

Chapter 9 - Airport Zoning

Introduction

Simply defined, zoning is the division of a municipal or rural area into districts for the primary purpose of regulating the use of land. It regulates the type and intensity of land use. Intensity is regulated through restrictions on the height of buildings, setback requirements, and lot coverage. The types of land uses comprising a zoning ordinance will keep conflicting land uses apart. In its simplest form, zoning must separate residential uses from commercial uses and industrial uses. These zones are shown on a map. Thus, two elements comprise the zoning ordinance -- the text which details the nature of the primary and accessory uses allowed in each zone and the map which shows where each of the zones is located.

Zoning is an expression of police power -- the power to regulate development activities for the health, safety, morals, and general welfare of the public. In Louisiana, parishes and municipalities are granted this authority through enabling legislation (L.R.S. 33:4721-4732). Zoning should allow for the "highest and best" use of land or the most productive use of land given its location. Furthermore, zoning is the implementation tool and legal document that guides orderly development in concert with local comprehensive plans.

Land use controls may limit selected uses or only certain type activities within broader land use categories. The controls may establish specific building size, unit numbers or area coverage limitations, population density limits, reflectivity and emission controls, materials use prohibitions and storage requirements, or land slope/grading and water retention area limitations. Most of the controls will be necessary only in the very near proximity of the airport runways.

These type controls like any other land use regulations, are more effective when implemented before significant incompatible development exists in the airport's vicinity. The compatible land use controls may also be effectively used for mitigating existing incompatible uses. Mitigation of incompatible uses will usually result in both public and private sector costs. The longer the mitigation action is delayed, the greater the eventual cost. Permitting the existence of uses incompatible with the public's health or safety can result in consequences far greater cost than would its mitigation.

Airports therefore, should be integrated into the total community environment and not considered in isolation of the community in which they are located. Although airports are federally regulated they remain locally sponsored and it is the local sponsor's responsibility to ensure compatibility within its community.

In administering Title 14 of the Code of Federal Regulations CFR Part 77, the prime objectives of the FAA are to promote air safety and the efficient use of the navigable airspace. To accomplish this mission, aeronautical studies are conducted based on information provided by proponents on an FAA Form 7460-1, Notice of Proposed Construction or Alteration.

This chapter presents elements that should be considered in planning for airport compatibility. Three specific elements are addressed. These include: (1) airspace protection, (2) noise compatibility, and (3) public safety as they relate to zoning of land surrounding the airport's environs.

Generally, these elements can be addressed through overlay zones. Overlay means the areas underneath the zone, have in addition to the land use or comprehensive zoning, an overlay or additional level of controls. Overlay also means the local jurisdiction where the airport is located may have zoning in effect. This means there may be two zoning regulations to be complied with, unless the airport zoning overlay and compatible land use zoning of the jurisdiction are included in one ordinance. **The enclosed CD contains two model airport hazard zoning ordinances** for general aviation airports in Louisiana. Ordinance T1 is for small airplane airports for visual and nonprecision instrument approach procedures and Ordinance T2 is for large airplane airports with visual, non-precision, and precision instrument approach procedures.

Airport Compatibility Development

Airport compatible land uses are those that are not adversely affected by airport operations or do not adversely affect the use of the airport. Residential development is most sensitive to airport operations and is nearly always incompatible if located close to the airport. Land uses where people congregate such as schools, churches, theaters, and hospitals, also may be incompatible.

Some uses are incompatible because they actually represent a danger to the aircraft using the airport. Examples of these are commercial or industrial activities that generate bright lights at night, smoke or electronic interference with aircraft radio navigation equipment. Landfills which attract large numbers of birds can also be dangerous. The most serious hazards are tall structures that extend into the air around airports where aircraft are operating close to the ground.

Unregulated development and the encroachment of incompatible land uses near airports can create significant public pressure to limit flight operations, prevent or curtail future airport expansion and possibly, in some cases, to close an airport. Three elements must be considered when determining land use compatibility and zoning of land surrounding airports. These include: (1) airspace protection, (2) noise compatibility, and (3) public safety. Each is discussed in the following sections.

Airspace Protection

Airspace protection is required to preserve and protect public airports as well as the navigable airspace necessary to operate them safely and efficiently. Through regulation of the height of man-made and natural objects, loss of navigable airspace to non-aviation uses, particularly within airport terminal airspace can be limited and controlled. Safety is preserved by preventing objects or structures from becoming hazards to air navigation. A hazard to air navigation jeopardizes the safety of flight activity, aircraft occupants and persons or property on the ground in its vicinity.

Airspace protection can be provided by establishing overlay zoning to limit the height of man-made objects and objects of natural growth. Height limitations do not designate permitted uses in the underlying zoning district, but does designate prohibited uses. For example, an airport zoning ordinance might not prohibit a manufacturing use such as a factory but could limit the height of a water tower associated with the factory.

Height limitations should coincide with the base elevations of navigable airspace. While the height of navigable airspace is objectively definable, the definition can be complex. The height will vary considerably from one location to another. The boundaries and airspace are dependent on multiple site specific variables related to the physical terrain, aviation operations, airport type, runway configuration, air navigation facilities and flight rules.

Generally, the Federal Aviation Administration (FAA) considers the navigable airspace to include all airspace 500 feet or more above the surface and that airspace below 500 feet required for takeoff and landing to include an airport's traffic pattern. Zoning to protect navigable airspace must therefore overlie the area of the adopting jurisdiction. The most restrictive height limitations are necessary in the immediate vicinity of the airport runways and along their extended centerline. In general, required height limitations increase at varying rates as distance from runways increase. Rates vary with functions of several runway factors including type of landing surface, aircraft operating weight category, and instrument landing capability. These variables are described in FAR Part 77 as the imaginary airport surfaces as illustrated in Figures 9.5.

Examples of airport imaginary surfaces at a general aviation airport having visual approaches is illustrated in Figures 9.1-9.4.

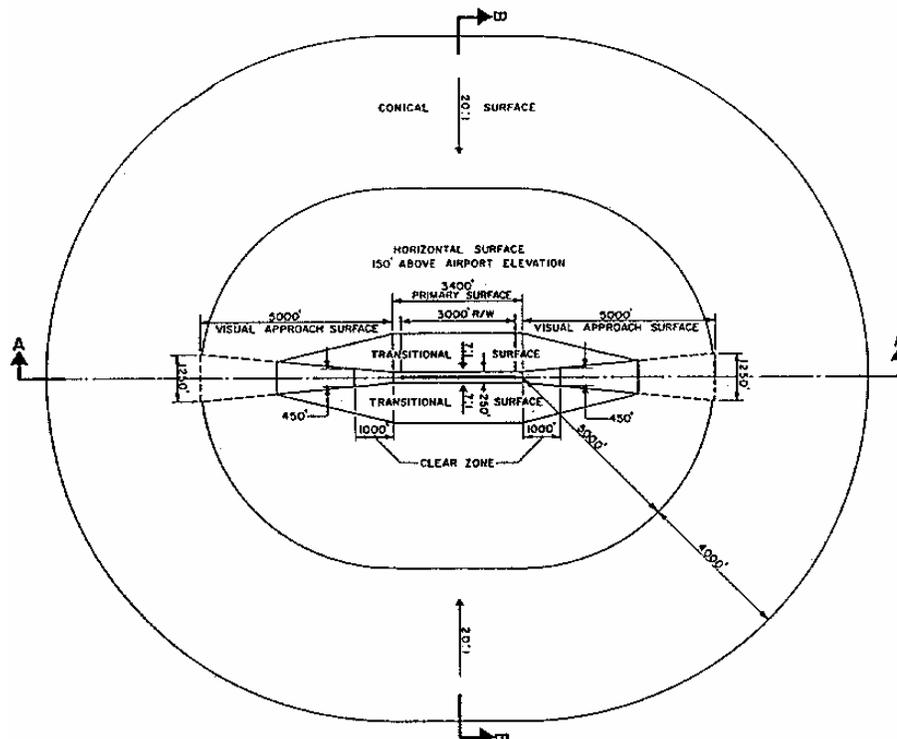


Figure 9.1: Airport Imaginary Surfaces - General aviation Airports (Visual)

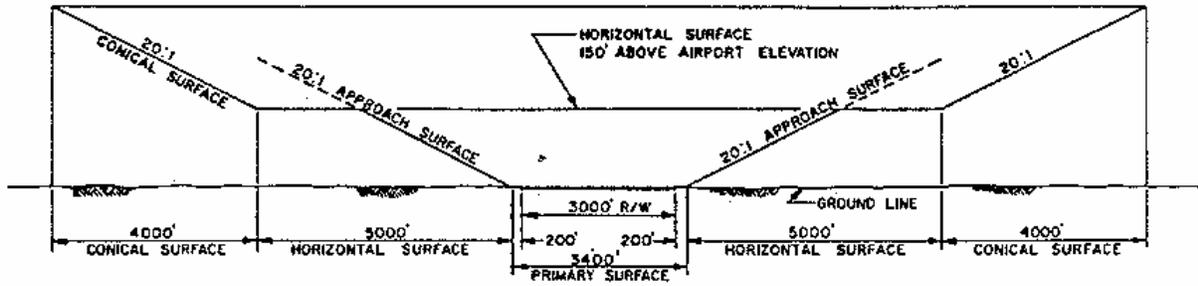


Figure 9.2: Section A - A (See Figure 7.1)

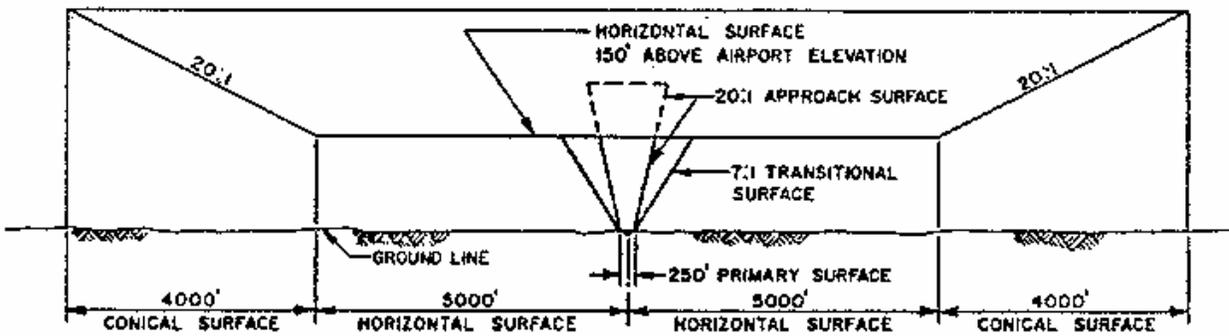


Figure 9.3: Section B - B (See Figure 7.1)

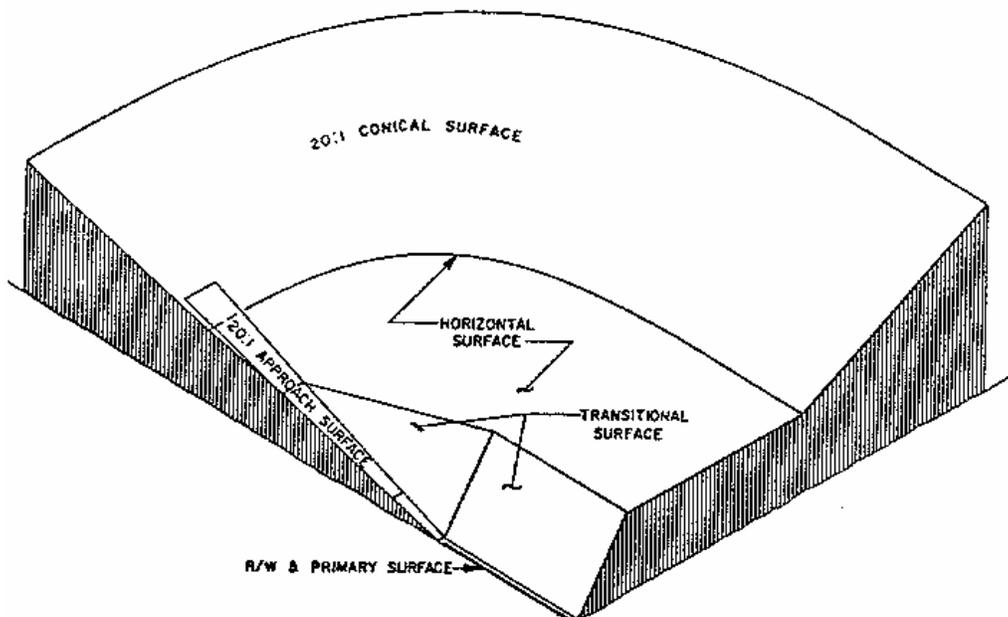


Figure 9.4: Isometric View Showing Imaginary Surfaces - General aviation Airports

Definition

Obstruction – any object that penetrates an obstruction identification surface (OIS) as defined in Federal Aviation Regulations 14 CFR Part 77. A supplemental obstruction is any object that penetrates an OIS that has been defined as a supplemental OIS by appropriate FAA authorities.

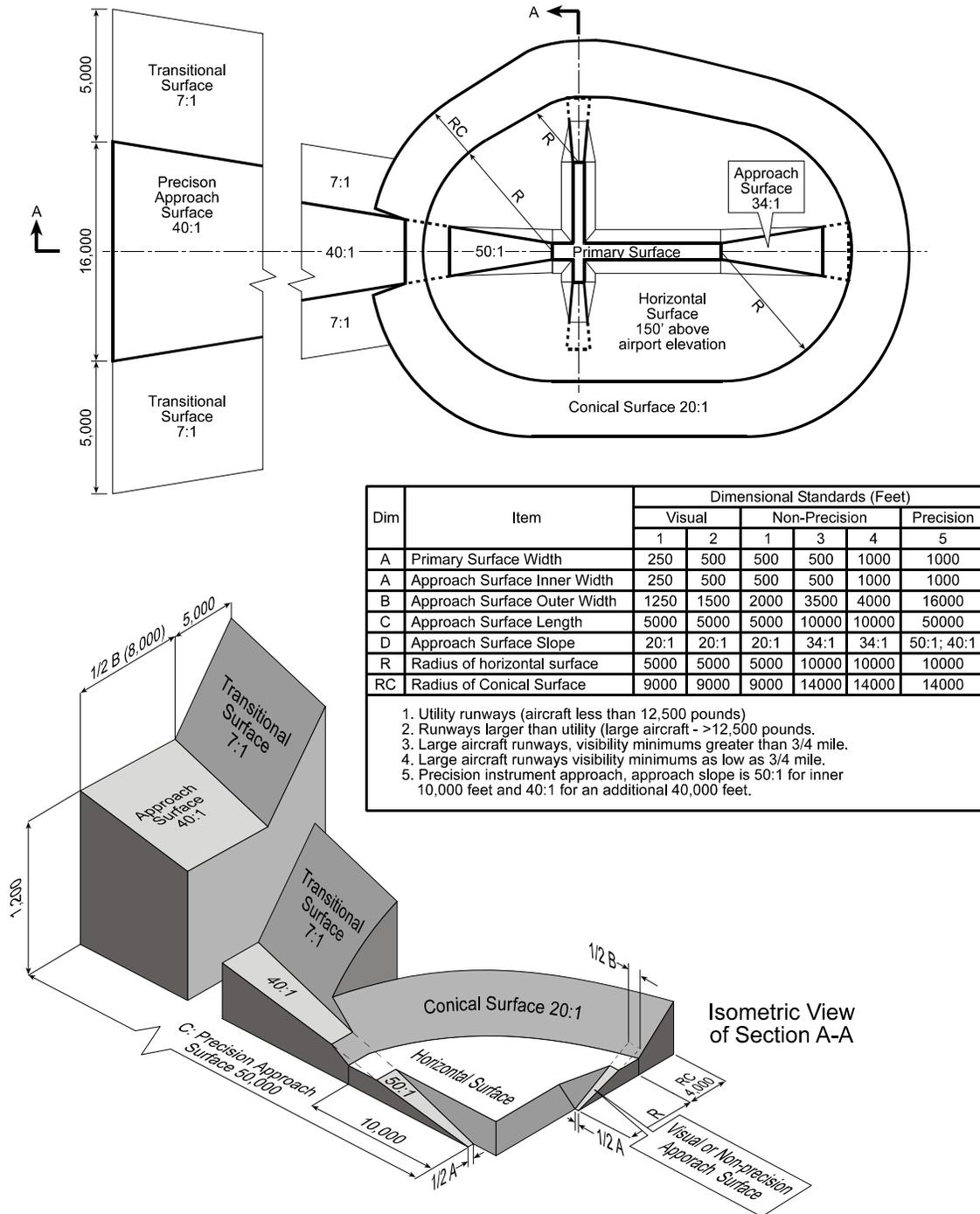


Figure 9.5: Federal Aviation Regulations, Part 77 Imaginary Surfaces

The imaginary airport surfaces provide safety buffers between aircraft arriving and departing at an airport's terminal airspace and objects on the ground. Minimum flight operating heights and procedures are prescribed by federal flight regulations. The difference between normal aircraft operating heights and the obstruction buffers decreases significantly the closer the aircraft is to the runway. The information needed to define the imaginary surfaces for the airport being zoned can be found on the airport layout plan (ALP). The ALP is incorporated in the airport master plan. An ALP is a scaled drawing of existing and planned airport facilities, their locations, and pertinent dimensional information. It also includes a basic data table identifying the airport reference point, airport elevation, existing and planned runways, and existing and planned approaches for the runways. For more information on ALPs, refer to **Chapter 5 - Airport Layout Plans**.

Noise Compatibility

Noise compatible land use in the vicinity of airports is necessary to protect the public's health and welfare while preserving the airport's capability to efficiently meet aviation transportation needs. Through regulation of noise sensitive land uses, encroachment of incompatible development in the vicinity of airports can be prevented and further development controlled.

Incompatible development, particularly residential development near airports, may cause the airport to decrease, limit or prevent aircraft operations. Incompatible development will adversely impact the airport's capacity improvement plans, particularly runway extensions and/or additions, that are necessary to meet the airport's growth.

Noise compatibility can be established with overlay zoning to control or prohibit noise sensitive land uses or activities in the vicinity of the airport. Noise compatibility controls should address current and future land use within specifically designated zones of airport generated noise exposure. It is accomplished by preventing noise sensitive land uses in those areas where the level of airport sound exposure will adversely impact that land use.

Airport noise exposure maps produced in accordance with 14 CFR FAR Part 150 will provide the best guidance for noise compatibility planning. Appendix A of 14 CFR FAR Part 150 establishes the standards, methods and procedures for producing these maps. Briefly, Part 150 requires airport noise exposure maps be developed using the FAA's Integrated Noise Model (INM). Noise exposure map development involves airport generated sound based forecast aircraft operations, weighting operations that occur at night and averaging the cumulative output over time. The results are then charted as sound exposure levels on scaled, geographic depictions of the airport and its surrounding areas. Areas within the exposure level contours can then be used to identify incompatible land uses for possible mitigation measures and to establish land use controls that limit future incompatible development. An approved noise exposure map must illustrate those areas surrounding the airport that are 65 LDN (Day-Night Sound Level) and higher exposures. Finally, some airports require a Part 150 element within the Airport's Master Plan.

Public Safety

The greatest potential risk to public health and safety associated with aircraft operations occurs during take-off and landing. Compatible land use for public safety is required to minimize the risk of injury to the general public in the event of an aviation accident. Controls are also necessary to ensure conditions associated with the land use will not jeopardize the safe operation of aircraft in flight; increase the potential for additional aircraft damage or occupant injury in the event of an aviation accident or interfere with effective emergency response such as an accident.

The public safety element of compatible land use surrounding an airport's environs is provided by establishing overlay zoning to limit certain activities to minimize the risk factors associated with aircraft operations. The potential risk to the public's health and safety is minimized by regulating uses in areas near airports or their runways which can result in the congregation of people, the presence of flammable, explosive or hazardous materials, the presence of intervening structures, objects, excavations or bodies of water in the immediate area of the runways, the emission of smoke, light or other phenomenon that could obscure the pilot's vision during take-off and landing, unshielded electro-magnetic or high energy device emissions that could interfere with ground or airborne electronic systems used for aircraft flight control or navigation, and the attraction of birds or animals in areas where aircraft could strike them during take-off or landing either in flight or on the runway.

The Airport Zoning Ordinance And Map Process

The steps to be undertaken in drafting and adopting an airport zoning ordinance and map are outlined below:

1. Identify the political subdivision(s) affected by the area to be zoned. This should include all governmental bodies located under all imaginary surfaces of the airport. If the airport to be zoned is located within the territorial limits of the owning political subdivision, that political subdivision may unilaterally zone the airport. If multiple jurisdictions are involved, the airport may want to consider a joint airport zoning board comprised of members of all affected jurisdictions. Such a board will require legal action for its creation. Additionally, an entity that will administer and enforce the ordinance must be created if one does not exist within the local jurisdiction of the airport to be zoned.
2. Develop the zoning ordinance and map addressing airspace protection, noise compatibility, and public safety as described above.
3. Publish a notice to hold a public hearing to receive and accept comments from the general public. The notice should include a description of the purpose of the proposed airport zoning ordinance and include the exact date, time and location of the public hearing. This notice should be published in the local official journal of the jurisdiction and be printed a minimum of three weeks prior to the scheduled public hearing.
4. Hold the first public hearing. At this public hearing a presentation of the recommended zoning ordinance and its purpose should be made to the attending public. Public

comment should then be received and recorded for the purpose of incorporating all comments and to address concerns where applicable.

5. Revise the proposed airport zoning ordinance and map to reflect the public input received during the first public meeting.
6. Publish a notice of the second public hearing.
7. Hold second public hearing presenting the final zoning ordinance and map as it reflects comments and revisions accepted at the first public hearing.
8. Adopt the airport zoning ordinance and have it certified by the appropriate city or parish attorney.

The above steps are for consideration by parishes and municipalities in which zoning ordinances do not exist. In those locations where zoning ordinances do exist and are adopted by the local jurisdiction, the airport zoning ordinance should become a part of the local jurisdiction's ordinance. **The enclosed CD** contains two model airport hazard zoning ordinances for general aviation airports in Louisiana.

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References

Louisiana Law Revised Statutes 33:4721-4732

Federal Aviation Regulation Part 77, "Objects Affecting Navigable Airspace"

Federal Aviation Administration Advisory Circular 70/7460-1K, "Obstruction Marking and Lighting"

Federal Aviation Administration Advisory Circular 70/7460-2K "Obstruction Marking and Lighting"

Federal Aviation Administration Advisory Circular 150/5020-1, "Noise Control and Compatibility Planning for Airports"

Federal Aviation Administration Advisory Circular 150/5070-6B, "Airport Master Plans"

Federal Aviation Administration Advisory Circular 150/5070-7, "The Airport System Planning Process"

Federal Aviation Administration Advisory Circular 150/5190-4A, "A Model Zoning Ordinance to Limit Height of Objects Around Airports"

Federal Aviation Administration Advisory Circular 150/5200-32A, "Reporting Wildlife Aircraft Strikes"

Federal Aviation Administration Advisory Circular 150/5200-33A, "Hazardous Wildlife Attractions on or near Airports"

Federal Aviation Administration Advisory Circular 150/5200-34A, “Construction or Establishment of Landfills Near Public Airports”

Federal Aviation Administration Advisory Circular 150/5300-13, “Airport Design”

Federal Aviation Administration Advisory Circular 150/5300-16, “General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey”

Federal Aviation Administration Advisory Circular 150/5300-17, “General Guidance and Specifications for Aeronautical Survey Airport Imagery Acquisition and Submission to the National Geodetic Survey”

Federal Aviation Administration Advisory Circular 150/5300-18, “General Guidance and Specifications for Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards”

Federal Aviation Administration Advisory Circular 150/5320-14, “Airport Landscaping for Noise Control Purposes”