CITY OF HOUSTON

John Whitmire
Mayor

HOUSTON AIRPORT SYSTEM

Jim Szczesniak
Director of Aviation

George Bush Intercontinental ~ William P. Hobby ~ Ellington Airport

May 9, 2025

SUBJECT: **Addendum No. 1**

REFERENCE: Invitation To Bid (ITB) for the Runway 4-22 Shoulders Pavement Rehabilitation & Lighting Upgrades at William P. Hobby Airport (HOU); Solicitation No. H06-RSPRLU-2025-006; Project No. 1057

To: All Prospective Bidders:

This Addendum is being issued for the following reasons:

I. **Add** the following report:
1. Construction Safety and Phasing Plan (CSPP).

II. **Replace** the following document:
1. Document 00840 – City of Houston Pay or Play Program Requirements.

III. **Respond to the following questions.**

1. **Question:** What is the Engineer's Estimate of the subject mentioned project?

   Response: The estimated construction cost is $10,684,066.00.

2. **Question:** Will there be an option to join the pre-bid virtually?

   Response: Please see added Microsoft Teams link below. However, the preference is for all potential contactors to attend in person. This will also be the only opportunity to tour the site.

   Join the meeting now
   Meeting ID: 299 007 284 149 5
   Passcode: QG7Jz2jT

When issued, Addendum shall automatically become part of the solicitation documents and shall supersede any previous specification(s) and/or provision(s) in conflict with the Addendum. Addendum will be incorporated into the Agreement as applicable. It is the responsibility of the bidder(s) to ensure that it has obtained all such letter(s). By submitting a bid on this project, bidder(s) shall be deemed to have received all Addendum and to have incorporated them into their bid.

If further clarification is needed regarding this solicitation, please contact Senior Procurement Specialist, David Martinez via email at david.martinez@houstontx.gov.

Sincerely,

DS

DocuSigned by:
Cathy Vander Plaats
02232028DE99414...

Cathy Vander Plaats
Aviation Procurement Officer
Houston Airport System

cc: File, ITB Solicitation No. H06-RSPRLU-2025-006

Attachments:

1. Construction Safety and Phasing Plan (CSPP)
2. Document 00840 – City of Houston Pay or Play Program Requirements

CONSTRUCTION SAFETY AND PHASING PLAN

HOUSTON AIRPORT SYSTEM

WILLIAM P. HOBBY AIRPORT

RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

100% (IFP) DESIGN

NOVEMBER 20, 2024

Prepared by:

Jacobs

818 Town and Country Boulevard
Suite 500
Houston, TX 77024

Contents

APPENDIX 1: Drawing Attachments

- General Notes (GC001)
- Overall Site Plan and Survey Control (GC100)
- Phasing Notes (GC201)
- Phasing Plan (GC301-GC308)
- Construction Phasing and Maintenance of Traffic Details (GC501)

APPENDIX 2: FAA Advisory Circular 150/5370-2G: Operational Safety on Airports During Construction

APPENDIX 3: HAS Spill Response & Procedures

APPENDIX 4: Work Area Definition Points and Coordinates for FAA Form 7460

General

This Construction Safety and Phasing Plan (CSPP) was prepared to meet the requirements of FAA Advisory Circular 150/5370-2G, "*Operational Safety on Airports During Construction*" (available as Appendix 2 to this document) for the Runway 4-22 Shoulder Pavement Rehabilitation and Lighting Upgrade project at William P. Hobby Airport (HOU). The limits of work (Project Area) correspond to the combined area of Work Areas 1 through 10, as shown in Appendix 1: Drawing Attachments, Phasing Plan.

The scope of this project consists of the rehabilitation of the entirety of the Runway 4-22 shoulder pavement, which will consist of crack sealing, seal coating, or mill and overlay repairs, depending on local pavement conditions. This extends to the sections of shoulders of Runway 13R-31L, Runway 13L-31R, Taxiway C, and other taxiway connectors that are located within the Project Area, plus the pavement of Taxiways H2 and R. Select continuously reinforced concrete pavement (CRCP) areas of the Runway 4-22 pavement related to existing kerf cuts between light bases that are deteriorating will be replaced. Isolated PCC panel replacement shall also occur within the project area, as indicated in the plans. As part of this rehabilitation, Runway 4-22 centerline, edge, threshold, end, and touchdown zone (TDZ) lighting, will be replaced with LED lighting and provisions made to facilitate maintenance access to these lighting systems; furthermore, the home run circuit supplying Runway 4-22 edge, centerline, and TDZ lighting will be replaced. In addition to the airfield lighting several airfield guidance signs will be replaced as part of this project.

Contractor shall prepare a Safety Plan Compliance Document (SPCD) detailing how Contractor shall comply with this CSPP. The SPCD shall detail all elements of construction documented in the CSPP, including specific heights and hazards of equipment to be used and Contractor's point of contact. The SPCD shall be submitted to the Resident Project Representative (RPR) and HOU Airside Operations for review and approval. The SPCD shall be prepared in accordance with FAA Advisory Circular (AC) 150/5370-2G. SPCD shall incorporate safety plans specific to daytime and nighttime construction operations, as well as a contingency plan to address cases of abnormal failures, inclement weather, or unexpected situations using Appendix D of AC 150/5370-2G as reference.

All work must be performed in conformance with HAS design requirements, FAA criteria, and local, State, and Federal codes. Contractor is directed to comply with, and acquaint its employees with, the following FAA ACs. These documents and related requirements are referenced in detail in the project specifications:

- AC 150/5200-18D: Airport Safety Self-Inspection
- AC 150/5210-5D: Painting, Marking, and Lighting of Vehicles Used on an Airport
- AC 150/5370-2G: Operational Safety on Airports During Construction

The section numbering below was utilized to coordinate with the sections of AC 150/5370-2G.

2.5 Coordination

As the party responsible for airport safety, Houston Airport System (HAS) has established, and will enforce, this CSPP. Coordination between the Engineer of Record and the Owner to ensure airport operational safety took place during the design effort and has been addressed in the project drawings and

specifications. Additionally, a pre-bid meeting will be held for interested bidders that will include safety as an agenda item. The Contractor that is awarded the contract will be required to comply with the provisions of this CSPP, as a condition of the contract, by executing the SPCD. The Contractor shall incorporate into the SPCD details of how it will comply with the CSPP along with any supplemental information that could not be included in this CSPP prior to the award of the contract. The supplemental information in the SPCD must be written to match the format of this CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, "No supplemental information," should be written after the corresponding subject title. The SPCD should not duplicate the information in the CSPP.

Coordination of the construction of the project will begin with a pre-construction meeting that will be scheduled as soon as practical after the award of the contract, but prior to the Notice-To-Proceed being issued to the Contractor. The following individuals will be invited to the meeting:

- Project Design Engineer
- Resident Project Representative (RPR)
- Airport / HAS Management
- Contractor's Testing Laboratory Representative
- RPR's Testing Laboratory Representative
- Contractor, including appropriate Subcontractor(s)
- Contractor's Project Superintendent
- Contractor's Project Clerk
- Local Airport Users
- Federal, State, or Local Agencies Affected by the Proposed Construction

These meetings will be conducted within the guidelines of AC 150/5370-12B (or subsequent revisions), "*Quality Management for Federally Funded Airport Construction Projects.*" In addition to addressing specific project elements, operational safety during construction will be discussed at these meetings.

Should multiple contractors be retained for construction (such as Civil and Electrical), both contractors are responsible for coordination among themselves. All Contractor coordination needed with the Owner will be done through the RPR.

2.5.1 Progress Meetings

Once the construction begins the Contractor will be required to hold weekly Progress Meetings to discuss the work accomplished and the work that is anticipated. Airfield safety will be a standing agenda item at each of these meetings. The HAS Project Manager, HOU Airside Operations, Engineer, and Contractor's supervisory personnel shall attend each meeting.

A pre-activity meeting shall be held prior to the start of any phase, or when deviations or changes from the contract documents occur, and a daily safety meeting shall be held prior to and at the completion of each work period, between HOU Airside Operations and the Contractor's superintendent to discuss

requirements for the next phase, work shift or work area. Any work or operation, either new or out of the ordinary, shall require a safety/pre-activity meeting.

For night work, Contractor must coordinate each night's activities with HOU Airside Operations by no later than 5 P.M. the same day, which will include a closure and barricade plan for review and approval. No work will be allowed within the AOA unless it has been coordinated with HOU Airport Operations for that night. Excavation work is not allowed at night when airfield lighting is active.

2.5.2 Scope or Schedule Changes

All changes in the Scope of Work or schedule will be submitted by the Contractor to the RPR who will forward it to HAS for review. The changes must be approved by and coordinated with the affected parties prior to being incorporated into the project CSPP revisions.

2.5.3 FAA ATO Coordination

Any coordination with the FAA ATO will be directed through the HAS Project Manager and HOU Airside Operations. Coordination with the FAA ATO shall take place to schedule shut-offs and/or restarts of any FAA-owned facilities. Contractor shall coordinate with HAS Project Manager and HOU Airside Operations regarding which facilities shall be shut off/restarted and associated timeframes.

2.6 Phasing

Construction work associated with this project shall be completed in 145 calendar days. Construction requires closure of Runway 4-22 and thus must be completed no later than October 31st, 2025. The project is to be completed in close conformance to the work area plans and notes as contained in the contract documents. An overall view of the project phasing is shown in Appendix 1: Drawing Attachments, Phasing Plan.

Final phasing order and scheduling shall be coordinated between the HAS Project Manager, HOU Airside Operations, and the FAA.

2.6.1 Phase Elements

The project has been phased so that construction impacts to airport operations are minimized. The phasing has been developed and will be coordinated with HOU Airside Operations, the FAA, and HOU personnel. All Contractor operations during the construction of the project will be in accordance with FAA AC 150/5370-2G. Construction activities will be coordinated by the RPR. The airport will issue notices related to construction activities using the Notice-to-Airmen (NOTAM) system.

Runway 4-22 will be closed for 145 calendar days between June and October 2025. The Project Area has been divided into ten work areas as delineated in Appendix 1: Drawing Attachments, Phasing Plan / Phasing Notes.

Table 1 shows a summary of the impacts to each area of pavement in each work area (1 thru 10). Red indicates that the runway/taxiway must be fully closed during work in that work area. Amber indicates that the taxiway must be partially closed during work in that work area. Green indicates that the runway/taxiway can be fully open during work in that work area. Except for Work Area 6, closures shall take place 24 hours a day, although work shall be performed only between 8am and 6pm, unless otherwise directed by the RPR.

Work Area	1	2	3	4	5	6	7	8	9	10	Mitigation
Runway 4-22											NOTAM of runway closure for duration of the project, deenergize lighting, runway closure markers
Runway 13L-31R											NOTAM of runway closure during work in Work Area 5, deenergize lighting, runway closure markers
Runway 13R-31L											NOTAM of runway closure during work in Work Area 6, nightly work, deenergize lighting, runway closure markers
TW B											Closed between RW 4-22 and TW Z during work in Work Area 2, fully closed during work in Work Area 8, barricades, obscure edge lighting
TW C											Closed between TW K and TW Z during work in Work Area 4, closed between RW 4-22 and TW K during work in Work Area 7, barricades, obscure edge lighting
TW H											Closed between RW 4-22 and RW 4 holding/run-up pad during work in Work Area 10, barricades, obscure edge lighting
TW H2											Fully closed during work in Work Area 1, barricades, obscure edge lighting
TW J											Closed between TW K and RW 4-22 during work in Work Area 1, barricades, obscure edge lighting
TW K											Closed between TW K2 and RW 4-22 during work in Work Area 3, closed between RW 13L-31R and Signature FBO during work in Work Area 7, closed between Signature FBO and TW R during work in Work Area 9, barricades, obscure edge lighting
TW K1											Closed between RW 4-22 and TW K during work in Work Area 10, barricades, obscure edge lighting
TW K2											Fully closed during work in Work Area 2, barricades, obscure edge lighting
TW M											Closed between TW H and TW K during work in Work Area 5, barricades, obscure edge lighting
TW R											Closed between RW 4-22 and TW K during work in Work Area 4, barricades, obscure edge lighting
TW Y											Closed between TW Z and RW 4-22 during work in Work Area 3, barricades, obscure edge lighting
TW Z											Closed at intersection with Taxiway B during work in Work Area 8, barricades, obscure edge lighting
Legend	Pavement Closed							Pavement Partially Closed			Pavement Open

Table 1: Runway/Taxiway Closure Overview

2.6.2 Construction Safety Drawings

Construction safety is provided in Appendix 1: Drawing Attachments**,** General Notes / Construction Phasing and Maintenance of Traffic Details**.**

2.7 Areas and Operations Affected by Construction Activity

2.7.1 Identification of Affected Areas

The Project Area is completely inside the AOA and consists of the Runway 4-22 RSA plus the TOFAs of several connecting taxiways. Construction activity is anticipated to affect airfield operations due to the closure of Runway 4-22 for the duration of the project. In addition, the intermittent closure of Runway 13R-31L, Runway 13L-31R, and Runway 4-22 taxiway connectors while work is being done inside their respective RSA/TSA/TOFAs[1] (as defined in **Table 2** and **Table 3**, respectively) will further impact airfield operations. Low-profile barricades, as shown in Appendix 1: Drawing Attachments, Construction Phasing and Maintenance of Traffic Details, will be utilized to visually identify and protect RSAs and TOFAs adjacent to construction.

Additional information is included in Appendix 1: Drawing Attachments, Phasing Plan.

Runway	Runway Design Code	RSA Width[2]	ROFA Width[2]	RSA/ROFA Length (beyond runway ends)	ROFZ Width[2]
4-22	C-III	500 feet	800 feet	1,000 feet	400 feet
13L-31R	B-II	150 feet	500 feet	300 feet	400 feet
13R-31L	C-III	500 feet	800 feet	1,000 feet	400 feet
2. Dimensions shown are centered on the runway centerline or extended centerline					

Table 2: Runway Safety Areas

Taxiway	Airplane Design Group (ADG)	TSA Width[3]	TOFA Width[3]
B	III	34 feet	61 feet
C	III	34 feet	61 feet
H	III + Boeing 767-200	41 feet	115 feet
H2	III	34 feet	61 feet
J	III	34 feet	61 feet
K	III	34 feet	61 feet
K2	III	34 feet	61 feet
M	III	34 feet	61 feet
R	III	34 feet	61 feet
Y	III	34 feet	61 feet
Z	III	34 feet	61 feet
3. Dimensions shown are perpendicular to and offset from the defined edge of taxiway			

Table 3: Taxiway Safety Areas

2.7.2 Mitigation of Effects

The impacts described in **Table 1** will be mitigated using the following measures. Runway 4-22 will be closed for 145 calendar days. The work will be broken up into 10 work areas, ensuring that at least 2

[1] RSA: Runway Safety Area / ROFA: Runway Object Free Area / TSA: Taxiway Safety Area / TOFA: Taxiway Object Free Area

crossings of Runway 4-22 will be always available to aircraft and/or Aircraft Rescue and Fire Fighting (ARFF)/emergency vehicles.

Contractor must submit a Work Area Notification (WAN) to HOU Airside Operations at least 2 weeks in advance of any runway or taxiway closure. These closures will be reported through the NOTAM system, coordination for NOTAM issuance shall take place no less than 72 hours in advance with the HAS Project Manager, HOU Airside Operations, and ATCT.

Whenever a runway is closed, lighted runway closure devices will be required. Contractor is expected to provide these devices and may keep them after work is concluded. Runway lighting will be deenergized from the vault.

Work Area 6 is of critical importance, since it requires the closure of Runway 13R-31L, the other Instrument Flight Rules (IFR) and air carrier capable runway at HOU. Since this requires HAS to submit a *Form 6000-26: Airport Sponsor Strategic Event Submission* to the FAA, Contractor shall give HOU Airside Operations at least 50 business days' advance notice to accommodate FAA processing time requirements (Contractor must still submit a WAN within the 2 weeks' advance notice period). Work inside Work Area 6 (requiring closure of Runway 13R-31L) shall be scheduled between 12:30am and 4:30am, for the time allotted for this work area to be completed. Contractor is required to carry out work within and clean up the Work Area prior to reopening Runway 13R-31L at 4:30am.

2.8 Navigational Aid (NAVAID) Protection

It is foreseen that NAVAIDs associated with Runway 4-22 (localizer, glide slope, PAPI/VASI lights, and RVR sensors) will be inoperative during Runway 4-22 closure. The PAPI system for Runway 13L shall be taken out of service while Runway 13L-31R is closed for work. As work on Runway 13R-31L shall only take place for 4 hours a day and the runway must be promptly reopened after work is complete, these would not be taken out of service.

At the start of the Project, the Contractor shall meet with an FAA representative to identify FAA-owned facilities and cables. The HAS Project Manager or HOU Airside Operations shall coordinate taking NAVAIDs out of service and/or returning them to service with HOU ATCT and the FAA. This coordination shall happen at least 72 hours in advance of any NAVAID shutdown or restart (or initial closure of Runway 13R-31L).

Contractor shall protect taxiway/taxilane edge lighting and guidance signs during construction and hauling activities and ensure no damage to NAVAIDs (including cables) occur during construction.

Contractor must also protect existing IT infrastructure, including fiber cable, duct banks, frame and covers, and handholes at all times. Should this infrastructure be damaged or relocated, Contractor must comply with HAS IT Standards and Specifications for replacement/ relocation.

2.9 Contractor Access

The Contractor shall have access to the project site at locations shown on the plans. The Contractor is required to coordinate the use of gates and/or other access points to the AOA with the RPR. No prohibited

items (weapons, oxygen/acetylene tanks, welding equipment, and/or other tools not required for work on the project) are to be in the vehicles brought into the AOA.

2.9.1 Location of Stockpiled Construction Materials

Contractor shall only use the two staging areas shown on the project plans (see Appendix 1: Overall Site Plan and Survey Control), unless otherwise approved by the HAS Project Manager prior to construction. Each staging area is associated with a haul route (as defined in Section 2.9.4), which in term is associated with a work area. Contractor may not have access to the full extent of a staging area due to simultaneous construction taking place at HAS.

As work will be performed concurrently in multiple work areas, it is anticpated the Contractor will use both staging areas at the same time. Contractor shall not store equipment nor materials in a staging area not associated with the work area in which such equipment or materials are to be used. Stockpiles within Contractor's designated staging areas will be allowed upon submission and approval of an FAA Form 7460 airspace study. Stockpiles may not be established within an RSA or TOFA, nor within 30 feet of existing security fencing, edge lights, or service roads' edges of pavement. Stockpiles must be prominently lighted and marked during nighttime or other times of restricted visibility.

All materials shall be stored in a manner to prevent Foreign Object Debris (FOD) within and around the Airport as indicated in Section 211. All materials shall also be stored in a manner as to not attract wildlife within and around the Airport, as indicated in Section 2.10.

2.9.2 Vehicle and Pedestrian Operations

Contractor shall arrange and provide own escorts. All Contractor escorts or Contractor personnel operating a vehicle unescorted within the AOA shall complete the Movement Driver Training Program required by HOU Airside Operations. Access to the AOA shall be limited to the approved access locations.

Contractor's vehicles that are not required on the project site shall be parked in the Contractor's Staging Areas or in areas designated by the RPR prior to the start of construction. No personal vehicles will be permitted inside the AOA at any time.

At all times, vehicles must yield to aircraft under power, aircraft being towed, and emergency response vehicles.

The Contractor will always be escorted while working in the AOA to coordinate all movements within the AOA movement area with the Air Traffic Control Tower (ATCT). At no time shall the Contractor move from the work site without being escorted.

All personnel operating a vehicle unescorted within the AOA shall complete the Movement Driver Training Program required by HOU Airside Operations.

2.9.3 Construction Equipment

Contractor's construction equipment shall always be returned to the Staging Areas when not actively being used for construction activities. The maximum height of construction equipment shall not exceed 30 feet.

2.9.4 Access and Haul Roads

Contractor will enter and exit the airfield through two access gates and haul roads, as shown in Appendix 1: Overall Site Plan and Survey Control. These routes are intended to minimize travel time through active pavements and interference with aircraft operations, as well as minimizing the need for crossing active runways. The South Route will use Gate S20 for airfield access and shall be used by personnel and equipment operating in Work Areas 1, 6, and 10. The North Route will use Gate E15 for airfield access and will serve personnel and equipment accessing Work Areas 2, 3, 4, 5, 7, 8, and 9. Contractor may not use any access or haul roads other than those described above, unless otherwise approved by the RPR. Flaggers shall be located at taxiway crossings within both haul routes. Construction traffic shall not enter any areas of the airfield outside of the limits of the active work area at any time.

Any materials delivered to the Contractor's work site must use the street address associated with the staging area's access point; the delivery address shall not include "William P. Hobby Airport".

Fencing, drainage, grading, and other miscellaneous construction necessary to establish temporary haul routes or access points will be the Contractor's responsibility and shall be approved in advance by HOU Airside Operations.

2.9.5 Situational Awareness

Regardless of if under escort or not, each vehicle driver 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. Because aircraft do not always broadcast their positions or intentions, visual checking, radio monitoring, and situational awareness of the surroundings is critical to safety.

2.9.6 Marking and Lighting of Vehicles

All Contractor's vehicles inside of the airport perimeter fence shall be marked and lit in accordance with FAA AC 150/5210-5, latest edition, "*Painting, Marking, and Lighting of Vehicles Used on an Airport*." Vehicles operating inside the airport perimeter fence shall:

- Be marked with a sign on both sides of the vehicle identifying the Contractor's name. This logo must be visible from a distance of at least 200 feet
- **Either:**
    - Display in full view above the vehicle a 3' x 3' or larger, orange and white checkerboard flag, with each checkerboard color being a 1' square; **OR**
    - Unless operating in the designated vehicle driving lanes, be equipped with and utilize a flashing amber (yellow) dome-type or 4-way hazard flasher type lights. No other color will be acceptable.
        - The amber dome-type lights visible 360-dgrees must be mounted on top of the vehicle and of such intensity to conform to local codes for maintenance and emergency vehicles.
        - This requirement also applies to vehicles under escort.

- **Exception:** Heavy vehicles under escort must comply with both flag and dome light requirements.

2.9.7 Maintenance of the Secured Area

The Contractor shall coordinate use of the AOA gates with the RPR, HOU Security (for regulatory compliance), and HOU Airside Operations prior to accessing the project site to prevent unauthorized people and vehicles from entering the airfield. Contractor shall provide gate guards at AOA access gates to be used for construction. Contractor must ensure that all access gates being used for AOA access remain locked or guarded, except for the brief periods required for passage of authorized vehicles, equipment, and personnel. Contractor must develop and enforce procedures in its SPCD to ensure that only authorized personnel and equipment are granted access to the AOA and to prohibit "piggybacking" behind authorized vehicles. The escort vehicle shall be responsible for maintaining security during construction.

2.9.8 Identification and Badging

All Contractor employees, subcontractors, agents, vendors, invitees, etc., requiring access to the construction site shall, in accordance with HOU's security plan, this CSPP, and Contractor's SPCD, be required to display airport-issued identification or be under airport-approved and badged escort personnel. Badges will be issued to individual employees, will be identified numerically, and a permanent record will be maintained on each individual to whom a badge is issued.

- A $55 non-refundable processing fee will be required for each badge. This fee must be paid before a badge is issued.
- No badge will be issued to any person until a review of the required paperwork by airport security and all requirements are met. Paperwork shall be submitted a minimum of 24 hours before issuance of a badge.
- The Contractor is responsible for personnel attending training and completing security badge applications, which will include air/ground radio, taxiway/taxilane, and airport familiarization. Estimated time for completion is two hours.
- Contractor's personnel must challenge (request to see a valid and unexpired airport-issued identification badge) any person within the secure area neither under escort nor visibly displaying such a badge.
- At the completion of the contract all badges shall be returned to the airport. A charge of $50 per badge will be assessed for all unreturned badges.

Flaggers must be badged and must have successfully completed enhanced airport movement/non-movement area training instructed by HOU Airside Operations, in addition to the regular badge and movement training, prior to performing in that capacity on airport property. Gate guards and escorts shall be considered under the flagger classification and shall be subject to the same requirements as flaggers.

2.10 Wildlife Management

Wildlife can be a very serious hazard within the AOA. Therefore, precautions must be taken to mitigate the following elements that attract wildlife or otherwise increase the risk caused by the presence of wildlife.

2.10.1 Trash

All trash, including food scraps, generated by the Contractor from the construction activities or the activities of the Contractor's personnel shall be collected and placed in a container that prevents animals from rummaging through it. This container shall be emptied before it becomes full. All trash cans must remain covered when not in use.

2.10.2 Standing Water

During the construction, the Contractor shall ensure that there is no standing water within the work site and within the staging areas.

2.10.3 Tall Grass and Seeds

Contractor shall maintain and mow grass within the project area during construction to prevent wildlife habitat from forming, nesting areas or other wildlife hazards from developing. Grass height within the project area(s) shall be kept at 8" or as directed by the RPR.

Any area that has become disturbed by the Contractor shall become the responsibility of the Contractor until vegetation has been established and accepted. The maintenance of the turf areas outside of the AOA shall be coordinated with the RPR and Airport at the progress meetings. Seeding and mulching outside of the AOA shall comply with TxDOT *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* (dated September 1st, 2024), item 164. All seeding, mulching, and sodding products to be used shall be approved by the HAS Project Manager or HOU Airside Operations, as well as by a Qualified Wildlife Hazard Management Biologist (QWHMB).

2.10.4 Poorly Maintained Fencing and Gates

Contractor shall not operate in such a way that could cause damage (either by action or negligence) to the AOA fences and gates and shall be responsible for any repair work incurred by not doing so.

2.10.5 Disruption of Existing Wildlife Habitat

As this project is located entirely within the AOA and primarily consists of rehabilitation and repair of existing airfield pavements, impact to any existing wildlife habitat is not anticipated.

2.11 Foreign Object Debris (FOD) Management

Foreign Object Debris (FOD) is a major concern on this project. It can cause serious damage to aircraft, equipment, or personnel. FOD can also lead to serious accidents resulting in injury or death. Sources of FOD include, but are not limited to, excessive dust, construction material containers and spillage, tools, vehicle tires, and food/beverage containers. The contractor shall maintain a clean and neat work area at all times.

The Contractor shall instruct all personnel in recognizing FOD and the hazards it presents and provide

receptacles for FOD collection throughout the project's duration. The Contractor shall conduct all operations in a manner to prevent FOD, which include materials such as bituminous millings, material containers, and other such items. These items shall be cleaned up as they are produced, unless otherwise specified, and placed in a secure location or receptacle where they will not be subject to wind or other means of dispersal within the AOA. Before leaving the site at the end of each work period the Contractor is required to inspect the area and clear it of any FOD. Contractor shall be required to have at least two operational vacuum sweepers equipped with plastic brushes (steel is not permitted) and magnets at all times, sweepers shall be used behind all haul trucks on haul routes, vehicle service roads (VSRs), adjacent taxiways, and apron areas. Water trucks shall be used to control all blowing dust. The Contractor must also always have an operator on site and ready during construction activities to remove FOD.

Contractor shall contact airside operations if FOD is noticed outside the work area.

2.12 Hazardous Materials (HAZMAT) Management

Management of hazardous material is required to prevent environmental damage as well as protect property and personnel. Contractor shall follow the HAS Spill Response & Procedures as included in Appendix 3. In the event of a spill exceeding the Texas Commission on Environmental Quality's (TCEQ) Reportable Quantities

Hazardous materials common to construction sites include vehicle fuels, oils, lubricants, and hydraulic fluid as well as many materials/compounds used for the actual construction of the work.

The Contractor shall store all such materials in containers approved for such use, shall have the Material Safety Data Sheets (MSDS) on site for all such materials, and shall have cleanup materials recommended by the MSDS on site and readily available for use in the event of a spill. All materials shall be used in strict accordance with the manufacturer's instructions and should be prepared to meet inspection at any time.

Transfer of materials from one container to another shall be done in areas where a spill is least likely to cause damage such as away from streams, storm sewer inlets, etc. Fueling of vehicles and equipment shall be done at designated areas within the Contractor's staging area. No fueling shall occur in areas outside of the Contractor's staging area.

Appropriate spill kits shall be available for all refueling operations. All contaminated materials from used spill kits shall be removed from the site and properly disposed of immediately after use.

Any spill, regardless of size, must be reported to the HAS Project Manager and HOU Airside Operations.

The following instructions are taken from AC 150/5320-15A, *"Management of Airport Industrial Waste"* and should be followed in the event of a hazardous spill:

2.12.1 Cleanup-General

Clean up leaks and spills immediately. Use a rag, absorbent pad, or other suitable material for small spills on paved surfaces, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste in designated areas. Cleanup must follow the issued Construction SWPPP

(TXR150000) and Airport SWPPP (TXR050000) to ensure compliance with stormwater discharge permits and proper spill management.

Never hose down or bury dry material spills. Clean up as much of the material as possible and properly dispose of legally off airport property.

Contractor shall retain an emergency response contractor to respond to spills that requiring reporting to the TCEQ (examples in subsection (e) of this section). The emergency response contractor should be immediately contacted to ensure that the airport is restored to pre-spill conditions with as quick as possible.

2.12.2 Minor Spills

Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill. This response may require the cessation of all other activities. The Contractor shall immediately notify the HAS Project Manager and HOU Airside Operations (Airside Supervisor) at the phone numbers provided in Section 213.

- Contain the spread of the spill.
- Notify the project foreman immediately.
- Use absorbent materials on small spills – DO NOT hose down or bury the spill. Recover spilled materials.
- Absorbent materials should be promptly removed and properly disposed of legally off airport property.
- Clean the contaminated area and properly dispose of contaminated materials legally off airport property.
- The Contractor shall complete any relevant reporting forms designated by the HAS Project Manager.

2.12.3 Semi-Significant Spills

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities. The Contractor shall immediately notify the HAS Project Manager and HOU Airside Operations (Airside Supervisor) at the phone numbers provided in Section 213, who may contact 911.

- Contain the spill.
- Notify the project foreman immediately.
- If the spill occurs on paved or impermeable surfaces, clean it up using “dry” methods (absorbent materials and do not let the spill spread widely)
- If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soils.
- If the spill occurs during rain, cover the spill with tarps or other material to prevent contaminating runoff.

- The Contractor shall complete any relevant reporting forms designated by the HAS Project Manager.

2.12.4 Significant/ Hazardous Spills

For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:

- The Contractor shall immediately notify the HAS Project Manager and HOU Airside Operations (Airside Supervisor) at the phone numbers provided in Section 2.13 and call 911.
- The HAS Project Manager will notify the proper county officials as per the spill plan.
- The construction personnel should not attempt to clean up the spill until the appropriate and qualified staff have arrived at the spill site.
- The Contractor shall complete any relevant reporting forms designated by the HAS Project Manager.

The services of a spill contractor or a HAZMAT team should be obtained immediately, and such response will be coordinated between the HAS Project Manager, HOU Airside Operations and the Contractor.

2.12.5 Reporting

The Contractor must report significant spills to the HAS Project Manager and HOU Airside Operations and shall comply with all Airport reporting requirements. Contractor must report spills or discharges meeting or exceeding TCEQ RQs to TCEQ's spill reporting hotline at 800-832-8224 within 24 hours of discovery. These reports shall include the RQ(s) being exceeded. Examples of RQs of concern are (this list is not exhaustive, other RQs are available at the TCEQ's website):

- **Oil**: discharges of 25 gallons or more into water, or any amount causing a sheen.
- **Hazardous substances**: amounts equal to or greater than the federal RQ or 100 pounds, whichever is less.
- **Sewage:** spills of 1,000 gallons or more. If water quality is affected, spills must be reported regardless of quantity.
- **Chemical spills:** any quantity that could pose a public health or environmental risk.
- **Other materials:** spills of 100 pounds or more that could cause harm to the environment.

After a TCEQ report is filed, Contractor must immediately provide the HOU Airside Operations and HAS Environmental teams with the TCEQ reporting number and relevant details.

Federal regulations require that any significant oil spill into a water body or onto adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours). The Contractor will make any required notifications and notify the RPR when this has been done.

2.13 Notification of Construction Activities

The Contractor shall coordinate all construction activities with the RPR at the weekly progress meetings. Prior to any airfield closure, the Contractor shall notify the RPR 48 hours in advance.

2.13.1 List of Responsible Representatives

A contact list will be developed prior to the start of the project and must be updated as needed by both the Airport and the Contractor. This list will be provided to the HAS Project Manager, HOU Airside Operations, and the RPR.

The contact list will include at a minimum both emergency and routine phone numbers for at least three on-site contractor personnel who will be available 24 hours a day, and the following airport personnel:

- HAS Project Manager (Anmar Al Rikabi) 281-233-1753
- Division Manager, Airside Operations (Ross Williamson) 713-845-6602
- Supervisor, Airside Operations (Michael Doty) 832-795-6350
- Airside Supervisor 713-410-1978
- Airside Coordinator 713-417-5710
- Construction Inspector (TBD) ..... XXX-XXX-XXXX
- Construction Airspace Coordinator (Juan Pedracova) 281-230-8915
- HAS IT Project Manager (Shawn Suski) 713-392-0769
- Airport Operations Center 713-845-6555
- HOU Security 713-417-5710
- SSC Manager (Ron Adair) 337-254-1336
- HOU Electrical (Derick Jones) 832-493-9747

2.13.2 NOTAMs

All airport NOTAMs shall be issued by HOU Airside Operations to provide anticipated notice of construction and phase durations for the project. All FAA (airspace, NAVAIDs, etc.) NOTAMs shall be issued by the local FAA SSC. HOU Airside Operations will advise the Contractor of any activities for which NOTAMs must be issued. The Contactor shall provide a minimum notice of 48 hours prior to conducting any of these activities. The Contractor shall not initiate such activities until it is advised by HOU Airside Operations that the NOTAM has been issued.

It is anticipated that a NOTAM will be required for the closures identified in Section 206(a).

2.13.3 Emergency Notification Procedures

In case of life-threatening emergencies, Contractor shall immediately call 911. The Airport Operations Center (AOC, 713-845-6555) shall be contacted (immediately after calling 911 if emergency is life-threatening, and immediately if not) to provide an adequate ARFF response. After these entities are contacted, Contractor must notify HOU Airside Operations, the HAS Project Manager, and HOU Landside Operations (if applicable).

2.13.4 Coordination with ARFF

Contractor shall coordinate with ARFF and emergency response personnel, through the HAS Project Manager, provisions for work that:

- Deactivates water lines or fire hydrants (includes procedures and timing of shut-off and reactivation of the affected facilities).

- Impacts emergency access routes (rerouting, blocking, and restoration).
- Uses hazardous materials on the airfield.

2.13.5 Notification to the FAA

Contractor shall ensure, through the HAS Project Manager, that aeronautical studies (7460) are conducted for all construction activities (stockpiles, equipment, and structures) prior to commencing construction work. Contractor must submit all Form 7460s to the HOU Construction Airspace Coordinator at least 60 days prior to the start of work to provide sufficient time for the FAA to conduct the aeronautical study.

2.14 Inspection Requirements

This project is subject to inspections by the FAA, HOU Airside Operations, RPR, TxDOT Aviation Division, and the TCEQ at any time during the construction. In addition, the Contractor shall designate an employee as a safety officer whose duty shall be to inspect the work area at least once a day, or as needed, with respect to safety issues.

2.14.1 Daily Inspections

Daily inspections of construction activities inside the movement areas by Airport personnel will be necessary. RPR and HOU Airside Operations reserve the right to inspect the site at any time during construction. The Contractor, RPR, and HOU personnel shall perform routine inspections as necessary.

2.14.2 Interim Inspections

Inspections of areas being reopened to aircraft traffic will be conducted by the Contractor and HOU Airside Operations prior to reopening. A satisfactory inspection shall include, but not be limited to, the following:

- Correct operation of airfield signage and lighting
- Absence of potential FOD hazards associated with construction (remnants of construction material, trash, unsecured equipment, etc.)
- Clear and correct airfield markings

Contractor shall keep sufficient personnel on site to remediate any findings or perform last-minute cleanups prior to reopening.

2.14.3 Final Inspections

The HAS Project Manager will ensure a final inspection is conducted, as necessary.

2.15 Underground Utilities

HAS airfield lighting cables will be replaced as part of the project. It is unlikely that underground utilities not shown in the plans will be encountered during construction; the Contractor should nonetheless locate, verify, and mark all utility lines at or near the Project Area prior to commencing work. Contractor shall also coordinate with the FAA SSC to locate FAA infrastructure. Any utilities encountered that are not shown in the plans shall be immediately reported to the HAS Project Manager and HOU Airside Operations to identify, mark, and log them for later inclusion in as-builts and updates to HOU's utility master plan.

Contractor shall immediately notify HOU Airside Operations of any utility infrastructure damaged during construction and shall bear the costs of repairs.

Known utility owners/operators at the airport are:

- Houston Airport System: storm drainage, airfield lighting, communications cables
- City of Houston: water and wastewater lines
- FAA: NAVAID power, control, and communication cables
- Shell/Magellan Pipeline: underground petroleum pipeline

2.16 Penalties

Security and other safety related violations of airport rules and regulations may result in temporary or permanent suspension of work or removal of the individual from the project. Certain violations could also result in fines being levied by the FAA and/or the Transportation Safety Administration (TSA).

2.16.1 Fines

- Contractor shall be solely responsible for fines assessed against HOU due to Contractor's violations of FAA/TSA safety or security requirements.
- If the restricted area gate is found to be open or unlocked and unattended, law enforcement and/or TSA may issue Contractor a citation. Contractor shall be responsible for all court costs and imposed fines. In addition, a charge of up to $10,000.00 may be levied by HAS and/or TSA for each violation so documented.
- In the event Contractor deviates from the identified construction limits and/or designated haul routes onto an active runway, taxiway or taxilane, the Contractor will be fined $1,000 per occurrence. In addition to fines, a Notice of Violation (NOV) may be issued, which may include suspension of work or termination, depending on the level of violation committed.
- HAS may impose fines upon Contractor for non-compliance with phasing deadlines.
    - This includes unnecessary delays in re-opening of Runway 13R-31L after nightly closures.

Fines assessed will be deducted from monies due to the Contractor.

2.17 Special Conditions

Contractor access may be restricted during times of poor weather conditions, during emergencies, security breaches, safety violations, or other times deemed applicable by HOU Airside Operations. Notification will be made by HOU Airside Operations to the RPR and the Contractor. Any instruction to the Contractor to clear any given area, at any time, by either HOU Airside Operations or ATCT, must be immediately complied with. Work may not resume until authorization from HOU Airside Operations is received.

Contractor shall be aware that temporary delays in starting work may be required while waiting for aircraft to taxi to destination in phases where construction traffic must cross an active taxiway or during low visibility operations. No delay claims will be considered for these delays. All stand-by time is incidental to other project work.

2.18 Runway and Taxiway Visual Aids

2.18.1 General

Airport marking, lighting, signage, and visual NAVAIDs must be clearly visible to pilots, and not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, or other wind currents and constructed of materials that would minimize damage to an aircraft in the event of inadvertent contact.

The Contractor shall always protect and avoid interfering with the above-mentioned items that are not the target of the repair and/or replacement efforts. If the Contractor has reason to believe that its work may interfere with any of the items above, the Contractor shall call this to the attention of RPR and await instructions before proceeding with the work.

The Contractor shall immediately notify the RPR when any of the above items are damaged.

During the closure, Visual Aids (markings, lighting, signs, NAVAIDs, etc.) that are not serving their intended function during construction shall be temporarily disabled, covered, or modified as necessary. Areas in which aircraft may operate during construction shall always be clearly marked and visible; visual aids within these areas must remain in place and operational. Where taxiway closures must occur, barricades shall be placed outside the object free areas of intersecting taxiways.

2.18.2 Markings

Temporary markings for aircraft movement shall be placed at the RPR's discretion. Markings must comply with AC 150/5340-1: *Standards for Airport Markings*.

Runways that are closed for construction shall be marked with a lighted runway closure device, as shown on the plans, placed on or near as practical to each of the runway designation numbers on either end.

2.18.3 Lighting and Visual NAVAIDs

All airfield lighting associated with a closed runway shall be deenergized while that runway is closed for construction. Whenever a portion of a taxiway must be closed as part of the project, its edge lighting shall be shut off (or obscured, if unable to be shut off) so that no visible light is emitted.

2.18.4 Signage

Airfield signs either associated with closed runways or taxiways and/or directing aircraft to a closed runway or taxiway shall be fully or partially covered as needed to avoid aircraft entry into these areas.

2.19 Marking and Signs for Access Routes

Access to the job site shall be through the designated gates and haul routes as shown in the plans. Haul routes shall be developed that minimize the number of crossings of active airfield pavement and impact to aircraft operations. Contractor may install MUTCD-compliant signage on temporary supports to facilitate situational awareness for construction vehicle operators.

2.20 Hazard Marking, Lighting, and Signing

2.20.1 Purpose

The Contractor shall place waterfilled, lighted, low-profile barricades for each work area indicated to ensure that aircraft do not enter a closed taxiway or runway, or a vehicle does not enter a hazardous area such as open trenches, small areas under repair, stockpiled material, and waste areas.

2.20.2 Equipment

Barricades shall be waterfilled, low profile and of the type detailed on the attached Phasing Plans shown in Appendix 1: Phasing Plan / Construction Phasing and Maintenance of Traffic Details. The use of sandbags is not allowed. The barricades shall be placed continuously unless indicated otherwise or directed by the RPR or Airport personnel. Each barricade shall be striped orange and white per the detail on the plans and be equipped with two flashing red lights visible from 360 degrees. No other color will be acceptable. The lights must remain operational during times of reduced visibility and from dusk to dawn.

Barricades will not be placed in the RSA/TOFA of an active runway/taxiway.

All barricades and associated lighting erected by the Contractor shall be maintained by the Contractor and shall be repaired and/or replaced immediately as required. Lights on barricades must be checked daily and immediately replaced if found inoperative. Barricade water levels shall also be checked daily and refilled as necessary. The Contractor shall provide the contact information for a person that can respond immediately to maintain, repair, and/or replace the equipment described above 24 hours per day.

Work area boundaries in turf will be delineated using the work area delineation devices as shown on the plans. Details are available in Appendix 1: Drawing Attachments, Phasing Plan / Construction Phasing and Maintenance of Traffic Details.

The lighted runway closure devices will be provided by the Contractor and will remain Contractor's property after the Project is complete. The Contractor shall provide, place, relocate (as necessary), and maintain the temporary runway closure markers as shown in Appendix 1: Drawing Attachments, Phasing Plan / Construction Phasing and Maintenance of Traffic Details.

2.20.3 Personnel Safety

Personnel on the construction site must wear a reflective vest meeting ANSI Class 3 standards. Personnel are strongly encouraged to wear hard hats when working near heavy machinery and ear protection when operating near aircraft noise.

2.21 Work Zone Lighting for Nighttime Construction

When work must be performed during nighttime (herein defined as 1 hour before sunset to 1 hour after sunrise[2] or other conditions where natural lighting is insufficient for work to be accurately and safely performed), Contractor shall provide lighting equipment to adequately illuminate work areas. Lighting

[2] Sunrise and sunset times will be those determined by the U.S. Navy Table of Sunrise/Sunset for Houston, TX on the date where work will be performed.

should provide the most natural color illumination and contrast with minimal shadows. It is strongly recommended that Contractor's support equipment be equipped with artificial illumination to provide additional visibility of the work and adjacent areas. Light towers deployed must not be aimed at the ATC Tower cab or active runways to avoid blinding effects (shielding may be used if necessary) and must be removed from work areas prior to those areas being reopened for aircraft operations.

Contractor must provide a lighting plan following the criteria in this section for RPR review and approval. No work shall be carried out at night unless Contractor's lighting plan has been approved by the RPR; nighttime work shall be in compliance of the approved lighting plan and other sections of this CSPP.

2.22 Protection of Runway and Taxiway Safety Areas

Section 207(a) provides the geometric definitions for the areas referenced in this section.

2.22.1 Runway Safety Area (RSA)

Most construction activities will occur within the Runway 4-22 safety area; therefore, the runway will be closed for the 145 days of construction time. When any construction activities are to take place within the Runway 13R-31L or Runway 13L-31R safety areas, the associated runway must be closed to aircraft traffic.

RSA dimensions are specified in **Table 2**.

2.22.2 Runway Object Free Area (ROFA)

As is the case with Runway 4-22 RSA, most construction activities will occur within the Runway 4-22 ROFA, but some work will also take place within the Runway 13R-31L or Runway 13L-31R ROFAs. Work inside an ROFA (but outside the RSA) does not warrant a runway closure, but neither construction equipment nor material stockpiles may be left inside an active runway's ROFA when not in use.

ROFA dimensions are specified in **Table 2**.

2.22.3 Taxiway Safety Area (TSA)

Some work will take place within the TSA of connector taxiways primarily between the intersection with Runway 4-22 and the location of the hold bars. While work is occurring on an affected taxiway, it will be closed in accordance with Section 2.06.

TSA dimensions are specified in **Table 3**.

2.22.4 Taxiway Object Free Area (TOFA)

No work will be performed within the TOFA of an active taxiway as part of this project.

For all work adjacent to Taxiway H, barricades and closures must allow for operations of Boeing 757 and Boeing 767-200 aircraft. Barricades at Taxiway H2 shall be no closer than 115' from the Taxiway H centerline in order to provide sufficient clearance.

TOFA dimensions are specified in **Table 3**.

2.22.5 Obstacle Free Zone (OFZ)

When any construction activities are to take place within a runway OFZ, the associated runway must be closed to aircraft traffic.

ROFZ dimensions are specified in **Table 2**.

2.22.6 Runway Approach/Departure Areas and Clearways

The same restrictions as in Section 2.22.5 apply to these areas.

2.23 Other Limitations on Construction

2.23.1 Prohibitions

- Smoking and explosives are not permitted anywhere on Airport Property at any time.
- Open flames, torching, welding shall not be permitted anywhere on Airport Property unless authorized in advance by HOU Airside Operations.
- The presence of any construction equipment or stockpiles requires submission of a FAA Form 7460-1.
- Construction activities may not take place within 25 feet of parked aircraft unless previously approved in writing by HOU Airside Operations.

2.23.2 Restrictions

- All construction operations, hauling, and transporting across active runways, taxiways, and taxilanes shall be under control of a designated HOU Airside Operations escort. HOU Airside Operations will be the point of contact through the Airport Operations Center at (713) 845-6555.
- Work will be temporarily restricted when conditions described in Section 2.17 occur.
- It is anticipated that most work will take place between 8am and 6pm, except as stated in this document or otherwise deemed necessary by and coordinated with the RPR. For nighttime work, any light banks shall be shielded to keep light from shining upwards which could impact air traffic. The RPR may request that the lights be repositioned at any time if there is an issue.

APPENDIX 1
DRAWING ATTACHMENTS

GENERAL NOTES:

1. THE WILLIAM P. HOBBY AIRPORT (HOU) OPERATIONS AND HOUSTON AIRPORT SYSTEM (HAS) SHALL AT ALL TIMES HAVE COMPLETE JURISDICTION OVER SAFETY OF ALL AIRCRAFT OPERATIONS DURING THE WORK. WHEREVER THE SAFETY OF AIRCRAFT IS CONCERNED, THE DECISIONS OF THE AIRPORT DIRECTOR, OR DESIGNATED REPRESENTATIVE, SHALL BE FINAL AS TO METHODS, PROCEDURES, AND MEASURES USED. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL WORK AND SEGREGATING THEIR WORK AREAS FROM OTHER AIRPORT USE AREAS AT ALL TIMES IN ACCORDANCE WITH THE CSPP..
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE COORDINATION OF ALL CONSTRUCTION ACTIVITIES AND MAINTAINING CONSTANT COORDINATION BETWEEN SUBCONTRACTORS AND OTHER STAKEHOLDERS. COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE RPR. THE RPR WILL ASSIST THE CONTRACTOR IN COORDINATING THE WORK WITH AIRPORT PERSONNEL, AND WITH THE AIR TRAFFIC CONTROL TOWER (ATCT). EXCEPT FOR EMERGENCIES ALL COORDINATION WITH THESE ENTITIES SHALL BE MADE THROUGH THE RPR. THE CONTRACTOR SUPERINTENDENT/SAFETY OFFICER SHALL MEET EACH MORNING WITH THE RPR PRIOR TO THE START OF DAILY CONSTRUCTION ACTIVITIES.
3. ALL CONSTRUCTION ACTIVITIES PLANNED BY THE CONTRACTOR SHALL BE REVIEWED AND APPROVED BY HOU OPERATIONS, THE RPR, ANY OTHER HOU REPRESENTATIVES.
4. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL APPLICABLE PERMITS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT.
5. NO EQUIPMENT WILL BE PERMITTED TO OPERATE UNTIL THE APPROVAL OF THE 7460-1 HAS OCCURRED, WHICH CAN TAKE UP TO 90 CONTINUOUS CALENDAR DAYS. NO RESPONSE ON THIS FORM DOES NOT INDICATE APPROVAL TO UTILIZE EQUIPMENT.
6. ARFF AND OTHER EMERGENCY VEHICLES' ACCESS TO THE AIRFIELD SHALL BE UNIMPEDED AT ANY TIME AND THEY SHOULD BE GIVEN PRIORITY AT ALL ACCESS POINTS OVER CONTRACTOR VEHICLES OR EQUIPMENT. THE CONTRACTOR SHALL NOT OBSTRUCT ANY EMERGENCY VEHICLES / PERSONNEL AT ANY TIME.
7. ALL CONTRACTOR VEHICLES, EQUIPMENT, AND PERSONNEL SHALL REMAIN WITHIN THE DESIGNATED WORK AREA OR HAUL ROUTES AT ALL TIMES.
8. NO EARTH DISTURBANCE SHALL OCCUR PRIOR TO THE INSTALLATION AND ACCEPTANCE OF THE EROSION AND SEDIMENTATION CONTROLS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING INLET PROTECTION AS REQUIRED.
9. NO MATERIAL SHALL BE STOCKPILED OUTSIDE OF THE STAGING AREA UNLESS AUTHORIZED IN WRITING BY THE RPR. ANY STOCKPILE LOCATIONS SHALL BE PROVIDED TO THE RPR BY THE CONTRACTOR FOR APPROVAL AT LEAST 10 CONTINUOUS CALENDAR DAYS PRIOR TO THE STOCKPILING OF MATERIALS. WHEN PERMITTED STOCKPILES OF MATERIAL ARE LOCATED WITHIN THE AOA, THEY ARE LIMITED TO A MAXIMUM HEIGHT OF 3 FEET. OUTSIDE OF THE AOA, STOCKPILES ARE LIMITED TO A MAXIMUM HEIGHT OF 15 FEET. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE IN PLACE PRIOR TO THE STOCKPILING OF MATERIALS.
10. THE CONTRACTOR IS RESPONSIBLE FOR ANY TEMPORARY DRAINAGE OR DEWATERING THAT MAY BE REQUIRED AS A RESULT OF THE SEQUENCE OF WORK ON THE PROJECT. ANY AREAS IMPACTED SHALL BE RESTORED TO, OR BETTER THAN, THE EXISTING CONDITIONS PRIOR TO THE COMPLETION OF THE WORK WITHIN THE WORK AREA.
11. THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT POTENTIAL POLLUTANTS FROM ENTERING ANY DRAINAGE SYSTEM OR WATERWAY. IN THE EVENT OF A SPILL THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE HAS PROJECT MANAGER, HOU AIRSIDE OPERATIONS, AND TCEQ AND ENACT THE SPILL PREVENTION PLAN PROVIDED IN THE CSPP.
12. THE CONTRACTOR SHALL ALWAYS MAINTAIN ON SITE AT LEAST TWO OPERATIONAL VACUUM SWEEPER TRUCKS WITH PLASTIC BRISTLES AND MAGNET TO ENSURE PAVEMENT AND HAUL ROUTES ARE KEPT FREE OF DEBRIS OR DIRT THAT COULD BECOME A FOD HAZARD.
13. THE CONTRACTOR SHALL SUBMIT AND ENACT A DUST PREVENTION PLAN. AT LEAST ONE OPERATIONAL WATER TRUCK SHALL BE ON SITE AT ALL TIMES FOR USE WITH DUST CONTROL. DURING NON-WORKING HOURS, THE CONTRACTOR SHALL BE ABLE TO PROVIDE A RESPONSE WITHIN 25 MINUTES OF NOTIFICATION, 24 HOURS A DAY 7 DAYS A WEEK. ALL LOADS SHALL BE COVERED AT ALL TIMES.
14. THE CONTRACTOR PROJECT SUPERINTENDENT SHALL ATTEND THE PRE-CONSTRUCTION MEETING AND WEEKLY CONSTRUCTION PROGRESS MEETINGS.
15. THE CONTRACTOR SHALL PROTECT AND PRESERVE ALL AIRFIELD SURVEY MONUMENTS WITHIN AND ADJACENT TO THE PROJECT SITE.
16. THE CONTRACT DOCUMENTS CONTAIN SENSITIVE SECURITY INFORMATION THAT IS CONTROLLED UNDER THE PROVISIONS OF 49 CFR PART 1520. NO PART OF THIS DOCUMENT MAY BE RELEASED EXCEPT AS AUTHORIZED UNDER 49 CFR PART 1540/1542 BY THE ASSOCIATE ADMINISTRATOR FOR CIVIL AVIATION SECURITY, FEDERAL AVIATION ADMINISTRATION, WASHINGTON DC, 20519. UNAUTHORIZED RELEASE MAY RESULT IN CIVIL PENALTY ACTION. FOR UNITED STATES GOVERNMENT AGENCIES PUBLIC AVAILABILITY IS TO BE DETERMINED UNDER 5 USC 552.
17. THE CONTRACTOR SHALL REMOVE FROM ALL PAVEMENT THE SLURRY PRODUCED BY SAWCUTTING. SLURRY SHALL NOT BE LEFT TO DRY ON PAVEMENT OVERNIGHT AND SHALL BE REMOVED PRIOR TO THE END OF EACH WORKING SHIFT.
18. CONTRACTOR SHALL RESTORE ALL TURF AREAS DISTURBED AS A RESULT OF HIS OPERATIONS. ALL AREAS INSIDE THE AOA SHALL BE RESTORED IN ACCORDANCE WITH ITEMS P-904, SODDING, AND P-905, TOPSOILING. ALL AREAS OUTSIDE THE AOA SHALL BE IN ACCORDANCE WITH ITEM 164, SEEDING FOR EROSION CONTROL, FROM THE TEXAS DEPARTMENT OF TRANSPORTATION, STANDARDS SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES DATED SEPTEMBER 1, 2024. AREAS WITHIN THE LIMIT OF DISTURBANCE AS SHOWN ON THE PLANS WILL BE PAID FOR UNDER ITEMS P-904 AND P-905. AREAS OUTSIDE THE LIMIT OF DISTURBANCE WILL BE RESTORED AT THE CONTRACTOR'S EXPENSE.
19. CONTRACTOR SHALL INSPECT SIGN COVERINGS DAILY AND RESET OR REPLACE ANY SIGN COVERING AS NECESSARY.

VEHICLE OPERATIONS, ACCESS, HAUL ROUTES, AND STAGING AREA:

1. NO PERSONNEL WILL BE PERMITTED ONTO THE PROJECT SITE WITHOUT A PROPER ACCESS BADGE OR UNDER ESCORT BY SOMEONE WITH THE APPROPRIATE CREDENTIALS.
2. CONTRACTOR SHALL COORDINATE AOA GATE USAGE WITH RPR, HOU AIRSIDE OPERATIONS, AND HOU SECURITY TO ENSURE THAT ONLY AUTHORIZED PERSONNEL AND VEHICLES MAY ACCESS THE AOA. CONTRACTOR IS RESPONSIBLE FOR ENSURING ACCESS GATES REMAIN LOCKED OR GUARDED, EXCEPT WHEN PERSONNEL/VEHICLES ARE ENTERING/EXITING THE AOA. CONTRACTOR SHALL INCLUDE PROVISIONS IN THEIR SPCD DETAILING HOW ACCESS RESTRICTIONS TO THE AOA WILL BE ENFORCED.
3. NO PERSONAL VEHICLES WILL BE PERMITTED WITHIN THE AOA AT ANY TIME.
4. ALL EQUIPMENT AND VEHICLES NOT ACTIVELY IN USE FOR THE CONSTRUCTION ACTIVITY SHALL BE LOCATED IN THE CONTRACTOR STAGING AREA. WHEN WORK IS COMPLETE FOR THE DAY ALL EQUIPMENT SHALL BE RETURNED TO THE CONTRACTOR STAGING AREA.
5. HAUL ROUTES ON THE AIRFIELD SHALL BE DELINEATED WITH LIGHTED BARRICADES, SIGNAGE, OR OTHER MEANS APPROVED BY THE RPR AND HOU OPERATIONS TO CLEARLY MARK THE ROUTES TO THE WORK AREA.
6. PRIOR TO THE USE OF A HAUL ROUTE THE ROUTE SHALL BE JOINTLY INSPECTED BY THE CONTRACTOR, THE RPR, AND HOU OPERATIONS. THE CONDITIONS OF THE ROUTE SHALL BE THOROUGHLY DOCUMENTED WITH VIDEO, PHOTOS, AND ANY OTHER MEANS ACCEPTABLE TO ALL PARTIES. WHEN THE HAUL ROUTE IS NO LONGER NEEDED FOR THE PROJECT, IT SHALL BE RESTORED TO THE EXISTING CONDITION OR BETTER BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
7. ESCORTS OPERATING WITHIN THE AOA MUST COMPLETE THE MOVEMENT DRIVER TRAINING PROGRAM REQUIRED BY HOU AIRSIDE OPERATIONS. CONTRACTOR SHALL CONTINUOUSLY BRIEF ALL EMPLOYEES, SUPPLIERS, AND SUBCONTRACTORS ON THE HAUL ROUTES TO BE UTILIZED THROUGHOUT THE DURATION OF THE PROJECT.
8. THE STAGING AREA DOES NOT HAVE UTILITIES. ANY UTILITIES REQUIRED BY THE CONTRACTOR SHALL BE COORDINATED WITH THE APPLICABLE UTILITY BY THE CONTRACTOR AND HOU OPERATIONS. THE CONTRACTOR IS SOLELY RESPONSIBILITY FOR OBTAINING AND PAYING FOR UTILITIES FOR THE STAGING AREA.
9. ALL CONTRACTOR VEHICLES THAT ARE AUTHORIZED TO OPERATE WITHIN THE AOA SHALL DISPLAY IN FULL VIEW A FLASHING AMBER (YELLOW) DOME TYPE LIGHT THAT IS VISIBLE FROM 360 DEGREES, OR A 3-FOOT BY 3-FOOT ORANGE AND WHITE CHECKERED (1-FOOT SQUARE) FLAG OR LARGER MOUNTED ABOVE THE VEHICLE. HEAVY EQUIPMENT UNDER ESCORT SHALL DISPLAY BOTH A LIGHT AND A FLAG COMPLYING WITH THESE REQUIREMENTS. ALL VEHICLES SHALL BE ESCORTED BY AN AUTHORIZED ESCORT. WHEN OPERATING OUTSIDE OF THE WORK AREAS THE VEHICLES SHALL BE UNDER THE CONTROL OF AN HAS PROVIDED ESCORT. A VEHICLE ESCORT SHALL ESCORT NO MORE THAN 3 VEHICLES OR 2 TRACTOR TRAILERS AT ONE TIME.
10. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING OFF-AIRPORT HAUL ROUTES WITH THE APPROPRIATE AUTHORITY. ON-AIRPORT HAUL ROUTES SHALL NOT INTERFERE WITH AIRPORT OPERATIONS AND SHALL BE ACCESSIBLE TO AIRPORT VEHICLES AT ALL TIMES.
11. ALL WASTE SHALL BE DISPOSED OF OFF-SITE. ANY OFF-SITE WASTE AREAS USED ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

SAFETY AND SECURITY:

1. IN THE EVENT OF AN EMERGENCY, THE CONTRACTOR SHALL MAKE DIRECT CONTACT WITH 911 AND THEN PROVIDE IMMEDIATE NOTIFICATION TO THE RPR.
2. THE STORAGE, TRANSPORT, AND OR USE OF EXPLOSIVES IS EXPLICITLY PROHIBITED ON AIRPORT PROPERTY.
3. THE CONTRACTOR SHALL PROVIDE THE PHONE NUMBERS OF AT LEAST THREE EMERGENCY CONTACT PERSONNEL, OF WHICH ONE MUST BE THE PROJECT SUPERINTENDENT. THESE INDIVIDUALS MUST BE ON CALL 24 HOURS AD DAY, 7 DAYS A WEEK FOR THE DURATION OF THE PROJECT, INCLUDING NO WORK PERIODS BETWEEN WORK AREAS IN THE EVENT OF AN EMERGENCY OR SITUATION THAT REQUIRES AN IMMEDIATE RESPONSE.
4. ALL WORK INSIDE RUNWAY SAFETY AREA OR TAXIWAY OBJECT FREE AREAS SHALL BE COORDINATED WITH AND APPROVED BY THE RPR.
5. IN THE EVENT OF AN EMERGENCY THE CONTRACTOR MAY BE REQUIRED TO BACKFILL ALL OPEN EXCAVATIONS AND VACATE THE AIRFIELD. IN SUCH INSTANCES THE CONTRACTOR SHALL RESPOND IMMEDIATELY AS ADVISED BY THE RPR.
6. RUNWAY AND TAXIWAY EDGE LIGHTS MUST REMAIN OPERATIONAL AT ALL TIMES WHEN PAVEMENT AREAS ARE AVAILABLE TO AIRCRAFT.
7. WHEN WORKING INSIDE THE AOA, THE CONTRACTOR SHALL MAINTAIN CONTINUOUS TWO-WAY RADIO CONTACT WITH THE ATCT. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE RADIOS CAPABLE OF TRANSMITTING AND RECEIVING ON A VHF AIRCRAFT FREQUENCY FOR THIS PURPOSE. EACH RADIO SHALL BE EITHER A HARD-WIRED VEHICLE-MOUNTED BASE RADIO OR A PORTABLE TRANSCEIVER. IF A PORTABLE RADIO IS USED, EACH MUST BE EQUIPPED WITH A SPARE BATTERY PACK AND VEHICLE POWER CHARGER TO ENSURE CONTINUAL OPERATION OF EACH RADIO.
8. WHEN WORKING INSIDE THE AOA, THE CONTRACTOR SHALL ASSIGN A MINIMUM OF ONE PERSON TO MONITOR THE AIR TRAFFIC CONTROL FREQUENCY, THE PERSON MONITORING THE RADIO MUST BE CAPABLE OF UNDERSTANDING AND SPEAKING ENGLISH. THIS PERSON MAY PERFORM OTHER DUTIES; HOWEVER, THE PRIMARY RESPONSIBILITY MUST BE TO MONITOR THE RADIO FOR COMMUNICATIONS FROM THE ATCT IN AN AREA WHERE NOISE WILL NOT IMPEDE THIS FUNCTION.
9. CONSTRUCTION ON THE PROJECT MAY BE HALTED AT ANY TIME BY THE RPR, HOU OPERATIONS, OR ARFF IF IT IS DETERMINED TO BE IN THE BEST INTEREST OF THE AIRPORT OPERATIONS, SAFETY, OR SECURITY. THE CONTRACTOR MAY BE DIRECTED TO REMOVE PERSONNEL, EQUIPMENT, OR OTHER VEHICLES FROM THE AIRFIELD UNTIL IT IS DETERMINED THE SITUATION HAS BEEN RESOLVED. NO ADDITIONAL TIME OR COMPENSATION WILL BE PROVIDED FOR ANY ISSUES RESULTING FROM THE CONTRACTOR'S ACTIONS.

UTILITIES:

1. INFORMATION PROVIDED ON THE DRAWINGS FOR EXISTING UTILITIES, CABLES, DUCTS, MANHOLES, FIXTURES, ETC. ARE APPROXIMATE AND BASED ON THE INFORMATION AVAILABLE, WHICH INCLUDES HISTORICAL RECORD DRAWINGS, AND AIRPORT MAPPING PROVIDED BY THE AIRPORT.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UNDERGROUND FACILITIES WITHIN THE PROJECT AREA PRIOR TO THE CONSTRUCTION OF THE PROJECT. THE RPR SHALL IMMEDIATELY BE NOTIFIED OF ANY DISCREPANCY BETWEEN THE DRAWINGS AND FIELD CONDITIONS.
3. THE CONTRACTOR SHALL CONTACT THE FOLLOWING AT LEAST 72 HOURS (3 BUSINESS DAYS) PRIOR TO ANY EXCAVATION ON THE PROJECT:

UTILITY OWNER	CONTACT	PHONE NUMBER
TEXAS DIG SAFE	N/A	811
FAA (SEE NOTE 7)	TINA SIEBERTZ	281-784-7601
HAS	ROSS WILLIAMSON / MICHAEL DOTY	713-845-6602 / 832-795-6350
HAS ELECTRICAL AND MAINTENANCE	STEPHEN BEAULIEU	218-230-8793
HAS SERVICE DESK	N/A	281-233-1900
HAS TECHNOLOGY INFRASTRUCTURE	SHAWN SUSKI	713-392-0769
ARFF	TBD	TBD

4. THE FAA REQUIRES A 45 CONTINUOUS CALENDAR DAY NOTIFICATION PRIOR TO EXCAVATION.
5. CONTACT HAS SERVICE DESK 72 HOURS PRIOR TO ANY HAS IT LOCATES.
6. AFTER UTILITIES HAVE BEEN LOCATED THE CONTRACTOR SHALL RECORD THE LOCATION AND DEPTH ON THE RECORD DRAWINGS/ FILES.
7. ANY UNSCHEDULED INTERRUPTION OF SERVICE TO ACTIVE LIGHTING CIRCUITS OR OTHER UTILITY SHALL IMMEDIATELY AND CONTINUOUSLY BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER. ANY DAMAGE TO UTILITY INFRASTRUCTURE INCLUDING BUT NO LIMITED TO LIGHT BASES, FIXTURES, HANDHOLES, ETC. SHALL BE REPAIRED TO THE SATISFACTION OF THE RPR AT NO ADDITIONAL COST TO THE OWNER. THE REPLACEMENT OF BASE CANS MAY REQUIRE ADDITIONAL PAVEMENT WORK AND REPAIR.
8. FAA CABLES ARE WITHIN THE PROJECT AREA. THESE CABLES ARE CRITICAL TO THE OPERATION OF VARIOUS NAVIGATIONAL AIDS. ANY DAMAGE TO THESE CABLES MAY REQUIRE THE COMPLETE REINSTALLATION BETWEEN TERMINATION POINTS. THE CONTRACTOR SHALL HAVE SPLICE KITS ON HAND FOR IMMEDIATE REPAIRS. ANY SPLICE SHALL BE CONSIDERED TEMPORARY UNTIL THE NECESSARY CABLES CAN BE PROCURED AND INSTALLED. THE METHOD OF REPAIR IS AT THE SOLE DISCRETION OF THE FAA. THE CONTRACTOR SHALL COORDINATE WITH THE REGIONAL FAA REPRESENTATIVE TO VERIFY LOCATION OF THESE LINES.

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WWW.JACOBS.COM
TEXAS P.E. FIRM F-2966

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

GENERAL NOTES

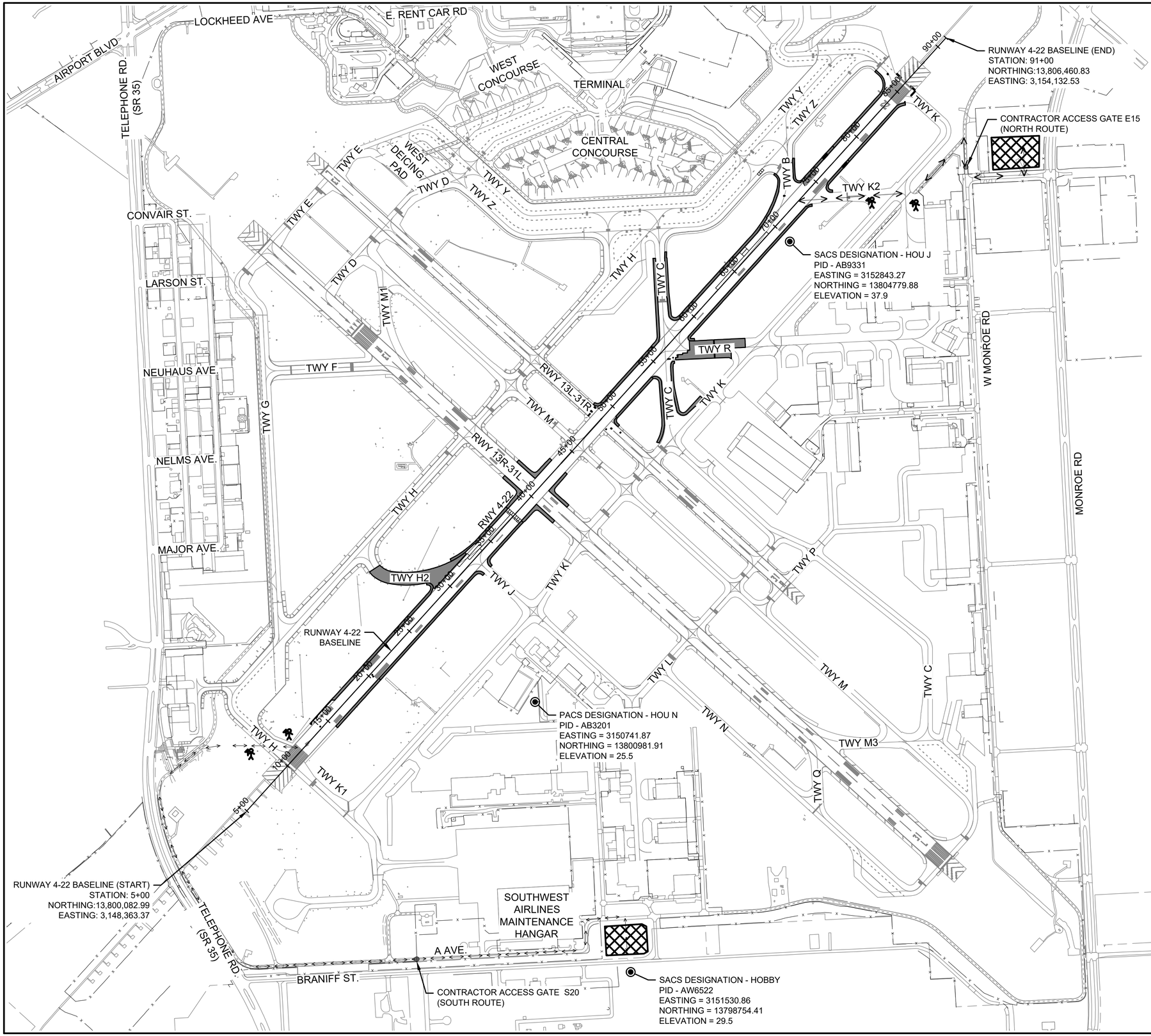
PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

REUSE OF DOCUMENTS:

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
LICENSED PROFESSIONAL ENGINEER
F-2966

APPROVED BY: DATE:
DIRECTOR
HOUSTON AIRPORT SYSTEM

TIP NO: TIP-24-259-HOU
BSG NO: BSG- 2024-341-HOU
PROJECT NO: P1057
C.I.P. NO: X-XX-XXXX-XXX
H.A.S. NO: N/A
SHEET NO: GC001



NOTES:

1. COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE, NAD 83 (2011) , EPOCH 2010.00. AIRPORT SACS MONUMENT "HOBBY" (NGS AW 6522) WAS HELD FOR PROJECT CONTROL. HORIZONTAL CONTROL SURVEY WAS PERFORMED USING GPS AND THE GEOID 12A MODEL. HOBBY GRID COORDINATES: N=13,798,754.41; E=3,151,530.86. UNIT OF MEASURE = U.S. SURVEY FOOT. ALL COORDINATES SHOWN HEREON HAVE BEEN SCALED UP TO A FACTOR OF 0.999870017. TO CONVERT TO GRID COORDINATES USE FOLLOWING FORMULA: SURFACE / 0.999870017 = GRID.
2. ALL ELEVATIONS ARE REFERENCED TO NAVD 88. AIRPORT SACS MONUMENT "HOBBY" WAS HELD FOR PROJECT CONTROL. VERTICAL CONTROL SURVEY WAS PERFORMED USING DIGITAL LEVELING AND CLOSED LEVEL LOOP PROCEDURES. HOBBY ELEVATION = 12.36 METERS OR 40.55 FEET.
3. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ACCURACY OF CONTROL INFORMATION. CONTRACTOR SHALL NOTIFY THE RPR OF ANY DISCREPANCIES.
4. THE CONTRACTOR SHALL UTILIZE BOTH STAGING AREAS / HAUL ROUTES TO AVOID CROSSING OF RW 13R-31L.

LEGEND:

- STAGING AREA (SEE NOTE 4)
- HAUL ROUTE (SEE NOTE 4)
- FENCE
- CRACK SEAL AND SEAL COAT
- PCC PAVING / ISOLATED SLAB REPLACEMENT
- FULL DEPTH ASPHALT REMOVAL
- FLAGGER

N

GRAPHIC SCALE
400' 0 400' 1200'
SCALE: 1" = 400'

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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

OVERALL SITE PLAN AND SURVEY CONTROL

PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

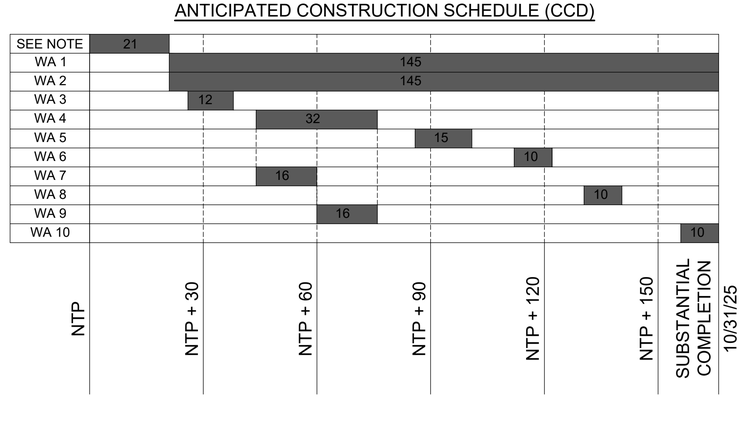
11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
REGISTERED PROFESSIONAL ENGINEER
F-2966

APPROVED BY:	DATE:
DIRECTOR HOUSTON AIRPORT SYSTEM	
TIP NO:	TIP-24-259-HOU
BSG NO:	BSG- 2024-341-HOU
PROJECT NO:	P1057
C.I.P. NO:	X-XX-XXXX-XXX
H.A.S. NO:	N/A
SHEET NO:	GC100

GENERAL PHASING NOTES:

1. THE CONSTRUCTION SAFETY PHASING PLAN (CSPP) HAS BEEN DEVELOPED IN COORDINATION WITH HOU OPERATIONS AND OTHER STAKEHOLDERS TO MINIMIZE THE IMPACTS TO THE AIRFIELD OPERATIONS AT HOU. THE CONTRACTOR SHALL PREPARE AND SUBMIT A SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) THAT DESCRIBES HOW THE CONTRACTOR WILL FOLLOW THE REQUIREMENTS OF THE CSPP AND INDICATE ANY ASPECT THAT CANNOT BE FOLLOWED TO ALLOW FOR COORDINATION WITH HOU AND ALL IMPACTED STAKEHOLDERS.
2. PRIOR TO COMMENCING WORK IN ANY AREA, THE CONTRACTOR SHALL SUBMIT A WORK AUTHORIZATION NOTICE (WAN) TO HOU OPERATIONS FOR APPROVAL AT LEAST 72 HOURS IN ADVANCE. NO WORK WILL BE PERMITTED WITHOUT PRIOR APPROVAL OF THE WAN. WHEN WORK INCLUDES EXTENDED MOVEMENT AREA CLOSURES, ADDITIONAL ADVANCE NOTIFICATION MAY BE REQUIRED. WANS WILL BE PRESENTED TO THE STAKEHOLDERS BY THE HAS PROJECT MANAGER ON TUESDAYS.
3. PRIOR TO THE START OF WORK IN ANY WORK AREA THE CONTRACTOR SHALL CONDUCT A PRE-WORK COORDINATION MEETING. THE CONTRACTOR SHALL REVIEW THE PLACEMENT OF ALL LOW-PROFILE BARRICADES AND RUNWAY CLOSURE DEVICES, AS WELL AS DISCUSS ANY TEMPORARY MODIFICATIONS TO THE AIRFIELD LIGHTING SYSTEMS, STOCKPILE LOCATIONS, NIGHTTIME ILLUMINATION PLAN, AND IDENTIFY ANY OTHER ANTICIPATED IMPACTS TO THE AIRPORT FACILITIES OR UTILITIES.
4. REPLACEMENT OF THE HOME RUNS FOR THE AIRFIELD LIGHTING CIRCUITS ARE OUTSIDE OF THE WORK AREAS SHOWN ON THE PLANS, THIS WORK SHALL BE COORDINATED AT LEAST 14 CONTINUOUS CALENDAR DAYS (CCD) PRIOR TO THE WORK COMMENCING WITH THE RPR TO FACILITATE ANY ADDITIONAL AIRFIELD CLOSURES THAT WOULD BE NECESSARY.
5. MARKING MAY OCCUR OUTSIDE OF THE WORK AREAS INDICATED. THIS WORK SHALL BE COORDINATED WITH THE RPR 14 CCD PRIOR TO COMMENCING WORK FOR ANY ADDITIONAL CLOSURES THAT WOULD BE REQUIRED.
6. ALL OF THE CONSTRUCTION ACTIVITIES SHALL BE PERFORMED WITHIN THE WORKING HOURS PROVIDED FOR EACH WORK AREA. ANY WORK OCCURRING DURING NIGHTTIME HOURS SHALL BE PROPERLY ILLUMINATED AND ALL LIGHTS DIRECTED AWAY FROM AIRCRAFT. LIGHTING MAY NEED TO BE ADJUSTED IF DIRECTED BY THE RPR.
7. WITHIN THE FIRST WORKING SHIFT OF ANY WORK AREA, ALL LOW-PROFILE BARRICADES AND RUNWAY CLOSURE DEVICES SHALL BE IN PLACE, OPERATIONAL, AND ACCEPTED. NO OTHER CONSTRUCTION ACTIVITIES CAN BEGIN UNTIL THESE ITEMS ARE PROPERLY INSTALLED AND ACCEPTED. ALL BARRICADES AND RUNWAY CLOSURE DEVICES SHALL REMAIN IN PLACE FOR EACH WORK AREA UNTIL THE WORK HAS BEEN COMPLETED AND ACCEPTED BY THE RPR.
8. WHEN THE WORK AREA IS TURNED OVER TO HOU AT THE END OF THE WORKING SHIFT OR THE COMPLETION OF THE WORK AREA, ALL LOW-PROFILE BARRICADES AND RUNWAY CLOSURE DEVICES SHALL BE REMOVED AND RETURNED TO THE CONTRACTOR STAGING AREA. THE CONTRACTOR SHALL ALLOW FOR TIME FOR HOU TO INSPECT THE AREA AND THE CONTRACTOR SHALL PERFORM ANY CORRECTIVE ACTIONS REQUIRED BY THE RPR PRIOR TO THE WORK AREA BEING TURNED OVER TO THE AIRPORT.
9. TEMPORARY LIGHTING MODIFICATIONS REQUIRED FOR THE WORK AREA SHALL BE COORDINATED WITH HOU AT LEAST 10 CONTINUOUS CALENDAR DAYS PRIOR TO THE START OF THE WORK. ALL MODIFICATIONS SHALL BE PERFORMED WITHIN THE FIRST WORKING SHIFT OF THE WORK AREA. THIS WORK MAY REQUIRE TEMPORARY CLOSURES OF TAXIWAYS/ APRONS/ RUNWAYS. ANY LOW-PROFILE BARRICADES REQUIRED FOR THIS WORK SHALL BE ERECTED AS DIRECTED BY THE RPR.
10. CONTRACTOR SHALL VERIFY FUNCTIONING OF BARRICADE LIGHTS, LIGHTED RUNWAY CLOSURE MARKERS, AND BARRICADE WATER LEVELS DAILY. THE CONTRACTOR SHALL REPLACE ANY NON-FUNCTIONAL LIGHTS OR LOW-PROFILE BARRICADES THAT HAVE BECOME DAMAGED OR HAVE LOST REFLECTIVITY, WITHIN 24 HOURS OF THEM BEING IDENTIFIED AS NON-FUNCTIONAL. THE CONTRACTOR SHALL MAINTAIN AN ADEQUATE NUMBER OF SPARE BULBS, FLASHERS, ETC. TO ALLOW FOR THE REPLACEMENT OF NON-FUNCTIONAL ITEMS WITHIN THE TIME INDICATED. LIGHTED RUNWAY CLOSURE MARKERS SHALL BE OPERATIONAL 24/7. LOW PROFILE BARRICADE LIGHTING SHALL BE OPERATIONAL FROM DUSK TO DAWN AND DURING TIMES OF LOW LIGHT.
11. LIGHTED RUNWAY CLOSURE DEVICES WILL BE FURNISHED BY AND WILL REMAIN THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE PLACEMENT AND MAINTENANCE (BULBS. FUEL, ETC.) OF THE DEVICES DURING THE RUNWAY CLOSURES. NO WORK SHALL OCCUR IN A WORK AREA THAT REQUIRES A RUNWAY CLOSURE WITHOUT THESE CLOSURE DEVICES IN PLACE UNLESS OTHERWISE NOTED. INOPERATIVE RUNWAY CLOSURE DEVICES MUST BE REPLACED WITHIN 30 MINUTES.
12. THE CONTRACTOR'S PERSONNEL AND EQUIPMENT SHALL REMAIN WITHIN THE WORK AREAS AND SHALL NOT CROSS A BARRICADE UNDER ANY CIRCUMSTANCE WITHOUT PRIOR APPROVAL FROM THE ESCORT TO ENTER AN ACTIVE PORTION OF THE AIRFIELD (AS SHOWN ON THE PLANS).
13. LOW-PROFILE BARRICADES SHALL BE PLACED TO MARK ALL OPEN EXCAVATIONS, PAVEMENT DROPS GREATER THAN 3 INCHES, OR OTHER HAZARDOUS CONDITIONS, OR AS DIRECTED BY THE RPR IN ADDITION TO THE ONES REQUIRED FOR THE CLOSURE OF AIRFIELD PAVEMENTS.
14. ALL AIRFIELD LIGHTING (EDGE LIGHTS, CENTERLINE LIGHTS, RUNWAY GUARD LIGHTS, ETC) ON CLOSED PAVEMENTS OR LEADING TO CLOSED PAVEMENTS SHALL BE OBSCURED OR DEENERGIZED SO NO VISIBLE LIGHT IS EMITTED. THE CONTRACTOR SHALL COORDINATE THIS WITH THE RPR 48 HOURS PRIOR TO WORK BEGINNING IN EACH WORK AREA.
15. ALL AIRFIELD GUIDANCE SIGNS LEADING TO A CLOSED PAVEMENT AREA SHALL BE COVERED. THE CONTRACTOR SHALL COORDINATE WITH THIS WITH THE RPR 48 HOURS PRIOR TO WORK BEGINNING IN EACH WORK AREA.
16. AT LEAST TWO CROSSINGS OF RW 4-22 SHALL BE AVAILABLE FOR AIRCRAFT AT ALL TIMES.

ANTICIPATED CONSTRUCTION SCHEDULE (CCD)



NOTE:
1. SUBMITTAL AND PROCUREMENT PERIOD

RW / TW CLOSURE OVERVIEW

	RW 4-22	RW 13L-31R	RW 13R-31L	TW B	TW C	TW H	TW H2	TW J	TW K	TW K1	TW K2	TW M	TW R	TW Y	TW Z	WORKING HOURS	DURATION CALENDAR DAYS
WORK AREA 1	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED	CLOSED BETWEEN RW 4-22 - TW K	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	8:00 AM - 6:00 PM	145
WORK AREA 2	CLOSED	OPEN	OPEN	CLOSED BETWEEN RW 4-22 - TW Z	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED	OPEN	OPEN	OPEN	OPEN	8:00 AM - 6:00 PM	145
WORK AREA 3	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED BETWEEN RW 4-22 - TW K2	OPEN	OPEN	OPEN	OPEN	CLOSED BETWEEN RW 4-22 - TW Z	OPEN	8:00 AM - 6:00 PM	12
WORK AREA 4	CLOSED	OPEN	OPEN	OPEN	CLOSED BETWEEN TW K - TW Z	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED BETWEEN RW 4-22 - TW K	OPEN	OPEN	8:00 AM - 6:00 PM	32
WORK AREA 5	CLOSED	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED BETWEEN TW H - TW K	OPEN	OPEN	OPEN	8:00 AM - 6:00 PM	15
WORK AREA 6	CLOSED	OPEN	CLOSED NIGHTLY	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	12:30 AM - 4:30 AM	10
WORK AREA 7	OPEN	OPEN	OPEN	OPEN	CLOSED BETWEEN RW 4-22 - TW K	OPEN	OPEN	OPEN	CLOSED BETWEEN RW 13L-31R - SIGNATURE	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	8:00 AM - 6:00 PM	16
WORK AREA 8	OPEN	OPEN	OPEN	CLOSED AT TW Z INTERSECTION	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED AT TW B INTERSECTION	8:00 AM - 6:00 PM	10
WORK AREA 9	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED BETWEEN TW R - SIGNATURE	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	8:00 AM - 6:00 PM	16
WORK AREA 10	CLOSED	OPEN	OPEN	OPEN	OPEN	CLOSED BETWEEN RW 4-22 - RW 4 RUN-UP PAD	OPEN	OPEN	OPEN	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN	8:00 AM - 6:00 PM	10

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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

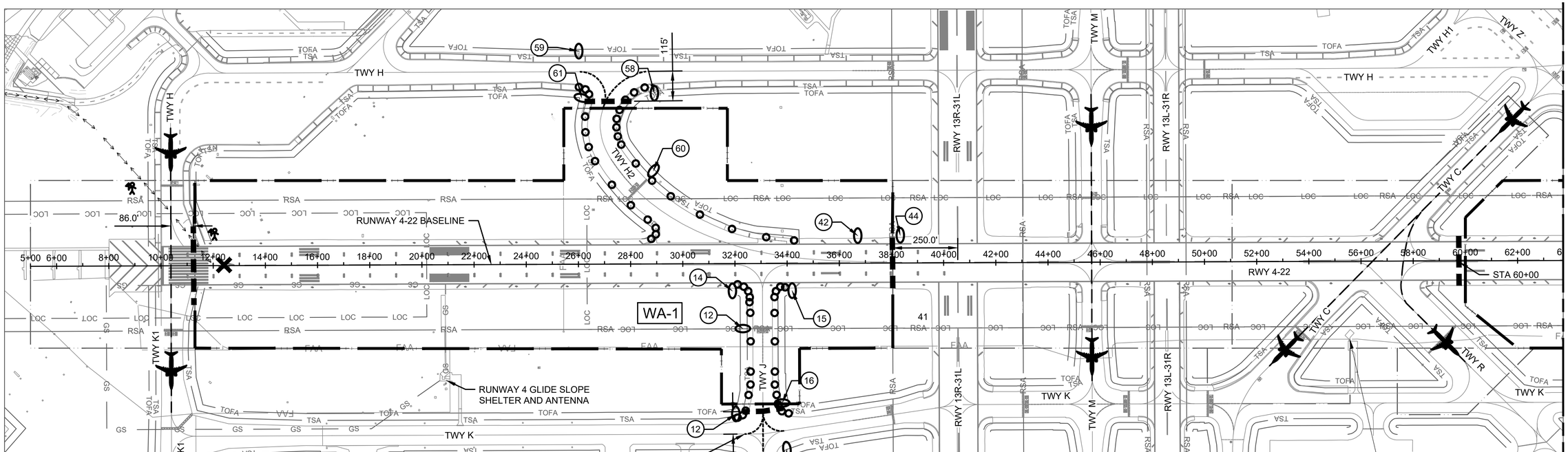
PHASING NOTES

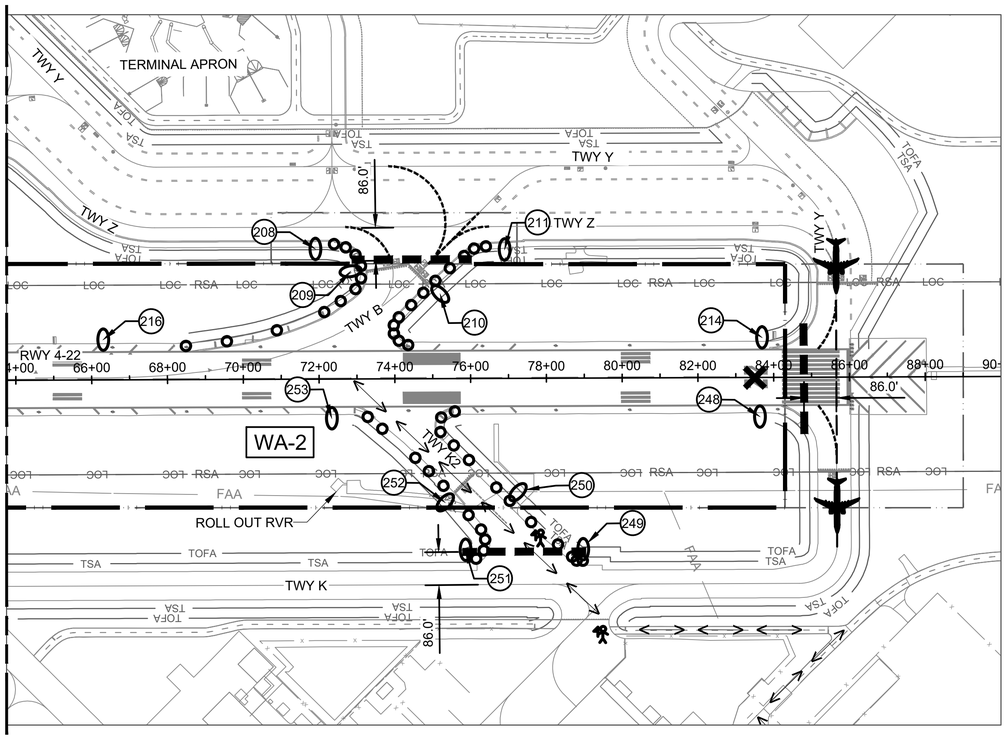
PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
LICENSED PROFESSIONAL ENGINEER
F-2966

APPROVED BY: DATE:
DIRECTOR
HOUSTON AIRPORT SYSTEM

TIP NO: TIP-24-259-HOU
BSG NO: BSG- 2024-341-HOU
PROJECT NO: P1057
C.I.P. NO: X-XX-XXXX-XXX
H.A.S. NO: N/A
SHEET NO: GC201





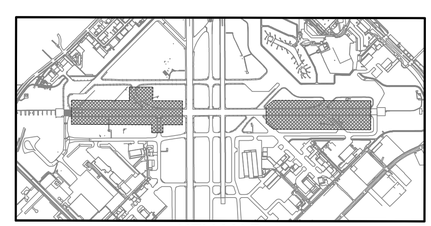
NOTES:

1. ALL RUNWAY 4-22 LIGHTING SHALL BE SHUT OFF AT THE VAULT PRIOR TO THE START OF ANY WORK. THIS INCLUDES, BUT IS NOT LIMITED TO: RUNWAY EDGE LIGHTS, CENTERLINE LIGHTS, TOUCHDOWN ZONE LIGHTS, APPROACH LIGHT SYSTEM (FAA OWNED).
2. ANY NAVAID FOR RUNWAY 4-22 SHALL BE SHUT OFF BY THE OWNER PRIOR TO WORK STARTING IN THE PROJECT, THIS INCLUDES THE RUNWAY 4 GLIDE SLOPE, RUNWAY 4 LOCALIZER, RUNWAY 22 LOCALIZER, RUNWAY 22 PAPI, RUNWAY 4 PAPI.
3. ONLY THE PORTION OF THE SIGN LEADING AIRCRAFT INTO THE CLOSED PAVEMENTS, OR THAT PROVIDES A TAXIWAY LOCATION WITHIN A CLOSED PAVEMENT AREA SHALL BE COVERED. ALL RED AND WHITE SIGNS SHALL REMAIN UNCOVERED.
4. PRIOR TO ANY MARKING REMOVAL THE CONTRACTOR SHALL SURVEY THE EXISTING MARKINGS WITH ADEQUATE DETAIL TO REPLACE THE MARKING IN-KIND. THE SURVEY SHALL BE PROVIDED TO THE RPR. THE MARKING SHALL BE REPLACED DURING THE LAST WORKING SHIFT AVAILABLE FOR THE WORK AREA

LEGEND:

WORK AREA NUMBER	WA-#
WORK AREA BOUNDARY	
4 / GC501 AIRFIELD SIGNAGE AND SIGN # TO BE COVERED (SEE NOTE 3)	#
3 / GC501 RUNWAY/TAXIWAY EDGE LIGHTS TO BE SHUT OFF OR COVERED	
1 / GC501 LOW PROFILE BARRICADE	
2 / GC501 LIGHTED RUNWAY CLOSURE MARKER	
AIRCRAFT TRAFFIC ROUTE	
LIMIT OF MARKING REMOVAL (SEE NOTE 4)	
HAUL ROUTE	
FLAGGER	

GRAPHIC SCALE
100' 0 100' 200'
SCALE: 1" = 100'



KEY MAP
NTS

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HOUSTON TEXAS

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VERIFY SCALE
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0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

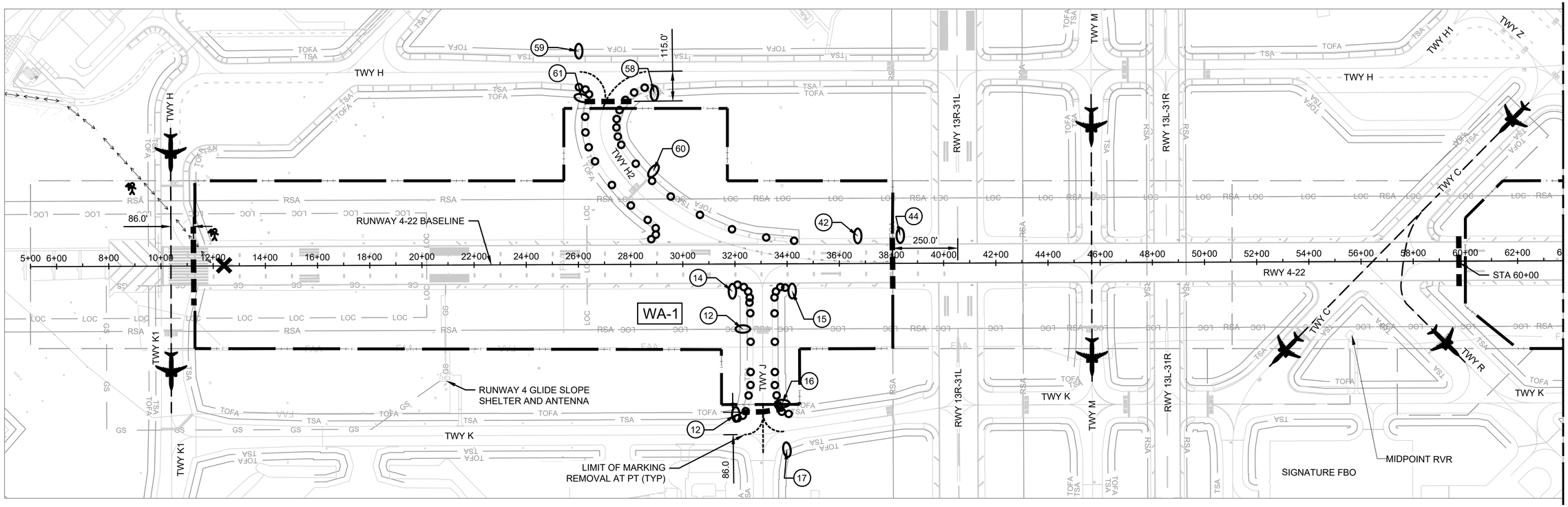
RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

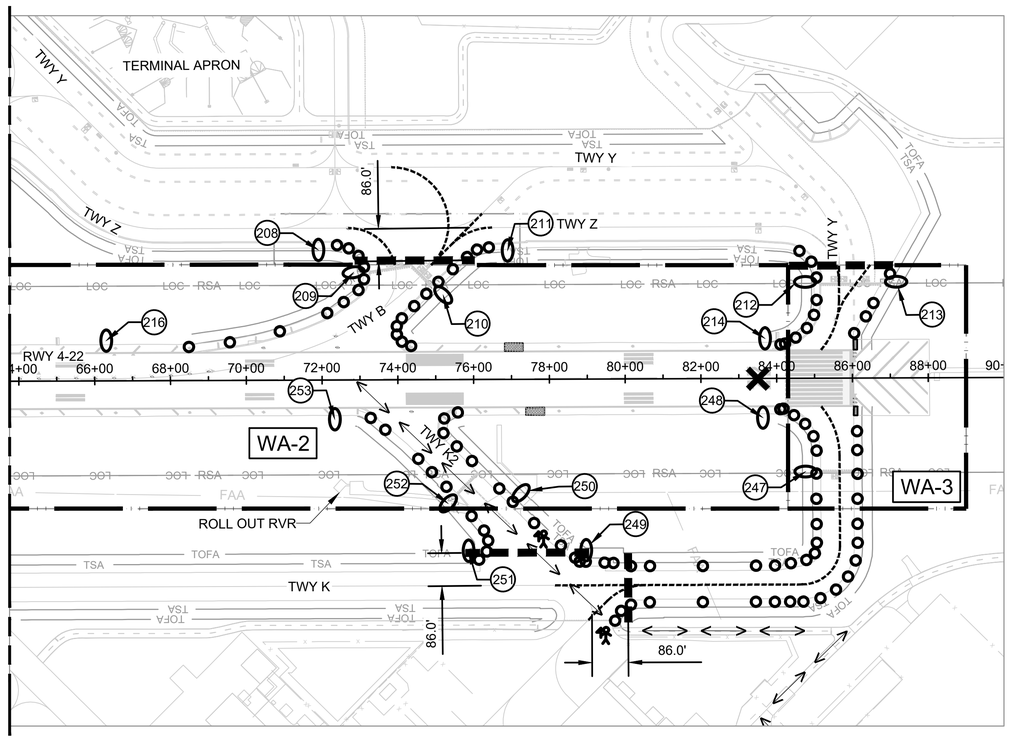
PHASING PLAN
WORK AREAS 1 AND 2
AIRFIELD CLOSURE PLAN

PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
LICENSED PROFESSIONAL ENGINEER
F-2966

APPROVED BY:	DATE:
DIRECTOR HOUSTON AIRPORT SYSTEM	
TIP NO:	TIP-24-259-HOU
BSG NO:	BSG- 2024-341-HOU
PROJECT NO:	P1057
C.I.P. NO:	X-XX-XXXX-XXX
H.A.S. NO:	N/A
SHEET NO:	GC301





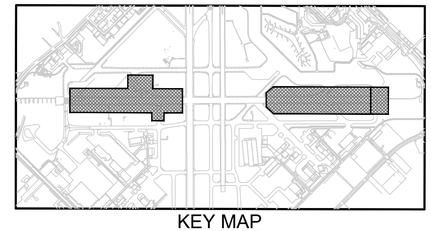
NOTES:

1. ALL RUNWAY 4-22 LIGHTING SHALL BE SHUT OFF AT THE VAULT PRIOR TO THE START OF ANY WORK. THIS INCLUDES, BUT IS NOT LIMITED TO: RUNWAY EDGE LIGHTS, CENTERLINE LIGHTS, TOUCHDOWN ZONE LIGHTS, APPROACH LIGHT SYSTEM (FAA OWNED).
2. ANY NAVAID FOR RUNWAY 4-22 SHALL BE SHUT OFF BY THE OWNER PRIOR TO WORK STARTING IN THE PROJECT, THIS INCLUDES THE RUNWAY 4 GLIDE SLOPE, RUNWAY 4 LOCALIZER, RUNWAY 22 LOCALIZER, RUNWAY 22 PAPI, RUNWAY 4 PAPI.
3. ONLY THE PORTION OF THE SIGN LEADING AIRCRAFT INTO THE CLOSED PAVEMENTS, OR THAT PROVIDES A TAXIWAY LOCATION WITHIN A CLOSED PAVEMENT AREA SHALL BE COVERED. ALL RED AND WHITE SIGNS SHALL REMAIN UNCOVERED.
4. PRIOR TO ANY MARKING REMOVAL THE CONTRACTOR SHALL SURVEY THE EXISTING MARKINGS WITH ADEQUATE DETAIL TO REPLACE THE MARKING IN-KIND. THE SURVEY SHALL BE PROVIDED TO THE RPR. THE MARKING SHALL BE REPLACED DURING THE LAST WORKING SHIFT AVAILABLE FOR THE WORK AREA

LEGEND:

- WORK AREA NUMBER — WA-#
- WORK AREA BOUNDARY
- 4 / GC501 — AIRFIELD SIGNAGE AND SIGN # TO BE COVERED (SEE NOTE 3)
- 3 / GC501 — RUNWAY/TAXIWAY EDGE LIGHTS TO BE SHUT OFF OR COVERED
- 1 / GC501 — LOW PROFILE BARRICADE
- 2 / GC501 — LIGHTED RUNWAY CLOSURE MARKER
- AIRCRAFT TRAFFIC ROUTE
- LIMIT OF MARKING REMOVAL (SEE NOTE 4)
- HAUL ROUTE
- FLAGGER

GRAPHIC SCALE
100' 0 100' 200'
SCALE: 1" = 100'



KEY MAP
NTS

HOUSTON AIRPORT SYSTEM
WILLIAM P. HOBBY AIRPORT
HOUSTON TEXAS

Jacobs
818 TOWN & COUNTRY BLVD
SUITE 500
HOUSTON, TEXAS 77024
P: +1-281-721-8400
WWW.JACOBS.COM
TEXAS P.E. FIRM F-2966

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

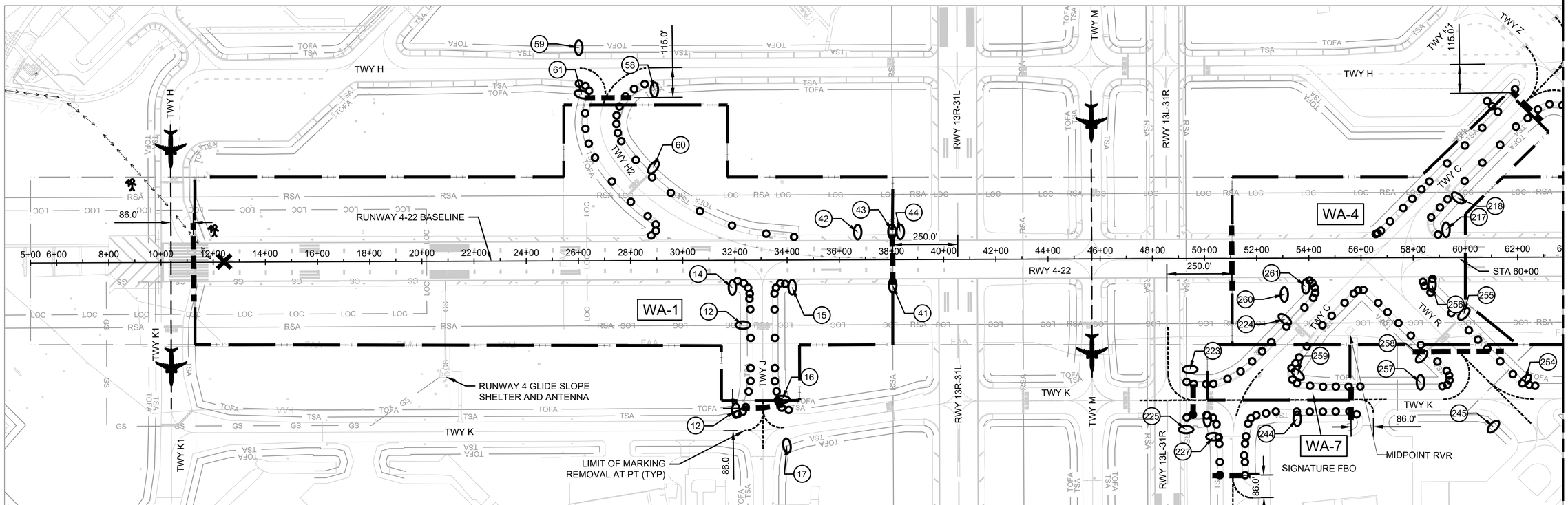
RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

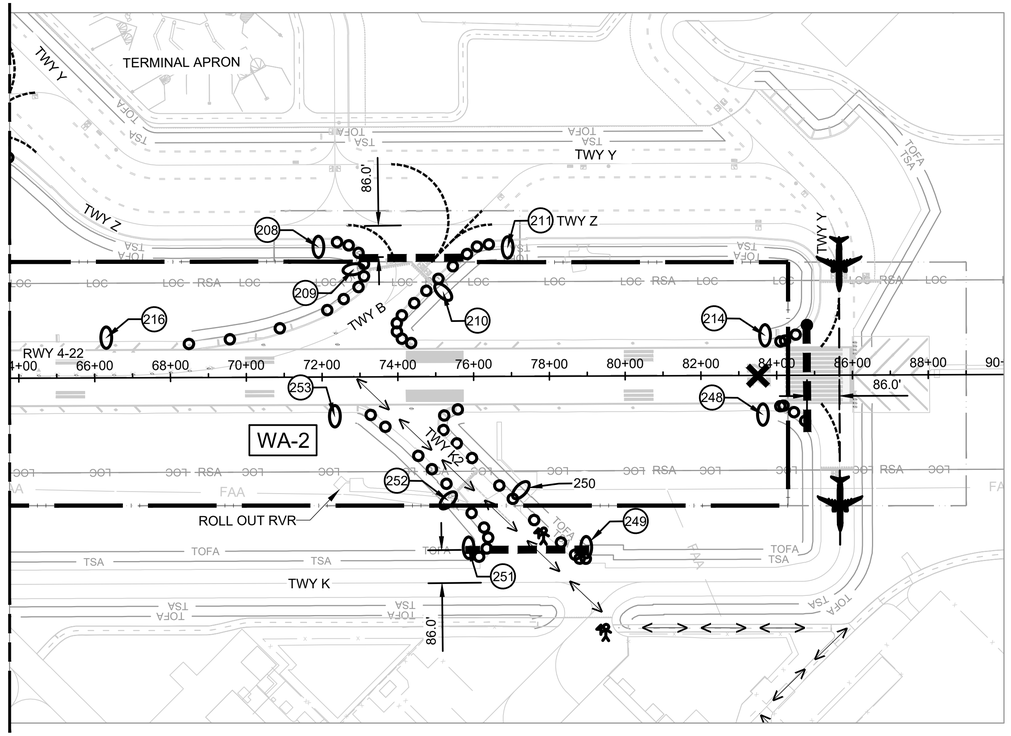
PHASING PLAN
WORK AREAS 1, 2, AND 3
AIRFIELD CLOSURE PLAN

PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
REGISTERED PROFESSIONAL ENGINEER
F-2966

APPROVED BY:	DATE:
DIRECTOR HOUSTON AIRPORT SYSTEM	
TIP NO:	TIP-24-259-HOU
BSG NO:	BSG- 2024-341-HOU
PROJECT NO:	P1057
C.I.P. NO:	X-XX-XXXX-XXX
H.A.S. NO:	N/A
SHEET NO:	GC302





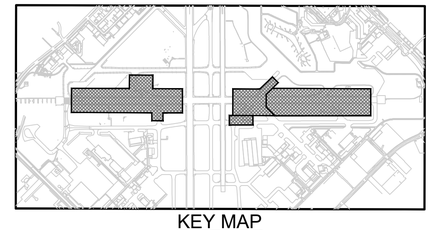
NOTES:

1. ALL RUNWAY 4-22 LIGHTING SHALL BE SHUT OFF AT THE VAULT PRIOR TO THE START OF ANY WORK. THIS INCLUDES, BUT IS NOT LIMITED TO: RUNWAY EDGE LIGHTS, CENTERLINE LIGHTS, TOUCHDOWN ZONE LIGHTS, APPROACH LIGHT SYSTEM (FAA OWNED).
2. ANY NAVAID FOR RUNWAY 4-22 SHALL BE SHUT OFF BY THE OWNER PRIOR TO WORK STARTING IN THE PROJECT, THIS INCLUDES THE RUNWAY 4 GLIDE SLOPE, RUNWAY 4 LOCALIZER, RUNWAY 22 LOCALIZER, RUNWAY 22 PAPI, RUNWAY 4 PAPI.
3. ONLY THE PORTION OF THE SIGN LEADING AIRCRAFT INTO THE CLOSED PAVEMENTS, OR THAT PROVIDES A TAXIWAY LOCATION WITHIN A CLOSED PAVEMENT AREA SHALL BE COVERED. ALL RED AND WHITE SIGNS SHALL REMAIN UNCOVERED.
4. PRIOR TO ANY MARKING REMOVAL THE CONTRACTOR SHALL SURVEY THE EXISTING MARKINGS WITH ADEQUATE DETAIL TO REPLACE THE MARKING IN-KIND. THE SURVEY SHALL BE PROVIDED TO THE RPR. THE MARKING SHALL BE REPLACED DURING THE LAST WORKING SHIFT AVAILABLE FOR THE WORK AREA

LEGEND:

- WORK AREA NUMBER — WA-#
- WORK AREA BOUNDARY
- 4 / GC501 — AIRFIELD SIGNAGE AND SIGN # TO BE COVERED (SEE NOTE 3)
- 3 / GC501 — RUNWAY/TAXIWAY EDGE LIGHTS TO BE SHUT OFF OR COVERED
- 1 / GC501 — LOW PROFILE BARRICADE
- 2 / GC501 — LIGHTED RUNWAY CLOSURE MARKER
- AIRCRAFT TRAFFIC ROUTE
- LIMIT OF MARKING REMOVAL (SEE NOTE 4)
- HAUL ROUTE
- FLAGGER

GRAPHIC SCALE
100' 0 100' 200'
SCALE: 1" = 100'



KEY MAP
NTS

HOUSTON AIRPORT SYSTEM
WILLIAM P. HOBBY AIRPORT
HOUSTON TEXAS

Jacobs
818 TOWN & COUNTRY BLVD
SUITE 500
HOUSTON, TEXAS 77024
P: +1-281-721-8400
WWW.JACOBS.COM
TEXAS P.E. FIRM F-2966

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

PHASING PLAN
WORK AREAS 1, 2, 4, AND 7
AIRFIELD CLOSURE PLAN

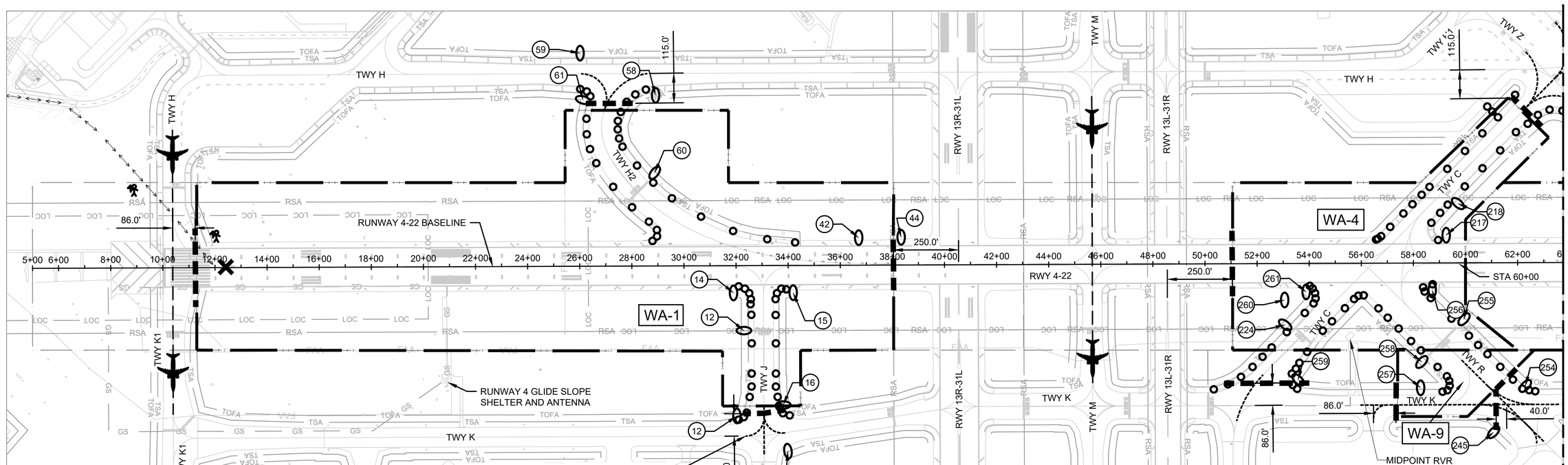
PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

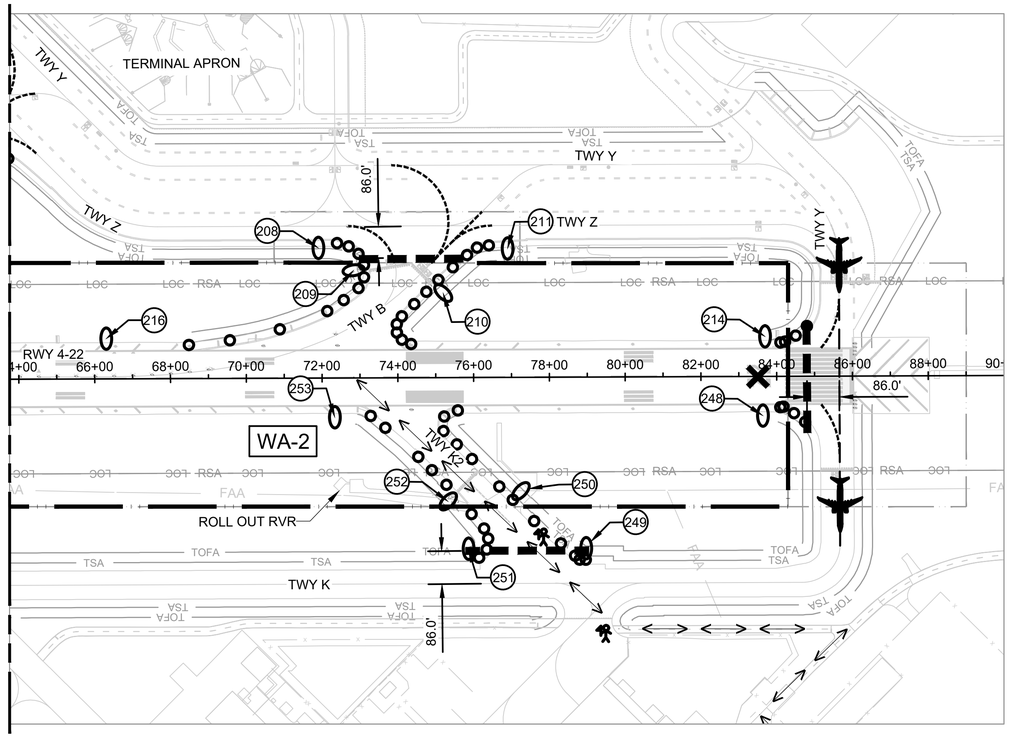
11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
REGISTERED PROFESSIONAL ENGINEER
F-2966

APPROVED BY: DATE:
DIRECTOR
HOUSTON AIRPORT SYSTEM

TIP NO: TIP-24-259-HOU
BSG NO: BSG- 2024-341-HOU
PROJECT NO: P1057
C.I.P. NO: X-XX-XXXX-XXX
H.A.S. NO: N/A
SHEET NO: GC303

FILENAME: H24C1057-GC303.DWG PLOT DATE: 2024/11/22 PLOT TIME: 11:59:56 AM





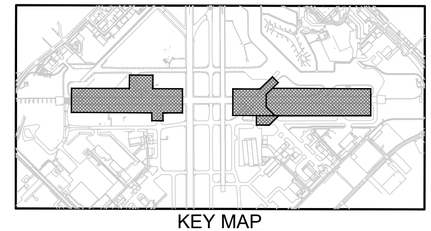
NOTES:

1. ALL RUNWAY 4-22 LIGHTING SHALL BE SHUT OFF AT THE VAULT PRIOR TO THE START OF ANY WORK. THIS INCLUDES, BUT IS NOT LIMITED TO: RUNWAY EDGE LIGHTS, CENTERLINE LIGHTS, TOUCHDOWN ZONE LIGHTS, APPROACH LIGHT SYSTEM (FAA OWNED).
2. ANY NAVAID FOR RUNWAY 4-22 SHALL BE SHUT OFF BY THE OWNER PRIOR TO WORK STARTING IN THE PROJECT, THIS INCLUDES THE RUNWAY 4 GLIDE SLOPE, RUNWAY 4 LOCALIZER, RUNWAY 22 LOCALIZER, RUNWAY 22 PAPI, RUNWAY 4 PAPI.
3. ONLY THE PORTION OF THE SIGN LEADING AIRCRAFT INTO THE CLOSED PAVEMENTS, OR THAT PROVIDES A TAXIWAY LOCATION WITHIN A CLOSED PAVEMENT AREA SHALL BE COVERED. ALL RED AND WHITE SIGNS SHALL REMAIN UNCOVERED.
4. PRIOR TO ANY MARKING REMOVAL THE CONTRACTOR SHALL SURVEY THE EXISTING MARKINGS WITH ADEQUATE DETAIL TO REPLACE THE MARKING IN-KIND. THE SURVEY SHALL BE PROVIDED TO THE RPR. THE MARKING SHALL BE REPLACED DURING THE LAST WORKING SHIFT AVAILABLE FOR THE WORK AREA

LEGEND:

- WORK AREA NUMBER — WA-#
- WORK AREA BOUNDARY
- 4 / GC501 — AIRFIELD SIGNAGE AND SIGN # TO BE COVERED (SEE NOTE 3)
- 3 / GC501 — RUNWAY/TAXIWAY EDGE LIGHTS TO BE SHUT OFF OR COVERED
- 1 / GC501 — LOW PROFILE BARRICADE
- 2 / GC501 — LIGHTED RUNWAY CLOSURE MARKER
- AIRCRAFT TRAFFIC ROUTE
- LIMIT OF MARKING REMOVAL (SEE NOTE 4)
- HAUL ROUTE
- FLAGGER

GRAPHIC SCALE
100' 0 100' 200'
SCALE: 1" = 100'



KEY MAP
NTS

HOUSTON AIRPORT SYSTEM
WILLIAM P. HOBBY AIRPORT
HOUSTON TEXAS

Jacobs
818 TOWN & COUNTRY BLVD
SUITE 500
HOUSTON, TEXAS 77024
P: +1-281-721-8400
WWW.JACOBS.COM
TEXAS P.E. FIRM F-2966

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

PHASING PLAN
WORK AREAS 1, 2, 4, AND 9
AIRFIELD CLOSURE PLAN

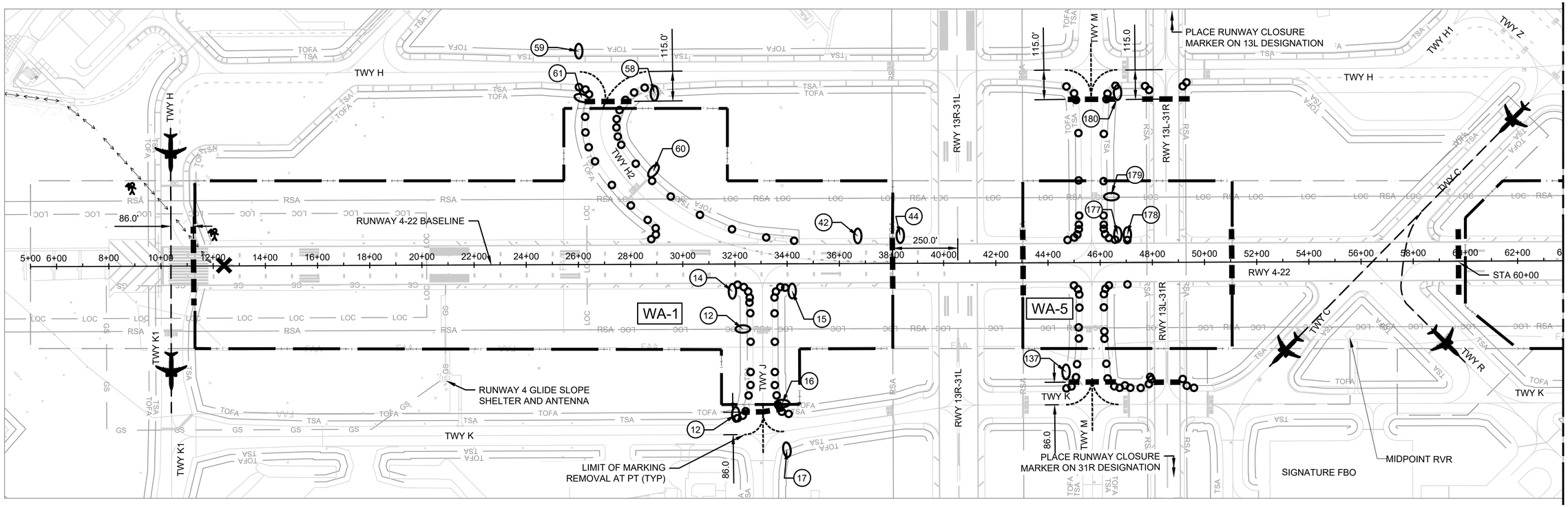
PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
REGISTERED PROFESSIONAL ENGINEER
F-2966

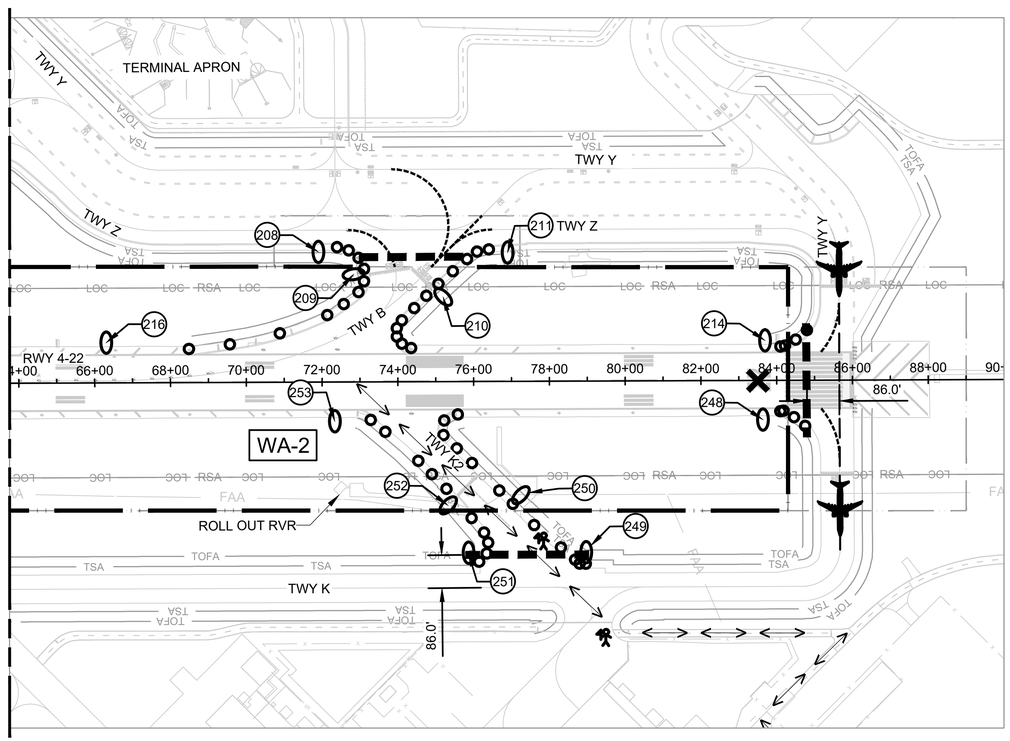
APPROVED BY: DATE:
DIRECTOR
HOUSTON AIRPORT SYSTEM

TIP NO: TIP-24-259-HOU
BSG NO: BSG- 2024-341-HOU
PROJECT NO: P1057
C.I.P. NO: X-XX-XXXX-XXX
H.A.S. NO: N/A
SHEET NO: GC304

FILENAME: H24C1057-GC304.DWG PLOT DATE: 2024/11/22 PLOT TIME: 12:02:07 PM



MATCHLINE, SEE ABOVE



MATCHLINE, SEE ABOVE

NOTES:

1. ALL RUNWAY 4-22 AND RUNWAY 13L-31R LIGHTING SHALL BE SHUT OFF AT THE VAULT PRIOR TO THE START OF ANY WORK. THIS INCLUDES, BUT IS NOT LIMITED TO: RUNWAY EDGE LIGHTS, CENTERLINE LIGHTS, TOUCHDOWN ZONE LIGHTS, APPROACH LIGHT SYSTEM (FAA OWNED).
2. ANY NAVAID FOR RUNWAY 4-22 SHALL BE SHUT OFF BY THE OWNER PRIOR TO WORK STARTING IN THE PROJECT, THIS INCLUDES THE RUNWAY 4 GLIDE SLOPE, RUNWAY 4 LOCALIZER, RUNWAY 22 LOCALIZER, RUNWAY 22 PAPI, RUNWAY 4 PAPI.
3. ONLY THE PORTION OF THE SIGN LEADING AIRCRAFT INTO THE CLOSED PAVEMENTS, OR THAT PROVIDES A TAXIWAY LOCATION WITHIN A CLOSED PAVEMENT AREA SHALL BE COVERED. ALL RED AND WHITE SIGNS SHALL REMAIN UNCOVERED.
4. PRIOR TO ANY MARKING REMOVAL THE CONTRACTOR SHALL SURVEY THE EXISTING MARKINGS WITH ADEQUATE DETAIL TO REPLACE THE MARKING IN-KIND. THE SURVEY SHALL BE PROVIDED TO THE RPR. THE MARKING SHALL BE REPLACED DURING THE LAST WORKING SHIFT AVAILABLE FOR THE WORK AREA

LEGEND:

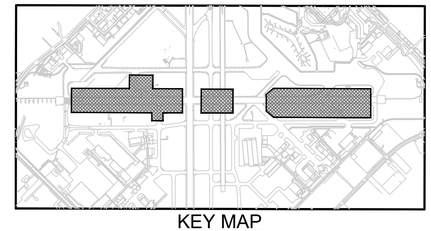
- WORK AREA NUMBER — WA-#
- WORK AREA BOUNDARY
- 4 / GC501 — AIRFIELD SIGNAGE AND SIGN # TO BE COVERED (SEE NOTE 3)
- 3 / GC501 — RUNWAY/TAXIWAY EDGE LIGHTS TO BE SHUT OFF OR COVERED
- 1 / GC501 — LOW PROFILE BARRICADE
- 2 / GC501 — LIGHTED RUNWAY CLOSURE MARKER
- AIRCRAFT TRAFFIC ROUTE
- LIMIT OF MARKING REMOVAL (SEE NOTE 4)
- HAUL ROUTE
- FLAGGER

N

GRAPHIC SCALE

100' 0 100' 200'

SCALE: 1" = 100'



KEY MAP
NTS

HOUSTON AIRPORT SYSTEM
WILLIAM P. HOBBY AIRPORT
HOUSTON TEXAS

Jacobs
818 TOWN & COUNTRY BLVD
SUITE 500
HOUSTON, TEXAS 77024
P: +1-281-721-8400
WWW.JACOBS.COM
TEXAS P.E. FIRM F-2966

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

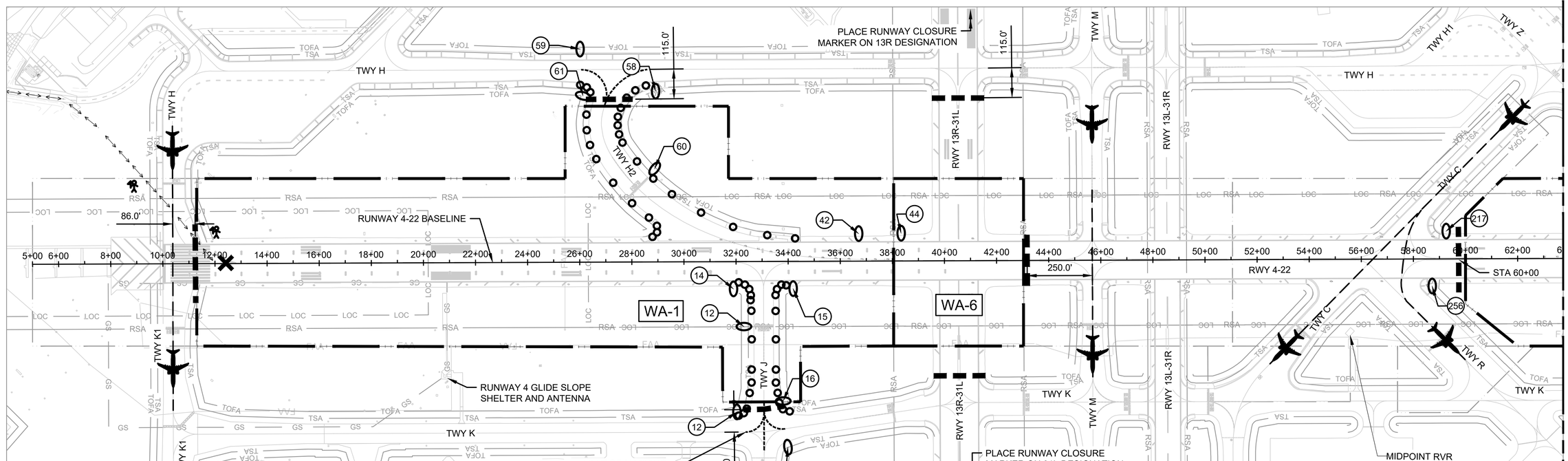
PHASING PLAN
WORK AREAS 1, 2, AND 5
AIRFIELD CLOSURE PLAN

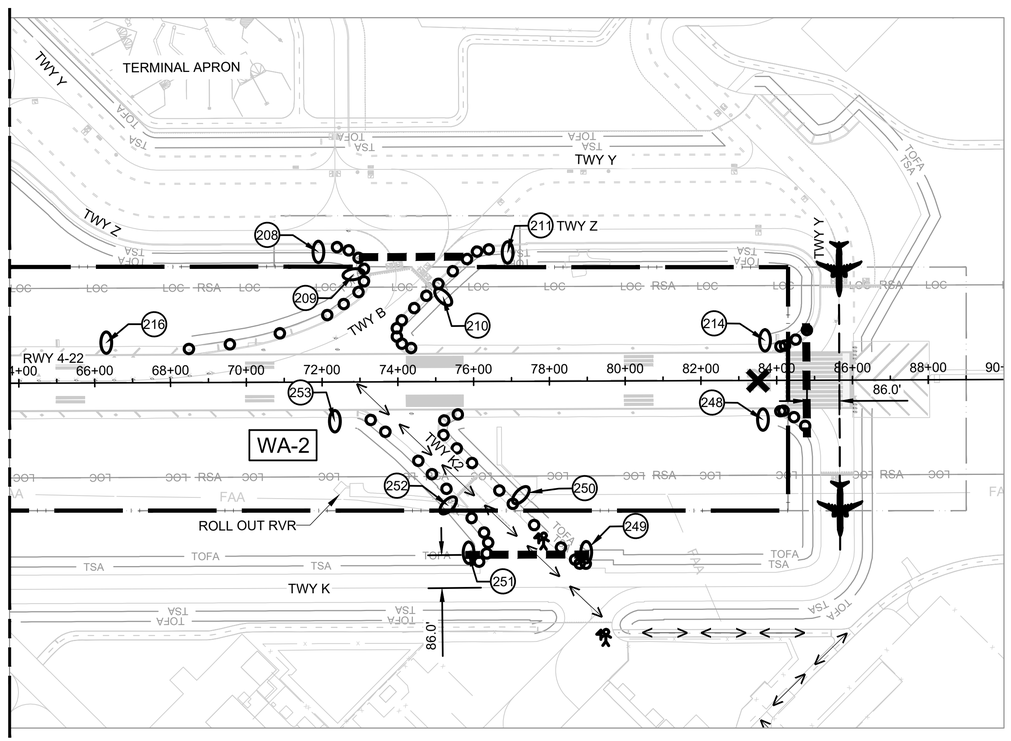
PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
REGISTERED PROFESSIONAL ENGINEER
F-2966

APPROVED BY: DATE:
DIRECTOR
HOUSTON AIRPORT SYSTEM

TIP NO: TIP-24-259-HOU
BSG NO: BSG- 2024-341-HOU
PROJECT NO: P1057
C.I.P. NO: X-XX-XXXX-XXX
H.A.S. NO: N/A
SHEET NO: GC305





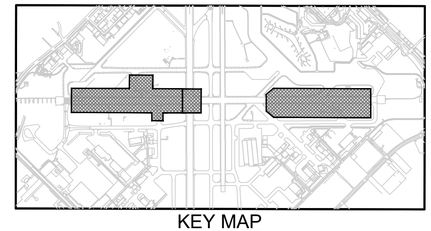
NOTES:

1. ALL RUNWAY 4-22 AND RUNWAY 13R-31L LIGHTING SHALL BE SHUT OFF AT THE VAULT PRIOR TO THE START OF ANY WORK WHEN THE RUNWAY IS CLOSED TO AIRCRAFT. THIS INCLUDES, BUT IS NOT LIMITED TO: RUNWAY EDGE LIGHTS, CENTERLINE LIGHTS, TOUCHDOWN ZONE LIGHTS, APPROACH LIGHT SYSTEM (FAA OWNED).
2. ANY NAVAID FOR RUNWAY 4-22 SHALL BE SHUT OFF BY THE OWNER PRIOR TO WORK STARTING IN THE PROJECT, THIS INCLUDES THE RUNWAY 4 GLIDE SLOPE, RUNWAY 4 LOCALIZER, RUNWAY 22 LOCALIZER, RUNWAY 22 PAPI, RUNWAY 4 PAPI.
3. ONLY THE PORTION OF THE SIGN LEADING AIRCRAFT INTO THE CLOSED PAVEMENTS, OR THAT PROVIDES A TAXIWAY LOCATION WITHIN A CLOSED PAVEMENT AREA SHALL BE COVERED. ALL RED AND WHITE SIGNS SHALL REMAIN UNCOVERED.
4. PRIOR TO ANY MARKING REMOVAL THE CONTRACTOR SHALL SURVEY THE EXISTING MARKINGS WITH ADEQUATE DETAIL TO REPLACE THE MARKING IN-KIND. THE SURVEY SHALL BE PROVIDED TO THE RPR. THE MARKING SHALL BE REPLACED DURING THE LAST WORKING SHIFT AVAILABLE FOR THE WORK AREA

LEGEND:

WORK AREA NUMBER	WA-#
WORK AREA BOUNDARY	
4 / GC501 — AIRFIELD SIGNAGE AND SIGN # TO BE COVERED (SEE NOTE 3)	#
3 / GC501 — RUNWAY/TAXIWAY EDGE LIGHTS TO BE SHUT OFF OR COVERED	
1 / GC501 — LOW PROFILE BARRICADE	
2 / GC501 — LIGHTED RUNWAY CLOSURE MARKER	
AIRCRAFT TRAFFIC ROUTE	
LIMIT OF MARKING REMOVAL (SEE NOTE 4)	
HAUL ROUTE	
FLAGGER	

GRAPHIC SCALE
100' 0 100' 200'
SCALE: 1" = 100'



KEY MAP
NTS

HOUSTON AIRPORT SYSTEM
WILLIAM P. HOBBY AIRPORT
HOUSTON TEXAS

Jacobs
818 TOWN & COUNTRY BLVD
SUITE 500
HOUSTON, TEXAS 77024
P: +1-281-721-8400
WWW.JACOBS.COM
TEXAS P.E. FIRM F-2966

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

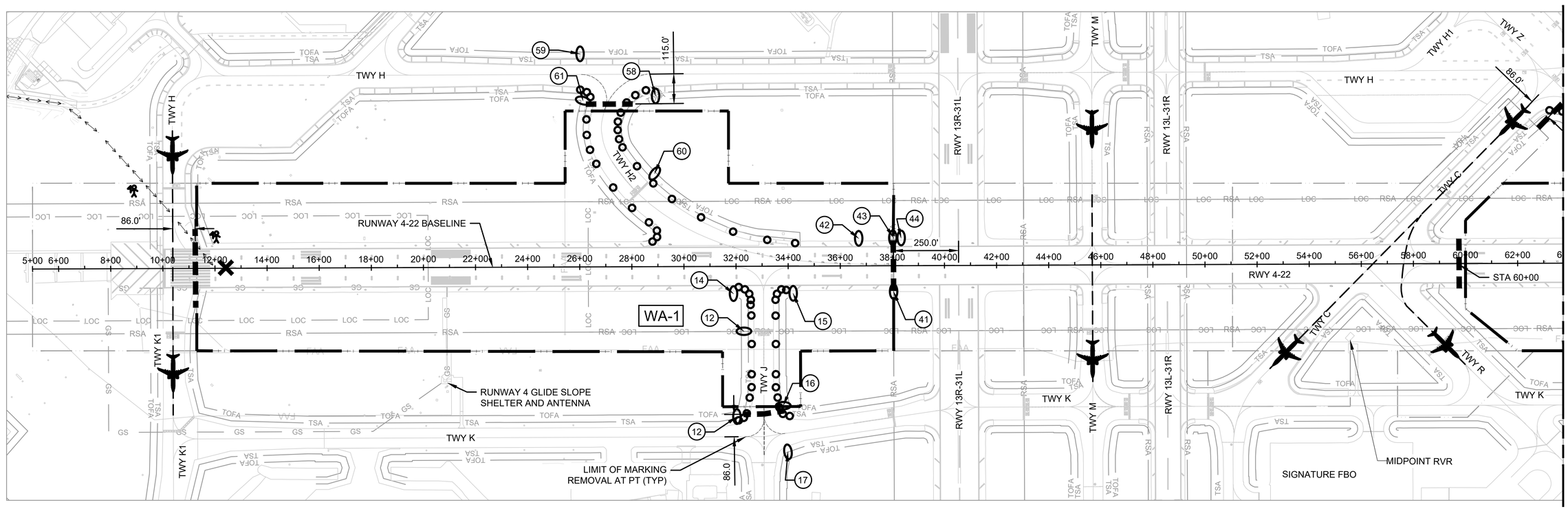
RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

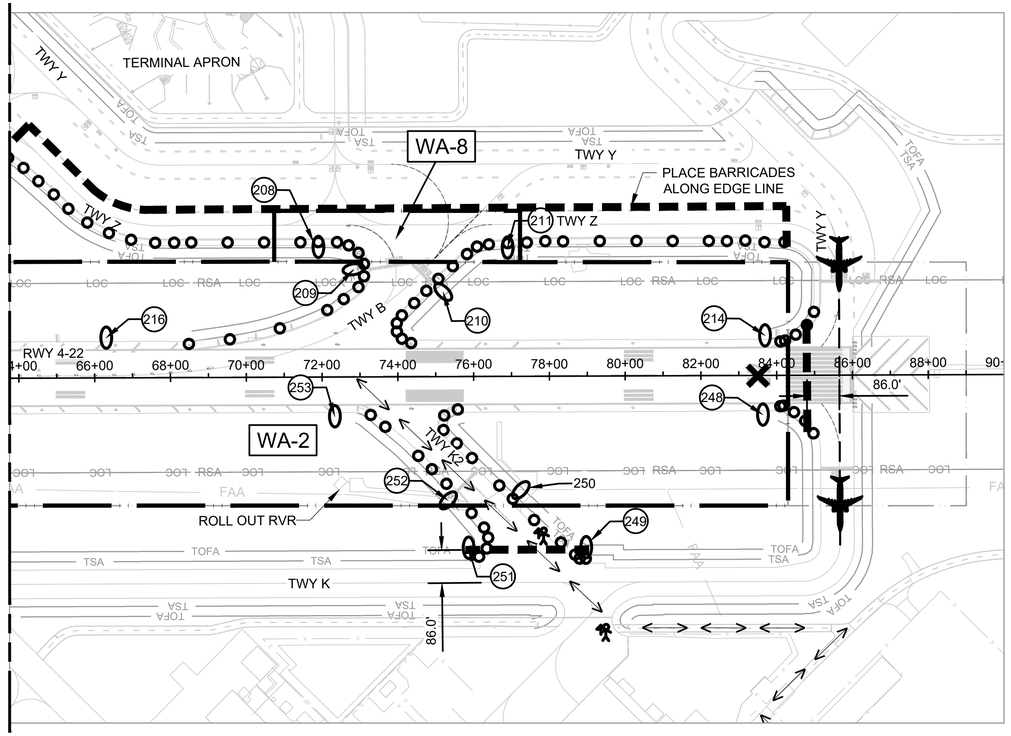
PHASING PLAN
WORK AREAS 1, 2, AND 6
AIRFIELD CLOSURE PLAN

PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
REGISTERED
PROFESSIONAL
ENGINEER
F-2966

APPROVED BY:	DATE:
DIRECTOR HOUSTON AIRPORT SYSTEM	
TIP NO:	TIP-24-259-HOU
BSG NO:	BSG- 2024-341-HOU
PROJECT NO:	P1057
C.I.P. NO:	X-XX-XXXX-XXX
H.A.S. NO:	N/A
SHEET NO:	GC306





LEGEND:

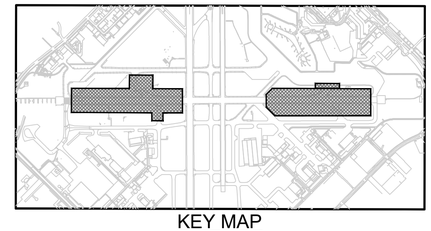
WORK AREA NUMBER	WA-#
WORK AREA BOUNDARY	
4 / GC501 — AIRFIELD SIGNAGE AND SIGN # TO BE COVERED (SEE NOTE 3)	#
3 / GC501 — RUNWAY/TAXIWAY EDGE LIGHTS TO BE SHUT OFF OR COVERED	
1 / GC501 — LOW PROFILE BARRICADE	
2 / GC501 — LIGHTED RUNWAY CLOSURE MARKER	
AIRCRAFT TRAFFIC ROUTE	
LIMIT OF MARKING REMOVAL (SEE NOTE 4)	
HAUL ROUTE	
FLAGGER	

N

GRAPHIC SCALE

100' 0 100' 200'

SCALE: 1" = 100'



KEY MAP
NTS

HOUSTON AIRPORT SYSTEM
WILLIAM P. HOBBY AIRPORT
HOUSTON TEXAS

Jacobs
818 TOWN & COUNTRY BLVD
SUITE 500
HOUSTON, TEXAS 77024
P: +1-281-721-8400
WWW.JACOBS.COM
TEXAS P.E. FIRM F-2966

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

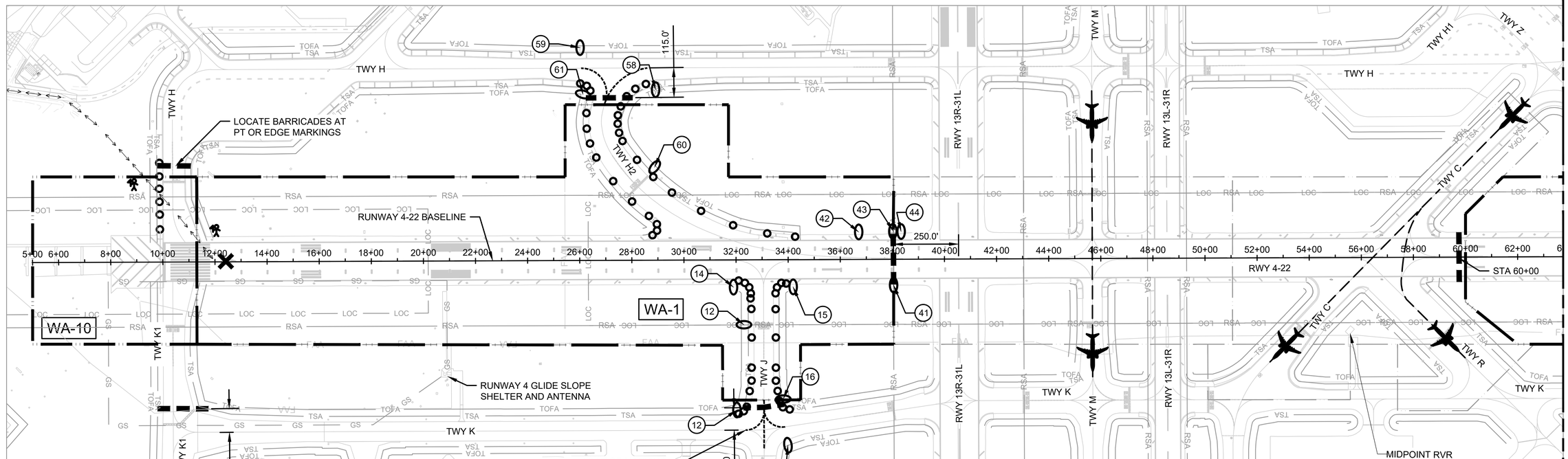
RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

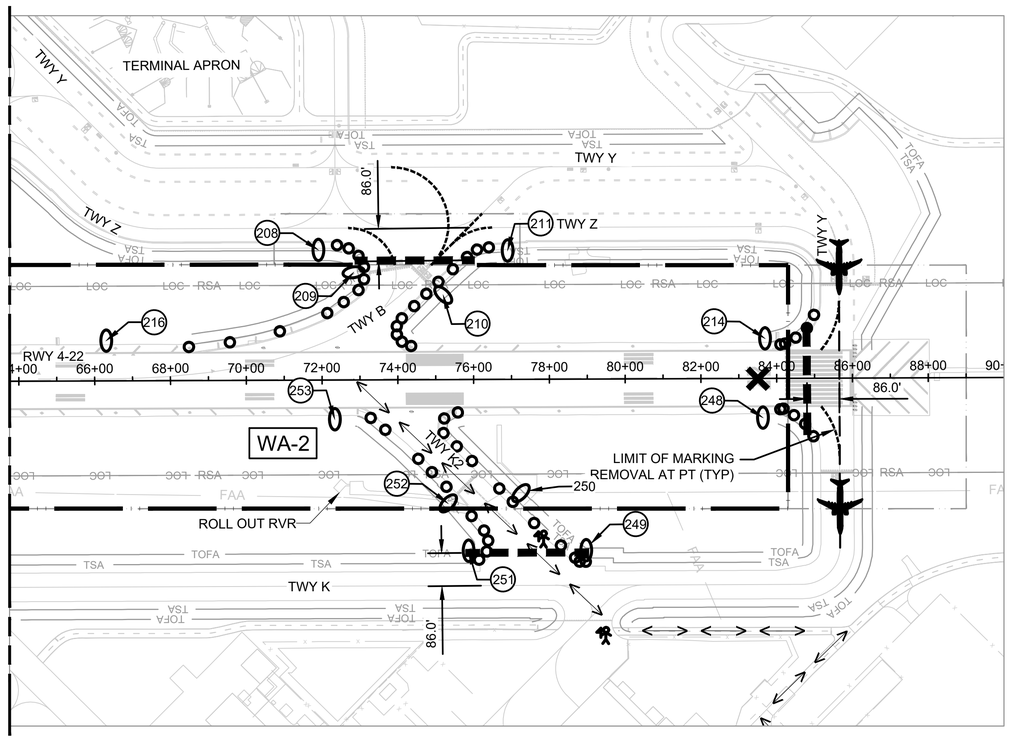
PHASING PLAN
WORK AREAS 1, 2, AND 8
AIRFIELD CLOSURE PLAN

PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
REGISTERED PROFESSIONAL ENGINEER
F-2966

APPROVED BY:	DATE:
DIRECTOR HOUSTON AIRPORT SYSTEM	
TIP NO:	TIP-24-259-HOU
BSG NO:	BSG- 2024-341-HOU
PROJECT NO:	P1057
C.I.P. NO:	X-XX-XXXX-XXX
H.A.S. NO:	N/A
SHEET NO:	GC307





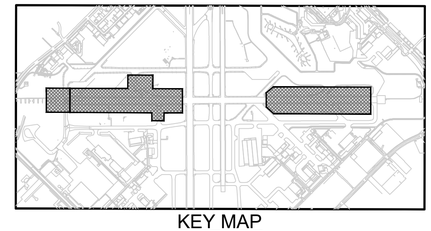
NOTES:

1. ALL RUNWAY 4-22 LIGHTING SHALL BE SHUT OFF AT THE VAULT PRIOR TO THE START OF ANY WORK. THIS INCLUDES, BUT IS NOT LIMITED TO: RUNWAY EDGE LIGHTS, CENTERLINE LIGHTS, TOUCHDOWN ZONE LIGHTS, APPROACH LIGHT SYSTEM (FAA OWNED).
2. ANY NAVAID FOR RUNWAY 4-22 SHALL BE SHUT OFF BY THE OWNER PRIOR TO WORK STARTING IN THE PROJECT, THIS INCLUDES THE RUNWAY 4 GLIDE SLOPE, RUNWAY 4 LOCALIZER, RUNWAY 22 LOCALIZER, RUNWAY 22 PAPI, RUNWAY 4 PAPI.
3. ONLY THE PORTION OF THE SIGN LEADING AIRCRAFT INTO THE CLOSED PAVEMENTS, OR THAT PROVIDES A TAXIWAY LOCATION WITHIN A CLOSED PAVEMENT AREA SHALL BE COVERED. ALL RED AND WHITE SIGNS SHALL REMAIN UNCOVERED.
4. PRIOR TO ANY MARKING REMOVAL THE CONTRACTOR SHALL SURVEY THE EXISTING MARKINGS WITH ADEQUATE DETAIL TO REPLACE THE MARKING IN-KIND. THE SURVEY SHALL BE PROVIDED TO THE RPR. THE MARKING SHALL BE REPLACED DURING THE LAST WORKING SHIFT AVAILABLE FOR THE WORK AREA

LEGEND:

- WORK AREA NUMBER — WA-#
- WORK AREA BOUNDARY
- 4 / GC501 — AIRFIELD SIGNAGE AND SIGN # TO BE COVERED (SEE NOTE 3)
- 3 / GC501 — RUNWAY/TAXIWAY EDGE LIGHTS TO BE SHUT OFF OR COVERED
- 1 / GC501 — LOW PROFILE BARRICADE
- 2 / GC501 — LIGHTED RUNWAY CLOSURE MARKER
- AIRCRAFT TRAFFIC ROUTE
- LIMIT OF MARKING REMOVAL (SEE NOTE 4)
- HAUL ROUTE
- FLAGGER

GRAPHIC SCALE
100' 0 100' 200'
SCALE: 1" = 100'



KEY MAP
NTS

HOUSTON AIRPORT SYSTEM
WILLIAM P. HOBBY AIRPORT
HOUSTON TEXAS

Jacobs
818 TOWN & COUNTRY BLVD
SUITE 500
HOUSTON, TEXAS 77024
P: +1-281-721-8400
WWW.JACOBS.COM
TEXAS P.E. FIRM F-2966

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

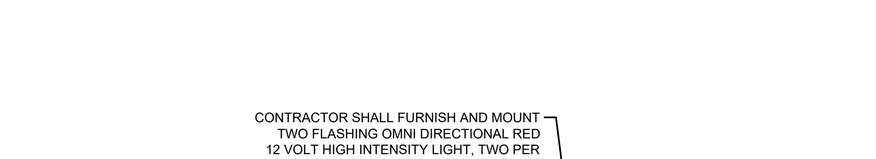
RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

PHASING PLAN
WORK AREAS 1, 2, AND 10
AIRFIELD CLOSURE PLAN

PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
REGISTERED PROFESSIONAL ENGINEER
F-2966

APPROVED BY:	DATE:
DIRECTOR HOUSTON AIRPORT SYSTEM	
TIP NO:	TIP-24-259-HOU
BSG NO:	BSG- 2024-341-HOU
PROJECT NO:	P1057
C.I.P. NO:	X-XX-XXXX-XXX
H.A.S. NO:	N/A
SHEET NO:	GC308

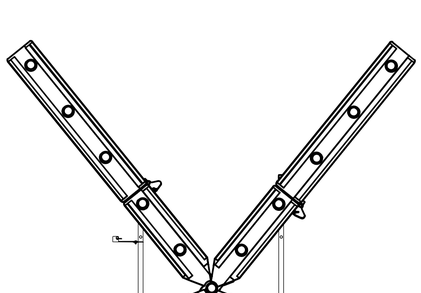


NOTES:

1. BARRICADES SHALL LINK TOGETHER TO PROVIDE CONTINUOUS BARRICADE LINE.
2. BARRICADES SHALL BE FILLED WITH SUFFICIENT WATER FOR BARRICADE TO MEET MINIMUM ALLOWABLE BARRICADE WEIGHT (30 POUNDS PER FOOT). NO OTHER METHOD WILL BE ACCEPTABLE TO ANCHOR LOW PROFILE BARRICADES TO THE PAVEMENT SURFACE.

1 / GC501 — LOW PROFILE BARRICADE

NTS



NOTES:

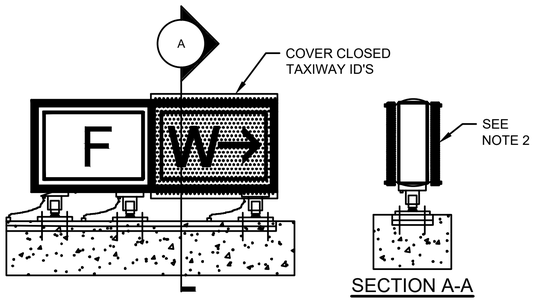
1. CONTRACTOR SHALL PLACE LIGHTED RUNWAY CLOSURE MARKER ON THE NUMERAL AT EACH END OF CLOSED RUNWAY IN ACCORDANCE WITH THE PHASING PLANS.
2. THE CONTRACTOR SHALL MAINTAIN THE LIGHTED RUNWAY CLOSURE MARKERS UNTIL COMPLETION OF THE RUNWAY CLOSURE AND REMOVE AT END OF CLOSURE WHEN DIRECTED BY THE RPR.

2 / GC501 — LIGHTED RUNWAY CLOSURE MARKER DETAIL

NTS

3 / GC501 — EDGE LIGHT COVER

NTS

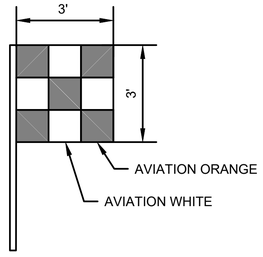


NOTES:

1. COVER ONLY TAXIWAYS CLOSED TO AIRCRAFT TRAFFIC AS SHOWN ON THE PHASING PLANS OR AS DIRECTED BY THE RPR. FASTEN TO WITHSTAND 80 MPH WINDS.
2. METHOD OF SIGN COVERING MUST BE APPROVED BY THE RPR. IF CONTRACTOR CHOOSES SIGN BLANKS AS METHOD OF COVERING, CONTRACTOR MUST PROVIDE BLANKS COMPATIBLE WITH THE SIGN MANUFACTURER.

4 / GC501 — SIGN COVERING DETAIL

NTS

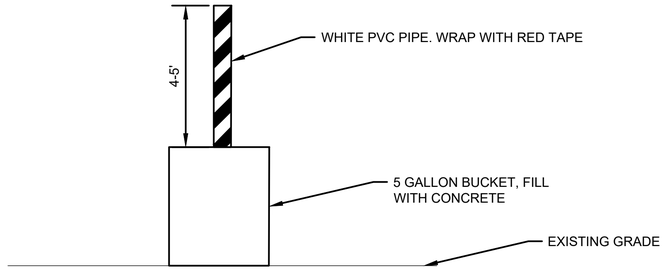


NOTE:

1. ALL HEAVY EQUIPMENT AND VEHICLES NOT EQUIPPED WITH BOTH A BEACON AND IDENTIFICATION MARKINGS SHALL HAVE A FLAG. ALL HEAVY EQUIPMENT SHALL HAVE A FLAG AND BEACON.

5 / GC501 — VEHICLE / EQUIPMENT FLAG

NTS



NOTE:

1. TO BE USED TO DELINEATE WORK AREA BOUNDARIES IN TURF SURFACES.
2. WORK AREA BOUNDARY DELINEATORS SHALL CONSIST OF A 4-5 FOOT TALL PVC PIPE WRAPPED IN RED TAPE, STICKING OUT OF A 5-GALLON BUCKET FILLED WITH CONCRETE.

6 / GC501 — WORK AREA BOUNDARY DELINEATOR

NTS

HOUSTON AIRPORT SYSTEM
WILLIAM P. HOBBY AIRPORT
HOUSTON TEXAS

Jacobs
818 TOWN & COUNTRY BLVD
SUITE 500
HOUSTON, TEXAS 77024
P: +1-281-721-8400
WWW.JACOBS.COM
TEXAS P.E. FIRM F-2966

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

REVISIONS

NO.	DESCRIPTION	DATE	BY

RUNWAY 4-22 SHOULDER PAVEMENT REHABILITATION AND LIGHTING UPGRADE PROJECT

CONSTRUCTION PHASING AND MAINTENANCE OF TRAFFIC DETAILS

PROJECT MGR:	KRC
DESIGNER:	HML
DRAWN BY:	ACE
CHECKED BY:	KRC
SCALE:	AS SHOWN
DATE:	11/20/2024

11/20/2024
STATE OF TEXAS
KEVIN R. CONTI
127462
REGISTERED PROFESSIONAL ENGINEER
F-2966

APPROVED BY: DATE:
DIRECTOR
HOUSTON AIRPORT SYSTEM

TIP NO:	TIP-24-259-HOU
BSG NO:	BSG- 2024-341-HOU
PROJECT NO:	P1057
C.I.P. NO:	X-XX-XXXX-XXX
H.A.S. NO:	N/A
SHEET NO:	GC501

APPENDIX 2
FAA ADVISORY CIRCULAR AC 150/5370-2G
OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION

U.S. Department
of Transportation
Federal Aviation
Administration

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. Appendix A 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 2.13.5.3, NAVAIDs.

2. Guidance for the use of orange construction signs was added. See paragraph 2.18.4.2, 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 2.22.3.4, Excavations.
4. Guidance for temporary shortened runways and displaced thresholds has been enhanced. See Figure 2-1 and Figure 2-2.
5. Figures have been improved and a new Appendix F 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 " ←" 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 http://www.faa.gov/regulations_policies/advisory_circulars/. You can view the Federal Aviation Regulations at http://www.faa.gov/regulations_policies/faa_regulations/.

8 **Feedback on this AC.**

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

John 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)[1] for each affected taxiway; designated approach visibility minimums;

[1] Find Taxiway Design Group information in AC 150/5300-13, *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 Allow for Temporary Changes to Operations.

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 Appendix E.

1.2.4 Take Required Measures to Revise Operations.

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 Manage Safety Risk.

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 Appendix A 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 1.2.5).

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 Establish a Safety Culture.

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 Assess Airport Operator's Responsibilities.

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 Chapter 2, 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 AC 150/5370-12, *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 https://oeaaa.faa.gov/oeaaa/external/portal.jsp. 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 https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT_SPONSOR_STRATEGIC_EVENT_SUBMISSION_FORM.pdf, 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 Define Construction Contractor's Responsibilities.

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 https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

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 × 11 inch or 11 × 17 inch format for compatibility with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE / AAA) process.

2.3.1 Submit an Outline/Draft.

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 Submit a CSPP.

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 Submit an SPCD.

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

2.3.4 Submit CSPP Revisions.

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 Chapter 3, Guidelines for Writing a CSPP. 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 2.22.3.

d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph 2.22.4.

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 is necessary for any specific subject, the statement, "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 AC 150/5370-12, *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 Scope or Schedule Changes.

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 2.13.5.3.2 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 Phase Elements.

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 Construction Safety Drawings.

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 Appendix E for an example of a table showing temporary operations versus current operations. The tables in Appendix E 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 Partially Closed Runways.

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 Figure 2-1 for a desirable configuration.

2.7.1.1.2 Displaced Thresholds.

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 Figure 2-2.

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

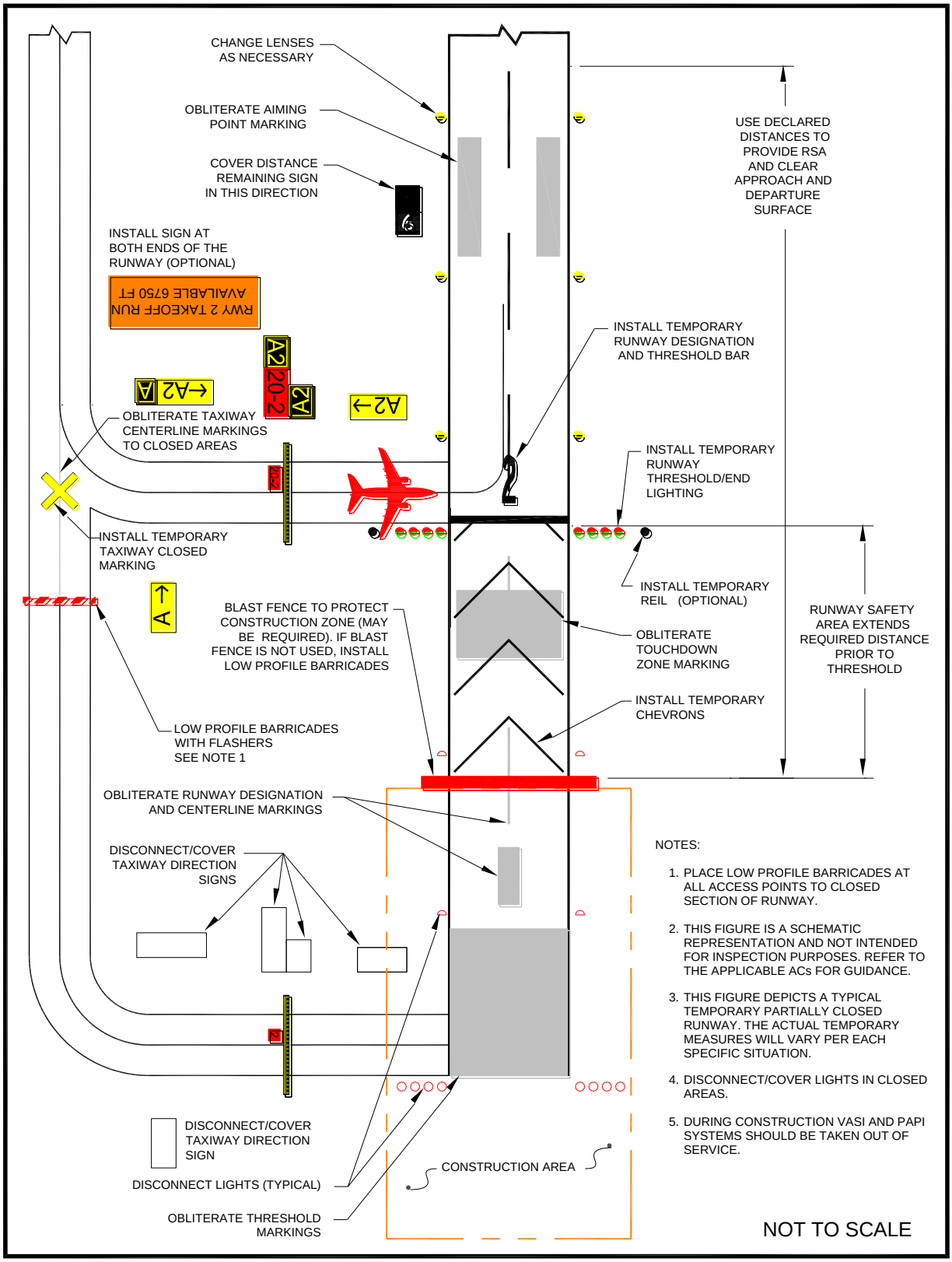
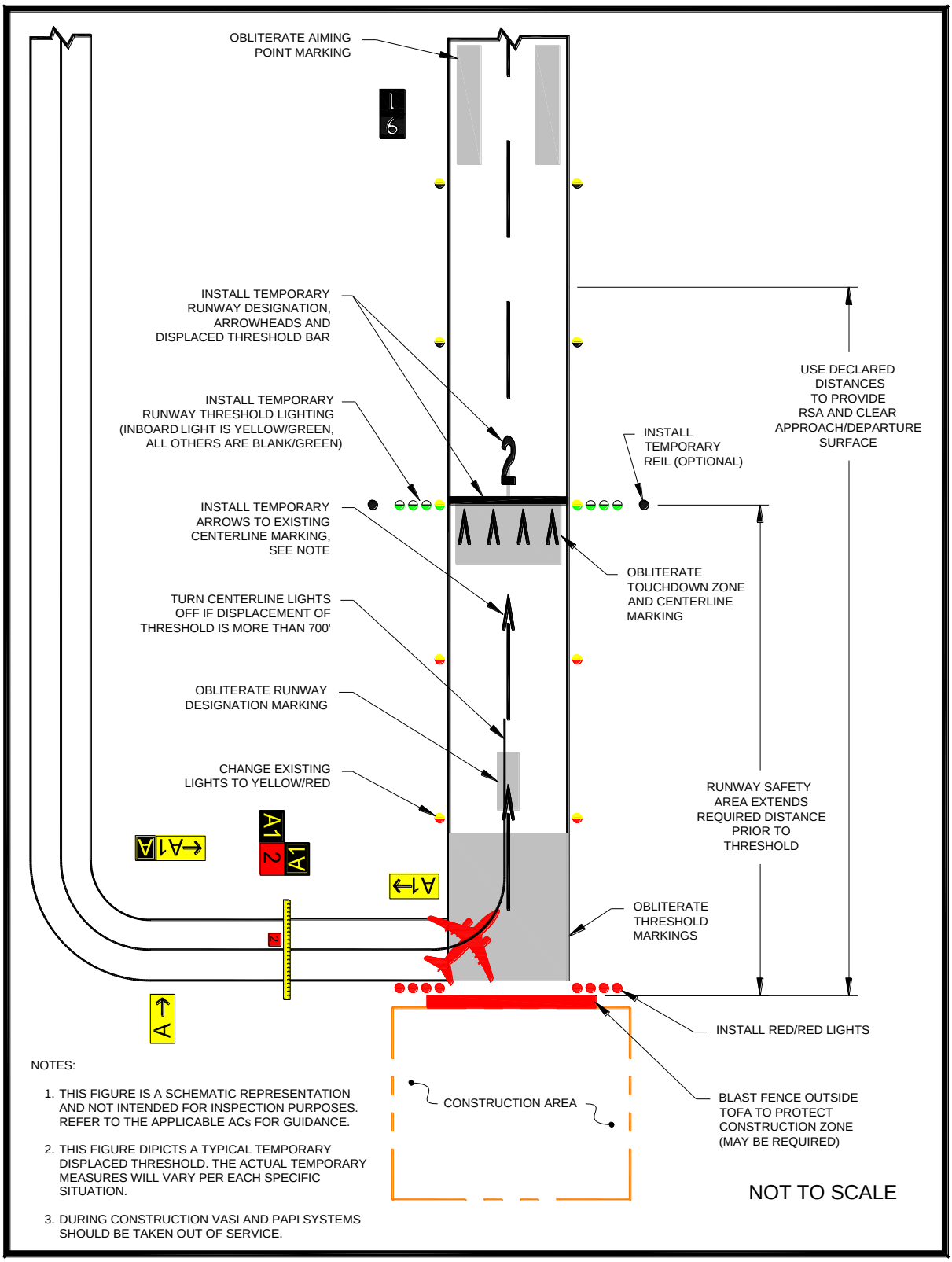


Figure 2-2. Temporary Displaced Threshold



Note: See paragraph 2.18.2.5.

2.7.2 Mitigation of Effects.

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 2.18.2.) 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 Vehicle and Pedestrian Operations.

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 AC 150/5210-5, *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 AC 150/5210-20, *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 General.

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 Areas Requiring Two-Way Radio Communication with the ATCT.

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 http://www.faa.gov/airports/runway_safety/publications/ (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 Badging Requirements.

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 AC 150/5200-33, *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 Trash.

Food scraps must be collected from construction personnel activity.

2.10.2 Standing Water.

2.10.3 Tall Grass and Seeds.

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 AC 150/5370-10, *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 Poorly Maintained Fencing and Gates.

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 AC 150/5210-24, *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 AC 150/5320-15, *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 NOTAMs.

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 AC 150/5200-28, *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 2.7.1.1 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 Appendix A to download the form. Further guidance is available on the FAA web site at oeaaa.faa.gov.

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 Appendix A 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 Appendix D, Construction Project Daily Safety Inspection Checklist. See also AC 150/5200-18, *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 AC 150/5340-1, *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 2.18.2.1.2.)

2.18.2.1 **Closed Runways and Taxiways.**

2.18.2.1.1 Permanently Closed Runways.

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 Temporarily Closed Runways.

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 Figure 2-3. 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 AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 2.7.1.1 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

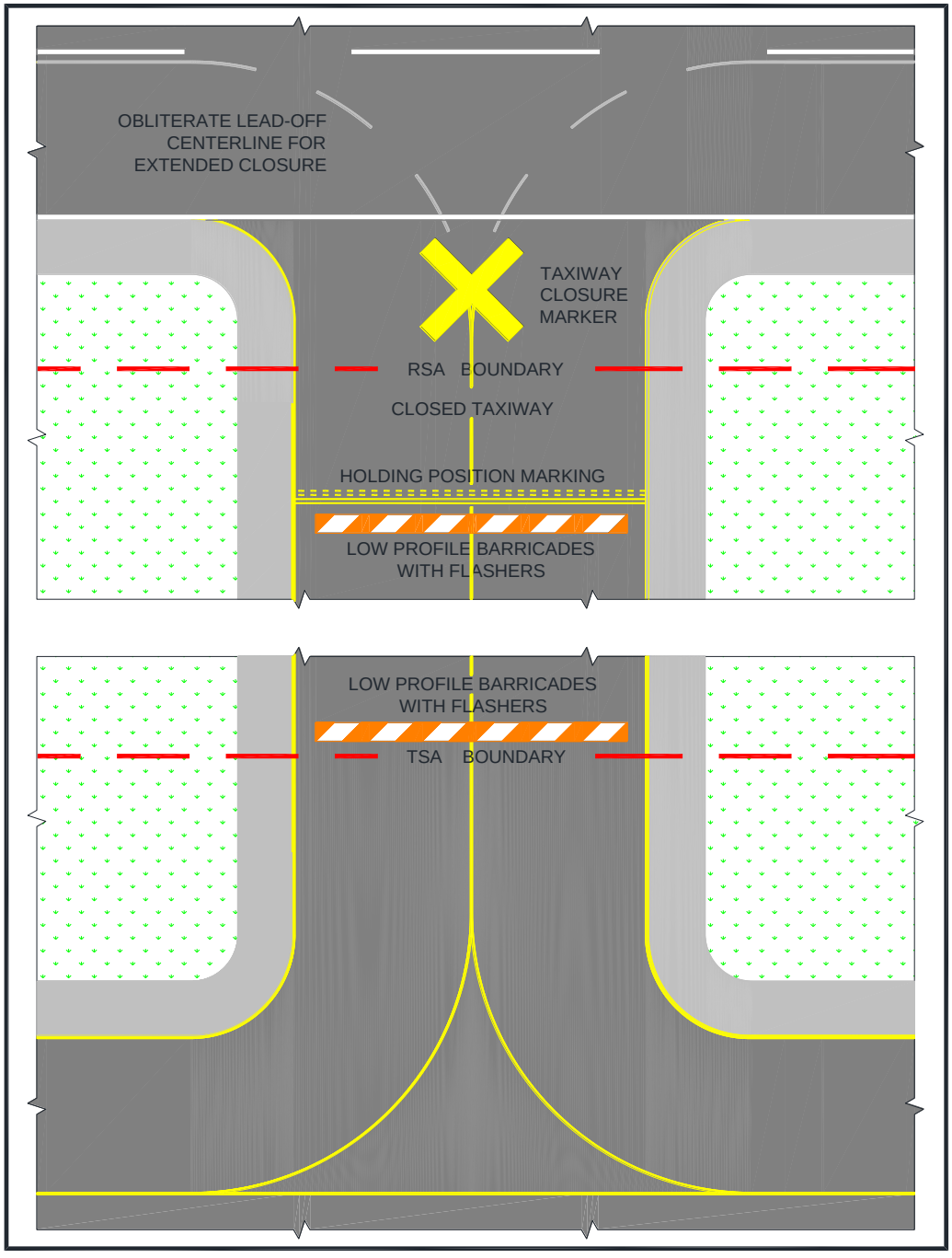
1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see AC 150/5340-1). Obliterate or cover markings prior to the 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 AC 150/5340-1. 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 Taxiways.

1. **Permanently Closed Taxiways.** AC 150/5300-13 *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 Figure 2-4.

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 Temporarily Closed Airport.

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.

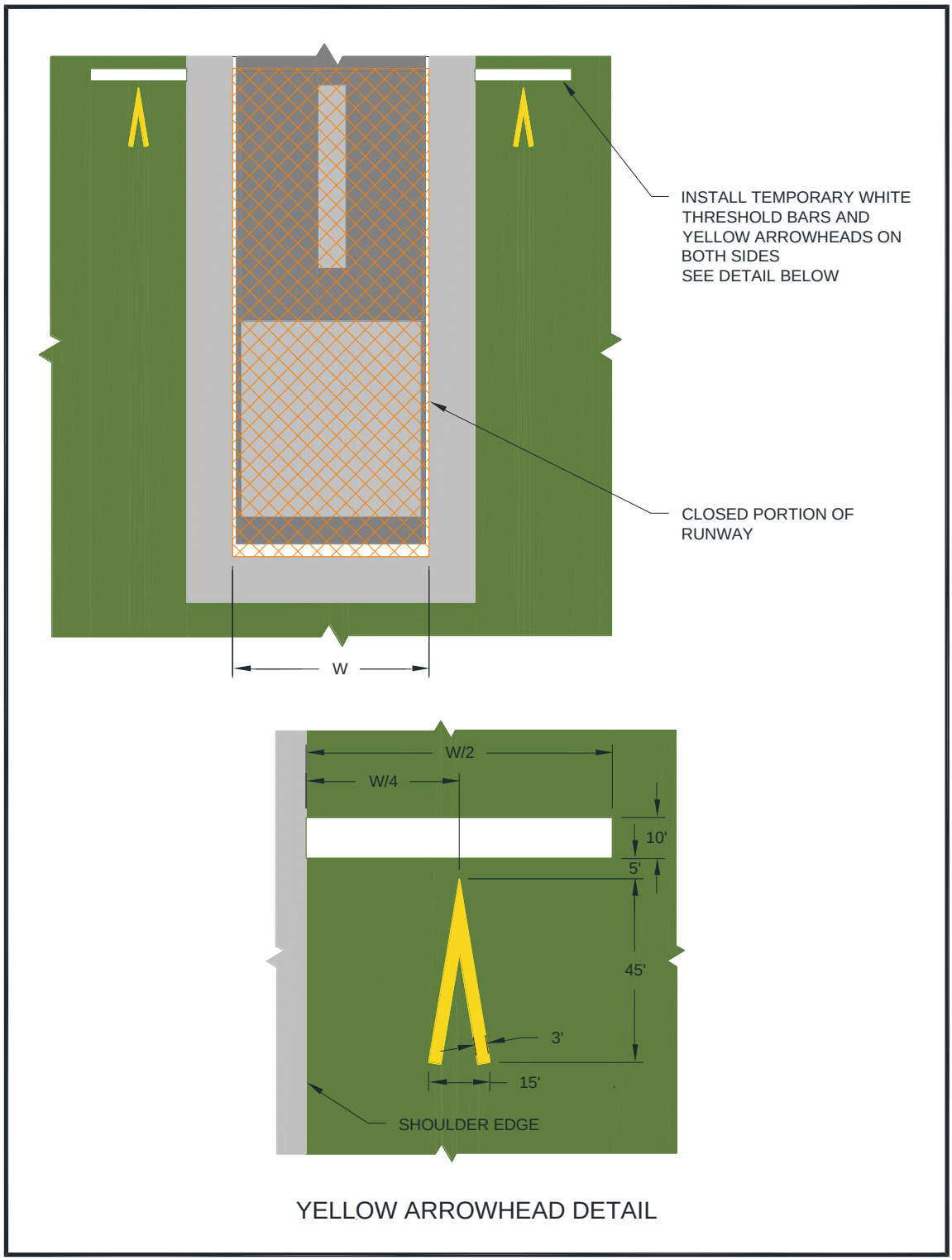
2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. 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 Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. 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 AC 150/5370-10), 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. AC

150/5340-1, *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 AC 150/5345-55, *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. Figure 2-6 shows a lighted X by day. Figure 2-7 shows a lighted X at night.

Figure 2-6. Lighted X in Daytime

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 Partially Closed Runways.

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 Temporary Displaced Thresholds.

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 AC 150/5340-30 for details on lighting displaced thresholds. See Figure 2-2.

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 AC 150/5345-39, *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 AC 150/5370-10.

2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 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 AC 150/5345-44, *Specification for Runway and Taxiway Signs*, and AC 150/5340-18, *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 Takeoff Run Available (TORA) signs.

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 Figure F-1.

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 AC 150/5340-18 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 AC 150/5220-23, *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 AC 150/5370-10 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 AC 150/5300-13. 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 2.13.5) 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 AC 150/5300-13). 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 AC 150/5300-13). 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 AC 150/5300-13 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 Taxiway Safety Area (TSA).

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 AC 150/5300-13.) 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 AC 150/5300-13).

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 2.18 and 2.20 are implemented.

2.22.4.3.4 If desired, appropriate orange construction signs are installed. See paragraph 2.18.4.2 and Appendix F.

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 Runway Approach/Departure Areas and Clearways.

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in AC 150/5300-13. 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 AC 150/5370-10.

2.23.2 Restrictions.

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 3.9) 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 AC 150/5370-12. 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 3.8, 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 Appendix F 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 3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 3.14 for the

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 Two-Way Radio Communications.

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 Airport Security.

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 3.10 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 3.10 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, AC 150/5320-15.

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, include a reference to paragraph 3.10. Differentiate between emergency and nonemergency 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 3.14 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 3.10 for compliance with airport safety and security measures and for radio communications as required. Include

a reference to paragraph 3.14 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, AC 150/5340-1, *Standards for Airport Markings;* AC 150/5340-18, *Standards for Airport Sign Systems;* and AC 150/5340-30, 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 3.14. 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 http://www.faa.gov/airports/.

Table A-1. FAA Publications

Number	Title and Description
AC 150/5200-28	*Notices to Airmen (NOTAMs) for Airport Operators* Guidance for using the NOTAM System in airport reporting.
AC 150/5200-30	*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.
AC 150/5200-33	*Hazardous Wildlife Attractants On or Near Airports* Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.
AC 150/5210-5	*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.
AC 150/5210-20	*Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports* Guidance to airport operators on developing ground vehicle operation training programs.
AC 150/5300-13	*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

Number	Title and Description
AC 150/5320-15	*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.
AC 150/5340-1	*Standards for Airport Markings* FAA standards for the siting and installation of signs on airport runways and taxiways.
AC 150/5340-18	*Standards for Airport Sign Systems* FAA standards for the siting and installation of signs on airport runways and taxiways.
AC 150/5345-28	*Precision Approach Path Indicator (PAPI) Systems* FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.
AC 150/5340-30	*Design and Installation Details for Airport Visual Aids* Guidance and recommendations on the installation of airport visual aids.
AC 150/5345-39	*Specification for L-853, Runway and Taxiway Retroreflective Markers*
AC 150/5345-44	*Specification for Runway and Taxiway Signs* FAA specifications for unlighted and lighted signs for taxiways and runways.
AC 150/5345-53	*Airport Lighting Equipment Certification Program* Details on the Airport Lighting Equipment Certification Program (ALECP).
AC 150/5345-50	*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.
AC 150/5345-55	*Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure*

Number	Title and Description
AC 150/5370-10	*Standards for Specifying Construction of Airports* Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.
AC 150/5370-12	*Quality Management for Federally Funded Airport Construction Projects*
EB 93	*Guidance for the Assembly and Installation of Temporary Orange Construction Signs*
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 http://www.ecfr.gov/.

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 http://mutcd.fhwa.dot.gov/.

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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, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. (See guidance available on the FAA web site at https://oeaaa.faa.gov.) The form may be downloaded at http://www.faa.gov/airports/resources/forms/, or filed electronically at: https://oeaaa.faa.gov.
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 http://www.faa.gov/airports/resources/forms/.
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
ATO	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
HMA	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 AC 150/5300-13 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 AC 150/5300-13 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 AC 150/5300-13.
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 AC 150/5300-13.
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 AC 150/5300-13 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 indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (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 Chapter 2. 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.

Table C-1. CSPP Checklist

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.	2.5				
Operational safety is a standing agenda item for construction progress meetings.	2.5				
Scheduling of the construction phases is properly addressed.	2.6				
Any formal agreements are established.	2.5.3				
Areas and Operations Affected by Construction Activity					
Drawings showing affected areas are included.	2.7.1				
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	2.7.1.1				
Access routes used by ARFF vehicles affected by the project are addressed.	2.7.1.2				
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				

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

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.	2.9				
The location of stockpiled construction materials is depicted on drawings.	2.9.1				
The requirement for stockpiles in the ROFA to be approved by FAA is included.	2.9.1				
Requirements for proper stockpiling of materials are included.	2.9.1				
Construction site parking is addressed.	2.9.2.1				
Construction equipment parking is addressed.	2.9.2.2				
Access and haul roads are addressed.	2.9.2.3				
A requirement for marking and lighting of vehicles to comply with AC 150/5210-5, *Painting, Marking and Lighting of Vehicles Used on an Airport,* is included.	2.9.2.4				
Proper vehicle operations, including requirements for escorts, are described.	2.9.2.5, 2.9.2.6				
Training requirements for vehicle drivers are addressed.	2.9.2.7				
Two-way radio communications procedures are described.	2.9.2.9				
Maintenance of the secured area of the airport is addressed.	2.9.2.10				
Wildlife Management					
The airport operator's wildlife management procedures are addressed.	2.10				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Foreign Object Debris Management					
The airport operator's FOD management procedures are addressed.	2.11				
Hazardous Materials Management					
The airport operator's hazardous materials management procedures are addressed.	2.12				
Notification of Construction 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.	2.13				
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.	2.13.1				
A list of local ATO/Technical Operations personnel is included.	2.13.1				
A list of ATCT managers on duty is included.	2.13.1				
A list of authorized representatives to the OCC is included.	2.13.2				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	2.8, 2.13.2, 2.18.3.3.9				
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.	2.13.4				
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	2.13.5				
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	2.13.5.3.2				
Inspection Requirements					
Daily and interim inspections by both the airport operator and contractor are specified.	2.14.1, 2.14.2				
Final inspections at certificated airports are specified when required.	2.14.3				
Underground Utilities					
Procedures for protecting existing underground facilities in excavation areas are described.	2.15				
Penalties					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	2.16				
Special Conditions					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	2.17				
Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs					
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	2.18.1				
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4				

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

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.	2.20.1				
The CSPP considers less obvious construction-related hazards.	2.20.1				
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.	2.20.2.1				
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	2.20.2.1				
Red lights meeting the luminance requirements of the State Highway Department are specified.	2.20.2.2				
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.	2.20.2.3				
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	2.20.2.3				
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	2.20.2.5				
Markings for temporary closures are specified.	2.20.2.5				
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 Lighting for Nighttime Construction					
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.	2.22.1.1, 2.22.3.1				
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.	2.22.1.2, 2.22.3.2				
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	2.22.3.3				
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.	2.22.1.4				
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	2.22.1.4				
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	2.22.3.5				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
addressed.					
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	2.22.2				
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.	2.22.4				
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.	2.22.4.3.6				
Provisions for protection of runway approach/departure areas and clearways are included.	2.22.6				
Other Limitations on Construction					
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.	2.23.1.2				
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	2.23.1.3				

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.

Table D-1. Potentially Hazardous Conditions

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		

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.		

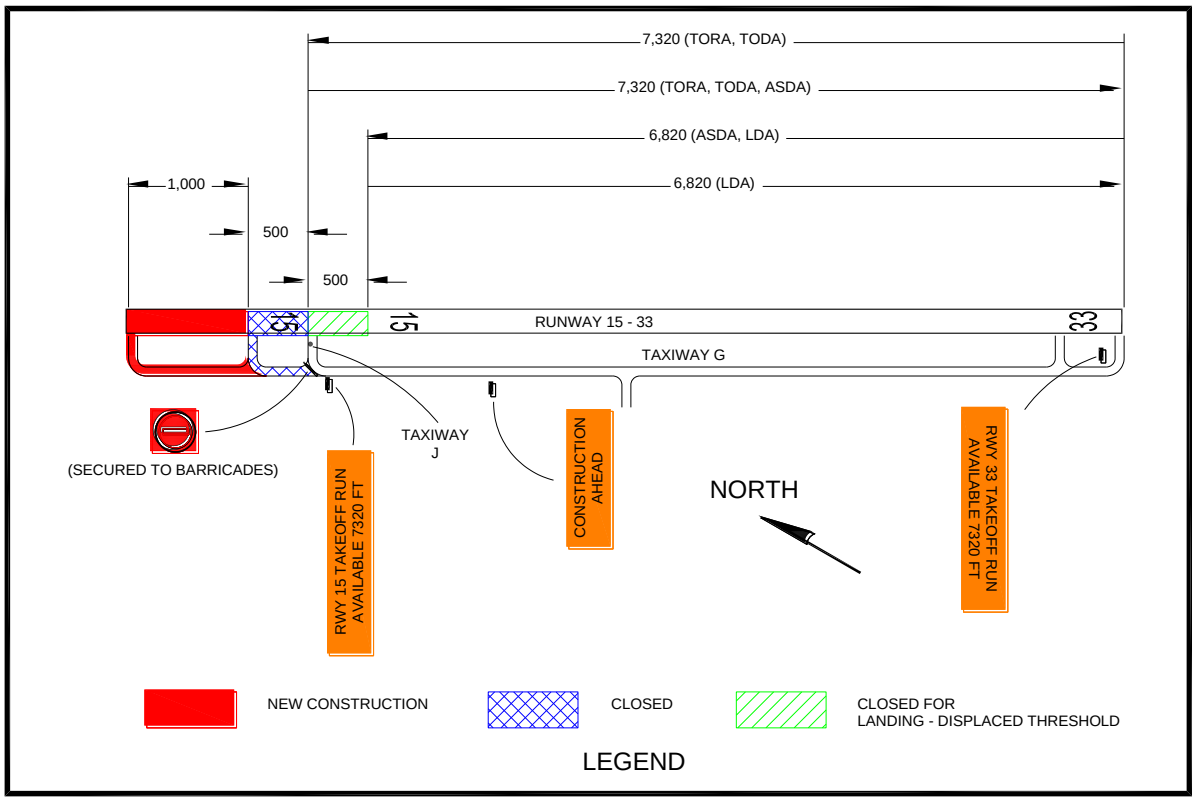
APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE

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

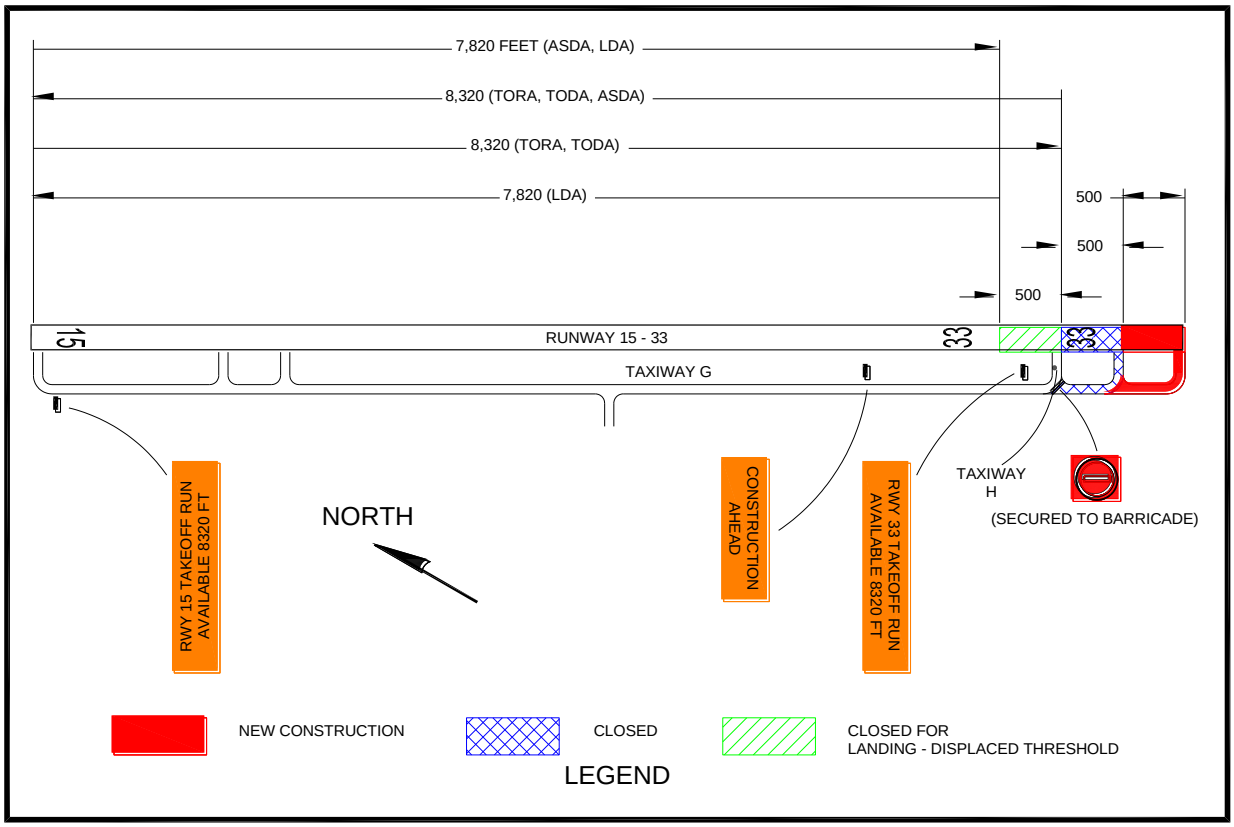


Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

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

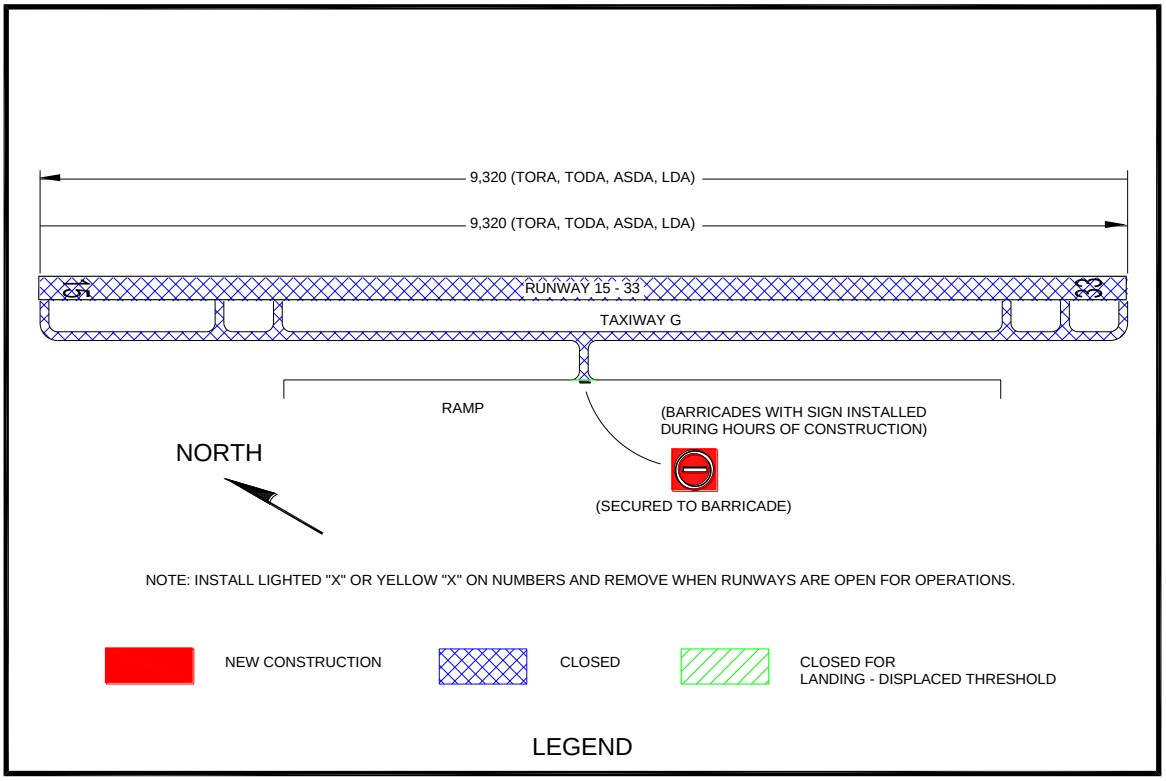


Table E-1. Operational Effects Table

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	¾ mile	¾ mile	¾ mile	1 mile

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

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
Runway 15 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	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 Declared Distances	TORA	7,820	7,320	8,320	9,320
	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
Runway 15 NAVAIDs		LOC	LOC	LOC	LOC
Runway 33 NAVAIDs		ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR
Taxiway G ADG		IV	III	IV	IV
Taxiway G TDG		4	4	4	4
ATCT (hours open)		24 hours	24 hours	24 hours	0500 - 2000
ARFF Index		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 and Taxiway Edge Protection

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 AC 150/5300-13 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:

Table E-3. Protection Prior to 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 Distance to Threshold Based on Required Approach Slope*	
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1

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

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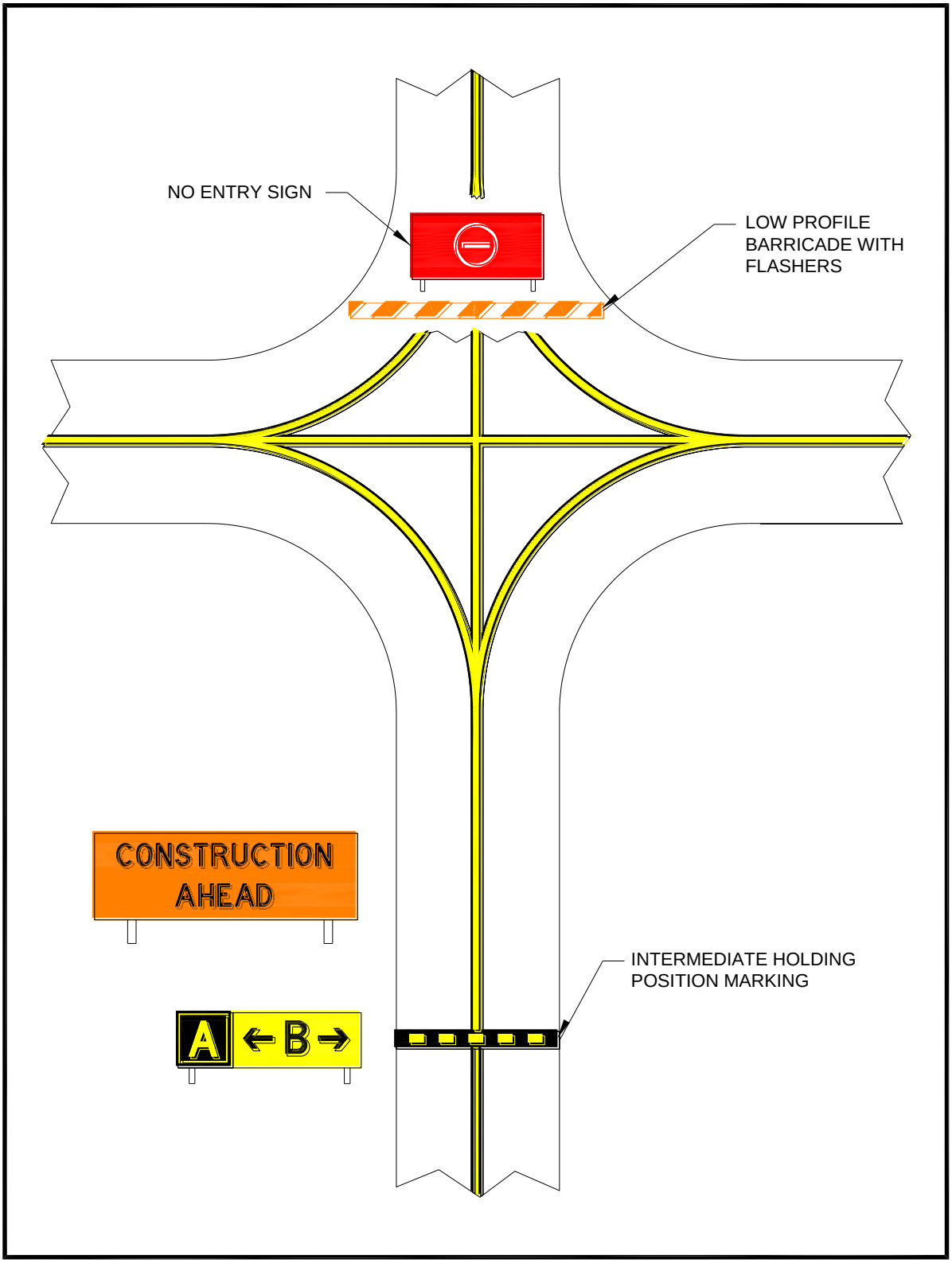
APPENDIX F. ORANGE CONSTRUCTION SIGNS

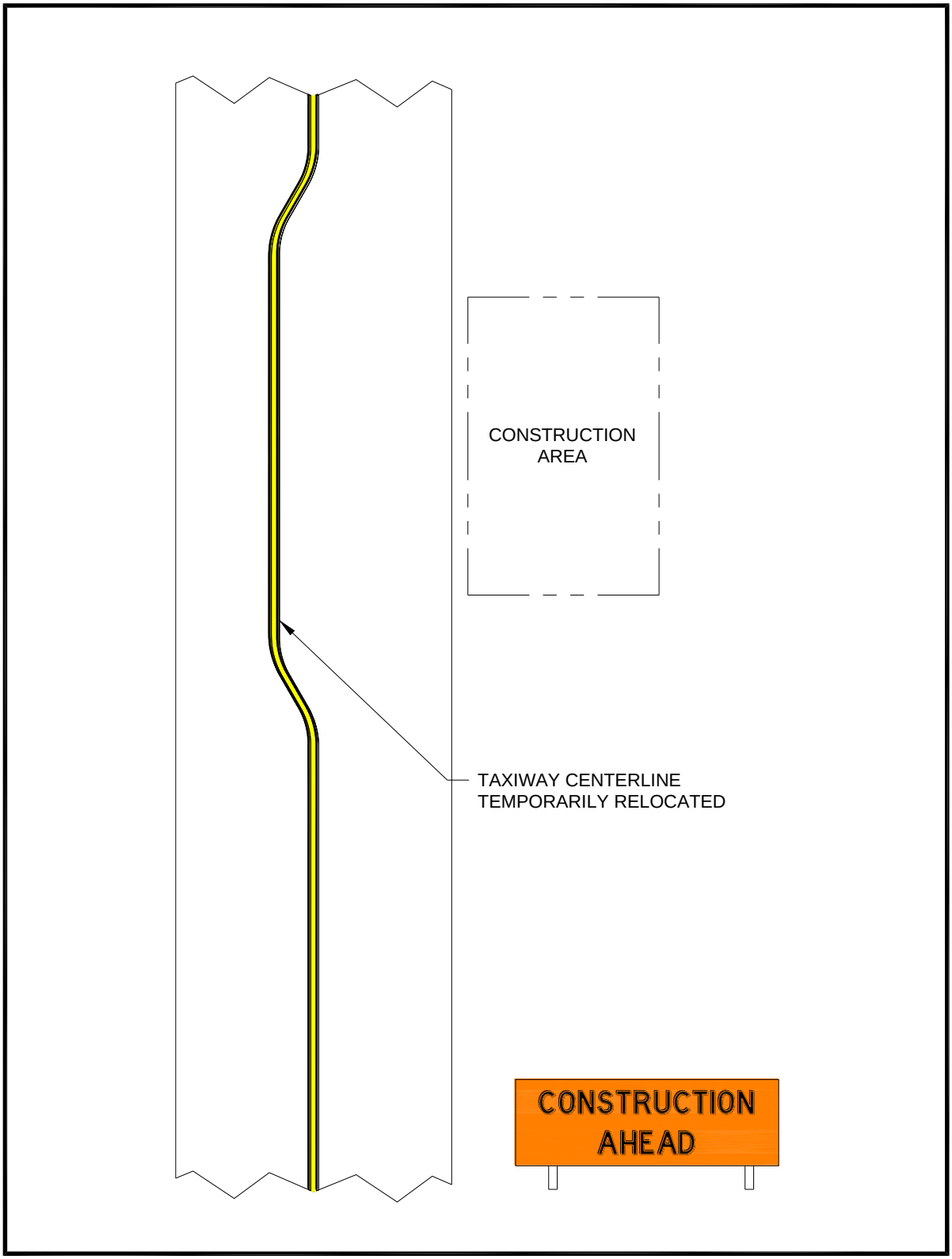
Figure F-1. Approved Sign Legends

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.

Subject: AC 150/5370-2G Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

_____
_____
_____

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

_____
_____
_____

☐ Other comments:

_____
_____
_____

☐ I would like to discuss the above. Please contact me at (phone number, email address).

_____

Submitted by: _____ Date: _____

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APPENDIX 3
HAS SPILL RESPONSE & PROCEDURES

HOUSTON AIRPORT SYSTEM

SPILL RESPONSE & PROCEDURES

Is this an INCIDENTAL RELEASE?

- *The spill is small in size and/or **CAN** be cleaned up safely by 1 or 2 people **&***
- *The material spilled is a **KNOWN** material **&***
- *The hazards associated with the material are **KNOWN** and **NOT** considered extremely dangerous.*

Or

Is this an EMERGENCY RESPONSE?

- *The spill is large in size and/or **CANNOT** be cleaned safely by 1 or 2 people or (More than **3 Gallons** or **50 Square Feet** (5 * 10 Foot Area) *NFPA-407**
- *The material spilled is an **UNKNOWN** material or*
- ***Aircraft Overfill/Mechanical Failure of Fuel System** *NFPA-407**

INCIDENTAL RELEASE

PROTECT THE STORM DRAINS AND CONTAIN THE SPILL USING SPILL KITS. WEAR APPROPRAITE PERSONAL PROTECTIVE EQUIPMENT, BE SAFE, & DON'T WALK OR DRIVE THROUGH SPILL.

NOTIFY AIRSIDE OPERATIONS AND PROVIDE SPILL REPORT
IAH: (281) 233-1131
HOU: (713) 417-5710
EFD: (281) 433-1612

CLEAN-UP CONTAMINATED MATERIALS AND PLACE INTO APPROPRAITE CONTAINERS AND LABEL CONTAINERS TO REFLECT CONTENTS
ENSURE ALL MATERIALS PROPERLY CLEANED UP & NOT FOD HAZARD

STORE CONTAINERS IN A SECURED COVERED LOCATION

CONTACT YOUR COMPANY'S ENVIRONMENTAL REPESENTATIVE TO INSURE PROPER PICK-UP AND DISPOSAL

IAH, EFD, HOU
JAMES PARISE (ENVIRONMENTAL INVESTIGATOR V)
OFFICE..... 281/233-1756
CELL..... 281/684-5156
EMAIL: JIM.PARISE@HOUSTONTX.GOV

EMERGENCY RESPONSE

CLEAR AREA IF POSSIBLE & REMAIN UP-WIND & OUT OF THE MATERIAL

CALL **911**& AIRPORT DISPATCH
IAH: (281) 230-1300
HOU/EFD: (713) 641-4100
PROVIDE THE FOLLOWING INFORMATION:

- ANY INJURIES
- NAME OF MATERIAL SPILLED
- ESTIMATED AMOUNT SPILLED
- LOCATION OF SPILL (GATE/RAMP)

PROTECT STORM DRAINS IF ABLE & AWAIT EMERGANCY RESPONDERS

PERFORM CLEAN-UP AS DIRECTED BY EMERGANCY RESPONDERS. WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT & UTILIZE SPILL KITS IN AREA. BE SAFE & DON'T WALK OR DRIVE THROUGH SPILL.
ENSURE ALL MATERIALS PROPERLY CLEANED UP & NOT FOD HAZARD

PLACE CONTAMINATED MATERIALS INTO APPROPRIATE CONTAINERS AND LABEL CONTAINERS TO REFLECT CONTENTS

STORE CONTAINERS IN A SECURED COVERED LOCATION

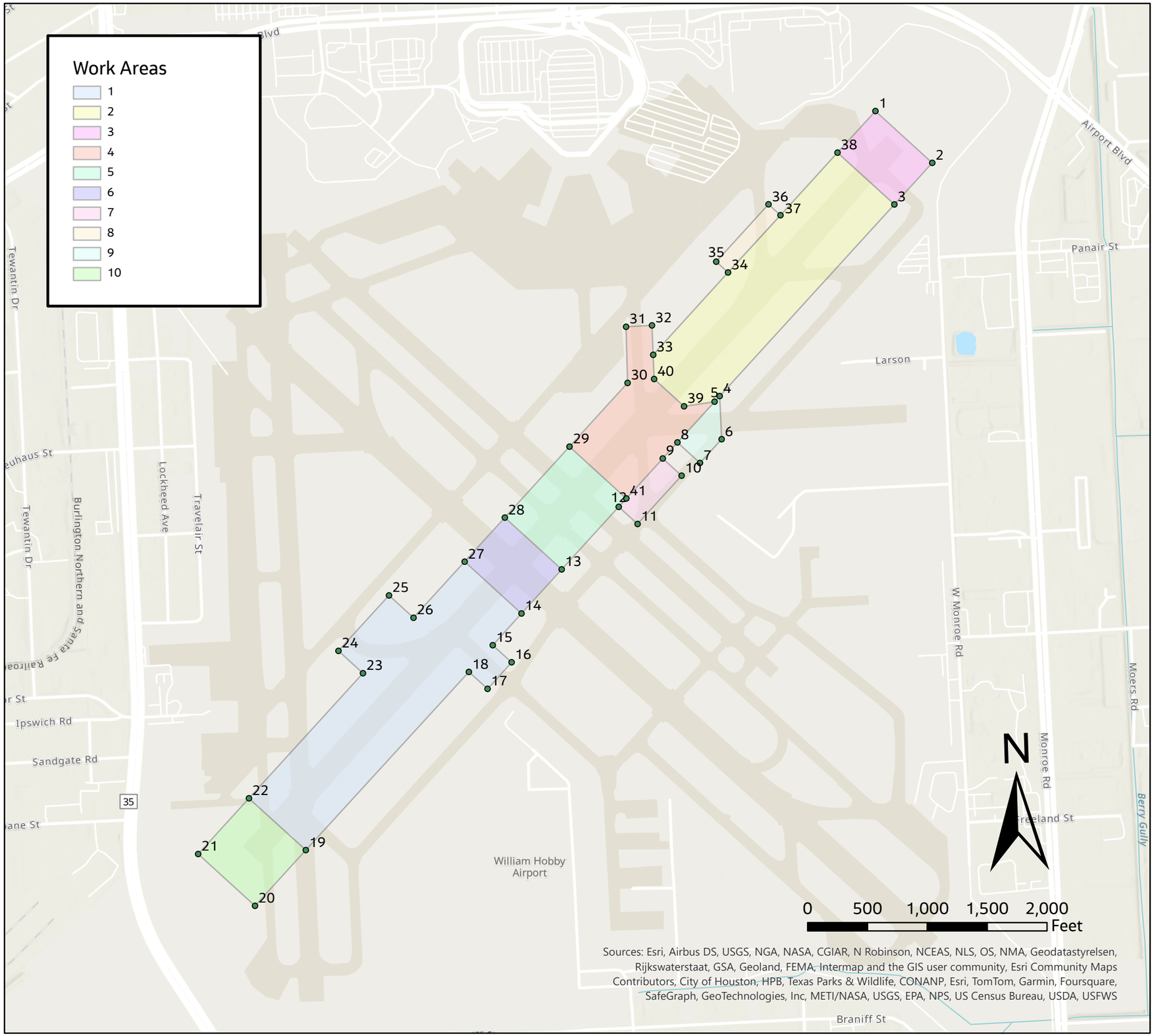
CONTACT YOUR COMPANY'S ENVIRONMENTAL REPESENTATIVE TO INSURE PROPER PICK-UP AND DISPOSAL

REMEMBER TO FOLLOW THIS PROCEDURE FOR SPILLS IN ADDITION TO ANY COMPANY PROCEDURES OR PROTICALS REGARDING SPILLS.

SAFETY IS EVERYONE'S RESPONSIBILITY!

Rev.8.2016

APPENDIX 4
WORK AREA DEFINITION POINTS AND COORDINATES FOR FAA FORM 7460



Houston Airport System PN 1057: Runway 4-22 Shoulder Pavement Rehabilitation and Lighting Upgrade Project

Work Area Definition Points and Coordinates

All coordinates indicated below are based on the NAD 83 datum, NSRS 2011 adjustment (Epoch 2010.0, GIS WKID 6318). Elevations are in feet above mean sea level.

#	Latitude	Longitude	Elevation
1	N29° 39' 19.14"	W095° 16' 07.43"	34.4
2	N29° 39' 14.70"	W095° 16' 02.21"	36.3
3	N29° 39' 11.36"	W095° 16' 05.92"	35.8
4	N29° 38' 55.98"	W095° 16' 23.03"	38.2
5	N29° 38' 55.53"	W095° 16' 23.53"	38.7
6	N29° 38' 52.41"	W095° 16' 22.97"	38.3
7	N29° 38' 50.50"	W095° 16' 25.10"	39.2
8	N29° 38' 52.26"	W095° 16' 27.17"	37.6
9	N29° 38' 50.97"	W095° 16' 28.60"	37.5
10	N29° 38' 49.50"	W095° 16' 26.87"	40.1
11	N29° 38' 45.62"	W095° 16' 31.18"	39.8
12	N29° 38' 47.09"	W095° 16' 32.92"	39.9
13	N29° 38' 42.07"	W095° 16' 38.50"	38.4
14	N29° 38' 38.53"	W095° 16' 42.44"	39.8
15	N29° 38' 35.98"	W095° 16' 45.26"	41.6
16	N29° 38' 34.52"	W095° 16' 43.52"	41.3
17	N29° 38' 32.39"	W095° 16' 45.88"	42.3
18	N29° 38' 33.84"	W095° 16' 47.60"	39.4
19	N29° 38' 19.54"	W095° 17' 03.56"	43.0
20	N29° 38' 15.06"	W095° 17' 08.54"	41.5
21	N29° 38' 19.50"	W095° 17' 13.76"	43.6
22	N29° 38' 23.97"	W095° 17' 08.79"	41.9
23	N29° 38' 34.01"	W095° 16' 57.62"	41.1
24	N29° 38' 35.92"	W095° 16' 59.88"	41.5
25	N29° 38' 40.37"	W095° 16' 54.92"	40.5
26	N29° 38' 38.46"	W095° 16' 52.67"	41.2
27	N29° 38' 42.96"	W095° 16' 47.66"	41.0
28	N29° 38' 46.50"	W095° 16' 43.73"	39.3
29	N29° 38' 52.20"	W095° 16' 37.39"	39.5
30	N29° 38' 57.31"	W095° 16' 31.71"	38.0
31	N29° 39' 01.96"	W095° 16' 31.68"	39.2
32	N29° 39' 02.00"	W095° 16' 29.22"	37.7
33	N29° 38' 59.57"	W095° 16' 29.19"	38.4
34	N29° 39' 06.18"	W095° 16' 21.86"	37.3
35	N29° 39' 07.10"	W095° 16' 22.95"	38.4
36	N29° 39' 11.71"	W095° 16' 17.83"	37.1
37	N29° 39' 10.77"	W095° 16' 16.73"	34.1
38	N29° 39' 15.80"	W095° 16' 11.14"	36.2
39	N29° 38' 55.23"	W095° 16' 26.43"	38.5
40	N29° 38' 57.57"	W095° 16' 29.18"	37.5
41	N29° 38' 47.76"	W095° 16' 32.17"	38.7

Pay or Play Program
Operating Procedures

Background

The Pay or Play Program was established with Ordinance 2007-534 on July 1, 2007 and is governed by Executive Order 1-7. The Pay or Play Program (POP) creates a more level playing field and enhances fairness in the bid process between competing contractors that choose to offer health benefits to their workforce and those who do not. The program also recognizes and accounts for the fact that there are costs associated with providing health care for the uninsured citizens of Houston and Harris County area.

Administration:

- Vendors are required to begin complying with POP within 30 days of contract award by utilizing the designated system, *B2G Workforce Module*, at https://houston.mwdbe.com to complete/review POP activities.
- Vendors are required to utilize *JP Morgan Chase Pay Connexion* (*Pay Connexion*) portal that will accept POP payments electronically. B2G Workforce Module will provide a direct link to *Pay Connexion* where contractors may submit payment via Debit Card, Credit Card, Automated Clearing House (ACH) and/or Electronic Checks (e-checks). Contractors will be charged a convenience fee per transaction.
- Vendors who onboard new employees are allowed a 60-day waiting period upon each new employee's start date to begin participating in POP. After the 60-day period has lapsed, Vendor must include the employee in POP reporting.
- The Office of Business Opportunity (OBO) has citywide administrative oversight of the program, including audit responsibilities. Vendor's compliance with POP requirements will be directly managed by the City Department with whom Vendor has contracted (Contracting Department). Questions about POP should be referred to the Contracting Department's POP Liaison. A contact list for POP Liaisons is available at http://www.houstontx.gov/obo/popforms.html or by contacting the OBO POP Administrator at 832-393-0633 or Brianne.Maxwell@houstontx.gov.

Pre-bid/Pre-Proposal Forms:

- Vendors must complete and return the following forms before contract award by the Contracting Department:
  - *Acknowledgment Form* (POP-1)
  - *Certification of Compliance* (POP-2)
  - *Participating Subcontractors* Form (POP-3)

Prime/Subcontractor Waiver Request (Form POP-4):

- Completed by Contracting Department prior to City Council approval contract award, for contract(s) that may meet exemption criteria as stated in EO 1-7. Form POP-4 must be signed by Contracting Department and forwarded, along with supporting documentation, to OBO POP Administrator for final decision.
- A new Form POP-4 is not needed for contract amendments and/or extensions, as the POP requirements in the original contract continues to apply.
- Contractors that utilize self-employed, owner/operator individuals to complete services (e.g., Truck Drivers, Day Laborers, 10-99, etc.) are POP exempt.
- Vendors should not submit a Form POP-4 for contracts enumerated in section 4.2 of EO 1-7, as those contracts are not covered under POP.

Pay Option Reporting (Workforce Audit):

- Vendors will create a *Workforce Employee List* showcasing all active employees working on the City of Houston project. Vendors will complete a weekly workforce audit by the end of each month. Vendors must provide the Total Hours Worked and individual Hours Worked by each covered employee as part of the weekly workforce audit.
  - Total Hours Worked = Total Number of Hours Employee worked for Employer.
  - Hours Worked = Total Number of Hours Employee worked on COH project.

Invoice Submission:

- Invoices are created from monthly *Workforce Audits* reports. Payments are due to the contracting department 30 business days after receipt of invoice. Payments

may be made through the *Pay Connexion.* Prime Vendor is responsible to the City for compliance of covered employees of covered subcontractors.

- Vendors will "Pay" by contributing $1.00 per covered employee per regular hour for work performed under the contract with the City, not to exceed $40.00 per employee.
    - POP will not accept partial payments; invoices must be paid in full.

Play Option Reporting (Workforce Audit):

- Vendors will create a *Workforce Employee List* showcasing all active employees working on the City of Houston project.
- Vendors will complete a quarterly workforce audits by month end of October, January, April, and July by providing proof of insurance for all active and covered employees for previous three (3) months.
- Vendors will "Play" by providing health benefits to covered employees. Health benefits must meet or exceed the following standards:
    - The employer will contribute no less than 75% of the monthly premium toward the total premium cost covered employee per month.
    - The employee contribution, if any amount, will be no greater than 25% of the monthly premium cost.

Note: Proof of coverage (in the form of the most current Company Insurance invoice or individual employee insurance card) for POP covered employees that work on the City Project.

Employee Waiver Request (Form POP-8):

- Vendor may request employee POP program waiver by submitting a request on the City of Houston Pay or Play (POP) *Employee Waiver Request* (Form POP-8); if a covered employee has refused health coverage through their employee or if a covered employee has acquired health coverage on their own.
    - Vendor will attach approved Form POP-8 to respective employees' workforce profile in the designated system.

Self-Insured Contractor Request (Form POP-9):

- Vendor may request for Self-Insured Status if the employer is using their own money to cover their employees' claims.
- Vendors awarded Self-Insured Status will be PLAY participants and required to report once a year.