# VOLUME III CONSTRUCTION SAFETY PHASING PLAN

FOR

## RUNWAY 16R-34L RECONSTRUCTION PROJECT RENO-TAHOE INTERNATIONAL AIRPORT

NEVADA PUBLIC WORKS PROJECT NO. WA-2019-084 RTIA DESIGN PROJECT NO. R17010A RTIA CONSTRUCTION PROJECT NO. R18015A AIP DESIGN NO. 3-32-0017-103 AIP CONSTRUCTION NO. 3-32-0017-105 & 106 DECEMBER 11, 2019

### FOR BIDDING PURPOSES ONLY









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The Reno-Tahoe Airport Authority (RTAA) has overall responsibility for safety during construction activities at the Reno-Tahoe International Airport and thus has prepared the following Construction Safety Phasing Plan (CSPP) document to address construction safety and phasing for the Runway 16R-34L Reconstruction Project.

The intent of this document is to provide direction on construction safety and phasing elements of this project to the Contractor. **Prior to beginning construction, the Contractor shall prepare a project specific Safety Plan Compliance Document (SPCD) addressing their planned activities in accordance with the requirements of this document, Special Provision No. 11 and FAA Advisory Circular 150/5370-2G.** This Advisory Circular has been included with this document as Attachment A. The Contractor shall also ensure that project documents referenced by attachment are updated to the most current version while preparing the SPCD.

The sections below are referenced from the requirements in AC 150/5370-2G and must be addressed in the Contractor's SPCD.

### I. COORDINATION

### a. CONTRACTOR PROGRESS MEETINGS

Meetings will be conducted by the RTAA and attended by the Contractor throughout the Project and will be used to discuss operational safety, scheduling, testing, quality control, quality acceptance, security, safety, labor requirements, environmental factors as well as other issues as needed as follows:

- A **Preconstruction Conference** will be held prior to the issuance of the Notice-to-Proceed. A sample agenda has been included with this document as Attachment B.
- Weekly Construction Progress Meetings will be held at regularly scheduled times. A discussion of operational safety will be a standing item of discussion. A 'Look Ahead Schedule' of at least 3 weeks duration shall be developed by the Contractor and discussed during the Weekly Construction Progress Meetings. The format of the meetings will be as outlined in Special Provision 8 of the Project Documents, also included with this document as Attachment C
- **Pre-Activity Conferences for Key Project Tasks** are to include at minimum; 1) Access, runway/taxiway closures, and demolition. 2) Electrical installations. 3) Pre-Paving. 4) Pre-Striping. These conferences will be used as needed to coordinate specific task items.
- **Daily Coordination** will be held onsite between the Contractors representative (assumed to be project foreman or project manager) and the Construction Manager. The Construction Manager will coordinate with the RTAA and Airport Operations as necessary.

### b. SCOPE OR SCHEDULE CHANGES

Scope and schedule changes will be discussed as needed during Weekly Construction Progress Meetings. Changes to the project scope or schedule that necessitate revisions to the CSPP shall require review and approval by the RTAA and the FAA.

### c. FAA AIR TRAFFIC ORGANIZATION (ATO) COORDINATION

FAA ATO coordination will be performed by the RTAA for this project.





### II. PHASING

#### a. PHASE ELEMENTS

The Project is located entirely within the airport operations area (AOA) of Reno-Tahoe International Airport and consists of the improvements to Runway 16R-34L, Taxiway A/Runway 34L intersection, and Magnetic Variation (MagVar) pavement marking improvements. The Project work includes demolition, subgrade preparation, grading, placement of asphalt treated permeable base, placement of aggregate subbase, placement of bituminous pavement, placement of Portland cement concrete pavement, signage, airfield electrical, pavement markings, and other miscellaneous items necessary for project completion.

The Project will be completed under multiple phases of work to be completed with various restrictions to allow for aircraft traffic movement around the airfield, pending funding allocation and award of bid.

The following phases of work are included with a brief description of the work associated with each phase. Refer to the Construction documents for detailed scope within each phase of work.

- **Runway 16R-34L Reconstruction.** This phase of work consists of airfield electrical improvements, removal and replacement PCCP of runway pavement and ACP shoulders, pavement markings, runway incursion mitigation (at Taxiway A), and other miscellaneous items. Lastly, this phase includes signage and pavement marking improvements necessary to designate this runway as 17R-35L, as required due to magnetic variation.
- **Runway 16L-34R MagVar.** This phase of work primarily consists of signage and pavement marking improvements necessary to designate this runway as 17L-35R as required due to magnetic variation.
- **Runway 7-25 MagVar.** This phase of work primarily consists of signage and pavement marking improvements necessary to designate this runway as 8-26, as required due to magnetic variation.

The Construction Documents set forth the constraints on the Contractor's operations; the Contractor's SPCD must accommodate these constraints.

Work on the project will proceed with the timelines as indicated within Special Provision 10 of the Project Documents, included as Attachment G.

See Paragraph III in this document for operations affected by the construction activity and Paragraph V in this document for contractor access requirements.

### b. CONSTRUCTION SAFETY DRAWINGS

The Contractor Site Access and Phasing Plans are depicted on Construction Drawings of the Project Documents. The sheets are included as Attachment D of this document.





### III. AREAS AND OPERATIONS AFFECTED BY THE CONSTRUCTION ACTIVITY

### a. IDENTIFICATION OF AFFECTED AREAS

The Project consists of multiple phases of work to be completed with various restricted work areas, as depicted on the Construction Drawings. It is the intention of the Airport Authority to allow as much flexibility as possible, within the constraints shown, for the Contractor to schedule work such that the work can be executed as efficiently as possible while also maintaining airfield safety.

The **Runway 16R-34L Reconstruction Phase** scope of work will be completed within the Runway 16R-34L Runway Safety Area (RSA) and adjacent Taxiway Safety Areas (TSA). In addition, a sub-phase of this portion of work includes work within the Runway 7-25 intersection and RSA. This work will be completed under a full closure of Runway 16R-34L and a limited closure of Runway 7-25. Taxiways A and B, south of Taxiway P, and Taxiway Q will be closed for the duration of this phase. Limited closures will be permitted on Taxiways A, D, F, J, L, N, P between Runway 16L-34R and Taxiway B, as outlined in the Construction Documents, to facilitate construction activities while maintaining necessary taxi routes to accommodate airport operations.

The **Runway 16L-34R MagVar Phase** scope of work will be completed within the Runway 16L-34R RSA and adjacent TSAs. In addition, a sub-phase of this portion of work includes work within the Runway 7-25 intersection and RSA. This work will be completed under a full closure of Runway 16L-34R and a limited closure of Runway 7-25. Limited closures will be permitted on Taxiways A, D, C, F, J, L, N, P between Runway 16R-34L and Taxiway C, as outlined in the Construction Documents, to facilitate construction activities while maintaining necessary taxi routes to accommodate airport operations.

The **Runway 7-25 MagVar Phase** scope of work will be completed within the Runway 7-25 RSA and adjacent TSAs. In addition, a sub-phase of this portion of work includes work within the Runway 16R-34L and 16L-34R RSAs. This work will be completed under a full closure of Runway 7-25 and a limited closures of Runways 16R-34L and 16L-34R. Limited closures will be permitted on Taxiways A, B, C, and L, as outlined in the Construction Documents, to facilitate construction activities while maintaining necessary taxi routes to accommodate airport operations.

The Contractor shall refer to the Contract Documents for closure requirements and allowable closure durations. In some cases, an accelerated work schedule may be required to mitigate operational impacts.

#### ILS Critical Area(s)

The project scope includes construction activities near and within the ILS glideslope critical areas for Runway 16R-34L. Work within the ILS critical area will require an ILS outage.

### b. MITIGATION OF EFFECTS

The constraints included within the Contract Documents include restricted work areas, sequential taxiway closures, to limit the impact to airport operations and improve construction safety. It is critical to airport operations that work within the restricted work areas be pursued to limit impact to airport operations. Therefore, the Contractor shall adhere to the following mitigation measures as required per Special Provision 10 of the Contract Documents.





### **Restricted Work Areas**

The following Restricted Work Areas, as shown in the Construction Drawings, shall be constrained as follows:

- Runway 16R-34L Reconstruction Phase. The Reconstruction Phase of work consists of all work on Runway 16R-34L with the exception of signing and striping modifications.
  - **Restricted Work Area 16R-A (Reference Drawing PH1.2).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-A within the Reconstruction Phase provided Restricted Work Area 16R-D is open and operational. The Contractor must complete all work within Restricted Work Area 16R-A within 45 days.
  - **Restricted Work Area 16R-D (Reference Drawing PH1.3).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-D anytime within the Reconstruction Phase provided Restricted Work Area 16R-A is open and operational.
  - Restricted Work Area 16R-L (Reference Drawing PH1.4). The Contractor must complete all work within Restricted Work Area 16R-L as shown on drawing PH1.4 within 30 days between the dates of August 10, 2020 and September 10, 2020. Restricted Work Area 16R-P must remain open and operational throughout any closure within Restricted Work area 16R-L.
  - **Restricted Work Area 16R-N (Reference Drawing PH1.5).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-N anytime within the Reconstruction Phase provided Restricted Work Area 16R-L and 16R-P are open and operational.
  - **Restricted Work Area 16R-P (Reference Drawing PH1.6).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-P within the Reconstruction Phase provided Restricted Work Area 16R-L and 16R-N are open and operational. The Contractor must complete all work within Restricted Work Area 16R-P within 45 days.
- Runway 16R-34L Signage and Striping Phase. All signing and striping changes shall be completed during the course of the <u>Reconstruction Phase</u> prior to runway opening. Runway may not be opened with revised designations sooner than September 10, 2020.





- Runway 16L-34R Signage and Striping Phase– Signing and striping for this runway may be performed once Runway 16R-34L is opened under its revised designation. Runway may not be opened with revised designations sooner than September 10, 2020. Once signing and striping work on Runway 16L-34R has begun, the work shall progress expeditiously to completion. In no case shall Runway 16L-34R be closed for longer than 30 Calendar days at any point during the contract.
  - **Restricted Work Area 16L-A (Reference Drawing PH2.2).** The Contractor will be allowed to perform items of work within Restricted Work Area 16L-A anytime within the 16L-34R Phase provided Restricted Work Area 16L-D is open and operational.
  - **Restricted Work Area 16L-D (Reference Drawing PH2.3).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-D anytime within the 16L-34R Phase provided Restricted Work Area 16L-A is open and operational.
  - **Restricted Work Area 16L-L (Reference Drawing PH2.5).** The Contractor must complete all work within Restricted Work Area 16L-L within 5 days provided Restricted Work Area 16L-J and 16L-P are open and operational.
  - **Restricted Work Area 16L-P (Reference Drawing PH2.6).** The Contractor will be allowed to perform items of work within Restricted Work Area 16L-P anytime within the 16L-34R Phase provided Restricted Work Area 16L-L is open and operational.
  - Runway 7-25 Signage and Striping Phase All signing and striping changes shall be completed during the course of the <u>Reconstruction Phase</u> prior to Runway 7-25 opening. Runway may not be opened with revised designations sooner than September 10, 2020. Once signing and striping work on Runway 7-25 has begun, the work shall progress expeditiously to completion. In no case shall Runway 7-25 be closed for longer than 30 Calendar days at any point during the contract.
    - **Restricted Work Area 25-A (Reference Drawing PH3.2).** The Contractor must complete all work within Restricted Work Area 25-A within 5 days between the dates of August 10, 2020 and September 10, 2020 provided Restricted Work Area 25-B is open and operational
    - **Restricted Work Area 25-B (Reference Drawing PH3.3).** The Contractor must complete all work within Restricted Work Area 25-B within 5 days between the dates of August 10, 2020 and September 10, 2020 provided Restricted Work Area 25-A is open and operational.
    - **Restricted Work Area 25-C (Reference Drawing PH3.4).** The Contractor must complete all work within Restricted Work Area 25-C within 5 days between the dates of August 10, 2020 and September 10, 2020 provided Restricted Work Area 16L-L are open and operational.





### **Further Mitigations Measures**

Further mitigation of the effects of the Contractor's activities shall be as follows:

- Construction work areas shall be delineated by the Contractor with low-level barricades with steadyburn red lights and candlestick cones with steady-burn red lights as indicated in Paragraph V of this document and Phasing Drawings.
- Construction shall be scheduled and executed by the Contractor to comply with the construction dates and durations listed in Special Provision 10 and the Contract.

Airport Operations will have final approval on matters of operational safety, operational coordination, safety and site access. <u>The Contractor shall at all times immediately follow directions given by Airport</u> <u>Operations or the Construction Manager.</u>

### IV. PROTECTION OF NAVIGATION AIDS (NAVAIDS)

The front course localizers for both IRNO and IAGY are both anticipated to be deactivated during the reconstruction of 16R/34L at any point during the project. This will eliminate the existing sidestep approach to runway 16L.

The LOC BC will remain on in both directions to support conventional departure procedures that require the use of the back course and for those operators that utilize the back course for positive course guidance in their one engine inoperative procedures (in particular for runway 16L).

The Contractor shall coordinate and limit work within the ILS critical area as outlined in Section III.

### V. CONTRACTOR ACCESS

### a. LOCATION OF STOCKPILED CONSTRUCTION MATERIALS

Contractor staging and temporary stockpiling area are shown on Drawings PH1.1, PH2.1, PH3.1 and DM2.1. The Contractor may request permission to park specific equipment and stockpile new materials within the confines of the work area boundaries provided that:

- The requirements of AC 150/5370-2G Paragraphs V and XVII, included as Attachment A in this document, are met, and
- Approval is obtained from the Construction Manager and Airport Operations.





### b. SITE ACCESS AND HAUL ROUTES

Contractor site access and haul routes shall be as indicated on Drawings PH0.1 – PH3.5 and DM2.1 of the Project Drawings which are included with this document under Attachment D.

All access to/from the project area will be coordinated with Airport Operations by the Construction Manager using Contractor provided escorts, including requirements outlined throughout this document.

In all cases the Contractor shall adhere to the following requirements:

- The Contractor will not be allowed to cross Runway 7-25 at any time during this contract without specific approval from the Construction Manager or as allowed during work within the respective Restricted Work Areas.
- Haul routes shall include provisions to prevent inadvertent entry into movement areas.
- **Aircraft operations shall not be impeded at any time.** The Contractor's activities shall be restricted as required so as not to impede airport operations, personnel, and equipment.
- The Contractor shall protect the haul routes from damage. Any damage occurring shall be repaired by the Contractor at no cost to the RTAA.
- The Contractor shall maintain a dedicated full time, fully functioning, manned power vacuum sweeper truck on all paved haul routes at any time work is being conducted using that haul route. Two (2) manned power vacuum sweeper trucks shall be required when Asphalt Treated Permeable Base (P-201S), Asphalt Pavement (P-401/403), or Portland Cement Concrete Pavement (P-501) is being hauled. If multiple haul routes are being utilized simultaneously, two (2) manned power vacuum sweeper trucks will be required on each haul route resulting in four (4) or more vacuum sweeper trucks required at one time.
- The Contractor shall minimize dust on the unpaved portions of the contractor haul route with a dedicated full time manned continuously operated water truck before and during hauling operation in order to prevent dust formation to the satisfaction of the construction manager.
- The Contractor's Flaggers shall be equipped with Contractor supplied hand held ICOM VHF Air Band Transceivers Model IC-A14, or approved equal, capable of monitoring ground and tower frequencies.
- A designated contractor escort will escort all construction vehicles to and from the work area. Workers must remain in the work area during work hours. If more than one work area is active at the same time, there shall be no movement across active airport movement areas (taxiways/apron) without an escort vehicle.
- All contractor personnel shall enter and leave the work area in vehicles equipped with proper warning lights, flagging, and/or vehicle markings per the requirements of AC 150/5370-2G.

The Contractor is cautioned that portions of the haul route are adjacent to or cross active taxiways within the active AOA that will include jet aircraft activity. The Contractor shall be responsible for any damage caused by Foreign Object Debris (FOD) created by his/her operations.

### c. WORK AREA

The work areas are indicated on Drawings PH0.1-PH3.5 of the Project Drawings, included with this document as Attachment D. The Contractor shall adhere to the requirements on these sheets and as follows:

• The Work Area is that area under construction, flagged, barricaded, closed to aircraft and separated from other areas of active aircraft movements, including the staging and stockpile areas. Work Area boundaries shall be as shown on the Drawings and shall be suitably marked by the Contractor with a suitable continuous low profile construction barricade line at all runway and taxiway intersections. At





a minimum, each low profile barricade shall have solid burn red lights attached and spaced no more than 10' apart. The Contractor is required to ensure that each light is functional at the end of each shift of work. Each barricade shall be anchored and/or filled satisfactorily to prevent overturning and/or movement from wind or jet blast. All work will be suspended by the construction manager or airport operations if more than 10% of the lights within a continuous barricade line or (3) three barricade lights in a row are found to be unlit during low light conditions. No work may proceed until the barricade lights are restored to working order and accepted by the construction manager and/or airport operations.

- The type of construction delineators and other barriers to be used shall be submitted for advance approval by the Construction Manager and shall remain the property of the Contractor at the completion of construction.
- Personnel entering work area may be required to execute a tool control form.
- Contractor shall have sanitary facilities, adequate water supply, tools, equipment, and supplies to support work needs and requirements when in the work zones. Escorted activities to retrieve additional materials or staff will not be tolerated or allowed. Inadequate preparation will not be allowed as a basis for extra or additional contract time.
- Contractor shall take all necessary steps to ensure that the work areas are kept free of FOD producing materials including debris and trash. At the end of each shift of work, the Contractor shall clean the work area, reset barricades and fencing disturbed during the shift, and return all equipment, supplies and incidentals to staging area unless otherwise allowed by Airport Operations. Equipment may be left within the work area provided it is properly secured.
- The Contractor shall be equipped with necessary communication equipment to control work zone activities and to communicate with Operation staff.

### d. CONTRACTOR VEHICLES

All Contractor vehicles operating within the Airport Operations Area (AOA) shall adhere to the following:

- Insurance coverage per Special Provision 3 of the Project Documents, included with this document as Attachment E.
- Company name and/or logo on each side of the vehicle (no paper signs) painted on the work vehicle or on magnetic signs with lettering a minimum of 8" high.
- During daylight hours, vehicles must be provided with a 3-foot by 3-foot square flag with a checkered pattern of international orange and white squares each at least 1 foot on each side; or a yellow flashing light that is mounted on the uppermost part of the vehicle. The light must be visible from any direction, day and night, including from the air.
- During nighttime hours from dusk to dawn, and during periods of limited visibility, all vehicles shall be equipped with a flashing yellow light.
- All vehicles entering the work area may be searched. Contractor shall allow additional time to accommodate searches.
- No privately owned vehicles will be allowed within the AOA. FSS

### e. AIRPORT SECURITY

The Contractor shall, at minimum, have his/her Superintendent and Foreman obtain RTIA security badges. At least two badged individuals must be within the designated work area at all times and/or within a one-hundred (100) foot radius of all workmen at all hours.





All vehicle operators who operate vehicles or equipment within the Airport Operations Area (AOA) must have taken and passed the Non-Movement Training Course in order to receive a security badge with driving endorsements.

Airport designated contractor escort personnel must be trained and badged per owner requirements. Each escort personnel shall go through a training course with Airport Operations prior to being accepted for escort duty. Contractor shall allow a minimum of one day for this training. Escort personnel approval shall be at the sole discretion of the RTAA

The Contractor will be required to pay for each individual badged at an approximate cost of \$150 each. The Contractor must allow adequate time (minimum 72 hours) to complete the 10-year background check.

The Contractor shall maintain a full time gate guard on access gates controlled by the Contractor. Gate security shall be maintained as indicated in AC 150/5370-2G Section 209, included as Attachment A in this document. Access gates shall be locked when not manned by a gate guard.

### f. TWO-WAY RADIO COMMUNICATIONS

The Contractor will be required to monitor by radio for aviation activity. All communication will be directly with the Construction Manager. The Contractor shall not utilize any equipment that interferes with RTAA or FAA radio frequencies.

### VI. WILDLIFE MANAGEMENT

### a. TRASH

The Contractor shall carefully control and continuously remove waste or loose material that might attract wildlife or otherwise become foreign object debris (FOD).

#### b. STANDING WATER

The Contractor shall not allow water to pool or otherwise remain standing that might attract wildlife.

### c. TALL GRASS AND SEEDS

Contractor action not required for this item.

#### d. POORLY MAINTAINED FENCING AND GATES

Contractor is responsible to maintain existing fencing and gates along designated haul routes. Any fencing and/or gates damaged by Contractors operations shall be immediately corrected to the approval of the Construction Manager and the RTAA.

### e. DISRUPTION OF EXISTING WILDLIFE HABITAT

The contractor shall confine his operations and vehicle movements to previously disturbed areas.





### VII. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

Waste and loose materials, referred to as FOD, are capable of causing damage to aircraft landing gear, propellers, and jet engines. The Contractor shall not leave or place FOD on or near active aircraft movement areas. Materials tracked onto these areas must be continuously removed during the project. Additionally, smaller items such as paper, plastics, cans, bottles and the like shall never be allowed to be deposited anywhere within the airfield perimeter. <u>The Contractor shall immediately remove or secure waste and loose materials from the work site, haul routes and staging areas.</u>

The Contractor shall maintain a dedicated full time, fully functional manned power vacuum sweeper truck on any paved haul route at any time work is being conducted using that haul route. Furthermore, the Airport Manager may require a dedicated full time, fully functional manned power vacuum sweeper truck if construction debris and/or FOD resulting from Construction activities is found on any active Taxiway or Runway.

A rumble grate shall be placed where construction traffic crosses active taxiways to minimize FOD potential from construction traffic. The Contractor shall perform, at a minimum, weekly cleaning of the rumble grates of accumulated debris.

### VIII. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

All construction activities with the potential to generate or require the use of hazardous materials shall be performed in accordance with all local, state and federal regulatory requirements. All project personnel shall be trained to recognize hazardous wastes on the project and to respond appropriately to ensure safety and protect the environment. In the event of a hazardous material spill, the procedures provided in the Emergency Response section pertaining to notification and response responsibility shall apply.

### IX. NOTIFICATION OF CONSTRUCTION ACTIVITIES

### a. MAINTENANCE OF A LIST OF RESPONSIBLE REPRESENTATIVES/POINTS OF CONTACT

All communication/correspondence shall be through the Construction Manager. It is incumbent on the Construction Manager to contact the involved parties as necessary.

All user groups and tenants affected by the project will be given at least seven (7) calendar days notice prior to construction. All notifications shall be made through the Construction Manager to airport management.

### b. NOTICES TO AIRMEN (NOTAM)

The following NOTAMs are anticipated to be issued as part of this project. Please refer to Section XVIII for additional discussion as it relates to Flight Operations and Aeronautical Information.

### **Construction Activity**

NOTAM issuance will occur when construction activity areas are adjacent to or directly impact aircraft operations. Airport Operations shall issue all Notice to Airmen (NOTAM). It is incumbent on the Contractor to notify Airport Operations, through the Construction Manager, of any activity that may require a NOTAM a minimum of fourteen (14) calendar days in advance of starting such activities.





#### Flight Procedures and Runway Designation

The FAA will issue updated flight procedures, anticipated September 10, 2020, to include new Runway designations associated with Magnetic Variation of the three runways. Airport Operations shall issue any necessary NOTAMs associated with flight procedure updates and runway designations markings. It is anticipated that Runways 16R-34L and 7-25 will reopen as 17R-35L and 8-26, respectfully, on or after September 10, 2020. Once Runway 17R-35L is open; Runway 16L-34R will be closed for signage and pavements marking improvements and reopened as Runway 17L-35R.

### NAVAID

The NOTAM indicating the glideslope outage will be issued by FAA Tech Ops, in coordination with the Airport Operations and Construction Manager. However, this means that no FDC NOTAM will be published altering any of the approach procedure minimums to reflect the GS outage. Additional outreach will be performed with operators ahead of this phase to ensure that no aircraft operator attempts to utilize the full 16R ILS approaches during the GS outage.

### c. EMERGENCY NOTIFICATION PROCEDURES

The emergency telephone number to be used for any reason while on the Airport is:

### 775-328-6999

#### DO NOT CALL 911

### d. COORDINATION WITH EMERGENCY PERSONNEL

Other than for emergency situations, all communication/correspondence with Emergency Personnel shall be through the Construction Manager. It is incumbent on the Construction Manager to contact the involved parties as necessary.

### e. NOTIFICATION TO THE FAA

FAA Form 7460-1 will be necessary for this project. It will be filed by the RTAA prior to construction. It is incumbent on the Contractor to notify the RTAA, through the Construction Manager, of any additional activity that may require a Form 7460-1 a minimum of forty-five (45) calendar days in advance of starting such activities.

### X. INSPECTION REQUIREMENTS

#### a. Twice DAILY (OR MORE FREQUENT) INSPECTIONS

Airport personnel along with the Construction Manager may conduct safety inspections at least twice daily to ensure that the Contractor is complying with the safety plan and that altered construction activities do not create potential safety hazards.

### b. FINAL INSPECTIONS

Airport personnel along with the Construction Manager will conduct an inspection at the completion of each area of work and project and prior to opening to traffic to ensure no safety hazards exist. Refer to Section VII, Foreign Object Debris, above.

### XI. UNDERGROUND UTILITIES





Construction activity will be stopped should interference to existing utilities be caused by Contractor activities. In case of emergency, when the Contractor's personnel believe they may be in an area of existing utilities, the Construction Manager shall be notified immediately.

The safety plan must provide procedures for notifying the RTAA if construction requires shutting off or otherwise disrupting any water line or fire hydrant on the airport. This notification shall be provided with as much advance notice as possible (48 hours at a minimum) and shall be coordinated through the Construction Manager, then directly to the Airport Manager. The Airport Manager will then be responsible to make the appropriate notifications.

The safety plan must provide procedures for notifying the RTAA when construction requires shutting off or otherwise disrupting any airfield lighting or signage circuit. This notification shall be provided with as much advance notice as possible (48 hours at a minimum) and shall be coordinated through the Construction Manager, then directly to the Airport Manager. The Airport Manager will then be responsible to make the appropriate notifications. The Contractor's electrical subcontractor will be required to prepare an electrical work plan that includes provisions for notification of Airport Maintenance, lockout and tag out of affected circuits at the regulator, safely interrupting the circuits while work is being done, performing electrical tests of the completed circuits, notification of the Airport Maintenance when work is completed, and recommissioning the system when it is ready to be energized.

Any trenches or excavations must be in compliance with the safety standards and guidelines set forth in AC 150/5370-2G Chapter 3, included as Attachment A in this document. The Airport Authority will have final authority for inspection and approval of all trenches, excavations, and cover requirements.

General Provision 70-15 and Special Provision No. 12 within the Project Documents address these procedures and are included with this document as Attachments F and H.

Entry into confined spaces shall be in accordance with RTAA procedures, included with this document as Attachment J.

### XII. PENALTIES

The RTAA shall have the responsibility and authority to monitor compliance with all RTAA rules and regulations. Violations of these rules and regulations will be handled in accordance with established procedures and may include verbal or written warnings or other appropriate measures.

In addition to any penalties provided by RTAA resolutions, rules and regulations, state and federal law, the Federal Aviation Regulations, or any other applicable law, rule or regulation, any person violating these rules and regulations may be promptly removed or ejected from the project by or under the authority of the President/CEO, such person may be deprived of the further access to the project pending an appeal of the matter to the Board of Trustees.

In contingencies not specifically covered by these rules and regulations, the President/CEO is authorized to make such decisions as may seem proper according to the circumstances then existing. These decisions may be reviewed at the next regular meeting of the Board of Trustees upon the appeal of any aggrieved person.





### XIII. SPECIAL CONDITIONS

Airport emergencies and closures take precedent over all other activities. If an emergency or closure occurs on Airport property that requires evacuation, stoppage of work, or clearing of work area and returning that area to service, the contractor(s) shall follow the direction of the Airport Manager, Airport Maintenance Personnel, Airport Fire or Airport Police to ensure the safety and protection of all affected by the emergency. The contractor(s) will be notified by the Airport Manager via the Construction Manager as to when work can safely resume.

The Contractor shall be aware that equipment taller than 30-feet will require a Form 7460-1 issued. The Form will be submitted to the FAA as indicated in Paragraph IX of this document. Tall equipment shall have checkered flags attached at the top of the boom for daytime operations, and a flashing yellow light at night.

### XIV. RUNWAY AND TAXIWAY VISUAL AIDS

The Contractor shall adhere to the requirements of AC 150/5370-2G Section 218, Operational Safety on Airports During Construction, included in this document as Attachment A.

The Contractor shall adhere to the requirements of AC 150/5370-2G Section 218, included in this document as Attachment A.

The closure of Runway 16R-34L. 16L-34R and Runway 7-25 will be accomplished with the use of lighted 'X's placed at each end of the runways. The Contractor will be responsible to supply the X's for all runway closures and perform the maintenance on the lighted 'X's and fuel the generators on the equipment at the end of each shift.

The Contractor will be required to coordinate with the Construction Manager to ensure taxiway and/or runway lighting is turned off during the various closures included in the Project Drawings. Contractor may be required to sleeve, cover, or shield airfield lighting per the request of Airport Operations or the Construction Manager for a given closure. In addition, the Contractor may be required to remove and replace pavement markings to accommodate long term closures.

### XV. MARKING AND SIGNS FOR ACCESS ROUTES

Refer to Sections II and III this document.

### XVI. HAZARD MARKING AND LIGHTING

### a. PURPOSE

The Contractor shall adhere to the requirements of AC 150/5370-2G Section 220, included in this document as Attachment A.

### b. EQUIPMENT

Refer to Sections II and V in this document.





### XVII.PROTECTION OF RUNWAY/TAXIWAY SAFETY AREAS

The Contractor shall adhere to the requirements of AC 150/5370-2G Section 221, included in this document as Attachment A.

### XVIII. OTHER LIMITATIONS ON CONSTRUCTION

## a. PRE-CONSTRUCTION FLIGHT OPERATIONS AND AERONAUTICAL INFORMATION

#### **Runway Availability**

The following table outlines the runways, and their characteristics, that will be available prior to the initiation of construction on 16R-34L.

RWY	TORA (FT)	TODA (FT)	ASDA (FT)	LDA (FT)	THL D DISP (FT)	ELEV (FT MSL)	SURFACE	SLOPE	ENTR Y ANGL E (DEG)
16R	11002	11002	11402	10002	999	4414.8	CONC/GRVD	0.00%	90
16 <b>R-D</b> *	9959	9959	10359	N/A			CONC/GRVD		90
34L	11002	11002	11402	10002	989	4414.5	CONC/GRVD	0.00%	90
34L-Q*	9952	9952	10352	N/A			CONC/GRVD		90
34L-P*	8963	8963	9363	N/A			CONC/GRVD		90
16L	9000	9000	9000	9000		4414.8	CONC/GRVD	-0.07%	90
16L-D*	7954	7954	7954	N/A			CONC/GRVD		90
34R	9000	9000	9000	9000		4408.3	CONC/GRVD	0.07%	90
07	5854	5854	6102	5854		4409.2	CONC/GRVD	-0.16%	90
25	6102	6102	6102	6102		4399.6	CONC/GRVD	0.16%	90

\*All intersection departure declared distances are measured from the intersection of the twy centerline and the runway centerline to the DER.

#### Lighting, Marking and NAVAIDs

The following table outlines the lighting and NAVAIDs available prior to the initiation of construction on 16R-34L.

RW Y	MA RKI NG S	ED GE LIG HT S	ALS /R EIL	CL	PAPI (L/R – GPA)	ILS /GS	RW SL/ RG L	RD R
16R	PIR	HIR L	MA LSR	CL	P4L - 3.06	IRN O/3 .10	/R GL	Yes
34L	PIR	HIR L	MA LSR	CL	P4L - 3.54**	IAG Y/3. 54	/R GL	Yes
16L	NPI	HIR L	REI L	CL	P4L - 3.00	/	/R GL	Yes
34R	NPI	HIR L	REI L	CL	P4L - 3.35***	/	/R GL	Yes



Runway 2	16R-34L	Reconsti	4				
Reno-Tak	ioe Inter	national	Airport		WOOD R		GERS
07	NPI	MIR L	REI L	P4L - 3.20	/	/	Yes
25	NPI	MIR L	REI L	P4L - 3.00*	/	/	Yes

\*PAPI Range limited to 2NM \*\*PAPI Range limited to 6NM

\*\*\*PAPI Range limited to 6NM and restricted to 8 degrees visible range right of centerline





### Permanent Obstacles

Prior to the rehabilitation of 16R-34L the Reno Tahoe Airport Authority will complete two enabling projects on the approach end of runway 16L. The changes involve the removal of several trees, located on airport property north of Mill St (prior to the Truckee River) and the lowering of street lights and supporting power poles along Mill St.

In addition to physical obstacle mitigations, RTAA and the design team have engaged in a review of all obstacles along runway 16L-34R to eliminate outdated FAA obstacle references to previous objects which were either removed or eliminated in preceding years.

The following list details those obstacles which are to be removed, lowered or will remain in place prior to the start of construction on 16R/34L:

Туре	AIRNAV	LAT (DD.DD)	LONG (DD.DD)	MSL (FT)	Removed by Airport	Lowered by Airport/NV Energy
POLE	32-021352	39.5167667	-119.7648694	4458		To be lowered to
POLE	32-021360	39.5169361	-119.7658333	4458		To be lowered to 4433ft MSL
POLE	32-021362	39.5169528	-119.7661222	4454		To be lowered to 4434ft MSL
TREE	32-024698	39.4862389	-119.7663444	4435	Х	
POLE	32-054732	39.516775	-119.7661472	4451		To be lowered to 4434ft MSL
BUILDING	32-054751	39.4889194	-119.765875	4413	Х	
TREE	32-054864	39.5185389	-119.7657194	4466	Х	
TREE	32-054865	39.5186111	-119.7658222	4459	Х	
BUILDING	32-054918	39.5140806	-119.765775	4420	Х	
TREE	32-054976	39.5186583	-119.7657833	4451	Х	
TREE	32-054978	39.5186917	-119.7660944	4454	Х	
BUILDING	32-055376	39.5032861	-119.7663139	4410	Х	
POLE	32-055511	39.516975	-119.7661083	4455		To be lowered to 4434ft MSL
POLE	32-055515	39.5170694	-119.7669806	4451		To be lowered to 4434ft MSL
TREE	32-055917	39.5203444	-119.7679139	4459	Х	Х
BUILDING	32-056276	39.5114556	-119.7663056	4420	Х	
TREE	32-056383	39.5192583	-119.7660222	4469	Х	
TREE	N/A	39.51857	-119.765665	4470	Х	
TREE	N/A	39.520003	-119.767235	4449	Х	Х
TREE	N/A	39.518483	-119.765537	4445	X	Х
TREE	N/A	39.518309	-119.765329	4462	Х	Х

The purpose of the obstacle changes are to enable increased aircraft performance capabilities, for aircraft departing runway 34R and improve approach safety for aircraft arriving on 16L.

RTAA will directly coordinate the changes shown above through the FAA ADO, FAA ATO and in coordination with air carriers and their 3<sup>rd</sup> party aircraft performance providers. In the event that the obstacle enhancements do not occur prior to construction start, or if there are changes/deviations from what is shown above, RTAA will notify all FAA and aircraft operator stakeholders as soon as possible.





### **Temporary Obstacles**

The Reno Tahoe Airport Authority has been working closely with the Northern Nevada Sierra Medical Center (NNSMC) group's proposed new Hospital location near the extended runway centerline of runway 16R, approximately 1 nautical mile south of the DER. The proposed site, and facility, will include a 4 story hospital complex which is currently proposed to extend up to a height of approximately 75ft AGL. The original site boundaries were proposed via 7460 and issued the following FAA case numbers:

- ◆ 2018-AWP-5630-OE
- ◆ 2018-AWP-6983-OE
- ◆ 2018-AWP-6984-OE

In these proposals, the building elevation is proposed to reach 4521ft MSL with a 4D accuracy. With this height, and accuracy, the proposed location, height and extent of the facility is not anticipated to impact existing flight procedures, runway design/protection surfaces, or one engine inoperative aircraft performance.

However, the cranes and mobile construction equipment used to erect the facility may pose a limited to significant impact on existing approaches to runway 34L and 34R and pose an impact to one engine inoperative takeoff performance from runway 16R and 16L (for operators using turning procedures and/or the IRNO LOC backcourse).

At this time, the height, extent and duration of temporary construction equipment is not yet known, and NNSMC has not filed a 7460 to accommodate the temporary obstacles. Based on similar projects in other regions, it is reasonable to expect the temporary crane heights could reach up to 150ft AGL with an elevation of 4594ft MSL. The accuracy associated with the crane will be dependent on the project but could either be automatically assumed to be a 4D or greater. Under those scenarios, impacts to aircraft performance for one engine inoperative calculations when departing 16R (or 16L for immediate turn procedures) will likely be impacted along with possible increases to minimums on approaches to 34L.

To avoid unexpected impacts resulting from temporary crane operations, RTAA will continue to work with NNSMC and strongly encourage their group to file temporary crane 7460 information at their earliest convenience with a particular focus on identifying the duration of crane operations, extent of the work area and resulting accuracy code. This information will be shared through RTAA to aircraft operators through typical project related updates and the presence of temporary crane operations will be considered in the ATO SRM for 2020 construction unless otherwise noted.





### Flight Procedures

The Reno Tahoe Airport Authority has worked directly with the FAA to fast track several enhancements to instrument approach procedures on both 16L and 34R prior to the start of construction in 2020. The enhancements are as follows:

- Runway 16L
  - o RNAV (GPS) X RWY 16L, Amdt 2
    - A VNAV line of minimums will be added to this approach procedure providing Baro-Aided VNAV for aircraft that are either not capable of the RNP approaches or do not have WAAS (LPV) capabilities
    - Updating circling criteria to latest TERPS 8260.3D guidance
    - Changing the Feeder between FMG and ROXJO to add a new waypoint aligned along the feeder between CAXIL and ROXJO
    - Anticipated minimums are anticipated to be better than 800 2
  - o RNAV (RNP) Y RWY 16L, Amdt 2
    - A permanent NOTAM will be applied to this procedure to eliminate the nighttime operations restriction currently imposed on this flight procedure
    - The permanent NOTAM will be in effect until the formal update to the procedure can be achieved during the MAGVAR update
    - This will enable all CATS to use this RNP procedure at nighttime achieving minimums of 377 1 1/8 for RNP 0.12 and 712 2 <sup>1</sup>/<sub>2</sub> for RNP 0.30
    - There are no other changes to waypoints, altitudes or temperature restrictions anticipated
- Runway 34R
  - RNAV (GPS) X RWY 34R, Amdt 2
    - The procedure will be updated to add a VNAV line of minimums to the procedure to provide Baro-VNAV vertical guidance
    - The minimums, descent angle and temperature limitations associated with the update are not yet known
    - The VNAV minimums are not currently anticipated to be better than the existing LNAV minimums of 892 – 3 for CAT D

RTAA will continue to track the progress of flight procedure development for publication on 26MAR20 and notify FAA ATO and Air Carrier stakeholders regarding any updates or changes to the flight procedures on either 16L or 34R as information is shared from FAA Western Flight Procedures Team.

### Flight Planning Considerations

The primary change that will be in place for flight planning and flight operations considerations, are the mandated updates to ADS-B Out equipage for aircraft operations in Class C airspace, in accordance with current rule FAR 91.225. There are no negative anticipated outcomes on flight planning, or flight operations, anticipated to occur from this rule which will take effect in January of 2020. However, ATC does have the ability to permit aircraft that do not yet conform to the ADS-B Out standards prescribed in FAR 91.227 to operate in Class C airspace on a case by case basis.

In addition to ADS-B requirements, RNO is, and will continue to be, a 121.445 airport requiring either special aircraft and flight crew training or airport briefing information pages prior to operating into or out of the airport under FAR 121 scheduled operations. There are no anticipated changes to 121.445 Airport Qualification "pages" (sometimes referred to as Airport Qual Pages) prior to the start of construction that would introduce new hazards to the overall construction plan.





Then enabling project to update the FAA and 3<sup>rd</sup> party obstacle definitions to match the removed, mitigated and outdated definitions is not anticipated to permanently change air carrier perception of payload/range capabilities when operating to or from RNO. In situations when operators utilize 34R for departures, there will be a performance improvement, over existing conditions, for all aircraft types with the most significant enhancements occurring on A320, B737 and larger equipment types. This may alleviate certain operators requirements to only utilize 16L during periods when 16L-34R is closed in order to preserve maximum payload on routes to the Northeastern US.

RTAA will coordinate with all FAA and air carrier stakeholders prior to construction start to ensure that the obstacle mitigations are applied to the extent that air carriers can take advantage of the updated information for flight planning purposes.

### **Overall Operations and Anticipated Weather Conditions During Construction**

The following series of tables describes some of the anticipated weather conditions, expressed by month and hour, that could influence aircraft operational performance, direction of operations and ability to successfully execute an instrument approach to land.

#### Performance Critical Weather Conditions: Temperature and Pressure

The following two tables depict the anticipated temperature, expressed in degrees C, and pressure, expressed as a QNH in inches of Mercury. Both tables are color coded to represent hours of the day during which the likelihood of a performance variable may have an increasingly adverse impact with green cells indicating no impact, white cells indicate a modest impact and yellow to orange cells indicating a moderate impact. All aircraft operators are expected to utilize temperature, and local pressure, information in combination with the field elevation to adjust their anticipated performance and instrumentation.

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	00:00	4.4	6.7	11.1	13.9	18.3	23.3	26.1	25	21.1	14.4	8.63	5.09
	01:00	3.9	5.95	10	12.8	17.2	22.2	25	23.3	20	13.9	8.3	4.4
	02:00	3.3	5	9.225	11.7	16.1	20.6	23.9	22.2	18.9	12.8	7.8	4.4
	03:00	3.3	4.4	8.3	- 11.1	15	19.4	22.8	21.7	17.8	12.2	6.7	3.9
	04:00	2.8	5	8.9	10.6	13.9	18.3	21.7	20.6	16.7	12.15	7.2	3.9
	05:00	2.8	3.9	7.2	10	13.9	17.8	21.1	19.4	16.1	- 11.1	7.2	3.9
	06:00	2.8	3.3	7.8	9.4	12.8	16.7	20	18.9	15	10.6	6.7	2.8
	07:00	2.8	3.3	7.2	9.4	13.3	18.3	20.6	18.9	15	10.6	6.1	2.975
	08:00	2.8	3.9	7.8	- 11.1	15.675	20.6	22.2	20.6	16.7	- 11.1	7.2	3.3
	09:00	4.4	6.13	9.4	13.3	18.3	23.125	25	23.3	19.4	13.3	9.4	4
e	10:00	6.1	9.76	11.7	15.6	21.1	26.1	27.8	25.6	22.2	15.6	11.1	6.1
Tim	11:00	7.85	- 11.1	13.78	18.3	23.9	28.9	30.6	28.9	25.21	17.8	13.9	7.8
8	12:00	9.4	13.3	15.975	20.6	25.6	30.6	32.2	31.1	27.8	20.6	15.6	9.4
Ľ	13:00	11.13	15	17.8	22.2	26.7	32.2	34.4	33.3	30	22.8	17.2	11.1
	14:00	12.8	16.1	19.4	22.8	27.59	33.3	35.6	34.4	31.64	24.4	18.9	12.2
	15:00	13.3	16.1	20	23.3	28.3	33.9	36.1	35	32.2	25	19.4	12.65
	16:00	13.3	17.2	20.6	23.57	28.9	33.9	36.7	35.6	32.2	25	18.9	12.2
	17:00	11.49	15	20	23.3	28.3	33.9	36.1	35	32.2	25	16.7	10
	18:00	9.4	13.3	18.9	22.2	27.2	32.8	35	33.9	31.1	23.3	15	8.9
	19:00	8.3	11.7	17.2	21.1	26.1	31.7	33.9	32.2	29.4	21.1	13.3	7.8
	20:00	7.2	10.6	15.6	19.4	24.4	30	31.7	30	27.2	19.4	12.2	7.2
	21:00	6.1	9.4	13.975	17.8	22.77	27.8	30	28.9	25.6	18.3	10.6	6.7
	22:00	5.6	8.9	13.3	16.7	21.1	26.7	28.9	27.2	24.4	17.2	10	6.7
	23:00	4.4	7.2	11.7	15.6	20.6	25.6	27.8	26.1	22.8	15	8.9	5

#### 85% Likelihood OAT (Degrees C)





### 15% Likelihood QNH (inHg)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
00:00	29.96	29.87	29.85	29.80	29.81	29.79	29.82	29.82	29.82	29.86	29.87	29.90
01:00	29.97	29.88	29.84	29.78	29.81	29.78	29.82	29.83	29.82	29.86	29.87	29.87
02:00	29.97	29.85	29.84	29.80	29.80	29.78	29.82	29.82	29.82	29.86	29.87	29.87
03:00	29.99	29.84	29.83	29.79	29.80	29.79	29.82	29.83	29.83	29.85	29.86	29.87
04:00	29.98	29.85	29.82	29.79	29.81	29.79	29.83	29.83	29.83	29.85	29.86	29.92
05:00	29.97	29.85	29.85	29.79	29.81	29.79	29.84	29.84	29.82	29.85	29.87	29.87
06:00	29.98	29.88	29.83	29.79	29.81	29.81	29.85	29.85	29.85	29.87	29.87	29.90
07:00	29.98	29.88	29.85	29.80	29.83	29.82	29.86	29.87	29.86	29.89	29.90	29.93
08:00	29.99	29.89	29.88	29.82	29.83	29.82	29.87	29.88	29.87	29.90	29.92	29.94
09:00	29.97	29.89	29.88	29.82	29.83	29.82	29.87	29.87	29.87	29.90	29.92	29.94
10:00	29.99	29.86	29.87	29.82	29.82	29.80	29.85	29.85	29.86	29.90	29.94	29.91
11:00	29.96	29.87	29.88	29.81	29.81	29.79	29.84	29.85	29.85	29.91	29.91	29.90
12:00	29.95	29.86	29.83	29.80	29.78	29.78	29.82	29.83	29.84	29.88	29.89	29.88
13:00	29.93	29.83	29.84	29.79	29.77	29.76	29.80	29.80	29.82	29.87	29.87	29.86
14:00	29.92	29.85	29.83	29.78	29.76	29.75	29.77	29.78	29.80	29.85	29.86	29.87
15:00	29.91	29.83	29.82	29.77	29.75	29.74	29.76	29.77	29.77	29.83	29.86	29.84
16:00	29.91	29.82	29.80	29.76	29.75	29.74	29.75	29.75	29.77	29.83	29.86	29.85
17:00	29.93	29.84	29.84	29.76	29.76	29.74	29.76	29.75	29.75	29.83	29.87	29.87
18:00	29.93	29.86	29.81	29.76	29.76	29.74	29.75	29.76	29.78	29.84	29.87	29.88
19:00	29.96	29.87	29.84	29.77	29.77	29.75	29.75	29.77	29.79	29.87	29.87	29.87
20:00	29.96	29.86	29.84	29.78	29.79	29.76	29.77	29.78	29.81	29.88	29.87	29.89
21:00	29.96	29.87	29.85	29.79	29.80	29.77	29.79	29.80	29.82	29.88	29.87	29.92
22:00	29.94	29.88	29.85	29.80	29.81	29.79	29.81	29.82	29.83	29.87	29.89	29.91
23:00	29.98	29.85	29.87	29.80	29.81	29.80	29.82	29.82	29.82	29.88	29.88	29.92

Local Time





### Likelihood of Flight Operations During South Flow

It is anticipated that RNO will operate in a South Flow during the late night, morning and lunchtime periods on a near daily basis.

The need to operate in a South Flow is driven by three factors:

- 1. Winds of any magnitude blowing from the south, south-southeast and south-southwest
- 2. Calm winds favoring aircraft performance for departures on the 16s
- 3. Low ceiling and/or visibility conditions with tailwinds less than or equal to 10 Knots

When examining these three conditions, the following table expresses the likelihood of operations in South Flow by hour and month. The steady decrease in likelihood occurring in the afternoon and early evening between March and September is consistent with the local weather phenomenon known as the Washoe Zephyr which generates strong, gusting, wind conditions from the west, west-northwest, northwest and north-northwest.

Likelihood of Runway	16 L/R Capable	(Headwind >= -10 Kts,	Crosswind <= 20 Kts)
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		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	00:00	99%	98%	97%	93%	94%	93%	97%	97%	98%	98%	97%	99%
	01:00	98%	98%	97%	93%	96%	97%	96%	98%	98%	99%	98%	96%
	02:00	98%	98%	96%	93%	95%	98%	99%	99%	99%	98%	97%	97%
	03:00	98%	99%	98%	96%	98%	98%	99%	100%	100%	98%	97%	98%
	04:00	97%	98%	98%	95%	98%	98%	99%	100%	99%	98%	98%	98%
	05:00	99%	99%	97%	93%	97%	99%	100%	100%	97%	98%	98%	95%
	06:00	98%	99%	96%	96%	97%	97%	100%	100%	99%	99%	97%	97%
	07:00	99%	98%	97%	95%	97%	98%	100%	100%	100%	97%	97%	97%
	08:00	99%	97%	97%	94%	96%	98%	100%	100%	100%	99%	97%	96%
	09:00	98%	96%	96%	93%	95%	95%	100%	100%	99%	99%	96%	97%
e	10:00	100%	96%	96%	93%	93%	97%	100%	100%	100%	98%	95%	94%
Tim	11:00	96%	96%	91%	90%	93%	97%	100%	99%	99%	98%	95%	93%
ocal	12:00	96%	92%	90%	88%	87%	96%	99%	99%	98%	95%	95%	94%
Ľ	13:00	96%	93%	91%	87%	84%	92%	98%	98%	97%	96%	91%	92%
	14:00	92%	92%	89%	85%	85%	87%	90%	95%	97%	93%	93%	93%
	15:00	92%	92%	86%	83%	80%	85%	90%	91%	95%	93%	90%	92%
	16:00	91%	91%	85%	80%	78%	81%	81%	90%	92%	91%	94%	91%
	17:00	97%	90%	87%	79%	69%	80%	77%	88%	88%	91%	91%	92%
	18:00	97%	93%	85%	78%	76%	77%	80%	87%	87%	90%	94%	94%
	19:00	98%	94%	86%	78%	76%	74%	78%	84%	88%	93%	96%	96%
	20:00	98%	96%	92%	82%	82%	78%	77%	82%	89%	95%	95%	96%
	21:00	97%	97%	93%	89%	83%	87%	76%	81%	92%	95%	97%	96%
	22:00	97%	97%	96%	89%	87%	88%	82%	88%	96%	94%	98%	97%
	23:00	98%	97%	97%	93%	93%	91%	90%	94%	97%	97%	97%	98%

On an annual basis, RNO experiences IFR conditions more frequently when operating in south flow. However, the overall construction project has been phased to occur during hours and months of the year when the likelihood of the airport operating below 1000ft and 3 mile minimums is less than 0.39%. The likelihood of operating below 1000ft and 3 mile minimums in south flow during the project is also less than 0.39%.





### Likelihood of Operating Below LOC Sidestep Minimums (1000ft - 3 Mile)

	JAN	FEB	MAR	ΔPR	ΜΔΥ	JUN	JUL	AUG	SEP	OCT	NOV	DEC
00.00	2.57%	281%	1.38%	0.21%	0.00%	0.61%	0.32%	0.00%	0.30%	0.00%	0.87%	3.70%
01:00	371%	2.01%	0.99%	0.20%	0.00%	0.34%	0.86%	0.03%	0.06%	0.00%	0.68%	315%
02:00	4.06%	3.01%	1 41%	0.20%	0.00%	0.94%	0.59%	0.00%	0.00%	0.00%	0.89%	2.53%
02:00	4.00%	2.25%	1.40%	0.40%	0.30%	0.75%	0.32%	0.00%	0.00%	0.09%	0.07%	1 13%
03.00	7 107	5.047	1.00%	0.71%	0.32%	0.37 %	0.52%	0.00%	0.00%	0.07%	1.107	9.13%
04.00	7.40%	0.0777	1.07 %	0.00%	0.17%	0.00%	0.00%	0.00%	0.55%	0.34%	0.0577	2.40%
05:00	5./9%	2.8/%	2.49%	0.18%	0.40%	0.60%	0.50%	0.00%	0.46%	0.44%	0.35%	2.6/%
06:00	5.76%	4.10%	1.05%	0.43%	0.22%	1.03%	0.45%	0.00%	0.21%	0.16%	0.37%	3.49%
07:00	6.12%	4.15%	2.05%	0.43%	0.19%	0.77%	0.95%	0.21%	0.08%	0.19%	0.29%	2.71%
08:00	6.54%	4.54%	1.64%	0.50%	0.24%	1.09%	0.65%	0.56%	0.00%	0.32%	0.70%	5.15%
09:00	6.99%	3.73%	2.09%	0.68%	0.11%	0.92%	0.86%	0.47%	0.00%	0.18%	0.64%	3.97%
10:00	6.76%	5.12%	1.84%	0.45%	0.03%	0.57%	0.39%	0.71%	0.04%	0.30%	1.95%	3.83%
11:00	4.69%	2.55%	1.48%	0.40%	0.08%	0.83%	0.99%	1.23%	0.00%	0.47%	0.78%	3.84%
12:00	3.05%	1.92%	1.05%	0.51%	0.00%	0.44%	0.29%	1.42%	0.02%	0.35%	0.49%	3.35%
13:00	1.96%	2.91%	0.98%	0.07%	0.23%	0.32%	0.31%	1.57%	0.00%	0.36%	0.33%	3.15%
14:00	1.36%	2.52%	1.23%	0.04%	0.00%	0.56%	0.03%	0.91%	0.05%	0.24%	0.70%	2.61%
15:00	1.90%	2.20%	1.20%	0.67%	0.00%	0.00%	0.14%	1.10%	0.89%	0.47%	0.66%	2.93%
16:00	2.08%	4.90%	1.59%	0.12%	0.00%	0.00%	0.36%	0.95%	0.49%	0.01%	1.27%	3.71%
17:00	1.96%	2.89%	1.01%	0.03%	0.18%	0.06%	0.44%	1.12%	1.28%	0.34%	1.04%	2.44%
18:00	1.83%	3.95%	0.82%	0.22%	0.20%	0.30%	0.30%	1.13%	1.14%	0.27%	0.44%	2.30%
19:00	1.62%	3.25%	0.88%	0.08%	0.05%	0.03%	0.12%	1.10%	1.37%	0.54%	0.36%	1.76%
20:00	2.41%	2.99%	0.64%	0.18%	0.00%	0.53%	0.52%	0.70%	1.52%	0.21%	0.35%	3.11%
21:00	2.41%	1.32%	1.57%	0.11%	0.24%	0.29%	0.46%	0.29%	0.38%	0.22%	0.42%	2.89%
22:00	2.44%	2.87%	1.47%	0.21%	0.09%	0.28%	0.12%	0.15%	0.68%	0.61%	0.28%	5.22%
23:00	3.14%	2.76%	1.17%	0.25%	0.05%	0.05%	1.44%	0.00%	0.46%	0.00%	0.34%	3.36%

Lo cal Time





#### Likelihood of Flight Operations During North Flow

It is anticipated that RNO will operate in a North Flow during the afternoon and late evening hours on a near daily basis. The need to operate in a North Flow is driven by surface and terminal area winds which typically blow from the west, west-northwest, northwest and north-northwest. In the springtime, the winds can be particularly turbulent when operating in this flow creating an increased reliance for flight crews to use one or more means of vertical guidance in support of stabilized approach operations.

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	00:00	97%	92%	91%	97%	98%	99%	99%	99%	99%	96%	94%	94%
	01:00	97%	92%	91%	95%	99%	99%	100%	99%	99%	98%	95%	95%
	02:00	98%	91%	91%	97%	99%	100%	100%	99%	99%	96%	96%	94%
	03:00	97%	94%	92%	97%	99%	100%	99%	100%	99%	98%	95%	95%
	04:00	98%	95%	91%	97%	99%	99%	100%	100%	99%	97%	97%	96%
	05:00	98%	94%	94%	97%	98%	99%	100%	100%	100%	96%	94%	95%
	06:00	97%	94%	93%	96%	99%	98%	100%	99%	99%	97%	95%	96%
	07:00	97%	94%	92%	96%	99%	98%	100%	100%	99%	98%	96%	96%
	08:00	96%	95%	92%	97%	99%	98%	99%	99%	99%	97%	95%	96%
	09:00	96%	95%	91%	94%	96%	97%	99%	99%	98%	95%	94%	95%
e	10:00	94%	93%	89%	94%	94%	96%	99%	99%	96%	96%	94%	96%
Lin	11:00	94%	93%	87%	92%	91%	94%	98%	96%	92%	94%	92%	95%
cal	12:00	94%	92%	85%	88%	88%	90%	97%	92%	91%	94%	90%	95%
Ľ	13:00	93%	89%	82%	88%	89%	87%	93%	90%	89%	90%	89%	95%
	14:00	93%	87%	82%	87%	88%	84%	88%	83%	85%	90%	91%	93%
	15:00	92%	87%	80%	85%	89%	85%	86%	82%	83%	88%	91%	93%
	16:00	93%	85%	78%	83%	86%	86%	89%	84%	85%	91%	91%	92%
	17:00	94%	89%	84%	88%	95%	91%	92%	91%	88%	91%	94%	94%
	18:00	94%	90%	83%	87%	92%	93%	91%	92%	93%	93%	95%	94%
	19:00	96%	93%	87%	90%	93%	95%	93%	96%	96%	95%	94%	94%
	20:00	96%	93%	91%	93%	95%	95%	97%	96%	97%	97%	96%	95%
	21:00	96%	94%	91%	94%	96%	97%	98%	97%	98%	96%	96%	95%
	22:00	97%	91%	92%	96%	98%	99%	98%	97%	98%	97%	98%	95%
	23:00	96%	92%	93%	96%	97%	99%	100%	99%	98%	95%	95%	95%

Likelihood of Runway 34 L/R Capable (Headwind >= -10 Kts, Crosswind <= 20 Kts)

On an annual basis, RNO experiences IFR conditions more frequently when operating in south flow than in north flow. However, the overall construction project has been phased to occur during hours and months of the year when the likelihood of the airport operating below 1000ft and 3 mile minimums is less than 0.39%. The likelihood of operating below 1000ft and 3 mile minimums in north flow during the project is also less than 0.39%.





# b. 16R-34L RECONSTRUCTION PHASE FLIGHT OPERATIONS AND AERONAUTICAL INFORMATION

#### **Runway Availability**

The following table illustrates the runways, intersection and departures that will be available in this phase

RWY	TORA (FT)	TODA (FT)	ASDA (FT)	LDA (FT)	THL D DISP (FT)	ELEV (FT MSL)	SURFACE	SLOPE	ENTR Y ANGL E (DEG)
16L	9000	9000	9000	9000		4414.8	CONC/GRVD	-0.07%	90
16L-D*	7954	7954	7954	N/A			CONC/GRVD		90
34R	9000	9000	9000	9000		4408.3	CONC/GRVD	0.07%	90
07	5854	5854	6102	5854		4409.2	CONC/GRVD	-0.16%	90
25	6102	6102	6102	6102		4399.6	CONC/GRVD	0.16%	90

\*All intersection departure declared distances are measured from the intersection of the twy centerline and the runway centerline to the DER.

#### Lighting, Marking and NAVAIDs

The following table outlines the lighting and NAVAIDs available during construction work on 16R/34L.

RWY	MARKINGS	EDGE	ALS/REIL	CL	PAPI	ILS/GS	RWSL/RGL	RDR
		LIGHTS			(L/R - GPA)			
16 <b>R</b>						IRNO		
						LOC BC/		
34L						IAGY LOC		
						BC/		
16L	NPI	HIRL	REIL	CL	P4L - 3.00	/	/RGL	Yes
34R	NPI	HIRL	REIL	CL	P4L – 3.35**	/	/RGL	Yes
07	NPI	MIRL	REIL		P4L - 3.20	/	/	Yes
25	NPI	MIRL	REIL		P4L - 3.00*	/	/	Yes

\*PAPI Range limited to 2NM

\*\*PAPI Range limited to 6NM and restricted to 8 degrees visible range right of centerline

The front course localizers for both IRNO and IAGY are both anticipated to be deactivated during the reconstruction of 16R-34L at any point during the project. This will eliminate the existing sidestep approach to runway 16L.

The LOC BC will remain on in both directions to support conventional departure procedures that require the use of the back course and for those operators that utilize the backcourse for positive course guidance in their one engine inoperative procedures (in particular for runway 16L).





### **Temporary Obstacles**

To support the safety of construction crews, and their equipment, working on 16R-34L, the blastpads and along the MALSR light stations, the design team will issue 7480s identifying the extents within which personnel and equipment up to a height of 30ft AGL will be operating during the reconstruction project.

It is anticipated that this 7480 filing will be followed up with both an airport issued NOTAM, identifying precise locations and duration of equipment activity, and possible low-close in obstacle notes added via NOTAM to the existing departure procedures from 16L and 34R.

Temporary vehicles operating along the runway 34L blast pad will also have a potential impact on one engine inoperative takeoff performance for those operators that depart runway 16L and perform an immediate right turn to align with the extended runway centerline of runway 16R and the IRNO LOC BC. Those operators affected by the temporary obstacles will most likely take a reduction in takeoff weight to clear the obstacles or will need to consider redesigning their OEI procedures.

RTAA and the design team will coordinate the timing and extent of men and equipment operating at or south of the 34L threshold with operators to ensure that accurate accountability is applied by operators when assessing their takeoff performance calculations from 16L. This may be supported by airport created NOTAMs and d-ATIS broadcasts identifying the presence of men and equipment near the 34L threshold/blastpad.

### Aeronautical Charting

Temporary construction charts will be requested from the FAA Airport Construction Advisory Council and are anticipated to be in effect via web-delivery, NOTAM link and via direct distribution from RNO.

Temporary 3<sup>rd</sup> party construction diagrams are anticipated for publication by Jeppesen, Lido and NAVBLUE. Coordination for updates to their charting products will be initiated no later than 60 days prior to the start of construction, however, the 3<sup>rd</sup> party charted products are not anticipated to present hard phasing of specific taxiway outages. Instead, it is anticipated that commercial charting providers will update their products to reflect the overall project scope and effected runway/taxiways while drawing users attention to NOTAMs and airport contacts for further details.

### NAVDATA, TAWS and Moving Map Data

There are no anticipated changes to any of the FAA or 3<sup>rd</sup> party generated data products supporting ARINC 424, 816 or TAWS databases during this phase of the rehabilitation project. Outreach will be performed ahead of the project with the major providers to ensure that they have the ability to react to specific phases per their FAA LOAs.

### NOTAMs

The decision to keep the existing FAA aeronautical charting products unchanged will enable the airport and FAA to apply textual NOTAMs to indicate specific runway/taxiway closures as they occur.

The NOTAM indicating LOC frontcourse outage will appear both as a flight procedure NOTAM disabling the ILS approaches and LOC sidestep approach. RTAA and the design team will not request a NAVAID oriented NOTAM to be issued, in order to prevent confusion surrounding the continued operation of the LOC backcourse for departures.





### Flight Planning Considerations

During construction work on 16R-34L the loss of any ILS approaches will need to be considered by all IFR flight planned operations into KRNO. While the likelihood of operating during weather conditions that would dictate the need for approaches that provide minimums less than those available on 16L-34R is remote, operators of non-RNP capable aircraft will most likely plan to carry additional fuel to counter the slight increased likelihood of diversions due to weather conditions.

The use of KRNO as an alternate for other airports in the region will also be diminished during the ILS outage to most operators as alternate weather determination at airports without an ILS is higher than those with one. This will have the potential benefit of decreasing unplanned or emergency operations which are diverted from other major airports to KRNO (like SMF).

### Flight Operations During South Flow

During the rehabilitation project, it is anticipated that RNO will operate in a South Flow during the late night, morning and lunchtime periods on a near daily basis.

• South Flow Arrivals. All existing arrivals are anticipated to be available during this phase of the project to support south flow operations.

There are no changes to arrival procedures that are either anticipated to occur during the project, or would be necessary to accommodate the loss of runway 16R - 34L. Additionally, there is no requirement for IFR flight operations to file an arrival specifically associated with a navigational mode, or initial approach fix, that is specific to runway 16L - 34R when compared to runway 16R - 34L. Therefore, there are no anticipated impacts to arrivals during south flow.

• South Flow Approaches. Approaches in south flow will be limited to landings on runway 16L, with occasional circle to land opportunities for smaller aircraft on runway 07 during construction phases when the runway is open.

The loss of the IRNO LOC front course will eliminate the 16L LOC Sidestep option, listed on the 16R ILS approach plate, from being available for approaches to 16L. However, all other approach procedures to 16L will be available. Furthermore, all upcoming changes to instrument approach procedures at KRNO are scheduled to occur prior to the beginning of construction on 26MAR20.

There are no anticipated lighting, VGSI or NAVAID losses on runway 16L - 34R or 07 - 25 during the construction on 16R - 34L.

There are no anticipated exit taxiway closures which would prevent operators from utilizing the full length of runway 16L or 07 for landing.

Table 1 – Approach Options During South Flow – Runway 16R – 34L Reconstruction Phase presents the approach procedures that are anticipated to be available during this phase of the project for runways 16L and 07. Individual procedures are presented as combinations for each runway, procedure name, approach category, minimums (ceiling and visibility), navigation aid or method (NAV) and any restrictions that must be observed. All minimums are presented with the assumption that the VGSI will be operational on runway 16L and runway 07.





The lowest approach minimums available during this period are summarized as follows:

- All LPV capable operators RNAV (GPS) X 805ft / 2 <sup>3</sup>/<sub>4</sub> mi
- All RNAV capable operators RNAV (GPS) X Amdt 2 800ft / 2 mi (lower vis for A and B)
- All RNP 0.12 capable operators RNAV (RNP) Y 377ft / 1 1/8 mi
- All RNP 0.3 capable operators RNAV (RNP) Y 712ft / 2<sup>1</sup>/<sub>2</sub> mi

Limited operational impacts may be encountered in the unusual circumstance that weather minimums, either on the field, or on the final approach to runway 16L, dictate a need for continued approach guidance down to ILS minimums.

• South Flow Departures. Departures during south flow will take place primarily from 16L. Departure operations will be supported by all existing SID, ODP and VCOA with no anticipated NAVAID or lighting outages that would negatively impact departures. The IRNO LOC backcourse will be available for conventional SID/DP and for operator OEI procedures. The ODP and VCOA procedures below reflect anticipated updates scheduled to take effect in January of 2019.

There are no anticipated entry taxiway closures which would prevent operators from accessing runway 16L or 07 at its full length.

Runway 16L will likely be the preferred departure runway during this phase of construction on 16R - 34L due to a slightly better one engine inoperative obstacle clearance capability when compared to other runways available during the phase. Moderate payload range impacts are anticipated for afternoon and early evening departures, during periods when the OAT is above 32C, which could trigger delays while flight crews wait for cooler temperatures, favorable wind conditions or adverse weather conditions to subside.

Table 2 – Departure Options During South Flow – Runway 16R – 34L Reconstruction Phase presents the departure procedures that are anticipated to be available during this phase of the project for runways 16L and 07. Individual procedures are presented as combinations for each runway, procedure name, minimums (ceiling and visibility), navigation aid or method (NAV) and any restrictions that must be observed.

There are no anticipated changes to departure procedures that will be required to accommodate the closure of runway 16L - 34R and operators will not have to modify their flight plan filing to accommodate a particular navigation mode for departures specifically from 16L. Because these procedures are essentially identical to those in use by operators before and after the construction project, there are no anticipated departure impacts during south flow for this system state.

**North Flow Operations.** During the rehabilitation project, it is anticipated that RNO will operate in a North Flow during the afternoon and late evening hours on a near daily basis. The need to operate in a North Flow is driven by surface and terminal area winds which typically blow from the west, west-northwest, northwest and north-northwest. In the springtime, the winds can be turbulent when operating in this flow, and flight crews will rely on existing, and updated, vertically guided approaches to runway 34R to support stabilized approach operations.

On an annual basis, RNO experiences IFR conditions more frequently when operating in south flow than in north flow. However, the overall construction project has been phased to occur during hours and months of the year when the likelihood of the airport operating below 1000ft and 3 mile minimums is less than 0.39%. The likelihood of operating below 1000ft and 3 mile minimums in north flow during the project is also less than 0.39%.





• North Flow Arrivals. All existing arrivals are anticipated to be available during this phase of the project to support north flow operations.

There are no changes to arrival procedures necessary to accommodate the loss of runway 16R - 34L. Additionally, there is no requirement to file an arrival specifically associated with a navigational mode, or initial approach fix, that is specific to runway 16L - 34R when compared to runway 16R - 34L. Therefore, there are no anticipated impacts to arrivals during this system state in north flow.

• North Flow Approaches. Approaches in north flow will be limited to landings on runway 34R, with occasional circle to land opportunities for smaller aircraft on runway 25.

There are no anticipated lighting, VGSI or NAVAID losses on runways 16L - 34R or 07 - 25 during this phase. Furthermore, all upcoming changes to instrument approach procedures at KRNO are currently scheduled to occur prior to the start of construction on runway 16R - 34L.

There are no anticipated exit taxiway closures which would prevent operators from utilizing the full length of runway 34R or 25 for landing. Although runway 34L is the preferred landing runway for aircraft performance reasons, landing on runway 34R is relatively similar (due to lower missed approach climb gradient requirements) and there are no anticipated aircraft performance impacts during north flow anticipated to occur during this phase of construction.

Table 3 – Approach Options During North Flow – Runway 16R – 34L Reconstruction Phase presents the approach procedures that are anticipated to be available during this phase of the project for runways 34R and 25. Individual procedures are presented as combinations for each runway, procedure name, approach category, minimums (ceiling and visibility), navigation aid or method (NAV) and any restrictions that must be observed. All minimums are presented with the assumption that the VGSI will be operational on runway 34R and runway 25.

The lowest approach minimums available during this period are summarized as follows:

- All RNP 0.15 capable operators RNAV (RNP) Z 765ft / 2 <sup>3</sup>/<sub>4</sub> mi
- All LPV capable operators RNAV (GPS) Y 865ft / 2 <sup>1</sup>/<sub>2</sub> mi (excludes CAT D)
- All RNAV capable operators RNAV (GPS) X 892ft / 3 mi (lower vis for A and B)
- All RNP 0.30 capable operators RNAV (RNP) Z 936ft / 4 mi

North Flow Departures. Departures during north flow will take place primarily from 34R with a limited number of departures anticipated from runway 25 during construction phases when the intersecting portion of runway 07 - 25 and 16L - 34R is not closed. Operations will be supported by all existing SID, ODP and VCOA with no anticipated NAVAID or lighting outages. IAGY LOC backcourse will be available for conventional SID/DP and for operator OEI procedures.

There are no anticipated entry taxiway closures which would prevent operators from accessing runway 34R.

Runway 34R is not the preferred departure runway for aircraft performance reasons. However recent enhancements to close-in obstacles along Mill St and in airport owned property north of the road, are anticipated to increase the overall takeoff performance capabilities of aircraft using the runway. This is hoped to improve the situation in which certain aircraft operators delay their flights while waiting to takeoff on the 16L direction, to avoid having to take the weight penalty previously associated with using 34R.

Table 4 – Departure Options During North Flow – Runway 16R – 34L Reconstruction Phase presents the departure procedures that are anticipated to be available during this phase of the project for runways 34R





and 25. Individual procedures are presented as combinations for each runway, procedure name, minimums (ceiling and visibility), navigation aid or method (NAV) and any restrictions that must be observed.

There are no anticipated changes to departure procedures that will be required to accommodate the closure of runway 16R - 34L and operators will not have to modify their flight plan filing to accommodate a particular navigation mode for departures specifically from 34R. Because these procedures are essentially identical to those in use by operators before and after the construction project, there are no anticipated departure impacts during north flow for this system state.

# c. 16L-34R AND 07-25 MAGVAR PHASES FLIGHT OPERATIONS AND AERONAUTICAL INFORMATION

### **Runway Availability**

As the reconstruction phase of runway 16R - 34L nears completion, work will begin on converting the runway and flight procedure references to the updated airport magnetic variation which could result in a phase with the following runway availability.

The following table outlines the runways, and their characteristics, that will be available on or following 10SEP20.

RWY	TORA (FT)	TODA (FT)	ASDA (FT)	LDA (FT)	THLD DISP (FT)	ELEV (FT MSL)	SURFACE	SLOPE	ENTRY ANGLE (DEG)
17 <b>R</b>	11002	11002	11402	10002	999	4414.8	CONC/GRVD	0.00%	90
17 <b>R-D*</b>	9959	9959	10359	N/A			CONC/GRVD		90
35L	11002	11002	11402	10002	989	4414.5	CONC/GRVD	0.00%	90
35L-Q*	9952	9952	10352	N/A			CONC/GRVD		90
35L-P*	8963	8963	9363	N/A			CONC/GRVD		90
16L	9000	9000	9000	9000		4414.8	CONC/GRVD	-0.07%	90
16L-D*	7954	7954	7954	N/A			CONC/GRVD		90
34R	9000	9000	9000	9000		4408.3	CONC/GRVD	0.07%	90
08	5854	5854	6102	5854		4409.2	CONC/GRVD	-0.16%	90
26	6102	6102	6102	6102		4399.6	CONC/GRVD	0.16%	90

\*All intersection departure declared distances are measured from the intersection of the twy centerline and the runway centerline to the DER.

Runway 17R - 35L and runway 08 - 26 runway markings, signs and adjacent taxiway markings will all be updated to reflect 17R - 35L and 08 - 26. The contractor will have an additional 30 days following 10SEP20 to complete the conversion of markings on runway 16L - 34R.





### Lighting, Marking and NAVAIDs

The following table outlines the lighting and NAVAIDs available prior to the initiation of construction on 16R-34L.

RWY	MARKINGS	EDGE	ALS/REIL	CL	PAPI	ILS/GS	RWSL/RGL	RDR
		LIGHTS			(L/R – GPA)			
17 <b>R</b>	PIR	HIRL	MALSR	CL	P4L - 3.06	IRNO/3.10	/RGL	Yes
35L	PIR	HIRL	MALSR	CL	P4L – 3.54**	IAGY/3.54	/RGL	Yes
16L	NPI	HIRL	REIL	CL	P4L - 3.00	/	/RGL	Yes
34R	NPI	HIRL	REIL	CL	P4L - 3.35***	/	/RGL	Yes
08	NPI	MIRL	REIL		P4L - 3.20	/	/	Yes
26	NPI	MIRL	REIL		P4L - 3.00*	/	/	Yes

\*PAPI Range limited to 2NM

\*\*PAPI Range limited to 6NM

\*\*\*PAPI Range limited to 6NM and restricted to 8 degrees visible range right of centerline

#### **Aeronautical Charting**

FAA will issue updated airport diagrams reflecting a total magnetic variation update on the airport 14 days prior to 10SEP20 through the NFDD mechansim. This will involve an updated published MAGVAR and updated references to runways 16R - 34L (as 17R - 35L), 16L - 34R (as 17L - 35R) and 07 - 25 (as 08 - 26). The formal charted publications of the airport will not have any notes regarding the transitional state of 16L - 34R.

Temporary 3rd party diagrams are anticipated for publication by Jeppesen, Lido and NAVBLUE depicting the 30 day period in which the airport may operate with 17R/35L and 16L/34R. These charts will be published in addition to the primary airport diagram matching the FAA airport diagram update on 10SEP20. Coordination for updates to their charting products will be initiated no later than 60 days prior to the start of construction. Availability of the 3rd party aeronautical products are anticipated on the following schedule:

- Jeppesen/Foreflight with Jepp 15SEP20
- Foreflight FAA 10SEP20
- Lido 16SEP20
- NAVBLUE 16SEP20

The airport will issue NOTAMs against the most current FAA airport diagrams published on 10SEP20 to indicated differences between actual markings and FAA published markings on the airport diagram and in eNASR.





### Flight Procedures

All approach, arrival and departure procedures will be updated on 10SEP20 to reflect the runway name change from 16R - 34L, 16L - 34R and 07 - 25 to 17R - 35L, 17L - 35R and 08 - 26.

In addition to these naming changes, many more substantial procedure changes associated with the FAA PBN Full Working Group efforts under 7100.41A. These procedure changes are not yet publicly available, but will be shared with operators and air traffic prior to the cutover on 10SEP20.

All enhancements to RNAV (GPS) X RWY 16L, RNAV (GPS) X RWY 34R and RNAV (RNP) Y RWY 16L will be incorporated into the full flight procedure update on 17L/35R. This will enable continuity of flight operations and air traffic application before and after the publication on 10SEP20.

All flight procedures referencing runway 17L/35R will have a NOTAM to enable applicability for use with runway 16L/34R until such time that the runway can be renamed. The potential hazards associated with this temporary situation are described in more detail in the NAVDATA and NOTAM sections below.

### NAVDATA, TAWS and Moving Map Data

The FAA CIFP will be updated for the 10SEP20 publication cycle to reflect all runway naming changes, including 16L - 34R to 17L - 35R and an extensive series of updated to flight procedures that were modified in the 7100.41A PBN FWG prior to reconstruction and MAGVAR considerations.

3rd party generated data products supporting ARINC 424, 816 or TAWS databases are anticipated to also be updated to match the FAA definition, with no lingering references to a runway 16L - 34R at RNO after 10SEP20. 3rd party aeronautical data updates are anticipated to begin no earlier than XXX, and are anticipated to be complete on most aircraft by 10SEP20.

Some aircraft operators, especially those who do not operate regular scheduled operations, may have a slight delay regarding updates to onboard NAVDATA of up to 28 to 56 days following the update. For these operators, it is anticipated that current aeronautical charting depictions will alert the pilots to the updated airport and flight procedure references as a cross check against a possibly outdated NAVDATA reference.

In situations where pilots continue to utilize flight procedures from an outdated database there are two possible hazards.

The first possible hazard would be associated with a pilots continued use of the previous RNAV (GPS) X approaches, SIDs or STARs to runway 16L - 34R, believing that they are identical due to the current status of the runway name. In these situations pilots may fly to incorrect waypoints, cross waypoints at incorrect altitudes or turn the wrong direction without querying ATC.

The second possible hazard are pilots that continue to use outdated approach, SID or STAR definitions to the other runways at the airport. These flight crews will most likely be more aware of a possible discrepancy, but may still require Air Traffic assistance.

RTAA and FAA ATO Outreach will be performed ahead of the project with the major providers to ensure that they have the ability to react to specific phases per their FAA LOAs. Air Traffic awareness and RTAA outreach will also be utilized to make operators aware of the changes to both magnetic variation AND flight procedures for at least 30 days after 10SEP20, or at least until such time that 16L - 34R is converted to 17L - 35R.





### NOTAMs

On, or after, 10SEP20 the airport will issue NOTAMs similar to the following:

- RWY 16R 34L now 17R 35L
- RWY 07 25 now 08 26

FAA will need to issue flight procedure NOTAMs for all updated flight procedures containing references to runway 17L - 35R indicating something similar to the following:

• RNAV (GPS) X 17L, RNAV (RNP) Y 17L, RNAV (RNP) Z 17L, etc, all references to runway 17L - 35R are applicable to 16L - 34R

### Flight Planning Considerations

There are no anticipated impacts on flight planning considerations on or after 10SEP20 due to the renaming, and reopening, of the primary runway 17R - 35L for planning considerations.



Reno-Tahoe International Airport



Runway	Approach Name	Approach Category	Ceiling	Visibil	ity NAV	Restrictions
16L	RNAV (GPS) X	A – D	805ft	2 ¾ mi	LPV	
16L	RNAV (GPS) X	A – D	800ft (est)	2 mi (est)	LNAV/VNAV	High temperature restriction on Baro-VNAV hais not yet determined (10SEP19)
16L	RNAV (GPS) X	А	1305ft	1 ¼ mi	LNAV	
16L	RNAV (GPS) X	В	1305ft	1 ½ mi	LNAV	
16L	RNAV (GPS) X	C – D	1305ft	3 mi	LNAV	
16L	RNAV (RNP) Y	A - D	377ft	1 1/8 mi	RNP 0.12	252ft/nm to 7200ft
						RF Required
16L	RNAV (RNP) Y	A - D	712ft	2 ½ mi	RNP 0.30	RF Required
16L	RNAV (RNP) Z	A – C	381ft	1 1/8 mi	RNP 0.12	259ft/nm to 7000ft RNP 0.8 Required On IAF RF Required From HOBOA and TRUCK
16L	RNAV (RNP) Z	A – C	718ft	2 1/2 mi	RNP 0.30	RNP 0.8 Required On IAF RF Required From HOBOA and TRUCK
16L or 07	VOR-D	А	1585ft	1 ¼ mi		Circling to RWY 07 NA at Night
16L or 07	VOR-D	В	1585ft	1 ½ mi		Circling to RWY 07 NA at Night
16L or 07	VOR-D	C - D	1585ft	3 mi		Circling to RWY 07 NA at Night

### Table 1 – Approach Options During South Flow – Runway 16R – 34L Reconstruction Phase





### Table 2 – Departure Options During South Flow – Runway 16R – 34L Reconstruction Phase

Runway	Procedure Name	Ceiling	Visibility	NA	V Restrictions
16L	MUSTANG EIGHT	600ft	1 ¼ mi	IRNO LOC/DME	525ft/nm to 8000ft
				FMG VOR	
16L	MUSTANG EIGHT	Standard	Standard (or Lower)	IRNO LOC/DME EMG VOR	740ft/nm to 8000ft
161	DENO NINE	200ft	1 mi		252ft/am to 10000ft
IOL	KENO MINE	50011	1 111	LOC/DME	55217/1111 to 109001t
16L	RENO NINE	Standard	Standard (or Lower)	IRNO LOC/DME	730ft/nm to 10900ft
16L	WAGGE SIX	Standard	Standard (or Lower)	IRNO LOC/DME	740ft/nm to 8000ft
16L	ZEFFR SIX RNAV	500ft or Standard	2 1/8 mi or Standard (or Lower)	RNAV 1	440ft/nm to 9400ft, then 400ft/nm to 13000
16L	ODP	Standard	Standard (or Lower)	FMG VOR	730ft/nm to 8000ft
16L	ODP	600	1 ¼ mi	FMG VOR	480ft/nm to 8000ft
16L	VCOA	2700ft	3 mi		




Runway	Approach Name	Approach Category	Ceiling	Visibility	NAV	Restrictions
34R	RNAV (GPS) X	A – B	892ft	1 ¼ mi	RNAV 1 – GPS	Baro-VNAV Are Being Added with Unknown Temperature Limits and Minimums
34R	RNAV (GPS) X	С	892ft	2 <sup>3</sup> / <sub>4</sub> mi	RNAV 1 – GPS	Baro-VNAV Are Being Added with Unknown Temperature Limits and Minimums
34R	RNAV (GPS) X	D	892ft	3 mi	RNAV 1 – GPS	Baro-VNAV Are Being Added with Unknown Temperature Limits and Minimums
34R	RNAV (GPS) Y	A – C	865ft	2 ½ mi	LPV	
34R	RNAV (RNP) Z	A – D	765ft	2 ¾ mi	RNP 0.12	RF Required From COLOM, FMG and SPOOK
34R	RNAV (RNP) Z	A – D	936ft	4 mi	RNP 0.30	RF Required From COLOM, FMG and SPOOK Baro-VNAV not permitted above 40C
34R or 25	VOR-D	А	1585ft	1 ¼ mi		
34R or 25	VOR-D	В	1585ft	1 ½ mi		
34R or 25	VOR-D	C - D	1585ft	3 mi		

# Table 3 – Departure Options During South Flow - Runway 16R – 34L Reconstruction Phase



Construction Safety Phasing Plan (CSPP)



# Table 4 – Departure Options During North Flow – Runway 16R – 34L Reconstruction Phase

Runway	Procedure Name	Ceiling	Visibility	NAV	Restrictions
34R	HUNGRY THREE	Standard	Standard (or Lower)	IAGY LOC/DME FMG VOR	480ft/nm to 8400ft
34R	HUNGRY THREE	500ft	1 ½ mi	IAGY LOC/DME FMG VOR	315ft/nm to 8400ft
34R	PVINE THREE RNAV	400ft	1 ½ mi	RNAV 1	383 ft/nm to 12000
34R	PVINE THREE RNAV	Standard	Standard (or Lower)	RNAV 1	411ft/nm to 4900ft, then 383ft/nm to 12000ft
34R	RENO NINE	400ft	1 ½ mi	IAGY LOC/DME	430ft/nm to 8700ft
34R	RENO NINE	Standard	Standard (or Lower)	IAGY LOC/DME	480ft/nm to 8700ft
34R	SPLTM FOUR RNAV	400ft	1 ½ mi	RNAV 1	613ft/nm to 6700ft, then 306ft/nm to 15000
25	VISTA TWO	Standard	Standard (or Lower)	FMG VOR	380ft/nm to 8400ft CAT A/B Only
34R	ODP	Standard	Standard (or Lower)	FMG VOR	480ft to 7000ft
34R	ODP	500ft	1 ½ mi	FMG VOR	320ft to 7000ft
25	ODP	Standard	Standard (or Lower)	FMG VOR	470ft to 7800ft
34R or 25	VCOA	2800ft	3 mi		





# ATTACHMENT A

# FAA AC 150/5370-2G



Construction Safety Phasing Plan (CSPP)



# Advisory Circular

**Subject:** Operational Safety on Airports During Construction

**Date:** 12/13/2017 **Initiated By:** AAS-100 AC No: 150/5370-2G Change:

### 1 **Purpose.**

This AC sets forth guidelines for operational safety on airports during construction.

### 2 **Cancellation.**

This AC cancels AC 150/5370-2F, *Operational Safety on Airports during Construction*, dated September 29, 2011.

### 3 Application.

This AC assists airport operators in complying with Title 14 Code of Federal Regulations (CFR) Part 139, *Certification of Airports*. For those certificated airports, this AC provides one way, but not the only way, of meeting those requirements. The use of this AC is mandatory for those airport construction projects receiving funds under the Airport Improvement Program (AIP). See Grant Assurance No. 34, *Policies, Standards, and Specifications*. While we do not require non-certificated airports without grant agreements or airports using Passenger Facility Charge (PFC) Program funds for construction projects to adhere to these guidelines, we recommend that they do so to help these airports maintain operational safety during construction.

### 4 **Related Documents.**

ACs and Orders referenced in the text of this AC do not include a revision letter, as they refer to the latest version. <u>Appendix A</u> contains a list of reading material on airport construction, design, and potential safety hazards during construction, as well as instructions for obtaining these documents.

# 5 **Principal Changes.**

The AC incorporates the following principal changes:

1. Notification about impacts to both airport owned and FAA-owned NAVAIDs was added. See paragraph <u>2.13.5.3</u>, NAVAIDs.

- 2. Guidance for the use of orange construction signs was added. See paragraph <u>2.18.4.2</u>, Temporary Signs.
- 3. Open trenches or excavations may be permitted in the taxiway safety area while the taxiway is open to aircraft operations, subject to restrictions. See paragraph <u>2.22.3.4</u>, Excavations.
- 4. Guidance for temporary shortened runways and displaced thresholds has been enhanced. See <u>Figure 2-1</u> and <u>Figure 2-2</u>.
- 5. Figures have been improved and a new <u>Appendix F</u> on the placement of orange construction signs has been added.

Hyperlinks (allowing the reader to access documents located on the internet and to maneuver within this document) are provided throughout this document and are identified with underlined text. When navigating within this document, return to the previously viewed page by pressing the "ALT" and " $\leftarrow$ " keys simultaneously.

Figures in this document are schematic representations and are not to scale.

# 6 Use of Metrics.

Throughout this AC, U.S. customary units are used followed with "soft" (rounded) conversion to metric units. The U.S. customary units govern.

# 7 Where to Find this AC.

You can view a list of all ACs at <u>http://www.faa.gov/regulations\_policies/advisory\_circulars/</u>. You can view the Federal Aviation Regulations at <u>http://www.faa.gov/regulations\_policies/faa\_regulations/</u>.

# 8 **Feedback on this AC.**

If you have suggestions for improving this AC, you may use the <u>Advisory Circular</u> <u>Feedback</u> form at the end of this AC.

ohn R. Dermody

Director of Airport Safety and Standards

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### CHAPTER 1. PLANNING AN AIRFIELD CONSTRUCTION PROJECT

### 1.1 **Overview.**

Airports are complex environments, and procedures and conditions associated with construction activities often affect aircraft operations and can jeopardize operational safety. Safety considerations are paramount and may make operational impacts unavoidable. However, careful planning, scheduling, and coordination of construction activities can minimize disruption of normal aircraft operations and avoid situations that compromise the airport's operational safety. The airport operator must understand how construction activities and aircraft operations affect one another to be able to develop an effective plan to complete the project. While the guidance in this AC is primarily used for construction operations, the concepts, methods and procedures described may also enhance the day-to-day airport maintenance operations, such as lighting maintenance and snow removal operations.

# 1.2 **Plan for Safety.**

Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the airport operator must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities, and associated costs will be identified and their impact to airport operations must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project, and/or to airport operations to maintain operational safety. This planning effort will ultimately result in a project Construction Safety and Phasing Plan (CSPP). The development of the CSPP takes place through the following five steps:

# 1.2.1 Identify Affected Areas.

The airport operator must determine the geographic areas on the airport affected by the construction project. Some, such as a runway extension, will be defined by the project. Others may be variable, such as the location of haul routes and material stockpiles.

# 1.2.2 Describe Current Operations.

Identify the normal airport operations in each affected area for each phase of the project. This becomes the baseline from which the impact on operations by construction activities can be measured. This should include a narrative of the typical users and aircraft operating within the affected areas. It should also include information related to airport operations: the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the airplanes that operate on each runway; the ADG and Taxiway Design Group (TDG)<sup>1</sup> for each affected taxiway; designated approach visibility minimums;

<sup>&</sup>lt;sup>1</sup> Find Taxiway Design Group information in <u>AC 150/5300-13</u>, Airport Design.

available approach and departure procedures; most demanding aircraft; declared distances; available air traffic control services; airport Surface Movement Guidance and Control System (SMGCS) plan; and others. The applicable seasons, days and times for certain operations should also be identified as applicable.

### 1.2.3 <u>Allow for Temporary Changes to Operations.</u>

To the extent practical, current airport operations should be maintained during the construction. In consultation with airport users, Aircraft Rescue and Fire Fighting (ARFF) personnel, and FAA Air Traffic Organization (ATO) personnel, the airport operator should identify and prioritize the airport's most important operations. The construction activities should be planned, through project phasing if necessary, to safely accommodate these operations. When the construction activities cannot be adjusted to safely maintain current operations, regardless of their importance, then the operations must be revised accordingly. Allowable changes include temporary revisions to approach procedures, restricting certain aircraft to specific runways and taxiways, suspension of certain operations, decreased weights for some aircraft due to shortened runways, and other changes. An example of a table showing temporary operations versus current operations is shown in <u>Appendix E</u>.

### 1.2.4 <u>Take Required Measures to Revise Operations.</u>

Once the level and type of aircraft operations to be maintained are identified, the airport operator must determine the measures required to safely conduct the planned operations during the construction. These measures will result in associated costs, which can be broadly interpreted to include not only direct construction costs, but also loss of revenue from impacted operations. Analysis of costs may indicate a need to reevaluate allowable changes to operations. As aircraft operations and allowable changes will vary widely among airports, this AC presents general guidance on those subjects.

### 1.2.5 <u>Manage Safety Risk.</u>

The FAA is committed to incorporating proactive safety risk management (SRM) tools into its decision-making processes. FAA Order 5200.11, *FAA Airports (ARP) Safety Management System (SMS)*, requires the FAA to conduct a Safety Assessment for certain triggering actions. Certain airport projects may require the airport operator to provide a Project Proposal Summary to help the FAA determine whether a Safety Assessment is required prior to FAA approval of the CSPP. The airport operator must coordinate with the appropriate FAA Airports Regional or District Office early in the development of the CSPP to determine the need for a Safety Risk Assessment. If the FAA requires an assessment, the airport operator must at a minimum:

- 1. Notify the appropriate FAA Airports Regional or District Office during the project "scope development" phase of any project requiring a CSPP.
- 2. Provide documents identified by the FAA as necessary to conduct SRM.
- 3. Participate in the SRM process for airport projects.
- 4. Provide a representative to participate on the SRM panel.

5. Ensure that all applicable SRM identified risks elements are recorded and mitigated within the CSPP.

# 1.3 **Develop a Construction Safety and Phasing Plan (CSPP).**

Development of an effective CSPP will require familiarity with many other documents referenced throughout this AC. See <u>Appendix A</u> for a list of related reading material.

### 1.3.1 List Requirements.

A CSPP must be developed for each on-airfield construction project funded by the Airport Improvement Program (AIP) or located on an airport certificated under Part 139. For on-airfield construction projects at Part 139 airports funded without AIP funds, the preparation of a CSPP represents an acceptable method the certificate holder may use to meet Part 139 requirements during airfield construction activity. As per FAA Order 5200.11, projects that require Safety Assessments do not include construction, rehabilitation, or change of any facility that is entirely outside the air operations area, does not involve any expansion of the facility envelope and does not involve construction equipment, haul routes or placement of material in locations that require access to the air operations area, increase the facility envelope, or impact line-of-sight. Such facilities may include passenger terminals and parking or other structures. However, extraordinary circumstances may trigger the need for a Safety Assessment and a CSPP. The CSPP is subject to subsequent review and approval under the FAA's Safety Risk Management procedures (see paragraph <u>1.2.5</u>).

### 1.3.2 Prepare a Safety Plan Compliance Document (SPCD).

The Safety Plan Compliance Document (SPCD) details how the contractor will comply with the CSPP. Also, it will not be possible to determine all safety plan details (for example specific hazard equipment and lighting, contractor's points of contact, construction equipment heights) during the development of the CSPP. The successful contractor must define such details by preparing an SPCD that the airport operator reviews for approval prior to issuance of a notice-to-proceed. The SPCD is a subset of the CSPP, similar to how a shop drawing review is a subset to the technical specifications.

# 1.3.3 Assume Responsibility for the CSPP.

The airport operator is responsible for establishing and enforcing the CSPP. The airport operator may use the services of an engineering consultant to help develop the CSPP. However, writing the CSPP cannot be delegated to the construction contractor. Only those details the airport operator determines cannot be addressed before contract award are developed by the contractor and submitted for approval as the SPCD. The SPCD does not restate nor propose differences to provisions already addressed in the CSPP.

### 1.4 Who Is Responsible for Safety During Construction?

### 1.4.1 <u>Establish a Safety Culture.</u>

Everyone has a role in operational safety on airports during construction: the airport operator, the airport's consultants, the construction contractor and subcontractors, airport users, airport tenants, ARFF personnel, Air Traffic personnel, including Technical Operations personnel, FAA Airports Division personnel, and others, such as military personnel at any airport supporting military operations (e.g. national guard or a joint use facility). Close communication and coordination between all affected parties is the key to maintaining safe operations. Such communication and coordination should start at the project scoping meeting and continue through the completion of the project. The airport operator and contractor should conduct onsite safety inspections throughout the project and immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

### 1.4.2 <u>Assess Airport Operator's Responsibilities.</u>

An airport operator has overall responsibility for all activities on an airport, including construction. This includes the predesign, design, preconstruction, construction, and inspection phases. Additional information on the responsibilities listed below can be found throughout this AC. The airport operator must:

1.4.2.1	Develop a CSPP that complies with the safety guidelines of <u>Chapter 2</u> ,
	Construction Safety and Phasing Plans, and Chapter 3, Guidelines for
	Writing a CSPP. The airport operator may develop the CSPP internally or
	have a consultant develop the CSPP for approval by the airport operator.
	For tenant sponsored projects, approve a CSPP developed by the tenant or
	its consultant.

- 1.4.2.2 Require, review and approve the SPCD by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.
- 1.4.2.3 Convene a preconstruction meeting with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See <u>AC 150/5370-12</u>, *Quality Management for Federally Funded Airport Construction Projects*. (Note "FAA" refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)
- 1.4.2.4 Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.
- 1.4.2.5 Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.
- 1.4.2.6 Notify users, ARFF personnel, and FAA ATO personnel of construction and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.
- 1.4.2.7 Ensure construction personnel know applicable airport procedures and changes to those procedures that may affect their work.
- 1.4.2.8 Ensure that all temporary construction signs are located per the scheduled list for each phase of the project.
- 1.4.2.9 Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.
- 1.4.2.10 Ensure vehicle and pedestrian operations addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.
- 1.4.2.11 At certificated airports, ensure each CSPP and SPCD is consistent with Part 139.

- 1.4.2.12 Conduct inspections sufficiently frequently to ensure construction contractors and tenants comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
- 1.4.2.13 Take immediate action to resolve safety deficiencies.
- 1.4.2.14 At airports subject to 49 CFR Part 1542, *Airport Security*, ensure construction access complies with the security requirements of that regulation.
- 1.4.2.15 Notify appropriate parties when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).
- 1.4.2.16 Ensure prompt submittal of a Notice of Proposed Construction or Alteration (Form 7460-1) for conducting an aeronautical study of potential obstructions such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. A separate form may be filed for each potential obstruction, or one form may be filed describing the entire construction area and maximum equipment height. In the latter case, a separate form must be filed for any object beyond or higher than the originally evaluated area/height. The FAA encourages online submittal of forms for expediency at <u>https://oeaaa.faa.gov/oeaaa/external/portal.jsp</u>. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.
- 1.4.2.17 Ensure prompt transmission of the Airport Sponsor Strategic Event Submission, FAA Form 6000-26, located at <u>https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT\_SPONSOR\_STR</u> <u>ATEGIC\_EVENT\_SUBMISSION\_FORM.pdf</u>, to assure proper coordination for NAS Strategic Interruption per Service Level Agreement with ATO.
- 1.4.2.18 Promptly notify the FAA Airports Regional or District Office of any proposed changes to the CSPP prior to implementation of the change. Changes to the CSPP require review and approval by the airport operator and the FAA. The FAA Airports Regional or District office will determine if further coordination within the FAA is needed. Coordinate with appropriate local and other federal government agencies, such as Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Transportation Security Administration (TSA), and the state environmental agency.
- 1.4.3 <u>Define Construction Contractor's Responsibilities.</u> The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

- 1.4.3.1 Submit a Safety Plan Compliance Document (SPCD) to the airport operator describing how it will comply with the requirements of the CSPP and supply any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor, indicating an understanding of the operational safety requirements of the CSPP and the assertion of compliance with the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the contractor that does not conform to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.
- 1.4.3.2 Have available at all times copies of the CSPP and SPCD for reference by the airport operator and its representatives, and by subcontractors and contractor employees.
- 1.4.3.3 Ensure that construction personnel are familiar with safety procedures and regulations on the airport. Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Many projects will require 24-hour coverage.
- 1.4.3.4 Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
- 1.4.3.5 Conduct sufficient inspections to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
- 1.4.3.6 Restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate, and as specified in the CSPP and SPCD.
- 1.4.3.7 Ensure that no contractor employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) from the construction site unless authorized.
- 1.4.3.8 Ensure prompt submittal through the airport operator of Form 7460-1 for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, and other equipment), stock piles, and haul routes when different from cases previously filed by the airport operator. The FAA encourages online submittal of forms for expediency at <u>https://oeaaa.faa.gov/oeaaa/external/portal.jsp</u>.

- 1.4.3.9 Ensure that all necessary safety mitigations are understood by all parties involved, and any special requirements of each construction phase will be fulfilled per the approved timeframe.
- 1.4.3.10 Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.
- 1.4.4 Define Tenant's Responsibilities.

If planning construction activities on leased property, Airport tenants, such as airline operators, fixed base operators, and FAA ATO/Technical Operations sponsoring construction are strongly encouraged to:

- 1. Develop, or have a consultant develop, a project specific CSPP and submit it to the airport operator. The airport operator may forgo a complete CSPP submittal and instead incorporate appropriate operational safety principles and measures addressed in the advisory circular within their tenant lease agreements.
- 2. In coordination with its contractor, develop an SPCD and submit it to the airport operator for approval issued prior to issuance of a Notice to Proceed.
- 3. Ensure that construction personnel are familiar with safety procedures and regulations on the airport during all phases of the construction.
- 4. Provide a point of contact of who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport.
- 5. Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
- 6. Ensure that no tenant or contractor employees, employees of subcontractors or suppliers, or any other persons enter any part of the AOA from the construction site unless authorized.
- 7. Restrict movement of construction vehicles to construction areas by flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate, as specified in the CSPP and SPCD.
- 8. Ensure prompt submittal through the airport operator of Form 7460-1 for conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. The FAA encourages online submittal of forms for expediency at https://oeaaa.faa.gov/oeaaa/external/portal.jsp.
- 9. Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

# **CHAPTER 2. CONSTRUCTION SAFETY AND PHASING PLANS**

### 2.1 **Overview.**

Aviation safety is the primary consideration at airports, especially during construction. The airport operator's CSPP and the contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard. They must provide information necessary for the Airport Operations department to conduct airfield inspections and expeditiously identify and correct unsafe conditions during construction. All aviation safety provisions included within the project drawings, contract specifications, and other related documents must also be reflected in the CSPP and SPCD.

# 2.2 Assume Responsibility.

Operational safety on the airport remains the airport operator's responsibility at all times. The airport operator must develop, certify, and submit for FAA approval each CSPP. It is the airport operator's responsibility to apply the requirements of the FAA approved CSPP. The airport operator must revise the CSPP when conditions warrant changes and must submit the revised CSPP to the FAA for approval. The airport operator must also require and approve a SPCD from the project contractor.

# 2.3 **Submit the CSPP.**

Construction Safety and Phasing Plans should be developed concurrently with the project design. Milestone versions of the CSPP should be submitted for review and approval as follows. While these milestones are not mandatory, early submission will help to avoid delays. Submittals are preferred in  $8.5 \times 11$  inch or  $11 \times 17$  inch format for compatibility with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE / AAA) process.

### 2.3.1 <u>Submit an Outline/Draft.</u>

By the time approximately 25% to 30% of the project design is completed, the principal elements of the CSPP should be established. Airport operators are encouraged to submit an outline or draft, detailing all CSPP provisions developed to date, to the FAA for review at this stage of the project design.

### 2.3.2 <u>Submit a CSPP.</u>

The CSPP should be formally submitted for FAA approval when the project design is 80 percent to 90 percent complete. Since provisions in the CSPP will influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the procurement contract.

### 2.3.3 <u>Submit an SPCD.</u>

The contractor should submit the SPCD to the airport operator for approval to be issued prior to the Notice to Proceed.

2.3.4 <u>Submit CSPP Revisions.</u>

All revisions to a previously approved CSPP must be re-submitted to the FAA for review and approval/disapproval action.

### 2.4 **Meet CSPP Requirements.**

- 2.4.1 To the extent possible, the CSPP should address the following as outlined in <u>Chapter 3</u>, <u>Guidelines for Writing a CSPP</u>. Details that cannot be determined at this stage are to be included in the SPCD.
  - 1. Coordination.
    - a. Contractor progress meetings.
    - b. Scope or schedule changes.
    - c. FAA ATO coordination.
  - 2. Phasing.
    - a. Phase elements.
    - b. Construction safety drawings.
  - 3. Areas and operations affected by the construction activity.
    - a. Identification of affected areas.
    - b. Mitigation of effects.
  - 4. Protection of navigation aids (NAVAIDs).
  - 5. Contractor access.
    - a. Location of stockpiled construction materials.
    - b. Vehicle and pedestrian operations.
  - 6. Wildlife management.
    - a. Trash.
    - b. Standing water.
    - c. Tall grass and seeds.
    - d. Poorly maintained fencing and gates.
    - e. Disruption of existing wildlife habitat.
  - 7. Foreign Object Debris (FOD) management.
  - 8. Hazardous materials (HAZMAT) management.
  - 9. Notification of construction activities.

- a. Maintenance of a list of responsible representatives/ points of contact.
- b. NOTAM.
- c. Emergency notification procedures.
- d. Coordination with ARFF Personnel.
- e. Notification to the FAA.
- 10. Inspection requirements.
  - a. Daily (or more frequent) inspections.
  - b. Final inspections.
- 11. Underground utilities.
- 12. Penalties.
- 13. Special conditions.
- 14. Runway and taxiway visual aids. Marking, lighting, signs, and visual NAVAIDs.
  - a. General.
  - b. Markings.
  - c. Lighting and visual NAVAIDs.
  - d. Signs, temporary, including orange construction signs, and permanent signs.
- 15. Marking and signs for access routes.
- 16. Hazard marking and lighting.
  - a. Purpose.
  - b. Equipment.
- 17. Work zone lighting for nighttime construction (if applicable).
- 18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces.
  - a. Runway Safety Area (RSA).
  - b. Runway Object Free Area (ROFA).
  - c. Taxiway Safety Area (TSA). Provide details for any adjustments to Taxiway Safety Area width to allow continued operation of smaller aircraft. See paragraph <u>2.22.3</u>.
  - d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph <u>2.22.4</u>.
  - e. Obstacle Free Zone (OFZ).
  - f. Runway approach/departure surfaces.
- 19. Other limitations on construction.
  - a. Prohibitions.

# b. Restrictions.

- 2.4.2 The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, "I, (Name of Contractor), have read the (Title of Project) CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:"). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information," should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:
  - 1. Coordination. Discuss details of proposed safety meetings with the airport operator and with contractor employees and subcontractors.
  - 2. Phasing. Discuss proposed construction schedule elements, including:
    - a. Duration of each phase.
    - b. Daily start and finish of construction, including "night only" construction.
    - c. Duration of construction activities during:
      - i. Normal runway operations.
      - ii. Closed runway operations.
      - iii. Modified runway "Aircraft Reference Code" usage.
  - 3. Areas and operations affected by the construction activity. These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.
  - 4. Protection of NAVAIDs. Discuss specific methods proposed to protect operating NAVAIDs.
  - 5. Contractor access. Provide the following:
    - a. Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).
    - b. Listing of individuals requiring driver training (for certificated airports and as requested).
    - c. Radio communications.
      - i. Types of radios and backup capabilities.
      - ii. Who will be monitoring radios.
      - iii. Who to contact if the ATCT cannot reach the contractor's designated person by radio.

- d. Details on how the contractor will escort material delivery vehicles.
- 6. Wildlife management. Discuss the following:
  - a. Methods and procedures to prevent wildlife attraction.
  - b. Wildlife reporting procedures.
- 7. Foreign Object Debris (FOD) management. Discuss equipment and methods for control of FOD, including construction debris and dust.
- 8. Hazardous Materials (HAZMAT) management. Discuss equipment and methods for responding to hazardous spills.
- 9. Notification of construction activities. Provide the following:
  - a. Contractor points of contact.
  - b. Contractor emergency contact.
  - c. Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator.
  - d. Batch plant details, including 7460-1 submittal.
- 10. Inspection requirements. Discuss daily (or more frequent) inspections and special inspection procedures.
- 11. Underground utilities. Discuss proposed methods of identifying and protecting underground utilities.
- 12. Penalties. Penalties should be identified in the CSPP and should not require an entry in the SPCD.
- 13. Special conditions. Discuss proposed actions for each special condition identified in the CSPP.
- 14. Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:
  - a. Equipment and methods for covering signage and airfield lights.
  - b. Equipment and methods for temporary closure markings (paint, fabric, other).
  - c. Temporary orange construction signs.
  - d. Types of temporary Visual Guidance Slope Indicators (VGSI).
- 15. Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.
- 16. Hazard marking and lighting. Discuss proposed equipment and methods for identifying excavation areas.
- 17. Work zone lighting for nighttime construction (if applicable). Discuss proposed equipment, locations, aiming, and shielding to prevent interference with air traffic control and aircraft operations.

- 18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:
  - a. Equipment and methods for maintaining Taxiway Safety Area standards.
  - b. Equipment and methods to ensure the safe passage of aircraft where Taxiway Safety Area or Taxiway Object Free Area standards cannot be maintained.
  - c. Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.
- 19. Other limitations on construction should be identified in the CSPP and should not require an entry in the SPCD.

### 2.5 **Coordination.**

Airport operators, or tenants responsible for design, bidding and conducting construction on their leased properties, should ensure at all project developmental stages, such as predesign, prebid, and preconstruction conferences, they capture the subject of airport operational safety during construction (see <u>AC 150/5370-12</u>, *Quality Management for Federally Funded Airport Construction Projects*). In addition, the following should be coordinated as required:

### 2.5.1 Progress Meetings.

Operational safety should be a standing agenda item for discussion during progress meetings throughout the project developmental stages.

### 2.5.2 <u>Scope or Schedule Changes.</u>

Changes in the scope or duration at any of the project stages may require revisions to the CSPP and review and approval by the airport operator and the FAA (see paragraph 1.4.2.17).

### 2.5.3 FAA ATO Coordination.

Early coordination with FAA ATO is highly recommended during the design phase and is required for scheduling Technical Operations shutdowns prior to construction. Coordination is critical to restarts of NAVAID services and to the establishment of any special procedures for the movement of aircraft. Formal agreements between the airport operator and appropriate FAA offices are recommended. All relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, should be coordinated with FAA ATO and may require an FAA flight inspection prior to restarting the facility. Flight inspections must be coordinated and scheduled well in advance of the intended facility restart. Flight inspections may require a reimbursable agreement between the airport operator and FAA ATO. Reimbursable agreements should be coordinated a minimum of 12 months prior to the start of construction. (See paragraph <u>2.13.5.3.2</u> for required FAA notification regarding FAA-owned NAVAIDs.)

# 2.6 **Phasing.**

Once it has been determined what types and levels of airport operations will be maintained, the most efficient sequence of construction may not be feasible. In this case, the sequence of construction may be phased to gain maximum efficiency while allowing for the required operations. The development of the resulting construction phases should be coordinated with local Air Traffic personnel and airport users. The sequenced construction phases established in the CSPP must be incorporated into the project design and must be reflected in the contract drawings and specifications.

# 2.6.1 <u>Phase Elements.</u>

For each phase the CSPP should detail:

- Areas closed to aircraft operations.
- Duration of closures.
- Taxi routes and/or areas of reduced TSA and TOFA to reflect reduced ADG use.
- ARFF access routes.
- Construction staging, disposal, and cleanout areas.
- Construction access and haul routes.
- Impacts to NAVAIDs.
- Lighting, marking, and signing changes.
- Available runway length and/or reduced RSA and ROFA to reflect reduced ADG use.
- Declared distances (if applicable).
- Required hazard marking, lighting, and signing.
- Work zone lighting for nighttime construction (if applicable).
- Lead times for required notifications.

# 2.6.2 <u>Construction Safety Drawings.</u>

Drawings specifically indicating operational safety procedures and methods in affected areas (i.e., construction safety drawings) should be developed for each construction phase. Such drawings should be included in the CSPP as referenced attachments and should also be included in the contract drawing package.

# 2.7 Areas and Operations Affected by Construction Activity.

Runways and taxiways should remain in use by aircraft to the maximum extent possible without compromising safety. Pre-meetings with the FAA ATO will support operational simulations. See <u>Appendix E</u> for an example of a table showing temporary operations versus current operations. The tables in <u>Appendix E</u> can be useful for coordination among all interested parties, including FAA Lines of Business.

# 2.7.1 Identification of Affected Areas.

Identifying areas and operations affected by the construction helps to determine possible safety problems. The affected areas should be identified in the construction safety drawings for each construction phase. (See paragraph 2.6.2.) Of particular concern are:

# 2.7.1.1 Closing, or Partial Closing, of Runways, Taxiways and Aprons, and Displaced Thresholds.

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing, landing, or takeoff in either direction on that pavement is prohibited. A displaced threshold, by contrast, is established to ensure obstacle clearance and adequate safety area for landing aircraft. The pavement prior to the displaced threshold is normally available for take-off in the direction of the displacement and for landing and takeoff in the opposite direction. Misunderstanding this difference, may result in issuance of an inaccurate NOTAM, and can lead to a hazardous condition.

### 2.7.1.1.1 <u>Partially Closed Runways.</u>

The temporarily closed portion of a partially closed runway will generally extend from the threshold to a taxiway that may be used for entering and exiting the runway. If the closed portion extends to a point between taxiways, pilots will have to back-taxi on the runway, which is an undesirable operation. See <u>Figure 2-1</u> for a desirable configuration.

# 2.7.1.1.2 <u>Displaced Thresholds.</u>

Since the portion of the runway pavement between the permanent threshold and a standard displaced threshold is available for takeoff and for landing in the opposite direction, the temporary displaced threshold need not be located at an entrance/exit taxiway. See <u>Figure 2-2</u>.

- 2.7.1.2 Closing of aircraft rescue and fire fighting access routes.
- 2.7.1.3 Closing of access routes used by airport and airline support vehicles.
- 2.7.1.4 Interruption of utilities, including water supplies for fire fighting.
- 2.7.1.5 Approach/departure surfaces affected by heights of objects.
- 2.7.1.6 Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.



Figure 2-1. Temporary Partially Closed Runway



Figure 2-2. Temporary Displaced Threshold

Note: See paragraph 2.18.2.5.

### 2.7.2 <u>Mitigation of Effects.</u>

Establishment of specific procedures is necessary to maintain the safety and efficiency of airport operations. The CSPP must address:

- 2.7.2.1 Temporary changes to runway and/or taxi operations.
- 2.7.2.2 Detours for ARFF and other airport vehicles.
- 2.7.2.3 Maintenance of essential utilities.
- 2.7.2.4 Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.

# 2.8 Navigation Aid (NAVAID) Protection.

Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, coordinate with the appropriate FAA ATO/Technical Operations office to evaluate the effect of construction activity and the required distance and direction from the NAVAID. (See paragraph 2.13.5.3.) Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs require special consideration since they may interfere with signals essential to air navigation. If any NAVAID may be affected, the CSPP and SPCD must show an understanding of the "critical area" associated with each NAVAID and describe how it will be protected. Where applicable, the operational critical areas of NAVAIDs should be graphically delineated on the project drawings. Pay particular attention to stockpiling material, as well as to movement and parking of equipment that may interfere with line of sight from the ATCT or with electronic emissions. Interference from construction equipment and activities may require NAVAID shutdown or adjustment of instrument approach minimums for low visibility operations. This condition requires that a NOTAM be filed (see paragraph 2.13.2). Construction activities and materials/equipment storage near a NAVAID must not obstruct access to the equipment and instruments for maintenance. Submittal of a 7460-1 form is required for construction vehicles operating near FAA NAVAIDs. (See paragraph 2.13.5.3.)

### 2.9 **Contractor Access.**

The CSPP must detail the areas to which the contractor must have access, and explain how contractor personnel will access those areas. Specifically address:

# 2.9.1 Location of Stockpiled Construction Materials.

Stockpiled materials and equipment storage are not permitted within the RSA and OFZ, and if possible should not be permitted within the Object Free Area (OFA) of an operational runway. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval. The airport operator must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. (See paragraph <u>2.18.2</u>.) This includes determining and

verifying that materials are stabilized and stored at an approved location so as not to be a hazard to aircraft operations and to prevent attraction of wildlife and foreign object damage from blowing or tracked material. See paragraphs 2.10 and 2.11.

2.9.2 <u>Vehicle and Pedestrian Operations.</u>

The CSPP should include specific vehicle and pedestrian requirements. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The airport operator should coordinate requirements for vehicle operations with airport tenants, contractors, and the FAA air traffic manager. In regard to vehicle and pedestrian operations, the CSPP should include the following, with associated training requirements:

### 2.9.2.1 **Construction Site Parking.**

Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the AOA. These areas should provide reasonable contractor employee access to the job site.

# 2.9.2.2 Construction Equipment Parking.

Contractor employees must park and service all construction vehicles in an area designated by the airport operator outside the OFZ and never in the safety area of an active runway or taxiway. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment must not be parked on a closed taxiway or runway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees should also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See paragraph 2.13.1 for further information.

### 2.9.2.3 Access and Haul Roads.

Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul roads does not interfere with NAVAIDs or approach surfaces of operational runways. Address whether access gates will be blocked or inoperative or if a rally point will be blocked or inaccessible.

- 2.9.2.4 Marking and lighting of vehicles in accordance with <u>AC 150/5210-5</u>, *Painting, Marking, and Lighting of Vehicles Used on an Airport.*
- 2.9.2.5 Description of proper vehicle operations on various areas under normal, lost communications, and emergency conditions.
- 2.9.2.6 Required escorts.
- 2.9.2.7 **Training Requirements for Vehicle Drivers to Ensure Compliance** with the Airport Operator's Vehicle Rules and Regulations.

Specific training should be provided to vehicle operators, including those providing escorts. See <u>AC 150/5210-20</u>, *Ground Vehicle Operations on Airports*, for information on training and records maintenance requirements.

### 2.9.2.8 Situational Awareness.

Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time. At non-towered airports, all aircraft movements and flight operations rely on aircraft operators to self-report their positions and intentions. However, there is no requirement for an aircraft to have radio communications. Because aircraft do not always broadcast their positions or intentions, visual checking, radio monitoring, and situational awareness of the surroundings is critical to safety.

### 2.9.2.9 **Two-Way Radio Communication Procedures.**

### 2.9.2.9.1 <u>General.</u>

The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCT. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact, as directed by the airport operator, with:

- 1. Airport operations
- 2. ATCT

- 3. Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.
- 4. Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and "shortened" runways on the ATIS frequency.
- 2.9.2.9.2 <u>Areas Requiring Two-Way Radio Communication with the ATCT.</u> Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.
- 2.9.2.9.3 Frequencies to be Used.

The airport operator will specify the frequencies to be used by the contractor, which may include the CTAF for monitoring of aircraft operations. Frequencies may also be assigned by the airport operator for other communications, including any radio frequency in compliance with Federal Communications Commission requirements. At airports with an ATCT, the airport operator will specify the frequency assigned by the ATCT to be used between contractor vehicles and the ATCT.

- 2.9.2.9.4 Proper radio usage, including read back requirements.
- 2.9.2.9.5 Proper phraseology, including the International Phonetic Alphabet.
- 2.9.2.9.6 Light Gun Signals.

Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure. See the FAA safety placard "Ground Vehicle Guide to Airport Signs and Markings." This safety placard may be downloaded through the Runway Safety Program Web site at <u>http://www.faa.gov/airports/runway\_safety/publications/</u> (see "Signs & Markings Vehicle Dashboard Sticker") or obtained from the FAA Airports Regional Office.

### 2.9.2.10 Maintenance of the secured area of the airport, including:

2.9.2.10.1 Fencing and Gates.

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit "piggybacking" behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR- 00/52, *Recommended Security Guidelines for Airport Planning and Construction*, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

### 2.9.2.10.2 <u>Badging Requirements.</u>

Airports subject to 49 CFR Part 1542, *Airport Security*, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

# 2.10 Wildlife Management.

The CSPP and SPCD must be in accordance with the airport operator's wildlife hazard management plan, if applicable. See <u>AC 150/5200-33</u>, *Hazardous Wildlife Attractants On or Near Airports*, and CertAlert 98-05, *Grasses Attractive to Hazardous Wildlife*. Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

### 2.10.1 <u>Trash.</u>

Food scraps must be collected from construction personnel activity.

### 2.10.2 Standing Water.

### 2.10.3 <u>Tall Grass and Seeds.</u>

Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in <u>AC 150/5370-10</u>, *Standards for Specifying Construction of Airports*, Item T-901, Seeding. Contact the local office of the United Sates Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

# 2.10.4 <u>Poorly Maintained Fencing and Gates.</u> See paragraph 2.9.2.10.1.

# 2.10.5 Disruption of Existing Wildlife Habitat.

While this will frequently be unavoidable due to the nature of the project, the CSPP should specify under what circumstances (location, wildlife type) contractor personnel should immediately notify the airport operator of wildlife sightings.

# 2.11 Foreign Object Debris (FOD) Management.

Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft movement areas. Materials capable of creating FOD must be continuously removed during the construction project. Fencing (other than security fencing) or covers may be necessary to contain material that can be carried by wind into areas where aircraft operate. See <u>AC 150/5210-24</u>, *Foreign Object Debris (FOD) Management*.

# 2.12 Hazardous Materials (HAZMAT) Management.

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel or hydraulic fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. See <u>AC 150/5320-15</u>, *Management of Airport Industrial Waste*.

# 2.13 Notification of Construction Activities.

The CSPP and SPCD must detail procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. It must address the notification actions described below, as applicable.

2.13.1 List of Responsible Representatives/points of contact for all involved parties, and procedures for contacting each of them, including after hours.

# 2.13.2 <u>NOTAMs.</u>

Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must either enter the NOTAM into NOTAM Manager, or provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. Refer to <u>AC 150/5200-28</u>, *Notices to Airmen (NOTAMs) for Airport Operators*, for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator. See paragraph <u>2.7.1.1</u> about issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

2.13.3 Emergency notification procedures for medical, fire fighting, and police response.

### 2.13.4 Coordination with ARFF.

The CSPP must detail procedures for coordinating through the airport sponsor with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

- 1. The deactivation and subsequent reactivation of water lines or fire hydrants, or
- 2. The rerouting, blocking and restoration of emergency access routes, or
- 3. The use of hazardous materials on the airfield.

### 2.13.5 Notification to the FAA.

2.13.5.1 **Part 77.** 

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e., cranes, graders, other equipment) on airports. FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. See <u>Appendix A</u> to download the form. Further guidance is available on the FAA web site at <u>oeaaa.faa.gov</u>.

### 2.13.5.2 **Part 157.**

With some exceptions, Title 14 CFR Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports*, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA Airports Regional or District Office. See <u>Appendix A</u> to download the form.

# 2.13.5.3 NAVAIDs.

For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622.

### 2.13.5.3.1 Airport Owned/FAA Maintained.

If construction operations require a shutdown of 24 hours or greater in duration, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown, using Strategic Event Coordination (SEC) Form 6000.26 contained within FAA Order 6000.15, *General Maintenance Handbook for National Airspace System (NAS) Facilities*.

# 2.13.5.3.2 FAA Owned.

- 1. The airport operator must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs, using SEC Form 6000.26.
- 2. Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. Refer to active Service Level Agreement with ATO for specifics.

# 2.14 **Inspection Requirements.**

# 2.14.1 Daily Inspections.

Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in <u>Appendix D</u>, <u>Construction Project Daily Safety Inspection Checklist</u>. See also <u>AC 150/5200-18</u>, *Airport Safety Self-Inspection*. Airport operators holding a Part 139 certificate are required to conduct self-inspections during unusual conditions, such as construction activities, that may affect safe air carrier operations.

# 2.14.2 Interim Inspections.

Inspections should be conducted of all areas to be (re)opened to aircraft traffic to ensure the proper operation of lights and signs, for correct markings, and absence of FOD. The contractor should conduct an inspection of the work area with airport operations personnel. The contractor should ensure that all construction materials have been secured, all pavement surfaces have been swept clean, all transition ramps have been properly constructed, and that surfaces have been appropriately marked for aircraft to operate safely. Only if all items on the list meet with the airport operator's approval should the air traffic control tower be notified to open the area to aircraft operations. The contractor should be required to retain a suitable workforce and the necessary equipment at the work area for any last minute cleanup that may be requested by the airport operator prior to opening the area.

# 2.14.3 Final Inspections.

New runways and extended runway closures may require safety inspections at certificated airports prior to allowing air carrier service. Coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary.

# 2.15 Underground Utilities.

The CSPP and/or SPCD must include procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This may involve coordinating with public utilities and FAA ATO/Technical Operations. Note that "One Call" or "Miss Utility" services do not include FAA ATO/Technical Operations.

### 2.16 **Penalties.**

The CSPP should detail penalty provisions for noncompliance with airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion). Such penalties typically include rescission of driving privileges or access to the AOA.

### 2.17 **Special Conditions.**

The CSPP must detail any special conditions that affect the operation of the airport and will require the activation of any special procedures (for example, low-visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, Vehicle / Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption).

### 2.18 **Runway and Taxiway Visual Aids.**

This includes marking, lighting, signs, and visual NAVAIDs. The CSPP must ensure that areas where aircraft will be operating are clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDs that are to continue to perform their functions during construction remain in place and operational. Visual NAVAIDs that are not serving their intended function during construction must be temporarily disabled, covered, or modified as necessary. The CSPP must address the following, as appropriate:

### 2.18.1 General.

Airport markings, lighting, signs, and visual NAVAIDs must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, and other wind currents and constructed of materials that will minimize damage to an aircraft in the event of inadvertent contact. Items used to secure such markings must be of a color similar to the marking.

### 2.18.2 Markings.

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager,
airport operations, airport users, the FAA Airports project manager, and Airport Certification Safety Inspector for Part 139 airports to determine minimum temporary markings. The FAA Airports project manager will, wherever a runway is closed, coordinate with the appropriate FAA Flight Standards Office and disseminate findings to all parties. Where possible, the temporary markings on finish grade pavements should be placed to mirror the dimensions of the final markings. Markings must be in compliance with the standards of <u>AC 150/5340-1</u>, *Standards for Airport Markings*, except as noted herein. Runways and runway exit taxiways closed to aircraft operations are marked with a yellow X. The preferred visual aid to depict temporary runway closure is the lighted X signal placed on or near the runway designation numbers. (See paragraph <u>2.18.2.1.2</u>.)

#### 2.18.2.1 **Closed Runways and Taxiways.**

2.18.2.1.1 <u>Permanently Closed Runways.</u>

For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place an X at each end and at 1,000-foot (300 m) intervals. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X.

2.18.2.1.2 <u>Temporarily Closed Runways.</u>

For runways that have been temporarily closed, place an X at each end of the runway directly on or as near as practicable to the runway designation numbers. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X. See <u>Figure 2-3</u>. See also paragraph 2.18.3.3.

# 2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.

When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with <u>AC 150/5340-1</u>. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph <u>2.7.1.1</u> for the difference between partially closed runways and runways with displaced thresholds. Because of the temporary nature of threshold displacement due to construction, it is not necessary to re-adjust the existing runway centerline markings to meet standard spacing for a runway with a visual approach. Some of the requirements below may be waived in the cases of low-activity airports and/or short duration changes that are measured in days rather than weeks. Consider whether the presence of an airport traffic

control tower allows for the development of special procedures. Contact the appropriate FAA Airports Regional or District Office for assistance.



Figure 2-3. Markings for a Temporarily Closed Runway

- 1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see <u>AC 150/5340-1</u>). Obliterate or cover markings prior to the moved threshold. Existing touchdown zone markings beyond the moved threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-4.
- 2. Displaced Thresholds. Pavement markings for a displaced threshold consist of a runway threshold bar, runway designation, and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See <u>AC 150/5340-1</u>. Obliterate markings prior to the displaced threshold. Existing touchdown zone markings beyond the displaced threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-2.

# 2.18.2.1.4 <u>Taxiways.</u>

1. **Permanently Closed Taxiways.** <u>AC 150/5300-13</u> *Airport Design,* notes that it is preferable to remove the pavement, but for pavement that is to remain, place an X at the entrance to both ends of the closed section. Obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed taxiway. See <u>Figure 2-4</u>.

## Figure 2-4. Temporary Taxiway Closure



2. **Temporarily Closed Taxiways.** Place barricades outside the safety area of intersecting taxiways. For runway/taxiway intersections, place an X at the entrance to the closed taxiway from the runway. If the taxiway will be closed for an extended period, obliterate taxiway centerline markings, including runway leadoff lines and taxiway to taxiway turns, leading to the closed section. Always obliterate runway lead-off lines for high speed exits, regardless of the duration of the closure. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed. See Figure 2-4.

# 2.18.2.1.5 <u>Temporarily Closed Airport.</u> When the airport is closed temporarily, mark all the runways as closed.

- 2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.
- 2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.
- 2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, "temporary outboard white threshold bars and yellow arrowheads", see <u>Figure 2-5</u>, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in <u>Figure 2-5</u>. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.
- 2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, "Runway and Taxiway Painting," in <u>AC 150/5370-10</u>), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. <u>AC</u>

<u>150/5340-1</u>, *Standards for Airport Markings*, has additional guidance on temporary markings.



# Figure 2-5. Temporary Outboard White Threshold Bars and Yellow Arrowheads

## 2.18.3 Lighting and Visual NAVAIDs.

This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting installation must be in conformance with AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and fixture design in conformance with AC 150/5345-50, Specification for Portable Runway and Taxiway Lights. When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. See AC 150/5340-26, Maintenance of Airport Visual Aid Facilities, for disconnect procedures and safety precautions. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources. Maintain mandatory hold signs to operate normally in any situation where pilots or vehicle drivers could mistakenly be in that location. At towered airports certificated under Part 139, holding position signs are required to be illuminated on open taxiways crossing to closed or inactive runways. If the holding position sign is installed on the runway circuit for the closed runway, install a jumper to the taxiway circuit to provide power to the holding position sign for nighttime operations. Where it is not possible to maintain power to signs that would normally be operational, install barricades to exclude aircraft. Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4 illustrate temporary changes to lighting and visual NAVAIDs.

#### 2.18.3.1 **Permanently Closed Runways and Taxiways.**

For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

# 2.18.3.2 Temporarily Closed Runways and New Runways Not Yet Open to Air Traffic.

If available, use a lighted X, both at night and during the day, placed at each end of the runway on or near the runway designation numbers facing the approach. (Note that the lighted X must be illuminated at all times that it is on a runway.) The use of a lighted X is required if night work requires runway lighting to be on. See <u>AC 150/5345-55</u>, *Specification for L-893*, *Lighted Visual Aid to Indicate Temporary Runway Closure*. For runways that have been temporarily closed, but for an extended period, and for those with pilot controlled lighting, disconnect the lighting circuits or secure switches to prevent inadvertent activation. For runways that will be opened periodically, coordinate procedures with the FAA air traffic manager or, at airports without an ATCT, the airport operator. Activate stop bars if available. <u>Figure 2-6</u> shows a lighted X by day. <u>Figure 2-7</u> shows a lighted X at night.





Figure 2-7. Lighted X at Night



# 2.18.3.3 **Partially Closed Runways and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing and landing or taking off in either direction. A displaced threshold, by contrast, is put in place to ensure obstacle clearance by landing aircraft. The pavement prior to the displaced threshold is available for takeoff in the direction of the displacement, and for landing and takeoff in the opposite direction. Misunderstanding this difference and issuance of a subsequently inaccurate NOTAM can result in a hazardous situation. For both partially closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

2.18.3.3.1 <u>Partially Closed Runways.</u>

Disconnect edge and threshold lights on that part of the runway at and behind the threshold (that is, the portion of the runway that is closed). Alternately, cover the light fixtures in such a way as to prevent light leakage. See Figure 2-1.

# 2.18.3.3.2 <u>Temporary Displaced Thresholds.</u>

Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light (white for visual runways) in the opposite direction. If the displacement is 700 feet or less, blank out centerline lights in the direction of approach or place the centerline lights out of service. If the displacement is over 700 feet, place the centerline lights out of service. See <u>AC 150/5340-30</u> for details on lighting displaced thresholds. See <u>Figure 2-2</u>.

- 2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.
- 2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See <u>AC 150/5345-39</u>, *Specification for L-853, Runway and Taxiway Retroreflective Markers*.
- 2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See <u>AC 150/5370-10</u>.
- 2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in <u>AC 150/5340-30</u>. Battery powered, solar, or portable lights that meet the criteria in <u>AC 150/5345-50</u> may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may

be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

- 2.18.3.3.7 When runway thresholds are temporarily displaced, reconfigure yellow lenses (caution zone), as necessary, and place the centerline lights out of service.
- 2.18.3.3.8 Relocate the Visual Glide Slope Indicator (VGSI), such as Visual Approach Slope Indicator (VASI) and Precision Approach Path Indicator (PAPI); other airport lights, such as Runway End Identifier Lights (REIL); and approach lights to identify the temporary threshold. Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI, coordinate its installation or disabling with the local ATO/Technical Operations Office. Relocation of such visual aids will depend on the duration of the project and the benefits gained from the relocation, as this can result in great expense. See FAA JO 6850.2, *Visual Guidance Lighting Systems*, for installation criteria for FAA owned and operated NAVAIDs.
- 2.18.3.3.9 Issue a NOTAM to inform pilots of temporary lighting conditions.

# 2.18.3.4 **Temporarily Closed Taxiways.**

If possible, deactivate the taxiway lighting circuits. When deactivation is not possible (for example other taxiways on the same circuit are to remain open), cover the light fixture in a way as to prevent light leakage.

# 2.18.4 Signs.

To the extent possible, signs must be in conformance with <u>AC 150/5345-44</u>, *Specification for Runway and Taxiway Signs*, and <u>AC 150/5340-18</u>, *Standard for Airport Sign Systems*.

#### 2.18.4.1 **Existing Signs.**

Runway exit signs are to be covered for closed runway exits. Outbound destination signs are to be covered for closed runways. Any time a sign does not serve its normal function or would provide conflicting information, it must be covered or removed to prevent misdirecting pilots. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. For long term construction projects, consider relocating signs, especially runway distance remaining signs.

# 2.18.4.2 **Temporary Signs.**

Orange construction signs comprise a message in black on an orange background. Orange construction signs may help pilots be aware of changed conditions. The airport operator may choose to introduce these signs as part of a movement area construction project to increase situational awareness when needed. Locate signs outside the taxiway safety limits and ahead of construction areas so pilots can take timely action. Use temporary signs judiciously, striking a balance between the need for information and the increase in pilot workload. When there is a concern of pilot "information overload," the applicability of mandatory hold signs must take precedence over orange construction signs recommended during construction. Temporary signs must meet the standards for such signs in Engineering Brief 93, Guidance for the Assembly and Installation of Temporary Orange Construction Signs. Many criteria in AC 150/5345-44, Specification for Runway and Taxiway Signs, are referenced in the Engineering Brief. Permissible sign legends are:

- 1. CONSTRUCTION AHEAD,
- 2. CONSTRUCTION ON RAMP, and
- 3. RWY XX TAKEOFF RUN AVAILABLE XXX FT.

Phasing, supported by drawings and sign schedule, for the installation of orange construction signs must be included in the CSPP or SPCD.

#### 2.18.4.2.1 <u>Takeoff Run Available (TORA) signs.</u>

**Recommended:** Where a runway has been shortened for takeoff, install orange TORA signs well before the hold lines, such as on a parallel taxiway prior to a turn to a runway hold position. See EB 93 for sign size and location.

2.18.4.2.2 Sign legends are shown in <u>Figure F-1</u>.

**Note:** See Figure E-1, Figure E-2, Figure E-3, Figure F-2, and Figure F-3 for examples of orange construction sign locations.

# 2.19 Marking and Signs for Access Routes.

The CSPP should indicate that pavement markings and signs for construction personnel will conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of <u>AC 150/5220-23</u>, *Frangible Connections*, which may require modification to size and height guidance in the MUTCD.

# 2.20 Hazard Marking, Lighting and Signing.

2.20.1 Hazard marking, lighting, and signing prevent pilots from entering areas closed to aircraft, and prevent construction personnel from entering areas open to aircraft. The CSPP must specify prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Hazard marking and lighting must also be specified to identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

## 2.20.2 Equipment.

# 2.20.2.1 Barricades.

Low profile barricades, including traffic cones, (weighted or sturdily attached to the surface) are acceptable methods used to identify and define the limits of construction and hazardous areas on airports. Careful consideration must be given to selecting 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. The spacing of barricades must be such that a breach is physically prevented barring a deliberate act. For example, if barricades are intended to exclude aircraft, gaps between barricades must be smaller than the wingspan of the smallest aircraft to be excluded; if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 feet (1.2 meters). Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

# 2.20.2.2 Lights.

Lights must be red, either steady burning or flashing, and must meet the luminance requirements of the State Highway Department. Batteries powering lights will last longer if lights flash. Lights must be mounted on barricades and spaced at no more than 10 feet (3 meters). Lights must be operated between sunset and sunrise and during periods of low visibility whenever the airport is open for operations. They may be operated by photocell, but this may require that the contractor turn them on manually during periods of low visibility during daytime hours.

2.20.2.3 **Supplement Barricades with Signs (for example) As Necessary.** Examples are "No Entry" and "No Vehicles." Be aware of the increased effects of wind and jet blast on barricades with attached signs.

#### 2.20.2.4 Air Operations Area – General.

Barricades are not permitted in any active safety area or on the runway side of a runway hold line. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, highly reflective collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades may be supplemented with alternating orange and white flags at least 20 by 20 inch (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open runway or taxiway / taxilane safety area, or apron must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, and other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 inch (7.6 cm) above the ground. Figure 2-8 and Figure 2-9 show sample barricades with proper coloring and flags.

#### **Figure 2-8. Interlocking Barricades**



Figure 2-9. Low Profile Barricades



# 2.20.2.5 Air Operations Area – Runway/Taxiway Intersections.

Use highly reflective barricades with lights to close taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, even for closures of relatively short duration, close all taxiway/runway intersections with barricades. The use of traffic cones is appropriate for short duration closures.

# 2.20.2.6 Air Operations Area – Other.

Beyond runway and taxiway object free areas and aprons, barricades intended for construction vehicles and personnel may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels.

# 2.20.2.7 Maintenance.

The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the airport operator. Lighting should be checked for proper operation at least once per day, preferably at dusk.

# 2.21 Work Zone Lighting for Nighttime Construction.

Lighting equipment must adequately illuminate the work area if the construction is to be performed during nighttime hours. Refer to <u>AC 150/5370-10</u> for minimum illumination levels for nighttime paving projects. Additionally, it is recommended that all support equipment, except haul trucks, be equipped with artificial illumination to safely

illuminate the area immediately surrounding their work areas. The lights should be positioned to provide the most natural color illumination and contrast with a minimum of shadows. The spacing must be determined by trial. Light towers should be positioned and adjusted to aim away from ATCT cabs and active runways to prevent blinding effects. Shielding may be necessary. Light towers should be removed from the construction site when the area is reopened to aircraft operations. Construction lighting units should be identified and generally located on the construction phasing plans in relationship to the ATCT and active runways and taxiways.

#### 2.22 **Protection of Runway and Taxiway Safety Areas.**

Runway and taxiway safety areas, OFZs, OFAs, and approach surfaces are described in <u>AC 150/5300-13</u>. Protection of these areas includes limitations on the location and height of equipment and stockpiled material. An FAA airspace study may be required. Coordinate with the appropriate FAA Airports Regional or District Office if there is any doubt as to requirements or dimensions (see paragraph <u>2.13.5</u>) as soon as the location and height of materials or equipment are known. The CSPP should include drawings showing all safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction.

#### 2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined 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 (see <u>AC 150/5300-13</u>). Construction activities within the existing RSA are subject to the following conditions:

- 2.22.1.1 No construction may occur within the existing RSA while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (See <u>AC 150/5300-13</u>). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published, and appropriate NOTAMs issued. See <u>AC 150/5300-13</u> for guidance on the use of declared distances.
- 2.22.1.2 The airport operator must coordinate the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.
- 2.22.1.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

## 2.22.1.4 Excavations.

- 2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.
- 2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

## 2.22.1.5 **Erosion Control.**

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

#### 2.22.2 Runway Object Free Area (ROFA).

Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

#### 2.22.3 <u>Taxiway Safety Area (TSA).</u>

- 2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See <u>AC 150/5300-13</u>.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see <u>AC 150/5300-13</u>).
- 2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

2.22.3.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations.

#### 2.22.3.4 Excavations.

- 1. Curves. Open trenches or excavations are not permitted within the TSA while the taxiway is open. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.
- 2. Straight Sections. Open trenches or excavations are not permitted within the TSA while the taxiway is open for unrestricted aircraft operations. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations to allow the safe passage of ARFF equipment and of the heaviest aircraft operating on the taxiway across the trench without causing damage to the equipment or aircraft. In rare circumstances where the section of taxiway is indispensable for aircraft movement, open trenches or excavations may be permitted in the TSA while the taxiway is open to aircraft operations, subject to the following restrictions:
  - a. Taxiing speed is limited to 10 mph.
  - b. Appropriate NOTAMs are issued.
  - c. Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
  - d. Low mass, low-profile lighted barricades are installed.
  - e. Appropriate temporary orange construction signs are installed.
- 3. Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

## 2.22.3.5 **Erosion control.**

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

#### 2.22.4 Taxiway Object Free Area (TOFA).

Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations. Thus, the restrictions are more stringent. Except as provided below, no construction may occur within the taxiway object free area while the taxiway is open for aircraft operations.

- 2.22.4.1 The taxiway object free area dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available. Give special consideration to TOFA dimensions at taxiway turns and intersections.
- 2.22.4.2 Offset taxiway centerline and edge pavement markings (do not use glass beads) may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting, centerline reflectors, or taxiway edge reflectors are required. Existing lighting that does not coincide with the temporary markings must be taken out of service.
- 2.22.4.3 Construction activity, including open excavations, may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:
- 2.22.4.3.1 Taxiing speed is limited to 10 mph.
- 2.22.4.3.2 NOTAMs issued advising taxiing pilots of hazard and recommending reduced taxiing speeds on the taxiway.
- 2.22.4.3.3 Marking and lighting meeting the provisions of paragraphs <u>2.18</u> and <u>2.20</u> are implemented.
- 2.22.4.3.4 If desired, appropriate orange construction signs are installed. See paragraph <u>2.18.4.2</u> and <u>Appendix F</u>.
- 2.22.4.3.5 Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the usable pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.
- 2.22.4.3.6 Flaggers furnished by the contractor must be used to direct and control construction equipment and personnel to a pre-established setback distance for safe passage of aircraft, and airline and/or airport personnel. Flaggers must also be used to direct taxiing aircraft. Due to liability issues, the airport operator should require airlines to provide flaggers for directing taxiing aircraft.

# 2.22.5 Obstacle Free Zone (OFZ).

In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

# 2.22.6 <u>Runway Approach/Departure Areas and Clearways.</u>

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in <u>AC 150/5300-13</u>. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6.1 Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport operator with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

# 2.22.6.2 Caution About Partial Runway Closures.

When filing a NOTAM for a partial runway closure, clearly state that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold). There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition).

# 2.22.6.3 **Caution About Displaced Thresholds.**

Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA), such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, or other work within the existing RSA of any usable runway end, do not implement a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

# 2.23 **Other Limitations on Construction.**

The CSPP must specify any other limitations on construction, including but not limited to:

#### 2.23.1 Prohibitions.

2.23.1.1	No use of tall equipment (cranes, concrete pumps, and so on) unless a
	7460-1 determination letter is issued for such equipment.

- 2.23.1.2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.
- 2.23.1.3 No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See <u>AC 150/5370-10</u>.

## 2.23.2 <u>Restrictions.</u>

- 2.23.2.1 Construction suspension required during specific airport operations.
- 2.23.2.2 Areas that cannot be worked on simultaneously.
- 2.23.2.3 Day or night construction restrictions.
- 2.23.2.4 Seasonal construction restrictions.
- 2.23.2.5 Temporary signs not approved by the airport operator.
- 2.23.2.6 Grades changes that could result in unplanned effects on NAVAIDs.

#### **CHAPTER 3. GUIDELINES FOR WRITING A CSPP**

## 3.1 General Requirements.

The CSPP is a standalone document written to correspond with the subjects outlined in paragraph 2.4. The CSPP is organized by numbered sections corresponding to each subject listed in paragraph 2.4, and described in detail in paragraphs 2.5 - 2.23. Each section number and title in the CSPP matches the corresponding subject outlined in paragraph 2.4 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on). With the exception of the project scope of work outlined in Section 2. Phasing, only subjects specific to operational safety during construction should be addressed.

# 3.2 **Applicability of Subjects.**

Each section should, to the extent practical, focus on the specific subject. Where an overlapping requirement spans several sections, the requirement should be explained in detail in the most applicable section. A reference to that section should be included in all other sections where the requirement may apply. For example, the requirement to protect existing underground FAA ILS cables during trenching operations could be considered FAA ATO coordination (Coordination, paragraph 2.5.3), an area and operation affected by the construction activity (Areas and Operations Affected by the Construction Activity, paragraph 2.7.1.4), a protection of a NAVAID (Protection of Navigational Aids (NAVAIDs), paragraph 2.8), or a notification to the FAA of construction activities (Notification of Construction Activities, paragraph 2.13.5.3.2). However, it is more specifically an underground utility requirement (Underground Utilities, paragraph 2.15). The procedure for protecting underground ILS cables during trenching operations should therefore be described in 2.4.2.11: "The contractor must coordinate with the local FAA System Support Center (SSC) to mark existing ILS cable routes along Runway 17-35. The ILS cables will be located by hand digging whenever the trenching operation moves within 10 feet of the cable markings." All other applicable sections should include a reference to 2.4.2.11: "ILS cables shall be identified and protected as described in 2.4.2.11" or "See 2.4.2.11 for ILS cable identification and protection requirements." Thus, the CSPP should be considered as a whole, with no need to duplicate responses to related issues.

# 3.3 **Graphical Representations.**

Construction safety drawings should be included in the CSPP as attachments. When other graphical representations will aid in supporting written statements, the drawings, diagrams, and/or photographs should also be attached to the CSPP. References should be made in the CSPP to each graphical attachment and may be made in multiple sections.

## 3.4 **Reference Documents.**

The CSPP must not incorporate a document by reference unless reproduction of the material in that document is prohibited. In that case, either copies of or a source for the referenced document must be provided to the contractor. Where this AC recommends references (e.g. as in paragraph <u>3.9</u>) the intent is to include a reference to the corresponding section in the CSPP, not to this Advisory Circular.

## 3.5 **Restrictions.**

The CSPP should not be considered as a project design review document. The CSPP should also avoid mention of permanent ("as-built") features such as pavements, markings, signs, and lighting, except when such features are intended to aid in maintaining operational safety during the construction.

## 3.6 **Coordination.**

Include in this section a detailed description of conferences and meetings to be held both before and during the project. Include appropriate information from <u>AC 150/5370-12</u>. Discuss coordination procedures and schedules for each required FAA ATO Technical Operations shutdown and restart and all required flight inspections.

## 3.7 Phasing.

Include in this section a detailed scope of work description for the project as a whole and each phase of work covered by the CSPP. This includes all locations and durations of the work proposed. Attach drawings to graphically support the written scope of work. Detail in this section the sequenced phases of the proposed construction. Include a reference to paragraph <u>3.8</u>, as appropriate.

# 3.8 Areas and Operations Affected by Construction.

Focus in this section on identifying the areas and operations affected by the construction. Describe corresponding mitigation that is not covered in detail elsewhere in the CSPP. Include references to paragraphs below as appropriate. Attach drawings as necessary to graphically describe affected areas and mechanisms proposed. See <u>Appendix F</u> for sample operational effects tables and figures.

# 3.9 NAVAID Protection.

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph <u>3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination.</u> Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph <u>3.14 for the</u> issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDS and the corresponding critical areas.

#### 3.10 Contractor Access.

This will necessarily be the most extensive section of the CSPP. Provide sufficient detail so that a contractor not experienced in working on airports will understand the unique restrictions such work will require. Due to this extent, it should be broken down into subsections as described below:

#### 3.10.1 Location of Stockpiled Construction Materials.

Describe in this section specific locations for stockpiling material. Note any height restrictions on stockpiles. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 3.11 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 3.12 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

#### 3.10.2 Vehicle and Pedestrian Operations.

While there are many items to be addressed in this major subsection of the CSPP, all are concerned with one main issue: keeping people and vehicles from areas of the airport where they don't belong. This includes preventing unauthorized entry to the AOA and preventing the improper movement of pedestrians or vehicles on the airport. In this section, focus on mechanisms to prevent construction vehicles and workers traveling to and from the worksite from unauthorized entry into movement areas. Specify locations of parking for both employee vehicles and construction equipment, and routes for access and haul roads. In most cases, this will best be accomplished by attaching a drawing. Quote from AC 150/5210-5 specific requirements for contractor vehicles rather than referring to the AC as a whole, and include special requirements for identifying HAZMAT vehicles. Quote from, rather than incorporate by reference, AC 150/5210-20 as appropriate to address the airport's rules for ground vehicle operations, including its training program. Discuss the airport's recordkeeping system listing authorized vehicle operators.

## 3.10.3 <u>Two-Way Radio Communications.</u>

Include a special section to identify all individuals who are required to maintain communications with Air Traffic (AT) at airports with active towers, or monitor CTAF at airports without or with closed ATCT. Include training requirements for all individuals required to communicate with AT. Individuals required to monitor AT frequencies should also be identified. If construction employees are also required to communicate by radio with Airport Operations, this procedure should be described in detail. Usage of vehicle mounted radios and/or portable radios should be addressed. Communication procedures for the event of disabled radio communication (that is, light signals, telephone numbers, others) must be included. All radio frequencies should by identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

## 3.10.4 <u>Airport Security.</u>

Address security as it applies to vehicle and pedestrian operations. Discuss TSA requirements, security badging requirements, perimeter fence integrity, gate security, and other needs. Attach drawings to graphically indicate secured and/or Security Identification Display Areas (SIDA), perimeter fencing, and available access points.

# 3.11 Wildlife Management.

Discuss in this section wildlife management procedures. Describe the maintenance of existing wildlife mitigation devices, such as perimeter fences, and procedures to limit wildlife attractants. Include procedures to notify Airport Operations of wildlife encounters. Include a reference to paragraph <u>3.10</u> for security (wildlife) fence integrity maintenance as required.

# 3.12 FOD Management.

In this section, discuss methods to control and monitor FOD: worksite housekeeping, ground vehicle tire inspections, runway sweeps, and so on. Include a reference to paragraph 3.15 for inspection requirements as required.

# 3.13 HAZMAT Management.

Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Safety Data Sheet (SDS), Material Safety Data Sheet (MSDS) or Product Safety Data Sheet (PSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be identified. Include a reference to paragraph <u>3.10</u> for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, <u>AC 150/5320-15</u>.

# 3.14 Notification of Construction Activities.

List in this section the names and telephone numbers of points of contact for all parties affected by the construction project. We recommend a single list that includes all telephone numbers required under this section. Include emergency notification procedures for all representatives of all parties potentially impacted by the construction. Identify individual representatives – and at least one alternate – for each party. List both on-duty and off-duty contact information for each individual, including individuals responsible for emergency maintenance of airport construction hazard lighting and barricades. Describe procedures to coordinate immediate response to events that might adversely affect the operational safety of the airport (such as interrupted NAVAID service). Explain requirements for and the procedures for the issuance of Notices to Airmen (NOTAMs), notification to FAA required by 14 CFR Part 77 and Part 157 and in the event of affected NAVAIDs. For NOTAMs, identify an individual, and at least one alternate, responsible for issuing and cancelling each specific type of Notice to

Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

#### 3.15 **Inspection Requirements.**

Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) or other airport operator's representative and the construction contractors. If the engineering consultants and/or contractors have a Safety Officer who will conduct such inspections, identify this individual. Describe procedures for special inspections, such as those required to reopen areas for aircraft operations. Part 139 requires daily airfield inspections at certificated airports, but these may need to be more frequent when construction is in progress. Discuss the role of such inspections on areas under construction. Include a requirement to immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

#### 3.16 Underground Utilities.

Explain how existing underground utilities will be located and protected. Identify each utility owner and include contact information for each company/agency in the master list. Address emergency response procedures for damaged or disrupted utilities. Include a reference to paragraph <u>3.14</u> for notification of utility owners of accidental utility disruption as required.

#### 3.17 **Penalties.**

Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, VPD, and others.

#### 3.18 **Special Conditions.**

Identify any special conditions that may trigger specific safety mitigation actions outlined in this CSPP: low visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, VPD, and other activities requiring construction suspension/resumption. Include a reference to paragraph <u>3.10</u> for compliance with airport safety and security measures and for radio communications as required. Include

a reference to paragraph <u>3.14</u> for emergency notification of all involved parties, including police/security, ARFF, and medical services.

## 3.19 Runway and Taxiway Visual Aids.

Include marking, lighting, signs, and visual NAVAIDS. Detail temporary runway and taxiway marking, lighting, signs, and visual NAVAIDs required for the construction. Discuss existing marking, lighting, signs, and visual NAVAIDs that are temporarily, altered, obliterated, or shut down. Consider non-federal facilities and address requirements for reimbursable agreements necessary for alteration of FAA facilities and for necessary flight checks. Identify temporary TORA signs or runway distance remaining signs if appropriate. Identify required temporary visual NAVAIDs such as REIL or PAPI. Quote from, rather than incorporate by reference, <u>AC 150/5340-1</u>, *Standards for Airport Markings; <u>AC 150/5340-18</u>, <i>Standards for Airport Sign Systems;* and <u>AC 150/5340-30</u>, as required. Attach drawings to graphically indicate proposed marking, lighting, signs, and visual NAVAIDs.

# 3.20 Marking and Signs for Access Routes.

Detail plans for marking and signs for vehicle access routes. To the extent possible, signs should be in conformance with the Federal Highway Administration MUTCD and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

# 3.21 Hazard Marking and Lighting.

Specify all marking and lighting equipment, including when and where each type of device is to be used. Specify maximum gaps between barricades and the maximum spacing of hazard lighting. Identify one individual and at least one alternate responsible for maintenance of hazard marking and lighting equipment in the master telephone list. Include a reference to paragraph <u>3.14</u>. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

# 3.22 Work Zone Lighting for Nighttime Construction.

If work is to be conducted at night, specify all lighting equipment, including when and where each type of device is to be used. Indicate the direction lights are to be aimed and any directions that aiming of lights is prohibited. Specify any shielding necessary in instances where aiming is not sufficient to prevent interference with air traffic control and aircraft operations. Attach drawings to graphically indicate the placement and aiming of lighting equipment. Where the plan only indicates directions that aiming of lights is prohibited, the placement and positioning of portable lights must be proposed by the Contractor and approved by the airport operator's representative each time lights are relocated or repositioned.

## 3.23 **Protection of Runway and Taxiway Safety Areas.**

This section should focus exclusively on procedures for protecting all safety areas, including those altered by the construction: methods of demarcation, limit of access, movement within safety areas, stockpiling and trenching restrictions, and so on. Reference AC 150/5300-13, as required. Include a reference to paragraph 3.10 for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 3.10 for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify open excavations as required. If runway and taxiway closures are proposed to protect safety areas, or if temporary displaced thresholds and/or revised declared distances are used to provide the required Runway Safety Area, include a reference to paragraphs 3.14 and 3.19. Detail procedures for protecting the runway OFZ, runway OFA, taxiway OFA and runway approach surfaces including those altered by the construction: methods of demarcation, limit of cranes, storage of equipment, and so on. Quote from, rather than incorporate by reference, AC 150/5300-13, as required. Include a reference to paragraph 3.24 for height (i.e., crane) restrictions as required. One way to address the height of equipment that will move during the project is to establish a three-dimensional "box" within which equipment will be confined that can be studied as a single object. Attach drawings to graphically indicate the safety area, OFZ, and OFA boundaries.

## 3.24 **Other Limitations on Construction.**

This section should describe what limitations must be applied to each area of work and when each limitation will be applied: limitations due to airport operations, height (i.e., crane) restrictions, areas which cannot be worked at simultaneously, day/night work restrictions, winter construction, and other limitations. Include a reference to paragraph 3.7 for project phasing requirements based on construction limitations as required.

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# APPENDIX A. RELATED READING MATERIAL

Obtain the latest version of the following free publications from the FAA on its Web site at <u>http://www.faa.gov/airports/</u>.

Number	Title and Description			
AC 150/5200-28	Notices to Airmen (NOTAMs) for Airport Operators			
	Guidance for using the NOTAM System in airport reporting.			
<u>AC 150/5200-30</u>	Airport Field Condition Assessments and Winter Operations Safety			
	Guidance for airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures.			
<u>AC 150/5200-33</u>	Hazardous Wildlife Attractants On or Near Airports			
	Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.			
<u>AC 150/5210-5</u>	Painting, Marking, and Lighting of Vehicles Used on an Airport			
	Guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.			
<u>AC 150/5210-20</u>	<i>Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports</i>			
	Guidance to airport operators on developing ground vehicle operation training programs.			
<u>AC 150/5300-13</u>	Airport Design			
	FAA standards and recommendations for airport design. Establishes approach visibility minimums as an airport design parameter, and contains the Object Free area and the obstacle free-zone criteria.			
AC 150/5210-24	Airport Foreign Object Debris (FOD) Management			
	Guidance for developing and managing an airport foreign object debris (FOD) program			

# **Table A-1. FAA Publications**

Number	Title and Description				
<u>AC 150/5320-15</u>	Management of Airport Industrial Waste				
	Basic information on the characteristics, management, and regulations of industrial wastes generated at airports. Guidance for developing a Storm Water Pollution Prevention Plan (SWPPP) that applies best management practices to eliminate, prevent, or reduce pollutants in storm water runoff with particular airport industrial activities.				
<u>AC 150/5340-1</u>	Standards for Airport Markings				
	FAA standards for the siting and installation of signs on airport runways and taxiways.				
<u>AC 150/5340-18</u>	Standards for Airport Sign Systems				
	FAA standards for the siting and installation of signs on airport runways and taxiways.				
<u>AC 150/5345-28</u>	Precision Approach Path Indicator (PAPI) Systems				
	FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.				
<u>AC 150/5340-30</u>	Design and Installation Details for Airport Visual Aids				
	Guidance and recommendations on the installation of airport visual aids.				
<u>AC 150/5345-39</u>	Specification for L-853, Runway and Taxiway Retroreflective Markers				
<u>AC 150/5345-44</u>	Specification for Runway and Taxiway Signs				
	FAA specifications for unlighted and lighted signs for taxiways and runways.				
<u>AC 150/5345-53</u>	Airport Lighting Equipment Certification Program				
	Details on the Airport Lighting Equipment Certification Program (ALECP).				
<u>AC 150/5345-50</u>	Specification for Portable Runway and Taxiway Lights				
	FAA standards for portable runway and taxiway lights and runway end identifier lights for temporary use to permit continued aircraft operations while all or part of a runway lighting system is inoperative.				
<u>AC 150/5345-55</u>	Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure				

Number	Title and Description			
<u>AC 150/5370-10</u>	Standards for Specifying Construction of Airports			
	Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.			
<u>AC 150/5370-12</u>	Quality Management for Federally Funded Airport Construction Projects			
EB 93	<i>Guidance for the Assembly and Installation of Temporary Orange</i> <i>Construction Signs</i>			
FAA Order 5200.11	FAA Airports (ARP) Safety Management System (SMS)			
	Basics for implementing SMS within ARP. Includes roles and responsibilities of ARP management and staff as well as other FAA lines of business that contribute to the ARP SMS.			
FAA Certalert 98-05	Grasses Attractive to Hazardous Wildlife			
	Guidance on grass management and seed selection.			
FAA Form 7460-1	Notice of Proposed Construction or Alteration			
FAA Form 7480-1	Notice of Landing Area Proposal			
FAA Form 6000.26	National NAS Strategic Interruption Service Level Agreement, Strategic Events Coordination, Airport Sponsor Form			

Obtain the latest version of the following free publications from the Electronic Code of Federal Regulations at <u>http://www.ecfr.gov/</u>.

# **Table A-2. Code of Federal Regulation**

Number	Title			
Title 14 CFR Part 77	Safe, Efficient Use and Preservation of the Navigable Airspace			
Title 14 CFR Part 139	Certification of Airports			
Title 49 CFR Part 1542	Airport Security			

Obtain the latest version of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration at <u>http://mutcd.fhwa.dot.gov/</u>.

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# APPENDIX B. TERMS AND ACRONYMS

# Table B-1. Terms and Acronyms

Term	Definition			
Form 7460-1	Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, <i>Safe, Efficient Use, and Preservation of the Navigable Airspace</i> . (See guidance available on the FAA web site at <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> .) The form may be downloaded at <a href="https://www.faa.gov/airports/resources/forms/">https://www.faa.gov/airports/resources/forms/</a> , or filed electronically at: <a href="https://www.faa.gov">https://www.faa.gov</a> .			
Form 7480-1	Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at <a href="http://www.faa.gov/airports/resources/forms/">http://www.faa.gov/airports/resources/forms/</a> .			
Form 6000-26	Airport Sponsor Strategic Event Submission Form			
AC	Advisory Circular			
ACSI	Airport Certification Safety Inspector			
ADG	Airplane Design Group			
AIP	Airport Improvement Program			
ALECP	Airport Lighting Equipment Certification Program			
ANG	Air National Guard			
AOA	Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.			
ARFF	Aircraft Rescue and Fire Fighting			
ARP	FAA Office of Airports			
ASDA	Accelerate-Stop Distance Available			
AT	Air Traffic			
ATCT	Airport Traffic Control Tower			
ATIS	Automatic Terminal Information Service			
АТО	Air Traffic Organization			
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under			

Term	Definition			
	the authority of 14 CFR Part 139, Certification of Airports.			
CFR	Code of Federal Regulations			
Construction	The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.			
CSPP	Construction Safety and Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.			
CTAF	Common Traffic Advisory Frequency			
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.			
DOT	Department of Transportation			
EPA	Environmental Protection Agency			
FAA	Federal Aviation Administration			
FOD	Foreign Object Debris/Damage			
FSS	Flight Service Station			
GA	General Aviation			
HAZMAT	Hazardous Materials			
НМА	Hot Mix Asphalt			
IAP	Instrument Approach Procedures			
IFR	Instrument Flight Rules			
ILS	Instrument Landing System			
LDA	Landing Distance Available			
LOC	Localizer antenna array			
Movement Area	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 aprons and aircraft parking areas (reference 14 CFR Part 139).			
MSDS	Material Safety Data Sheet			
MUTCD	Manual on Uniform Traffic Control Devices			
NAVAID	Navigation Aid			
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.			
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.			

Term	Definition				
NOTAM	Notices to Airmen				
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.				
OCC	Operations Control Center				
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis				
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane 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 purposes. (See <u>AC 150/5300-13</u> for additional guidance on OFA standards and wingtip clearance criteria.)				
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) 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 NAVAIDs 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. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to <u>AC 150/5300-13</u> for guidance on OFZ.				
OSHA	Occupational Safety and Health Administration				
OTS	Out of Service				
P&R	Planning and Requirements Group				
NPI	NAS Planning & Integration				
PAPI	Precision Approach Path Indicator				
PFC	Passenger Facility Charge				
PLASI	Pulse Light Approach Slope Indicator				
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.				
RA	Reimbursable Agreement				
RE	Resident Engineer				
REIL	Runway End Identifier Lights				
RNAV	Area Navigation				
ROFA	Runway Object Free Area				
RSA	Runway Safety Area. A defined 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 <u>AC 150/5300-13</u> .				
SDS	Safety Data Sheet				
SIDA	Security Identification Display Area				
SMS	Safety Management System				

Term	Definition			
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.			
SRM	Safety Risk Management			
SSC	System Support Center			
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with <u>AC 150/5300-13</u> .			
TDG	Taxiway Design Group			
Temporary	Any condition that is not intended to be permanent.			
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.			
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.			
TODA	Takeoff Distance Available			
TOFA	Taxiway Object Free Area			
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See <u>AC 150/5300-13</u> for guidance on declared distances.			
TSA	Taxiway Safety Area, or Transportation Security Administration			
UNICOM	A radio communications system of a type used at small airports.			
VASI	Visual Approach Slope Indicator			
VGSI Visual Glide Slope Indicator. A device that provides a visual glide slope to landing pilots. These systems include precision approach path indicato visual approach slope indicator (VASI), and pulse light approach slope in (PLASI).				
VFR	Visual Flight Rules			
VOR	Very High Frequency Omnidirectional Radio Range			
VPD	Vehicle / Pedestrian Deviation			

# APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST

This appendix is keyed to <u>Chapter 2</u>. 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 a required submittal.

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
General Considerations					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	<u>2.5</u>				
Operational safety is a standing agenda item for construction progress meetings.	<u>2.5</u>				
Scheduling of the construction phases is properly addressed.	<u>2.6</u>				
Any formal agreements are established.	<u>2.5.3</u>				
Areas and Operation	ons Affected by C	onstruction A	ctivity		
Drawings showing affected areas are included.	<u>2.7.1</u>				
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	<u>2.7.1.1</u>				
Access routes used by ARFF vehicles affected by the project are addressed.	<u>2.7.1.2</u>				
Access routes used by airport and airline support vehicles affected by the project are addressed.	2.7.1.3				
Underground utilities, including water supplies for firefighting and drainage.	2.7.1.4				

#### Table C-1. CSPP Checklist
Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	<u>2.7.1.5</u>				
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	<u>2.7.1</u>				
Temporary changes to taxi operations are addressed.	<u>2.7.2.1</u>				
Detours for ARFF and other airport vehicles are identified.	<u>2.7.2.2</u>				
Maintenance of essential utilities and underground infrastructure is addressed.	<u>2.7.2.3</u>				
Temporary changes to air traffic control procedures are addressed.	2.7.2.4				
	NAVAIDs				
Critical areas for NAVAIDs are depicted on drawings.	<u>2.8</u>				
Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.	<u>2.8</u>				
Protection of NAVAID facilities is addressed.	<u>2.8</u>				
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	<u>2.8</u>				
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	<u>2.8, 2.13.1,</u> <u>2.13.5.3.1,</u> <u>2.18.1</u>				
	Contractor Acces	S			
The CSPP addresses areas to which contractor will have access and how	<u>2.9</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
the areas will be accessed.					
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	<u>2.9</u>				
The location of stockpiled construction materials is depicted on drawings.	<u>2.9.1</u>				
The requirement for stockpiles in the ROFA to be approved by FAA is included.	<u>2.9.1</u>				
Requirements for proper stockpiling of materials are included.	<u>2.9.1</u>				
Construction site parking is addressed.	<u>2.9.2.1</u>				
Construction equipment parking is addressed.	<u>2.9.2.2</u>				
Access and haul roads are addressed.	<u>2.9.2.3</u>				
A requirement for marking and lighting of vehicles to comply with <u>AC 150/5210-5</u> , <i>Painting, Marking</i> <i>and Lighting of Vehicles Used on an</i> <i>Airport</i> , is included.	<u>2.9.2.4</u>				
Proper vehicle operations, including requirements for escorts, are described.	<u>2.9.2.5, 2.9.2.6</u>				
Training requirements for vehicle drivers are addressed.	<u>2.9.2.7</u>				
Two-way radio communications procedures are described.	<u>2.9.2.9</u>				
Maintenance of the secured area of the airport is addressed.	<u>2.9.2.10</u>				
W	ildlife Manageme	ent			
The airport operator's wildlife management procedures are addressed.	<u>2.10</u>				

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
Foreign	Dbject Debris Ma	nagement			
The airport operator's FOD management procedures are addressed.	<u>2.11</u>				
Hazardo	ous Materials Mai	nagement			
The airport operator's hazardous materials management procedures are addressed.	<u>2.12</u>				
Notificatio	on of Construction	n Activities			
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	<u>2.13</u>				
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.	<u>2.13.1</u>				
A list of local ATO/Technical Operations personnel is included.	<u>2.13.1</u>				
A list of ATCT managers on duty is included.	<u>2.13.1</u>				
A list of authorized representatives to the OCC is included.	<u>2.13.2</u>				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	<u>2.8, 2.13.2,</u> <u>2.18.3.3.9</u>				
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	2.13.2				
Emergency notification procedures for medical, fire fighting, and police	2.13.3				

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
response are addressed.					
Coordination with ARFF personnel for non-emergency issues is addressed.	<u>2.13.4</u>				
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	<u>2.13.5</u>				
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	2.13.5.3.2				
Ins	pection Requirem	ients	-		
Daily and interim inspections by both the airport operator and contractor are specified.	<u>2.14.1, 2.14.2</u>				
Final inspections at certificated airports are specified when required.	<u>2.14.3</u>				
U	nderground Utilit	ties			
Procedures for protecting existing underground facilities in excavation areas are described.	<u>2.15</u>				
	Penalties				
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	<u>2.16</u>				
	Special Condition	IS		-	
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	<u>2.17</u>				
Runway and Taxiway Visual Aid	s - Marking, Ligl	nting, Signs, a	nd Visu	ial NA	VAIDs
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	<u>2.18.1</u>				
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	<u>2.18.1, 2.18.3,</u> <u>2.18.4.2,</u> <u>2.20.2.4</u>				

Coordination	Reference	Addressed?			Remarks	
		Yes	No	NA		
The requirement for markings to be in compliance with <u>AC 150/5340-1</u> , <i>Standards for Airport Markings</i> , is specified.	<u>2.18.2</u>					
Detailed specifications for materials and methods for temporary markings are provided.	<u>2.18.2</u>					
The requirement for lighting to conform to <u>AC 150/5340-30</u> , <i>Design</i> and Installation Details for Airport Visual Aids; <u>AC 150/5345-50</u> , Specification for Portable Runway and Taxiway Lights; and <u>AC</u> <u>150/5345-53</u> , Airport Lighting Certification Program, is specified.	<u>2.18.3</u>					
The use of a lighted X is specified where appropriate.	<u>2.18.2.1.2,</u> <u>2.18.3.2</u>					
The requirement for signs to conform to <u>AC 150/5345-44</u> , Specification for Runway and Taxiway Signs; AC 50/5340-18, Standards for Airport Sign Systems; and <u>AC 150/5345-53</u> , Airport Lighting Certification Program, is specified.	<u>2.18.4</u>					
Marking a	and Signs For Acc	cess Routes				
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the MUTCD and/or State highway specifications.	<u>2.18.4.2</u>					
Hazard Marking and Lighting						
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	<u>2.20.1</u>					

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	<u>2.20.1</u>				
The CSPP considers less obvious construction-related hazards.	<u>2.20.1</u>				
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.	<u>2.20.2.1</u>				
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	<u>2.20.2.1</u>				
Red lights meeting the luminance requirements of the State Highway Department are specified.	<u>2.20.2.2</u>				
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 inch high.	<u>2.20.2.3</u>				
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	<u>2.20.2.3</u>				
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	<u>2.20.2.5</u>				
Markings for temporary closures are specified.	<u>2.20.2.5</u>				
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	2.20.2.7				

Coordination	Reference	Addressed?			Remarks	
		Yes	No	NA		
Work Zone Lig	hting for Nighttin	ne Constructio	on			
If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.	2.21					
Protection of Runway and Taxiway Safety Areas						
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	<u>2.22.1.1</u> , <u>2.22.3.1</u>					
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.	<u>2.22.1.2,</u> <u>2.22.3.2</u>					
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	<u>2.22.3.3</u>					
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.	<u>2.22.1.4</u>					
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	<u>2.22.1.4</u>					
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	2.22.1.4					
Grading and soil erosion control to maintain RSA/TSA standards are	<u>2.22.3.5</u>					

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
addressed.					
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	<u>2.22.2</u>				
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	2.22.3				
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	<u>2.22.4</u>				
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.	<u>2.22.4.3.6</u>				
Provisions for protection of runway approach/departure areas and clearways are included.	2.22.6				
Other Li	mitations on Con	struction			
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.	<u>2.23.1.2</u>				
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	<u>2.23.1.3</u>				

### APPENDIX D. 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 including information such as the date, time and name of the person conducting the inspection.

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
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.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
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.		
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		

### **Table D-1. Potentially Hazardous Conditions**

Item	Action Required (Describe)	No Action Required (Check)
approach zones.		
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.		
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.		
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.		
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.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
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.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
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.		
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.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

Item	Action Required (Describe)	No Action Required (Check)
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.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

### APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE

#### E.1 **Project Description.**

Runway 15-33 is currently 7820 feet long, with a 500 foot stopway on the north end. This project will remove the stopway and extend the runway 1000 feet to the north and 500 feet to the south. Finally, the existing portion of the runway will be repaved. The runway 33 glide slope will be relocated. The new runway 33 localizer has already been installed by FAA Technical Operations and only needs to be switched on. Runway 15 is currently served only by a localizer, which will remain in operation as it will be beyond the future RSA. Appropriate NOTAMS will be issued throughout the project.

E.1.1 During Phase I, the runway 15 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 15 takeoff and the departure end of runway 33 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 33 will be adjusted to provide the required RSA and applicable departure surface. Excavation near Taxiway G will require its ADG to be reduced from IV to III. See Figure E-1.



### Figure E-1. Phase I Example

- **Note 1:** Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.
- Note 2: Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

E.2 During Phase II, the runway 33 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 33 takeoff and the departure end of runway 15 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 15 will be adjusted to provide the required RSA and applicable departure surface. See Figure E-2.



### Figure E-2. Phase II Example

- **Note 1:** Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.
- Note 2: Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

E.3 During Phase III, the existing portion of the runway will be repaved with Hot Mix Asphalt (HMA) and the runway 33 glide slope will be relocated. Construction will be accomplished between the hours of 8:00 pm and 5:00 am, during which the runway will be closed to operations.



### **Figure E-3. Phase III Example**

Project	Runway 15-33 Extension and Repaving			
Phase	Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway
Scope of Work	N/A	Extend Runway 15-33 1,000 ft on north end with Hot Mix Asphaltic Concrete (HMA).	Extend Runway 15-33 500 ft on south end with Hot Mix Asphaltic Concrete (HMA).	Repave existing runway with HMA Relocate Runway 33 Glide Slope
Effects of Construction Operations	N/A	Existing North 500 ft closed	Existing South 500 ft closed	Runway closed between 8:00 pm and 5:00 am Edge lighting out of service
Construction Phase	N/A	Phase I (Anticipated)	Phase II (Anticipated)	Phase III (Anticipated)
Runway 15 Average Aircraft Operations	Carrier: 52 /day GA: 26 /day Military: 11 /day	Carrier: 40 /day GA: 26 /day Military: 0 /day	Carrier: 45 /day GA: 26 /day Military: 5 /day	Carrier: 45 / day GA: 20 / day Military: 0 /day
Runway 33 Average Aircraft Operations	Carrier: 40 /day GA: 18 /day Military: 10 /day	Carrier: 30 /day GA: 18 /day Military: 0 /day	Carrier: 25 /day GA: 18 /day Military: 5 /day	Carrier: 20 /day GA: 5 /day Military: 0 /day
Runway 15-33 Aircraft Category	C-IV	C-IV	C-IV	C-IV
Runway 15 Approach Visibility Minimums	1 mile	1 mile	1 mile	1 mile
Runway 33 Approach Visibility Minimums	<sup>3</sup> ⁄4 mile	<sup>3</sup> ⁄4 mile	<sup>3</sup> ⁄4 mile	1 mile

### Table E-1. Operational Effects Table

**Note:** Proper coordination with Flight Procedures group is necessary to maintain instrument approach procedures during construction.

Proje	ct	Runway 15-33 Extension and Repaving				
Phas	e	Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway	
Runway 15TORADeclaredTODA		7,820	7,320	8,320	9,320	
		7,820	7,320	8,320	9,320	
	ASDA	7,820	7,320	7,820	9,320	
	LDA	7,820	6,820	7,820	9,320	
Runway 33	TORA	7,820	7,320	8,320	9,320	
Declared Distances	TODA	7,820	7,320	8,320	9,320	
	ASDA	8,320	6,820	8,320	9,320	
LDA		7,820	6,820	7,820	9,320	
Runway 15 Approach Procedures		LOC only	LOC only	LOC only	LOC only	
		RNAV	RNAV	RNAV	RNAV	
		VOR	VOR	VOR	VOR	
Runway 33 Approach Procedures		ILS	ILS	ILS	LOC only	
		RNAV	RNAV	RNAV	RNAV	
		VOR	VOR	VOR	VOR	
Runwa NAVA	y 15 IDs	LOC	LOC	LOC	LOC	
Runwa NAVA	y 33 IDs	ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR	
Taxiway G ADG		IV	III	IV	IV	
Taxiway (	G TDG	4	4	4	4	
ATCT (hou	rs open)	24 hours	24 hours	24 hours	0500 - 2000	
ARFF I	ndex	D	D	D	D	

Project	Runway 15-33 Extension and Repaving			
Phase	Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway
Special Conditions	Air National Guard (ANG) military operations	All military aircraft relocated to alternate ANG Base	Some large military aircraft relocated to alternate ANG Base	All military aircraft relocated to alternate ANG Base
Information for NOTAMs		Refer above for applicable declared distances. Taxiway G limited to 118 ft wingspan	Refer above for applicable declared distances.	Refer above for applicable declared distances. Airport closed 2000 – 0500. Runway 15 glide slope OTS.

**Note:** This table is one example. It may be advantageous to develop a separate table for each project phase and/or to address the operational status of the associated NAVAIDs per construction phase.

Complete the following chart for each phase to determine the area that must be protected along the runway and taxiway edges:

Table E-2. Runway	y and Taxiway	<b>Edge Protection</b>
-------------------	---------------	------------------------

Runway/Taxiway	Aircraft Approach Category* A, B, C, or D	Airplane Design Group* I, II, III, or IV	Safety Area Width in Feet Divided by 2*

\*See <u>AC 150/5300-13</u> to complete the chart for a specific runway/taxiway.

Complete the following chart for each phase to determine the area that must be protected before the runway threshold:

Runway End Number	Airplane Design Group* I, II, III, or IV	Aircraft Approach Category* A, B, C, or D	Minimum Safety Area Prior to the Threshold*	Minimum Threshold Required App	Distance to   Based on proach Slope*
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	:1

### Table E-3. Protection Prior to Runway Threshold

\*See <u>AC 150/5300-13</u> to complete the chart for a specific runway.

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**APPENDIX F. ORANGE CONSTRUCTION SIGNS** 

Figure F-1. Approved Sign Legends

# CONSTRUCTION AHEAD

CONSTRUCTION ON RAMP

# RWY 4L TAKEOFF RUN AVAILABLE 9,780 FT



Figure F-2. Orange Construction Sign Example 1

**Note:** For proper placement of signs, refer to EB 93.



Figure F-3. Orange Construction Sign Example 2

**Note:** For proper placement of signs, refer to EB 93.

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### **Advisory Circular Feedback**

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subj	ject: AC 150/5370-2G	Date:	
Plea	use check all appropriate line it	ems:	
	An error (procedural or typog	raphical) has been noted in paragrap	h on page
	Recommend paragraph	on page	be changed as follows:
	In a future change to this AC, (Briefly describe what you want	please cover the following subject: <i>added.)</i>	
	Other comments:		
	I would like to discuss the abo	ove. Please contact me at (phone nur	mber, email address).
Subi	mitted by:	Date:	

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### ATTACHMENT B

## Sample Preconstruction Conference Agenda



Construction Safety Phasing Plan (CSPP)



### SAMPLE AGENDA

### Pre-Construction Meeting Reno-Tahoe International Airport Insert Date of Pre-Construction Meeting

**Runway 16R-34L Reconstruction Project** 

- I. Project Scope
- II. Personnel/Representatives
- III. Schedule
- IV. Airport Safety and Security
- V. Inspection
- VI. Testing
- VII. Submittals
- **VIII.** Administration
- IX. Payment
- X. Labor Requirements
- XI. Environmental
- XII. Attachment
  - **1. Construction Managers Duties**

2. AC 150/5370-2G – Operational Safety on Airports During Construction



### ATTACHMENT C

## Project Documents Special Provision 8 – Progress Meetings



#### **SPECIAL PROVISION NO. 8**

#### **PROGRESS MEETINGS**

<u>SP8-01 WEEKLY PROGRESS MEETINGS</u>. The Construction Manager will conduct Progress Meeting weekly at regularly scheduled times convenient for all parties involved. Progress Meetings are in addition to specific meetings held for other purposes, such as coordination meetings. A four week look ahead schedule with the current week shown as week one will be developed by the Contractor prior to the start of the meeting and will be discussed during the planning portion of the agenda. Additionally, discussions will address administrative and technical issues of concern, determining resolutions and development of deadlines for resolution within allowable time frames.

<u>SP8-02 ATTENDEES.</u> As may be required by the Construction Manager, in addition to representatives of the Authority and the Contractor, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by individuals directly involved with the Contract and authorized to conclude matters relating to progress.

**<u>SP8-03 AGENDA.</u>** The agenda shall include:

- A. Review and correct or approve minutes of the previous Progress meeting prepared by the Construction Manager. The meeting minutes will document issues of significance including submittals, schedules, quality control, safety, problems encountered, and the assignment of responsibilities for future action.
- B. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
- C. Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
- D. Review the present and future needs of each entity present, including such item
  - (1) Interface Requirements
  - (2) Time
  - (3) Sequences
  - (4) Deliveries
  - (5) Off-Site Fabrication Problems
  - (6) Access
  - (7) Site Utilization
  - (8) Submittals
  - (9) Requests for Information
  - (10) Non-Compliance Notices
  - (11) Temporary Facilities and Services
  - (12) Hours of Work
  - (13) Resource Allocation

- (14) Hazards and Risks
- (15) Housekeeping
- (16) Quality and Work Standards
- (17) Safety Issues
- (18) Change Orders
- (19) Documentation of Information for Payment Requests

The Construction Manager will record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

### **END OF SECTION SP8**



### ATTACHMENT D

Project Drawings:



Construction Safety Phasing Plan (CSPP)



obs\8494\_RTIA Runways\RTIA Runway 16R\_0A\Civil\Dwg\2-16R-34L\_BidPkg2\PH0001\_16R.dwg 12/9/2019 4:45 PM Megan Klin










































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3. DEPTH OF EXCAVATION SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO

4. END JOINTS BETWEEN ADJACENT SECTIONS OF WILDLIFE DETERRENT CHAIN LINK FENCE. FABRIC SHALL BE LAPPED 4" AND TIED WITH GALVANIZED WIRE TIES A 2' O.C. AND AT



# ATTACHMENT E

# Project Documents:

# Special Provision 3 – Insurance Requirements



### **SPECIAL PROVISION NO. 3**

#### **INSURANCE REQUIREMENTS**

**<u>SP3-01 CONTRACTOR PROVIDED INSURANCE.</u>** The Contractor will provide the following insurance coverage for himself, all sub-contractors, suppliers, material, men, and any and all others accessing the project on the Contractor's behalf.

### INSURANCE/INDEMNIFICATION SPECIFICATIONS

#### **INTRODUCTION**

The Reno-Tahoe Airport Authority (Owner) has established specific indemnification, insurance, and safety requirement for contracts to help assure that reasonable insurance coverage is purchased and safe working conditions are maintained. Indemnification and hold harmless clauses are intended to assure that a Contractor accepts and is able to pay for the loss or liability related to its activities.

The Contractor's attention is directed to the insurance requirements below. It is highly recommended that the Contractor confer with its respective insurance carriers or brokers to determine in advance of bid/proposal submission the availability of insurance certificates and endorsements as prescribed and provided herein. If there are any questions regarding these insurance requirements, it is recommended that the agent/broker contact the Authority Manager of Finance directly at (775) 328-6435. If the successful Contractor fails to comply strictly with the insurance requirements, that Contractor may be disqualified from award of the contract.

### **SP3-02 INDEMNIFICATION AGREEMENT**

The Contractor shall indemnify, hold harmless and defend the Owner, its Board of Trustees and its officers, directors, agents, servants, and employees from any and all liabilities, losses, suits, claims, judgments, fines, penalties, demands or expenses, including all reasonable costs for investigation and defense thereof (including, but not limited to, attorneys' fees, court costs, and expert fees), for injury or damage to persons or property sustained in or about the Airport, as a proximate result of the acts or omissions of the Contractor, its agents, servants, or employees, subcontractors and subordinate subcontractors, or arising out of the operations of the Contractor upon and about the Airport, excepting such liability as may result from the sole negligence of the Owner, its officers, directors, servants, agents and employees. Contractor shall further use legal counsel reasonably acceptable to the Owner in carrying out Contractor's obligations hereunder. Any final judgment rendered against the Owner for any cause for which Contractor is liable hereunder shall be conclusive against Contractor as to liability and amount, where the time for appeal therefrom has expired. The Indemnity provisions set forth herein shall survive the expiration or early termination of any Agreement. The parties agree that if any part of this indemnification provision is found to conflict with applicable laws, such part shall be unenforceable only insofar as it conflicts with said laws, and that this indemnification provision shall be judicially interpreted and rewritten to provide the broadest possible indemnification legally permissible.

### SP3-03 CONTRACTOR PROVIDED INSURANCE

The Contractor shall provide the following insurance coverage for itself, all subcontractors, suppliers, material men, and all others accessing the project on the Contractor's behalf.

### **COMMERCIAL GENERAL LIABILITY INSURANCE**

Using Insurance Services Office "Commercial General Liability" policy form CG 00 01, with an edition date prior to 2004, or the exact equivalent. Coverage for an additional insured shall not be limited to its vicarious liability. Defense costs must be paid in addition to limits. Limits shall be no less than \$10,000,000 per occurrence for all covered losses and no less than \$10,000,000 general aggregate.

### **COURSE OF CONSTRUCTION INSURANCE**

Builder's Risk or Course of Construction Insurance insuring on a "all risks" basis, with a limit equal to the completed value of the project and all materials and equipment to be incorporated therein, including property in transit or elsewhere and insuring the interests of the Owner, Contractor and its subcontractors of any tier providing equipment, materials, or services for the project. The Airport shall be named as loss payee; and the insurers shall waive all rights of recovery against Airport.

<u>SP3-04 ADDITIONAL CONTRACTOR PROVIDED INSURANCE</u>. The contractor will provide the following additional insurance coverage:

### WORKERS' COMPENSATION INSURANCE

The Contractor and its subcontractor shall procure Nevada Worker's Compensation Insurance as evidenced by a Certificate of Insurance from an acceptable insurance company covering contractor's employees for at least the statutorily required limits.

Employer's Liability Insurance with a minimum limit of \$1,000,000 per occurrence, including stop gap insurance.

## **BUSINESS AUTOMOBILE COVERAGE**

The Contractor or subcontractor shall be responsible for maintaining Business Auto Coverage on ISO form CA 00 01 including owned, and non-owned and hired autos, or the exact equivalent. Limits shall be no less than \$5,000,000 per accident, Combined Single Limit. If Contractor or Contractor's employees will use personal autos in any way on this project, Contractor shall obtain evidence of personal auto liability coverage for each person.

## **CONTRACTOR'S TOOLS AND EQUIPMENT**

The Contractor is responsible for its own construction tools and equipment whether owned, leased, rented, or borrowed for use at the Airport worksite.

### SP3-05 DEDUCTIBLES AND SELF-INSURED RETENTIONS

Contractor's Commercial General Liability: \$25,000 per claim Course of Construction Insurance: \$10,000 per claim Any changes to the deductibles or self-insured retentions made during the term of the Agreement or during the term of any policy must be approved by the Owner prior to the change taking effect.

### SP3-06 ADDITIONAL INSURANCE CRITERIA

Contractor shall furnish the Owner with insurance certificates as evidence that the foregoing insurance is in force prior to commencement of work on the contract, including complete copies of the policies if requested.

Said policies shall be with insurance companies authorized to do business in the State of Nevada with an A. M. Best rating of A- VII or better.

Such policies shall provide that written notice shall be given to Owner thirty (30) days prior to cancellation or material change of any protection which said policies provide.

Said policies, except Worker's Compensation, shall name Owner, its Board, officers, employees, related entities, and representatives as additional insureds. The policies will be primary and any other insurance carried by Contractor and/or Owner shall be excess and not contributing therewith.

In the event Contractor fails to provide Owner with the insurance described, no work shall commence on the contract site. If the coverage required by the Contractor is terminated or reduced for any reason, all work on the contract site shall immediately stop until the all the required coverages are in place.

The extent of coverage or the limits of liability provided under the policies procured by the Contractor and/or subcontractors shall not be construed to be a limitation on the nature or extent of the Contractors' obligations or to relieve the Contractor of any such obligations or representation by the Owner as to the adequacy of the insurance to protect the Contractor against the obligations imposed on it by this or any other contract.

It is the Contractor's responsibility to familiarize itself with the coverages described herein.

Immediate notification must be given to the Owner and/or its agent upon receiving any knowledge or notification of claim or litigation on which the Owner may be named.

### SP3-07 COSTS

Costs for providing such insurance as described above shall be incidental to the work.

## END OF SECTION SP3



# ATTACHMENT F

# Project Documents:

General Provision 70 – Legal Regulations and Responsibility to the Public



#### SECTION 70 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

<u>70-01 LAWS TO BE OBSERVED</u>. The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

**<u>70-02 PERMITS, LICENSES, AND TAXES.</u>** The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

**70-03 PATENTED DEVICES, MATERIALS, AND PROCESSES.** If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

**70-04 RESTORATION OF SURFACES DISTURBED BY OTHERS**. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) must be shown on the plans and is indicated as follows:

1. Utility Service by NV Energy to existing and proposed lighting vault.

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the Construction Manager.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the Construction Manager, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

<u>70-05 FEDERAL PARTICIPATION</u>. The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed

as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

**70-06 SANITARY, HEALTH, AND SAFETY PROVISIONS.** The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

<u>70-07 PUBLIC CONVENIENCE AND SAFETY</u>. The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic*, and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the Construction Manager. If the Construction Manager determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the Construction Manager reserves the right to assign the task of debris removal to a third party and recover the resulting costs from payments due the Contractor.

**70-08 CONSTRUCTION SAFETY AND PHASING PLAN (CSPP).** The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is included within this document.

**<u>70-09 USE OF EXPLOSIVES.</u>** The use of explosives is not permitted on this project.

**70-10 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE.** The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Construction Manager has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the nonexecution thereof by the Contractor, the Contractor shall restore, at their expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

**70-11 RESPONSIBILITY FOR DAMAGE CLAIMS.** The Contractor shall indemnify and hold harmless the Engineer/Construction Manager and the Owner and their officers, agents, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in

constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

**70-12 THIRD PARTY BENEFICIARY CLAUSE**. It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third-party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

**70-13** <u>OPENING SECTIONS OF THE WORK TO TRAFFIC</u>. If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his/her own estimate of the difficulties involved in arranging his/her work to permit such beneficial occupancy by the Owner as described within the Special Provisions.

Upon completion of any portion of work listed above, such portion shall be accepted by the Owner in accordance with Section 50, paragraph 50-14, *Partial Acceptance*.

No portion of the work may be opened by the Contractor until directed by the Owner in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the RPR, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the Owner shall be repaired by the Contractor at their expense.

The Contractor shall make their own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

**70-14 CONTRACTOR'S RESPONSIBILITY FOR WORK.** Until the Engineer's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except

damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at their own expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

## 70-15 CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF

**OTHERS.** As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and/or in the contract documents.

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the Construction Manager.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's "Person to Contact" no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Construction Manager.

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the Construction Manager and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the Construction Manager continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or their own surety.

**70-15.1 FAA FACILITIES AND CABLE RUNS.** The Contractor is hereby advised that the construction limits of the project include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. The Contractor, during the execution of the project work, shall comply with the following:

- A. The Contractor shall permit FAA maintenance personnel the right of access to the project work site for purposes of inspecting and maintaining all existing FAA owned facilities.
- B. The Contractor shall provide notice to the FAA Air Traffic Organization (ATO)/Technical Operations/System Support Center (SSC) Point-of-Contact through the Construction Manager a minimum of seven (7) calendar days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.
- C. If execution of the project work requires a facility outage, the Contractor shall contact the FAA Point-of-Contact through the Construction Manager a minimum of 72 hours prior to the time of the required outage.
- D. Any damage to FAA cables, access roads, or FAA facilities during construction caused by the Contractor's equipment or personnel whether by negligence or accident will require the Contractor to repair or replace the damaged cables, access road, or FAA facilities to FAA requirements. The Contractor shall not bear the cost to repair damage to underground facilities or utilities improperly located by the FAA.
- E. If the project work requires the cutting or splicing of FAA owned cables, the FAA Point-of-Contact through the Construction Manager shall be contacted a minimum of 72 hours prior to the time the cable work commences. The FAA reserves the right to have a FAA representative on site to observe the splicing of the cables as a condition of acceptance. All cable splices are to be accomplished in accordance with FAA specifications and require approval by the FAA Point-of-Contact as a condition of acceptance by the Owner. The Contractor is hereby advised that FAA restricts the location of where splices may be installed. If a cable splice is required in a location that is not permitted by FAA, the Contractor shall furnish and install a sufficient length of new cable that eliminates the need for any splice.

<u>70-16 FURNISHING RIGHTS-OF-WAY</u>. The Owner will be responsible for furnishing all rights-ofway upon which the work is to be constructed in advance of the Contractor's operations. **70-17 PERSONAL LIABILITY OF PUBLIC OFFICIALS**. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, Construction Manager, their authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

**70-18 NO WAIVER OF LEGAL RIGHTS.** Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.

**70-19 ENVIRONMENTAL PROTECTION.** The Contractor shall comply with all federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

**70-20** ARCHAEOLOGICAL AND HISTORICAL FINDINGS. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during their operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the RPR. The RPR will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work*, and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

<u>70-21 INSURANCE REQUIREMENTS.</u> Insurance requirements are outlined within the Special Provisions.

## END OF SECTION 70



# ATTACHMENT G

# Project Documents:

Special Provision 10 – Phasing, Duration, and Liquidated Damages



### **SPECIAL PROVISION NO. 10**

### PHASING, DURATION AND LIQUIDATED DAMAGES

**SP10-01 OVERVIEW**. The work under this contract for Runway 16R-34L Rehabilitation at Reno-Tahoe International Airport shall be performed in a phased construction schedule in order to minimize impacts on airport operations and to maximize flexibility for the Contactor. The Contractor shall be required to prepare the phasing plan in order to maximize his efficiency, while addressing certain constraints imposed by Airport Operations.

<u>SP10-02</u> WORK DURATION. The entire project shall consist of a Base Bid and six (6) Bid Options as depicted on the Drawings. The Owner will select the Base Bid and possibly one or more of the Bid Options based upon the bidding results and the amount of funding available at the time of award. A notice to proceed will be issued upon which the contractor shall commence a non-construction Procurement Phase. A second notice to proceed for construction will be issued once the owner in its sole discretion is satisfied all items necessary to complete the Procurement Phase have been achieved. The overall project duration shall be the duration as shown in the table below. The Contractor may work on all awarded Bid Options simultaneously provided the work is performed in accordance with the Construction Safety Phasing Plan (CSPP), designated Restricted Work Areas and accepted Project Schedule.

	Overall
Awarded Project	Project Duration
	(Calendar Days)
Procurement Phase	45
Base Bid	145
Base Bid + Bid Option 1	180
Base Bid + Bid Options 1 and 2	255
Base Bid + Bid Options 1, 2 and 3	335
Base Bid + Bid Options 1, 2, 3 and 4	355
Base Bid + Bid Options 1, 2, 3, 4 and 5	380
Base Bid + Bid Options 1, 2, 3, 4, 5 and 6	400

The Procurement Phase includes submission and acceptance of all contract materials and procuring construction materials necessary for project startup. Submission items include but are not limited to the Safety Plan Compliance Document (SPCD), P-501 Portland Cement Concrete pavement, P610 Portland Cement Concrete and P-201S asphalt treated permeable base course.

Project Calendar days will accrue immediately upon Procurement Phase NTP. A separate notice to proceed will be issued once Procurements Phase items are complete and accepted at owners sole discretion. The project duration will not be extended to accommodate submittals that are rejected or that require re-submission.

A winter shutdown period may be executed at the owner's discretion should construction activities extend into winter months and the work cannot be completed per the project specifications. Should a winter shutdown be necessary, the shutdown period will begin at a mutually acceptable period. Construction duration days will be suspended during a winter shutdown such that the project area is returned to the owner and can be utilized by the owner without restriction. Contractor should note that the project area will be required to meet all FAA criteria to be deemed acceptable for use by the Owner. The Contractor will not be permitted onsite during a winter shutdown period. The Contractor will be allowed access to the staging yards located outside the airport operations area (AOA) during the Procurement Phase. The Contractor will not be allowed access to the airport operations area (AOA) during the Procurement Phase, which includes the staging area along Mill Street.

### General

It is the intent that the contractor completes all reconstruction work upon NTP on Runway 16R-34L. Prior to opening Runway 16R-34L, all signing and striping shall be completed to convert the runway to Runway 17R-35L. Runway 7-25 will be shut down during a portion of the Runway 16R-34L construction. Once shut down, all signing and striping changes on Runway 7-25 shall be completed to convert the runway to Runway 8-26. Upon opening Runway 17R-35L to airport operations, the Contractor shall perform signing and striping on Runway 16L-34R to convert it to Runway 17L-35R.

No runway shall be opened under a revised designation until September 10, 2020 or later. There shall be no case where a parallel runway is opened under a different designation during the entire length of construction (e.g. Runway 16L-34R opened while Runway 17R-34L is also open). There shall be no case where Runway 16R-34L and 16L-34R will be permitted to be closed simultaneously.

### **Construction Timing Limitations**

While the amount of work and type of work will change based upon which bid options are selected, the Contractor must perform all work on an active airfield. In order to maintain a safe and operational airfield, certain time constraints are required to be maintained. These time constraints are as follows:

To facilitate the possibility of an emergency opening, the contractor shall maintain the Runway 7-25 surface and the runway safety area in a ready to open condition at all times as required by FAA AC 150-5370-2F unless specifically allowed for closure. This condition shall include, at a minimum, immediate and continuous foreign object debris (FOD) removal on Runway 7-25 at all times. **Runway 7-25 shall be deemed unavailable for emergency purposes when, upon direction by Airport Operations, it cannot be opened for use within fifteen (15) minutes.** The Contractor is also cautioned that Runway 7-25 shall be opened whenever active work is not taking place within the runway safety area.

Work within Runway 7-25 Runway Safety Area that is not allowed under intermittent closures shall be performed under a **single thirty (30) calendar day** continuous closure. A separate notice to proceed shall be issued before this work is commenced. The work performed under the continuous closure shall include dig out and off haul of existing pavement and asphalt treated permeable base, subgrade preparation, underground electrical work, placement of new PCC pavement and necessary cleanup to return the Runway 7/25 surface and runway safety area to a ready to open condition. The continuous closure will be deemed complete only after Airport Operations has inspected the Runway 7-25 surface and runway safety area found them in a ready to open condition as required by FAA AC 150-5370-2F.

#### SP 10-03 WORK AREAS.

#### **Reconstruction Phase (Refer to Phasing Plans for depictions of work areas)**

The <u>Reconstruction Phase</u> of work consists of all work on Runway 16R-34L with the exception of signing and striping modifications.

#### Runway 16R-34L

**Restricted Work Area 16R-A (Reference Drawing PH1.2).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-A anytime within the Reconstruction Phase provided Restricted Work Area 16R-D is open and operational. The Contractor must complete all work within Restricted Work Area 16R-A within 45 days.

**Restricted Work Area 16R-D (Reference Drawing PH1.3).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-D anytime within the Reconstruction Phase provided Restricted Work Area 16R-A is open and operational. The Contractor must complete all work within Restricted Work Area 16R-D within 45 days.

**Restricted Work Area 16R-L (Reference Drawing PH1.4).** The Contractor must complete all work within Restricted Work Area 16R-L as shown on drawing PH1.4 within 30 days between the dates of August 10, 2020 and September 10, 2020. Restricted Work Area 16R-P must remain open and operational throughout any closure within Restricted Work area 16R-L.

**Restricted Work Area 16R-N (Reference Drawing PH1.5).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-N anytime within the Reconstruction Phase provided Restricted Work Area 16R-L and 16R-P are open and operational.

**Restricted Work Area 16R-P (Reference Drawing PH1.6).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-P anytime within the Reconstruction Phase provided Restricted Work Area 16R-L and 16R-N are open and operational. The Contractor must complete all work within Restricted Work Area 16R-P within 45 days.

#### Signing and Striping Phase (Refer to Phasing Plans for depictions of work areas)

The <u>Signing and Striping Phase</u> of work consists of all signing and striping work on the airfield. No other types of work are allowed during this phase.

**Runway 16R-34L** - All signing and striping changes shall be completed during the course of the <u>16R Reconstruction Phase</u> prior to runway opening. Runway may not be opened with revised designations sooner than September 10, 2020. All striping within Restricted Work Areas 16R-A, 16R-D, and 16R-P must be completed within a 7-day period, for each work area. Contractor shall note, closure restrictions identified above and within the drawings for each work area will apply during the signage and striping phase of work.

**Runway 7-25** - All signing and striping changes shall be completed during the course of the <u>16R</u> <u>Reconstruction Phase</u> prior to Runway 7-25 opening. Runway may not be opened with revised designations sooner than September 10, 2020. Once signing and striping work on Runway 7-25 has begun, the work shall progress expeditiously to completion. In no case shall Runway 7-25 be closed for longer than 30 Calendar days at any point during the contract.

**Restricted Work Area 25-A (Reference Drawing PH3.2).** The Contractor must complete all work within Restricted Work Area 25-A within 5 days between the dates of August 10, 2020 and September 10, 2020 provided Restricted Work Area 25-B is open and operational

**Restricted Work Area 25-B (Reference Drawing PH3.3).** The Contractor must complete all work within Restricted Work Area 25-B within 5 days between the dates of August 10, 2020 and September 10, 2020 provided Restricted Work Area 25-A is open and operational.

**Restricted Work Area 25-C (Reference Drawing PH3.4).** The Contractor must complete all work within Restricted Work Area 25-C within 5 days between the dates of August 10, 2020 and September 10, 2020 provided Restricted Work Area 16L-L are open and operational.

**Restricted Work Area 16L-L (Reference Drawing PH2.5).** The Contractor must complete all work within Restricted Work Area 16L-L as part of the 16L-34R restriping phase (see below).

**Runway 16L-34R** – Signing and striping for this runway may be performed once Runway 16R-34L is opened under its revised designation. Runway may not be opened with revised designations sooner than September 20, 2020. Once signing and striping work on Runway 16L-34R has begun, the work shall progress expeditiously to completion. In no case shall Runway 16L-34R be closed for longer than 30 Calendar days at any point during the contract.

**Restricted Work Area 16L-A (Reference Drawing PH2.2).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-A anytime within the 16L-34R Phase provided Restricted Work Area 16R-D is open and operational.

**Restricted Work Area 16L-D (Reference Drawing PH2.3).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-D anytime within the 16L-34R Phase provided Restricted Work Area 16R-A is open and operational.

**Restricted Work Area 16L-L (Reference Drawing PH2.5).** The Contractor must complete all work within Restricted Work Area 16L-L within 5 days provided Restricted Work Area 16L-J,16L-P, and 25-C are open and operational.

**Restricted Work Area 16L-P (Reference Drawing PH2.6).** The Contractor will be allowed to perform items of work within Restricted Work Area 16R-P anytime within the 16L-34R Phase provided Restricted Work Area 16R-L is open and operational.

<u>SP10-03 PHASING PLAN.</u> Prior to beginning any operations on site, the Contractor shall prepare a detailed written and graphic construction progress plan indicating how he intends to perform the work addressing the constraints listed. Such plan must address work areas, haul routes, staging areas, flagged crossings and schedule at a minimum. Costs for these items shall be reflected in the bid price for P-102-1 Airport Safety and Security.

This plan must be approved by the Owner and Construction Manager prior to the Contractor beginning any work.

<u>SP10-04 STAGING AREAS.</u> The Contractor is to use onsite staging areas as shown on the Project Drawings.

<u>SP10-05 LIQUIDATED DAMAGES.</u> The Contractor agrees that he/she and his/her Surety shall be liable for and pay to the Owner the dollar amounts as fixed below, agreed as liquidated damages per each calendar day, Sundays and holidays included, that the Work remains incomplete or area unopened, not as penalty but as a liquidation of a reasonable portion of damages that will be incurred by the Owner by the failure of the Contractor to meet his/her obligation by the time or date stipulated. For failure to have the following areas open during the periods specified or for failure to complete and open areas in durations specified hereinbefore:

AREA	LIQUIDATED DAMAGES	
Overall Construction	\$5,000 per calendar day for each day that project remains incomplete	
Timeframe	or unusable to Owner beyond the specified duration.	
FAA Cables	\$500 per hour for each hour that the cables remain inoperable. The contractor will be responsible for the cost to replace these cables in addition to liquidated damages. No Get Well Provision shall offset any Liquidated Damages assessed under this item.	
Restricted Dates	\$1,000 per hour or portion thereof for each hour a Restricted work area is not available for air traffic due to contractors' operations. This time frame shall include airport operations approval of restricted area for aircraft operations.	

These damages are cumulative in that any damages assessed for failure to complete one area are in addition to damages being assessed for failure to complete another.

If the Work is determined to be unsatisfactory for any reason and requires removal and replacement, rework, or any action that will affect Airport Operations, it will be considered part of the Work, and if the time period exceeds that specified or if areas cannot be opened, liquidated damages will be assessed.

## END OF SECTION SP10



# ATTACHMENT H

Project Documents:

Special Provision 12 – Protection of Airport Cables, Controls, NAVAIDS and Weather Bureau Facilities


## **SPECIAL PROVISION NO. 12**

## PROTECTION OF AIRPORT, CABLES, CONTROLS, NAVAIDS AND WEATHER BUREAU FACILITIES

**SP12-01 DESCRIPTION.** The Contractor is hereby informed that there are installed on the Airport FAA NAVAIDS including without limitation, ASR, UHF and VHF receivers and transmitters; U.S. Weather Bureau facilities; airfield lighting systems; electric cables and controls relating to such NAVAIDS and facilities. Such NAVAIDS, weather bureau and other facilities, and electric cables must be fully protected during the entire construction time. Work under this contract can be accomplished in the vicinity of these facilities and cables only at approved periods of time.

Approval is subject to withdrawal at any time because of change in the weather, emergency conditions on the existing airfield areas, anticipation of emergency conditions, and for any other reason determined by the Construction Manager acting under the orders and instructions of the airport management and the designated FAA representative. Any instructions to the Contractor to clear any given area, at any time, by the Construction Manager, the Airport Management or the FAA control tower (by radio or other means) shall be immediately executed. Construction work will be commenced in the cleared area only when additional instructions are issued by the Construction Manager.

Power and control cables leading to and from any FAA NAVAIDS, Weather Bureau and other facilities, will be marked in the field by the local FAA Airway Facilities Sector personnel or the Construction Manager for the information of the Contractor, before any work in their general vicinity is started. Thereafter, through the entire time of this construction, the Contractor shall not allow any construction equipment to cross these cables without first protecting the cable with steel boiler plate, or similar structural devices, for three (3') feet each side of the marked cable route. All excavation within three (3') feet of existing cables shall be accomplished by hand digging only.

This Special Provision intends to make perfectly clear the need for protection of FAA NAVAIDS, Weather Bureau and other facilities, and cables by this contractor at all times.

The Contractor shall immediately repair, at his own expense, with identical material by skilled workmen, any underground cables serving FAA NAVAIDS, Weather Bureau and other airport facilities, which are damaged by his workmen, equipment, or work. Prior approval of the FAA must be obtained for the materials, workmen, time of day or night, method of repairs, and for any temporary or permanent repairs the Contractor proposes to make to any FAA NAVAIDS and facilities damaged by the Contractor. Prior approval of the Construction Manager must be obtained for the materials, workmen, time of day or night, and for the method of repairs for any temporary or permanent repairs the Contractor proposes to make to any temporary or permanent repairs the Contractor proposes to make to any temporary or permanent repairs the Contractor proposes to make to any temporary or permanent repairs the Contractor proposes to make to any temporary or permanent repairs the Contractor proposes to make to any temporary or permanent repairs the Contractor proposes to make to any temporary or permanent repairs the Contractor proposes to make to any temporary or permanent repairs the Contractor proposes to make to any other airport facilities and cables damaged by this contractor.

Should the repair require splicing, it shall be spliced at the discretion of the local FAA Airway Facilities Sector Manager as to who shall perform the work. Where the FAA performs the work, it shall be at the Contractor's expense. No work shall be back filled or covered prior to approval by the Airway Facilities Sector Manager.

# **END OF SECTION SP12**



# ATTACHMENT I

# RTAA SAFE Program



Construction Safety Phasing Plan (CSPP)



# **Reno-Tahoe International Airport**

P.O. Box 12490 • Reno, NV 89510-2490 • (775) 328-6400 • (775) 328-6510



As we go about our daily routines, it's easy to forget that we are all an integral part of the security team at the Reno-Tahoe International Airport. Whether TSA TSO, airline mechanic, cook or cashier, we each play an important role in ensuring the security and safety of not only the airport but it's passengers as well.

To help promote security, the Airport has implemented a security education/enforcement program for all badge holders called Security Awareness for Everyone program (SAFE). SAFE combines security education in the form of the interactive training that everyone receives at the time of badging, positive reinforcement via the Lurking Louie program, ongoing reminders of responsibilities during inspections of tenant leasehold areas and during random SIDA badge checks on the ramp. Because failed security can have such a serious impact on everyone's welfare, we will also implement a punitive arm to SAFE in order to reprimand those that neglect their security responsibilities.

This disciplinary element of SAFE seeks to hold every badge holder accountable for abiding by the airport's security rules. Offenses are classified by the seriousness of the infraction and number of offenses. Correspondingly, penalties grow harsher as the offense's seriousness increases. The enforcement matrix provides an overview of the offenses and corresponding penalties.

As with any program dealing with human behavior, we recognize that it's impossible to list every possible offense. The Aviation Security Coordinator reserves the right to assign penalties to other infractions as they are identified.

All individuals who hold security access badges must realize that they will be held accountable for failures to uphold the security regulations of the Reno-Tahoe International Airport.

# BADGE HOLDER RESPONSIBILITIES/VIOLATIONS MATRIX

CLASS I VIOLATIONS										
Failure to respond to an audible alarm sounding at a door by securing the door and then contacting AIRCOM										
Failure to secure any SIDA door or gate by leaving it open, propped, unsecured or unattended.										
Failure to challenge individuals who are not displaying authorized security badges. (The badge challenge should include verifying the picture and expiration date on the badge.)	1st Offense: • Revocation of Badge for 24 hours • Security Retraining									
Failure to display badge at all times above the waist on the outermost garment while in SIDA										
Failure to be cooperative and immediately present security badge when challenged.	2nd Offense: • Revocation of badge for 72 hours • Security Retraining									
Failure to obey directions of an RTAA Operations Officer, RTAA Police Officer or RTAA Security Specialist	2rd Offense: • Permanent reveastion of hadge									
Failure to immediately report any and all security violations or suspicious activity to AIRCOM	Sid Offense. • Fernanent revocation of badge									
Failure to continuously monitor all persons for whom they are providing an escort										
Failure, if escorting, to transfer escort authority to another authorized badge holder who acknowledges and assumes responsibility for the escort										
CLASS II VIOLA	ATIONS									
Escorting an individual who holds an access badge that provides them access to the area in which the escort is being conducted	1st Offense: • Revocation of Radge for 72 hours									
Failure to ensure that any doors or gates they open are securely closed behind them without allowing anyone else to enter. (Following behind a person who has swiped their badge is known as piggybacking)	Security Retraining     2nd Offense: Permanent revocation of badge									
Failure to immediately report a lost or stolen badge to AIRCOM										
CLASS III VIOLATIONS										
Bypassing TSA security checkpoint when traveling on a commercial airline flight (except for authorized air carrier employees)										
Escorting anyone in a manner that bypasses the TSA checkpoint process when the person being escorted is traveling on a commercial flight (except for authorized air carrier employees)	1st Offense: Immediate & Permanent Revocation of Badge									
Wilfully tampering with or attempting to bypass any security system, measure or procedure.										



# ATTACHMENT J

# RTAA Confined Spaces Program



Construction Safety Phasing Plan (CSPP)

# CHAPTER 7.0

# **CONFINED SPACE ENTRY PROGRAM**

Within the confines of the Reno-Tahoe Airport Authority (RTAA) are numerous underground vaults, enclosed equipment and undetermined confined spaces. These confined spaces, if not entered properly, could result in personal injury and/or the disruption of vital RTAA services. In keeping with the goal of safety first, specific steps and training are required when entry is made into a confined space.

# 7.1 INTRODUCTION

Operations that require entry into, and work in, confined spaces pose significant threats to life and health. No RTAA employee or contractor will enter a confined space unless in full compliance with all applicable regulatory requirements.

This document contains the procedures required to comply with OSHA's Part 1910.146, Permit-Required Confined Space Rule, and to ensure that all confined space entries performed by RTAA employees are accomplished in a manner that will assure the maximum degree of employee safety. It provides critical information and outlines procedures necessary to ensure that all hazards are carefully evaluated prior to entry. It establishes entry permit procedures, prescribes employee and contractor training requirements, establishes confined space entry responsibilities and procedures and discusses personal protective equipment and emergency rescue.

### 7.2 **RESPONSIBILITIES**

The following section describes the functions and responsibilities of RTAA employees and contractors involved in the confined space entry program.

# 7.2.1 Environmental, Safety and Health Officer (ESHO)

At RTAA facilities, the ESHO is designated as a Confined Space Entry Authorizing Official who will:

- Implement, maintain and evaluate the Confined Space Entry Program and entry procedures.
- Maintain copies of all issued Confined Space Entry Permits.
- Maintain a roster of RTAA employees who are trained and qualified to enter confined spaces and update this roster annually.
- Periodically survey all company facilities and work areas to identify confined spaces.
- Identify and evaluate the potential severity of each hazard within the confined spaces.

Reno-Tahoe Airport Authority

- Post warning signs near all identified confined spaces to warn employees of potential hazards and to state "Permit-Required Confined Space Authorized Personnel Only."
- Maintain a current listing of identified confined spaces with location. This list will be maintained at the RTAA Fire Department, will be accessible to all employees and will contain the following data:
  - 1. Description of confined space.
  - 2. Location.
  - 3. List of known hazards/potential chemical exposures.
- Ensure that all test instruments are calibrated for accuracy in exact accordance with the manufacturer's instructions and with regulatory requirements. Accurate records will be maintained of all calibration tests.
- Provide training information for employees so that attendants, authorized entrants and personnel authorizing or in charge of entry can work safely in and around the permit space.
- Adhere to requirements to perform an annual audit of the confined space entry program. This audit will be conducted and documented as an integral part of the site inspection/audit program.
- Provide training information for Airport Communications Center to insure that they can perform their duties per this program.
- All contractors performing confined space entry provide written documentation as to their safety training program and confined space entry procedures.

### 7.2.2 Supervisors and Project Managers

RTAA Supervisors or Project Managers who are responsible for employees who perform the entry must:

- Prevent unauthorized entry into confined spaces.
- Ensure that employees are not assigned work requiring confined space entry unless they have been properly trained and will adhere to the procedures set forth in this document.
- Provide, maintain and monitor the proper use of equipment necessary for safe confined space entry, including testing, monitoring, communication and personal protective equipment as appropriate.

- Brief attendants and entrants on proper entrance and exit procedures.
- Notify the Airport Fire Division, Communications Center and Operations Officer of the planned entry time, duration and location of the entry.
- Ensure availability and proper positioning of all pedestrian, vehicle or other barriers necessary to protect entrants from external hazards.
- Take appropriate measures to remove unauthorized personnel in or near confined spaces.
- Take the necessary measures for concluding an entry operation, such as closing off a confined space area and assuring that the Confined Space Entry Permit (see appendix form RTAA CSR-6) is canceled once the work authorized by the permit has been completed or declared unsafe to proceed.

# 7.2.3 Entry Supervisors (Team Leader)

An Entry Supervisor is any person who has been trained and qualified by the ESHO or designee. These on-site entry team leaders will perform the following duties:

- Determine that entry permits contain the required information prior to approval and signing.
- Determine that the necessary procedures, practices and equipment for safe entry are in effect before allowing entry.
- Determine, at intervals, that entry operations remain consistent with the terms of the entry permit and that acceptable entry conditions are present.
- Cancel the entry authorization and terminate entry whenever acceptable entry conditions are not present.
- Notify the Communications Center and Operations Officer prior to entry of, and after, securing a confined space in order to maintain a record of entry into confined space.

## 7.2.4 Attendants

An attendant is an employee positioned outside the permit space who monitors the entrance and who will perform the following duties:

- Maintains continuous visual or verbal contact with personnel who have entered the confined space and with the Airport Communications Center.
- Knowledgeable of potential confined space hazards, and monitors activities both inside and outside the confined space to ensure safe conditions.

- Does not enter a confined space while performing attendant duties.
- Attempts non-entry rescue of the entrant from the confined space by using the safety line if the person is unable to exit unassisted.
- Continuously maintains an accurate count of all persons in the confined space and does not permit unauthorized persons to enter.
- Permits emergency rescue personnel to enter when responding to an emergency.
- Takes the following actions when unauthorized persons approach or attempt to enter a confined space:
  - 1. Warns unauthorized persons away from the confined space.
  - 2. Requests the unauthorized persons to exit immediately if they have entered the confined space.
  - 3. Immediately informs the authorized entrants and the work area Supervisor of the entry of unauthorized persons.
- Orders evacuation of the confined space when:
  - 1. A condition is observed that is not addressed in the entry permit.
  - 2. The attendant detects behavioral effects of hazard exposure.
  - 3. The attendant detects a situation outside the confined space that could endanger the entrants.
  - 4. The attendant detects an uncontrolled hazard within the permit space.
  - 5. The attendant must leave the workstation.
- Summons rescue and other emergency services as soon as it is determined that authorized entrants need to escape, or at the first sign of loss of consciousness or distress by the employee(s) working in the confined space.

## 7.2.5 Entrant

An entrant is an individual who enters the confined space and performs the following duties:

• Maintains continuous visual or verbal contact with other personnel who have entered the confined space and with the attendant(s).

- Knowledgeable of potential confined space hazards and monitors activities both inside and outside the confined space to ensure safe conditions.
- Does not allow any persons who are not listed on the permit to enter the confined space, except in response to an emergency.
- Takes the following actions when unauthorized persons approach or attempt to enter a confined space:
- 1. Warns unauthorized persons away from the confined space.
  - 2. Requests unauthorized persons to exit immediately if they have entered the space.
  - 3. Immediately informs the attendant, Entry Supervisor and Airport Communications Center of any unauthorized entry.
- Entrants should alert the attendant whenever they recognize a warning sign or symptom of exposure to a dangerous situation, prohibited condition or unsafe act. The entrant must evacuate the confined space as quickly as possible if problems are detected.
- If an order to evacuate is given by the attendant, Entry Supervisor, ESHO or other entrant, it must be followed as quickly as possible by entrants. Once all personnel are safely out of the confined space, personnel will re-examine the scene before re-entering the space.

# 7.2.6 Airport Communications Center

The Airport Communications Center is the focal point for communication within the RTAA operation and will be responsible for performing the following duties:

- Keeping a log of all notification of normal entry into a permit-required confined space or non-permit-required space, as well as emergency entry into a permit-required space.
- Dispatching emergency equipment and making proper notification in case of a confined space emergency.
- Making notification during emergency entry into confined space operations.
- Understanding and following procedures and practices as written in the Safety Plan.

# 7.2.7 Employees

All employees, tenants, contractors and emergency responders shall conform with the following:

Comply with confined space entry procedures and policies.

- Attend required training.
- Wear protective equipment as required by the job.
- Never enter confined spaces unless authorized and after appropriate precautions have been completed.

### 7.2.8 <u>Personal Protective Equipment (PPE)</u>

All personnel shall be provided with and are required to use the appropriate PPE when working in confined spaces.

The minimum PPE shall consist of:

- 1. Hard hat, as required.
- 2. Safety glasses.
- 3. Approved footwear.
- 4. Leather or rubber gloves, if applicable (cotton gloves are not acceptable).
- 5. Retrieval line, harness and adequate rope. Retrieval line requirements may be omitted provided that the retrieval line will create more of a hazard than it will prevent (such as becoming entangled in equipment or pipes).

In addition, the following PPE shall be used as the situation warrants:

- 1. Goggles and/or face shield.
- 2. Rubber apron.
- 3. Rubber trousers.
- 4. Rubber boots.
- 5. Full body suits (of the appropriate class for the hazard encountered).
- 6. Supplied air respirators (SAR).
- 7. Self-contained breathing apparatus (SCBA).
- 8. Full Face Respirator may be worn if the atmosphere contains no less than 19.5 percent oxygen.

If unsure which PPE should be worn for a particular job, contact a Supervisor, ESHO or designee, or consult the appropriate Material Safety Data Sheet (MSDS). All PPE shall be inspected prior to the job for defects. Any broken or damaged equipment shall be replaced immediately and the appropriate Supervisor shall be notified.

Any time a retrieval line is used, i.e., checking a fall or rescue tow, that line and harness shall be removed from service and replaced with a new rope and harness before the job is continued. Notify Airport Communications Center, the ESHO or designee and Entry Supervisor that a line and harness have been used.

SCBA air cascade tanks shall not be allowed to run empty before exiting a confined space. Exit should take place as soon as the warning bell sounds. All SCBA air cascade tanks shall be 100 percent full prior to entering a confined space. Any tank below 100 percent must be replaced before entry.

If equipment becomes contaminated, it must be disposed of by placement into a correctly marked container. <u>THE CONTAMINATED EQUIPMENT OR MATERIAL SHALL NOT BE</u> <u>PLACED IN A TRASH CAN</u>. Employees shall not dispose of reusable equipment. If the equipment cannot be effectively decontaminated in the field, it shall be placed in a safe container and the ESHO or designee shall be notified to handle. Instructions on proper decontamination can be found in the MSDS and should be adhered to.

## 7.3 TRAINING

All entrants, attendants and Entry Supervisors who are involved in confined space work must be trained and authorized in confined space entry procedures. Training will be the responsibility of the ESHO or designee. Training shall be provided to an employee before he/she is assigned the duty of entering a permit space.

The ESHO will certify completion of required training and will maintain records of training completion. Copies of completed training shall be forwarded to the Human Resources Department. Additionally, the ESHO and the Airport Training Coordinator will maintain a current list of all employees who are trained and certified for confined space entry. This list will be kept current by the Airport Training Coordinator.

## 7.3.1 Training Outline

Confined space training shall include:

- Hazards present during entry, i.e. heat, cold, electrical, mechanical, etc.
- Recognition of the signs and symptoms of exposure.
- Understanding the consequences of exposure.

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- Authorization to enter.
- Dealing with unauthorized personnel.
- Monitoring/controlling the number of entrants.
- Attendant responsibilities.
- Communication requirements.
  - 1. Maintenance of contact with the attendant.
  - 2. Notifying the attendant when the entrant initiates self-evacuation.
- Evacuation requirements.
- Alarm/warning system.
- Permit requirements.
- Inspection requirements.
- Proper use of PPE.
- Proper use of barriers needed to protect entrants from external hazards.

Entry Supervisors shall conduct a comprehensive pre-entry briefing, informing entrants and attendants of job requirements, known hazards, safety procedures, personal protective equipment requirements, emergency procedures and rescue procedures.

# 7.3.2 Initial Training

Initial training will be provided prior to an employee being assigned to enter a confined space. This training will require approximately 16 hours and will include but is not limited to:

### 7.3.2.1 Attendant Training

- Hazard recognition.
- Care and use of personal protective equipment.
- Care and use of rescue equipment.
- Communication procedures.

- RTAA, OSHA, specific Section safety rules and related operating procedures.
- Lockout/tagout procedures.

## 7.3.2.2 Entrant Training

- Hazard recognition.
- Care and use of personal protective equipment.
- Care and use of rescue equipment.
- Rescue techniques.
- Communication procedures.
- RTAA, OSHA, specific Section safety rules and related operating procedures.
- Lockout/tagout procedures.

## 7.3.2.3 Entry Supervisors

Persons responsible for authorizing confined space entry shall be Supervisors, Project Managers or maintenance technicians, and shall receive training in the following:

- Hazard recognition.
- Care and use of PPE.
- Care and use of rescue equipment.
- Rescue techniques.
- Communication procedures.
- RTAA and specific Section safety rules and related operating procedures.
- Section clearance rules and in-plant or Section equipment operation.
- Lockout/tagout procedures.

# 7.3.2.4 Confined Emergency Response Team (CERT)

Rescue squad employees shall receive training and demonstrate proficiency in the following:

- CERT members shall be trained to the attendant, entry, Supervisor and rescue levels.
- CPR and First Aid with one member trained at the level of Emergency Medical Technician.
- Hazard recognition.
- Care and use of PPE.
- Care and use of rescue equipment.
- Rescue techniques. The rescue squad shall conduct live-action drills, simulating a confined space rescue and first aid procedures, on an annual basis.
- Communication procedures and equipment including inter-divisional communications, radios and telephones.
- All RTAA, OSHA, safety rules and related Section operating procedures.
- Annual physical.

# 7.3.3 Annual/Recurrent Training

Attendants, entrants, Entry Supervisor and rescue squad members shall have training no less than annually in the following areas:

- Hazard recognition.
- Care and use of personal protective equipment.
- Care and use of entry equipment/rescue equipment.
- Communication procedures.
- RTAA, OSHA, specific Section safety rules and related operating procedures.
- Lockout/tagout procedures.
- Rescue techniques.

- The entry team shall conduct a live-action drill simulating a complete confined space entry operation from filling out of confined space permit to entering space to shutdown procedures.
- Rescue team shall conduct a live-action drill simulating a confined space rescue.

# 7.3.4 Training For Airport Communications Center Personnel

Airport Communications Center personnel shall receive initial training as well as annual/recurrent training in the following areas:

- Emergency communication procedures.
- Notification procedures.
- Record keeping procedures.
- Hazard recognition.
- Safety rules and related procedures for confined space operations.

The Supervisor may require additional training at his/her discretion to ensure compliance with the Confined Space Program. Additional training shall be scheduled whenever there is a change in permit space operations that presents a hazard, employee(s) have not been trained, are required to have more training or there is a change in equipment/policies.

# 7.4 PERMIT SYSTEM

Prior to any confined space entry, the Entry Supervisor will obtain a Confined Space Entry Permit Form, complete applicable portions and obtain an authorizing official's approval/ signature on the permit form. A permit must be completed and approved for each confined space entry.

Permits will be revoked when an uncontrolled hazard is discovered or when any of the requirements set by the permit are not met. When such a hazard is discovered, all entrants must immediately vacate the confined space. The permit must be posted at the confined space location.

If hot work must be accomplished in conjunction with a confined space entry, a Hot Work Permit must be completed and attached to the Confined Space Entry Permit.

The ESHO will maintain a logbook that records all confined space entries. This logbook will include the date of entry, permit number, expiration date and date the permit was canceled. The logbook will be kept for a minimum of five years.

A copy of each issued Confined Space Entry Permit will be attached to the log and retained by the local ESHO. Prior to entry, a copy of the permit will be sent to the following:

- ESHO or designee
- Confined Emergency Response Team CERT
- Operations
- Entry Team Supervisor
- Airport Communications Center

In case of an emergency entry into a confined space, notification shall be made to the Airport Communications Center prior to entry with the nature of emergency, location, duration, name(s) of personnel entering and the type of operation to be performed. The Airport Communications Center will notify the Fire Department, Operations Officer and Supervisor of the emergency entry operation. A follow-up copy of the permit will be provided within 24 hours.

## 7.5 ENTRY PROCEDURES

Prior to making entry into a confined space on RTAA facilities, the following procedures shall be accomplished:

### 7.5.1 Pre-Entry Procedures

Prior to directing an entry into any confined space the Supervisor or Project Manager will perform the following steps:

- Complete the Confined Space Entry Permit.
- Isolate pipes or lines entering/exiting the space by blanking, double blocking and bleeding.
- Accomplish necessary lockout/tagout actions pursuant to established RTAA procedures and in conformity with OSHA.
- Empty, flush, ventilate or purge the space to remove any flammable gases or vapors, combustible particles, toxic gases or vapors, harmful acids and bases or any other substance that may be harmful to life. The space will be ventilated for the duration of the entry.
- Notify the ESHO and CERT at least 48 hours prior to entry and forward a copy of the Confined Space Entry Permit to the ESHO and CERT upon approval by the Entry Supervisor.

- Ensure that a qualified person has completed a comprehensive hazard analysis and appropriate tests to verify atmospheric conditions and contaminants. All monitoring/testing must be conducted from a safe location outside the confined space before entry is attempted. All test results will be made available to the Employees and/or their authorized Employee Representative. Entrants or their authorized Employee Representative will be allowed to observe all testing.
- Determine if the atmosphere is hazardous; test first for oxygen, then combustible gases and vapors, and finally for toxic gases and vapors.
- Brief all entrants, attendants, rescue personnel and workers in the immediate vicinity on all necessary information prior to entry.
- Ensure that all electrical equipment taken into the space meets the requirements for the location, is properly grounded, is equipped with ground fault circuit interrupters and is explosion proof.
- Confirm that all employees have appropriate PPE and have been properly trained in its use.
- Ensure that each entrant has a retrieval line attached at one end to the entrant, preferably to a web chest harness, with the other end attached to a lifting device or an anchorage. This line must be capable of lifting or retrieving the entrant from the confined space without exposing anyone else to the conditions that may have disabled the entrant.
- Ensure compliance with hot work permit conditions. Notify the RTAA Fire Department prior to beginning any welding operations or other hot work so that the proper fire watch can be established.
- Ensure that a trained attendant is available. The attendant will be stationed directly outside the confined space to maintain visual and verbal communication with the employee(s) working in the confined space. If visual contact is not possible, communications between the entrant(s) and the attendant must be maintained by audible voice, two-way radio or other remote monitoring device that will allow the attendant to monitor the status of the entrant(s). The attendant will have immediate access to a telephone or radio for use to summon emergency personnel if the need arises. If a telephone is used to summon emergency rescue personnel, the attendant will be provided with a list of emergency agencies/personnel and their phone numbers.
- Guard against inadvertent entry of outside hazards, such as vehicles, pedestrians, chemicals, etc., in the vicinity of the entry.

The employee preparing for confined space entry must be familiar with:

Lockout/tagout procedures.

- Use of calibrated direct reading instruments for testing of the atmosphere.
- Use of equipment to test for energized equipment.
- OSHA Regulation 29 CFR, Part 1910.146.
- RTAA Confined Space Entry Permit Procedure.

The State of Nevada is a self-regulated OSHA state and has adopted all federal OSHA regulations. The State of Nevada Occupational Safety & Health Standards for General Industry's latest edition (29 CFR Part 1910, Subpart J-General Environmental Controls, Section 1910.146-Permit-required Confined Spaces) will be the minimum guidelines for entry into a confined space on RTAA property.

# 7.5.2 Notification of Entry into a Confined Space

An employee wishing to enter a confined space shall notify a Supervisor specifying the exact space to be entered unless it is a confined space covered under non-permit-required regulations. Information required is the nature of the work to be performed, the approximate amount of time required to complete the job and the number of people who will occupy the confined space. Airport Operations will determine if a Notice to Airman (NOTAM) or tenant notification is required.

Any time work of an unusual nature, such as welding, use of sealant, chemicals, or solvents is conducted in a non-permit confined space, the work shall require a Confined Space Entry Permit and all rules and regulations shall apply.

Once a permit has been issued, RTAA Operations, Fire Department and the Airport Communications Center must be notified of the time work will start, work duration, work to be accomplished and location of work. This must be done prior to entry and documented on the confined space permit. Upon securing the confined space, the entry team Supervisor will notify the Airport Communications Center, Operations and the Fire Department.

Any one or all of the following might be required:

- All electric sources that affect a confined space shall be locked out and red tagged at all times. If possible, a visible air gap shall be established in the circuit.
- All valves that connect to the confined space to be entered shall be locked out and red tagged. If possible, two valves shall be closed and a drain between the two shall be opened (double block and bleed).
- The confined space shall be emptied of all contents before entry whenever possible.

- Piping which connects to the confined space and does not have valves, or the valve is shown to leak through, shall require a break to be made at a flange. That connection shall be blanked off at all times that the space will be entered. If this is not possible, other provisions shall be made to ensure the safety of entrants.
- All vents and drains in the confined space shall be red tagged and locked in the appropriate position.
- Appropriate warning signs and barricades shall be posted in the immediate area of the confined space for the entire time it is open.
  - 1. Warnings shall include signs that notify personnel of the hazards existing in or near the confined space.
  - 2. Barricades and barrier tape shall be used on all manholes and open pits or sumps to prevent personnel, vehicles or equipment from falling into the hole.
- Welding shall follow the requirements of 29 CFR 1910, Subpart Q, and the RTAA Hot Welding Permit Program. Welding gas tanks may never be brought into a confined space.

# 7.5.3 Supervisor or Project Manager's Role

When all of the above requirements have been met, the Supervisor or Project Manager shall notify the Entry Supervisor that the space is prepared for entry. The Entry Supervisor will sign the Confined Space Entry Permit. The permit will only be issued for the time required to complete the operation. A new permit must be issued for each new crew entering the space.

# 7.5.4 Tailgate Briefing Prior to Entry

The Entry Supervisor shall then conduct a "tailgate briefing" with the crew who will be working in the confined space and their assigned attendants. This meeting shall include:

- Review of known hazards that are associated with the confined space. This shall include a review of the MSDSs.
- Review of all PPE to be used, including a complete inspection of the equipment and replacement of any defective components.
- Review of all first aid and rescue equipment deemed necessary. This equipment shall be present during the entire entry.
- Review of the confined space procedures.
- Review of the Confined Space Entry Permit issuance.

• Completed report of the "tailgate briefing" with a copy forwarded to the ESHO.

# 7.5.5 Atmosphere Testing

The atmosphere of the confined space shall be tested before entry using an approved testing device for concentrations of the following:

- Oxygen 19.5 percent 23.5 percent.
- Combustibles (less than 10.0 percent of lower explosive level).
- Carbon monoxide (less than 35 PPM).
- Hydrogen sulfide (less than 10 PPM).
- Other toxic fumes (as determined by MSDS or the Confined Space Entry Permit). Testing of the space shall be performed prior to entry, after a 10-minute ventilation (if necessary) and continuously while personnel are in the confined space.
- The proper order of testing in a confined space shall be:
  - 1. Oxygen.
  - 2. Flammable vapors and combustible gases.
  - 3. Toxic gases and vapors.
- All testing for atmospheric hazards will be conducted under the premise that the gases have stratified. When RTAA personnel use monitoring equipment in confined spaces, <u>ALL</u> <u>MANUFACTURER GUIDELINES WILL BE FOLLOWED</u>. The employee will conduct these tests in a cautious manner. Tests will be conducted every four to six feet. If at any time a limit is exceeded, no person shall enter the space; or if persons are already in the space, they shall evacuate immediately. <u>THERE ARE NO EXCEPTIONS</u>. All entrants and/or their authorized representatives shall be allowed to observe the testing.
- Ventilation, if required, shall be provided by some mechanical means for a minimum of 10 minutes and the atmosphere re-tested. Testing shall be done with frequent ventilation to facilitate an accurate reading of the atmospheric conditions.
- If the above atmospheric conditions are not met, the space shall not be entered unless:
  - 1. Continuous venting will maintain an atmosphere within acceptable limits.
  - 2. It is necessary to perform an emergency rescue operation, in which case proper safety procedures must be followed.

- A Confined Space Entry Permit will be placed at each point of entry and will contain the following information:
  - 1. Percent oxygen concentration.
  - 2. Percent flammable/combustible concentration.
  - 3. PPM carbon monoxide.
  - 4. Other toxic materials.
  - 5. Signature of the person doing the testing.
  - 6. Time and date of the test.

#### 7.5.6 Sign In Log

Employees planning to enter the confined space shall sign the confined space sign-in log (see appendix form RTAA S-13). Personnel shall sign in and out every time they enter or leave the space. This is necessary to accurately track personnel in the event of a mishap or emergency.

The log shall be kept and monitored by the attendant and shall contain the following information:

- Specific area to be entered.
- Reason for entry.
- Name and signature of each person entering the confined space.
- Date of entry for each person.
- Approximate duration of work in the confined space.
- Name and signature of each person leaving the confined space.
- Date and time each person left the confined space.

## 7.5.7 <u>Securing Confined Space</u>

At the completion of the operation, the person in charge shall verify, using the confined space sign-in log, that all personnel have exited the space and signed out. A visual inspection of the space shall be made to verify that all personnel have exited and that all equipment has been removed. The Supervisor shall ensure that entry points to the space are secured and that no persons have re-entered the space.

## 7.5.8 Notification of Entry Closure

Once the space has been closed, the person in charge shall inform the Supervisor, Project Manager, or crew leader that all personnel have signed out on the confined space log and that the space is adequately closed. He/she will notify Operations, the Fire Department and Communications Center that the space is properly secured.

## 7.6 **RESCUE**

Rescue procedures that will be followed in the event of a confined space entry emergency are:

### 7.6.1 <u>Rescue Services</u>

RTAA shall maintain a CERT, comprised of trained Fire Department personnel. The CERT shall control all actual emergency and rescue operations, augmented by airport maintenance employees.

At RTAA facilities, the ESHO or designee is designated to have responsibility for all aspects of confined space operations, from routine entry for maintenance personnel, contractors, subcontractors and tenants, to emergency rescue operations.

The ESHO or designee will ensure that a written guideline for emergency response is in place and reviewed annually. The ESHO or designee will also ensure that all appropriate emergency equipment is made available and maintained in accordance with the manufacturer's appropriate regulatory requirements.

A training program shall be established, maintained and evaluated for all CERT personnel.

### 7.6.2 <u>Rescue Procedures</u>

In the event of an emergency, the person discovering a problem in a confined space shall:

- Determine the type and severity of the emergency if possible without putting self in danger.
- Notify the Airport Communications Center of the nature of the emergency and the location.
- Monitor the confined space to ensure that no other individuals attempt to make entry into the space until CERT personnel arrive on scene.
- The attendant or any person discovering a problem in a confined space shall not, under any circumstances, attempt rescue or enter the confined space. Attendants may assist the CERT personnel.

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- The attendant may attempt to pull the injured worker from the confined space using the retrieval line if it is possible to do so without entering the confined space, and without causing additional injuries to the person inside the confined space.
- A retrieval line will be used by all personnel who enter a confined space so long as it does not pose a hazard to the entrant.
- The attendant may assist the injured person while the worker is exiting the confined space so long as the attendant does not enter the confined space.
- If an emergency/problem occurs outside the confined space, the space shall be evacuated immediately and normal emergency notification procedures must be followed.
- All persons involved in an emergency shall provide a written report to their immediate Supervisor and the ESHO.

The Airport Communications Center will initiate the following:

- Notify RTAA Fire, Operations, and Police.
- Notify RTAA maintenance/contractor personnel.
- Make any other notifications or request for assistance per the incident commander.

# 7.7 EMERGENCY ENTRY PROCEDURES

Confined space entry under emergency circumstances may be unavoidable. Such entries may be required to stop a leak of hazardous material or prevent additional injury to personnel. Such emergency entries will be directed by the ESHO or designee.

All confined space atmospheres will be considered dangerous until proven otherwise by testing of the atmosphere. If testing proves that the atmosphere is safe to enter and all other hazards have been removed/isolated, then at the discretion of the incident commander, personnel may enter the space without respiratory protection. If the atmosphere cannot be fully controlled all of the time, personnel shall use the appropriate personal protective equipment to make entry into the space. All electrical lighting and other equipment must be approved/certified for use in such atmospheres.

Emergency rescue services will be notified immediately and required to standby when workers make an entry under emergency circumstances.

# 7.8 ON-SITE CONTRACTORS

On-site contractors who will be working on property owned, operated or leased by RTAA, or performing work under contract with the RTAA, will be briefed and provided access to all available information on confined space hazards.

On-site contractors are expected to comply with all federal regulations, state and local standards, including those pertaining to confined space entry. They are expected to have or to develop their own compliant confined space programs and procedures. These programs will be subject to review and approval by RTAA officials prior to any confined space jobs being done under the terms of the contract. All contractors must obtain written approval from the ESHO or designee prior to entering a confined space.

On-site contractors who must enter confined spaces while performing contractual requirements must comply with the entry requirements established by RTAA. Further, contractors must obtain an RTAA Confined Space Entry Permit and demonstrate to the satisfaction of the ESHO that employees and agents are properly trained and equipped to perform an entry. On-site contractors are expected to perform hazard analyses and evaluations as well as perform monitoring as necessary to determine confined space hazards.

All contracts initiated by RTAA that will involve on-site contractor confined space entries will include contractual provisions requiring the contractor to comply with federal, state, and local confined space standards. Additionally, the on-site contractor's confined space procedures will be at least as stringent as the comparable RTAA procedures. The contractor will be provided with a copy of this program for comparison purposes prior to beginning work.

All on-site contractors will be inspected by the ESHO or designee. The ESHO or designee will have full authority to stop any operation if an unsafe act is observed or reported in regard to the contractor.

Contractors working in any RTAA jurisdiction must notify the Airport Communications Center of entry into confined spaces. This notification procedure must be a part of the Confined Space Program and be coordinated with the ESHO or designee and the Airport Communications Supervisor.

## 7.9 EQUIPMENT CALIBRATION

RTAA uses a continuous monitoring device to test the atmosphere prior to and throughout the entry. The device is calibrated monthly by using a test gas consisting of the following elements:

- Pentane.
- Carbon monoxide.
- Hydrogen sulfide.

All monitoring instruments shall be maintained per manufacturer's specifications. Annually, the ESHO or designee will review all logs on monitoring instruments to ensure that the equipment is operational and that it conforms to manufacturer's specifications.

# 7.10 SEWER/STORM DRAIN SYSTEM OPERATIONS

Sewer systems and storm drain systems pose a different hazard to entrants. There is rarely any possibility of complete isolation of the space to be entered; because isolation is not complete, the atmosphere may suddenly and unpredictably become lethal or hazardous due to causes beyond the control of the entrant or the RTAA. Because of this hazard or potential hazard, special procedures shall be employed by personnel who enter a sewer/storm drain system.

Atmospheric monitoring will take place at all times. The monitoring equipment will be located with the entry team. Test results during entry may be monitored by an authorized employee representative.

Where several entrants are working together in the same immediate location, one instrument used by the lead entrant is acceptable.

If the instrument(s) warn of deterioration in the atmospheric conditions, all personnel will evacuate the space immediately, the space will be examined carefully and a reason for the warning must be identified before personnel may re-enter the confined space.

The Entry Supervisor, Supervisor, Project Manager and the ESHO or designee must be notified if an emergency evacuation is done.

Monitoring instruments will be used to monitor levels of oxygen, flammable gas or vapor, hydrogen sulfide or carbon monoxide.

If one of the following conditions is encountered:

- Oxygen concentration less than 19.5 percent or more than 23.5 percent.
- Lower flammable limit (LFL) of 10 percent or more.
- Hydrogen sulfide above 10 PPM.
- Carbon monoxide above 35 PPM.

Personnel may not make entry into a confined space until the hazard has been eliminated. If personnel are in a confined space and any of the above environmental conditions should occur, entrants must evacuate the space immediately.

Ventilation equipment will be used at all times by RTAA personnel when entry into a sewer/storm drain system is made.

Lighting, electrical, and communication equipment shall be Class 1, Division 1 rated per National Electrical Code and UL Listed when used in confined spaces.

All entrant personnel shall use supplied air respirators when entering a sewer/storm drain system.

Entry Supervisors shall notify the Communications Center via radio, prior to entry of a sewer/storm drain system as well as after the space has been closed.

# 7.11 NON-PERMIT CONFINED SPACE OPERATIONS

Confined spaces may be entered without a written permit or attendant provided that the space can be maintained in a safe condition for entry by mechanical ventilation alone, as provided by 29 CFR 1910.146 (C)(5). All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise.

# 7.11.1 Procedures to Classify a Non-Permit Space

The following procedures will be used to demonstrate that a confined space can be entered as a non-permit confined space:

- The ESHO or designee can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere.
- The ESHO or designee can demonstrate that continuous forced-air ventilation alone is sufficient to maintain the permit space safe for entry.
- The ESHO or designee must keep records of all information and data that support items 1 and 2.
- If an initial entry of the permit space is necessary to obtain the data for above listed items, it must be done per Section 6, Entry Procedures for permit-required confined space.

# 7.11.2 Pre-Testing for Classification of Space

Entry into a permit space for the reclassification of a permit-required space to a non-permit space shall be done in the following manner:

- Personnel shall eliminate any condition that makes the site unsafe to enter prior to removing the cover.
- Once the cover is removed, the area around the site will be guarded by a railing, temporary cover or other temporary barrier.

- Internal atmosphere will be tested at three levels using direct reading instruments for the following conditions in the order given:
  - 1. Oxygen content.
  - 2. Flammable vapors and combustible gases.
  - 3. Toxic air contaminants.

No hazardous atmosphere is permitted within the space whenever personnel are inside. All test results will be available to authorized employee representatives.

The use of continuous forced-air ventilation to enter a space shall meet the following conditions:

- Personnel may not enter until ventilation has completely eliminated the hazard.
- Ventilation shall be directed to the work area and remain in place until all personnel have left the space.
- Air supply for forced-air ventilation shall be from a clean source.
- The atmosphere shall be monitored at all times.
- If a hazardous atmosphere is detected during entry, personnel shall evacuate the space immediately.
- If the space is evacuated because of a change in atmosphere, it must be re-evaluated to determine how the hazardous atmosphere developed and what steps must be taken to protect employees before re-entry.
- If changes occur in the use or configuration of a non-permit confined space that might increase the hazards to entrants, the ESHO or designee shall re-evaluate that space and, if necessary, reclassify it to a permit-required confined space.

# 7.11.3 Documentation of Non-Permit Confined Space

The ESHO or designee shall maintain a list of all spaces that are determined to be non-permit confined space operations. This list shall contain the following information:

- Date test was performed.
- Who completed the test.
- What measures were taken to eliminate the hazards.

- Location and identity of the space.
- Signature of person determining status to classify space to non-permit.

A copy of this certification shall be kept with the ESHO or designee, and made available to each employee entering the space.

# 7.11.4 Entry of a Non-Permit Confined Space

RTAA and contract personnel who enter a non-permit confined space shall perform the following duties:

- Notify the Supervisor of date, time, location of space and job/task to be performed.
- Obtain and complete a non-entry permit form.
- Notify the Airport Communications Center of entry into space and its location.
- Monitor the atmosphere prior to entry and continuously during entry operations.
- Leave the space immediately if the atmosphere changes.
- Use forced air ventilation prior to entry and continuously during entry operations.

Notify the Airport Communications Center by radio or telephone that operations have been completed, once all personnel have exited the space and it has been secured.

## 7.12 CONFINED SPACE EQUIPMENT

The following is a list of equipment used and a description of each:

1. Half-face, full-face air supplied or air line respirators.

• Designed to provide the entrant with respiratory protection during routine confined space entry or during emergency egress.

2. Body harness, lifelines and tripod with winch/block and tackle.

• Equipment used by the entrant for entry and retrieval within a confined space.

3. Portable gas monitor(s).

• Used to detect oxygen deficiency and enrichment, flammable atmospheres and toxic atmospheres within a confined space.

- 4. Ventilating fans, flexible ducting and saddle.
  - Ventilation system used to ventilate a confined space prior to and during entry into it.

5. Explosion-proof flashlights.

• Specially designed lights to be operated within a flammable or potentially flammable atmosphere sometimes found within a confined space.

6. Explosion-proof electrical lights/equipment.

• Specially designed lights to be operated within a flammable or potentially flammable atmosphere sometimes found within a confined space.

7. Lockout/tagout kits.

• Equipment used to lockout, blind and block potential electrical, mechanical or stored energy hazards within a confined space.

8. Communication equipment such as mobile radios, telephones, intercoms, etc.

• Explosion-proof communications equipment used within a confined space for communications among entrants and attendants.

9. Hard-hats.

- Used to protect personnel from falling objects outside and within a confined space.
- 10. Fire extinguishers.
  - Used either outside or inside a confined space in the event a fire hazard exists.

### 7.13 GLOSSARY

Attendant -An individual stationed outside the confined space who is trained as required by this program and who monitors the authorized entrants outside the confined space. Attendants are also called "stand-by persons."

Authorized Entrant - An RTAA employee who is authorized to enter a confined space upon completion of Confined Space Entry Training.

Authorizing Official - At Reno/Tahoe International and Reno/Stead Airports the Environmental, Safety and Health Officer (ESHO) is designated as the confined space entry authorizing official. The ESHO may designate additional qualified persons as authorizing officials if necessary. This

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designation must be in writing. Authorizing officials are the only individuals who can approve and/or cancel Confined Space Entry Permits.

**Blank** - The absolute closure of a pipe, line or duct by fastening across its bore a solid plate or "cap" which completely covers the bore and which is capable of withstanding the maximum upstream pressure.

**Ceiling Level** - The concentration of an airborne substance that should not be exceeded, even instantaneously, during any part of the work exposure.

**Communications Center** - The Communications Center is the central dispatch center for RTAA operations and is staffed on a 24-hour basis. Its primary functions are to provide dispatching for airport employees, paging services and emergency communication for the RTAA.

Confined Space - An enclosed space that meets the following conditions:

- Is large enough and so configured that an employee can physically enter and perform assigned work.
- Has limited or restricted means of entry and exit such as tanks, vessels, silos, storage bins, hoppers, vaults, pits and diked areas.
- Is not designed for continuous employee occupancy.
- Has one of the following characteristics:
  - 1. Contains a flammable gas vapor or mist in excess of 10 percent of its lower explosive limit.
  - 2. Contains airborne combustible dust concentration that obscures vision at 5 feet.
  - 3. The atmospheric oxygen concentration is below 20.9 percent or above 23.5 percent.
  - 4. Contains atmospheric concentration of any substance that could result in exposure to non-permissible levels.
  - 5. Contains any atmospheric condition recognized as immediately dangerous to life or health.
  - 6. Contains a material with the potential for engulfing an entrant.
  - 7. Has an internal configuration in which an entrant could be trapped or asphyxiated by inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section.

8. Contains any other recognized serious safety or health hazard.

**Confined Space Entry Permit** - The written document that must be completed and approved by an authorizing official prior to any employee entering a confined space.

**Contractor** - Any person, company or corporation who negotiates to render services to the RTAA for construction, alteration, repair or other services. This shall include the primary contractor and all subcontractors.

**Corrosive -** A liquid or solid that is capable of causing visible deterioration or destruction to body tissue or other materials upon exposure to the agent.

**Double Block and Bleed** - The closure of a line, duct or pipe by locking and tagging a drain or vent that is open to the atmosphere in the line between the locked/closed valves.

**Emergency** - Any occurrence (including failure of hazard control or monitoring equipment) or event(s) internal or external to the confined space that could endanger entrants.

Entrant - A person who is trained and authorized by the ESHO or designee to enter confined spaces.

**Entry** - The act by which a person intentionally passes through an opening into a permit-required confined space. Entry is considered to have been made as soon as any part of the entrant's face breaks the plane of an opening into the space.

**Entry Supervisor** - The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

**Environmental, Safety and Health Officer (ESHO)** - The person assigned by the Executive Director to oversee all safety and health issues for the RTAA including training, policy formulation, OSHA compliance and chairing of the Safety Committee.

Hazard - A danger that threatens physical harm to an individual.

Hazardous Atmosphere - An atmosphere that exposes employees to a risk of death, incapacitation, injury or acute illness.

Hot Work - Operations that could provide a source of ignition, such as riveting, welding, cutting, burning or heating.

Immediately Dangerous to Life or Health (IDLH) - Any condition that poses an immediate threat of loss of life; may result in irreversible or immediate severe health effects, may result in eye damage, irritation or other conditions which could impair escape from the confined space.

**Immediate Severe Health Effects -** Any acute clinical sign(s) of a serious, exposure-related reaction manifested within 72 hours after exposure.

**Lower Explosion Limit (LEL)** - The minimum concentration of an ignitable gas or vapor in air that produces a flame when an ignition source is present. The LEL is the same as the lower flammability limit (LFL) for the purposes of this document.

**Non-Permit Confined Space -** A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Oxygen-Deficient Atmosphere - An atmosphere containing less than 19.5 percent oxygen.

Oxygen-Enriched Atmosphere - An atmosphere containing more than 23.5 percent oxygen.

**Permissible Exposure Limit (PEL)** - An employee's permitted exposure to any material as set out by OSHA and the National Institute for Occupational Safety (NIOSH).

**Permit-Required Confined Space** - A confined space that has one or more of the following characteristics:

- Contains, or has a potential to contain, a hazardous atmosphere.
- Contains a material that has the potential for engulfing an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section.
- Contains any other recognized serious safety or health hazard.
- Permit-required confined space program (permit space program) means the employer's overall program for controlling, and where appropriate, for protecting employees from permit space hazards and for regulating employee entry into permit spaces.

All identified confined spaces located on RTAA property shall be posted with a sign or stenciled at the opening of the space with the following warning: <u>"DANGER: PERMIT-REQUIRED</u> <u>CONFINED SPACE, DO NOT ENTER</u>." Each space will also be marked with an identifying number assigned by the ESHO.

**Prohibited Condition** - Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Qualified Person - RTAA personnel who have been designated by the ESHO as being capable of recognizing and evaluating employee exposure to hazardous substances and other unsafe

conditions, and because of their knowledge, training and experience are qualified to enter confined spaces safely and properly.

**Respiratory Protection -** At this facility respiratory protection shall consist of the following types of equipment: Cartridge operated respirator (respirator), self-contained breathing apparatus (SCBA) and supplied air respirators (SAR). This equipment shall meet all standards and manufacturer's recommendations.

**Retrieval Line -** A line or rope secured to the worker's full-body harness and with its other end secured to either a lifting (or other retrieval) device or to an anchor point located outside the entry portal.

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These procedures supplement the RTAA Safety Manual Chapter 7.0, Confined Space Entry Program, and are applicable only for the *"Project Name"* project managed by ATKINS, with Prime Contractor, *"Contractor"*. These procedures apply to *"Contractor"* and all their Subcontractors who may be required to work in a confined space within the property of the Reno-Tahoe International Airport. *"Contractor"* and their Subcontractors are responsible for all personnel training, appropriate equipment, and safety procedures associated with meeting the confined space entry permit requirements.

## **KEY PARTICIPANTS:**

- Airport Fire Station and Duty Captain: Permit will be obtained from this location and closed out upon exit from the confined space. A visit by the Entry Supervisor and the Subcontractor Superintendant or Foreman is required to obtain the Permit Form and receive instruction from the Duty Captain before any confined space entry.
- **Emergency Contact**: If there is a need for rescue, notify AIRCOM immediately via the **airport emergency phone number 775-328-6999**.
  - AIRCOM will notify the Airport Fire Department and Airfield Operations for immediate response.
  - **Do** <u>not</u> call 911. The Reno dispatcher would have to transfer the call to the airport, possibly causing serious delay.
- Inspector / Construction Management Team:
  - Joe Mamola, ATKINS CM Representative: Entry times and locations will be reported to the on-site Inspector before entry and upon exit from the confined space. <u>Cell phone (775) 745-6996</u>.
  - ATKINS Inspector will notify AIRCOM of entry and exit.
  - Linda Shields, ATKINS, acts as back-up to Inspector. Cell phone (775) 745-6982.
  - If neither ATKINS contact is available at the time scheduled for entry or exit, notify Airfield Operations at (775) 328-6490.
- AIRCOM: Communications Center tracks all entry and exit for airside construction. ATKINS on-site Inspector will notify AIRCOM of times of entry and exit.
- AIRCOM <u>non</u>-emergency phone number is (775) 328-6600.
- Contractor/Subcontractor Entry Supervisor: Individual responsible for ensuring confined space entry permit procedures are followed, personnel safety requirements are met, and equipment is in proper working order.

## **PRIOR TO ENTRY:**

Entry Supervisor will coordinate with the Fire Station to obtain entry permits required for a single workday. Each separate Man Hole (MH), Hand Hole (HH), or other confined space

requires its own separate permit and will be processed independently. Permit Forms may be obtained from the on-duty shift Fire Captain. Identification of the confined space location will be by intersection of Taxiways and Runways or specific locations near terminal, concourse, etc.

Notify the on-site Inspector of the permit number, location, scheduled time of entry, and expected length of time in the confined space, and the Inspector will inform AIRCOM.

## **UPON ENTRY:**

Maintain a copy of the Permit at the location of the confined space and available for inspection by the RTIA Safety Officer and the Inspector. All safety procedures will be adhered to in accordance with OSHA and RTAA requirements. Notify the on-site Inspector upon exit of the confined space with the permit number, location, and time of exit.

## UPON COMPLETION OF WORKDAY ACTIVITIES:

Return to the Fire Station to close out all permits that were opened during the workday. Retain a copy of all closed permits on file and available for inspection by the RTIA Safety Officer and the Inspector.