

February 2012



# CITY OF PHOENIX AVIATION DEPARTMENT AIRPORT CONSTRUCTION SAFETY MANUAL



# AIRPORT CONSTRUCTION SAFETY MANUAL

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**CONSTRUCTION SAFETY MANUAL  
INTRODUCTION  
AIRPORT CHARACTERISTICS AND  
SAFETY REQUIREMENTS – AIRSIDE**

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Safety during construction is a major consideration at the three City of Phoenix airports. Working in compliance with the Aviation Department's and Federal Aviation Administration's (FAA) safety requirements can be seamless if the tools in this manual are used as intended. The Aviation Department's Construction Safety Phasing Plan (CSPP) and the contractor's Safety Plan Compliance Document (SPCD) are the two primary tools that shall be used to ensure safety compliance when coordinating construction activities within the Airport Operations Area.

These two documents stated above are simple organizational tools that will assist to coordinate construction activities that pose a potential safety hazard.

**Construction Safety and Phasing Plan (CSPP):**

The Aviation Department is responsible for developing, certifying, and submitting the CSPP to the FAA. The CSPP should be developed concurrently with the project design. Milestone update submissions to the FAA (not mandatory) will help avoid delays. The Aviation Department is encouraged to submit an outline around the 25% to 30% completion stage; the formal CSPP should be submitted for FAA approval when the project design is 80% to 90% complete.

The CSPP should address, to the extent possible, [AC 150/5370-2F](#) Chapter 3, Guidelines for writing a CSPP.

**Safety Plan Compliance Document (SPCD):**

It is the responsibility of the contractor to develop the SPCD. This document will record that the contractor has planned for

all of the items that were addressed in the CSPP and all supplemental information that must be addressed. The SPCD should be submitted to the Aviation Department for approval prior to the Notice to Proceed (NTP). The standard format for the SPCD can be found in [AC 150/5370-2F](#) and an example is provided in the appendix of this manual.

**Coordination:**

All parties involved with construction on all of the three City of Phoenix airports shall introduce the subject of airport safety. Safety shall be an agenda item for discussion during progress meetings throughout the project. If there is a deviation to the schedule and/or scope it may require revisions to the CSPP and review by the Aviation Department and FAA. Early coordination is required with FAA Air Traffic Organization (ATO) to schedule airway facility shutdown and restart. Relocation or adjustments to NAVAIDs and changes to final grades in critical areas may require an inspection prior to restarting the facility.

Please refer to [AC 150/5370-2F](#) for the CSPP checklist and SPCD guidelines and examples.

## Introduction

The City of Phoenix Aviation Department has jurisdiction over Phoenix Sky Harbor International Airport (PHX), Phoenix Deer Valley Airport (DVT) and Phoenix Goodyear Airport (GYR) as authorized by ARS, (Arizona Revised Statutes) [§28-8418](#).

All three Phoenix area airports (PHX, DVT, GYR) are divided into two areas known as Airside and Landside. The airside portion is also known as the Air Operations Area or AOA and is defined by the FAA as “any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An Air Operations Area includes such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runways, taxiways and aprons.”<sup>1</sup>

## AOA Movement/Non-Movement Areas

The AOA is subdivided into two areas known as the *Movement* and *Non-Movement Areas*. The FAA defines the *Movement Areas* as “The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff and landing of aircraft exclusive of loading ramps and aircraft parking aprons”<sup>2</sup>. *Movement areas* are under the control of an Air Traffic Control Tower (ATCT). *Non-Movement Areas* are defined as “taxiways, aprons, loading ramps and other areas not under the control of ATCT or at airports without an operating ATCT.”<sup>3</sup> Please refer to [Exhibit 4 and 5](#).

It is important that contractors understand the limits of the *Movement* and *Non-movement* areas. [Exhibit 1, 2](#) and [3](#) show layout of each of the Phoenix airports. In paved areas of the

AOA, *Movement* and *Non-Movement* areas are delineated by pavement striping as shown in [Exhibit 6](#). For non-paved areas of the AOA, the contractor should confirm the limits of the *Movement* and *Non-Movement* areas with Airport Operations and mark the boundary of the *Movement Area*.

Areas within the airport property line but outside of the secured AOA are considered the **Landside** areas of the airport. This includes but is not limited to the airport terminals, roads leading to the terminals, parking garages, etc. The landside areas of the airport fall under the jurisdiction of the City of Phoenix Aviation Department. Construction in the landside areas will be covered in greater detail in Part III of this manual. Please refer to [Map-3](#).

## Security

All three Phoenix airports operate in strict compliance with Federal Aviation Regulations (FAR). Both Deer Valley and Goodyear airports operate under Part 1540-Civil Aviation Security<sup>4</sup>, while Sky Harbor operates under Part 1542 Airport Security<sup>5</sup>. Violators of these regulations will be subject to arrest and penalties imposed by the Transportation Security Administration (TSA), FAA, or the City of Phoenix Police and Aviation Departments.

Security Identification Display Areas (SIDA) have been established that allow badged personnel unescorted access into the AOA. The SIDA is secured by means of a gate guard, fencing, locked doors with access card readers or locked gates with access card readers. At all SIDA entrances, signs are posted warning individuals that they are about to enter a secure area. Please refer to [Exhibit 7](#).

Within the AOA there are different levels of

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<sup>1</sup> [AC 150/5370-2F](#) (01/17/03), Appendix 2, pg A-2

<sup>2</sup> Per [AC 15-5210-20](#) (6/21/06), Section 1.3.20, pg B-2

<sup>3</sup> Per [AC 15-5210-20](#) (6/21/06), Section 1.3.22, pg B-2

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<sup>4</sup> [49 CFR Part 1540](#)

<sup>5</sup> [49 CFR Part 1542](#)



security, therefore badges are color coded to reflect an individual's authorized area of access. The security training provided by the Aviation Department Operations Division will cover the security areas in greater detail. Once issued, the security badge must be worn at all times while working inside the AOA. It is to be displayed on the outermost garment of the individual; located on the upper torso. Please refer to [Exhibit 8](#).

At Deer Valley and Goodyear Airports, badging and access to the AOA are controlled by the Airport Manager.

Contractors requiring personnel to work inside the AOA are to contact the City of Phoenix Aviation Department Security Badging Office for guidelines for obtaining a security badge. The contractor should visit the Badging Office web site at <http://skyharbor.com/about/SecurityBadgingHow.html> for more information.

For contractors requiring personnel to operate a motor vehicle inside of the AOA, an airfield driver's license issued by the Security Badging Office is also required. In order to receive the airfield driver's license, the individual must complete the badging requirements plus complete an AOA (*Non-Movement*) driving course and pass the driver examination. Finally, Contractors are to ensure they have the appropriate vehicle insurance coverage required by the Aviation Department.

**NOTE: Security badging, AOA drivers license requirements, fees and vehicle insurance are subject to change, therefore contractors should first contact the Phoenix Aviation Security Badging Office to confirm current requirements prior to commencing the security badging process.**

### **Escorts and Driving Inside the AOA**

Only badged personnel are authorized access into the secured areas of the airport. Non-badged personnel requiring access to secured areas must be escorted at all times by badged personnel. The same rule applies for personnel operating motor vehicles inside of the AOA. Badged personnel authorized to operate motor vehicles inside the AOA must escort motor vehicle operators that do not have a valid airfield driver's license. During the security and driver training, procedures and guidelines for operating motor vehicles inside of the AOA will be explained in greater detail. In addition, the training will also explain the penalties that may be imposed should security guidelines be violated.

The general contractor shall be responsible for ensuring all personnel and motor vehicles (employees, subcontractors) are authorized to enter into the AOA. On occasion where material deliveries or duration on the project site make it impractical to obtain a security badge, the general contractor will be responsible for ensuring these personnel and motor vehicles are properly escorted into and out of the project site per the Aviation Department guidelines. The contractor may only escort a maximum of three vehicles at any one time. The contractor's escort vehicle must have immediate control of the vehicles being escorted at all times.

Although more extensive training will be provided by the Airport Operations Division, at a minimum the contractor should be aware of the following while driving in the AOA;

- a. Aircraft have **Right of Way** at all times,
- b. Adhere to posted vehicle speeds,
- c. Under no circumstances will the contractor/subcontractor be allowed unescorted entry into the *Movement* areas of the AOA. Entry into the *Movement* areas must be under appropriate Airport Operations escort in

communication with the Air Traffic Control Tower (ATCT). The contractor shall make prior arrangements with the Project Manager and Airport Operations should access to the *Movement* areas be required.

At Deer Valley and Goodyear airports, the contractor shall consult with Airport Operations on the guidelines for driving inside of the AOA.

For more information about driving inside the AOA, please see our “Airfield Driver Permit Study Guide” at <http://skyharbor.com/pdf/Airfield-Driver-Study-Guide.pdf>

### **Protection of Airspace**

While working inside of the AOA, the contractor must ensure that the protection of navigable airspace as defined in CFR Part 77 is assured. Operation and parking of construction equipment (i.e. cranes, back hoes, trucks & graders) may impact airspace; therefore the contractor shall provide the required notices as specified in [AC 150/5370-2F](#). If construction operations impact the airspace, airport operations may require the closure of runways or displaced thresholds and/or require the contractor to work at night.

### **Protection of Safety Areas**

Safety areas have been established for protecting aircraft while transiting runways and taxiways. During the construction operations the contractor must ensure these areas are never encroached. In general, runway and taxiway safety areas shall be<sup>6</sup>:

- a. Cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface

- variations;
- b. Drained by grading or storm sewers to prevent water accumulation;
- c. Capable under dry conditions, of supporting construction and maintenance equipment, aircraft rescue and firefighting equipment, and occasional passage of aircraft without causing structural damage to the aircraft;
- d. Free of objects, except for objects that need to be located in the runway/taxiway safety area because of their function. Objects higher than 3 inches (7.6 cm) above grade should be constructed, to the extent practicable, on low impact resistant supports (frangible mounted structures) of the lowest practical height with the frangible point no higher than 3 inches (7.6 cm) above grade. Other objects, such as manholes, should be constructed at grade. In no case should their height exceed 3 inches (7.6 cm) above grade.

Underground fuel storage facilities should not be located within runway and taxiway safety areas (see [AC 150/5230-4A](#), Aircraft Fuel Storage, Handling, and Dispensing on Airports).

The areas and zones discussed below must be field identified in coordination with Airport Operations to ensure construction operations are conducted safely and efficiently. It is highly recommended that the Contractor review [AC 150/5370-2F](#) prior to commencement of work. It should also be noted that additional safety areas not covered in this manual may be required; therefore continued coordination with Airport Operations is imperative.

*Runway Safety Area (RSA)* - The surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with [AC](#)

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<sup>6</sup> [AC 150/5300-13](#), Chapters 3 & 4

[150/5300-13](#).<sup>7</sup> Please refer to [Exhibit 5](#) for a basic illustration of a RSA.

*Object-Free Area (OFA)* – An area on the ground centered on the runway, taxiway, or taxilane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering.<sup>8</sup>

*Obstacle-Free Zone (OFZ)* – The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual Navigational Aid's (NAVAID's) that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches.<sup>9</sup> Please refer to [Exhibit 9](#) for a basic illustration of an OFZ.

For the Phoenix Sky Harbor, Deer Valley and Goodyear Airports, the following are their respective Runway Safety Areas (RSA), Object Free Areas (OFA) and Obstacle Free Zones (OFZ). The dimensioning of the RSAs, OFAs and OFZs are determined by the type of aircraft utilizing the runways and taxiways. [AC 150/5300-13](#) provides detailed information for determining the required dimensioning for various safety areas.

a. Sky Harbor<sup>10</sup>

1. *Runway 8/26*: The RSA is 250 feet from either side of the runway centerline and extends 1,000 feet beyond each end of the runways. The OFA is 400 feet from either side

of the runway centerline. The OFZ is 200 feet from either side of the runway centerline.

2. *Runways 7L/25R & 7R/25L* – The RSA is 250 feet from either side of the runway centerlines and extending 1,000 feet beyond each end of the runways. The OFA is 400 feet from either side of the runway centerlines. The OFZ is 200 feet from either side of the runway centerlines.
3. All taxiways except for Taxiway A, the OFAs are 160 feet from either side of the taxiway centerlines; Taxiway Safety Areas are 107 feet from either side of the taxiway centerlines.
4. For Taxiway A, the OFA is 93 feet from either side of the taxiway centerline; Taxiway Safety Area is 59 feet from either side of the taxiway centerline.

b. Deer Valley<sup>11</sup>

1. *Runway 7R/25L* – The RSA is 250 feet from either side of the runway centerlines. The RSA extends 1,000 feet beyond the runway on the 7R end and 700 feet on the 25L end. The OFA is 400 feet on either side of the runway centerlines. The OFZ is 200 feet from the runway centerline.
2. *Runway 7L/25R* – The RSA is 60 feet from either side of the runway and 240 feet beyond each end. The OFA is 125 feet from either side of the runway. The OFZ is 125 feet from either side of the runway centerline.

3. Taxiway OFAs are 65.5 feet from the

<sup>7</sup> Per [AC 150/5370-2F](#) (01/17/03), Appendix 2, pg 41

<sup>8</sup> Per [AC 150/5370-2F](#) (01/17/03), Appendix 2, pg 40

<sup>9</sup> Per [AC 150/5370-2F](#), Appendix 2, pg 40

<sup>10</sup> Per Phoenix Sky Harbor ALP dated 2/2011

<sup>11</sup> Per Phoenix Deer Valley ALP dated 08/15/2001



centerline of the taxiway; Taxiway Safety Areas are 39.5 feet from either side of the centerline. It should be noted that two groups of aircraft utilize the taxiways at DVT, therefore the OFA and Taxiway Safety Area for the larger of the two groups (Group II) is mentioned. The Contractor shall consult with Airport Operations when delineating the OFA and Taxiway Safety Area boundaries for their respective project.

c. Goodyear<sup>12</sup>

1. *Runway 3* - The RSA is 250 feet from either side of the runway. The RSA extends 1,000 feet beyond the end the runway on the 3 end and 781 feet at the 21 end. The OFA is 400 feet from either side of the runway and extends 1000 feet beyond runway 3 and 689 feet beyond runway 21. The OFZ is 200 feet from the either side of the runway centerline.
2. Taxiway OFAs are 129.5 feet from either side of the taxiway centerlines. Taxiway Safety Areas are 85.5 feet from either side of the taxiway centerlines.

**Taxiway Areas**<sup>13</sup>

A taxiway safety area is defined as the surface along the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, see [AC 150/5300-13](#).

1. No construction may occur in the Taxiway Safety Area (TSA) while the taxiway is open for aircraft

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<sup>12</sup> Per Phoenix Goodyear ALP dated 08/15/2001

<sup>13</sup> [AC 150/5370-2F](#), Chapter 2, pg 7

- operations. The TSA may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA available during construction.
2. The Aviation Department must notify the FAA District Officer and the FAA air traffic manager and issue a NOTAM.
  3. The Construction Safety Phasing Plan (CSPP) must provide information ensuring adequate distance for protection from blast.

No construction may occur within the Taxiway Object Free Area unless the requirements in [AC 150/5730-2F](#) are met.

Open trenches or excavations are not permitted within the TSA while the taxiway is open. If possible, backfill or cover the excavations appropriately. Covering open trenches must be designed to allow the safe operation of the heaviest aircraft on the taxiway to cross the trench without damage.

Contractors must prominently mark open trenches and excavations at the construction with orange flags, and then light them with red lights during hours of restricted visibility or darkness.

**NOTE: Per the FAA, when these clearances cannot be provided adjacent to a movement area, that movement area shall be closed. This closure must be approved by airport management and the FAA Air Traffic Control Tower, and a notice to airmen (NOTAM) must be issued by airport management. A minimum of 48 hours advance notice to airport management is required for the issuance of NOTAMs, except in emergencies. Emergencies are defined as non-planned incidents that create an imminent hazard. They are not due to failure**

**to communicate, or for convenience.**

**Navigation Aid (NAVAID) Protection:**

If parking vehicles or storing equipment around a NAVAID facility, it is important that the contractor coordinate with the FAA Air Traffic Organization. Using this area inappropriately can have devastating effects on aircraft air navigation. If any NAVAID may be affected in the construction process the CSPP and SPCD must acknowledge and show an understanding of the allowable activities and limitations.

**Pavement Markings**

While working in the AOA the contractor must have a thorough understanding of the area they are working in as well as markings that designate where they are authorized to enter and where they are to stay clear of. Of particular importance is the pavement marking designating the *Non-Movement* area boundaries shown in [Exhibit 6-1](#). This marking taken from [AC 150/5340-30F](#) (*Standards for Airport Markings*) delineates the line between *Movement* and *Non-Movement* boundaries of the AOA. The solid strip designates the *Non-Movement* side with the dashed line designating the *Movement* side. In areas where no pavement marking is present, the contractor should consult with airport operations and delineate the area by inserting stakes into the ground.

While working in the AOA the contractor must also have familiarity with other pavement markings that designate between runways, taxiways and hold positions. Runway pavement markings are white while taxiways are yellow. Lines for marking deceptive, closed or hazardous areas are also yellow.

Runways are marked at each end by white numbers, which designate the nearest 10<sup>th</sup> degree increment of the azimuth of the runway

centerline. In addition, for parallel runways, the letters “L” and “R” are used to designate the left and right runways. At Phoenix Sky Harbor the south runways are designated as 7L-25R, 7R-25L and the North runway is 8-26. Taxiways are designated by letter i.e., A, B, and pronounced by their phonetic names i.e., Alpha, Bravo, etc.

Hold bars delineate the line between the taxiway and runway. They are located at the edge of the runway safety area and are designated by two solid lines in parallel with two dashed lines. The double yellow line designates the taxiway side with the dashed lines designating the runway side. The hold bar is never to be crossed without escort from the Operations Section under permission from the ATCT.

See [Exhibit 6](#) as well as [Exhibit 10](#) to review the pavement markings discussed. The contractor should also review [AC 150/5340-1J](#) for more detailed discussion on airfield pavement markings.

**Airfield Lighting**

Contractors may find themselves working in the AOA at night or during inclement weather. It is therefore extremely important for the contractor to understand the AOA lighting configurations. Per FAA [AC 150/5340-30F](#) (*Design And Installation Details for Airport Visual Aids*), edge lighting systems are used to outline usable operational areas of airports during periods of darkness and low visibility weather conditions. These systems are classified according to the intensity of brightness produced by the lighting system.

Below are some of the basic lighting systems the contractor may encounter. It must be noted that not all lighting systems are covered in this manual; the contractor is responsible for ensuring their personnel are trained in the lighting system for their particular work

environment. The contractor should consult with the Project Manager and Airport Operations prior to entering the AOA at night or during inclement weather.

### **Runway Edge Light Configurations**

Runway edge lights define the edge of the runway and are white in color.

At Phoenix Sky Harbor all three runways are classified as instrument approach, therefore per [AC 150/5340-30F](#), the runway edge lights emit white light, except in the caution zone, which is the last 2,000 feet (610m) of the runway. In the caution zone, yellow lights are substituted for white lights and emit yellow light in the direction facing the instrumental approach threshold and the white light in the opposite direction. The yellow lights are intended for rollout information after landing.

Threshold lights emit green light outward from the runway and emit red light toward the runway to mark the ends of the runway. The green lights indicate the landing threshold to landing aircraft and the red lights indicate the end of the runway, both landing and departing. These lights are usually combined into one fixture and special lenses or filters are used to emit the desired light in the appropriate direction. See [Exhibit 1](#) and [Exhibit 4](#) for examples of runway light configurations.

**Note: Per [AC/150/5340-30F](#), Instrument approach runways are runway end specific, meaning one runway may have an instrument approach on one end and a non-instrument approach on the opposite end. However, when there is an instrument approach at each runway end, yellow/white lights are installed at each runway end in the directions previously described. At both Phoenix Deer Valley and Goodyear airports, the contractor should consult**

**with the Project Manager and Airport Operations on the runway type (Instrument/Non-instrument) approach at their respective airport.**

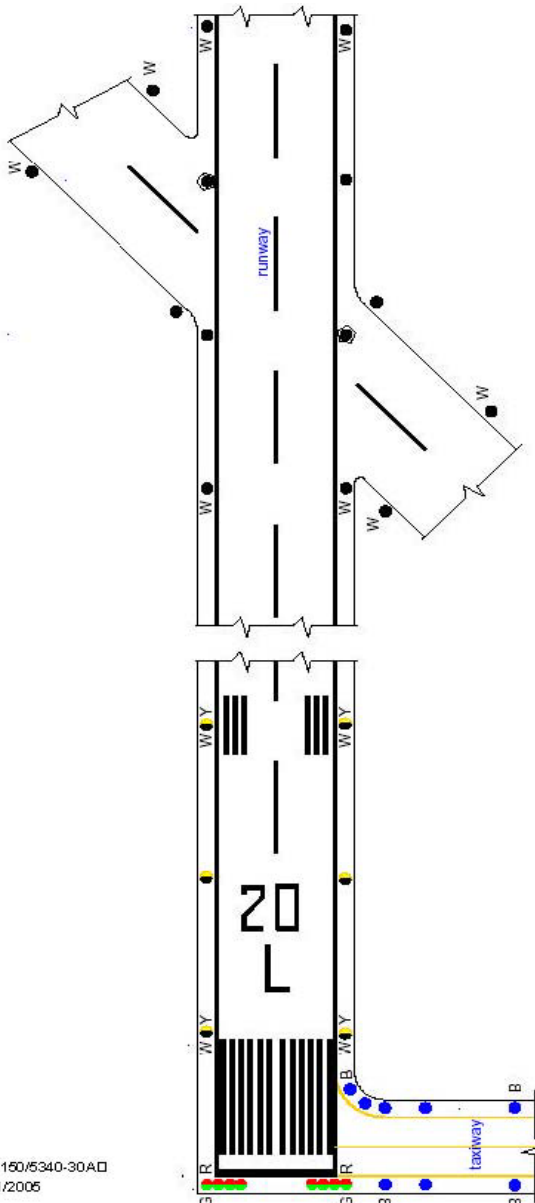
### **Taxiway Edge Light Configurations**

Per AC [150/5340-30F](#), taxiway edge lighting systems are configurations of lights that define the lateral limits of the taxiway. Taxiway edge lights emit blue light. Fixtures in the edge lighting system are located in a line parallel to the taxiway centerline not more than 10 feet (3m) outward from the edge of the full strength pavement. Blue reflectors may be installed per FAA guidelines in lieu of, or to enhance, taxiway edge lights.

The taxiway centerline lights are used to designate the center, of the taxiway. All taxiway centerline lighting fixtures emit green light. See [Exhibit 11](#) for an example of a typical taxiway edge light configuration. It should be noted that not all airports and/or taxiways use taxiway centerline lights. At Phoenix Sky Harbor, taxiway centerline lights are currently used on Taxiway 'A' and the runway high speed exits.

### **Runway Guard Lights (RGL's)**

Runway guard lights provide a distinctive warning to anyone approaching the runway holding position that they are about to enter an active runway. RGL's are effective for all visibilities. These circuits are energized day and night unless the runway is closed.



**Figure 11 – Typical lighting configuration**  
 (Black dots = white lights)

**Signage**

Airfield signage provides the pilot or vehicle operator the ability:

- a. To easily determine the designation or name of any taxiway on which that are located.<sup>14</sup>
- b. To readily identify routes toward a desired destination.<sup>14</sup>

- c. To indicate mandatory holding positions, including holding positions used to maintain aircraft separation during low visibility weather operations.<sup>14</sup>

Mandatory Instruction, Location, Direction and Destination Signs are the four basic signs that the Contractor will encounter while working inside of the AOA. All have their own distinct color scheme and provide specific instructions to the pilot or vehicle operator.

*Mandatory Instruction Signs*

Mandatory instruction signs have white inscriptions on a red background. They denote an entrance to a runway or a critical area. At all three Phoenix airports, vehicles and aircraft are required to hold at these signs unless cleared by Air Traffic Control.<sup>15</sup> Exhibits 12 and 13 are examples of a Mandatory Instruction Signs



**Exhibit 12-Holding Position for ILS Critical Areas**



**Exhibit 13-Holding Position Sign**

*Location Signs*<sup>16</sup>

These signs identify the taxiway or runway upon which the aircraft is located. The signs are also used to identify the boundary of the runway safety area/OFZ or ILS critical area. Exhibit 14 is an example of a Location Sign:

<sup>14</sup> [AC 150/5340-18F](#)

<sup>15</sup> [AC 150/5340-18F](#)

<sup>16</sup> [AC 150/5340-18F](#)



Exhibit 14-Taxiway Location Sign

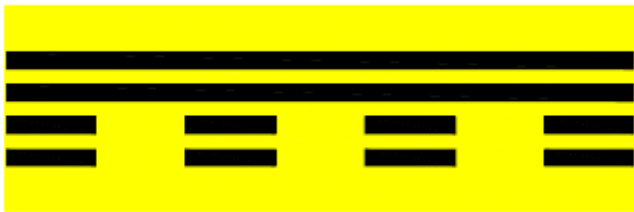


Exhibit 15-Boundary Sign for Runway Safety Area OFZ and Runway Approach Area

*Direction Signs* – These signs indicate directions of other taxiways leading out of an intersection. The signs have black inscriptions on a yellow background and always contain arrows. The arrows should be oriented to approximate the direction of turn.<sup>17</sup> *Exhibit 16* is an example of a directional sign.

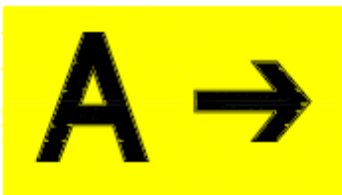


Exhibit 16-Direction/Runway Exit Sign.

*Destination Signs* – Destination (Outbound and Inbound) signs have black inscriptions on a yellow background and always contain an arrow. These signs indicate the general direction to a remote location.<sup>18</sup>

- a. Outbound Destination Signs are used to identify directions to the takeoff runways. These routes usually begin at the entrance to a taxiway from an apron.<sup>18</sup> *Exhibit 17 and 18* are examples of Outbound Destination Signs.



Exhibit 17-Typical Outbound Runway Destination Sign



Exhibit 18-Outbound Destination Sign to Different Runways

- b. Inbound Destination Signs usually indicate major destination areas. The inscription on these designation signs should contain a minimum of three letters. *Exhibit 19* is an example of an Inbound Destination Sign.<sup>19</sup>



Exhibit 19-Inbound Destination Sign

Below are other common abbreviations used for destinations;

**RAMP**-General parking, servicing, and loading

<sup>17</sup> [AC 150/5340-18F](#)

<sup>18</sup> [AC 150/5340-18F](#)



areas for aircraft

**FUEL**-Areas where aircraft are fueled or serviced

**GATE**-Gate positions at which aircraft are loaded or unloaded

**ITIN**-Areas set aside specifically for itinerant aircraft

**MIL**-Areas set aside for military aircraft

**CIVIL**-Areas set aside for civil aircraft

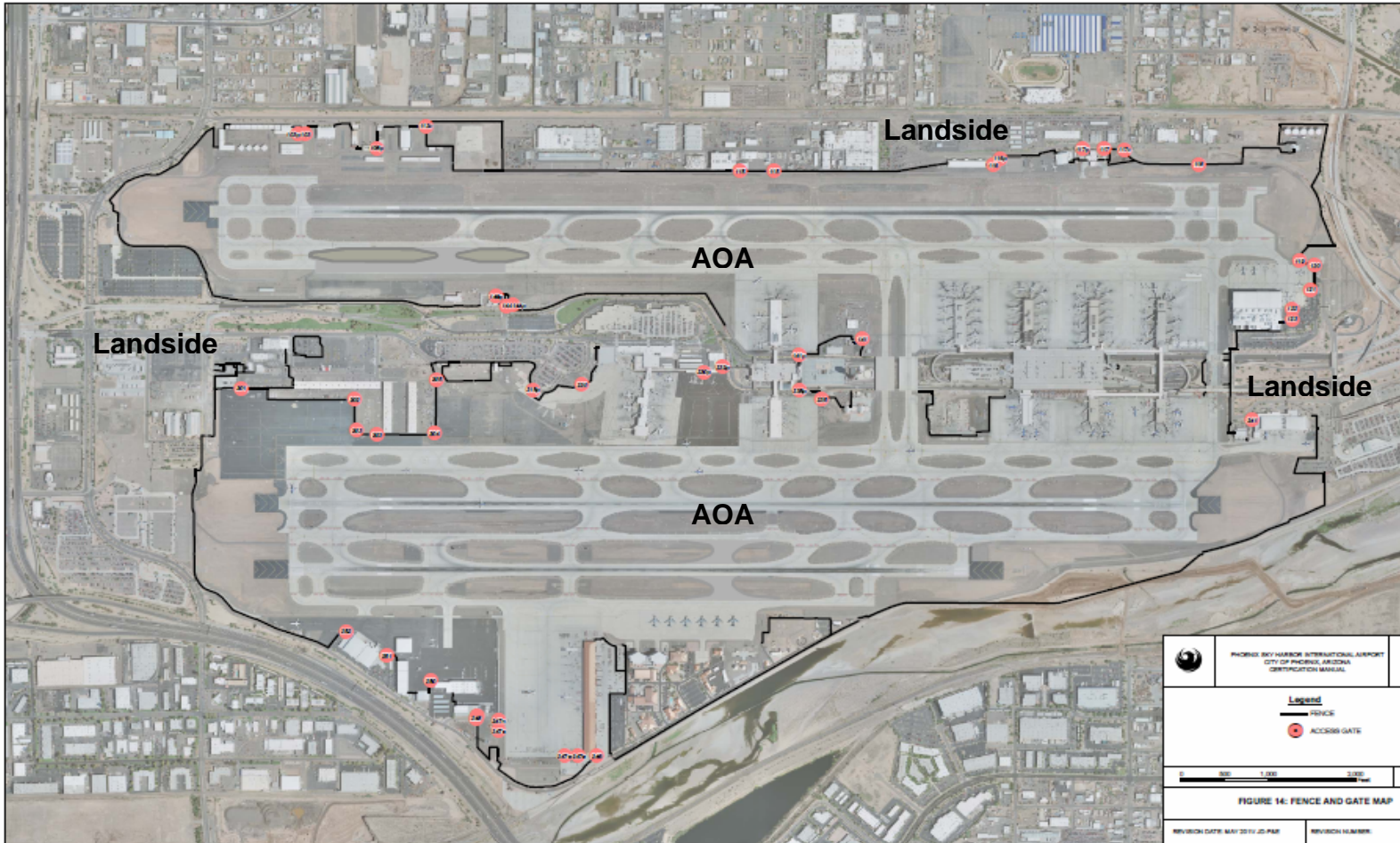
**VSTR** -Areas set aside for transient aircraft

**PASS**-Areas set aside for passenger aircraft

**CRGO**-Areas set aside for cargo handling

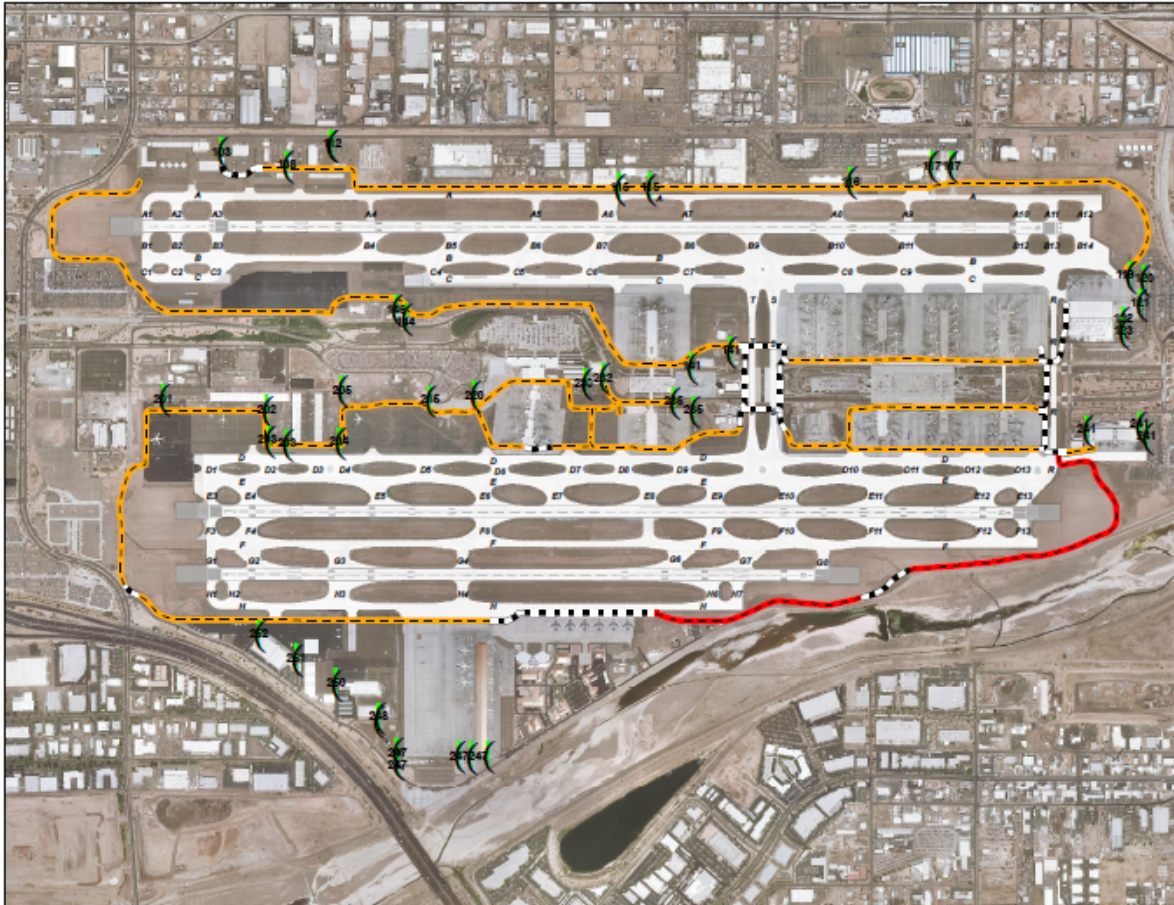
**INTL**- Areas set aside for handling international flight.

# Exhibit 4 Sky Harbor Air Operations Area



# Exhibit 5 Non-Movement Service Road Map

## PHOENIX SKY HARBOR INTERNATIONAL AIRPORT - AIRSIDE ACCESS ROAD



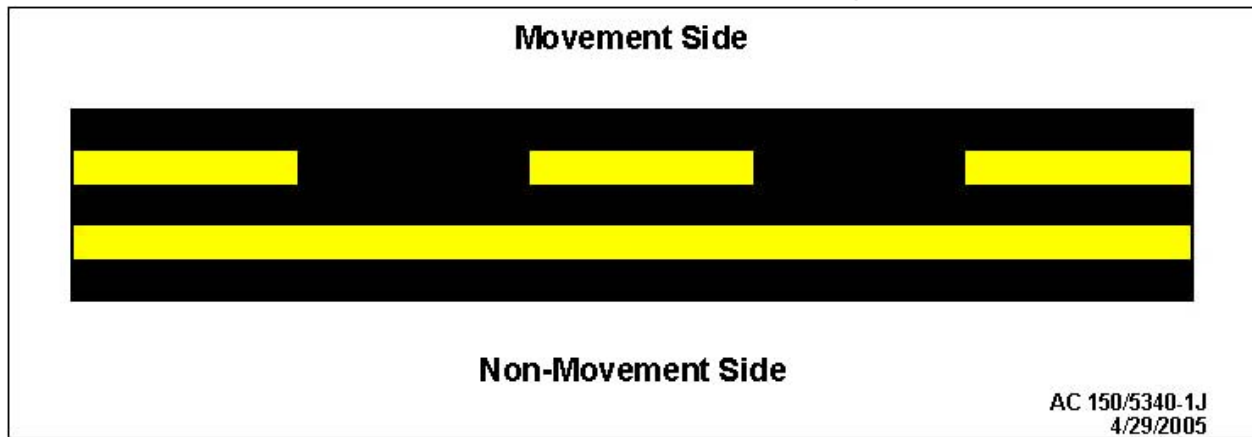
**Legend**

- Vehicle Service Road
- Vehicle Service Road - Restricted
- Vehicle Service Road - Object Free Area
- Aircraft Movement Area
- Access Gate

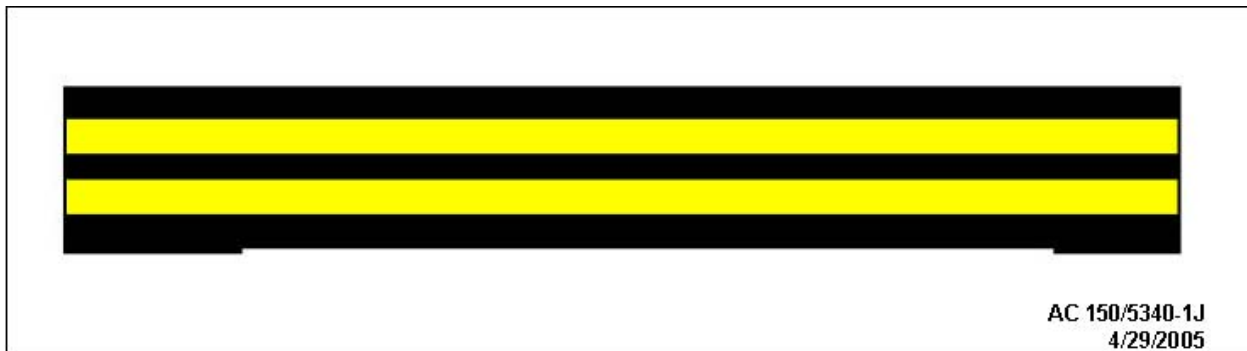
0 0.125 0.25 0.5  
miles

**PHX** PHOENIX SKY HARBOR INTERNATIONAL AIRPORT  
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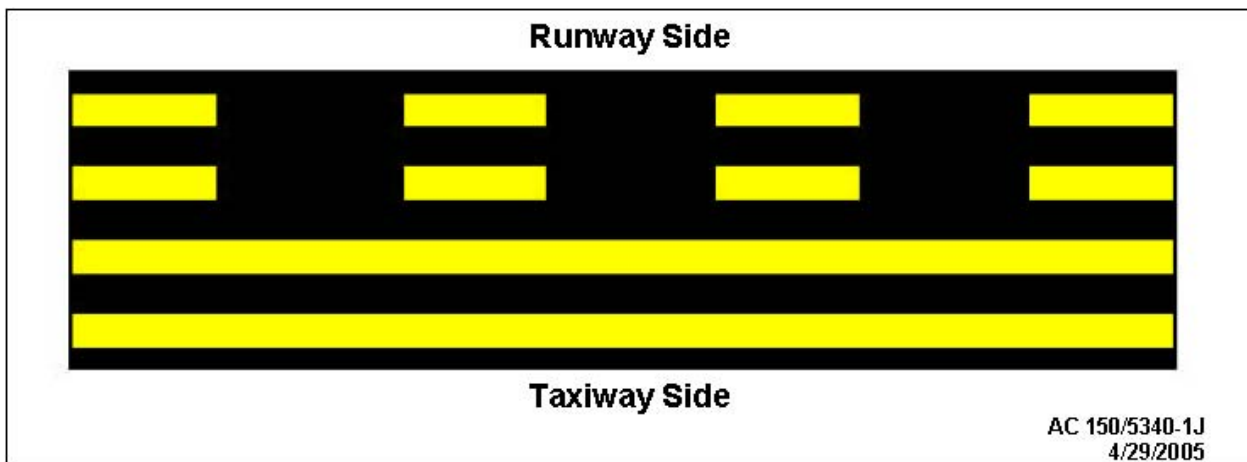
## Exhibit 6 Pavement Markings



**Exhibit 6-1. Non-movement Area Boundary**



**Exhibit 6-2. Continuous Taxiway Edge Lighting Marking**



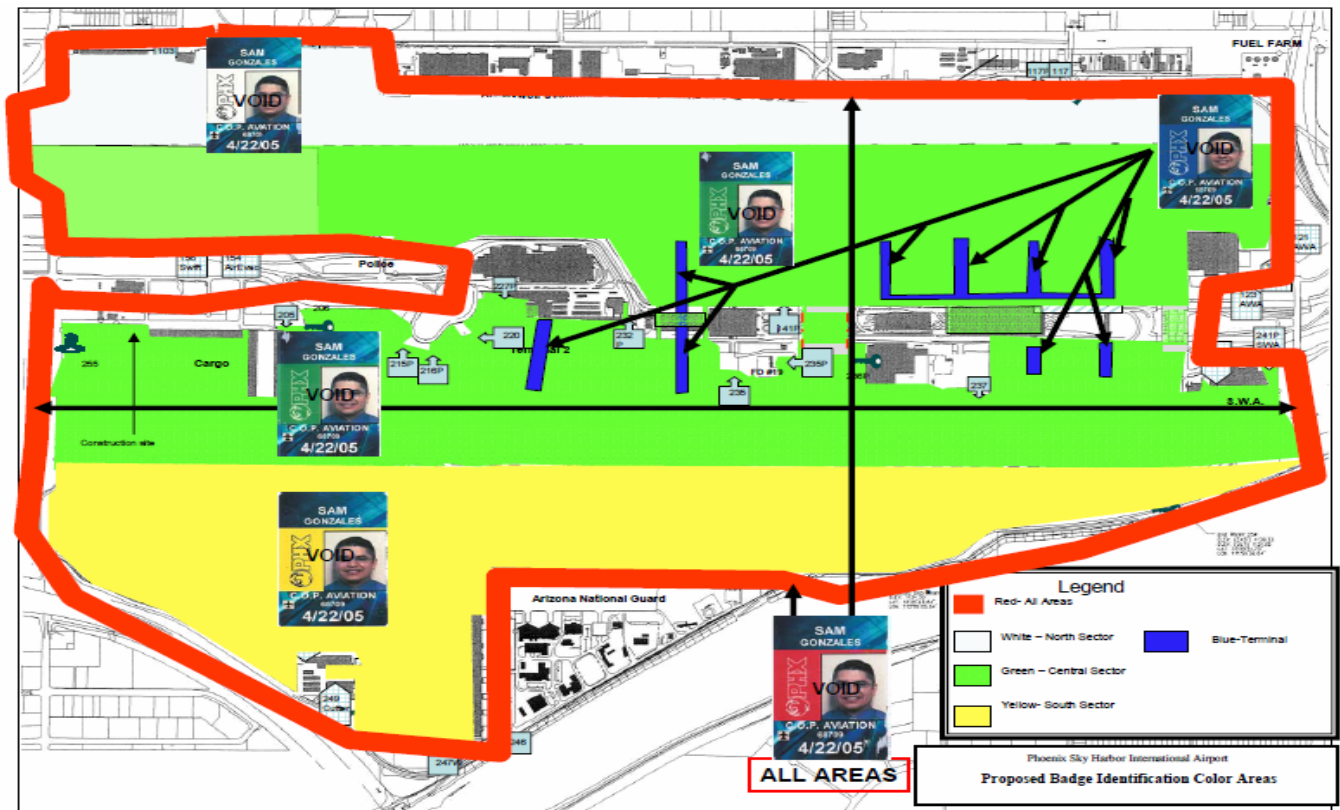
**Exhibit 6-3. Runway Holding Position Marking**



### Exhibit 7 SIDA Entrance



### Exhibit 8 Badge Color Map

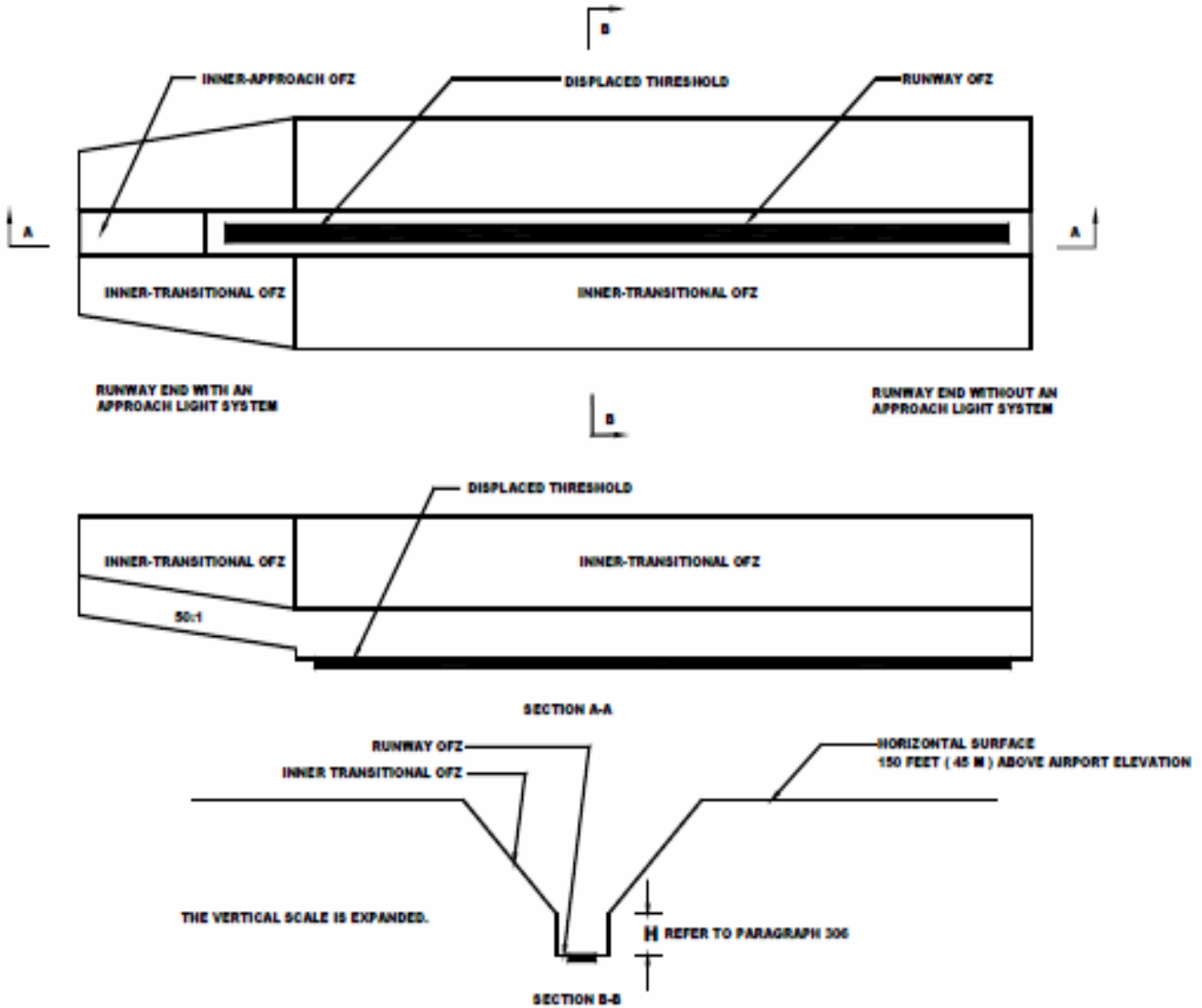




# Exhibit 9 Runway Obstacle Free Zone

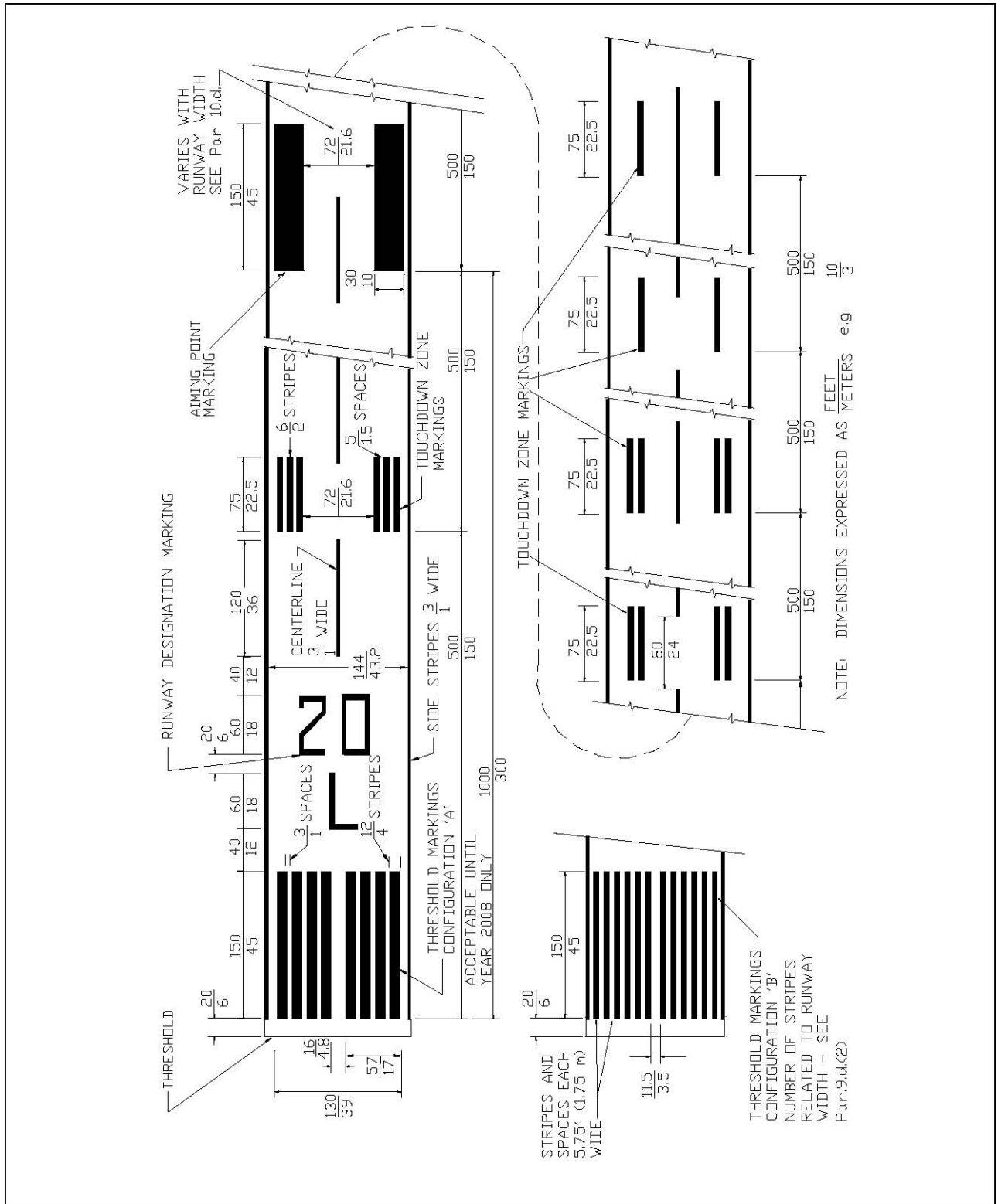
11/10/94

AC 150/5300-13 CHG 4

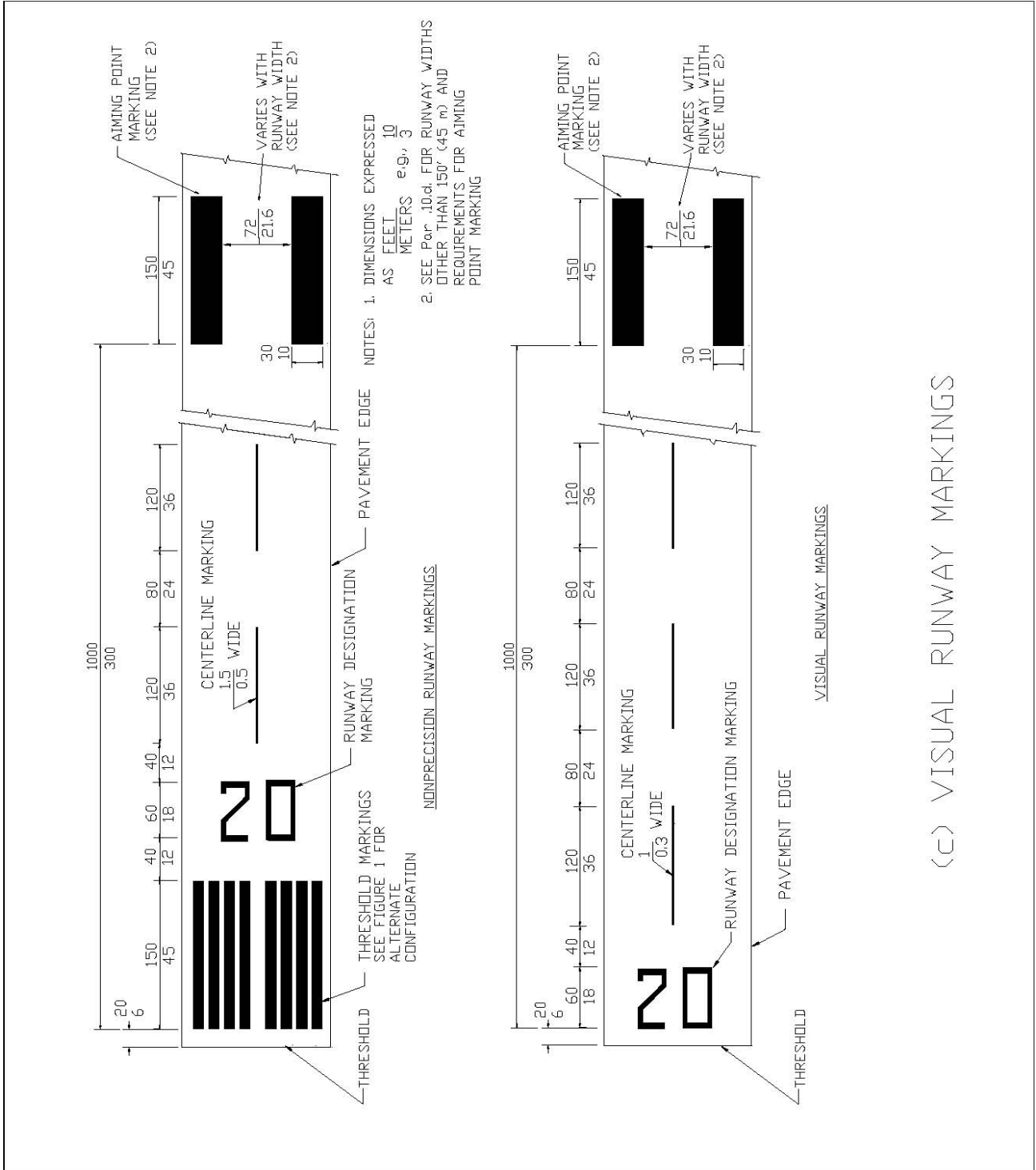


**FIGURE 3-5. OBSTACLE FREE ZONE (OFZ) FOR RUNWAYS SERVING LARGE AIRPLANES WITH LOWER THAN 3/4-STATUTE MILE (1 200 M) APPROACH VISIBILITY MINMUMS AND DISPLACED THRESHOLD**

# Exhibit 10-1 Runway Pavement Markings Precision Runway



## Exhibit 10-2 Runway Pavement Markings Non-Precision Runway



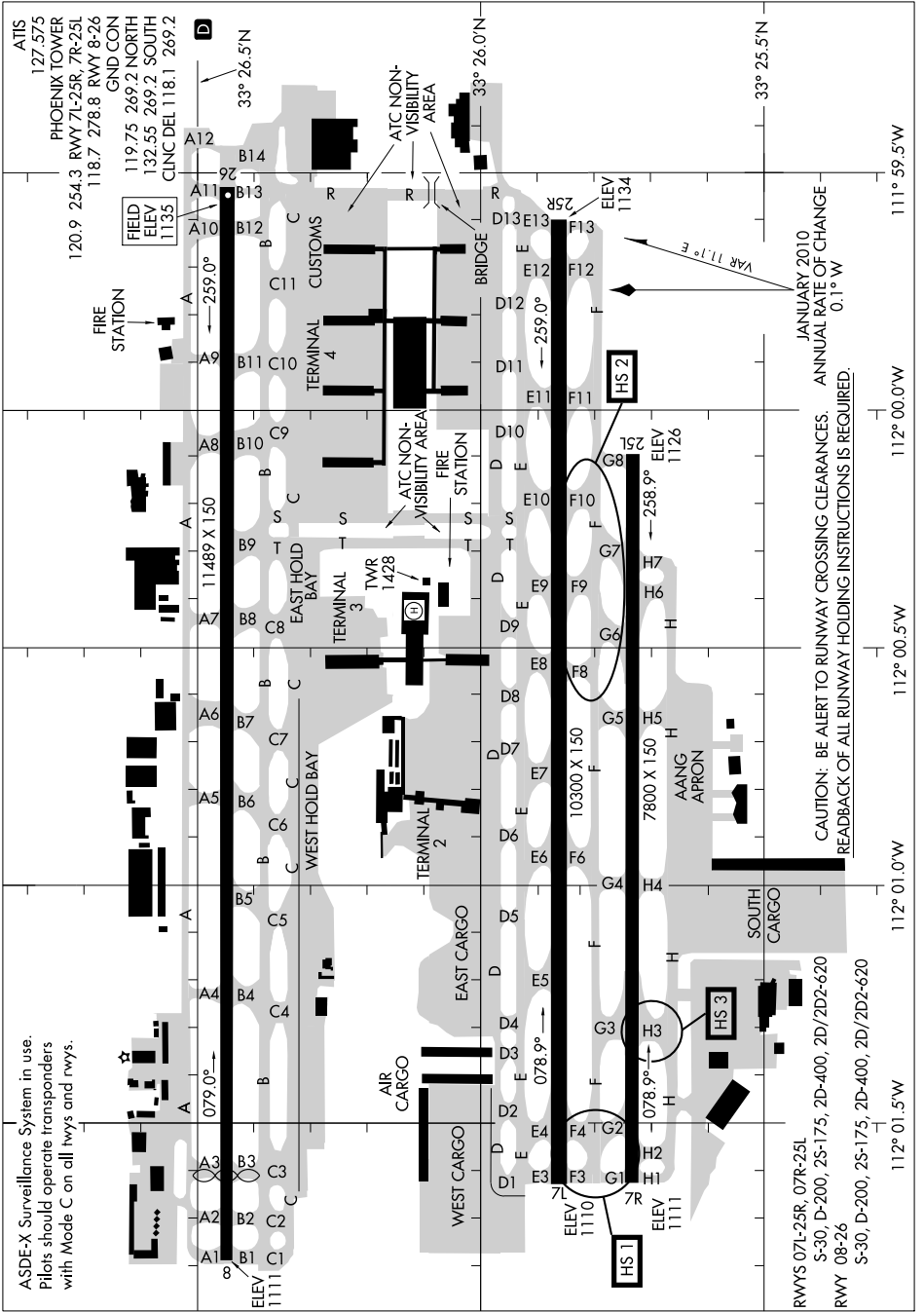
# AIRPORT DIAGRAM

AL-322 (FAA)

PHOENIX SKY HARBOR INTL (PHX)

PHOENIX, ARIZONA

SW-4, 15 DEC 2011 to 12 JAN 2012



ASDE-X Surveillance System in use.  
Pilots should operate transponders  
with Mode C on all twys and rwnys.

JANUARY 2010  
ANNUAL RATE OF CHANGE  
0.1° W

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.  
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

RWYS 07L-25R, 07R-25L  
S-30, D-200, 2S-175, 2D-400, 2D/2D2-620  
RWY 08-26  
S-30, D-200, 2S-175, 2D-400, 2D/2D2-620

SW-4, 15 DEC 2011 to 12 JAN 2012

# AIRPORT DIAGRAM

PHOENIX, ARIZONA

PHOENIX SKY HARBOR INTL (PHX)





11349

# AIRPORT DIAGRAM

AL-6648 (FAA)

GOODYEAR/PHOENIX GOODYEAR (GYR)

GOODYEAR, ARIZONA

ATIS  
 118.35  
 GOODYEAR TOWER ★  
 120.1 239.3  
 GND CON  
 121.7

FIELD  
 ELEV  
 968

33°26'N



JANUARY 2010  
 ANNUAL RATE OF CHANGE  
 0.1° W

AIR CARRIER PARKING

208.4°

TRANSIENT PARKING

TERMINAL

HANGARS

TWR

HANGARS

8500 X 150

RWY 03-21  
 S-75, D-200, 2D-270

33°25'N

ELEV  
941

028.4°

0.3% UP

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.  
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

112°23'W

112°22'W

SW-4, 15 DEC 2011 to 12 JAN 2012

SW-4, 15 DEC 2011 to 12 JAN 2012

# AIRPORT DIAGRAM

11349

GOODYEAR, ARIZONA  
 GOODYEAR/PHOENIX GOODYEAR (GYR)

**CONSTRUCTION SAFETY MANUAL**  
**PART II**  
**CONSTRUCTION/AIRCRAFT SAFETY AND**  
**MITIGATION OF HAZARDOUS CONDITIONS – AIRSIDE**

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### **Introduction**

At Phoenix Sky Harbor, airport operations run on a 24-hour, seven-day a week schedule, even while construction is in progress. The contractor must plan and coordinate work in order to 1) create no hindrances or hazards to aircraft operations, 2) maintain a construction schedule that does not compromise personnel and equipment safety and 3) complete the work requirements in accordance with the contract plans and specifications. In order to meet these criteria, the contractor shall follow the *Special Provisions* and *Special Safety Requirements During Construction* stated in the Contract Documents and shall review and implement the guidelines outlined in the airport [Construction Safety and Phasing Plan \(CSPP\)](#).

[AC 150/5370-2F](#), *Operational Safety On Airports* sets the requirements for maintaining acceptable levels of operational safety during construction. The contractor shall ensure that all personnel, subcontractors and material suppliers are aware of its contents and pay particular attention to Chapter 3 (*Guidelines for Writing a CSPP*) and Appendix 3 (*Construction Safety and Phasing Plan Checklist*).

During construction additional site security, temporary traffic control, pavement markings, signage and lighting may be installed. Part II of this manual will discuss these requirements along with other minimum construction standards that the contractor will have to abide by while working inside of the AOA.

**Note: Failure to adhere to established rules and procedures while working**

**inside the AOA may result in serious disciplinary action from the FAA, TSA and/or the City of Phoenix Aviation Department.**

### **Site Security:**

At Phoenix Sky Harbor perimeter security is under the jurisdiction of the TSA. At Deer Valley and Goodyear airports the contractor will contact the Airport Security Coordinator five (5) calendar days before the start of construction to submit the necessary airport security information for all vehicles and personnel, which will be required inside the airport security fence during construction. All barrier and fencing designs and their phasing shall be submitted to the Aviation Department for review and approval prior to erection. In addition, the contractor shall develop a written Safety Plan per [AC 150/5370-2F](#).

Restricted areas are fenced and must remain fenced at all times. Any required temporary fences and gates shall be constructed by the contractor. These gates shall remain closed and locked or a guard shall be provided at the contractor's expense. The contractor shall furnish the guard with a roster of all personnel authorized to enter into the AOA and construction work area. Gate guards provided by the contractor shall be issued cellular telephones as a direct method of communications with the Aviation Department Communications Center and Operations Section.

The following Aviation Department Standard Details identify specific requirements related to site security that the contractor shall adhere to throughout the project duration:

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- a. [Detail 102](#), *Construction Gate*
- b. [Detail 103](#), *Construction Gate with Airside Inset*
- c. [Detail 120](#), *Restricted Area Sign*
- d. [Detail 130](#), *Temporary Fence*

### **Airport Traffic and Regulations**

With vehicular traffic, safety during construction is likely to be compromised by four principal causes; increased traffic volume, non-standard vehicle patterns, vehicles without radio communication, and operators untrained in the Aviation Department's communication procedures. Airport management will develop a construction vehicle traffic plan with airport users, air traffic control and with appropriate participation by construction engineers and contractors in accordance with the CSPP. This plan, when signed by all participating parties, becomes a part of the contract.

### **Special Traffic Regulations for Aircraft**

As previously mentioned aircraft traffic will continue to use existing runways, aprons, and taxiways at the same time that work is being performed. The contractor shall not create a hindrance, hazard, or obstacle to aircraft using the airport. The contractor must, at all times, conduct the work in compliance with requirements of the Airport Director, FAA Air Traffic Control (ATC) or their authorized representative, and the CSPP.

When absolutely essential, runways or taxiways may be closed to aircraft operations upon advance written application by the contractor to the Airport Director or his designated representative. Closures, when approved, are typically from 11:00 p.m. to 5:00 a.m. Contractors are to use these time frames when

bidding the project. If any roadway or taxiway is interrupted due to the methods used by the contractor, an alternate detour roadway or taxiway must be provided. The contractor shall submit a plan to the Aviation Department for approval. At a minimum the contractor will schedule and organize his work so that a minimum of closings or crossings of runways and taxiways will be required during the performance of the entire contract.

All alternate routes must be properly delineated for airside use. Unless otherwise specified, the contractor shall utilize [Detail 107](#), *Traffic Control for Crossing Active Runways/Taxiways* in preparing his traffic control plan.

When construction work or incidental operations are in progress within 200 feet of runways or taxiways that have not been closed in accordance with the above, the contractor shall furnish two-way radio communications with the ATCT at each location where such work or operation is in progress. Such radio communication **must** be manned at all times by a qualified operator and shall be in conjunction with flag men and an adequate public address or other loudspeaker system, so that instructions from the control tower will be immediately passed on to the contractor's personnel. Any instructions from the control tower shall be immediately obeyed. Radio operator and communications procedure shall be satisfactory to the Airport Director.

### **Aircraft Safety**

Safety of aircraft, construction personnel and equipment are paramount while

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working in the AOA. As mentioned in Part 1, aircraft have **RIGHT OF WAY AT ALL TIMES**. The contractor must coordinate his work in order to satisfy clearance requirements for arrival and departure of aircraft to maintain compliance with [AC 150/5300-13](#), [AC 150/5370-2F](#) and the contract *Special Safety Requirements*.

**Vehicle Marking and Identification:**

All permitted vehicles operating in the AOA shall display in full view above the vehicle a 3' x 3' or larger, orange and white checkerboard flag, each checkerboard color being 1' square. Any vehicle operating on the AOA shall be equipped with a flashing amber dome-type light, mounted on top of the vehicle and of such intensity to conform to local codes for maintenance and emergency vehicles. All vehicles operating within the airfield boundary shall be identified with a sign on each side of the vehicle bearing the contractor's name with an 8-inch minimum letter height.

Vehicles making only occasional visits to the job site are exempt from the identification requirements above if a properly identified vehicle escorts them into, through, and out of the airport secured area. These and other vehicles needing intermittent identification may be marked with tape or with magnetically attached markers that are commercially available.<sup>1</sup>

**Note: When operating vehicles within the AOA, the operator shall remain alert to the movements of aircraft, and shall be cognizant of his position on the AOA, pavement markings that**

**designate aircraft movement /non-movement areas as well as all lighting and signage.**

**Construction Site Access**

Unless otherwise stated in the contract specifications, the contractor must submit specific proposed routes associated with construction activities to the Project Manager and the Aviation Operations Section for evaluation and approval as part of the CSPP before beginning construction activities. These proposed routes must also provide specifications to prevent inadvertent entry into *movement* areas. Special attention must be paid to ensure that Aircraft Rescue and Firefighting (ARFF) right of way access and haul roads are not impeded at any time and that construction traffic on haul roads does not interfere with air Navigation Aids (NAVIDS) or approach surfaces of operational runways.

**Construction Parking**

Contractors shall consult with the Project Manager and the Aviation Operations Section on designation of employee parking. This area should provide reasonable access to the job site while preventing any unauthorized entry of persons or vehicles into the AOA. In addition designated parking must adhere to the following guidelines:

- a. Parking areas must lie outside of Runway Safety Areas (RSA), Obstacle Free Zones (OFZ) and never on a closed taxiway, runway or Part 77 surfaces.
- a. Vehicles must be parked outside of the Object Free Area (OFA) when not in use.

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<sup>1</sup> Per Specification M-003, Section 003-3.4

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- b. Parking areas must not obstruct the clear line of sight by the Air Traffic Control Tower (ATCT) to any taxiways or runways under air traffic control nor obstruct any runway visual aids
- c. Review by the FAA in order to determine affects of navigable airspace. Construction equipment such as cranes and batch plants will require the submission of FAA Form 7460-1.

### **Staging Areas**

The location of construction staging areas shall be coordinated with the Aviation Department. The staging areas cannot be located in high traffic areas within the AOA.

Any staging areas used must be left environmentally clean at the completion of the construction project. This includes keeping the area clean of debris, oil spills, and other undesirable elements. Any hazardous or regulated waste material produced by the contractor must be properly disposed of at no additional cost to the owner.

The contractor may be required to provide test results to confirm an area has been left environmentally clean, with any contamination removed.

### **Trenches, Excavations and Stockpiled Material**

Unless otherwise specified, 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. Low profile barricades shall 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. Temporary (less than five calendar days) stockpiling of materials within the AOA and outside of runway or taxiway safety areas are subject to prior approval from the Airport Operations Manager.

### **Maximum Equipment Height**

All airports should file FAA Form 7460-1, when equipment is expected to penetrate any of the surfaces previously defined.

### **Limitation of 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 Aviation and Fire Departments. 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 vertical panel barricades and lighted by light units (acceptable to the Aviation Department 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

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movement resulting from aircraft blast or wind conditions. Material should not be stored near aircraft turning areas.

### **Personnel Safety**

While inside of the AOA, the contractor will be working in an area where jet takeoff noise can reach as high as 120 decibels, contractors shall comply with industry standards for hearing protection of all construction personnel.

In addition the contractor shall abide by all industry standards for the implementation of personal protective equipment while working inside the AOA.

### **Debris/Dust Control**

While working in the AOA a high degree of care is necessary to control debris and dust. Spilled material on active roadways, taxiways, runways, and aprons shall be swept up immediately. The contractor shall be aware that the construction area is subject to jet blast. Constant dust control measures will be required to prevent loose material from blowing across the airfield.

Foreign Object Debris (FOD) is capable of causing severe damage to aircraft landing gear, powerplants, and propellers. Contractors shall not place FOD on or near active aircraft movement areas. In addition, FOD must be continuously removed during the construction project.

If the haul road used by the contractor uses or crosses any area used by aircraft for taxiing, takeoff or parking, a power broom and/or hand sweeping shall be used to keep this area clean of debris which would damage aircraft engines or

propellers. The contractor shall be liable for any damages that occur should aircraft damage be sustained as a result of improper debris control.

If earthwork is being performed adjacent to the aircraft movement areas, the contractor shall institute a frequent dust control program to contain flying debris. Special attention shall also be given in areas subject to jet blasts from airplanes turning adjacent to, and away from the construction area.

### **Barricades, Warning Signs and Hazard Markings**

The perimeters of the actual work areas shall be adequately barricaded and lighted in order to prevent intrusion by taxiing aircraft and vehicles. Per [AC150/5370-10F](#) (*Standards for Specifying Construction of Airports*) and unless otherwise stipulated in the contract documents, the contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs and markings for hazards that are in the AOA shall be per the following;

- a. Temporary signs of the same size, message, color, and material shall replace all permanent signs affected by construction. The contractor shall submit a sign relocation plan to the Aviation Department for approval prior to relocation of any of the existing signs.

Should temporary taxiway guidance signs be required, they



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shall be constructed similar to [Detail 106](#) and installed in accordance with [AC 150/5340-18F](#).

In addition, the contractor will coordinate temporary sign installation with the Project Manager and Airport Operations.

- b. Prior to purchase and installation of barricades, the contractor is required to prepare a barricade plan and submit it for approval at least five (5) working days prior to commencing work at the site. Written approval of the contractor's barricade plan is required prior to commencing work.

The contractor will be required to purchase and install barricades similar or equal to the type shown in [Detail 105 & 105-1](#). Barricades will be spaced at 25 feet on center and will have flashing red lights at each end. When existing edge lighting is inoperable on an active taxiway, the contractor shall replace one red flashing light with one blue non-flashing light. The contractor shall coordinate with Airport Operations prior to installing temporary taxiway edge lighting.

- c. The contractor shall retain, as a contingency, a minimum of 10 percent additional barricades to be utilized for discretionary placement. The contractor will be responsible for all barricades. If Aviation Department personnel need to place barricades around a site due to contractor's error or non-responsiveness, they will be moved at a cost of \$100 per barricade, per

day. These fees will be charged directly to the contractor.

**Note: While barricades are in place, the contractor will be responsible for ensuring the blue and red lights are always operating at their optimum level, to include weekends and holidays. The contractor is advised to plan accordingly to assure there are sufficient replacement batteries available at all times.**

#### **Artificial Lighting**

During periods of nighttime work the contractor shall coordinate with the Project Manager and Airport Operations as to the type of artificial lighting that may be required. As a minimum however, the contractor should understand the following:

- a. Equipment utilizing artificial lighting shall have the light fixtures affixed in such a manner to direct illumination on the area under construction.
- b. Portable floodlight units are to be located in such a manner so that they do not become an obstruction or hazard.
- c. When utilizing artificial lighting (affixed to equipment or portable floodlights), the contractor must ensure that the glare of the light will not cause visual or actual interference to operating aircraft and the ATCT.

#### **Obstruction Lighting for Equipment**

The contractor shall provide red obstruction lights and checkered flags for all stationary cranes erected on the construction site. Red obstruction lights must have 360-degree lenses, and shall

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emit a minimum of 40 candelas but no more than 400 candelas, in accordance with FAA Advisory Circulars: [AC 150/5210-5D](#) (*Painting, Marking And Lighting of Vehicles Used On An Airport*); and [AC 70/7460-1K](#) (*Obstruction Lighting and Marking*). They shall be mounted at the highest point of the crane, and shall be situated so that it is visible from all angles. All movable cranes shall be provided with red obstruction lights if the boom cannot be lowered during hours of darkness or inclement weather. The Aviation Department will issue NOTAM's on obstruction lighting; the contractor shall notify the Project Manager if any relocation takes place. A crane with height exceeding the FAR Part 77 obstruction limits must receive FAA approval prior to planned use. Application for approval should be submitted on the FAA website using FAA Form 7460- I, Notice of Proposed Construction or Alteration.

#### **Temporary Runway Edge Lighting**

In the event that temporary edge lighting for runways is required, the contractor shall first coordinate with the Project Manager, Airport Operations and the Aviation Facilities and Services Division for the proper placement and connection of such temporary lighting. At a minimum the contractor will be required to adhere to the requirements of the National Electrical Code (NEC) Article 300, and [AC 150/5340-30F](#) (*Design and Installation Details for Airport Visual Aids*).

#### **Temporary Runway Closure**

Per [AC 150/5340-1K](#) and [AC 150/5345-55A](#) (*Standards for Airport Markings and Lighted Visual Aid to Indicate Temporary Runway Closure*), a raised-lighted **X** may be placed on each runway end in lieu of

pavement markings and is to be located within 250 feet of the runway end. The contractor must coordinate with the Project Manager and Airport Operations to ensure proper placement.

Unless otherwise stipulated in the contract specifications, the contractor is responsible for the fueling, maintenance and operation of lighted **X**'s while in the contractor's possession.

**NOTE: Prior to commencement of any type of electrical construction or maintenance, the contractor shall consult/coordinate with Aviation Facilities and Services Division for any type of electrical shutdowns. In addition the contractor is required to review the Aviation Department *Lockout/Tag out Procedures, Airfield Lighting Vault Lockout/Tag out Policy* and complete the *Lock-out Checklist for Airfield Electrical Circuits*. These documents can be found in Appendix 1 of this manual. In addition it is recommended that the contractor also review Chapter 6 (*Safety Summary*) of the Aviation Department *Airfield Standards Manual*.**

#### **Pavement Markings**

Should the Aviation Department choose to install pavement markings in lieu of lighted **X**'s to temporarily close a runway, the contractor will follow the guidelines stated in [AC 150/5340-1J](#). This guidance states in part that when it is necessary to provide a visual indication that a runway is temporarily closed, **X**'s are placed only at each end of the runway on top of their runway designation markings or just off the runway end when required by construction activity. The **X**'s are yellow in

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color and conform to the dimensions shown in [Exhibit 10](#). Since the **X**'s are temporary, they are usually made of some easily removable material, such as plywood or fabric rather than painted on the pavement surface. Any materials used for temporary **X**'s should provide a solid appearance. Since these **X**'s will usually be placed over white runway markings, their visibility can be enhanced by a black boarder.

Temporary markings may use paint or temporary marking tape on asphaltic concrete surfaces; however, temporary markings on all concrete surfaces shall be temporary marking tape. All permanent pavement markings shall be restored at project completion.

Closures of taxiways and runways must be prearranged and approved by airport management and the ATCT.

### **Transition Ramps**

Construction projects on airside may involve overlays and/or milling operations on runway or taxiway surfaces. This operation will require the construction of temporary ramps to allow runway or taxiway use, between actual work shifts during the airside non-peak hours.

If the contractor is working at either Deer Valley or Goodyear airports, communications with the ATCT may be required for all work activities; therefore the contractor must plan and coordinate with airport operations on the procedures for communicating with the tower.

[AC 150/5370-13A](#) (*Off-Peak Construction of Airport Pavements Using Hot-Mix Asphalt*), paragraph 36C, describes two

methods for constructing transition ramps, depending upon the type of equipment available. [Detail 108](#) illustrates construction of the transition ramp with cold-planing equipment; [Detail 109](#) demonstrates a method of constructing this ramp if cold-planing equipment is not available.

### **Communications**

Typically the contractor will not be authorized to communicate with the Air Traffic Control Tower (ATCT) when working inside the AOA. But when the construction work or incidental operations are in progress within 200 feet of active runways or taxiways, two way communications with the ATCT will be maintained by the contractors qualified radio operator. Although more extensive training will be provided on radio communications, at a minimum the contractor should thoroughly review the *Airport Construction Safety Planning Guide* (Appendix 3, [AC 150/5370-2F](#)) when planning and scheduling activities that will require communication with the ATCT.

### **Overview of Mitigation of Hazardous Conditions**

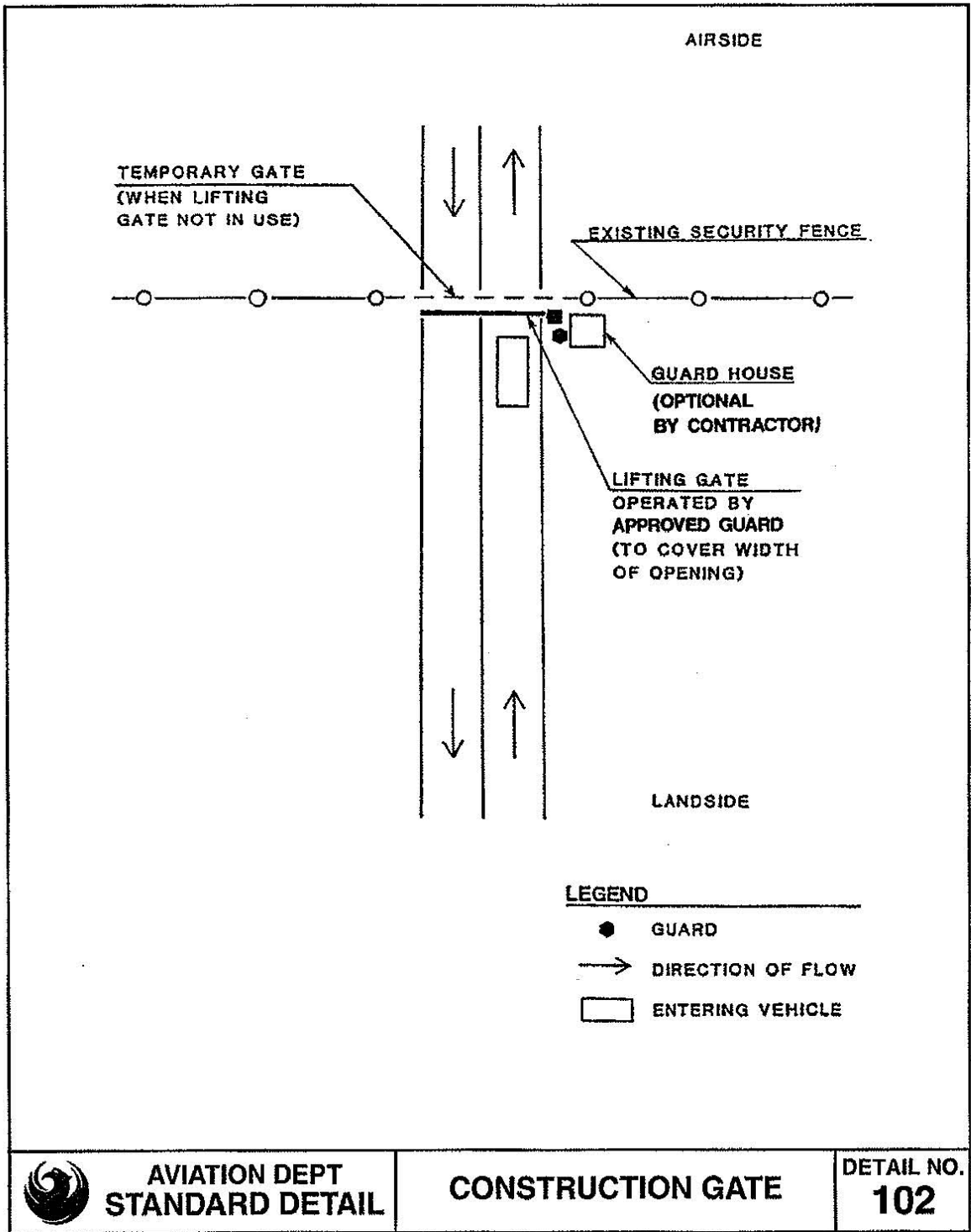
The following are topics that identify potential hazards contractors must consider when performing construction activity at any of the Phoenix area airports. Many of the items have been previously discussed and it should be noted that not all items are shown below; the contractor is responsible for the review of [AC 150/5370-2F Operational Safety on Airports During Construction](#).

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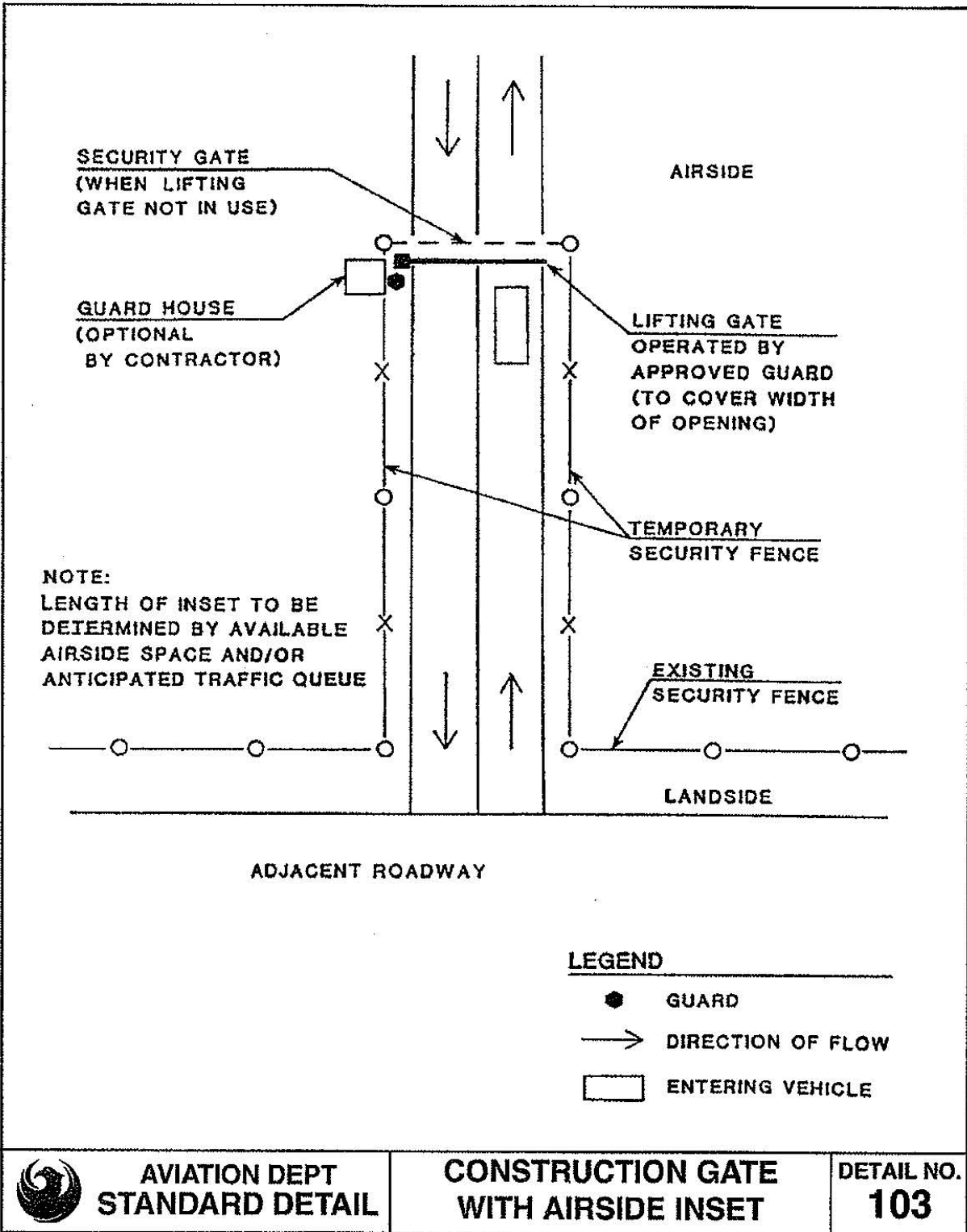
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1. Excavation adjacent to runways, taxiways, and aprons
2. Mounds of stockpiles of earth, construction material, temporary structures, and other obstacles in proximity to airport operations areas and approach zones.
3. Runway surfacing projects resulting in excessive lips greater than 1 inch (2.54 cm) for runways and 3 inches (7,62cm) for edges between old and new surfaces at runway edges and ends.
4. Heavy equipment, stationary or mobile, operating or idle near airport operations areas or in safety areas.
5. Proximity of equipment or material that may degrade radiated signals or impair monitoring of navigational aids.
6. Tall but relatively low visibility units such as cranes, drills and the like in critical areas such as safety areas and approach zones.
7. Improper or malfunctioning lights or unlighted airport hazards.
8. Holes, obstacles, loose pavement, trash, and other debris on or near airport operations areas,
9. Failure to maintain fencing during construction to deter human and animal intrusions into the airport operation areas.
10. Open trenches alongside pavement.
11. Improper marking or lighting of runways, taxiways, and displaced thresholds.
12. Attractions for birds such as trash, grass seeding, or pond water on or near airports,
13. Inadequate or improper methods of marking temporarily closed airport operations areas including improper and unsecured barricades.
14. Obliterated markings on active operational area.

# DETAIL 102 CONSTRUCTION GATE



# DETAIL 103 CONSTRUCTION GATE



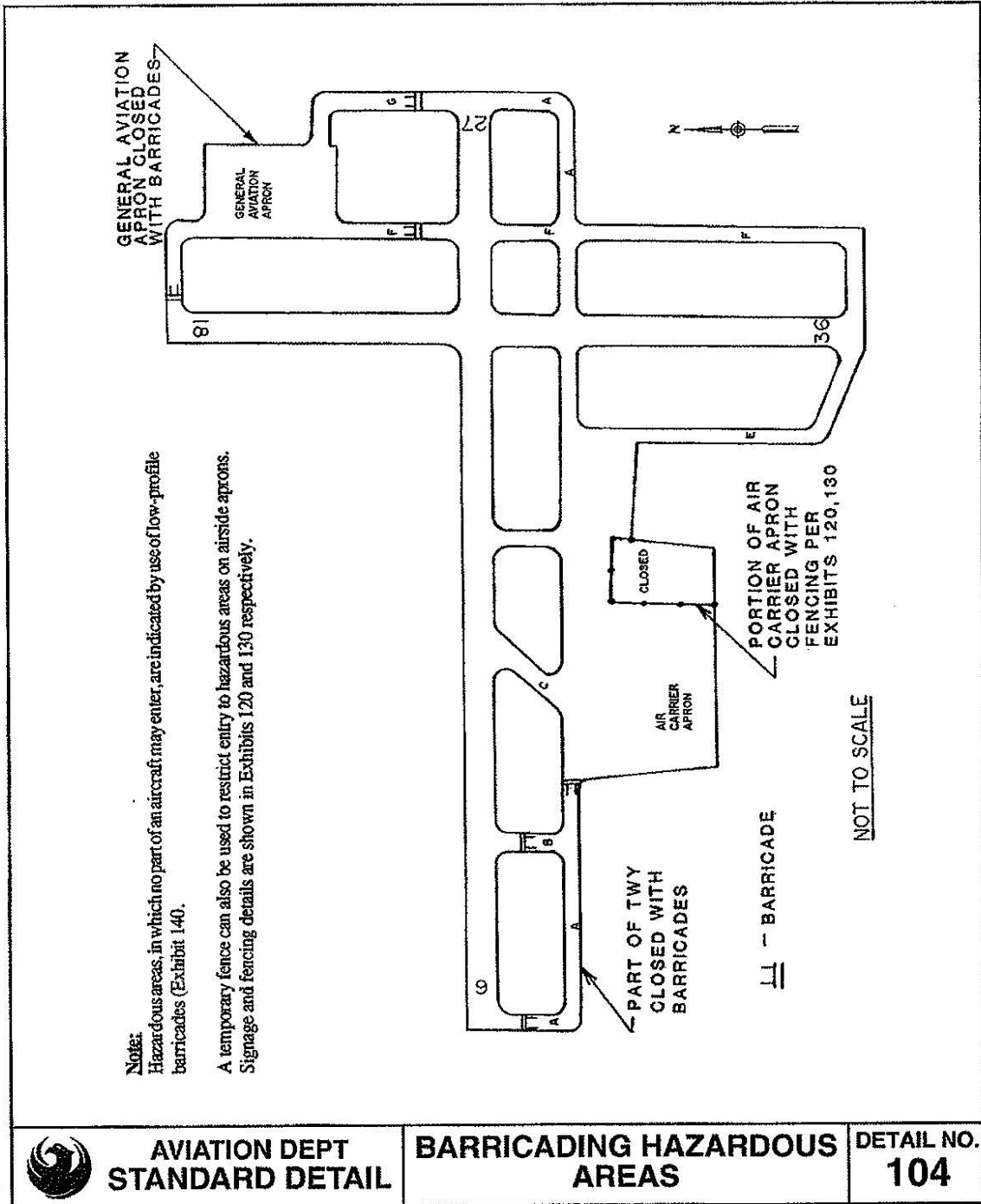
**AVIATION DEPT  
STANDARD DETAIL**

**CONSTRUCTION GATE  
WITH AIRSIDE INSET**

**DETAIL NO.  
103**



# DETAIL 104 CONSTRUCTION GATE WITH AIRSIDE INSET



## DETAIL 105 MULTI-BARRIER SAFETY BARRICADE



**10x10x96, Low Profile, Water Filled with Warning Lights**

**DETAIL 105-1  
MULTI-BARRIER SAFETY BARRICADE**

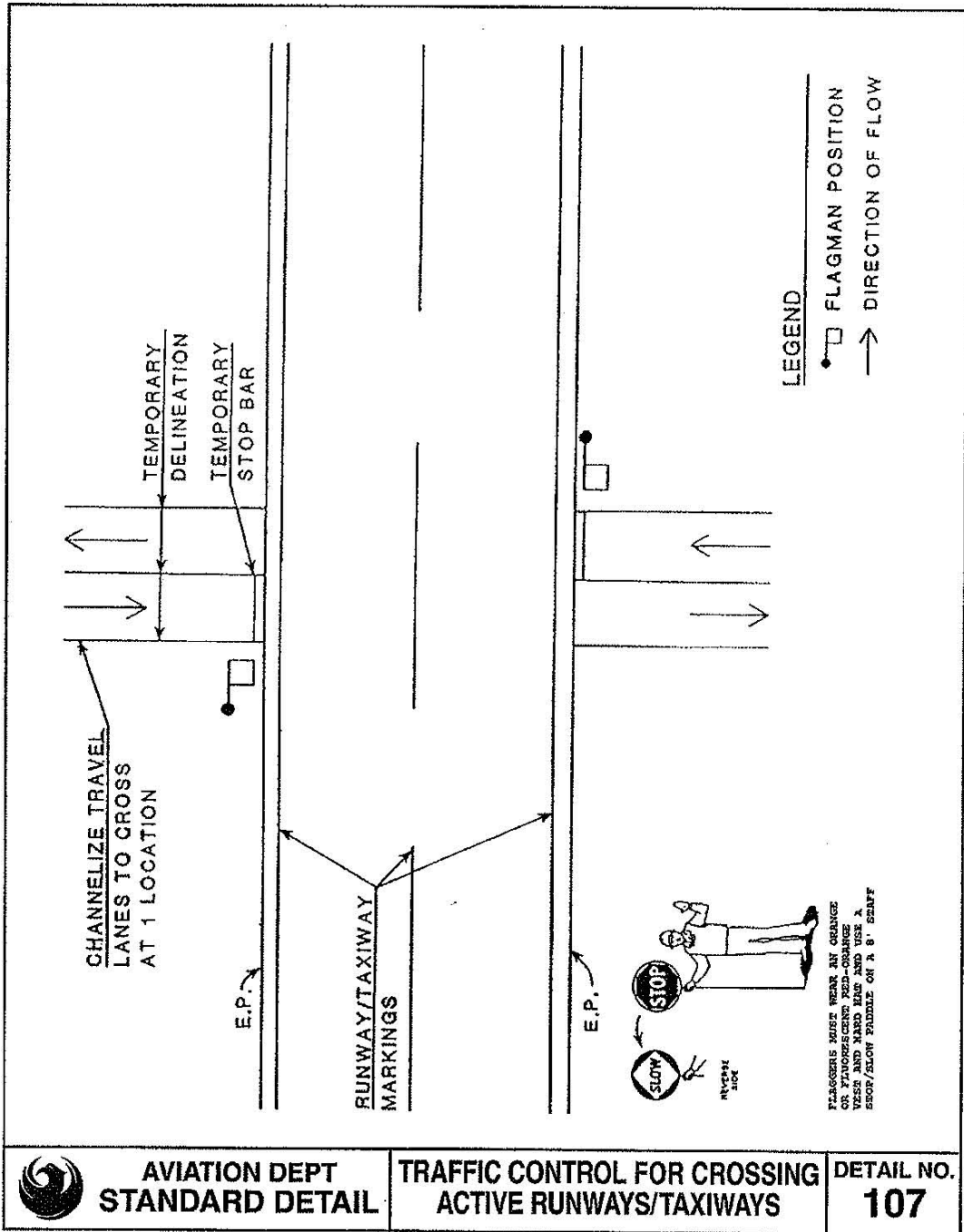


**Low Profile Barricade Spacing**

**DETAIL 106**  
**TEMPORARY TAXIWAY GUIDANCE SIGN**



# DETAIL 107 TRAFFIC CONTROL FOR CROSSING ACTIVE RUNWAYS/TAXIWAYS

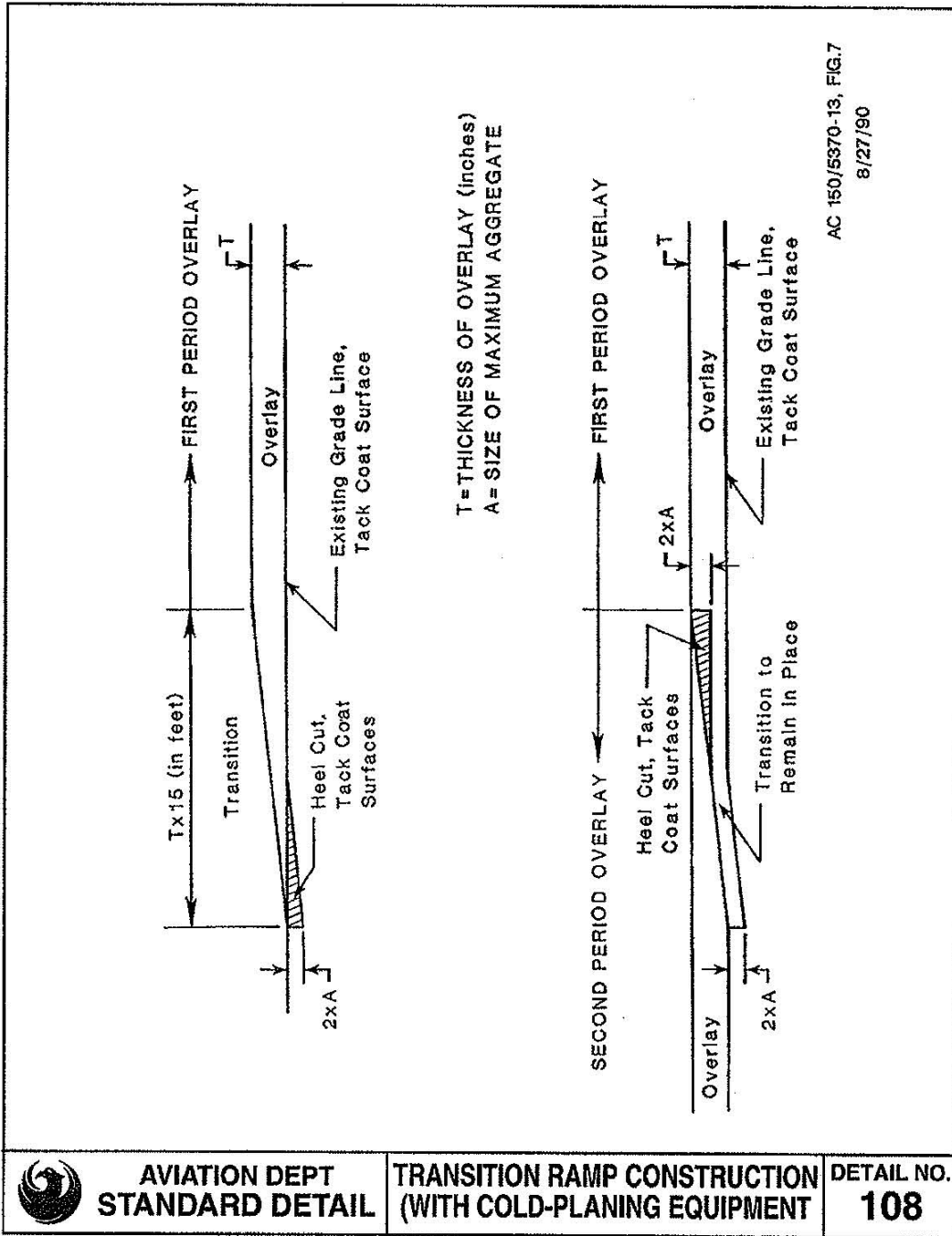


**AVIATION DEPT  
STANDARD DETAIL**

**TRAFFIC CONTROL FOR CROSSING  
ACTIVE RUNWAYS/TAXIWAYS**

**DETAIL NO.  
107**

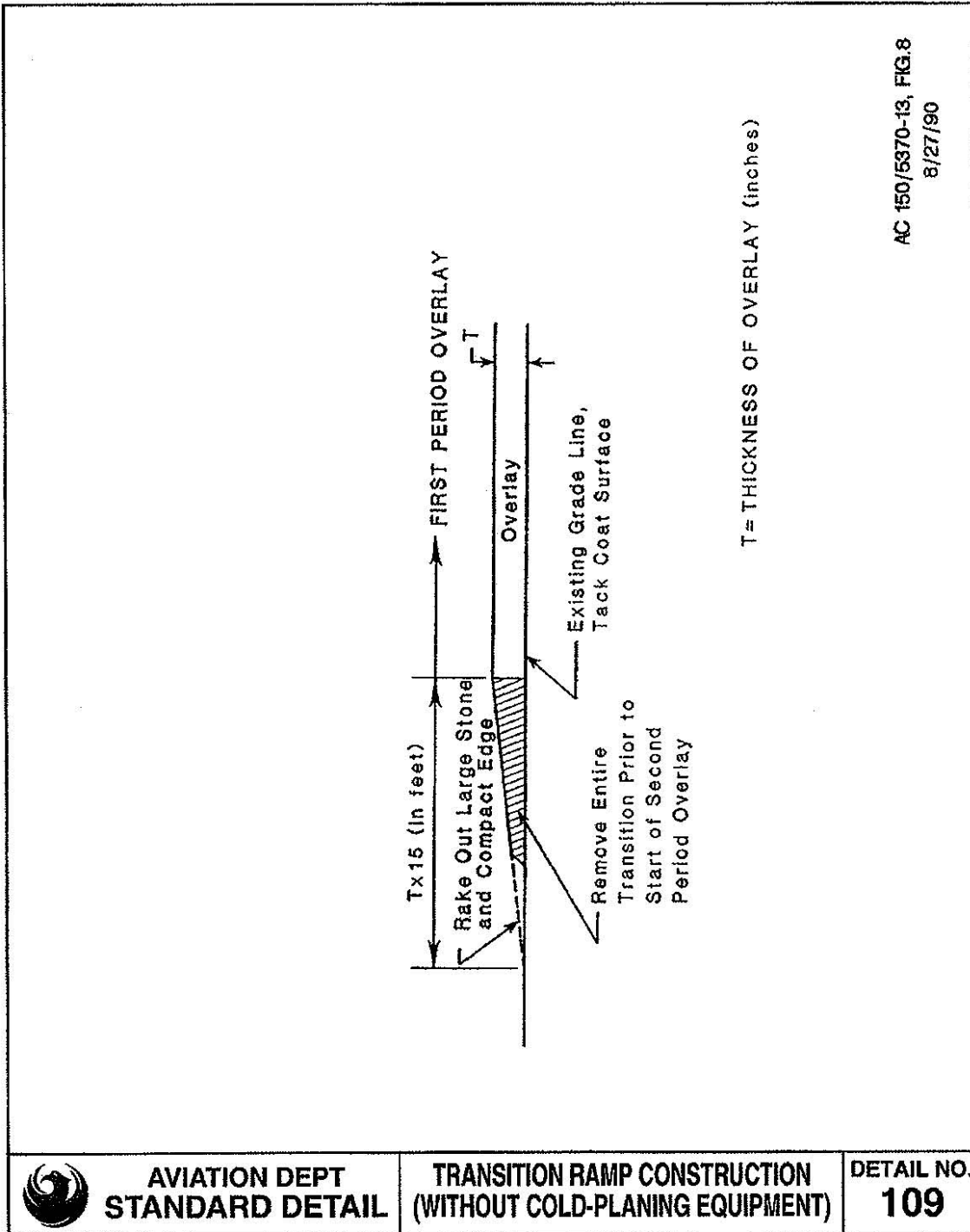
# DETAIL 108 TRANSITION RAMP CONSTRUCTION (WITH COLD-PLANING EQUIPMENT)



	<b>AVIATION DEPT STANDARD DETAIL</b>	<b>TRANSITION RAMP CONSTRUCTION (WITH COLD-PLANING EQUIPMENT)</b>	<b>DETAIL NO. 108</b>
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**DETAIL 109  
TRANSITION RAMP CONSTRUCTION  
(WITHOUT COLD PLANING EQUIPMENT)**



AC 150/5370-13, FIG. 8  
8/27/90

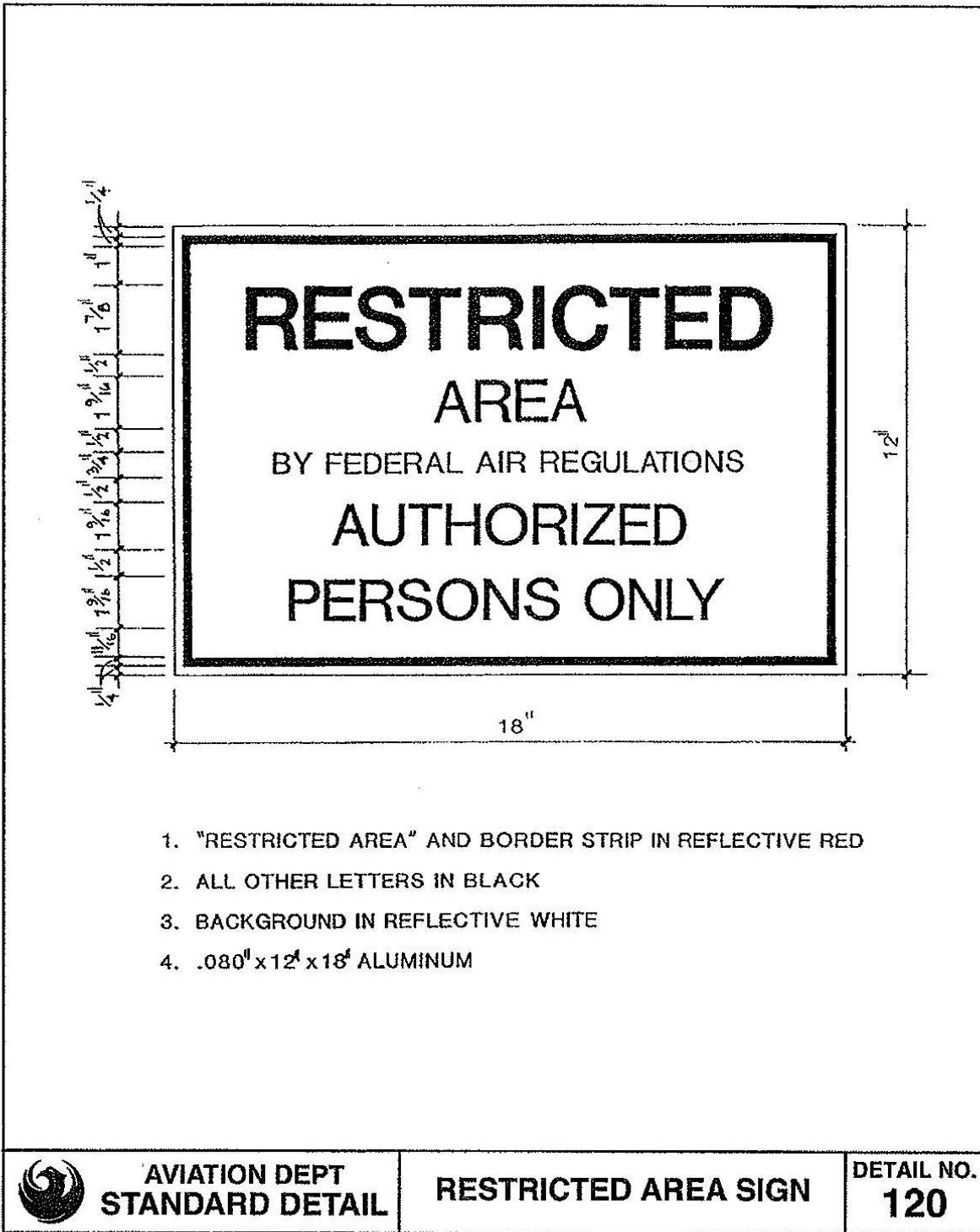


**AVIATION DEPT  
STANDARD DETAIL**

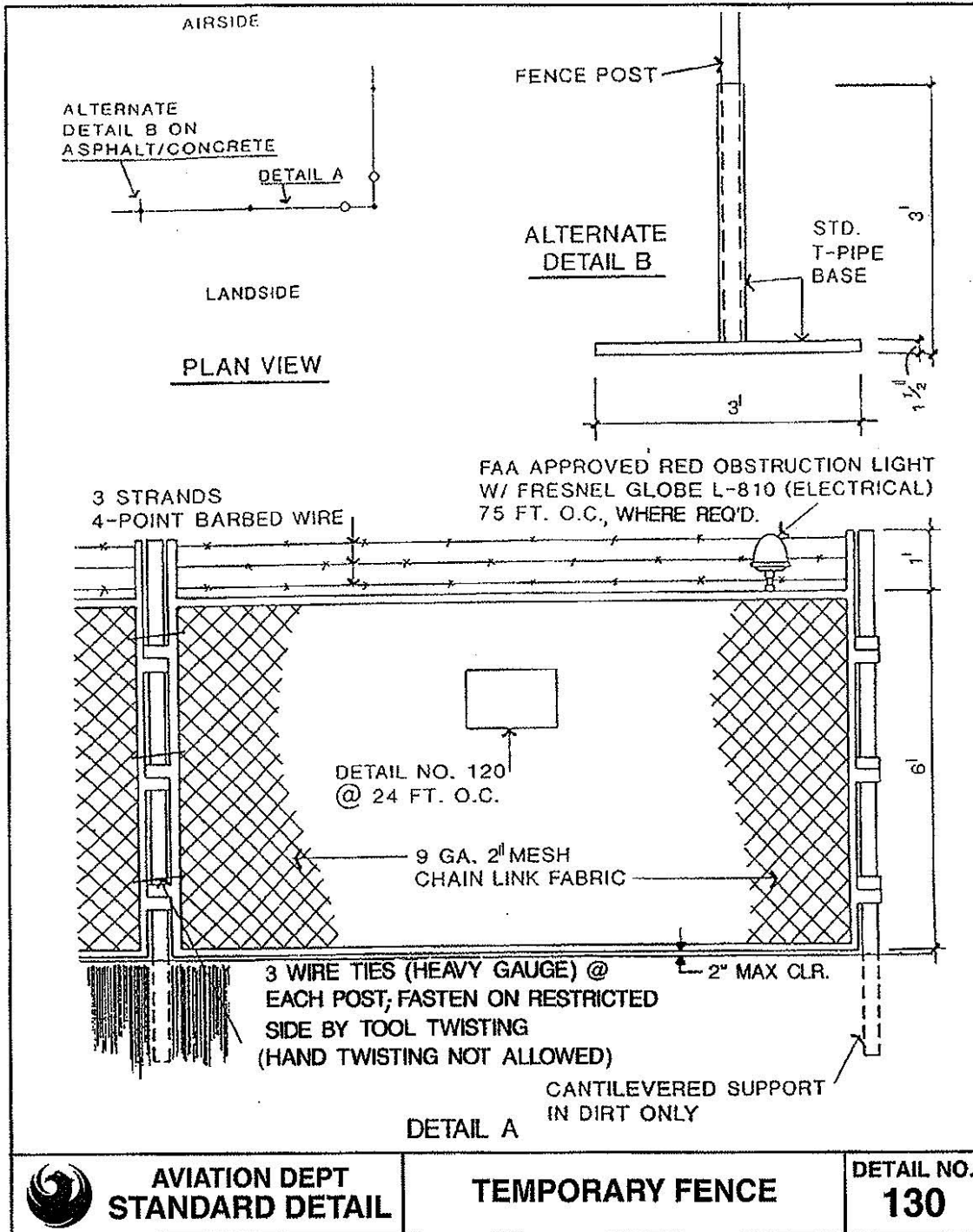
**TRANSITION RAMP CONSTRUCTION  
(WITHOUT COLD-PLANING EQUIPMENT)**

**DETAIL NO.  
109**

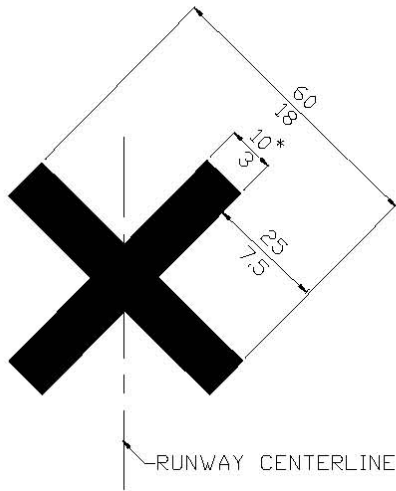
**DETAIL 120  
RESTRICTED AREA SIGN**



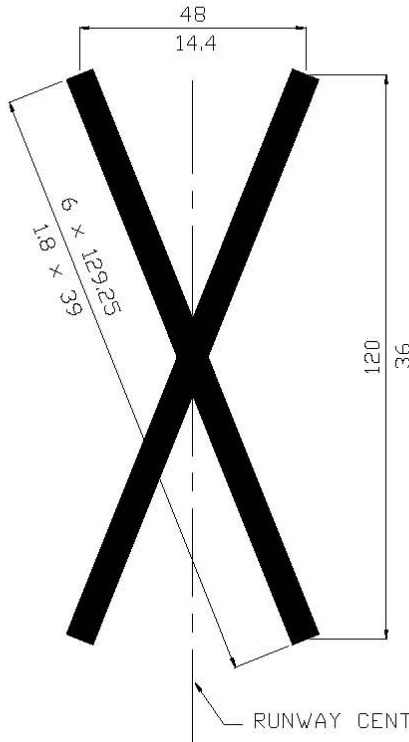
# DETAIL 130 TEMPORARY FENCE



## Detail 131 CLOSED RUNWAY/TAXIWAY MARKINGS



(A) CLOSED RUNWAY

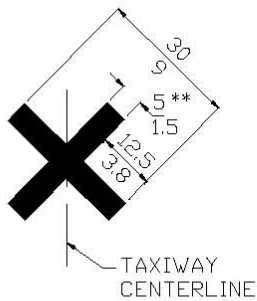


(B) ALTERNATE CLOSED RUNWAY

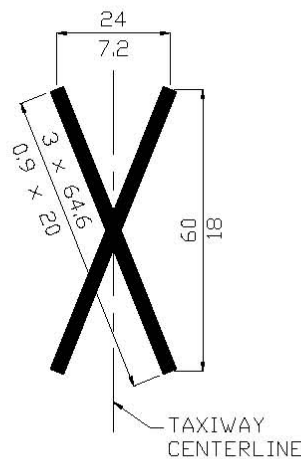
\* FOR TEMPORARY X's  
THIS DIMENSION MAY BE  
CHANGED TO 8 FEET

NOTE: X's ARE  
ALWAYS YELLOW

DIMENSIONS ARE EXPRESSED  
THUS:  $\frac{\text{FEET}}{\text{METERS}}$  e.g.,  $\frac{10}{3}$



(C) CLOSED TAXIWAY



(D) ALTERNATE CLOSED TAXIWAY

\*\* FOR TEMPORARY X's  
THIS DIMENSION MAY BE  
CHANGED TO 4 FEET

**CONSTRUCTION SAFETY MANUAL**  
**PART III**  
**TEMPORARY TRAFFIC CONTROL – LANDSIDE**

---

### **Introduction**

In Part 1 of this manual, the Landside area of the airport was defined as the areas within the airport property line but outside of the secured AOA. This area includes but is not limited to the airport terminals, roads leading to the terminals, parking garages, etc. The landside areas of the airport fall under the jurisdiction of the City of Phoenix Aviation Department.

This section will focus on the requirements for marking, barricading and lighting of landside construction areas in order to delineate work zones to prevent incursion by the general public as well as non-construction related vehicles and equipment.

### **Traffic Regulations**

Traffic control work includes, but is not limited to, furnishing, installing, maintaining, and removing all temporary signs, pavement markings, barricades, retaining structures, temporary concrete barriers, and miscellaneous traffic control devices as required. Also included is the removal of existing signs and pavement markings that conflict with traffic control shown in the contract plans or submitted drawings.

All traffic and traffic control devices shall be provided by the contractor; maintained and controlled as specified in the City of Phoenix *Right Of Way Management Program Brochure*.

Permission to restrict any city street, sidewalk or alley (street closure permits) shall be requested as specified in the *Right Of Way Management Program Brochure*.

When not provided in the contract plans,

the contractor shall supply drawings which layout all temporary traffic control features for approval by the Engineer. The drawings must be approved by the City of Phoenix Aviation and Street Transportation Departments prior to any traffic control work being started.

The following roadways at Phoenix Sky Harbor International Airport shall be considered major streets:

Sky Harbor Boulevard,  
24th Street,  
Buckeye Road,  
Air Lane.

At least two lanes of traffic in each direction on Sky Harbor Boulevard shall remain in operation between the hours of 6:00 a.m. to 11:00 p.m. This applies to all days – weekdays, weekends and holidays. One lane of traffic in each direction on Sky Harbor Boulevard may be allowed between 11:01 p.m. and 5:59 am subject to approval by the Aviation Department. The contractor shall submit a written request for each night's lane restriction a minimum of 48 hours in advance of the requested restriction.

No complete road closure in either direction on Sky Harbor Boulevard will be allowed. Minimum traffic speed shall be maintained at 25 mph at all times

### **Construction Site Identification**

Construction sites shall be identified by using the restricted area sign shown in [Detail 120](#).

### **Signs**

All permanent signs affected by

**CONSTRUCTION SAFETY MANUAL**  
**PART III**  
**TEMPORARY TRAFFIC CONTROL – LANDSIDE**

---

construction shall be replaced with temporary signs of the same size, message, color, and material. The contractor shall submit a sign relocation plan to the Aviation Department for approval to any relocation of any existing signs.

**Pavement Markings**

All existing pavement markings requiring removal shall be obliterated by approved methods.

Temporary markings may be painted or may use temporary marking tape (removable) on asphaltic concrete surfaces; however, temporary markings on all concrete surfaces shall be

temporary marking tape (removable) only. All permanent pavement markings shall be restored at project completion.

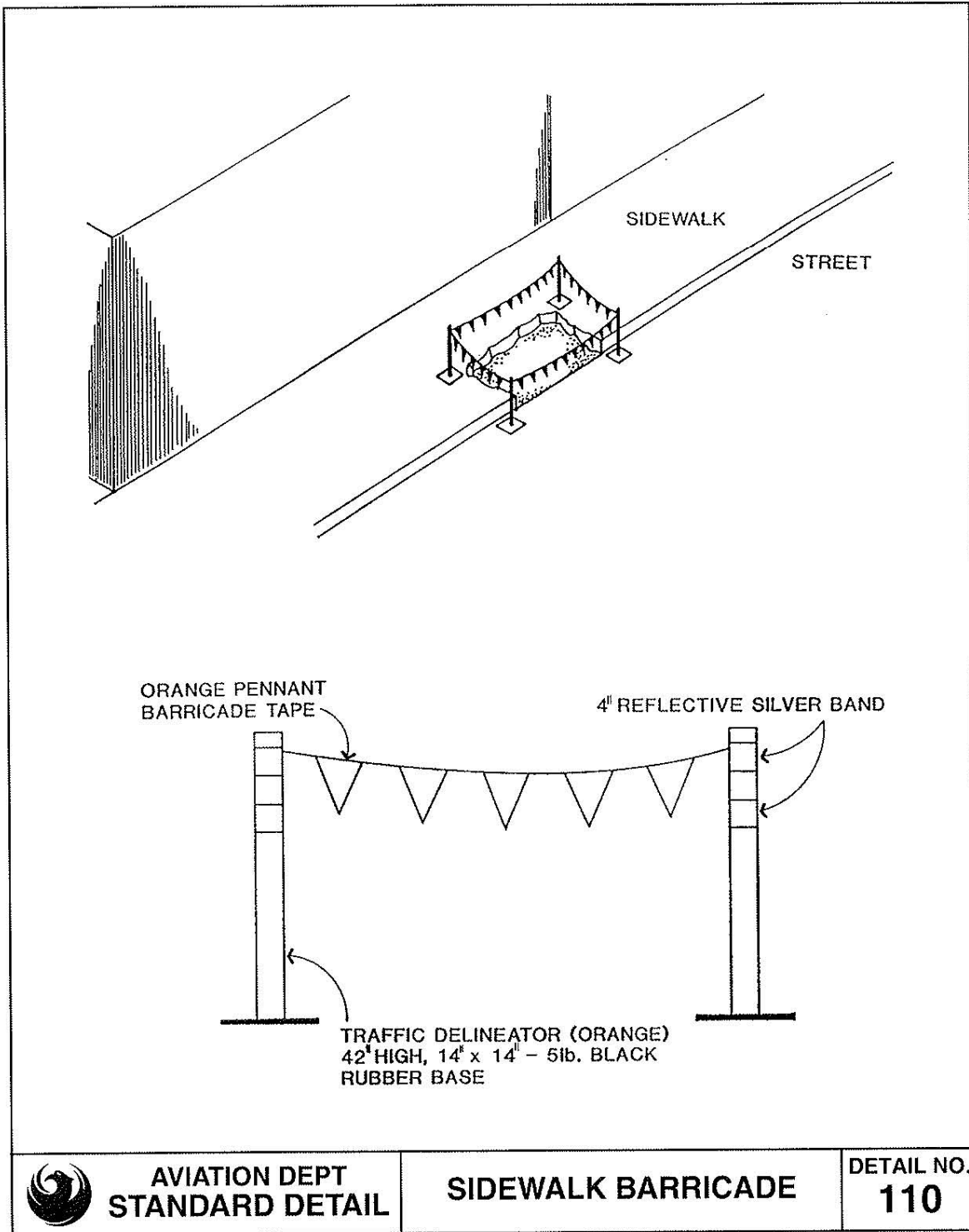
**Sidewalk Closures**

Construction activities may require the partial or complete closure of sidewalks in the vicinity of terminal buildings. A partial sidewalk closure is illustrated in [Detail 110](#); details for a full sidewalk closure are shown in [Detail 115](#) and [Detail 116](#).

Capability of curbside check-in at terminal buildings shall be maintained, despite any nearby construction activity. All sidewalk closures shall be pre-approved and coordinated with the Aviation Department.



**DETAIL 110  
SIDEWALK BARRICADE**

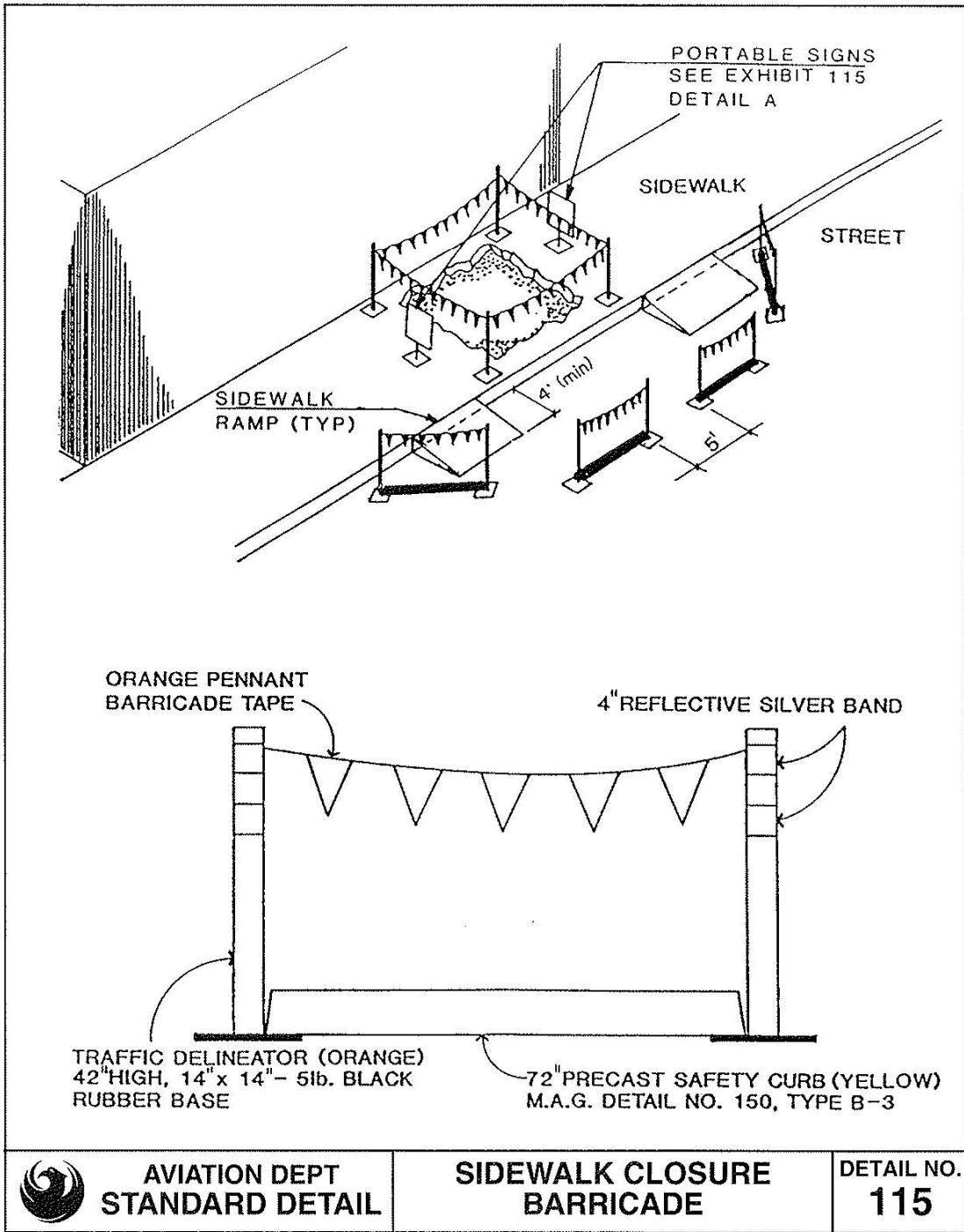


**AVIATION DEPT  
STANDARD DETAIL**

**SIDEWALK BARRICADE**

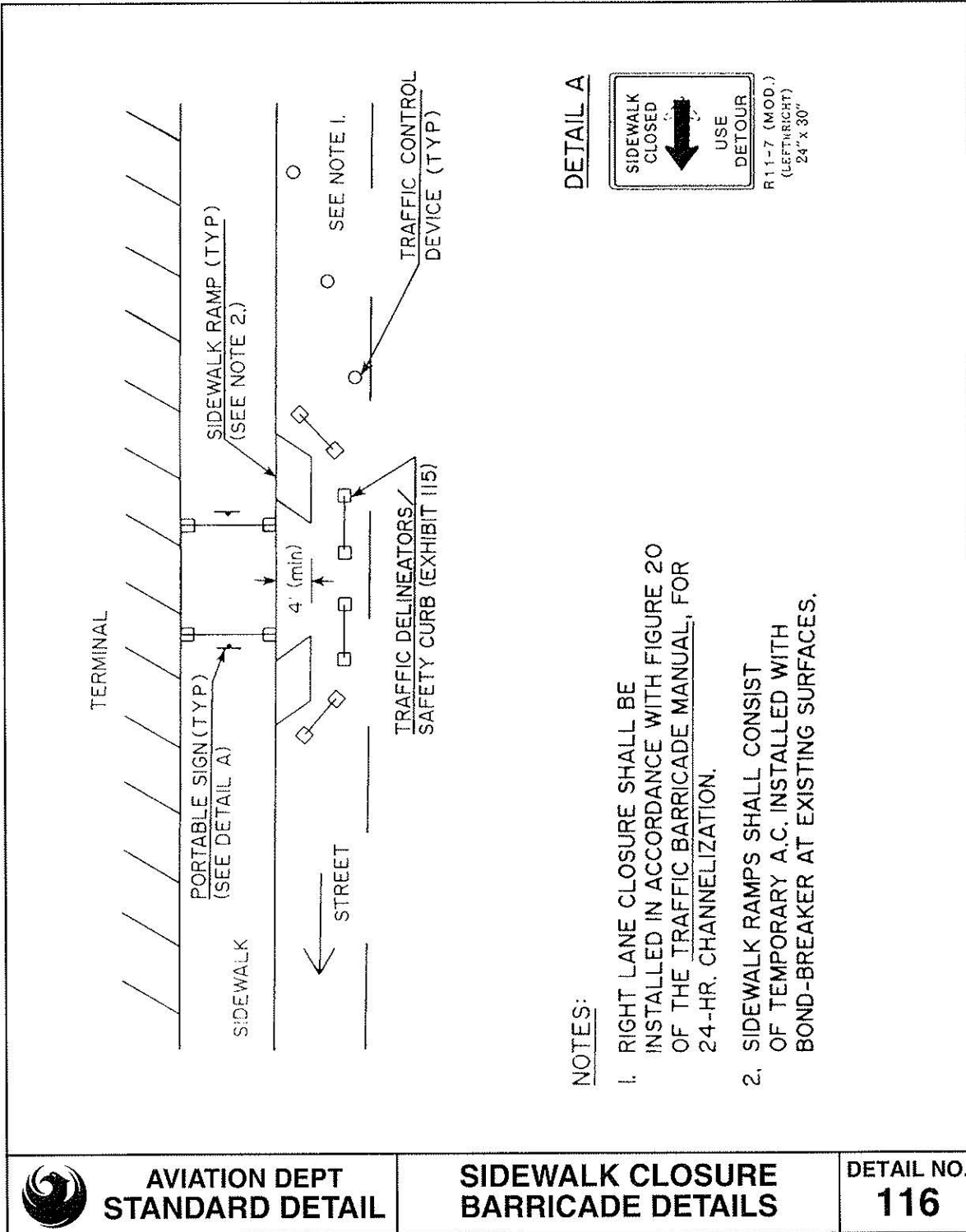
**DETAIL NO.  
110**

**DETAIL 115  
SIDEWALK CLOSURE BARRICADE**



 <p><b>AVIATION DEPT STANDARD DETAIL</b></p>	<p align="center"><b>SIDEWALK CLOSURE BARRICADE</b></p>	<p align="right">DETAIL NO. <b>115</b></p>
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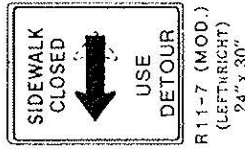
**DETAIL 116  
SIDEWALK CLOSURE BARRICADE DETAIL**



**NOTES:**

1. RIGHT LANE CLOSURE SHALL BE INSTALLED IN ACCORDANCE WITH FIGURE 20 OF THE TRAFFIC BARRICADE MANUAL, FOR 24-HR. CHANNELIZATION.
2. SIDEWALK RAMPS SHALL CONSIST OF TEMPORARY A.C. INSTALLED WITH BOND-BREAKER AT EXISTING SURFACES.

**DETAIL A**

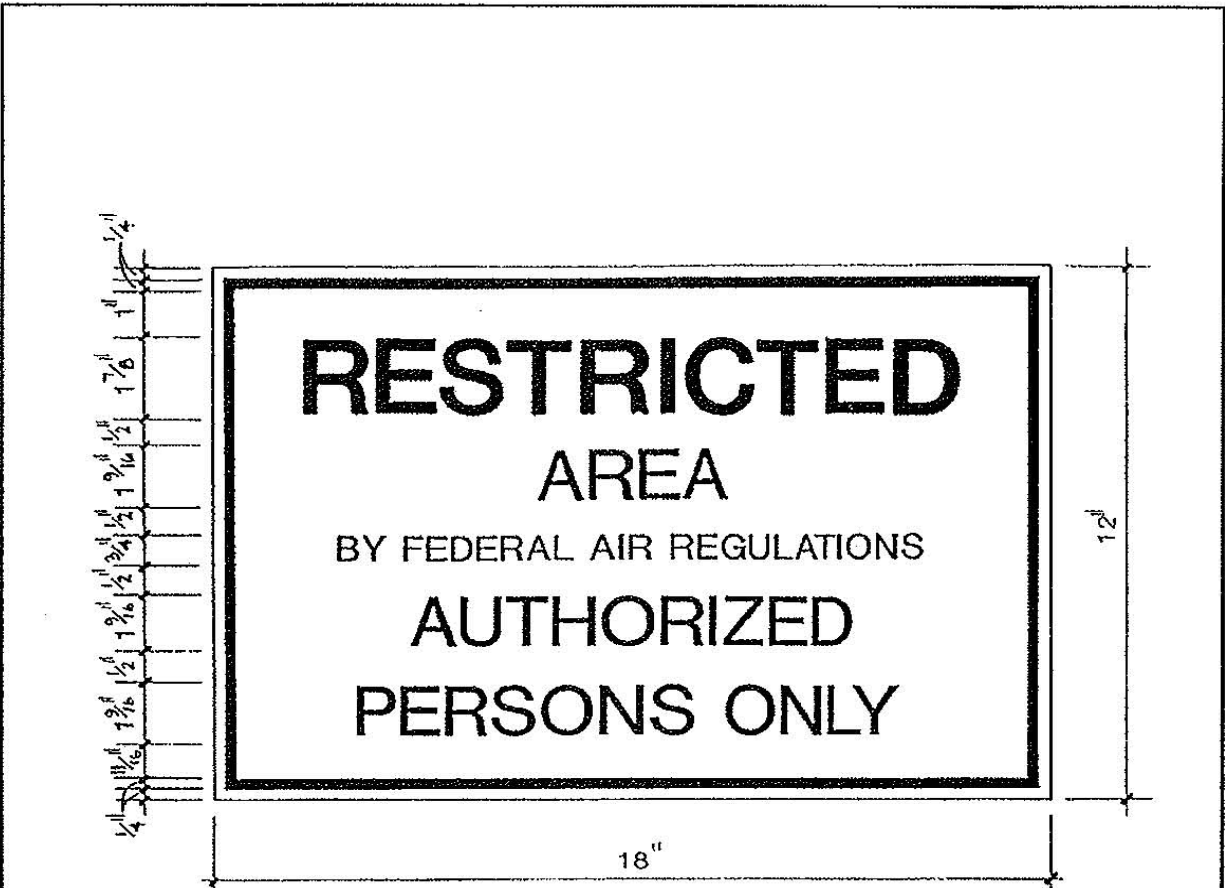


**AVIATION DEPT  
STANDARD DETAIL**

**SIDEWALK CLOSURE  
BARRICADE DETAILS**

**DETAIL NO.  
116**

DETAIL 120  
 RISTRICED AREA SIGN



1. "RESTRICTED AREA" AND BORDER STRIP IN REFLECTIVE RED
2. ALL OTHER LETTERS IN BLACK
3. BACKGROUND IN REFLECTIVE WHITE
4. .080" x 12" x 18" ALUMINUM

	<b>AVIATION DEPT          STANDARD DETAIL</b>	<b>RESTRICTED AREA SIGN</b>	<b>DETAIL NO.          120</b>
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## **Introduction**

An important aspect of any type of construction project is the coordination and location of all underground utilities. At all three Phoenix area airports this requirement could not be more important. With electrical, communication and fuel lines servicing the airports and the City of Phoenix, it is imperative that the contractor plan and coordinate the locating of all underground utilities within the project area prior to commencement of work. At a minimum and unless otherwise stated in the contract documents the contractor shall review and understand the following with regard to the coordination and locating of utilities.

1. All existing utilities within the construction areas or the staging area shall remain active, accessible, and protected at all times. The contractor is responsible for locating all existing utilities (operational and abandoned) prior to starting any excavation, demolition or earthwork in an area. The contractor will verify the location of underground facilities, by providing a private utility locating company to verify the location of all on-site utilities.
2. The contractor shall be responsible for obtaining all utility location information, and for performing all requirements as prescribed in A.R.S. 40-360.21 through .29 for all underground facilities, including those that have been installed on the current project, until the project is accepted by the City.
3. At least two (2) working days prior to commencing any excavation, the contractor shall call the Blue Stake Center for information relative to the location of buried utilities.
4. Several utility owners, including the City of Phoenix, the Federal Aviation Administration, Swissport Fueling, Southwest Gas, Century Link, Arizona Public Service and others have utilities located in the air operations area of the airport. These utilities shall be located and potholed by the contractor prior to starting construction. The contractor shall contact the utility owner prior to excavation and shall have remedial plans for the disruption of any utility service.
5. The contractor shall, at his own expense, repair any construction damage to any utility or structure, to the satisfaction of the Aviation Department and the utility owner. The locations of utility facilities that are shown on drawings and were furnished by the City of Phoenix are to be regarded as preliminary information only, subject to further investigation by the contractor – the City does not warrant the accuracy of these locations.
6. The contractor is advised that underground monitoring wells may exist with the project work limits. The monitoring wells are to be protected by the contractor and left in an undisturbed condition. Any inadvertent damage must be reported immediately to the Aviation Department Environmental Section.

**CONSTRUCTION SAFETY MANUAL**  
**PART IV**  
**UTILITY COORDINATION**

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**Points of Contact**

Shown below is a list of points of contact that a contractor shall be aware of before construction begins.

Construction Hotline: 602-553-0005

<b>Aviation</b>	<b>Phone Number</b>
Airport Emergency	602-273-3311 DO NOT DIAL 911
Aviation Communications Center	602-273-3300 Press 1, 0
Aviation Landside Division	602-273-3300 Press 1, 0 ask for OSCAR 20
Aviation Airside Operations	602-273-3300 Press 1, 0 ask for OSCAR 30
Aviation Construction Hotline	602-553-0005
Aviation Work Order Center	602-273-3300 Press 1, 7
Aviation Technology Help Desk	602-273-3300 Press 1, 8
Airport Parking (ACE)	602-273-4545
Aviation Parking Operations – General Info	602-683-3615
Aviation Badging Office	602-273-2036

<b>Organization</b>	<b>Name</b>	<b>Phone Number</b>
ADOT – Permit Number	Dave Loy	602-712-7522
MCHD – Permit Number	Richard Wallace	602-506-8794
ADEQ	Chris Varga	602-771-4665
APS	Diane Boman (69KV Underground) Henry Miranda (12KV & 69KV)	602-371-7537 602-371-1994
Southwest Gas	Marcus Wanatabe	480-730-3843
Century Link	John Nevlis	602-630-6891
SRP	Joe Penunuri Allen Garrison Ken Berry	602-236-4853 602-499-5322 602-586-8070
SRP Water Permit Number	Sysana Ortega	602-236-2962
CBS Outdoors Electric	Operator	602-246-9569
Swissport	Micah Davidson	602-278-8731

**Note – Points of contacts and contact phone numbers are subject to change as well as there may be additional utilities/companies which may not be shown above. Unless otherwise stated in the contract documents, the contractor is not relieved of their responsibilities for ensuring all utilities within their work zone have been investigated and located. The contractor shall contact the Project Manager or the Aviation Facility & Services Division should they require assistance in coordinating utility investigations.**

**CONSTRUCTION SAFETY MANUAL**  
**PART V**  
**SUBMISSION OF PERMITTING DOCUMENTATION**

---

**Introduction**

Construction contractors working on property owned by the Phoenix Aviation Department shall furnish all materials, labor, and equipment necessary to comply with both the National and Arizona Pollutant Discharge Elimination System (NPDES/AZPDES) requirements for erosion control during construction.

The contractor shall also refer to the *Erosion Control Manual*, published by the Maricopa County Flood Control District that outlines guidelines for completing a Storm Water Pollution Prevention Plan (SWPPP). The contractor may download a current copy of the *Erosion Control Manual* by logging on to <http://www.fcd.maricopa.gov/>.

Contractors shall follow contract requirements for submitting all SWPPP documentation. Questions regarding submission of documents may also be directed to the Aviation Planning and Environmental Department.

**Waste and Spillage**

Waste generated by the contractor, including hazardous waste or petroleum contaminated waste, become the responsibility of the contractor, unless other special arrangements have been made with the party responsible for hiring the contractor. All waste shall be disposed of as required by Federal State and or local regulations.

Chemical products, including oils and fuels, must be stored in a safe manner, away from heat sources or any drainage ways, including storm or sewer drains. Secondary containment to halt the flow of chemicals if accidentally spilled is required. All product containers will be stored in or on secondary containment devices.

Any spills, releases or overfills of product; rinses or waste shall be reported to the airport by calling 602-273-3300. All responsibility and cost for cleaning will be borne by the contractor.



**Height Obstruction Evaluation (FAA Form 7460)**

Most projects at the three City of Phoenix airports are required to obtain a “Determination of No Hazard” from the Federal Aviation Administration. Since the scope of airport projects range from simple to complex, please contact David Ebeling at 602-273-4388 or Randy Payne at 602-273-2058 the Planning Division at 602-273-3340 or by e-mail at [aviation.planning@phoenix.gov](mailto:aviation.planning@phoenix.gov) to request an “Obstruction Evaluation”. This verifies the need for an evaluation. When contacting the Planning Division, Project Managers and/or contractors should have an understanding of the scope of work required to complete the project. Some helpful questions when considering the scope of work include:

1) Will cranes or lifts be used? If so, how high and at what operating times?

2) Is there grading involved? If so, what type of equipment will be used?

3) Will a permanent or temporary structure be built? If temporary, how long will the structure be in place? (dates, number of days, or number of months)

Planning staff recommends that the request be filed with the Planning Division at least 45 days prior to construction/activity commencement. Upon submittal, Planning Staff will conduct a height analysis and submit the findings to the FAA by filing Form 7460. This filing is an important step that allows the FAA to identify potential aeronautical hazards in advance, thus preventing or minimizing the adverse impacts to the safe and efficient use of the surrounding airspace.

# **DANGER**

**LOCKOUT/TAG OUT PROCEDURES  
FOR THE  
CONTROL OF HAZARDOUS ENERGY**



**City of Phoenix**

**AVIATION  
DEPARTMENT**

APPENDIX

# ***City of Phoenix***

## ***Aviation Department***

### **LOCKOUT/TAGOUT PROCEDURES FOR THE CONTROL OF HAZARDOUS ENERGY**

#### **I. PURPOSE**

Lockout/Tag out is placing equipment into a temporary condition in which all power (energy) is blocked. It means blocking or de-energizing all possible sources of motion to protect against unexpected movement. The OSHA standard covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy, could cause injury to employees. Procedural requirements are contained in CFR 29, Part 1910.147.

#### **II. BACKGROUND**

According to research conducted by the National Institute for Occupational Safety and Health (NIOSH), several hundred employees each year sustain fatal injuries as a result of failing to take adequate precautions to prevent the sudden release of energy in different forms, while performing maintenance or servicing machines or equipment. Recommendations were made to OSHA to establish standard procedures to eliminate this category of accident and resulting injury. In 1989, OSHA introduced standard 1910.147, which required employers to establish and implement Lockout/Tagout Programs. This document has been developed to provide guidelines for controlling hazardous energy during maintenance and servicing operations for “affected employees” in the Aviation Department.

#### **III. POLICY**

During the course of maintenance and servicing operations, employees will observe all requirements and practice all methods for Lockout/Tag out of machinery and equipment necessary to protect from injury by the unexpected and restricted release of hazardous energy. Contractors and tenants are required to comply as well. Compliance with OSHA Standard 1910.147 is mandatory for all affected Airports servicing operations.

#### **IV. SCOPE**

As defined in 1910.147, an “affected employee” is an employee whose job requires them to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tag out, or whose job requires them to work in an area in which servicing or maintenance is being performed. “Affected employees” are those in Facilities and Services Division, Planning and

## **V. ENERGY CONTROL PROGRAM**

### **Preparation for Lockout or Tag Out**

Each shop supervisor/foreman or their delegate shall conduct a survey to locate and identify all maintenance and service operations within their area of responsibility where there exists hazard or potential hazard from release of energy. Examples of hazards are breaker panels, high-pressure hydraulic lines, raised dump-truck beds, HVAC equipment, and baggage conveyor systems. A list of these operations shall be maintained and communicated to all affected employees. It is important to remember there may be more than one energy source: electrical, mechanical, thermal, hydraulic, pneumatic, potential energy, or stored energy.

### **A. SEQUENCE OF LOCKOUT OR TAG OUT SYSTEM PROCEDURES**

- 1) Notify all affected employees that a lockout or tag out system is going to be utilized and the reason. Example: Sky Harbor Maintenance informing Airlines and Skycaps during baggage conveyor maintenance. The authorized employee, the one doing the locking, shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards. Shops should maintain a list of affected employees and authorized employees.
- 2) If the machine or equipment is operating, shut it down by normal stopping procedure (depress stop button, open toggle switch, close/open valve, etc).
- 3) Operate the energy-isolating device. This mechanical device physically prevents the transmission or release of energy. Examples are manual circuit breakers, disconnect switch, a slide gate, slip blind, in-line valve, or line blank. Stored energy, such as that in springs, elevated machine members, hydraulic systems, and air, gas and steam or water pressure, must be dissipated or restrained by methods such as repositioning, blocking, and bleeding down. Shops should also list energy sources and methods to be used in isolating them, for equipment and operations in their respective areas.
- 4) Lockout and/or tag out the energy isolating devices with individually assigned locks(s) and/or tag(s). The following definitions delimitate the difference between Lockout and Tagout Devices.

**LOCKOUT DEVICE** – A device that utilizes a positive means such as a lock, to hold and energy isolating device in the safe position and prevent the energizing of a machine, equipment or circuit. Able to be removed by one authorized person only.

**TAGOUT DEVICE** – A prominent warning device, such as a tag, and a means of attachment, which can be securely fastened to an energy-

isolating device to indicate that neither the isolating device nor the equipment being controlled may be operated until the tag out device is removed.

**NOTE:** If an energy-isolating device is not capable of being locked out, a tag out system will be utilized. This is not recommended and should not be relied on. Consult with the Aviation Facility Services Department should this type of situation arise.

- 5) After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. **CAUTION: Return operating controls to “neutral” or “off” position after test.**

## **B. RESTORING MACHINES OR EQUIPMENT TO NORMAL PRODUCTION OPERATIONS.**

- 1) After the servicing /maintenance are completed and equipment is ready for normal production operations, check the area around the equipment to ensure that no one is exposed.
- 2) After all tools have been removed from the equipment, guards have been reinstalled and employees are in the clear, remove all lockout and tag out devices. Operate the energy isolating devices to restore energy to the machine or equipment.

## **C. PROCEDURES INVOLVING MORE THAN ONE PERSON**

In the preceding steps, if more than one individual is required to lockout or tag out equipment, each shall place their own personal lockout device or tag out device on the energy isolating devices(s). When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tag out device (hasp) may be used. If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet, which allows the use of multiple locks to secure it. Each employee will then use his or her own lock to secure the box or cabinet. As each person no longer needs to maintain his or her lockout protection, that person will remove his or her lock from the box or cabinet.

## **D. BASIC RULES FOR USING LOCKOUT OR TAG OUT SYSTEM PROCEDURES**

All equipment shall be locked out and/or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. **DO NOT ATTEMPT TO OPERATE ANY SWITCH, VALVE, OR OTHER ENERGY ISOLATING DEVICE WHEN IT IS LOCKED AND/TAGGED OUT.**

## **VI SHOP RESPONSIBILITIES**

- A. List typical maintenance/service operations, energy source, and related hazards.

- B. List employees “authorized” to lockout/tag out.
- C. List “affected employees” and how to get notice to them. The Maintenance Work Order Center and Airport Communications Center should be informed of all Lockouts/Tag outs.
- D. List type and location of energy isolating means.
- E. List “stored energy” types and methods to dissipate or retrain. For example, raised dump truck beds.
- F. List type of equipment checked to ensure disconnects.
- G. Conduct in-shop training for all shop employees and maintain training records.

**VII PROTECTIVE MATERIALS AND HARDWARE**

- A. Locks, tags, chains, wedges, key blocks, adapter pins, self locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.
- B. Each shop supervisor/foreman is responsible for purchase and inventory of these items as needed for proper operation.
- C. Standardization of Lockout and Tag out devices. Lockout and tag out devices shall be:
  - 1) The only devices used for controlling energy; not used for any other purpose.
  - 2) Durable: capable of withstanding the environment in which used for as long as needed.
  - 3) Tag out devices must be impervious to weather conditions to remain legible and not deteriorate.
  - 4) Tags shall not deteriorate when used in corrosive environments.
  - 5) Lockout and tag out devices shall be standardized within each shop, i.e., either same shape, same size or same color, Tag out devices must also have the same print and format.
  - 6) Substantial: Able to withstand removal without the use of excessive force, like bolt cutters or cutting tools. Tag out devices and means of attachment shall be substantial enough to prevent inadvertent or accidental removal. Means or attachment should be one-piece, all environment-tolerant nylon cable tie capable of withstanding 50-lbs. pull.
  - 7) Identifiable: Identity of employee placing the lockout and tag out devices must be clearly indicated on each device.

- 8) Tags must contain warning legend such as, **DO NOT START, DO NOT OPEN, DO NOT OPERATE.**

## **VIII. TRAINING AND INSPECTION**

### **A. TRAINING**

- 1) Section Supervisors shall see that training is provided to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage and removal of energy controls are required to be used by employees.

### **B. RETRAINING**

- 1) Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that presents a new hazard, or when there is a change in the energy control procedures.
- 2) Additional retraining shall also be conducted whenever a periodic inspection reveals there are deviations from or inadequacies in the employees knowledge or use of the energy control procedures.
- 3) The retraining shall re-establish employee proficiency and introduce new or revised control methods and procedures, as necessary.

### **C. INSPECTION**

- 1) Section Supervisors shall conduct annual inspections of the energy control procedures in each shop under their supervision to ensure that the procedures and the requirements of this standard are being followed.

## **IX. OUTSIDE CONTRACTORS**

Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout and tag out procedures. Group lockout procedures will be utilized as needed.





## Airfield Lighting Vault Lock-Out Tag-Out Policy

The purpose of this procedure is to standardize the lockout tag out procedures between Electrical Contractors, Sky Harbor Electricians, Operations and Phoenix Air Traffic Control Tower (ATCT).

1. Sky Harbor electricians responding to a lock-out/tag-out request will coordinate with the ATCT through Operations.
2. After Operations notifies electricians of closures, the Sky Harbor electricians will turn off the closed runways/taxiways using the airfield computer system.
3. The contractor will supply an approved breaker-locking device and lock, then lock off the individual breakers for the circuits to be locked out. These items will remain in the vaults in a lock box provided by Sky Harbor Electrical Section.
4. The Sky Harbor Electric Section will lock the panel doors shut with a hasp and an Electrical Section Lock.
5. The load break elbows and/or S-1 switches will be pulled, locked and placed on the corresponding regulator by the electrical contractor.
6. The electrical contractor and Sky Harbor electricians **must fill out lock-out forms** before leaving the vault.
7. Upon completion of the lockout, the contractor will remove all locks and install the load breaks. All circuits **must be verified operational** in the manual mode on the regulator. Operations will perform a complete check the lights in the field, to verify actual operation.
8. When that has been completed, Sky Harbor electricians will notify Operations when lock-in is complete and regulators are in remote control; Operations will notify the ATCT that they have control of the airfield lighting.
9. Complete lock-out/lock-in forms.

**This procedural checklist must be followed to the letter.**

Ken McKinney  
Electrical Facilities Supervisor  
Phoenix Sky Harbor International Airport

Revised: May 5, 2006



**Contractor Lock-out Procedure Checklist for Airfield Electrical Circuits**

**Project Name:** \_\_\_\_\_

Start of Shift

Date: \_\_\_\_\_

Time: \_\_\_\_\_

- 1. Representative of the Electrical Contractor present? YES  NO
- 2. Representative of the City of Phoenix present? YES  NO
- 3. Representative of the Engineer present? YES  NO
- 4. Representative of the General Contractor present? YES  NO
- 5. Has the Airside Operations Supervisor been notified? YES  NO
- 6. Has the ATCT turned off all of the effected lighting circuits? YES  NO
- 7. Have all required breakers been turned off? YES  NO
- 8. Have all required load break elbows and/or S1 cutouts been pulled? YES  NO
- 9. Have all required circuit breaker or door locks been installed? YES  NO

Notes/Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Electrical Contractor Company and Employee Contact Info:

\_\_\_\_\_

City of Phoenix Electrician and Contact Info:

\_\_\_\_\_

General Contractor Company and Employee Contact Info:

\_\_\_\_\_

Revised May 9, 2006



**Contractor Lock-in Procedure Checklist for Airfield Electrical Circuits**

**Project Name:** \_\_\_\_\_

End of Shift

Date: \_\_\_\_\_

Time: \_\_\_\_\_

- 1. Representative of the Electrical Contractor present? YES  NO
- 2. Representative of the City of Phoenix present? YES  NO
- 3. Representative of the Engineer present? YES  NO
- 4. Representative of the General Contractor present? YES  NO
- 5. Have all required load break elbows and/or S1 cutouts been installed? YES  NO
- 6. Have all required circuit breaker or door locks been removed? YES  NO
- 7. Have all required breakers been turned on? YES  NO
- 8. Has the Airside Operations Supervisor been notified? YES  NO
- 9. Has the ATCT turned on all of the affected lighting circuits? YES  NO
- 10. Has Airside Operations verified all circuits operational in the field? YES  NO

Notes/Comments: \_\_\_\_\_

Electrical Contractor Company and Employee Contact Info:

City of Phoenix Electrician and Contact Info:

General Contractor Company and Employee Contact Info:

Revised May 9, 2006

### Appendix 3. Safety and Phasing Plan Checklist

This appendix is keyed to Section 2. Plan Requirements. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not as a required submittal.

Coordination	Reference	Addressed			Remarks
<b>General Considerations</b>					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	205	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Operational safety is a standing agenda item for construction progress meetings.	205	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Scheduling of the construction phases is properly addressed.	206	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Areas and Operations Affected by Construction Activity</b>					
Drawings showing affected areas are included.	207.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	207.a(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Access routes used by ARFF vehicles affected by the project are addressed.	207.a(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Access routes used by airport and airline support vehicles affected by the project are addressed.	207.a(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Underground utilities, including water supplies for fire fighting and drainage.	207.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	207.a(5)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	207.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Temporary changes to taxi operations are addressed.	207.b(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Detours for ARFF and other airport vehicles are identified.	207.b(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Maintenance of essential utilities and underground infrastructure is addressed.	207.b(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Temporary changes to air traffic control procedures are addressed.	207.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>NAVAIDS</b>					
Critical areas for NAVAIDS are depicted on drawings.	208	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.	208	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Protection of NAVAID facilities is addressed.	208	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	208	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	208, 213.a, 213.e(3)(a), 218.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Contractor Access</b>					
The CSPP addresses areas to which contractor will have access and how the areas will be accessed.	209	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	209	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The location of stockpiled construction materials is depicted on drawings.	209.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The requirement for stockpiles in the ROFA to be approved by FAA is included.	209.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Requirements for proper stockpiling of materials are included.	209.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Construction site parking is addressed.	209.b(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Construction equipment parking is addressed.	209.b(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Access and haul roads are addressed.	209.b(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
A requirement for marking and lighting of vehicles to comply with AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport, is included.	209.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Proper vehicle operations, including requirements for escorts, are described.	209.b(5), 209.b(6)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Training requirements for vehicle drivers are addressed.	209.b(7)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Two-way radio communications procedures are described.	209.b(9)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Maintenance of the secured area of the airport is addressed.	209.b(10)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Wildlife Management</b>					
The airport operator's wildlife management procedures are addressed.	210	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Foreign Object Debris Management</b>					
The airport operator's FOD management procedures are addressed.	211	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Hazardous Materials Management</b>					
The airport operator's hazardous materials management procedures are addressed.	212	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Notification of Construction Activities</b>					
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	213	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	213.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
A list of local ATO/Technical Operations personnel is included.	213.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
A list of ATCT managers on duty is included.	213.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
A list of authorized representatives to the OCC is included.	213.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	208, 213.b, 218.b(4)(i)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	213.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Emergency notification procedures for medical, fire fighting, and police response are addressed.	213.c	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Coordination with ARFF personnel for non-emergency issues is addressed.	213.d	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	213.e	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	213.e(3)(b)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Inspection Requirements</b>					
Daily inspections by both the airport operator and contractor are specified.	214.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Final inspections at certificated airports are specified when required.	214.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Underground Utilities</b>					
Procedures for protecting existing underground facilities in excavation areas are described.	215	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	



Coordination	Reference	Addressed			Remarks
<b>Penalties</b>					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	216	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Special Conditions</b>					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	217	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs</b>					
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	218.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	218.a, 218.c, 219, 220.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The requirement for markings to be in compliance with AC 150/5340-1, Standards for Airport Markings is specified.	218.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The requirement for lighting to conform to AC 150/5340-30, Design and Installation Details for Airport Visual Aids, AC 150/5345-50, Specification for Portable Runway and Taxiway Lights , and AC 150/5345-53 Airport Lighting Certification Program, is specified.	218.b(1)(f)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The use of a lighted X is specified where appropriate.	218.b(1)(b), 218.b(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The requirement for signs to conform to AC 150/5345-44, Specification for Runway and Taxiway Signs, AC 50/5340-18, Standards for Airport Sign Systems, and AC 150/5345-53, Airport Lighting Certification Program, is specified.	218.c	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Marking and Signs For Access Routes</b>					
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to AC 150/5340-18 and, to the extent practicable, with the MUTCD and/or State highway specifications.	219	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Hazard Marking and Lighting</b>					
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	220.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	220.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP considers less obvious construction-related hazards.	220.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	220.b(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	220.b(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Red lights meeting the luminance requirements of the State Highway Department are specified.	220.b(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 in high.	220.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Barricades marked with diagonal, alternating orange and white stripes are specified to indicate construction locations in which no part of an aircraft may enter.	220.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	220.b(5)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Markings for temporary closures are specified.	220.b(5)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The provision of a contractor’s representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	220.b(7)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Protection of Runway and Taxiway Safety Areas</b>					
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	221.a(1), 221.c(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM.	221.a(2), 221.c(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	221.c(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open.	221.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	221.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	221.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Grading and soil erosion control to maintain RSA/TSA standards are addressed.	221.c(5)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	221.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	221.c	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	221.d	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	221.e	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Provisions for protection of runway approach/departure areas and clearways are included.	221.f	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
<b>Other Limitations on Construction</b>					
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.	222.a(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP prohibits the use of flare pots within the AOA at any time.	222.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	222.a(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

#### Appendix 4. Construction Project Daily Safety Inspection Checklist

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project.

#### Potentially Hazardous Conditions

Item	Action Required	or	None
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.			<input type="checkbox"/>
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.			<input type="checkbox"/>
Runway resurfacing projects resulting in lips exceeding 3 in (7.6 cm) from pavement edges and ends.			<input type="checkbox"/>
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.			<input type="checkbox"/>
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.			<input type="checkbox"/>
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and approach zones.			<input type="checkbox"/>
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.			<input type="checkbox"/>
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.			<input type="checkbox"/>

Item	Action Required	or	None
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.			<input type="checkbox"/>
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.			<input type="checkbox"/>
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.			<input type="checkbox"/>
Obliterated or faded temporary markings on active operational areas.			<input type="checkbox"/>
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.			<input type="checkbox"/>
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.			<input type="checkbox"/>
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.			<input type="checkbox"/>
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.			<input type="checkbox"/>
Lack of radio communications with construction vehicles in airport movement areas.			<input type="checkbox"/>
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.			<input type="checkbox"/>
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.			<input type="checkbox"/>
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.			<input type="checkbox"/>

Item	Action Required	or	None
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).			<input type="checkbox"/>
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.			<input type="checkbox"/>
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.			<input type="checkbox"/>
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.			<input type="checkbox"/>
Site burning, which can cause possible obscuration.			<input type="checkbox"/>
Construction work taking place outside of designated work areas and out of phase.			<input type="checkbox"/>