Airport Obstruction Management
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Practice of protecting navigable airspace around an airport
- Approach surfaces
- Circling approaches
- Missed approaches
- Departure surfaces
- One engine inoperable surfaces
- En-route airspace (minimum vectoring altitude)
- Navigational facilities
Protect from Encroachment by

- Tall structures
  - Buildings
  - Antennae
  - Smokestack
  - Silo
- Vegetation
- Terrain
- Vehicles on other transportation modes

- Overview of regulatory criteria
- Critical surface identification
  - Composite map development
- Obstruction evaluation
- Obstruction management
  - Action plan development
- Consensus building and conflict resolution
- Best practices for protective monitoring and coordination
Object, Obstruction, Obstacle and Hazards

- **Object** – item that protrudes into airspace
- **Obstruction** – object that upon FAA evaluation is required to be marked, lighted and identified on publications
- **Obstacle** – object that does or would penetrate and obstacle clearance surface
- **Controlling Obstacle** – obstacle around which a flight procedure is designed
- **Hazard to Air Navigation** – an obstruction that would have a substantial adverse effect to a significant volume of aeronautical operations
Responsibility for Obstruction Management

- Airport Sponsor
- Indiana Tall Structures Act (I.C. 8-21-10)
- FAA can only evaluate and modify the system to maintain safety
Obstruction Management Process

- Identify airport’s role now and future
- Identify applicable airspace surfaces
- Create composite airspace surface map
- Identify lowest critical surface
- Gather object data for airport
- Evaluate object data against airspace surfaces
- Identify potential obstruction mitigation or management activities
- Engage stakeholders - build support for obstruction mitigation and management
- Monitor and maintain
Identify Airport Role and Future Vision

- Are airport planning documents current?
- Will aircraft using airport change in the future?
- Are there any existing constraints?
- Can the constraints be resolved?
- Are the constraints potentially controlling obstacles?
Identify Critical Airspace Surfaces

- Identify federal regulatory and design airspace surfaces
  - 14 CFR Part 77 (FAR Part 77): Safe, Efficient Use and Preservation of Navigable Airspace
  - FAA Advisory Circular 150/5300-13A: Airport Design
  - FAA Order 8260.3D: U.S. Standards for Terminal Instrument Procedures (TERPS)

- Does air carrier one engine inoperable (OEI) apply?
  - FAA AC 120-91: Airport Obstacle Analysis and ICAO Annex 6: Operation of Aircraft

- Identify any state or local regulatory or zoning surfaces
FAR Part 77

- Establishes requirements to provide notice to FAA
- Sets standards used to determine obstruction to air navigation
- Provides process for aeronautical studies
- Establishes process to petition for discretionary review
FAA Advisory Circular 150/5300-13A

- Sets appropriate design standards based on size of aircraft using the airport
- Provides threshold siting criteria and departure protection
- FAA Engineering Brief 99 threshold siting criteria update
- FAA Engineering Brief 91: Management of Vegetation in the Airport Environment
FAA Order 8260.3D (TERPS)

- Critical surfaces and criteria (clearances) used to design instrument procedures
- Initial, intermediate and final approach
- Missed approach
Air Carrier Regulations

- FAA AC 120-91 Airport Obstacle Analysis
  - One engine inoperable (OEI) – obstacle clearance for irregular operations
- ICAO Annex 6, Chapter 5
  - Aircraft performance limitations for foreign flag carriers

Source: Planning Technology Inc.
Critical Surface Identification

- Must consider all surfaces
  - Part 77 approach for each visual or instrument procedure
  - Part 77 transitional, horizontal, and conical surface
  - FAA Advisory Circular 150/5300-13A
    - Threshold siting
    - Departure surface
  - TERPs surfaces
    - 20:1 Visual surface
    - Missed approach
  - OEI Surface
  - PAPI Surface

Source: FAA Order 8260.3D, Figure 2-1-5
Composite Map

- 3D model of airport’s airspace
- Identified height of desired most critical surface over any given point
- Consider long-term airport build-out

Source: Planning Technology Inc.
Critical Surface Identification

- Some special considerations
  - Utility runways having vertically guided approaches
  - Nonprecision runways with instrument departure procedures
Departure Surface

Source: Planning Technology Inc.
Critical Surface Identification

- Some special considerations
  - Misses approach segment
  - Circling or offset approaches
  - Step down for non-vertically guided approach
  - Protection of OEI surface for air carriers

Source: Planning Technology Inc.
Step Down Approach

Source: Planning Technology Inc.
OEI Surface

Source: Planning Technology Inc.
PAPI Surface

Source: Planning Technology Inc.
Data Sources

- FAA Digital Obstacle File (DOF) and Daily Digital Obstacle File (DDOF)
  - Need to check verification status
- Data from OE/AAA submittals
- FAA 5010 Airport Master Record submittals
- Air Carriers
- State and local government
- Locally collected data (project)
- Handheld tool (spot check)
Obstruction Evaluation Tools

- Part 77 Notice Tool
- Software solutions – AutoCAD/GIS to custom software
- Surface Analysis and Visualization Tool
- iOE/AAA – FAA’s internal tool
- State resources

Indiana Tall Structures Permit

INDIANA TALL STRUCTURE PERMIT AREAS
(INDIANA CODE 8-21-10*)
*Applicable only to public-use runways/heliports

INDOT Office of Aviation
100 N. Senate Ave., Room N955
Indianapolis, IN 46204

If an Indiana Tall Structure Permit is Required:

1. Submit FAA Form 7460-1 ([https://oeggd.faa.gov](https://oeggd.faa.gov)) to initiate an FAA airspace evaluation
2. Prior to construction, provide 60 days’ written notice to:
   - All public-use airports/heliports within 5 nautical miles of the proposed structure *(if applicable)*
     Note: A notification template is available on the INDOT Aviation website: [http://www.in.gov/indot/2808.htm](http://www.in.gov/indot/2808.htm)
   - The INDOT Office of Aviation
3. An airspace determination of “No Hazard” must be issued by the FAA and complied with prior to construction
Obstacle Action Plan

- Best developed before submitting GIS data to FAA
- Identifies obstacle and resolution
- Resolution must consider the environment
Obstruction Mitigation and Management

- Tied to grant assurances
- Airport sponsor has primary responsibility but cannot do it alone
- Goal is proactive rather than reactive management
- Need coordination and working relationship with nonairport stakeholders
Obstruction Management Tools

- Prevention methods
  - Airport leases
  - Avigation easements
  - Airport zoning ordinances
    - Overlay
    - Land Use
  - High-set aside areas
  - Transfer of development rights
  - Purchase of development rights

Be aware of when these tools need to be updated
Building Support

- Proactive management provides best opportunity to collaborate

- Develop a communication strategy
  - What do they want?
  - What do they need?
  - How does obstruction management impact their daily activities?
  - What do they stand to lose or gain from an obstruction management issue?
Identify the Audience

- Identify the stakeholders
  - Do they have decision making authority?
- Communicate the obstruction effects to decision makers
- Is cross-jurisdictional coordination needed?
- Engage with adjacent property owners
- Coordinate with real estate and communication infrastructure industries
- Engage with the general public
Crafting the Message

- Is this new information for them or has your audience been exposed to these concepts before?
  - Be specific as to the impact

- Does your audience understand why obstruction management is so important to your airport?
  - Make it easy to understand
  - Tailor your message to the audience

- Do you have visual aids, such as graphics or videos, to help them understand?
  - Use graphics and visuals to provide context
Building Consensus

- Mutual gains in multi-stakeholder negotiations
  - Be fully informed on technical and jurisdictional issues
  - Understand and respect opposing viewpoints
  - Be willing to consider reasonable alternatives

- Collaboration requires
  - A common sense of purpose and identification of the problem
  - Participants educating each other
  - Participants sharing in the implementation of solutions
  - Participants being kept informed as situations evolve
Maintaining and Monitoring

Comprehensive airport obstruction management program involves:
- Airport strategic and operational planning
- Identifying applicable criteria
- Using of best available resources for data collection and analysis
- Considering innovative and solution-oriented mitigation measures through collaboration and consensus building
- ONGOING COMMUNICATION - Community and stakeholder engagement before, during and following the implementation of obstruction management measures
- Continuous monitoring of program performance to achieve the goal of protecting the airport from encroachment
ACRP WebResource 7

- Presentation templates
- Bibliography of references
- Contains sample airspace composite maps

The ACRP Guidebook on Developing an Obstruction Management Program
WebResource 7 Templates

https://crp.trb.org/acrp0916

- Stand-Alone Airport Zoning Ordinance
- Airspace Education Presentation
- Presentation on Airspace Surfaces
- Noise and Avigation Easement
- Obstacle Action Plan

Also contains searchable reference resources
Simple Airport Composite Map

Source: https://crp.trb.org/acrp0916
Complex Airport Composite Map

Source: https://crp.trb.org/acrp0916
Thank You!

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