Appendix F

PROJECT IMPLEMENTATION MATERIALS

Appendix F
IMPLEMENTATION MATERIALS

The materials in this appendix are for use in implementing the Noise Compatibility Program for Scottsdale Airport and include the following:

- Sample Building Code;
- Sample Subdivision Regulations;
- Informal land use tools currently utilized by Scottsdale Airport and the City of Scottsdale;
- Sample zoning ordinances from jurisdictions that regulate land use within noise contours less than 65 DNL; and
- AOPA Noise Awareness Steps

SAMPLE BUILDING CODE AMENDMENT ESTABLISHING SOUND INSULATION STANDARDS*

SECTION 1.00. PURPOSE. The purpose of this chapter is to safeguard life, health, property, and public welfare by establishing uniform sound insulation performance standards to protect persons within hotels, motels, apartment houses, attached and detached single-family dwellings, and within other buildings where noise-sensitive activities are affected by excessive aircraft noise at ***Scottsdale Airport***. Effects of airborne noise include but are not limited to persistent interference with speech and sleep. This chapter is intended to be a companion to the adopted zoning ordinance establishing airport compatibility overlay zones and limiting land use in these zones.

SECTION 2.00. DEFINITIONS. The special terms used in these provisions are defined as follows:

2.01. Community Noise Equivalent Level (CNEL): The 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition 4.77 decibels to sound levels for periods between 7 p.m. and 10 p.m. and ten decibels to sound levels for the periods between 10 p.m. and 7 a.m, local time, as averaged over one year. It is the Federal Aviation Administration's standard metric in California for determining the cumulative exposure of individuals to noise.

2.02. Decibel (dB): A unit of measure of a sound expressed from a calibrated sound level meter utilizing an A-level weighting scale.

2.03. Noise: Sound from aircraft or other sources which interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying.

2.04. NLR: Outdoor to indoor noise level reduction to be achieved through incorporation of sound insulation in structure.

2.05. Interior Noise Level: Sound level of noise in any habitable room with windows and doors closed.

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* SOURCE:
U.S. Air Force Recommendations for Insulation of Residential Structures Against Aircraft Noise, Undated. As cited in Cleveland Hopkins International Airport F.A.R. Part 150 Noise Compatibility Study, Appendix L.

2.06. OITC Rating: Outdoor Indoor Transmission Class - a description of the noise level reduction, in decibels, achieved by a product or construction assembly. The OITC rating system was developed by the American Society of Testing Materials. It takes into account the influence of environmental noise, such as transportation-related noise, on the product being tested. It takes into account a wider range of frequencies that the STC rating which better reflect the spectrum of exterior noise. This is a new rating system than the STC rating. Increasingly, manufacturers are testing their products using the OITC system.

2.07. STC Rating: Sound Transmission Class - a single number rating of the sound transmission loss (TL-- the reduction of sound energy passing through a building material) of a wall or structure which attempts to account for the variation in TL with frequency. The STC rating system was developed by the American Society of Testing Materials. It is the rating system traditionally used by manufacturers and designers.

SECTION 3.00. SCOPE.

3.01. Structures Requiring Protection: Compliance with these standards shall be required for structures and land uses as noted in the Table of Land Use Compatibility Standards.

3.02. Type of Construction Affected: These standards shall apply to new construction of structures and land uses as noted in Subsection 3.01. The standards also shall apply to reconstruction, remodeling, or additions to existing buildings of the types mentioned above when the value of the improvement exceeds 50 percent of the value of the existing structures. Where noise-sensitive activities are carried on in only a portion of new or reconstructed commercial building, only those areas judged noise-sensitive need be protected.

SECTION 4.00. BUILDING REQUIREMENTS FOR A MINIMUM NOISE LEVEL REDUCTION (NLR) OF 25 dB.

4.01. Compliance: Compliance with the following standards shall be deemed to meet the requirements of the Airport Compatibility Overlay Zoning Ordinance for structures in which an NLR of 25 dB is required.

4.02. General:

a. Brick veneer, masonry blocks, or stucco exterior walls shall be constructed airtightly. All joints shall be grouted or caulked airtightly.

b. At the penetration of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Through-the-wall/door mail boxes shall not be used.

4.03. Exterior Walls:

a. Exterior walls other than as described in this Subsection shall have a laboratory sound transmission class rating of at least STC-39. (See Table 1 at the end of this Chapter for examples.)

b. Masonry walls having a surface weight of at least 25 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered or painted with heavy "bridging" paint.

c. Stud walls shall be at least four inches in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco, or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least ½-inch thick, installed on the studs.

(2) Continuous composition board, plywood, or gypsum board sheathing at least ½-inch thick shall cover the exterior side of the wall studs behind wood, or metal siding. Asphaltic or wood shake shingles are acceptable in lieu of siding.

(3) Sheathing panels shall be butted tightly and covered on the exterior with overlapping building paper. The top and bottom edges of the sheathing shall be sealed.

(4) Insulation material at least two inches thick shall be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

4.04. Windows:

a. Windows other than as described in this Subsection shall have a laboratory sound transmission class rating of at least STC-28. (See Table 2.)

b. Glass shall be at least 3/16-inch thick.

c. All operable windows shall be weather-stripped and airtight when closed so as to conform to an air infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM E-283-65-T.

d. Glass of fixed-sash windows shall be sealed in an airtight manner with a non-hardening sealant, or a soft elastomer gasket or glazing tape.

e. The perimeter of window frames shall be sealed airtightly to the exterior wall construction with a sealant conforming to one of the following Federal Specifications: TT-S-00227, TT-S-00230, or TT-S-00153.

f. The total area of glass in both windows and doors in sleeping spaces shall not exceed 20 percent of the floor area.

4.05. Doors:

a. Doors, other than as described in this Subsection, shall have a laboratory sound transmission class rating of at least STC-28. (See Table 3.)

b. All exterior side-hinged doors shall be solid-core wood or insulated hollow metal at least 1-3/4-inch thick and shall be fully weather-stripped.

c. Exterior sliding doors shall be weather-stripped with an efficient airtight gasket system with performance as specified in Paragraph 4.04.c. The glass in the sliding doors shall be at least 3/16-inch thick.

d. Glass in doors shall be sealed in an airtight non-hardening sealant, or in a soft elastomer gasket or glazing tape.

e. The perimeter of door frames shall be sealed airtightly to the exterior wall construction as described in Paragraph 4.04.e.

4.06. Roofs:

a. Combined roof and ceiling construction other than described in this Subsection and Subsection 4.07 shall have a laboratory sound transmission class rating of at least STC-39.

b. With an attic or rafter space at least six-inches deep, and with a ceiling below, the roof shall consist of closely butted ½-inch composition board, plywood, or gypsum board sheathing topped by roofing as required.

c. If the underside of the roof is exposed, or if the attic or rafter spacing is less than six inches, the roof construction shall have a surface weight of at least 25 pounds per square foot. Rafters, joists, or other framing may not be included in the surface weight calculation.

d. Window or dome skylights shall have a laboratory sound transmission class rating of at least STC-28. (See Table 2.)

4.07. Ceilings:

a. Gypsum board or plaster ceilings at least ½-inch thick shall be provided where required by Paragraph 4.06.b above. Ceilings shall be substantially airtight, with a minimum number of penetrations.

b. Glass fiber or mineral wool insulation at least two inches thick shall be provided above the ceiling between joists.

4.08. Floors:

a. Openings to any crawl spaces below the floor of the lowest occupied rooms shall not exceed two percent of the floor area of the occupied rooms.

4.09. Ventilation:

a. A mechanical ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors, or other openings to the exterior.

b. Gravity vent openings in the attic shall not exceed the code minimum in number and size.

c. If a fan is used for forced ventilation, the attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 20 gauge steel, which shall be lined with one-inch thick coated glass fiber, and shall be at least five feet long with one 90-degree bend.

d. All vent ducts connecting the interior space to the outdoors, excepting domestic range exhaust ducts, shall contain at least a five-foot length of internal sound absorbing duct lining. Each duct shall be provided with a bend in the duct such that there is no direct line of sight through the duct from the venting cross-section to the room-opening cross-section.

e. Duct lining shall be coated glass fiber duct liner at least one-inch thick.

f. Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a baffle plate across the exterior termination which allows proper ventilation. The dimensions of the baffle plate shall extend at least one diameter beyond the line of sight into the vent duct. The baffle plate shall be of the same material and thickness as the vent duct material.

g. Fireplaces shall be provided with well-fitted dampers.

SECTION 5.00. BUILDING REQUIREMENTS FOR A MINIMUM NOISE LEVEL REDUCTION (NLR) OF 30 dB.

5.01. Compliance: Compliance with the following standards shall be deemed to meet the requirements of the Airport Compatibility Overlay Zoning Ordinance for structures in which an NLR of 30 dB is required.

5.02. General:

a. Brick veneer, masonry blocks, or stucco exterior walls shall be constructed airtightly. All joints shall be grouted or caulked airtightly.

b. At the penetration of exterior walls by pipes, ducts, conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Operational vented fireplaces shall not be used.

e. All sleeping spaces shall be provided with either a sound-absorbing ceiling or a carpeted floor.

f. Through-the-wall/door mailboxes shall not be used.

5.03. Exterior Walls:

a. Exterior walls other than as described in this Subsection shall have a laboratory sound transmission class rating of at least STC-44. (See Table 1).

b. Masonry walls having a surface weight of at least 40 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered or painted with heavy “bridging” paint.

c. Stud walls shall be at least four inches in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco, or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least ½-inch thick, installed on the studs. The gypsum board or plaster may be fastened rigidly to the studs if the exterior is brick veneer or stucco. If the exterior is siding-on-sheathing, the interior gypsum board or plaster must be fastened resiliently to the studs.

(2) Continuous composition board, plywood, or gypsum board sheathing shall cover the exterior side of the wall studs behind wood, or metal siding. The sheathing and facing shall weigh at least four pounds per square foot.

(3) Sheathing panels shall be butted tightly and covered on the exterior with overlapping building paper. The top and bottom edges of the sheathing shall be sealed.

(4) Insulation material at least two inches thick shall be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

5.04. Windows:

a. Windows other than as described in this Subsection shall have a laboratory sound transmission class rating of at least STC-33. (See Table 2).

b. Glass of double-glazed windows shall be at least 1/8-inch thick. Panes of glass shall be separated by a minimum three-inch air space.

c. Double-glazed windows shall employ fixed sash or efficiently weather-stripped operable sash. The sash shall be rigid and weather-stripped with material that is compressed airtightly when the window is closed so as to conform to an infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM E-283-65-T.

d. Glass of fixed-sash windows shall be sealed in an airtight manner with a non-hardening sealant, or a soft elastomer gasket or glazing tape.

e. The perimeter of window frames shall be sealed airtightly to the exterior wall construction with a sealant conforming to one of the following Federal Specifications: TT-0227, TT-S-00230, or TT-S-00153.

f. The total area of glass of both windows and exterior doors in sleeping spaces shall not exceed 20 percent of the floor area.

5.05. Doors:

a. Doors, other than as described in this Subsection, shall have a laboratory sound transmission class rating of at least STC-33. (See Table 3.)

b. Double door construction is required for all door openings to the exterior. Openings fitted with side-hinged doors shall have one solid-core wood or insulated hollow metal core door at least 1 3/4-inch thick separated by an airspace of at least four inches from another door, which can be a storm door. Both doors shall be tightly fitted and weather-stripped.

c. The glass of double-glazed sliding doors shall be separated by a minimum four-inch airspace. Each sliding frame shall be provided with an efficiently airtight weather-stripping material as specified in Paragraph 5.04.c.

d. Glass of all doors shall be at least 3/16-inch thick. Glass of double sliding doors shall not be equal in thickness.

e. The perimeter of door frames shall be sealed airtightly to the exterior wall construction as indicated in Subsection 5.04.e.

f. Glass of doors shall be set and sealed in an airtight non-hardening sealant, or a soft elastomer gasket or glazing tape.

5.06. Roofs:

a. Combined roof and ceiling construction other than described in this Subsection and Subsection 5.07. shall have a laboratory sound transmission class rating of at least STC-44.

b. With an attic or rafter space at least six inches deep, and with a ceiling below, the roof shall consist of closely butted ½-inch composition board, plywood, or gypsum board sheathing topped by roofing as required.

c. If the underside of the roof is exposed, or if the attic or rafter spacing is less than six inches, the roof construction shall have a surface weight of at least 40 pounds per square foot. Rafters, joists, or other framing may not be included in the surface weight calculation.

d. Window or dome skylights shall have a laboratory sound transmission class rating of at least STC-33. (See Table 2.)

5.07. Ceilings:

a. Gypsum board or plaster ceilings at least ½-inch thick shall be provided where required by Paragraph 5.06.b above. Ceilings shall be substantially airtight, with a minimum number of penetrations.

b. Glass fiber or mineral wool insulation at least two inches thick shall be provided above the ceiling between joists.

5.08. Floors:

The floor of the lowest occupied rooms shall be slab on fill, below grade, or over a fully enclosed basement. All door and window openings in the fully enclosed basement shall be tightly fitted.

5.09. Ventilation:

a. A mechanical ventilation system shall be installed that will provide minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors, or other openings to the exterior.

b. Gravity vent openings in attic shall not exceed code minimum in number and size. The openings shall be fitted with transfer ducts at least three feet in length containing internal sound absorbing duct lining. Each duct shall have a lined 90-degree bend in the duct such that there is no direct line of sight from the exterior through the duct into the attic.

c. If a fan is used for forced ventilation, the attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 20 gauge steel, which shall be lined with one-inch thick coated glass fiber, and shall be at least five feet long with one 90-degree bend.

d. All vent ducts connecting the interior space to the outdoors, excepting domestic range exhaust ducts, shall contain at least a 10-foot length of internal sound absorbing duct lining. Each duct shall be provided with a lined 90-degree bend in the duct such that there is no direct line of sight

through the duct from the venting cross-section to the room opening cross- section.

e. Duct lining shall be coated glass fiber duct liner at least one-inch thick.

f. Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a baffle plate across the exterior termination which allows proper ventilation. The dimensions of the baffle plate shall extend at least one diameter beyond the line of sight into the vent duct. The baffle plate shall be of the same material and thickness as the vent duct material.

g. Building heating units with flues or combustion air vents shall be located in a closet or room closed off from the occupied space by doors.

h. Doors between occupied space and mechanical equipment areas shall be solid core wood or 20 gauge steel hollow metal at least 1 3/4-inch thick and shall be fully weather-stripped.

SECTION 6.00. BUILDING REQUIREMENTS FOR A MINIMUM NOISE LEVEL REDUCTION (NLR) OF 35 dB.

6.01. Compliance.

Compliance with the following standards shall be deemed to meet the requirements of the Airport Compatibility Overlay Zoning Ordinance for structures in which an NLR of 35 dB is required.

6.02. General:

a. Brick veneer, masonry blocks, or stucco exterior walls shall be constructed airtightly. All joints shall be grouted or caulked airtightly.

b. At the penetration of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Operational vented fireplaces shall not be used.

e. All sleeping spaces shall be provided with either a sound absorbing ceiling or a carpeted floor.

f. Through-the-wall/door mailboxes shall not be used.

g. No glass or plastic skylight shall be used.

6.03. Exterior Walls:

a. Exterior walls other than as described in this Subsection shall have a laboratory sound transmission class rating of at least STC-49. (See Table 1.)

b. Masonry walls having a surface weight of at least 75 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered or painted with heavy "bridging" paint.

c. Stud walls shall be at least four inches in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco, or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least ½-inch thick, installed on studs. The gypsum board or plaster may be fastened rigidly to the studs if the exterior is brick veneer. If the exterior is stucco or siding-on-sheathing, the interior gypsum board or plaster must be fastened resiliently to the studs.

(2) Continuous composition board, plywood, or gypsum board sheathing shall cover the exterior side of the wall studs behind wood or metal siding. The sheathing and facing shall weigh at least four pounds per square foot.

(3) Sheathing panels shall be butted tightly and covered on the exterior with overlapping building paper. Top and bottom edges of the sheathing shall be sealed.

(4) Insulation material at least 3-1/2-inches thick shall be installed continuously through the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

6.04. Windows:

a. Windows other than as described in this Subsection shall have a laboratory sound transmission class rating of at least STC-38. (See Table 2.)

b. Double-glazed windows shall employ fixed sash. Glass of double-glazed windows shall be at least 1/8-inch thick. Panes of glass shall be separated by a minimum three-inch space and shall not be equal in thickness.

c. Glass of windows shall be sealed in an airtight manner with a non-hardening sealant, or a soft elastomer gasket or glazing tape.

d. The perimeter of window frames shall be sealed airtightly to the exterior wall construction with a sealant conforming to one of the following Federal Specifications: TT-S-00227, TT-S-00230, or TT-S-00153.

e. The total area of glass of both windows and exterior doors in sleeping spaces shall not exceed 20 percent of the floor area.

6.05. Doors:

a. Doors, other than as described in this Subsection, shall have a laboratory sound transmission class rating of at least STC-38. (See Table 3.)

b. Double door construction is required for all door openings to the exterior. The door shall be side-hinged and shall be solid-core wood or insulated hollow metal, at least 1 3/4-inch thick, separated by a vestibule at least three feet in length. Both doors shall be tightly fitted and weather-stripped.

c. The perimeter of door frames shall be sealed airtightly to the exterior wall construction as specified in Paragraph 6.04.d.

6.06. Roofs:

a. Combined roof and ceiling construction other than described in this Subsection shall have a laboratory sound transmission class rating of at least STC-49.

b. With an attic or rafter space at least six inches deep, and with a ceiling below, the roof shall consist of closely butted ½-inch composition board, plywood, or gypsum board sheathing topped by roofing as required.

c. If the underside of the roof is exposed, or if the attic or rafter spacing is less than six inches, the roof construction shall have a surface weight of at least 75 pounds per square foot. Rafters, joists, or other framing may not be included in the surface weight calculation.

6.07. Ceilings:

a. Gypsum board or plaster ceilings at least ½-inch thick shall be provided where required by Subsection 6.06. Ceilings shall be substantially airtight, with a minimum number of penetrations. The ceiling panels shall be mounted on resilient clips or channels. A non-hardening sealant shall be used to seal gaps between the ceiling and walls around the ceiling perimeter.

b. Glass fiber or mineral wool insulation at least 3-1/2 inches thick shall be provided above the ceiling between joists.***6.08. Floors:***

The floors of the lowest occupied rooms shall be slab on fill or below grade.

6.09. Ventilation:

a. A mechanical ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without need to open any windows, doors, or other openings to the exterior.

b. Gravity vent openings in attic shall not exceed code minimum in number and size. The openings shall be fitted with transfer ducts at least six feet in length containing internal sound absorbing duct lining. Each duct shall have a lined 90-degree bend in the duct such that there is no direct line of sight from the exterior through the duct into the attic.

c. If a fan is used for forced ventilation, the attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 20 gauge steel, which shall be lined with one-inch thick coated glass fiber, and shall be at least 10 feet long with one 90-degree bend.

d. All vent ducts connecting the interior space to the outdoors excepting domestic range exhaust ducts, shall contain at least 10 feet length of internal sound absorbing duct lining. Each duct shall be provided with a lined 90-degree bend in the duct such that there is no direct line of sight through the duct from the venting cross-section to the room-opening cross-section.

e. Duct lining shall be coated glass fiber duct liner at least one-inch thick.

f. Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a baffle plate across the exterior termination which allows proper ventilation. The dimensions of the baffle plate shall extend at least one diameter beyond the line of sight into the vent duct. The

baffle plate shall be of the same material and thickness as the vent duct material.

g. Building heating units with flues or combustion air vents shall be located in a closet or room closed off from the occupied space by doors.

h. Doors between occupied space and mechanical equipment areas shall be solid-core wood or 20 gauge steel hollow metal at least 1 3/4-inches thick and shall be fully weather-stripped.

TABLE 1

SOUND TRANSMISSION CLASS (STC)
OF SOME COMMON EXTERIOR WALL CONSTRUCTIONS

	Description	Weight lbs./ft.^{2}	STC
(a)	Stucco on wire lath over tar paper. Wood studs, 16 in. o.c., 5/8 in. gypboard on inside face of studs.	5.0	39
(b)	Same as (a), but staggered studs	5.2	46
(c)	Common curtainwall spandrel panel; 16 ga. sheet metal exterior with insulation and 5/8 in. gypboard interior	7.8	41
(d)	4-1/2 in. brick - ½ in. plaster both sides	55	48
(e)	4 in. light weight concrete block unpainted	24	29
(f)	4 in. lightweight concrete block sealed with two coats of paint	24	45
(g)	Same as (e), but 8 in. dense	50	55
(h)	Same as (f), but 8 in. dense	50	55
(I)	4 in. dense poured concrete	50	51
(j)	8 in. dense poured concrete	100	57
(k)	Fluted 18 ga. sheet metal for prefabricated building	4.4	28

Source: Santa Clara County Airport Land Use Commission (ALUC), Land Use Plan for Area Surrounding Santa Clara County Airports, County of Santa Clara (CA) Planning Department, August 1973.

TABLE 2

SOUND TRANSMISSION CLASS (STC)
OF SOME COMMON WINDOW CONSTRUCTION AND MATERIALS

	Description	Weight lbs./ft.^{2}	STC
(a)	Double-hung window, wood frame, 3/32-in. glass	--	23
(b)	Louvered window, 1/4-in. window glass	--	17
(c)	Aluminum sliding window, 3/32-in. glass	--	19
(d)	Steel frame, casement window, 3/32-in. glass	--	21
(e)	Approximate limit of TL for (a) through (d) if caulked and permanently sealed	--	27
(f)	Approximate TL for constructions (a) through (d) if new 1/4-in. plate is added in separate frame. Old window sealed, min. 2-1/2 in. airspace	--	42
(g)	Double-glazed aluminum window 7/32-in. and 1/4-in. glass; 2-1/2 in. airspace	--	43
(h)	1/8-in. sheet glass, sealed	1.6	31
(i)	1/4-in. plate glass, sealed	3.2	32
(j)	1/4-in. acoustic glass, sealed	3.2	35
(k)	½-in. acoustic glass, sealed	3.2	35
(l)	1/4-in. - 3/16-in. glass in neoprene gasket aluminum frames; 2-1/2 in. airspace	5.7	41
(m)	Same as (l), but 1/4-in. - 7/32-in. glass; 3-3/4 in. airspace	6.1	49
(n)	3-5/8 in. thick glass blocks	--	43

Source: Santa Clara County Airport Land Use Commission (ALUC), Land Use Plan for Area Surrounding Santa Clara County Airports, County of Santa Clara (CA) Planning Department, August 1973.

TABLE 3

SOUND TRANSMISSION CLASS (STC)
OF SOME COMMON EXTERIOR DOORS

	Description	Weight lbs./ft.^{2}	STC
(a)	1-3/4 in. hollow-core wood. No weatherstripping. 5/16-in. crack at threshold.	2.5	15
(b)	Same as (a), 1/16-in. crack	2.5	16
(c)	Same as (b), weatherstripped	2.5	19
(d)	Same as (b), sealed	2.5	20
(e)	1-3/4 in. paneled door. No weatherstripping. 1/16-in. crack at threshold	5.0	20
(f)	Same as (e), weatherstripped	5.0	23
(g)	Same as (e), sealed	5.0	24
(h)	1-3/4 in. solid-core door. No weatherstripping. 1/16-in. crack at threshold	7.0	19
(I)	Same as (h), weatherstripped	7.0	25
(j)	Same as (h), sealed	7.0	31
(k)	Wood sound door. Neoprene seals and drop threshold	6.6	37
(l)	Metal sound door. Neoprene seals and drop threshold	7.9	42

Source: Santa Clara County Airport Land Use Commission (ALUC), Land Use Plan for Area Surrounding Santa Clara County Airports, County of Santa Clara (CA) Planning Department, August 1973.

SAMPLE SUBDIVISION REGULATIONS AMENDMENT

Section 1.0 Purpose
Section 2.0 Definitions
Section 3.0 Area of Applicability
Section 4.0 Plat Notice
Section 5.0 Avigation Easement
Section 6.0 Fair Disclosure Agreement

SECTION 1.0 PURPOSE. This chapter is intended to protect the public health, safety and welfare by regulating development and land use within noise sensitive areas and airport hazard areas; to ensure compatibility between Scottsdale Airport and surrounding land uses; and to protect the Airport from incompatible encroachment.

SECTION 2.0 AREA OF APPLICABILITY. For purposes of this chapter, the standards and requirements provided herein shall apply within the Airport Influence Area.

SECTION 3.0 PLAT NOTICE. A notice of potentially high aircraft noise levels shall be affixed to and recorded with the final plat (or for a minor subdivision, the deed) for properties in the Airport Influence Area. The notice shall be worded as follows:

> "**NOISE WARNING** - All or part of this property is in an area potentially subject to aircraft noise levels high enough to annoy users of the property and interfere with its unrestricted use. Contact Scottsdale Airport Manager for information regarding the most recently calculated levels of current and forecast aircraft noise levels on the property."

SECTION 4.0 FAIR DISCLOSURE AGREEMENT. For all subdivisions, a fair disclosure agreement shall be filed whereby the owner and his or her agents agree fully to disclose to prospective buyers of the property the potential airport noise impacts to which the property may be subject. This agreement shall be written and recorded as a covenant running with the land, binding all succeeding owners of the property within the subdivision.

AIRPORT AREA DEVELOPMENT COMMUNICATION FORM

PURPOSE: This form identifies influences due to proximity to the Scottsdale Airport. Applicants must obtain approval from Scottsdale Airport for applicable influences listed below.

INSTRUCTIONS: Contact Gary P. Mascaro, Assistant Aviation Director at (480) 312-7612 and fax this form along with a site map and location map [FAX: (480) 312-8480]. Aviation staff will review the proposed development for any aeronautical influences and return the approved form indicating all applicable requirements or stipulations.

Submit the approved form to the current City Planning Department.

_____ **AIRPORT HEIGHT ZONING – WITHIN 20,000 FEET OF AIRPORT (see map – Scottsdale Airport Vicinity)**

Proposed permanent structures and/or temporary construction cranes must be reviewed by the Federal Aviation Administration (via FAA Form 7460-1) if taller than:

1. An imaginary surface that extends outward and upward at a slope of **100 to 1** for a horizontal distance of 20,000 feet from the nearest point of the runway.
2. 200 feet in height above the ground level at any site.

NOTE: Applicants may claim a 7460-1 form exemption if the proposed object is shielded by existing structures or by natural terrain of equal or greater height where it is evident beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.

_____ **NOISE INFLUENCE AREA/ NOISE CONTOURS (see Influence Area Map or (Land Information Web (LIW) at www.scottsdaleAZ.gov/cosmap/lis/default.asp**

1. Noise disclosure required for new noise sensitive development in the influence area.
2. Avigation easement required for development within the 55 DNL or greater noise contour.
3. Land use restrictions impacted by the 65 DNL noise contour.

_____ **ADJACENT TO AIRPARK TAXILANE**

See Scottsdale Airport-Vicinity & Airpark Development Information Sheet and contact airport administration.

_____ **ADJACENT TO AIRPORT PROPERTY**

See Scottsdale Airport-Vicinity & Airpark Development Information Sheet and contact airport administration.

APPROVAL: The applicant _____ regarding the _____ project located at _____ will meet the indicated requirements by complying with the stipulations below and has been advised to review the executive summaries for the adopted Scottsdale Airport Master Plan and F.A.R. Part 150 Noise Compatibility Study as part of the due diligence to determine any future impacts by proposed airport growth/operational changes.

Approved by Airport staff _____ Date _____

Stipulations_____

_____

Comments_____

_____

SCOTTSDALE AIRPORT-VICINITY & AIRPARK DEVELOPMENT INFORMATION

This information pertains to object height, noise attenuation, avigation easements and development in the Scottsdale Airport/Airpark vicinity and is in addition to other City Codes (Building, Fire and Zoning Codes). Page two applies only to properties directly adjacent to the airpark taxilanes and/or airport. **For further information, questions or airport approval call Gary P. Mascaro, Assistant Aviation Director, at (480) 312-7612.**

1) **WITHIN 20,000 FOOT RADIUS FROM THE RUNWAY:**
   a) **FAA Form 7460-1**. Applicants must submit to the FAA Form 7460-1 at least 60 days prior to permits or construction, if applicable**. FAA review of cranes or construction near airports is required for:
      i) Objects exceeding an imaginary surface extending outward and upward at a **100 to 1 slope** for a horizontal distance of 20,000 ft. from the closest part of the runway, or
      ii) Any temporary or permanent structure taller than 200 ft.- ***see Notice of Construction Map***

      Applicants may choose to claim an exemption and not submit a 7460-1 Form if the proposed object is shielded from the runway by existing structures or terrain of equal or greater height where it is evident beyond all reasonable doubt that the object will not adversely affect safety in air navigation. *(See 7460-1 Form instructions.)*
   b) **Airport Height Zoning.** Proposed project must comply with the Airport Height Zoning to ensure protection of airspace in the airport vicinity – ***Consult airport staff.***
   c) **Airport Communication Form.** Applicant must communicate with the airport to complete an Airport Communication Form (available at the Dept. of Development Services).

2) **WITHIN AIRPORT INFLUENCE AREA:** Provide disclosure to prospective lessees and/or purchasers of airport proximity in a form acceptable to the City - ***see Airport Noise Areas Map & Sample Disclosure. Consult airport staff.***

3) **WITHIN 55 DNL NOISE CONTOUR:**
   a) **Avigation easement.** Execute easement document obtained from Scottsdale Airport.
   b) **Noise reduction.** Buildings with residential, lodging or other noise sensitive uses shall reduce interior to exterior noise levels by at least 25db - ***Consult airport staff.***

4) **WITHIN 65 DNL OR GREATER NOISE CONTOUR:** Residential uses and noise sensitive land uses are restricted by the Scottsdale Airport Noise Compatibility Program - ***Consult airport staff.***

5) **RUNWAY PROTECTION ZONE (RPZ):** Structures or vehicle parking may be prohibited within 1700 ft. of the runway end. If permitted, execute RPZ easement - ***Consult airport staff.***

REMAINING ITEMS ON PAGE TWO PERTAIN ONLY TO PROPERTIES ABUTTING A TAXILANE OR ADJACENT TO THE AIRPORT

6) **ABUTTING AN AIRCRAFT TAXILANE OR TAXIWAY:** ***Consult airport staff***

a) **Compliance with regulations.** The Airpark Rules and Regulations and Airpark Minimum Operating Standards regulate activity on lots abutting a taxilane or taxiway. The Northwest Airpark Property Owner Association CC&R's govern architectural approvals and controls assessments to maintain the privately-owned taxilanes outside Airpark Gates No. 5 & 6.

b) **Aircraft storage limits.** Off-airport hangaring is limited to the lesser of:

i) The aircraft that will simultaneously fit inside the hangar, or

ii) The aircraft permitted by the Airpark Rules and Regulations "slot program". One aircraft per "slot". One "slot" per 1,000 sq. ft. of on-site office or shop space.

c) **Non-hangar space**. At least 1,000 sq. ft. of non-hangar space is required for aircraft storage.

d) **Wingspan limitations.** Maximum recommended wingspan in the airpark is 66 ft. or less.

e) **Aircraft staging areas.**

i) An aircraft staging area equal to or larger than the largest on-site hangar is required.

ii) The staging area shall conjoin the taxilane and hangar to prevent obstructing the taxilane.

iii) The staging area must not exceed a 2% slope and meet FAA pavement standards.

iv) A "hold-short" line meeting FAA standards is required at the taxilane easement boundary.

f) **Design for aircraft.** Accommodating potential aeronautical uses is encouraged through:

i) Designing warehouse/parking areas that are convertible to aircraft storage/staging areas.

ii) Reserving at lease 2,000 sq. ft. of open space for future aircraft storage and staging.

g) **Preservation of taxilane easement/safety area (50' from taxilane centerline).**

i) Drop-offs, objects exceeding 3' in height (transformers or switch cabinets, fuel facilities, curbs, headwalls, river rock, culverts) or vegetation are prohibited in the taxilane easement.

ii) A 5% slope cannot be exceeded in the taxilane easement.

iii) The taxilane easement must be a weight-bearing surface. Paving is encouraged.

iv) Gravel for ground cover is discouraged, and if approved must be between 2"-3" diameter.

v) A FAA standard edge line must be painted where the taxilane edge is not obvious.

vi) Stormwater retention within the taxilane easement is prohibited.

vii) Architectural barriers (buildings, walls, bollards, etc.) must separate auto parking areas and the taxilane easement to prevent unauthorized vehicle access to the taxilane.

h) **Vehicle access**.

i) Vehicles must access each hangar/staging area without traversing the taxilane easement.

ii) A normally closed gate is required. Automatically operated gates are encouraged.

i) **Lighting.** Exterior lights must illuminate downward to prevent glare to pilots and/or air traffic controllers. Exterior lighting is required facing the taxilane.

j) **Jet blast.** Protection against jet blast may be required.

k) **Taxilane abandonment.** Please contact the airport director

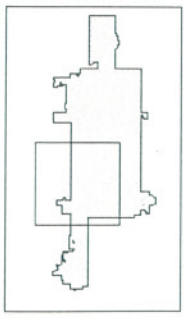
7) **ADJACENT TO AIRPORT PROPERTY:** ***Consult airport staff***

a) **Adjacent objects and landscaping.** No landscaping or objects (transformers, switch cabinets, trash enclosures, light standards, storage sheds, covered parking structures or retaining walls exceeding the adjacent grade on-airport) are permitted within 10 ft. of the airport perimeter fence without airport director approval.

b) **Screen wall construction.** A wall abutting the airport perimeter fence is only permitted with airport director approval. In such case the wall must be at least 6 ft. high and will normally replace the airport fence at the applicant's expense and must meet current and future FAA security requirements.

Scottdale Airport Vicinity, FAA Notice of Proposed Construction

Area Of Detail



INSTRUCTIONS: Proposed temporary cranes or structures which exceed a height of 100:1 slope (100 ft horizontally for 1 foot vertically) from the nearest point of the runway must provide notice to the FAA via a 7460-1 form. Forms are available at the FAA Flight Standards District Office (480 419-0111) or the Scottsdale Airport Administration Office (480 312-2321).

SAMPLE AIRPORT DISCLOSURE FOR NEW RESIDENTIAL DEVELOPMENT AROUND SCOTTSDALE AIRPORT

NOTICE OF PROSPECTIVE PURCHASERS

OF PROXIMITY TO THE SCOTTSDALE AIRPORT

For inclusion into CC&R's or for disclosure notice:

Proximity to Airport. Each Owner, by accepting a deed to a Lot or Parcel, or by otherwise acquiring title to a Lot or Parcel, acknowledges (for such Owner and such Owner's family members, other Occupants, successors and assigns) that: **(a)** the Project is in close proximity to the Scottsdale Airport (the "Airport"), which is currently located generally between Frank Lloyd Wright Boulevard on the north, Pima Road on the east, Thunderbird Road on the south and Scottsdale Road on the west; **(b)** as of the date hereof, the airport is operated as a general aviation reliever/commercial service airport for Scottsdale and North Phoenix, used generally for single engine and twin engine airplanes, corporate jets, helicopters and scheduled service turbo prop and jet aircraft; **(c)** aircraft taking off from and landing at the Airport may fly over the Project and adjacent properties at altitudes which will vary with meteorological conditions, aircraft type, aircraft performance and pilot proficiency; **(d)** at the date hereof, the majority of aircraft takeoffs and landings occur daily between 6:00 a.m. and 11:00 p.m., but the Airport is open twenty-four (24) hours each day, so takeoffs and landings may occur at any hour of the day or night; **(e)** at the date hereof, the number of takeoffs and landings at the Airport average approximately 850 each day, but that number will vary and may increase with time if the number of its operations increases; **(f)** flights over the Project or adjacent properties by aircraft taking off from or landing at the Airport may generate noise, the volume, pitch, amount and frequency of occurrence of which will vary depending on a number of factors, including without limitation the altitudes at which the aircraft fly, wind direction and other meteorological conditions and aircraft number and type, and may be affected by future changes in Airport activity; **(g)** as of the date hereof, management of the Airport has policies in place intended to help reduce or minimize aircraft noise and its influence on owners and occupants of properties in the vicinity of the Airport, but those policies may change over time and in addition other aspects of such policies (including, without limitation, those intended to promote safety) may be given preference over policies relating to limiting noise; and **(h)** such Owner (for such Owner and such Owner's family members, other Occupants, successors and assigns) hereby accepts and assumes any and all risks, burdens and inconvenience caused by or associated with the Airport and its operations (including, without limitation, noise caused by or associated with aircraft flying over the Project and adjacent properties), and agrees not to assert or make and claim against the City of Scottsdale, its officers, directors, commissioners, representatives, agents, servants and employees, the Declarant, and Declarant Affiliate, or the Association, or any director, officer, employee, agent, representative or contractor of any of them, related thereto.

Any questions regarding the operation of the Airport can be directed to the Airport Administration office at 480-312-2321.

NOISE AND AVIGATION EASEMENT AND COVENANT NOT TO SUE

WHEREAS, _____, hereinafter called "Grantor," is the owner of that certain property located in Maricopa County, Arizona, legally described in Exhibit "A" attached hereto (the "Property").

WHEREAS, Grantor has been advised and is of the opinion that a portion of the Property is located in a noise-influence area; that these present and future noise influences might be annoying to users of the land for its stated purpose and might interfere with the unrestricted use and enjoyment of the Property in its intended use; that these noise influences might change over time by virtue of greater numbers of aircraft, louder aircraft, seasonal variations, and time-of-day variations; that changes in airport, aircraft, and air traffic control operating procedures or in airport layout could result in increased noise influences; and that Grantor's or the user's own personal perceptions of the noise exposure could change and that his or her sensitivity to aircraft noise could increase;

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, Grantor does hereby grant and convey a permanent and perpetual noise and avigation easement to the City of Scottsdale ("Grantee"), owner and operator of Scottsdale Airport (the "Airport"), and to Grantee's grantees, lessees, sublessees, permittees, invitees, successors and assigns, for the purpose of the passage of all aircraft (for purposes of this instrument, "aircraft" means any contrivance or device now known or hereafter invented, used or designed to navigate, or fly in, the air) in and through the "Navigable Airspace" (as hereinafter defined) over and above the Property, together with the right to cause in said Navigable Airspace noise, vibration and all other effects that may be caused by the operation of aircraft landing or taking off from, or operated at or on, the Airport.

Grantor, for and on behalf of itself, its successors and assigns, further covenants and agrees that upon the Property no use shall be permitted that causes a discharge into the air of fumes, smoke or dust which will obstruct visibility and adversely affect the operation of aircraft or cause any interference with navigational facilities necessary to aircraft operation.

Grantor, for and on behalf of itself, its successors and assigns, waives, remises and releases any right, claim or cause of action which Grantor has now, or which Grantor may have in the future against, and covenants not to sue, Grantee and/or its past, present, and future officers, officials, directors, employees and agents, and Grantee's grantees, lessees, sublessees, permittees, invitees, successors and assigns, due to such noise, vibration, and other effects that may be caused by the operation of aircraft in and through the Navigable Airspace, and/or landing and taking off from, or operating at or on the Airport, regardless of any future changes in volume or character of aircraft overflights, types of aircraft, changes in airport layout and operating policies, or changes in air traffic control procedures.

Grantor, for and on behalf of itself, its successors and assigns, further acknowledges that the easement, covenant not to sue and other agreements contained herein contemplate and include all existing and future operations at the Airport, so long as the operations are conducted in compliance with the requirements of applicable laws and regulations from time to time; that future aircraft numbers and types will most likely increase and noise patterns may also increase; and that the rights, obligations and covenants herein set forth shall not terminate or vary in the event of changes in the flight volume or noise, traffic patterns, runway length or location, or characteristics or type or category of aircraft using the Airport.

Grantor and Grantee understand and agree that this easement, its covenants and agreements, including all benefits and burdens, run with the land and are binding upon and shall inure to the benefit of their respective successors and assigns.

"Navigable Airspace" means airspace above the minimum altitudes of flight prescribed by regulations under subparts II and III of part A of subtitle VII of title 49 of the United States Code, including airspace needed to ensure safety in the takeoff and landing of aircraft (49 U.S.C. § 40102(a)(30) (as amended)).

_____, Grantor

By:_____
Its:_____

CITY OF SCOTTSDALE, an Arizona
municipal corporation

By: _____
Scott T. Gray
Aviation Director

STATE OF _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me this ___ day of _____, 2004, by _____ of _____, for and on behalf of Grantor.

_____
Notary Public

My commission expires:

_____

STATE OF _____)
) ss.
County of _____)

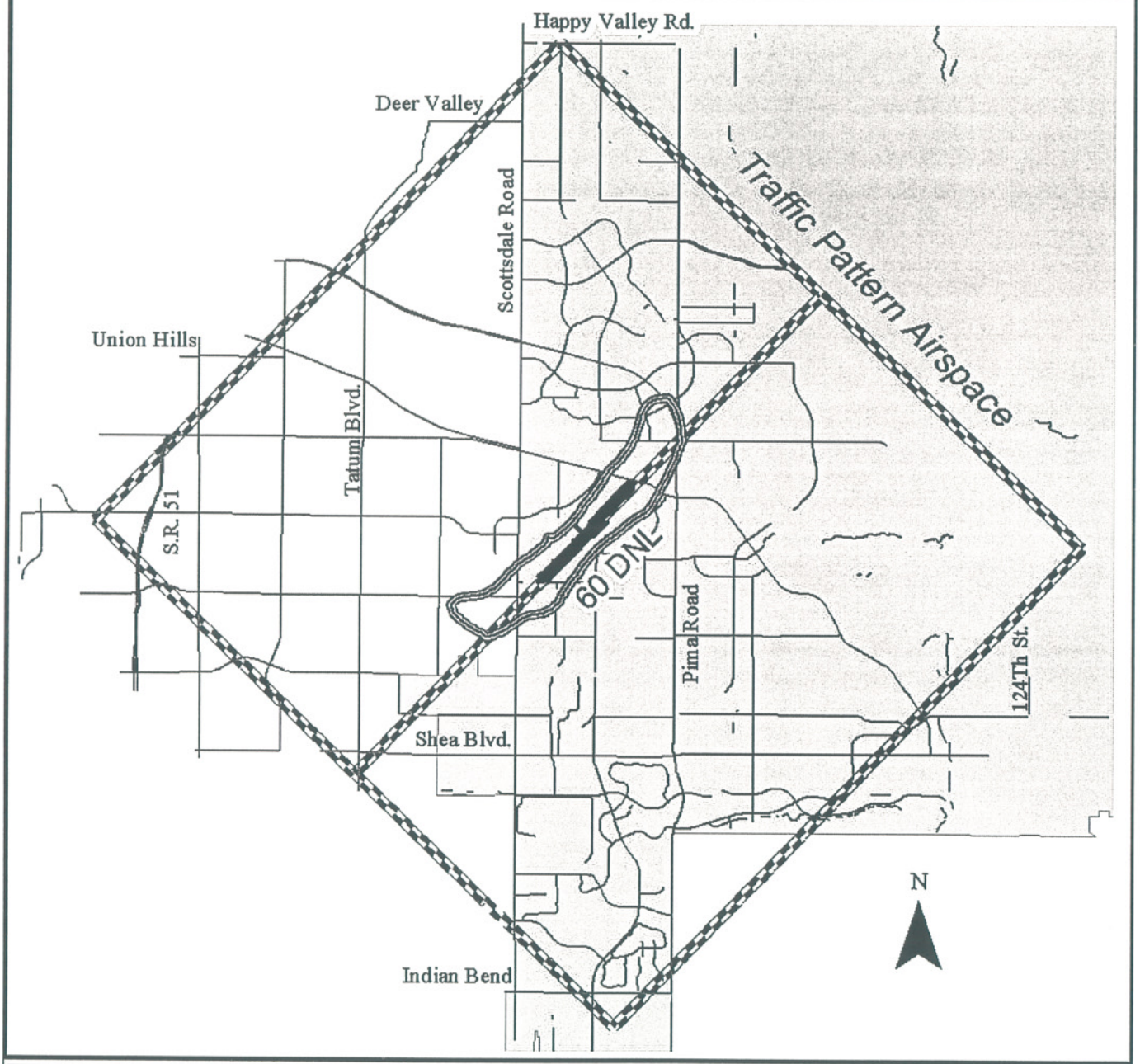
The foregoing instrument was acknowledged before me this ___ day of _____, 2004, by Scott Gray, Aviation Director, for and on behalf of City of Scottsdale.

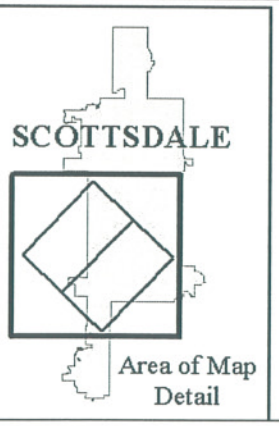
_____
Notary Public

My commission expires:

_____

Scottsdale Airport
Traffic Pattern Airspace





1 0.5 0 1 2 3 Miles

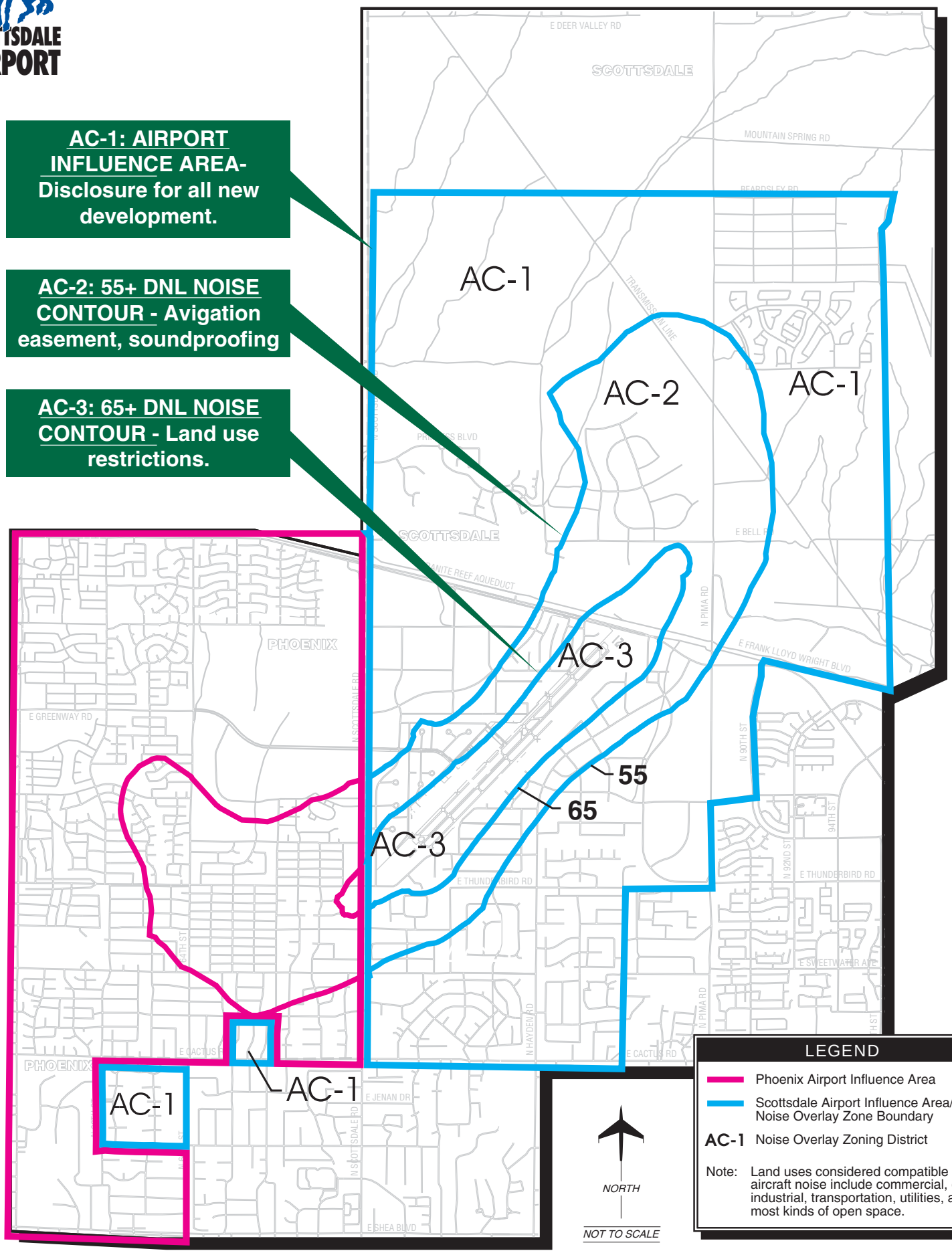
Map Date: October 18, 2001

SCOTTSDALE AIRPORT AREA DEVELOPMENT - NOISE AREAS

AC-1: AIRPORT INFLUENCE AREA- Disclosure for all new development.

AC-2: 55+ DNL NOISE CONTOUR - Avigation easement, soundproofing

AC-3: 65+ DNL NOISE CONTOUR - Land use restrictions.



LEGEND

- Phoenix Airport Influence Area
- Scottsdale Airport Influence Area/ Noise Overlay Zone Boundary
- **AC-1** Noise Overlay Zoning District

Note: Land uses considered compatible with aircraft noise include commercial, office, industrial, transportation, utilities, and most kinds of open space.

NORTH

NOT TO SCALE

ADAMS COUNTY, COLORADO

EXCERPTS FROM COMPREHNSIVE PLAN AND ZONING REGULATIONS

B. Physical Influences

Important physical features that have influenced land use patterns include floodplains located along major drainage ways; areas with conservation values, including open lands and agricultural lands; public parklands and open space; and areas with airport related noise impacts. The following is a summary of key physical influences (see Figure 2.3 below).

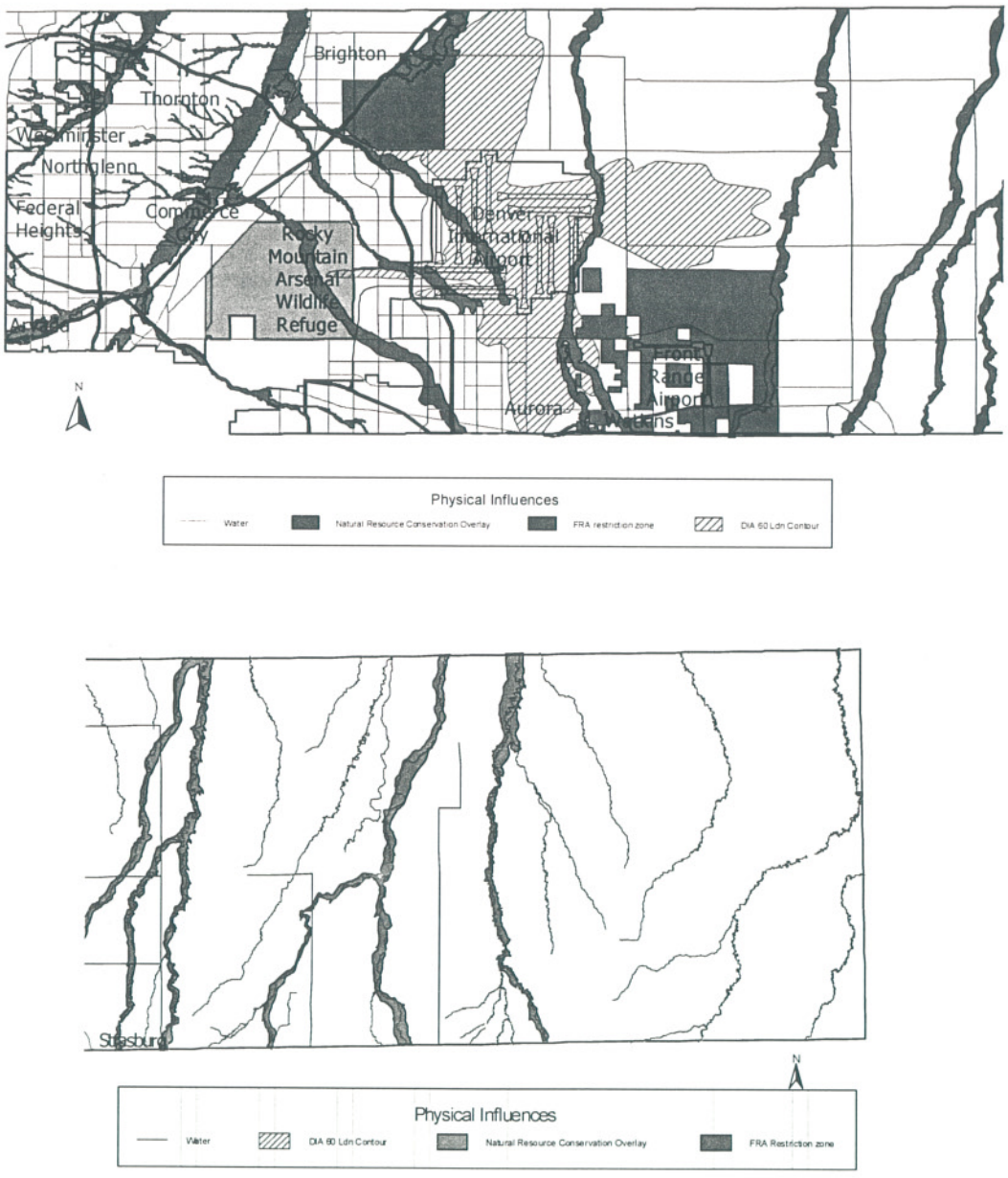


Figure 2.3

1. Floodplains

The South Platte River and its tributary creeks and streams form the major waterway and drainage basin in the western half of the County. Other drainages include Clear Creek, Big Dry Creek, and Little Dry Creek. Defined floodplains can be found along these drainages and creeks in the County. The County is also traversed by a number of north/south creeks east of Denver International Airport. In general, creeks in the east portion of the County are characterized by their intermittent nature, and broad, shallow floodplains.

Twin Lakes is part of the Clear Creek Open Space system.

2. Priority Conservation Areas and Agricultural Lands

The County contains a number of important natural resource areas, open lands, and agricultural lands. The Adams County Open Space Plan identifies areas that are important to the County in terms of wildlife habitat, scenic character, and agricultural production. The location of these areas can be used as an important factor in directing development to areas that are more suited for development. Figure 7.4 Agricultural Lands Conservation Map, which appears in Chapter VII, illustrates areas in the County that should be considered for conservation. See the Adams County Open Space Plan for a more detailed discussion of these areas.

3. Parks and Open Space

The western third of the County has diverse recreation and open space opportunities. Major facilities include the Adams County Regional Park, the South Platte River and Clear Creek Open Space systems, Barr Lake State Park, and the Rocky Mountain Arsenal National Wildlife Refuge.

4. Airport Noise Impacts

Denver International Airport and Front Range Airport are located in the western half of Adams County. The 60 Ldn noise contours resulting from airport operations at DIA (see Figure 2.3 on page 9) will impact future land uses. The County prohibits new residential development within this 60 Ldn noise contour. The Front Range Airport Master Plan will be revised in 2004 and may contain new noise contours for the airport. These noise contours will be based on the ultimate projected build-out of the airport.

5. Public Utilities

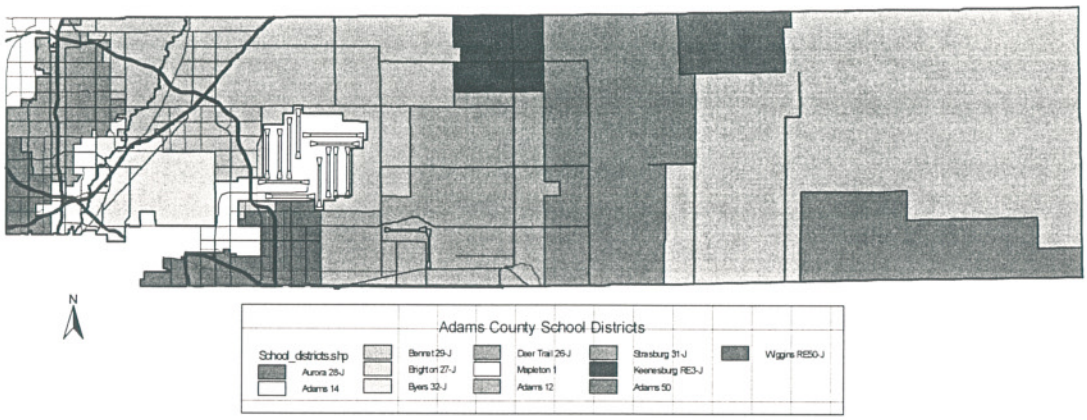
Adams County residents are served by multiple public and private utilities. The County provides no utility services on its own. Urban scale development is permitted only within municipal limits so it can be served by municipal utilities. Exurban development relies mainly on on-site wastewater systems and quasi-public Metropolitan Districts for water and other services.

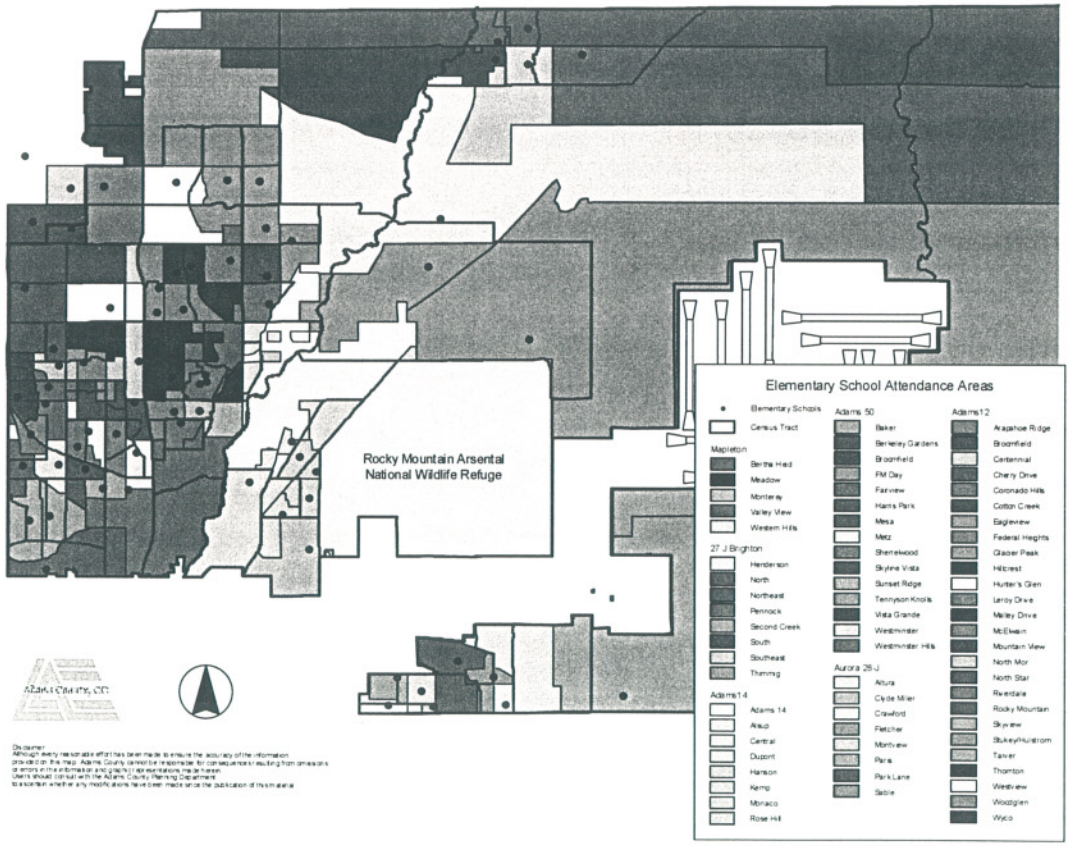
6. Schools

Twelve different school districts serve Adams County. The total combined enrollment of these districts exceeded 101,000 students at the start of the 2002 school year. However, it is difficult to tell how many students attend school in Adams County at any one time. This is due to three factors. Some of Adams County districts also serve areas in Arapahoe, Jefferson, and Weld Counties. Colorado is an open enrollment state and many Adams County students may attend school outside of the County, or vice versa. Also, due to the mobility of the population, school enrollment numbers fluctuate almost daily. The districts serving Adams County are listed below and shown on the map in Figure 2.4 on the next page. Elementary school attendance areas are also shown for western Adams County in Figure 2.5.

- District 1 - Mapleton
- District 12 – Five Star Schools
- District 14 – Commerce City
- District 26-J - Deer Trail
- District 27-J - Brighton
- District 28-J - Aurora
- District 29-J - Bennett
- District 31-J – Strasburg
- District 32-J - Byers
- District 50 – Westminster
- District RE3-J - Keenesburg
- District RE50-J – Wiggins

Figures 2.4 and 2.5





3-32 AIRPORT NOISE OVERLAY (ANO)

3-32-01 PURPOSE

The Airport Noise Overlay is intended to provide for protection of residential and non-residential land uses in areas which may be subjected to noise levels of such duration and frequency which would constitute a nuisance to residential and other uses.

3-32-02 BOUNDARIES

The Airport Noise Overlay includes all land heavily impacted by the noise created by low-flying aircraft, and lying within the sixty (60) Ldn or greater noise contour area. The extent of this area is determined based upon the measurements of sound computed by the methods contained in Title 14 of the Code of Federal Regulations, Subchapter I, Federal Aviation Regulations (F.A.R., hereafter) Part 150, "Airport Noise Compatibility Planning". These computations are based upon the fleet mix that forms the "worst case scenario" for the type and volume of aircraft activity proposed at full build-out of the facility. The geographic extent of the noise overlay for each aviation facility affecting Adams County is delineated on the official Adams County Zoning Map.

3-32-03 PERMITTED USES

All uses permitted by the underlying zone as permitted uses or conditional uses are permitted in the Airport Noise Overlay unless specifically prohibited, subject to building permit review and approval.

3-32-04 PROHIBITED USES

All uses: (1) not expressly identified as permitted uses in the underlying zone district; or (2) determined to be permitted by the Director of Planning and Development pursuant to Section 3-05-01 of these standards and regulations, are prohibited. In addition, the following uses are specifically prohibited in an Airport Noise Overlay Zone:

1. Neighborhood Indoor Uses
2. Institutional Care
3. Universities

3-32-05 GENERAL SITE DESIGN AND PERFORMANCE STANDARDS

The following general site design and performance standards shall be met by all uses within an Airport Noise Overlay District.

3-32-05-01 RESIDENTIAL USES

3-32-05-01-01 *NO NEW RESIDENTIAL ZONING*

No residential rezoning shall be considered or approved.

3-32-05-01-02 *EXISTING LOTS DEVELOPABLE*

One single family dwelling may be constructed per lot in existence at the effective date of these standards and regulations, or as may be created per Article 28, Title 30, Section 101 (10) of the Colorado Revised Statues, as amended.

3-32-05-01-03 *EXISTING RESIDENTIAL USE NON-CONFORMING*

Existing residential uses may continue, but shall be limited by the non-conforming use provisions of these standards and regulations.

3-32-05-01-04 *APPROVED RESIDENTIAL USES*

Residential uses allowed in accordance with an approved Site Specific Development Plan, or building permit effective at the time airport construction commences may be allowed if the use conforms with the performance standards listed below

3-32-05-01-05 *NOISE REDUCTION REQUIRED*

All newly established residential uses must incorporate noise level reduction measures sufficient to achieve an interior noise level of 45 dB on the A-weighted scale. Assurance that these measures have been incorporated into the structure is illustrated by submission of noise reduction plans certified by a registered professional engineer at the time of application for a building permit, and implemented prior to issuance of a Certificate of Occupancy.

3-32-05-02 AFFIDAVIT REQUIRED TO OBTAIN BUILDING PERMIT

A signed " Aircraft Activity Covenant with Disclosure" must be filed prior to issuance of a building permit.

3-32-05-03 COMMERCIAL AND INDUSTRIAL USES TO INCORPORATE NOISE REDUCTION

The portions of the commercial or industrial structures devoted to office uses, or occupied by members of the public must incorporate noise level reduction measures sufficient to achieve an interior noise level of 45 dB on the A-weighted scale. The noise reduction measures cited above are described in Chapter 35 of the Appendix of the Uniform Building Code, and as adopted by Adams County. Assurance that these measures have been incorporated into the structure is illustrated by submission of noise reduction plans certified by a registered professional engineer at the time of application for a building permit, and implemented prior to issuance of a Certificate of Occupancy.

3-32-05-04 USES NOT TO INTERFERE WITH AVIATION

3-32-05-04-01 *NO EMISSIONS*

Uses must not produce steam, smoke, or otherwise pose a hazard to aviators.

3-32-05-04-02 *NO GLARE*

Uses must not emit glaring light or employ highly reflective surfaces which may impair the visibility of aviators, nor shall the use create interference with the electronic communication among aviators and ground control.

3-32-05-04-03 *NOT ATTRACTIVE TO WILDLIFE*

Uses must lack the potential of attracting birds and other wildlife species which may pose a hazard to flight operations.

3-32-06 RELATIONSHIP TO DESIGN REQUIREMENTS AND PERFORMANCE STANDARDS

All design requirements and performance standards for specific uses contained in Chapter 4 of these standards and regulations shall apply in a Noise Overlay District unless inconsistent with a provision contained in Section 3-32, in which case the specific standard or requirement contained in Section 3-32 shall apply.

LINCOLN, NEBRASKA

EXCERPTS FROM ZONING REGULATIONS

Chapter 27.58

AIRPORT ENVIRONS NOISE DISTRICT

Sections:

27.58.010	**Scope of Regulations.**
27.58.020	**Definitions.**
27.58.030	**Use Regulations.**
27.58.050	**Permitted Uses in Relation to Noise Exposure Levels.**
27.58.060	**Conditional Permitted Uses in Relation to Noise Exposure Levels.**
27.58.080	**Avigation and Noise Easements.**
27.58.090	**Pre-existing Uses.**
27.58.100	**Enforcement and Exemption.**

27.58.010 Scope of Regulations.

The regulations set forth in this chapter, or set forth elsewhere in this title when referred to in this chapter, are regulations in the Airport Environs Noise District. The regulations shall apply to the area in the vicinity of the Lincoln municipal airport defined as Airport Environs Noise District in Section 27.58.020. References to specific DNL lines shall mean those DNLs as shown on the "Airport Environs Noise District Map." (Ord. 18408 §1; August 2, 2004: prior Ord. 17752 §1; October 30, 2000: Ord. 17699 §1; July 24, 2000: Ord. 14431 §3: July 14, 1986: Ord. 13414 §1; June 14, 1982).

27.58.020 Definitions.

For the purpose of this chapter, certain terms and words are hereby defined:

Airborne noise shall mean noise radiated initially into and transmitted through air.

Airport Environs Noise District shall mean an area established on the Airport Environs Noise District Map (hereinafter Airport Environs Noise District Map), and more particularly described as follows:

> Beginning at a point located on Southwest 12th street at the southeast corner of the north half of Section 9, Township 9 North, Range 6 East of the 6th P.M., Lancaster County, Nebraska, thence northerly along Southwest 12th Street, said line also being the east line of Sections 9 and 4, Township 9 North, Range 6 East, and the east line of Section 33, Township 10 North, Range 6 East a distance of approximately 8,100 feet to the centerline of the Burlington Northern Santa Fe railroad tracks; thence northeasterly along said railroad track centerline a distance of approximately 2,000 feet; thence northerly along the centerline of Southwest 9th Street and its extension north and south through the west half of Sections 34 and 27, Township 10 North, Range 6 East a distance of approximately 8,200 feet to the centerline of a Burlington Northern Santa Fe railroad track. Said

track being approximately 500 feet south of "O" Street; thence northeasterly along the former Burlington Northern Santa Fe railroad centerline through Sections 27 and 22, Township 10 North, Range 6 East to the intersection of said railroad centerline and the east line of Section 22, Township 10 North, Range 6 East; thence northerly along the east line of said Section 22 a distance of approximately 150 feet to the centerline of the Union Pacific railroad tracks; thence northwesterly along said railroad track centerline through Sections 22 and 15, Township 10 North, Range 6 East to an intersection with the west line of Section 15, Township 10 North, Range 6 East; thence north along the west line of Section 15, Township 10 North, Range 6 East to an intersection with the centerline of Northwest 12th Street; thence northerly along the centerline of Northwest 12th Street to its intersection with the centerline of Northwest 13th Street in Section 3 Township 10 North, Range 6 East; thence continuing northerly along the centerline of said Northwest 13th Street to its intersection with the centerline of West Fletcher Avenue; thence westerly along the centerline of said West Fletcher Avenue to a point on the west line of Section 34, Township 11 North, Range 6 East; thence northerly along the west line of said Section 34 to the southeast corner of Section 28, Township 11 North, Range 6 East; thence east along the south line of Section 27, Township 11 North, Range 6 East to an intersection with North 1st Street, said point also being the southeast corner of Section 27, Township 11 North, Range 6 East; thence north along North 1st Street and along the east line of Sections 27, 22, and 15, Township 11 North, Range 6 East to the City of Lincoln's three-mile zoning jurisdiction line; thence westerly along said three-mile zoning jurisdiction line to its intersection with Northwest 70th Street. Said point being on the west line of Section 24, Township 11, Range 5 East; thence south along the west line of Sections 24, 25 and 36, Township 11 North, Range 5 East, and along the west line of Sections 1, 12, 13, 24, 25 and 36, Township 10 North, Range 5 East, and along the west line of Sections 1 and 12, Township 9 North, Range 5 East to the southwest corner of the north half of Section 12, Township 9 North, Range 5 East; thence east along the south line of the north half of Section 12, Township 9 North. Range 5 East, and along the south line of Sections 7, 8 and 9, Township 9 North, Range 6 East, said line also being along West Claire Avenue and its extension east and west, to the point of beginning at the southeast corner of the north half of Section 9, Township 9 North, Range 6 East.

Day-night average sound level (DNL) shall mean the sum of noise emission equivalent of A-weighted sound level during a 24-hour day typifying annual average conditions after addition of 10 decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

Exterior door shall mean all exit doors of a building that are located between conditioned and unconditioned space. A basement, crawl space, or garage is considered unconditioned space unless it is provided with a positive heat supply to maintain a minimum temperature of 50 degrees F.

Habitable space shall mean space or room in a structure for living, sleeping, eating, or cooking. Bathrooms, toilet compartments, closets, halls, storage or utility space, solariums, sunrooms and similar areas are not considered habitable space.

Noise-sensitive manufacturing and noise-sensitive communication facilities shall include, but not be limited to, the manufacture and assembly of micro-electronics, technical and scientific instruments, photographic and optical goods, and other manufacturing sensitive to speech interference or vibration, and radio and television broadcasting studios. (Ord. 18408 §2; August 2, 2004: prior Ord. 17752 §2; October 30, 2000: Ord. 17699 §2; July 24, 2000: Ord. 14431 §4; July 14, 1986: Ord.13414 §3; June 14, 1982).

27.58.030 Use Regulations.

Any use permitted in the underlying zoning district in which the proposed use is located shall be allowed in the Airport Environs Noise District except as prohibited within the provisions of this chapter and, provided that additional requirements set forth in this chapter are met. References to allowable uses as provided within this chapter are conditioned upon the said use being in compliance with allowable uses within the underlying zoning district. (Ord. 18408 §3; August 2, 2004: prior Ord. 17752 §3; October 30, 2000: Ord. 17699 §3; July 24, 2000: Ord. 13414 §4; June 14, 1982).

27.58.050 Permitted Uses in Relation to Noise Exposure Levels.

(a) The use of a building or premises for any use permitted under Section 27.58.030 shall be allowed in the Airport Environs Noise District if it lies within the specified noise exposure levels set out in Figure 27.58.050 shown at the end of this chapter, conditioned upon compliance with Section 27.58.080 of this chapter.

(b) Where property is undeveloped, only such portion of it as is actually within the DNL lines shall be considered at or within that DNL line. However, at such time as said property shall be subdivided or platted, any platted buildable lots intersected by a DNL line shall be deemed to be wholly within the highest DNL line. (Ord. 18408 §4; August 2, 2004: prior Ord. 17752 §4; October 30, 2000: Ord. 17719 §2; August 21, 2000: Ord. 17699 §5; July 24, 2000: Ord. 13414 §6; June 14, 1982).

27.58.060 Conditional Permitted Uses in Relation to Noise Exposure Levels.

(a) The use of a building or premises for a use designated Y[1] in Figure 27.58.050 shown at the end of this chapter is permitted in the Airport Environs Noise District if it lies within the specified noise exposure levels, in conformance with the requirements of Section 27.58.080 of this title and the conditions prescribed herein:

(1) A building permit may be issued by the Director of Building and Safety provided that the building plan shows a design that incorporates acoustical features described below in addition to all other applicable requirements of the Lincoln Building Code as now existing or hereinafter amended:

(i) All exterior doors shall be either:

A. solid-core or metal-clad construction of at least 1 3/4 inches thick, or

B. separately equipped with wood or metal storm door.

C. multiple-glazed.

(ii) Multiple-glazed windows shall be provided for all habitable space.

(iii) Through-the-wall/door mailboxes, venting skylights, jalousie windows, or other direct openings from the interior to the exterior of the building shall be prohibited.

(iv) Mechanical ventilation shall be provided of a type and design to provide adequate environmental comfort with all doors and windows closed during all seasons. Window and through-the-wall ventilation units shall not be used. Commercial cooking areas are exempt from these conditions. (Ord. 18408 §5; August 2, 2004: prior Ord. 17857 §6; June 4, 2001: Ord. 17752 §5; October 30, 2000: Ord. 17719 §3; August 21, 2000: Ord. 17699 §6; July 24, 2000: Ord. 14837 §2(part); February 29, 1988: Ord. 13414 §7; June 14, 1982).

27.58.080 Avigation and Noise Easements.

(a) All uses allowed within the Airport Environs Noise District, except as provided in Section 27.58.090, shall be conditioned upon the grant by the property owner of an avigation and noise easement. Such easement shall be a condition of subdivision, community unit plan, special permit, use permit, or building permit. The avigation and noises easement is to be submitted pursuant to the terms of this chapter and shall conform to the provisions contained in the model - avigation and noise easement, a copy of which is shown in Figure 27.58.080 at the end of this chapter. (Ord. 18408 §6; August 2, 2004: prior Ord. 17752 §7; October 30, 2000: Ord. 17699 §8; July 24, 2000: Ord. 13414 §9; June 14, 1982).

27.58.090 Pre-existing Uses.

Any existing use which was lawfully established at the time of the effective date of this chapter may be continued although such use does not conform to the provisions hereof. However, the requirements set forth in this chapter shall be applicable to the portion of the use subject to enlargement, extension, conversion, reconstruction, or structural alteration, and not be retroactive to the entire existing structure. Nothing shall prohibit the reconstruction of a building legally in use at the time of the adoption of this chapter. A request for enlargement, extension, conversion, reconstruction, or structural alteration of a pre-existing use which does not conform to the provisions of this chapter shall be processed through special permit procedures set forth in Chapter 27.63. No person applying for a special permit to enlarge, extend, convert, reconstruct, or alter a structure lawfully in existence at the time of the enactment of this chapter shall be required to submit an avigation and noise easement as a condition for approval thereof. (Ord. §18408 7; August 2, 2004: prior Ord. 13414 §10; June 14, 1982).

27.58.100 Enforcement and Exemption.

(a) Prior to the issuance of a building permit or other certificate, the Director of Building and Safety shall receive the executed avigation and noise easement for property in the Airport Environs Noise District which shall then be forwarded to the Airport Authority or shall have received evidence that the executed avigation and noise easement was previously furnished to the Airport Authority. All avigation and noise easements shall be forwarded to the Airport Authority, which shall then be filed with the Register of Deeds at Authority's expense.

(b) Uses in connection with the operation of the Lincoln municipal airport, and properties owned or leased by the City of Lincoln, the Airport Authority of the City of Lincoln, military units, or other governmental agencies are hereby declared compatible and shall be exempted from the

requirements of this chapter. (Ord. 18408 § 8; August 2, 2004: prior Ord. 17752 §9; October 30, 2000: Ord. 17699 § 9; July 24, 2000: Ord. 13414 §11; June 14, 1982).

Figure 27.58.050
Generalized Use Matrix for Airport Environs Noise District

Uses Permitted Within Each Noise Contour Level *	Airport Noise Environs District			
	Below 60 DNL	60 to 65 DNL	65 to 70 DNL	70 to 75 DNL
All residential uses (incl. RV parks and campgrounds)	Y	Y [1]	N	N
Educational and religious facilities	Y	Y [1]	N	N
Health and childcare facilities	Y	Y [1]	N	N
Outdoor sport, recreation, entertainment (except for race tracks for motorized vehicles, open space and natural areas, golf courses and trails) and parks facilities.	Y	Y	N	N
Indoor sport, recreation, and entertainment facilities	Y	Y	Y	N
Noise-sensitive manufacturing and communication facilities	Y	Y	Y	N
Cemeteries, mausoleums and undertaking establishments	Y	Y	Y	N
Hotels/ motels	Y	Y	Y	N
Race Tracks for Motorized Vehicles	Y	Y	Y	N
Offices, retail and service businesses, restaurants, eating and drinking establishments	Y	Y [1]	Y [1]	Y [1]
Open space and natural areas	Y	Y	Y	Y
Golf courses and trails	Y	Y	Y	Y
Service stations and repair services	Y	Y	Y	Y
Assembly, processing, manufacturing, refining, mining, storage, transportation, utility, communication and distribution facilities	Y	Y	Y	Y
Farming, livestock, breeding and feeding; plant nurseries	Y	Y	Y	Y
Parking lots	Y	Y	Y	Y
Signs	Y	Y	Y	Y

Notes:
Y - Permitted
N - Not permitted

1. Development is required to incorporate acoustical features as a condition of building permit issuance, as described in Section 27.58.060 of this chapter.

* All uses permitted within the Airport Environs Noise District shall be conditioned upon the grant by the property owner of an avigation and noise easement agreement, as described in Section 27.58.080 of this chapter.

(Ord. 18408 § 4; August 2, 2004).

Figure 27.58.080
Model Avigation and Noise Easement

INDENTURE made this _____ day of _____ , 20__ , between _____ , hereinafter called "Grantor", and Airport Authority of the City of Lincoln, a public body corporate and politic, hereinafter called "Airport Authority":

WHEREAS, Grantor is the owner in fee simple of a certain tract of land situated in Lancaster County, State of Nebraska, more particularly described as:

See attached Exhibit "A",

said tract of land being hereinafter referred to as "Grantor's Land"; and

WHEREAS, Airport Authority, as an agency of the City of Lincoln, Nebraska, is the owner and operator of a public airport known as Lincoln Municipal Airport situated on land adjacent or in close proximity to the above-described property; and

WHEREAS, Grantor has agreed in consideration of _____ ($_____) and other valuable consideration, receipt of which is hereby acknowledged, to grant Airport Authority and City of Lincoln, Nebraska, the following Avigation and Noise Easement for the right of flight and consequent aircraft noise over Grantor's Land.

NOW THIS INDENTURE, WITNESSETH:

Grantor, for itself, its heirs, successors and assigns, for the said consideration, hereby grants and conveys to the City of Lincoln, Nebraska, the following Avigation and Noise Easement for the right of flight and consequent aircraft noise over Grantor's Land.

NOW THIS INDENTURE, WITNESSETH:

Grantor, for itself, its heirs, successors and assigns, for the said consideration, hereby grants and conveys to the City of Lincoln, Nebraska, for the use of Airport Authority, its successors and assigns, a perpetual easement and right-of-way for the unobstructed and unrestricted flight of aircraft in, through and across the airspace over and above Grantor's Land, at any legally permissible altitude, and the right, to the extent permitted by law, to make noise and cause fumes and disturbance arising from the ground and flight operations of all civil and military aircraft to, from and upon Lincoln Municipal Airport, regardless of the means of propulsion.

The Grantor, for itself, its heirs, successors, and assigns, does hereby waive all right to and interest in any claim or cause of action against the Airport Authority or the City of Lincoln, arising out of or from any legally permissible noise, vibration, avigations, pollution, light or noise generated from, above or on airport property, or sonic disturbance of any description, caused by flight operations of civil and military aircraft regardless of the means of propulsion, to, from and upon Lincoln Municipal Airport, which may result in damage to land or to any person, structure or other property located upon Grantor's Land, excepting, however, any claim or cause of action for any damage or injury to person or property resulting from any aircraft, or object therefrom, falling on, propelled into, or striking any person or property on Grantor's land.

The Grantor, for the said consideration, further agrees, that if Grantor or its heirs, successors or assigns, should sell or alienate any portion of Grantor's Land, Grantor, its heirs, successors or assigns shall include in every deed or conveyance evidencing such sale or alienation, a recitation that the grant is subject to all conditions contained within this Avigation and Noise Easement, and further as a condition of such transaction, Grantor shall require each Grantee to include such recitation in any subsequent deed or conveyance of any of the property herein above described as Grantor's Land.

In the event any condition or provision herein contained is held to be invalid by any court of competent jurisdiction, the invalidity of any such easement, condition or provision shall in no way affect any other condition or provision herein contained.

It is understood and agreed that this easement shall be binding upon the heirs, administrators, executors, and assigns of the Grantor, and that this easement shall run with Grantor's Land.

TO HAVE AND TO HOLD said Avigation and Noise Easement hereby granted unto the City of Lincoln for the use of the Airport Authority, its successors, and assigns, as appurtenant to the said Lincoln Municipal Airport and every part thereof.

IN WITNESS WHEREOF, the undersigned has caused its signature to be affixed this _____ day of _____ , 20__.

By: _____

STATE OF NEBRASKA)
) ss.
COUNTY OF LANCASTER)

On this _____ day of _____ , 20__, before me, a duly appointed and qualified notary public, personally appeared _____, to me personally known to be the same and identical person who signed the above and foregoing instrument and he did acknowledge the execution thereof to be his voluntary act and deed and that of _____.

WITNESS my hand and seal on the date last aforementioned.

_____
Notary Public

(Ord. 18408 §6; August 2, 2004).

NAPLES, FLORIDA
EXCERPTS ZONING REGULATIONS

DIVISION 4. AIRPORT OVERLAY DISTRICT*

***Editor's note:** Ord. No. 02-9648, § 1, adopted June 5, 2002, repealed former Div. 4, §§ 102-1031--102-1036, which pertained to airport high noise special overlay district. Section 2 of said ordinance enacted provisions designated as a new Div. 4, §§ 102-1031--102-1039, to read as herein set out. See the Code Comparative Table.

Sec. 102-1031. Title and citation.

This division shall be known as and may be cited as the airport overlay district (AOD).

(Ord. No. 02-9648, § 2, 6-5-02)

Sec. 102-1032. Purpose.

(a) The purpose of the airport overlay district (AOD) is to provide both airspace protection and land use compatibility in relation to the normal operation of public-use airports located within the City of Naples. This division shall attempt to promote:

(1) The maximum safety of residents and property within the areas surrounding the airport; and

(2) The maximum safety of aircraft arriving at and departing from the Naples Municipal Airport and all public-use heliports; and

(3) The full utility of the public-use airport; and

(4) Compatible development standards for land uses within the prescribed AOD associated with the normal operation of the airport;

(5) Building/structure height standards for use within the AOD and other zones prescribed in the Federal Aviation Regulations through the use of variance procedures in cases of justifiable hardship; and

(6) Proper enforcement of these regulations in compliance with state and federal laws in a manner which provides the greatest degree of safety, comfort, and wellbeing to both the users of the airport facility and the property owners within the vicinity of the airport;

(b) The regulations set forth in this division are adopted pursuant to the authority conferred by F.S. § 333.03. It is hereby determined that an airport obstruction has the potential for being hazardous to aircraft operations as well as to persons and property on the ground in the vicinity of the obstruction. An obstruction may affect land use in its vicinity and may reduce the size of areas available for the taking-off, maneuvering and landing of aircraft, thus tending to impair or destroy the utility of the airport and the public investment therein. It is hereby found that excessive aircraft noise may be an annoyance or may be objectionable to residents in the city. Accordingly, it is declared that:

(1) The creating or establishment of an airport hazard which reduces the size of the areas available for such operations, or which inhibits the safe and efficient use of airspace or the airport, creates a public nuisance and injury to the city and

no variance by the city shall be granted to authorize any such obstruction; and

(2) It is in the interest of the public health, safety and welfare that the creation of airport hazards and incompatible use of land within the airport overlay district or the airport noise zones be prevented; and

(3) The creating or establishment of anything affecting the safety of aircraft or pilots or passengers, or which inhibits the safe operations of aircraft operating to or from the airport shall be prevented; and

(4) The prevention of these hazards and incompatible land uses is desirable.

(c) It is further declared that the prevention of the creation of airport hazards and incompatible land uses, and the elimination, removal, alteration, mitigation or marking and lighting of existing airport obstructions are public purposes for which the political subdivision may raise and expend public funds and acquire land or interests in land.

(Ord. No. 02-9648, § 2, 6-5-02)

Sec. 102-1033. Definitions.

The following definitions shall apply for purposes of this division.

Airport hazard means any structure, tree, or use of land which would exceed the federal obstruction standards as contained in 14 C.F.R. Part 77.21, 77.23, 77.25, 77.28 and 77.29 and which obstructs the airspace required for the flight of aircraft in taking off, maneuvering, or landing or is otherwise hazardous to aircraft taking off, maneuvering, or landing and for which no person has previously obtained a permit or variance pursuant to F.S. § 333.025, or F.S. § 333.07.

Airport hazard area means any area of land or water upon which an airport hazard or obstruction might be established if not prevented as provided in this division.

Airport land use compatibility zoning means airport zoning regulations restricting the use of land adjacent to or in the immediate vicinity of an airport or along the extended path of a runway in the manner enumerated in F.S. § 333.03(2), to activities and purposes compatible with the continuation of normal airport operations including landing and takeoff of aircraft in order to promote public health, safety and general welfare.

Airport noise impact zones means areas within specific airport generated noise impact Ldn contour lines in which land use should be limited to activities that are not noise sensitive, or where appropriate noise level reduction measures for construction of certain buildings and avigation easements and disclosure statements may be required for land uses which may be otherwise unacceptable.

Building official means the administrative officer or person responsible for administering and enforcing the requirements of the City of Naples Building Code and portions this airport overlay district as specified.

Ldn means a day/night 24-hour average sound level measurement, expressed in decibels, obtained after an addition of ten decibels to sound levels occurring during the night time period from 10:00 p.m. to 7:00 a.m.

Planning director means the administrative officer or person responsible for administering and enforcing portions of the requirements of this airport overlay district as specified and serves as zoning administrator.

Runway means a defined area on an airport prepared for landing and take-off of aircraft along its length.

Sound level means the quantity in decibels measured by an instrument satisfying the requirements of American Standard Specification for Type 1 Sound Level Meters. The sound level shall be the frequency weighted sound pressure level obtained with the frequency weighting "A" and the standardized dynamic characteristic "SLOW."

Sound level requirement (SLR) means maximum Ldn permitted in interior spaces for specific land uses.

Structure means any object, constructed, erected, installed or planted by man, including but not limited to: antennas, buildings, cranes, overhead transmission lines, smoke stacks, towers and utility poles.

Tree means any plant of the vegetable kingdom.

Zoning board of adjustment means the executive body or agency having the statutory authority and responsibility to hear and decide appeals from any order, requirement, decision or determination made by the zoning administrator in enforcing this division; to hear and decide variances to the requirements of this division within the City of Naples, Florida. For purposes of this division, the zoning board of adjustment in the City of Naples, Florida is the Naples City Council.

(Ord. No. 02-9648, § 2, 6-5-02)

Sec. 102-1037. School impact area regulations.

(a) There is hereby created and established a school impact area (Exhibit D) for areas at each end of each active runway at the Naples Municipal Airport. Within a school impact area, certain uses are restricted or prohibited to reduce incompatibilities with normal airport operations and danger to public health, safety and well-being.

(b) The school impact area is an area five miles long in direct line with each runway centerline and has a width of 2,500 feet.

(c) Educational centers and facilities, including all types of primary and secondary schools, preschools, childcare facilities both public and private shall be prohibited, with the exception of aeronautical related educational facilities.

(d) Variances approving construction of an educational facility within the school impact area shall only be granted when the city council makes specific findings detailing how the public policy reasons for allowing the construction outweigh health and safety concerns prohibiting such a location, and the application otherwise satisfies the requirements for a variance.

(Ord. No. 02-9648, § 2, 6-5-02)

Editor's note: It should be noted that Exhibit D referred to in § 102-1037 is not set out herein, but is on file and available for inspection in the offices of the city.

Sec. 102-1038. Airport noise impact zone and regulations.

(a) There is hereby created and established as an overlay zone on the adopted city zoning atlas an "airport noise impact zone" as depicted on the Naples Airport Noise Contour Plan (Exhibit E) for areas surrounding the Naples Municipal Airport. The airport noise impact zone is an area with restricted land uses and special construction standards to minimize the impact of noise produced by aircraft operations. The airport noise impact zone map contained herein is based on projected future aircraft operations and is defined as follows:

(1) *Noise Impact Zone A. The entire interior area of the curvilinear figure delineated by the outermost boundary of line "A" on the noise zone map. The contour of noise zone A approximates the 75 Ldn line.*

(2) *Noise Impact Zone B. That area commencing at the boundary indicated on the noise zone map as the boundary of noise zone A and extending outward therefrom to the boundary indicated on the Noise Zone map as "B." The contour of noise zone B approximates the 70 Ldn line.*

(3) *Noise Impact Zone C. That area commencing at the boundary indicated on the noise zone map as the outer boundary of noise zone B and extending outward therefrom to the boundary indicated on the noise zone map as "C." The contour of noise zone C approximates the 65 Ldn line.*

(4) *Noise Impact Zone D. That area commencing at the boundary indicated on the noise zone map as the outer boundary of Noise Zone C and extending therefrom to the boundary indicated on the noise zone map as "D". The contour of noise zone D approximates the 60 Ldn lines as further modified based upon property lines and zoning district boundaries.*

(Ord. No. 02-9648, § 2, 6-5-02)

Editor's note: It should be noted that Exhibit E referred to in § 102-1038 is not set out herein,

but is on file and available for inspection in the offices of the city.

Sec. 102-1039. Airport noise impact zone land use regulations.

(a) The purpose of this section is to establish standards for land use with respect to exterior noise resulting from the legal and normal operations at the Naples Municipal Airport within the City of Naples. Section 102-1038 establishes four specific noise zones of differing intensities. This section shall address specific land use in the vicinity of Naples Municipal Airport, as identified in the most recent Naples Airport FAA Part 150 Study as it now exists or may be hereafter amended or established from time to time in accordance with federal regulations; establishes permitted, and prohibited land uses in the noise zones; the appeal process, establishes soundproofing requirements for development within the noise zones; and establishes notification procedures.

TABLE 1: LAND USES REGULATION CHART

TABLE INSET:

	Noise Impact ZONES			
	A	B	C	D
LAND USE	75 Ldn	75--70 Ldn	70--65 Ldn	65--60 Ldn
Residential, single-family	Not permitted	Not permitted	Not permitted	Not permitted
Residential, multifamily	Not permitted	Not permitted	Not permitted	Not permitted
Multifamily as part of a mixed use development	Not permitted	Not permitted	Not permitted	Not Permitted
Transient lodging	Not permitted	Not permitted	Not permitted	Conditional Use**
Church	Not permitted	Not permitted	Not permitted	Conditional Use**
Library	Not permitted	Not permitted	Not permitted	Conditional Use**
Hospital	Not permitted	Not permitted	Not permitted	Conditional Use**
Correctional Institution	Not permitted	Not permitted	Not permitted	Not Permitted
Nursing Home	Not permitted	Not permitted	Not permitted	Not Permitted
Assisted Living Facility	Not permitted	Not permitted	Not permitted	Not Permitted
School*	Not permitted	Not permitted	Not permitted	Not Permitted

Note: This table is a general regulation. The responsibility for determining the acceptability and permissible land uses remains in the Naples City Council. All other land uses not specified above shall be permitted in the noise zones pursuant to the

applicable zoning district and shall not be required to meet SLR.

* As otherwise permitted in section 102-1037(c).

** Criteria for Evaluating Conditional Use Application:

- Ability to meet and maintain sound level requirement of 45 Ldn for interior spaces.
- Extent and location of outdoor assembly areas designed for active recreation purposes.
- Extent and location of outdoor living areas including patios, porches, lanais, and balconies.
- Other sound attenuation measures utilized.
- Mixture of uses and project density.
- Fleet mix (i.e., number and type(s) of aircraft using the runway, including the number and type of engine(s) used and gross weight of aircraft.
- Inbound approach or outbound departure flight paths relative to the extended runway centerline.
- Proximity of the site to runway(s).

(b) *Appeals. Determinations made by the planning director, relating to use interpretations involving Table 1, may be appealed to the city council. An appeal may be made by an applicant, any aggrieved person, governing body of a political subdivision, NAA or FDOT.*

(c) *Permitted and restricted activities. Land uses shall be permitted in the noise zone pursuant to the applicable zoning district and as provided in Table 1. Those activities and land uses not specifically listed in the land use guidance chart are permitted or restricted in the noise zones based on their similarity to noise tolerance as exhibited by the activities and land uses which are listed in the guidance chart.*

(d) Where boundaries of more than one noise impact zone are shown on a parcel, provisions of the most restrictive zone shall apply.

(e) Where boundaries of a entire parcel noise impact zone traverses a portion of a parcel, only the land within the zone is subject to the regulations of this division.

(f) *Nonconforming uses. The regulations prescribed by this section shall not be construed to require the sound conditioning or other changes or alteration of any preexisting structure not conforming to this part as of the effective date of this section or to otherwise interfere with the continuance of any such preexisting nonconforming use. Nothing herein contained shall require any such change in the construction of or alteration of a structure which has commenced construction prior to the effective date of this section and which is diligently pursued.*

(g) *Sound level requirement (SLR) for buildings or structures. The provisions of these special regulations shall apply to the construction of a new building and the major redevelopment of existing buildings.*

(1) Redevelopment of an existing structure containing residential uses which triggers the need for compliance with the Federal Emergency Management Agency's floor elevations will also require compliance with the sound level requirement of 45 Ldn.

(2) Buildings or structures moved into the established noise zone must comply with applicable provisions.

(h) Compliance with the aircraft sound isolation performance standards shall be established by certification from a registered professional architect or engineer that when constructed in accordance with the approved plans and with quality workmanship, the building shall achieve the specified interior noise levels, or by the use of assemblies having the Sound Transmission Class ratings.

(i) *Notification of potential noise impact:*

(1) Public notice of the existence of maps depicting noise impacted areas shall be published at least three times in a newspaper of general circulation in Collier County.

(2) The Naples Airport noise zones are identified on The City of Naples Zoning Map (any revisions or reconfigurations thereof), and shall be available for public inspection at the City of Naples Planning Department.

(3) Upon any revision of the maps depicting potential noise impacted areas, the city manager or his designee shall record in the Public Records of Collier County a notice of potential noise impacted areas with maps depicting the noise contours shown thereon. Said notice shall provide constructive notice to existing and prospective purchasers of property within the noise impacted area and elsewhere.

(j) *Avigation easements. New development or redevelopment of property located within the land use zones described in Table 1 of this section shall be evaluated to determine the appropriateness of requiring an avigation easement, or its functional equivalent, in favor of the City of Naples Airport Authority. Such evaluation shall be based upon the criteria for evaluating conditional uses outlined in Table 1 of this section.*

(k) *Disclosure statement. Any person (entity) in a first sale from the developer selling any interest in real property located within the noise impact zone shall disclose in writing in the sales contract or addendum the following information to the purchaser prior to the sale: (i) the noise impact zone within which the real property lies and (ii) a statement that the real property lies within an area which airport noise may be present and objectionable. Said written notice shall also contain the following statement: "The undersigned purchaser of said interest in real property hereby certifies that the purchaser has read and understands the above disclosure made by the seller and acknowledges the preexistence of the airport and the potential for objectionable noise affecting (the use and enjoyment) of the real property." Although the disclosures required by this paragraph (k) shall not apply to resales of improved real property existing as of the effective date of this division, it shall not operate to obviate any disclosures regarding the existence of the airport or the effect of the airport noise zone on the property that may otherwise exist at law or in equity.*

(l) Prior to the issuance of a certificate of occupancy for new development or redevelopment located within the noise impact zones, the developer shall provide deed restrictions or a declaration of condominium stating that the property is located in an airport noise impact zone.

(Ord. No. 02-9648, § 2, 6-5-02)

Secs. 102-1040--102-1070. Reserved.

ORLANDO, FLORIDA
EXCERPTS ZONING REGULATIONS

2R. AN AIRCRAFT NOISE OVERLAY DISTRICT

Sec. 58.370. Relationship to the Growth Management Plan.

The AN Aircraft Noise Overlay District implements GMP Transportation Element Objective 1.19 to facilitate proper land use planning and prohibit incompatible land uses in the areas surrounding the Orlando International Airport (OIA) and the Orlando Executive Airport (OEA). GMP Future Land Use Element Policy 2.4.11 also specifies that the City and Greater Orlando Aviation Authority shall work cooperatively to implement the Aircraft Noise and Land Use Control Map concept, which utilizes the AN Overlay district.

(Ord. of 9-16-1991, Doc. #25094; Ord. of 5-20-1996, Doc. #29361; Ord. of 8-23-1999, § 7, Doc. #32283)

Sec. 58.371. Purpose of the District.

The purpose of the Aircraft Noise Overlay District is to protect the health, safety, and welfare of persons and property in the vicinity of the OIA and OEA. Aircraft noise may be considered annoying, objectionable, or unhealthy to residents in the community surrounding the airports. The AN Overlay district is intended to reduce noise and safety hazards associated with aircraft operations, to preserve the operational stability of the airports, and assist in the implementation of policies and recommendations found in the City's Growth Management Plan and in appropriate FAA sponsored Part 150 Studies.

The requirements found in the AN Overlay District are intended to supplement all other zoning districts in which land may be classified, and the various Chapters of the City Code which might impact on aviation and land development, including, but not limited to, safety, fire, building, and health codes. However, to the extent that any provision of this Part conflicts with another code or ordinance, the provisions of this Part shall govern and control.

FIGURE 7A. AIRCRAFT NOISE/LAND USE CONTROL ZONE MAP

GRAPHIC LINK: FIGURE 7A. AIRCRAFT NOISE/LAND USE CONTROL ZONE MAP

(Ord. of 9-16-1991, Doc. #25094; Ord. of 5-20-1996, Doc. #29361; Ord. of 8-23-1999, § 9, Doc. #32283)

Sec. 58.372. Establishment of Aircraft Noise/Land Use Control Zones.

Aircraft Noise/Land Use Control Zones - Five separate Aircraft Noise/Land Use Control Zones shall be established as shown on the Aircraft Noise/Land Use Control Zone Map (Figure 7A). The Aircraft Noise/Land Use Control Zones are based on a projection of future noise environments arising from aircraft flight operations at the OIA and OEA, as such environments were defined by FAR Part 150 Studies.

A composite contour was developed to establish the aircraft noise overlay zones. This was accomplished based on land use controls for two noise metrics (DNL and dBA Aircraft Noise Metric). The DNL metric is a day-night sound level used to present cumulative/average long term aircraft noise exposure. The dBA Aircraft Noise Metric is a single event maximum sound level measure used to describe peak noise levels of representative aircraft flyovers as related to speech interference.

Zone A - 75 and greater DNL contour

Zone B - 70 to 75 DNL contour

Zone C - 65 to 70 DNL contour

Zone D - The composite limits of the 60 DNL contour and the 80 dBA AircraftNoise Metric contour to the 65 DNL contour.

Zone E - The composite of the limits of the 55 DNL and the 75 dBA Aircraft NoiseMetric contour to the composite limits of the 60 DNL contour and the 80 dBA Aircraft Noise Metric contour.

The boundaries of the AN Overlay district shall be construed as the outer boundary of Zone E, and may be altered by initiation of the City Council or Municipal Planning Board whenever there is a finding that noise impacts have changed, via a FAA Part 150 Study.

Determination of Boundaries. In determining the location of noise zone boundaries on the Aircraft Noise/Land Use Control Zone Map, the following standards shall apply:

1. For platted lots less than one (1) acre in size, where an Aircraft Noise/Land Use Control Zone boundary line enters or crosses said platted parcel, the land use restriction and sound level reduction standards associated with the more stringent Aircraft Noise/Land Use Control Zone shall apply.

2. For platted and unplatted properties greater than 1 acre in size, where an Aircraft Noise/Land Use Control Zone boundary line enters or crosses the parcel, the regulations associated with more than one zone may apply. The City shall utilize the Aircraft Noise/Land Use Control Zone Map over-layed onto a 1/8th section line map to determine the applicable Aircraft Noise/Land Use Control Zone. The City, in consultation with the Greater Orlando Aviation Authority, shall determine the applicable line of demarcation. If conflicts arise, the City's determination may be appealed to the Municipal Planning Board and City Council.

(Ord. of 9-16-1991, Doc. #25094; Ord. of 8-23-1999, § 11, Doc. #32283)

Secs. 58.373--58.379. Reserved.

Editor's note: Ord. of 8-23-1999, § 12, repealed § 58.373, relative to additional district requirements. Said section was derived from Ord. of 9-16-1991, Doc. #25094.

2S. AIRCRAFT NOISE

Sec. 58.380. Land Use Restrictions.

Applicability of Overlay Zone Controls. Aircraft noise/land use control zone regulations shall not apply to existing residential and non-residential development, noise compatible land uses such as commercial, industrial, and office uses and/or vacant land zoned for such use, or vacant properties zoned for residential use prior to the adoption of this ordinance (unless a proposed modification of the residential zoning would reduce existing noise/land use compatibility).

The regulations prescribed by this Part shall not be construed to require the sound conditioning or other changes or alteration of any pre-existing structure not conforming to this Part as of the effective date of this revision or to otherwise interfere with the continuance of any

pre-existing nonconforming use. Nothing in this Part shall require any such change in the construction or alteration of a structure which was begun prior to the effective date of this part and is diligently pursued.

(Ord. of 9-16-1991, Doc. #25094; Ord. of 8-23-1999, § 13, Doc. #32283)

Sec. 58.381. Sound Level Requirements for Structures and Buildings.

The following chart (Figure 7B) summarizes the aircraft noise/land use controls associated with the noise overlay zones:

FIGURE 7B. AIRCRAFT NOISE LAND USE CONTROLS

Residential Uses.

Consistent with Future Land Use Element Policy 2.4.11, the following controls shall apply to all residential uses including: single family, multifamily, mobile homes, and hotel/motel/timeshare uses.

TABLE INSET:

REQUIRED CONTROLS						
Control Zone	Avigation Easement	Waiver of Claim	Notification	SLR 25 db	SLR 30 db	SLR 35 db
Zone E			X			
Zone D		X	X	X		
Zone C	X	X	X		X	X
Zone B	X	X	X			X
Zone A (On Airport)	X	X	X		X	

1. Single Family, Multi-Family, and Mobile Home uses prohibited in Zones A and B, except where prior approvals/ agreements grant such use. Hotel/Motel/Timeshare uses are permitted in Zones A and B with appropriate controls as specified above.

2. While Single Family and Multifamily residential uses are permitted in Zone C, they are discouraged. Mobile Homes are specifically prohibited in Zone C. For Single Family uses in Zone C, a 35 SLR shall be applied. For Multifamily uses, a 30 SLR shall be applied.

Non-Residential Uses.

Consistent with Future Land Use Element Policy 2.4.11, the following controls shall apply to all sensitive non-residential land use types, consisting of: hospital/clinic/nursing home, childcare, school uses. These regulations shall not be applied to commercial, industrial and/or office uses.

TABLE INSET:

REQUIRED CONTROLS						
Control Zone	Avigation Easement	Waiver of Claim	Notification	SLR 25 db	SLR 30 db	SLR 35 db
Zone E			X			
Zone D			X	X		
Zone C		X	X		X	
Zone B	X	X	X			X
Zone A (On Airport)	X	X	X			X

1. Hospital/Clinic/Nursing Homes, Childcare, and School Uses prohibited in Zones A and B, except for aviation relatedtraining/educational facilities.

2. Childcare facilities in Zone C shall only be permitted as accessory uses. Stand-alone childcare facilities shall be prohibited. Existing childcare facilities shall be permitted to expand so long as new structures meet the SLR standards shown above.

3. Elementary, Middle and High School facilities, whether public or private, shall be prohibited in Zone C. Other school facilities shall be reviewed as a Conditional Use, in which the SLR reduction specified above and additional land use compatibility measures may be applied.

SLR - Sound Level Reduction in Decibels (db); can be achieved through insulation, high grade windows, etc.

(Ord. of 9-16-1991, Doc. #25094; Ord. of 8-23-1999, § 14, Doc. #32283)

Sec. 58.382. Sound Level Reduction (SLR) Design Requirements.

General Requirements. The SLR requirements found in Section 58.381 may be achieved by any suitable combination of building design, choice of building materials and execution of construction details in accordance with established architectural and acoustical principles. The SLR requirements shall apply to all occupied rooms having one or more exterior walls or ceilings, when furnished in accordance with the intended final usage of the room.

No new building or structure for which an SLR of 25, 30, or 35 is required by Section 58.381 may be constructed unless and until a building permit therefore has been issued by the City. No such permit shall be issued unless and until conformance with the requirements contained in Section 58.381 is indicated by plans and specifications for the building or structure.

The City may require, prior to granting final approval of the finished building construction, at the expense of the owner, a field test by a Qualified Acoustical Consultant to verify the sound level reduction (SLR) of the building. In lieu of field testing, the City may accept, at the owner's expense, a certification of design criteria by a Qualified Acoustical Consultant,

verifying the sound level reduction (SLR) of the building.

Verification Testing Procedures/SLR Design Information. Sound level reductions shall be determined for at least four aircraft fly-over events by a typical air carrier-sized jet aircraft for each room tested. The resulting value assigned to the room shall be the average value of the individual fly-over events. Using the noise signal generated by an individual aircraft fly-over event, outside and inside noise levels may be measured simultaneously. The noise levels measured outside and inside the room being tested may be observed directly by simultaneously reading the maximum noise levels on two sound level meters; or the outside and inside fly-over event may be recorded on magnetic tape, and the required noise level reduction determined by analysis of the recorded signals. In either case, the two measuring systems used for outside and inside noise measurement must satisfy the requirements for a Type II Sound Level Meter according to ANSI S1.4-197. The two systems shall be calibrated prior to and following the fly-over events so that they indicate the same level within one decibel for the same noise, using suitable calibration procedures as specified by the manufacturer. For calculations undertaken for purposes of meeting the requirements of this Part, the City, owner, or qualified acoustical consultant may use the assumed outside spectrum shown in Figure 8.

FIGURE 8. OCTAVE BAND NOISE SPECTRUM

GRAPHIC LINK: FIGURE 8. OCTAVE BAND NOISE SPECTRUM

This spectrum may be used to make calculations for determining how the standards of this Part are to be met. Such calculations shall take into account the area and sound transmission loss characteristics of exposed room surfaces, and the amount of sound absorption in the room.

In residential structures, the assumed ratio of sound absorption to floor area for each room is as follows (making an allowance of at least two decibels for sound leaks and flanking sound transmission paths):

TABLE INSET:

Octave Frequency Band (H2)	Sound Absorption Floor Area
63	0.30
125	0.50
250	0.75
500+	1.00

Inside Noise Levels. In residential structures, inside noise levels shall be measured with a single microphone, four feet above the floor, near the center of the room. For other structures, inside noise levels shall be measured with a single microphone, five feet above the floor, either near the center of the room, or inside the room eight feet from the exterior wall most directly exposed to the aircraft noise, whichever distance from the most directly exposed wall is less.

For residential structures, it shall generally be sufficient to conduct tests in two rooms. One of the rooms to be tested shall be the bedroom most directly exposed to aircraft noise. The other room to be tested shall be either the living room, dining room, or family room, whichever is most directly exposed to the aircraft noise. The Building Official shall have sole authority in

determining the number of rooms and the particular rooms to be tested.

For structures where a number of rooms receive nearly equal exposure to aircraft noise, tests need only be conducted in two of the near identical rooms. For structures in which several rooms are to be evaluated, tests need only be conducted for those rooms whose exterior walls are most directly exposed to the noise source. If noise level reduction requirements are met for these rooms, the tests need not be repeated for rooms of similar construction which are not directly exposed to fly-over events.

Adjustments for Unfurnished Rooms. When the sound level reduction is measured in an unfurnished or partially furnished room an adjusted sound level reduction shall be computed by adding ten times the logarithm and the base ten of the ratio of the floor area of the room to the sound absorption in the unfurnished or partially furnished room but in any event, such correction shall not exceed two decibels. The adjusted noise level reduction value shall be used in determining compliance with the SLR requirements. If the noise level reduction is measured in a furnished room no adjustment in the noise level reduction may be made.

Outside Noise Levels. The outside noise level shall be measured in an unobstructed location near the center of the wall most directly exposed to the aircraft noise source, approximately five feet above the level of the floor of the room being tested and eight feet from the wall.

(Ord. of 9-16-1991, Doc. #25094; Ord. of 8-23-1999, § 15, Doc. #32283)

Sec. 58.383. Public Notification of Potential Noise Impacts.

Public disclosure of aircraft noise impacts shall be made to all future purchasers, mortgagees, occupiers and users of residential property located in all of the Aircraft Noise/Land Use Control Zones shown on the Aircraft Noise/Land Use Control Zone map, consistent with Figure 7A. Public notification shall consist of the following:

1. Public notice of the existence of maps depicting noise impacted areas shall be published by the Greater Orlando Aviation Authority at least three (3) times in a newspaper of general circulation in Orange County, as provided in Public Law 96-193; and

2. Aircraft Noise/Land Use Control Zone Maps depicting noise impacted areas shall be available for public inspection at the Planning and Development Department, the Orlando Public Library and other public places; and

3. The Greater Orlando Aviation Authority shall ensure that Aircraft Noise information is publicized and available to the public and other interested parties such as local realtors/brokers/title companies and professional organizations; and

4. The City shall attach a zoning suffix of AN-Aircraft Noise Overlay District to all areas where residential and/or sensitive non-residential uses are allowed within Aircraft Noise/Land Use Control Zones A through E; and

5. Residential plats recorded within Noise Zones C, D, and E shall note the potential for objectionable aircraft noise on the plat. Specifically, the plat shall note the following in a minimum 12 point type: "The properties delineated on this plat are subject to aircraft noise that may be objectionable." This requirement shall be made a condition of approval for all residential subdivisions approved by the City of Orlando.

(Ord. of 8-23-1999, § 16, Doc. # 32283)

Sec. 58.384. Avigation Easement and Waiver of Claims.

An avigation easement and/or waiver of claim, consistent with Section 58.381, shall be required as a condition of development approval for certain lot-splits, short form and long form subdivisions in Aircraft Noise Zones A, B, C, and D. The avigation easement and/or waiver of claim shall be executed between the applicant and the Greater Orlando Aviation Authority and delivered to the Planning and Development Department before a building permit may be issued for a building or structure located, or to be located, within Aircraft Noise Zones A, B, C, or D.

The Board of Zoning Adjustment or Municipal Planning Board may require the execution and delivery of an avigation easement and/or waiver of claim as a condition of granting variances for nonconforming construction or land uses within any of the Aircraft Noise Zones. The land use controls, avigation easement, waiver of claim, and sound level reduction requirements specified in this Part shall be consistent with agreements reached between the property owner and the Greater Orlando Aviation Authority established prior to the effective date of this ordinance revision. Adoption of this ordinance shall in no way invalidate or modify such recorded avigation easements, or noise damage waivers of claim.

(Ord. of 8-23-1999, § 17, Doc. #32283)

Secs. 58.385--58.389. Reserved.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION (AOPA) NOISE AWARENESS STEPS

Following are some general guidelines and techniques to minimize the noise impact produced by aircraft operating near the ground:

1. If practical, avoid noise-sensitive areas such as residential areas; open-air assemblies (e.g., sporting events and concerts), and national park areas. Make every effort to fly at or above 2,000 feet over the surface of such areas when overflight cannot be avoided.

2. Consider using a reduced power setting if flight must be low because of cloud cover or overlying controlled airspace or when approaching the airport of destination. Propellers generate more noise than engines; flying with the lowest practical rpm setting will reduce the aircraft's noise level substantially.

3. Perform stalls, spins, and other practice maneuvers over uninhabited terrain.

4. Many airports have established specific noise abatement procedures. Familiarize yourself and comply with these procedures.

5. Work with airport managers and fixed-base operators to develop procedures to reduce the impact on noise-sensitive areas.

6. To contain aircraft noise within airport boundaries, avoid performing engine runups at the ends of runways near housing developments. Instead, select a location for engine runup closer to the center of the field.

7. On takeoff, gain altitude as quickly as possible without compromising safety. Begin takeoffs at the start of a runway, not at an intersection.

8. Retract the landing gear either as soon as a landing straight ahead on the runway can no longer be accomplished or as soon as the aircraft achieves a positive rate of climb. If practical, maintain best-angle-of-climb airspeed until reaching 50 feet or an altitude that provides clearance from terrain or obstacles. Then accelerate to best-rate-of-climb airspeed. If consistent with safety, make the first power reduction at 500 feet.

9. Fly a tight landing pattern to keep noise as close to the airport as possible. Practice descent to the runway at low power settings and with as few power changes as possible.

10. If a VASI or other visual approach guidance system is available, use it. These devices will indicate a safe glidepath and allow a smooth, quiet descent to the runway.

11. If possible, do not adjust the propeller control for flat pitch on the downwind leg; instead, wait until short final. This practice not only provides a quieter approach, but also reduces stress on the engine and propeller governor.

12. Avoid low-level, high-power approaches, which not only create high noise impacts, but also limit options in the event of engine failure.

Note: These recommendations are general in nature; some may not be advisable for every aircraft in every situation. No noise reduction procedure should be allowed to compromise flight safety.

Source: AOPA's Aviation USA – 1994