

Inspecting Aerodrome Construction

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Inspectors Workshop for the Caribbean Region**

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**Federal Aviation
Administration**



Inspecting Aerodrome Construction Overview

- National standards and procedures.
- Inspection Criteria
- Unserviceability markers and lights
- Pilot visual aids
- Marking closed runways
- Marking temporary displaced or relocated thresholds
- Protecting runway strips
- Good construction practices





Airfield construction activity can disrupt normal taxi routes, cause pilot confusion, provide hazardous situations and increase the potential for an accident. Airfield Inspectors must pay close attention to construction areas when inspecting an aerodrome.

Inspecting Aerodrome Construction

Construction activity is inspected for the following:

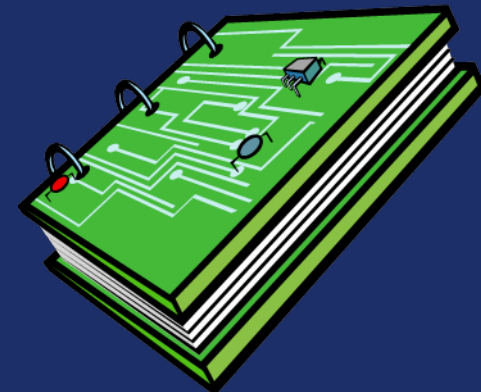
- **Compliance to airport certification requirements.**
- **Compliance to National standards and procedures.**
- **Compliance to the Construction Safety Plan.**
- **Potential for visual aids to cause pilot confusion.**
- **Potentially unsafe conditions for aircraft operations.**
- **Potential for Vehicle/Pedestrian Deviations**
- **Accurate and current NOTAMS**



Inspecting Airfield Construction

Construction related standards in ICAO Annex 14 are mainly in Chapter 7.

- Closed runway and taxiway marking
- Unserviceable markers and lights



FAA Part 139 Requirements

139.341 – Identifying, marking, and lighting construction and other unserviceable areas

- **Mark and light in a manner authorized by the Administrator**
 - Each construction area and unserviceable area on or adjacent to any movement area or any other area on the airport which air carrier aircraft may be operated
 - Each item of construction equipment and construction roadway
 - Any area adjacent to a NAVAID that if traversed could cause signal or NAVAID failure
- **Provide procedures, such as a review of all appropriate utility plans prior to construction, for avoiding damage to existing utilities, cables, wires, conduits, pipelines, or other underground facilities.**
- **Advisory Circulars contain methods and procedures for identifying and marking construction areas that are acceptable to the Administrator.**



Inspection Criteria



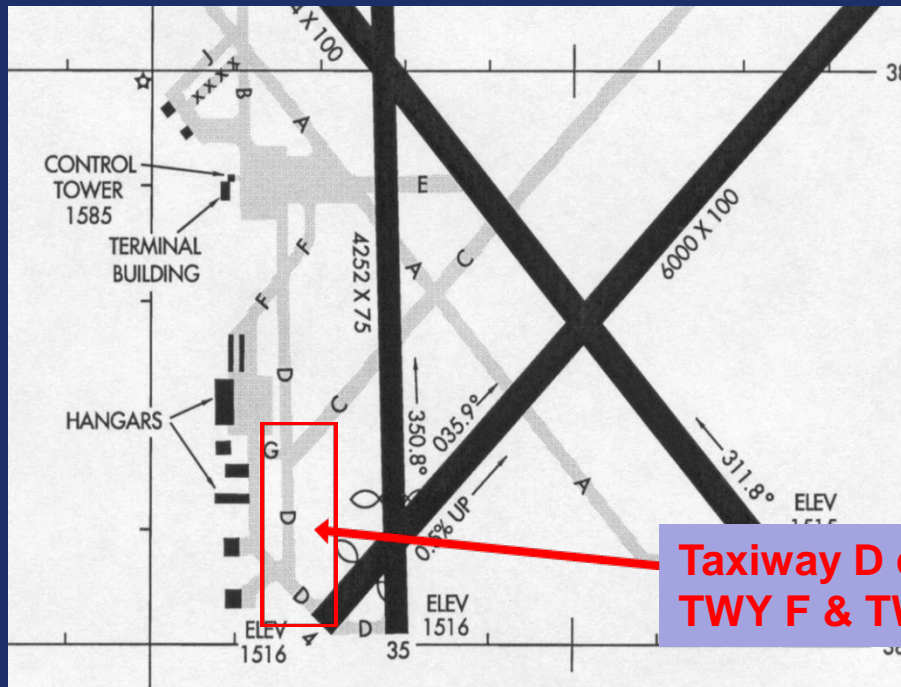
When taxiways or runways are closed for maintenance or construction, be sure that ARFF has been notified so they can plan their emergency response routes accordingly. This would normally be done during the ARFF inspection.

Inspection Criteria Construction Areas



ARFF should also be notified if construction will disrupt any water line or fire hydrant on the airport.

Inspection Criteria Construction Areas



Taxiway D closed for reconstruction between TWY F & TWY C until the end of August

Marking construction and closed areas on an Airport Diagram or layout map to disseminate locally to tenants, airlines and pilots is a good way to supplement the text in NOTAMs. Copies of the marked up Airport Diagram distributed to pilots.

Unserviceability Markers and Lights

Annex 14.7.4



Unserviceability markers shall be displayed wherever any portion of a taxiway, apron or holding bay is unfit for the movement of aircraft but it is still possible for aircraft to bypass the area safely. On a movement area used at night, unserviceability lights shall be used.

Unserviceability Markers and Lights

Annex 14.7.4



Unserviceability markers shall be placed at intervals sufficiently close so as to delineate the unserviceable area.

Note.— Guidance on the location of unserviceability lights is given in Attachment A, Section 13.

Unserviceability Markers and Lights



- Unserviceability markers shall consist of conspicuous upstanding devices such as flags, cones or marker boards.
- An unserviceability marker board should be at least 0.5 m (18") in height and 0.9 m (3') in length, with alternate red and white or orange and white vertical stripes.

Unserviceability Lights

- An unserviceability light shall consist of a red fixed light. The light shall have an intensity sufficient to ensure conspicuity considering the intensity of the adjacent lights and the general level of illumination against which it would normally be viewed.
- Solar charged LED red lights are often used on construction barricades. While more expensive, they do have the advantage of not having to regularly replace batteries.



Unserviceability Markers & Flags

- Markers (barricades) used to mark construction areas or closed pavement should be as low as possible to the ground; low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, or other surface wind currents.
- An unserviceability flag should be at least 0.5 m (square and red, orange or yellow or any one of these colors in combination with white).



Unserviceability Markers/Lights



- Use highly reflective barriers with flashing or steady-burning red lights to barricade taxiways leading to closed runways.
- Evaluate all operating factors when determining how to mark temporary closures. Even for relatively short closures, major taxiway/runway intersections should be identified with barricades spaced no greater than 3 meters apart.

Unserviceability Markers/ Barricades



During aerodrome inspections, Inspectors should conduct night inspections of construction areas to ensure that unserviceability markers and lights are adequate and operable to keep aircraft out of construction areas.

Inspection Criteria - Construction Areas



When inspecting construction areas, Inspectors should check for adequate unserviceability markers, warning signs and potentially misleading or confusing pilot visual aids.



Inspection Criteria – Pilot Visual Aids



Inspectors should be on the lookout for equipment or materials that might obstruct signs.

Inspection Criteria – Pilot Visual Aids



Signs for closed areas should be covered or removed so as not to provide misleading or confusing information to pilots, especially at night.

Inspection Criteria - Pilot Visual Aids

Taxiway edge lights in closed areas should be covered if the lights cannot be turned off at night.



Inspection Criteria – Pilot Visual Aids



If taxiway center line lights lead into a closed area, the light fixtures should be covered if the lights cannot be disconnected or turned off.

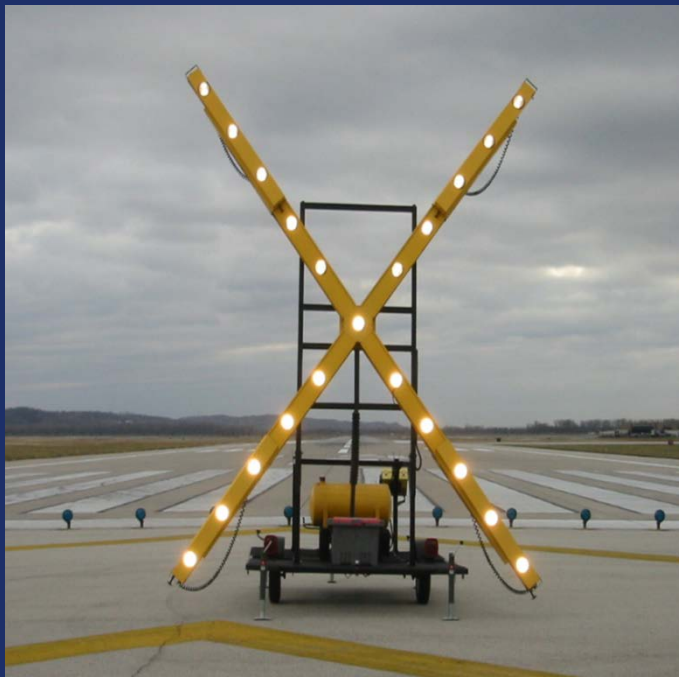
Marking Closed Runways

Annex 14, 7.1.2 - A closed marking should be displayed on a temporarily closed runway or taxiway or portion thereof, except that such marking may be omitted when the closing is of short duration and adequate warning by air traffic services is provided.



Marking Closed Runways

- Portable Lighted “X”s equipment is common at U.S. airports and provides an effective method to identify temporary closed runways.
- Portable lighted “X” equipment is normally placed on the runway designation marking, which can also prevent a pilot from inadvertently taking off on a closed runway.



Marking Closed Runways



Lighted X's are very effective during low visibility conditions and at night when the runway lights must be illuminated for maintenance or during snow removal operations.

Temporary Runway Threshold

This is an example of a temporary chevron where a black outline is used to enhance the visibility of the chevron on light colored pavement.



Temporary Runway Thresholds



- This is an example of temporary relocated threshold marking and chevron installed along the sides of the runway using staked plywood where the pavement prior to the threshold is used for taxiing.
- For a temporary displaced threshold, the arrowheads would be white.

Temporary Runway Thresholds



When the runway threshold is temporarily moved for construction, the runway distance remaining signs in the opposite direction must be covered as they no longer provide accurate information.

Temporary Runway Thresholds



When the runway threshold is temporarily moved for construction and the runway is open at night, the caution zone lights marking the last 600 m (2000') of runway will need to be adjusted. If runway center line lights are present, they will need to be placed out of service.

Temporary Runway Thresholds

When the runway threshold is temporarily moved for construction, NAVAIDS will need to be placed out of service.



Good Construction Practices

Temporarily paint over or remove taxiway centerlines leading in to closed taxiways and runways.



Good Construction Practices



Installing a construction fence along the boundary of the protected portion of the runway safety area is an effective method of identifying construction limits and preventing inadvertent access into the runway strip.

Good Construction Practices



Keep a close watch on surveyors and construction vehicles to ensure they stay out of runway strips if no physical barrier is installed.

Good Construction Practices



Inspectors should be on the lookout for any construction equipment parked adjacent to movement areas that has the potential to be hit by a taxiing aircraft.

Good Construction Practices



This pickup should not be parked in the runway strip. Construction vehicles, construction activity, equipment, construction material and potentially hazardous surface variations are not permitted in the runway strip during air carrier operations.

Good Construction Practices



Construction personnel authorized adjacent to or on the movement area must be properly trained in the airport's pedestrian and ground vehicle procedures or be escorted by a trained individual.

Good Construction Practices



AOA access control procedures must be in place where construction equipment and personnel enter the AOA.

Good Construction Practices



Flag personnel should be used where construction equipment must cross an active portion of the movement area.

Good Construction Practices



Construction vehicles normally drive through barricades to enter and leave construction sites. Installing barricades close together is an effective measure for preventing vehicles from inadvertently entering an active portion of the movement area.

Good Construction Practices



These warning signs are also a good idea adjacent to active taxiways.

Good Construction Practices



This is another example of warning signs being installed where there is a potential for construction personnel to inadvertently enter an active runway.

Questions?

