



Maintaining Safety and Security During On-Airport Construction

How does airport management maintain order, safety and security when construction vehicles and crews mix with aircraft?

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by

Craig Spence

Operations Officer

Washington Dulles International Airport, Washington, D.C., U.S.

The potential for accidents and breaches of security multiplies when dozens of construction vehicles and scores of workers move on and throughout the airport. As airports build to meet growing travel demands, airport managers face the challenge to minimize the impact on operations and maximize safety and security.

At Washington Dulles International Airport near Washington, D.C., U.S., dozens of different construction projects often occur at the same time. It is a continuing process. Each project may have three to five contractors with each of these employing several sub-contractors. Activity of this scope involves large numbers of different workers, many of whom are not familiar with airport safety needs. While security remains a constant concern, most safety problems are likely to arise from inadvertent or careless actions rather than deliberately unsafe practices.

Debris that can be ingested in engines or propelled by jet blast into other aircraft or at workers, randomly moving construction vehicles and carelessly stored materials represent just some of the potential trouble areas. Further, there is the potential for theft by persons seeking opportunities for intentional security threats. This demands close supervision and a stringent set of rules for contractors. At Dulles, these rules are set down in a 42-page document. Contractors receive this document before bidding on a project.

Four kinds of construction occur at this airport and each requires special control. These occur in the air operations area (AOA); in terminal sterile areas; in terminal non-sterile areas; and outside terminal and air operations areas.

The least conflicting is airport construction that does not require workers or equipment to enter any sensitive area. As an example, one current project at Dulles involves construction of a facility for general aviation. This includes an office, hangar and additional ramp space. By fencing the site from any access to the airport, construction proceeds with only the normal work safety concerns. It does not interfere with either safety or security of flight. Public roads provide access to the construction site without encroaching upon the AOA.

Fencing provides an additional benefit. Removal of trees at the building site disturbs wildlife in the area and the fencing keeps them off airport property and away from the air operation area. After completion of the project, a perimeter fence will be installed and the present fence will be removed to provide direct airport access.

Not so easy, however, are projects at other locations. Take the mid-field terminal under construction at Dulles, for instance. Here, earth-moving equipment, materials

trucks, dump trucks and cement mixers must move about the airport, crossing active runways, taxiways and ramps. Scores of workers must enter the AOA and move freely on the construction site. Some, like the truck drivers, enter and leave the airport often.

The sponsor of the construction is responsible for ensur-



Airport safety and security concerns increase when construction personnel and their equipment share aircraft servicing and passenger loading areas.

ing that the contractor understands and complies with safety and security rules and regulations. The appropriate sponsor may be the airport management, airline, tenant or concessionaire.

For security, all workers must have identification badges issued by the airport upon application by the sponsor of the construction, or they must remain within 20 feet of an escort. For large construction areas, construction workers are exempt from the 20-foot limitation and may move about the construction site. Movements, however, are limited or observed. A temporary fence may be used to separate the construction site from access to the active AOA. If a fence is not practical, a buffer zone observable for the control tower separates the construction site from any safety or security sensitive area.

Equipment enters the airport at a designated gate. All equipment must have temporary permits and the drivers must have current identification badges and airport-issued driver licenses. When entering the airport or leaving the immediate construction area, equipment must be under escort by a vehicle that has communication capability with the air traffic control tower. Limiting a convoy to no more than six trucks keeps interruptions and delays to aircraft movements at a minimum.

Depending upon the size and complexity of the project, a contractor may need eight to ten approved escorts or security monitors. This adds to the cost, so fencing is preferred where possible.

The airport engineering department develops and coordinates a construction traffic plan. This becomes a part of the construction contract. Routing of traffic to minimize conflict with flight operations comes after consultation with air traffic control, contractors and construction engineers. If necessary, special access roads may be established to direct construction traffic away from the AOA.

A power-broom vehicle makes regular runs over the routes covered by trucks and other equipment to clear the area of mud and other debris that may have fallen from the tires or truck beds. Runway, taxiway and ramp inspections become even more critical because rubble can be scattered further by the wind or by propeller or jet blasts.

Drivers are not permitted to leave vehicles unattended with engines running. Parked vehicles must be at least 200 feet away from the edge of a runway. Rules also prohibit vehicles from moving into the AOA if they are dripping oil, fuel or other substances that could endanger aircraft. All equipment left on the airport overnight must have warning lights. Airport management limits the amount of materials that contractors may store on airport property.

Contractors also are warned of and must abide by regulations relating to the height of equipment that may penetrate the approach zones. Ditches and excavations must be no closer to active runways and taxiways than predetermined for the project.

Barriers to block entrances to construction areas differ from those used on highways. The barrel-shaped barriers normally used in highway construction are too high, pos-



Weighted, low-profile vehicle barriers (cross-hatched) are less apt to damage passing aircraft or to be blown over by jet blast than barrel-shaped highway barriers.

ing potential damage to aircraft moving past them. Jet blasts also may toss them into an active aircraft area or toward workers.

To avoid these dangers, barriers required at the airport

are similar to long, low flower boxes, hollow on the inside. They are filled and weighted to prevent unwanted movement. Their low profile reduces the surfaces that may be hit by jet blasts. Stripes of white and orange reflective tape and square orange flags add visual alerts. Flashing yellow warning lights are required at night.

Construction near navigational aids requires special attention, and each case must be assessed individually. Construction, storage of materials, and vehicle parking must not interfere with line of sight observation from the air traffic control tower or with electronic transmissions. Technical experts from the U.S. Federal Aviation Administration (FAA) help make these decisions.

To do open-flame welding or torch-cutting work, contractors are required to take adequate fire and safety precautions approved by airport management.

Sometimes, construction or maintenance cannot be isolated from the air operations area. At these times, work often is done at night between 10 p.m. and 5 a.m. Night work usually adds to the cost of the project, but it permits



Construction operators must plan movements of mobile equipment to keep within designated work areas and avoid conflict with nearby aircraft operations.

work to progress without danger to air operations from construction or to the workers from jet blasts. When appropriate, notices to airmen are issued through the FAA.

Construction in the terminal building, while not posing the same risks to air operations, presents a variety of security problems. In the non-sterile areas, usual construction safety precautions must be in place to protect workers, airport employees and the traveling public. Inside the sterile areas, security problems intensify.

Workers without identification badges issued by the airport authority must be escorted and they must always stay within 20 feet and within sight of their escort. If chal-

lenged, the worker must be able to identify his escort.

Tools, such as hammers, chisels, knives, screwdrivers and others that could become weapons, must be screened



Since materials trucks often traverse runways and taxiways, their operators must be well versed in airport safety and security directives and ground vehicle rules of the road.

and accounted for by the sponsor of the construction. If a construction sponsor does not want to provide an escort, workers pass through metal detectors and the sponsor must sign for the tools at the security X-ray point. Tools that are left in the construction area after work must be placed in an immovable, locked box with access controlled by the airport authority.

Overseeing such massive construction work requires specialists. The Metropolitan Washington Airport Authority contracts with a construction management firm. Under direction of the authority and on-site airport management, personnel from the firm monitor the planning and the actual project work.

The firm reviews diagrams and plans, and places engi-



Temporary fencing separates airport and construction activities and can easily be adjusted to conform to changing shapes of work areas.

neers and technicians familiar with the specific project directly on-site. This aids the contractors by providing quick access to, and guidance from, persons more closely associated with airport safety and security conditions.

The resident engineer monitors the contractor's implementation and compliance with the airport's safety and security procedures. A project safety and security manager reviews the job site security program to detect any deficiencies and checks for corrective actions. This person also serves as liaison with airport operations to maintain the highest degree of safety and security during the life of the project.

Construction work often can be hazardous. Combine this with the specialized safety and security demands of an airport, and the task facing airport operators becomes particularly sensitive. Because of the specific complexities of airport construction regarding safety and security, contractors that have experience on airports generally become more competitive as a result of having the availability of equipment and personnel experienced in this work.

Although construction work has always been an important consideration in and around airports, it increases in scope as airports in all parts of the world try to keep pace

with the demands for air travel. In the United States alone, revenue passenger miles are forecast to increase a minimum of two-thirds over the current year by the end of this decade.

With more aircraft making more frequent flights into airports with almost continuous construction activities, airport operations personnel must take advantage of every opportunity to maintain a safe and secure facility. ♦

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About the Author

Craig Spence is an operations officer at Washington Dulles International Airport, U.S. He previously worked as operations officer at a general aviation airport and was manager of technical affairs for the American Association of Airport Executives (AAAE).

Spence also is a first lieutenant in the Maryland Air Guard, piloting Lockheed C-130 aircraft. He holds a degree in transportation management and has contributed articles to numerous publications.

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