>	Y	A	B	N
39	Miscellaneous manufacturing	N	Y <sup>2</sup>	Y <sup>2</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
40	Transportation, communications and utilities							
41	Railroad, rapid rail transit and street railroad transportation	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
42	Motor vehicle transportation	N <sup>3</sup>	Y	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
43	Aircraft transportation	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
44	Marine craft transportation	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
45	Highway & street right-of-way	N <sup>3</sup>	Y	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
46	Automobile parking	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
47	Communications	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	A <sup>15</sup>	B <sup>15</sup>	N
48	Utilities	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>
49	Other transportation communications and utilities	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	A <sup>15</sup>	B <sup>15</sup>	N
50	Trade							
51	Wholesale trade	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
52	Retail trade-building materials, hardware and farm equipment	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
53	Retail trade-general merchandise	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
54	Retail trade-food	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
55	Retail trade-automotive, marine craft, aircraft and accessories	N	Y <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
56	Retail trade-apparel and accessories	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
57	Retail trade-furniture, home furnishings and equipment	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
58	Retail trade-eating and drinking establishments	N	N	N <sup>2</sup>	Y	A	B	N
59	Other retail trade	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
60	Services							
61	Finance, insurance and real estate services	N	N	Y <sup>6</sup>	Y	A	B	N
62	Personal services	N	N	Y <sup>6</sup>	Y	A	B	N
62.4	Cemeteries	N	Y <sup>7</sup>	Y <sup>7</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14,2</sup>
63	Business services	N	Y <sup>8</sup>	Y <sup>8</sup>	Y	A	B	N
64	Repair services	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
65	Professional services	N	N	Y <sup>6</sup>	Y	A	B	N

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
65.1	Hospitals, nursing homes	N	N	N	A*	B*	N	N
65.1	Other medical facilities	N	N	N	Y	A	B	N
66	Contract construction services	N	Y <sup>6</sup>	Y	Y	A	B	N
67	Governmental services	N	N	Y <sup>6</sup>	Y*	A*	B*	N
68	Educational services	N	N	N	A*	B*	N	N
69	Miscellaneous services	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
70	Cultural, entertainment and recreational							
71	Cultural activities (including churches)	N	N	N <sup>2</sup>	A*	B*	N	N
71.2	Nature exhibits	N	Y <sup>2</sup>	Y	Y*	N	N	N
72	Public assembly	N	N	N	Y	N	N	N
72.1	Auditoriums, concert halls	N	N	N	A	B	N	N
72.11	Outdoor music shell, amphitheaters	N	N	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	N	N	N	Y <sup>17</sup>	Y <sup>17</sup>	N	N
73	Amusements	N	N	Y <sup>8</sup>	Y	Y	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y <sup>8,9,10</sup>	Y	Y*	A*	B*	N
75	Resorts and group camps	N	N	N	Y*	Y*	N	N
76	Parks	N	Y <sup>8</sup>	Y <sup>8</sup>	Y*	Y*	N	N
79	Other cultural, entertainment and recreation	N	Y <sup>9</sup>	Y <sup>9</sup>	Y*	Y*	N	N
80	Resources production and extraction							
81	Agriculture (except livestock)	Y <sup>16</sup>	Y	Y	Y <sup>18</sup>	Y <sup>19</sup>	Y <sup>20</sup>	Y <sup>20,21</sup>
81.5 to 81.7	Livestock farming and animal breeding	N	Y	Y	Y <sup>18</sup>	Y <sup>19</sup>	Y <sup>20</sup>	Y <sup>20,21</sup>
82	Agricultural related activities	N	Y <sup>5</sup>	Y	Y <sup>18</sup>	Y <sup>19</sup>	N	N
83	Forestry activities and related services	N <sup>5</sup>	Y	Y	Y <sup>18</sup>	Y <sup>19</sup>	Y <sup>20</sup>	Y <sup>20,21</sup>
84	Fishing activities and related services	N <sup>5</sup>	Y <sup>5</sup>	Y	Y	Y	Y	Y
85	Mining activities and related services	N	Y <sup>5</sup>	Y	Y	Y	Y	Y
89	Other resources production and extraction	N	Y <sup>5</sup>	Y	Y	Y	Y	Y

**LEGEND**

SLUCM - Standard Land Use Coding Manual, U.S. Department of Transportation.

Y - (Yes) - Land use and related structures are compatible without restriction.

N - (No) - Land use and related structures are not compatible and should be prohibited.

Y<sup>x</sup> - (yes with restrictions) - Land use and related structures generally compatible; see notes indicated by the superscript.

N<sup>x</sup> - (no with exceptions) - See notes indicated by the superscript.

NLR - (Noise Level Reduction) - NLR (outdoor to indoor) to be achieved through incorporation of noise attenuation measures into the design and construction of the structures.

A, B, or C - Land use and related structures generally compatible; measures to achieve NLR for A(DNL/CNEL 65-69), B(DNL/CNEL 70-74), C(DNL/CNEL 75-79), need to be incorporated into the design and construction of structures.

A\*, B\*, and C\* - Land use generally compatible with NLR. However, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted. See appropriate footnotes.

\* - The designation of these uses as "compatible" in this zone reflects individual federal agencies' and program considerations of general cost and feasibility factors, as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.

#### NOTES:

1. Suggested maximum density of 1-2 dwelling units per acre, possibly increased under a Planned Unit Development (PUD) where maximum lot coverage is less than 20 percent.
2. Within each land use category, uses exist where further deliberating by local authorities may be needed due to the variation of densities in people and structures. Shopping malls and shopping centers are considered incompatible use in any accident potential zone (CZ, APZ I, or APZ II).
3. The placing of structures, buildings, or above-ground utility lines in the clear zone is subject to severe restrictions. In a majority of the clear zones, these items are prohibited. See AFI 32-7060 (formerly AFR 19-9) and AFJM 32-8008 (formerly AFM 86-14) for specific guidance.
4. No passenger terminals and no major above-ground transmission lines in APZ I.
5. Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.
6. Low-intensity office uses only. Meeting places, auditoriums, etc., are not recommended.
7. Excludes chapels.
8. Facilities must be low intensity.
9. Clubhouse not recommended.
10. Areas for gatherings of people are not recommended.
11.
  - A. Although local conditions may require residential use, it is discouraged in DNL/CNEL 65-69 dB and strongly discouraged in DNL/CNEL 70-74 dB. The absence of viable alternative development options should be determined and an evaluation indicating a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals.
  - B. Where the community determines the residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) for DNL/CNEL 65-69 dB and DNL/CNEL 70-74 dB should be incorporated into building codes and considered in individual approvals
  - C. NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers can help mitigate outdoor exposure, particularly from near ground level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures which only protect interior spaces.
12. Measures to achieve the same NLR as required for facilities in DNL/CNEL 65-69 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
13. Measures to achieve the same NLR as required for facilities in DNL/CNEL 70-74 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
14. Measures to achieve the same NLR as required for facilities in DNL/CNEL 75-79 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
15. If noise sensitive, use indicated NLR; if not, the use is compatible.
16. No buildings.
17. Land use is compatible provided special sound reinforcement systems are installed.
18. Residential buildings require the same NLR as required for facilities in DNL/CNEL 65-69 dB range.
19. Residential buildings require the same NLR as required for facilities in DNL/CNEL 70-74 dB range.
20. Residential buildings are not permitted.
21. Land use is not recommended. If the community decides the use is necessary, hearing protection devices should be worn by personnel.