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AC 150/5370-2B

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# ADVISORY CIRCULAR



DEPARTMENT OF TRANSPORTATION  
Federal Aviation Administration  
Washington, D.C.

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**Subject:** OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION

1. PURPOSE. To assist airport operators in complying with Part 139, Certification and Operations: Land Airports Serving CAB-Certificated Air Carriers, and Part 152, Airport Aid Program, of the Federal Aviation Regulations (FAR), this advisory circular (AC) sets forth guidelines concerning the operational safety on airports during construction. For non-certificated airports and airports with no grant agreements, application of these provisions will help maintain the desired level of operational safety during periods of construction.

2. CANCELLATION. AC 150/5370-2A, Operational Safety on Airports With Emphasis on Safety During Construction, dated 6/20/75, is canceled by this revision.

3. RELATED READING MATERIAL. All references cited herein are available for inspection in any Federal Aviation Administration (FAA) regional office.

a. The Federal Aviation Regulations are sold by the Superintendent of Documents (AC 00-44, Status of Federal Aviation Regulations, current edition, contains a price list and ordering instructions).

b. AC 150/5370-10, Standards for Specifying Construction of Airports, is also sold by the Superintendent of Documents (AC 00-2, Advisory Circular Checklist, current edition, contains ordering instructions).

4. BACKGROUND. Various AC's are available which detail all major elements of safe, efficient airport (airside) design and construction. However, operational safety on airports may be degraded by construction hazards or marginal conditions that develop after an airport has been opened or approved for operation. This AC addresses that problem. Note that airports under obligation by virtue of acceptance of Federal assistance (grants, real or personal property) and airports certificated under FAR Part 139 may have mandatory requirements related to this subject.

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Initiated by: AAS-300

## 5. GENERAL.

a. The airport operator is responsible for full compliance with the requirements of FAR Part 139 for certificated airports and with the provisions of Federal grant agreements when applicable. Adherence to the following provisions will materially assist the airport operator in providing the level of safety required. The local FAA Airports offices have technical expertise to assist airport owners in all safety matters on airports. (See AC 150/5000-3, Address List for Regional Airports Divisions and Airports District/Field Offices, current edition.)

b. Each bidding document (construction plans and/or specifications) for airport development work or air navigation facility (NAVAID) installation involving aircraft operational areas should incorporate a section on safety on airports during the construction activity. The section, as a minimum, should contain the appropriate provisions outlined in appendix 1 to this advisory circular.

c. The airport operator should pay particular attention to the pullback distances and clearances for routine and irregular maintenance activities and emergencies that occur on airports. These include activities which involve maintenance equipment such as mowing machines, snowplows, lighting equipment, and emergency standbys for firefighting and rescue equipment.

6. COORDINATION OF AIRPORT CONSTRUCTION ACTIVITIES. Construction activities on an airport within, in proximity to, or affecting aircraft operational areas or navigable airspace should be coordinated with the FAA and airport users prior to initiating any such activities. In addition, basic responsibilities and procedures should be developed and disseminated to instruct construction personnel in airport procedures and for monitoring construction activities for conformance with safety requirements. These and other safety considerations should be addressed in the earliest stages of project formulation and incorporated in the contract specifications. Construction areas located within safety areas requiring special attention by the contractor should be clearly delineated on the project plans. Close monitoring to ensure continual compliance with these requirements should be maintained throughout the duration of the project. It should be noted that for certain airport projects, a formal notification to the FAA is required by regulation. For instance, FAR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports, requires that FAA be notified in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; and the deactivating or abandoning of an entire airport. Formal notification is made by submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA District Office or FAA Regional Office. (See AC 70-2, Airspace Utilization Considerations in the Proposed Construction, Alteration, Activation and Deactivation of Airports, current edition.) Formal notification is also required by any person proposing any kind of construction or alteration of objects that affect navigable airspace as defined in Part 77, Objects Affecting Navigable Airspace, of the FARs. FAA Form 7460-1, Notice of Proposed Construction or Alteration, should be used for this purpose. (See AC 70/7460-2, Proposed Construction or Alteration of Objects That May Affect the Navigable Airspace, current edition.)

a. Work Scheduling and Accomplishment. Predesign, preconstruction, and pre-bid conferences offer excellent opportunities to introduce the subject of airport operational safety during construction. All parties involved including the sponsor's engineer and contractors should integrate operational safety requirements into their planning and work schedules as early as practicable. Also, responsibilities should be clearly established for continuous monitoring and compliance with the requirements assigned and for vigilance to detect areas needing attention due to oversight or altered construction activity.

b. Safety Considerations. The following is a partial list of safety considerations which are, as experience indicates, likely to need attention during airport construction.

(1) Minimum disruption to standard operating procedures for aeronautical activity.

(2) Clear routes from firefighting and rescue stations to active airport operations areas.

(3) Chain of notification and authority to change safety-oriented aspects of the construction plan.

(4) Initiation, currency, and cancellation of NOTAMs.

(5) Suspension or restriction of aircraft activity on airport operations areas.

(6) Threshold displacement and appropriate temporary lighting and marking.

(7) Installation and maintenance of temporary lighting and marking for closed or diverted aircraft routes on airport operations areas.

(8) Revised vehicular control procedures or additional equipment and manpower.

(9) Marking/lighting of construction equipment.

(10) Storage of construction equipment and materials when not in use.

(11) Designation of responsible representatives of all involved parties and their availability.

(12) Location of construction personnel parking and transportation to and from the work site.

(13) Marking/lighting of construction areas.

- (14) Location of construction offices.
- (15) Location of contractor's plants.
- (16) Designation of waste areas and disposal.
- (17) Debris cleanup responsibilities and schedule.
- (18) Identification of construction personnel and equipment.
- (19) Location of haul roads.
- (20) Security control on temporary gates and relocated fencing.
- (21) Noise pollution.
- (22) Blasting regulation and control.
- (23) Dust control.
- (24) Location of utilities.
- (25) Provision for temporary utilities and/or immediate repairs in the event of disruption.
- (26) Location of power and control lines for electronic/visual navigational aids.
- (27) Additional security measures required if Part 107, Airport Security, of the FARs is involved.
- (28) Marking and lighting of closed airfield pavement areas.

c. Guidelines for Proximity of Construction Activity to Airport Operations Areas. The guidelines contained in appendix 1 of this circular are for use in the preparation of plans and specifications when construction activities are conducted in locations which may interfere with aircraft operations. They should be adapted to the needs of a particular project and should not be incorporated verbatim into project specifications.

7. EXAMPLES OF HAZARDOUS AND MARGINAL CONDITIONS. Past accidents and incidents have highlighted many contributory hazards and conditions. A representative list follows:

- a. Excavations adjacent to runways, taxiways, and aprons.
- b. Mounds or stockpiles of earth, construction material, temporary structures, and other obstacles in proximity to airport operations areas and approach zones.

c. Runway surfacing projects resulting in excessive lips greater than 3 inches (7.62 cm) for runways and 6 inches (15.24 cm) for edges between old and new surfaces at runway edges and ends.

d. Heavy equipment, stationary or mobile, operating or idle near airport operations areas or in safety areas.

e. Proximity of equipment or material which may degrade radiated signals or impair monitoring of navigational aids.

f. Tall, relatively low visibility units such as cranes, drills, and the like in critical areas such as safety areas and approach zones.

g. Improper or malfunctioning lights or unlighted hazards.

h. Holes, obstacles, loose pavement, trash, and other debris on or near airport operations areas.

i. Failure to maintain fencing during construction to deter human and animal intrusions into the airport operations areas.

j. Obstructions in approach zones.

k. Improper marking or lighting of runways, taxiways, and displaced thresholds.

l. Bird attractants such as trash, grass seeding, or ponded water on or near airports.

m. Inadequate or improper methods of marking temporarily closed airport operations areas including improper and unsecured barricades.

NOTE: Safety area encroachments and ground vehicle operation are the two most recurring threats to safety during construction.

8. ASSURING OPERATIONAL SAFETY. The airport management is responsible for establishing and using procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting operational safety at the airport. Notification is usually made by NOTAM (see AC 210-4, United States Civil Notice to Airmen (NOTAM) System Handbook, current edition), issued by Flight Service Stations, of construction, rough pavement, weather-caused effects, bird hazards, and other conditions affecting the use of the airport. FAA Air Traffic facilities and Airports District/Field Offices will assist in the notification process. Airmen or other persons engaged in aviation activities are encouraged to report safety-related airport conditions to airport management, the FAA, or through the use of the National Aeronautics and Space Administration's Aviation Safety Reporting System.

9. VEHICLES ON AIRPORTS. Vehicular activity on airport operations areas should be kept to a minimum. Where vehicular traffic on airport operations areas cannot be avoided, it should be carefully controlled. A basic guiding principle is that the aircraft always has the right-of-way. Some aspects of vehicle control and identification are discussed below. It should be recognized, however, that every airport presents different vehicle requirements and problems and therefore needs individualized solutions for safe vehicle and aircraft traffic interface.

a. Visibility. Vehicles which routinely operate on airport operations areas should be decorated for high daytime visibility and, if appropriate, lighted for nighttime operations. Vehicles which are not marked and lighted should be escorted by one that is or be equipped with temporary marking and lighting devices. (See AC 150/5210-5, Painting, Marking, and Lighting of Vehicles Used on an Airport, current edition.)

b. Identification. It is usually desirable to be able to visually identify specific vehicles from a distance. It is recommended that vehicles which routinely operate on airport operations areas be permanently marked with identifying characters on the sides and roof. (See AC 150/5210-5.) Vehicles needing intermittent identification could be marked with tape or with magnetically attached markers which are commercially available. Whenever possible, vehicles should be purchased with the recommended markings and lighting.

c. Noticeability. Moving equipment should have honking or buzzing devices.

d. Movement. The control of vehicular activity on airport operations areas is of the highest importance. Airport management is responsible for developing procedures, procuring equipment, and providing training to assure a viable vehicle control environment. This requires coordination with airport users and air traffic control. Consideration should be given to the use of two-way radio, signal lights, traffic signs, flagmen, escorts, or other means suitable for the particular airport. The selection of a frequency for two-way radio communications between construction contractor vehicles and the air traffic control (ATC) tower must be coordinated with the ATC tower chief. At nontower airports, two-way radio control between contractor vehicles and fixed base operators or other airport users should avoid frequencies used by aircraft. It should be remembered that even with the most sophisticated procedures and equipment, systematic training of vehicle operators is necessary to achieve safety. Special consideration should be given to training intermittent operators such as construction workers, even if escort service is being provided.

10. INSPECTION. Frequent inspections should be made by the airport owner or a representative during critical phases of the work to ensure that the contractor is following the recommended safety procedures and that there is an effective litter control program.

11. FAA SAFETY RESPONSIBILITIES. The FAA has some specific responsibilities regarding operational safety on certificated airports during periods of construction activity. In order to maintain the highest level of safety possible, it is recommended that the Airport Certification Inspectors be involved, where feasible, in the following functions:

- a. Review of plans and specifications to determine limits of work and possible problem areas.
- b. Participation in the development of the safety plan to be used during construction.
- c. Participation during construction inspections if possible and in the inspection of the finished work to determine that there are no safety violations to FAR Part 139.
- d. Participation in preconstruction conferences for lengthy, complex construction projects.

*Leonard E. Mudd*

LEONARD E. MUDD  
Director, Office of Airport Standards

APPENDIX 1. SPECIAL SAFETY REQUIREMENTS DURING CONSTRUCTION

1. RUNWAY SURFACES. When aircraft operations are being conducted on a runway, construction activity is prohibited within the safety area and the obstacle free zone (OFZ) as defined in AC 150/5300-4, Utility Airports--Air Access to National Transportation, current edition, paragraph 3. If the protected distances cannot be met, then a runway usage plan must be agreed upon prior to the issuance of a notice to proceed with construction.
2. APPROACH SURFACES. When aircraft operations are being conducted on a runway, construction activity is prohibited to penetrate the surfaces defined in AC 150/5300-4, appendix 9, paragraph 6. The runway threshold may be relocated or displaced to eliminate the penetration.
3. TAXIWAYS AND APRONS. Construction activity may be safely permitted up to the taxiways and aprons in use provided: the activity is first coordinated with airport users and air traffic control, NOTAMs are issued, marking and lighting provisions are implemented, and it is determined that the height of equipment and materials is safely below any part of the aircraft using the airport operations areas which might overhang those areas. A minimum clearance of 7 feet (2.134 m) plus 0.75 times the wingspan of the critical aircraft from taxiway centerline shall be maintained when construction activity is conducted adjacent to an active taxiway. A minimum clearance of 7 feet (2.134 m) plus 0.63 times the wingspan of the critical aircraft from the taxi lane centerline should be maintained when construction activity is conducted adjacent to a taxi lane.
4. TRENCHES, EXCAVATIONS, AND STOCKPILED MATERIAL. Open trenches or excavations exceeding 3 inches (7.62 cm) in depth and 3 inches (7.62 cm) in width or stockpiled material will not be permitted within the limits of safety areas of operational runways or taxiways. Coverings for open trenches or excavations shall be of sufficient strength to support the weight of the heaviest aircraft operating on the runway or taxiway. Lightweight barricades and/or flagging should be used to identify the limits of construction near open trenches or excavations. These safety area dimensions will be based on the type aircraft using the runway and taxiway during construction activities (see table 1 below).



Table 1. RUNWAY AND TAXIWAY SAFETY AREA DIMENSIONS

<u>Type Runway/Visibility</u>	<u>Runway Safety Area Width <u>1/</u> (feet) (m)</u>	<u>Taxiway Safety Area Width <u>1/</u></u>
Basic Utility Stage 1	100 (30.48 m)	<u>2/</u>
Basic Utility Stage II	120 (36.58 m)	<u>2/</u>
General Utility	150 (45.72 m)	<u>2/</u>
Precision Runway on Utility Airport, 1/2 mile (0.805 km) visibility minimum	300 (91.44 m)	<u>2/</u>
Basic Transport, 3/4 mile (1.207 km) visibility minimum	300 (91.44 m)	<u>2/</u>
General Transport, 3/4 mile (1.207 km) visibility minimum	300 (91.44 m)	<u>2/</u>
Basic or General Transport, 1/2 mile (0.805 km) visibility minimum	500 (152.4 m)	<u>2/</u>
Air Carriers	500 (152.4 m)	<u>2/</u>

1/ Safety areas are centered about and encompass the runway or taxiway pavements.

2/ The taxiway safety area width is the greater of the following: 40 feet (12.192 m) plus taxiway width or the wingspan of the critical aircraft.

5. MAXIMUM EQUIPMENT HEIGHT. Aeronautical activity at the airport should be suspended when equipment on the airport exceeds 150 feet (45.72 m) in height unless a favorable airspace finding has been made by the FAA. The guiding criteria involving Part 139 certificated airports and grant agreement airports is that all construction plans and specifications require direct coordination with the appropriate Airports District, Field, or Regional Office. All other airports

should file FAA Form 7460-1, Notice of Proposed Construction, when equipment, is expected to penetrate any of the surfaces previously defined. Airport operators/sponsors are reminded that FAR Part 157 requires prior notice to construct, realign, alter, or activate any runway/landing area or associated taxiway for any project which is non-Federally funded.

6. PROXIMITY OF CONSTRUCTION ACTIVITY TO NAVIGATIONAL AIDS. Construction activity in the vicinity of navigational aids requires special consideration. The effect of the activity and its permissible distance and direction from the aid must be evaluated in each instance. A coordinated evaluation by airport management and the FAA is necessary. Technical involvement by FAA Airports, Air Traffic, and Airway Facilities Specialists is needed as well as construction engineering and management input. Particular attention needs to be given to stockpiling materials and movement and parking of equipment which may interfere with line-of-sight from the tower or derogate electronic emissions.

7. CONSTRUCTION VEHICLE TRAFFIC. With respect to vehicular traffic, safety during construction is likely to be derogated by four principle causes: increased traffic volume, nonstandard traffic patterns, vehicles without radio communication and marking, and operators untrained in the airport's procedures. Because each construction situation differs, airport management must develop and coordinate a construction vehicle traffic plan with airport users and air traffic control and with appropriate participation by construction engineers and contractors. This plan, when signed by all participating parties, becomes a part of the contract. Airport management is responsible for coordinating and enforcing the plan.

8. LIMITATION ON CONSTRUCTION.

a. Open-flame welding or torch-cutting operations should be prohibited unless adequate fire and safety precautions are provided and have been approved by the airport owner (or operator). All vehicles are to be parked and serviced behind the building restriction line and/or in an area designated by the airport operator.

b. Open trenches, excavations, and stockpiled material at the construction site should be prominently marked with red flags and lighted by light units (acceptable to the airport owner or operator and the FAA) during hours of restricted visibility and/or darkness. Under no circumstances are flare pots to be used for airport lighting.

c. Stockpiled material should be constrained in a manner to prevent movement resulting from aircraft blast or wind conditions. Material should not be stored near aircraft turning areas.

9. MARKING AND LIGHTING OF CLOSED OR HAZARDOUS AREAS ON AIRPORTS. When areas on airports are closed or present hazards due to construction activities, they should be marked and lighted according to paragraph 10 of AC 150/5340-1E, Marking of Paved Areas on Airports, current edition.

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