



HOUSTON AIRPORT SYSTEM

City of Houston - Department of Aviation - Planning Design and Construction Division

PROJECT MANUAL

RECONSTRUCTION OF TAXIWAY NA GEORGE BUSH INTERCONTINENTAL AIRPORT

**PROJECT NUMBER: 907
CIP NUMBER: A-000570
AIP NUMBER: 3-48-0111-107-16**

VOLUME NUMBER 3 OF 3

ISSUED FOR COMPETITIVE SEALED PROPOSAL

July 27, 2018

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END OF DOCUMENT



**GEOTECHNICAL INVESTIGATION
HOUSTON AIRPORT SYSTEM
GEORGE BUSH INTERCONTINENTAL AIRPORT
RECONSTRUCTION OF TAXIWAY NA
HAS PROJECT NO. 675
HOUSTON, TEXAS**

**Reported to:
United Engineers, Inc.
Houston, Texas**

by

**Aviles Engineering Corporation
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REPORT NO. G123-15

August 2015



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August 18, 2015

Mr. Christin Norris, R.P.L.S., E.I.T.
Survey Manager/Project Manager
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**Reference: Geotechnical Investigation
Houston Airport System
George Bush Intercontinental Airport
Reconstruction of Taxiway NA
Houston, Texas
AEC Report No. G123-15**

Dear Mr. Norris,

Aviles Engineering Corporation (AEC) is pleased to present this report of our geotechnical investigation for the above referenced project. Authorization to proceed for the project was provided on April 7, 2015, and was performed in accordance with AEC Proposal No. G2015-03-08R, dated March 20, 2015.

AEC appreciates the opportunity to be of service to you. Please call us if you have any questions or comments concerning this report or when we can be of further assistance.

Respectfully submitted,
Aviles Engineering Corporation
(TBPE Firm Registration No. F-42)

Wilber L. Wang, P.E.
Senior Engineer



Shou Ting Hu, M.S.C.E., P.E.
Principal Engineer

Reports Submitted: 3 United Engineers, Inc.
1 File (electronic)



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RECONSTRUCTION OF TAXIWAY NA

**CONSTRUCTION SAFETY AND
PHASING PLAN (CSPP)**

Project No.: HAS PN 907

CIP No. A-000570

RS&H No.:
2120001.001

Prepared by RS&H, Inc.

For George Bush Intercontinental
Airport

Houston, Texas



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**GEORGE BUSH INTERCONTINENTAL AIRPORT
CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)
RECONSTRUCTION OF TAXIWAY NA
HAS PN 907**

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A. OVERVIEW

Aviation safety is the primary consideration at airports, especially during construction. The airport operator's Construction Safety and Phasing Plan (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.

The CSPP sets forth benchmarks and requirements for the project to help ensure the highest levels of safety, security and efficiency at the airport during construction. Guideline requirements for the CSPP are developed from *Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5370-2, Operational Safety on Airports During Construction*, current edition, latest change. Reference website:

http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/1019533

The CSPP is a standalone document written to correspond with the safety and security requirements set forth in *AC 150/5370-2*, current edition, latest change, the airport safety and security requirements, as well as local codes and requirements. The CSPP is to be used by all personnel involved in the project. The CSPP covers the actions of not only the construction personnel and equipment, but also the actions of inspection personnel and airport staff.

This document has been developed in order to minimize interruptions to Airport Operations, reduce construction costs, and maximize the performance and safety of construction activity on active airfield surfaces. Strict adherence to the provisions of the CSPP by all personnel assigned to or visiting the construction site is mandatory for Airport Improvements Program (AIP) funded construction projects.

The Contractor shall be required to submit a Safety Plan Compliance Document (SPCD) to the Airport describing how the Contractor will comply with the requirements set forth in this CSPP.

The SPCD shall be drafted as required in *AC 150/5370-2*, current edition, latest change. **The SPCD must be submitted to the Airport at least one (1) week prior to the date of the pre-construction conference.** The SPCD must also include a certification statement by the Contractor stating that it understands the operational safety requirements detailed in this CSPP and SPCD. The Contractor's certification statement will also assert that there will be no deviation from the approved construction practices contained within either of these documents.

In the event the Contractor's activities are found in non-compliance with the provisions of the CSPP or the SPCD, the Airport Engineer will direct the Contractor, in writing, to immediately cease those operations in violation. In addition a safety meeting will be conducted for the purpose of reviewing those provisions in the CSPP/SPCD that were violated. The Contractor will not be allowed to resume any construction operations until conclusion of the safety meeting and all corrective actions required by the Contractor have been implemented. This shall not affect the overall or phase durations of the contract.

B. PROJECT SCOPE

Runway 8R-26L and associated high speed exit taxiways, parallel Taxiway NA, parallel Taxiway NB, and associated connecting taxiways at George Bush Intercontinental Airport (IAH), also referred to as "Airport" throughout this document, were constructed in the mid-1960s. Taxiway NA was rehabilitated

in the 1998/1999 time frame. Since the rehabilitation, structural distresses have recommenced at an increasing rate, indicating the pavement's structural life has been exceeded.

The proposed Reconstruction of Taxiway NA project has two principle objectives for Taxiway NA and adjacent connecting taxiways and high speed exits: 1) to reconstruct the pavement sections for a thirty year structural life; and 2) reconfigure pavement geometry to comply with FAA criteria outlined in *AC 150/5300-13A-Change 1, Airport Design*.

This project will provide complete planning and design phase services along with limited construction phase services. The limits of the project area are identified graphically in the exhibits of Attachment A of this document.

Necessary construction locations, activities, and associated costs have been identified and their impact to Airport Operations has been assessed. The impact of work to Air Operations Areas (AOA) is discussed in detail in Section C, Plan Requirements, of this document and graphically depicted in the exhibits of Attachment A of this document. These exhibits will be made part of the drawing set issued to the Contractor for bidding and construction.

C. PLAN REQUIREMENTS

1. Project Coordination

Pre-design, pre-bid, and pre-construction conferences are used to introduce the subject of airport operational safety during construction. In addition, construction progress meetings, scope of schedule changes, and meetings with the FAA Air Traffic Organization (ATO) will be coordinated as required through the performance of the contract.

a. Pre-design Conference

A pre-design conference was convened and conducted by the City of Houston – Houston Airport System (HAS). In attendance were representatives from Airport Operations, members of the HAS Staff, representatives from IEA (the design consultants) and their sub-consultants. This meeting was used to discuss various items relating to design parameters, airport safety, routing of aircraft and equipment, sequencing of construction operations, environmental considerations, and any other requirements pertinent to the project. This pre-design conference was essential in identifying and outlining potential effects and/or conflicts to Airport Operations during the acquisition of data for design and the subsequent project construction.

b. Pre-bid Conference

The Airport shall conduct a pre-bid conference to help clarify and explain construction methods, procedures, and safety measures required by the contract.

This meeting will be held approximately 14 days prior to the bid opening date.

The pre-bid conference is not mandatory for all general Contractors intending to bid on this project. The FAA Airports District Office (ADO) is invited to all AIP funded projects. Typical agenda items included for this meeting are:

- New or unique construction methods;
- New construction procedures (i.e. statistical acceptance testing);

- Operational safety requirements; and
- Disadvantaged Business Enterprise (DBE) and other civil rights and labor requirements.

One of the primary focuses of the pre-bid conference will be to cover relevant information concerning the Contractor's requirements for developing and submitting an SPCD for review and approval. This will include both general and specific elements required in the SPCD and information on how the Contractor shall format the document to illustrate their plans for compliance with those provisions detailed within this CSPP.

Any changes or modifications recommended during the conference will be included in an addendum to the bid documents. A copy will be furnished to each prospective bidder who registered on the website.

c. Pre-construction Conference

A pre-construction conference, convened and conducted by the Airport and the design consultant, shall be used to discuss operational safety and security, quality control testing, quality acceptance testing, labor requirements, environmental factors, and other issues.

This meeting, among all parties affected by the construction will assist in a better understanding of potential problems and possible solutions for the course and performance of this contract.

The pre-construction conference shall be conducted as soon as practicable after the contract has been awarded and before issuance of the notice to proceed.

The expected participants for this meeting shall include the following parties:

- Sponsor's engineer.
- Resident engineer.
- Airport management.
- Testing laboratory representative.
- Contractor and subcontractor(s).
- Contractor's project superintendent.
- Contractor's project clerk.
- Airport users impacted by the proposed construction.
- Utility companies affected by the proposed construction.
- Federal, state, or local agencies affected by the proposed construction.
- Representative of FAA Airports regional or field office.

The design consultant will prepare an agenda prior to the pre-construction conference. This will include but is not limited to:

- The scope of the project, as well as the sequence and timing of all operations.
- Relationship between the Airport representative and the Contractor.
- Relationship between the FAA and the Sponsor.
- Identification of the Contractor's superintendent and a discussion of his/her authority and responsibilities.
- Designation of sponsor representative responsible for notifying the FAA Flight Service Station (FSS) serving the airport of the proposed start and completion dates of construction or of any circumstances requiring a NOTAM. Planned coordination (Airport Management), control and communications needed for those closures and crossings identified for this project are discussed in detail in Section C.9, Notification of Construction Activities, of this document.
- Scheduling of work and the need to perform certain items at various stages of the project, including operational safety problems that might arise because of the proposed work.
- Notice to proceed date.
- Safety during construction, including the responsibility for marking and lighting of closed and hazardous areas. Reference *AC 150/5370-2*, current edition, latest change, and *AC 150/5340-1, Standards for Airport Markings*, current edition, latest change, for detailed information. Also reference current edition, latest change, of the following safety FAA Advisory Circulars:
 - *AC 150/5200-18, Airport Safety-Self Inspection;*
 - *150/5210-5, Painting, Marking and Lighting of Vehicles Used ON Airports;*
 - *150/5320-5, Appendix 3, Suggested Special Provisions for Protection of Cables, Controls, NAVAIDs and Weather Bureau Facilities; and*
 - *150/5320-15, Airport Construction Controls to Prevent Air and Water Pollution.*
- Security requirements in secure airfield areas.
- The need for continuing vigilance for potential or existing hazards relative to any of the items associated with construction operations on an active or closed airfield surface.

d. Contractor Progress Meetings

Weekly construction meetings shall be held to discuss work progress and to address current or potential security and safety concerns. These meetings may be adjusted to a day-to-day basis as necessary for specific work items. Operational safety and security shall be a standing agenda item for discussion during these weekly/daily construction progress meetings.

e. Daily Tailgate and Phasing Safety Meetings

In addition to the Contractor Progress Meetings, a daily Tailgate Safety Meeting shall be held prior to entering the airfield to identify phasing changes for the day and outline any special precautions.

Two weeks prior to starting work in a new phase the Contractor shall conduct a meeting with all employees accessing the work area. This meeting shall at minimum address the specific phased work elements, work limits of the phase, haul routes to and from the phase, and required coordination tasks between other Contractors in the vicinity and Airport Operations. The outline of coordination items will be presented in the Traffic Control Meeting. Reference Section C.1.h, Houston Airport System – Traffic Control Meetings, of this document for details.

These meetings shall be conducted bilingually in English and Spanish.

f. Scope or Schedule Changes

Changes in the scope and/or duration of the project may necessitate revisions to the CSPP. The FAA Airports Regional or District office shall be promptly notified of any proposed changes to this CSPP. Changes to this document require review and approval by the Airport, HAS and the FAA prior to implementation. In addition, it may be necessary to coordinate proposed changes with any and all appropriate local and/or federal government agencies (i.e. EPA, OSHA, TSA, state environmental agencies, etc.).

g. FAA ATO Coordination

Early coordination with FAA ATO is required to schedule airway facility shutdowns and restarts.

It shall remain the Contractor's responsibility to be aware and cognizant of all activities on the airfield and to follow those procedures referenced above for work required in, around, or near any airfield Navigational Aids (NAVAIDs).

h. Houston Airport System (HAS) – Traffic Control Meetings

HAS conducts weekly Traffic Control Meetings for coordination efforts between Airport Operations, Maintenance, Contractors, etc. Attendance at this meeting will be mandatory by the Contractor's Superintendent.

2. Phasing

Construction phasing for this project shall be coordinated with the local Air Traffic personnel, Airport Operations, and airport users. The sequenced construction phases established in this CSPP have been incorporated into the project design and are reflected in the contract drawings and specifications. The specific project phase areas associated with the performance of this project are represented graphically in exhibits located in Attachment A of this document.

All of the phases identified have been evaluated and planned in order to reduce impact on airport users for the duration of construction associated with this work. The performance of work for each of these phases will require the reduction of aircraft access, re-routing of aircraft around the project work area, closures, and/or restrictions of various airfield surfaces. Exhibits showing the overall

phasing layout and the safety and security elements associated with each phase have been provided in Attachment A of this document.

a. Phase Elements

The sequence of construction for this project has been phased in order to maintain aircraft operations at an acceptable level of efficiency at the airport for the duration of this contract. Work within the phases and / or subphases of the contract may not be concurrent unless otherwise noted in the specific phasing plan sheets. For the purposes of this project, the terms “phase” and “sequence” should not be considered interchangeable. The phasing plans do generally follow the projected sequencing of the project, but the phases were developed such that, in some instances, the phase schedules can be adjusted to best fit the operational requirements of the airport.

General elements of this sequencing and phasing are as follows:

Contractor staging and proposed batch plant areas – Reference Attachment A of this document for general safety and security notes as well as staging and batch plant area locations. Construction staging areas, batch plant areas, Contractor employee parking areas, and stockpiling of materials are to remain outside of all Object Free and Safety Areas for all active airfield surfaces.

Construction access and haul routes – Reference Attachment A of this document for routing layouts. Applicable control along Contractor haul routes for both safety and security must be maintained at all times. This is especially true at those locations that require the Contractor to cross or move through active airfield surfaces. Reference Section C.5.b, Vehicle and Pedestrian Operations, Section C.15, Marking and Signs for Access Routes, and Section C.17, Protection of Runway and Taxiway Safety Areas, of this document for additional information.

Aircraft Rescue and Fire Fighting (ARFF) access routes – Emergency ARFF access in and around the site will be maintained by the Contractor, as required, for the duration of this project. Contractors must prominently mark open trenches and excavations within the construction site, prominently light them with red lights during hours of restricted visibility or darkness, and obtain approval from Airport Operations and the project Engineer.

Ground Service Equipment (GSE) vehicle routes – GSE vehicle access in and around the site will be maintained by the Contractor as required for the duration of this project. Contractors must prominently mark open trenches and excavations within the construction site, prominently light them with red lights during hours of restricted visibility or darkness, and obtain approval from Airport Operations and the project Engineer.

Required NAVAID Shutdowns – The Contractor shall coordinate all NAVAID shutdowns with the local FAA facilities manager and / or Air Traffic Control Tower (ATCT), as appropriate.

Required hazard marking and lighting – Low profile barricades, infield marker pole barricades, lighted runway closure markings, unlit taxiway closure markings, signs, lighting and/or safety flag details and usage requirements are provided in the exhibits of Attachment A of this document. In addition, reference Section C.15, Marking and Signs for Access Routes, Section C.16, Hazard Marking and Lighting, and Section C.17, Protection of Runway and Taxiway Safety Areas, of this document for additional information. Portable lighting units shall be provided, as required, for construction that must occur during nighttime operations. The

Contractor shall provide sufficient units so that all work areas are illuminated to a level of five (5) horizontal foot-candles. The lighting levels shall be calculated and measured in accordance with the current standards of the Illumination Engineering Society. Portable lighting units shall be positioned in such a way that they do not impact air traffic control operations and shall be approved by Airport Operations prior to use.

Lead times for required notifications – The Contractor is required to coordinate this with the Airport Operations. Lead times for required notifications shall be established at the pre-construction meeting.

Construction shall occur over the course of 14 phases. Phase specific elements addressed and taken into consideration during the development of the construction phasing for this project are as follows:

General Operational Notes

1. The Contractor shall be aware that there may be multiple construction projects occurring simultaneously at the airport. The Contractor is expected to work cooperatively with other Contractors to minimize interference to aircraft movements, impact to each work area, and disruptions to Airport Operations. The Contractor is hereby advised that all work must be coordinated between any construction projects and is subject to approval by HAS.

Each ongoing project will be assigned a project specific color by Airport Operations at the pre-construction meeting. Each Contractor escort vehicle and flagman must be visibly marked, easily legible at 150 feet, with the corresponding project color. Flagmen shall be equipped with haul route flags, as shown in the plans. Each Contractor vehicle shall be issued a corresponding project specific color placard by the gate guard upon entry into the AOA for placement in the front window. The Contractor's escorts and flagmen shall only escort vehicles with placard matching his / her project color.

2. In order to minimize operational impacts during certain periods of work, access to a specific work area may be restricted such that the Contractor will not have free, direct access to the work area. During these work periods, no Contractor employees, vehicles, or equipment will be able to enter or leave the work area except under escort by Airport Operations. This sequence of events shall be known as "in the box" operations. The Contractor shall set low-profile barricades or marker pole barricades, as required, to delineate the work area, or "box".

During "in the box" operations, escort services will be provided by Airport Operations at a limited number of regularly scheduled times per work period. Actual escort times will be established via coordination with Airport Operations prior to construction, but for the purpose of bidding escort services should be assumed available only at the beginning and end of each work period. Required "in and out" deliveries (for example, concrete deliveries) shall be scheduled during nighttime construction operations in order to further minimize operational impacts.

During "in the box" operations, the Contractor is responsible for providing all necessary equipment, tools, materials, and workforce necessary to complete all required work during the work period. The Contractor shall additionally provide portable sanitary facilities, and any other such required facilities, for use in the work areas.

"In the box" operations will not relieve the Contractor of his / her responsibilities to provide an adequate number of sweepers and vacuum trucks to keep all haul routes, active airfield pavements

within the limits of work, and any other pavement areas traversed by the Contractor's vehicles and equipment clean and free of mud, dirt, debris, waste, loose material, and any other FOD capable of causing damage to aircraft landing gears or propellers and / or being ingested in jet engines.

3. The Contractor shall install delineators along active RSAs and TOFAs adjacent to the project work areas, and as shown in the phasing plans, to provide a visual barrier to Contractor personnel. All delineators shall be placed no closer to the runway or taxiway centerline than the respective RSA or TOFA offset. The Contractor shall place low-profile barricades approximately five (5) feet outside of the RSA or TOFA offset across pavements temporarily closed as part of a work area. Outside paved areas, the Contractor shall place marker pole barricades approximately five (5) feet outside of the RSA or TOFA offset. Delineators shall be removed at the completion of each work phase, unless otherwise noted.
 - a. Barricades for Taxiway NB shall be placed in order to delineate both an unrestricted ADG VI TOFA (386 feet) and a modified ADG VI TOFA (335 feet, based on a Boeing 747-8 as the maximum allowable aircraft). Low-profile barricades shall be placed across temporarily closed pavements at the modified ADG VI TOFA (335 feet). Marker pole barricades shall be placed at the unrestricted ADG VI TOFA (386 feet).

In the event that any aircraft exceeding the operational capacity of the modified ADG VI TOFA (i.e. Airbus A-380-800, Antonov AN 124, Antonov AN 225) is observed taxiing along Taxiway NB, or Airport Operations notifies the Contractor of such imminent aircraft movements, the Contractor shall cease work immediately inside (Taxiway NB side) the marker pole barricades and move all equipment and personnel outside (Taxiway NA side) the marker pole barricades, giving way to all aircrafts. The Contractor shall remain outside the marker pole barricades until the aircraft has safely passed the work area. The Contractor may continue construction operations outside the marker pole barricades during these periods. This sequence of events shall be known as "Marker Pole Evacuation" operations. These operations occur on a known schedule, defined approximately 24 hours in advance of the scheduled operation. Airport Operations will coordinate scheduled operations of these aircrafts with the Contractor as they are developed. These operations typically occur no more than four (4) times per day and have an approximate duration of 30 minutes. These operations are typically between the hours of 1:00 p.m. CST (1300 hours) to 7:00 p.m. CST (1900 hours). There will be no adjustments to contract price or time should the schedule, frequency, or duration of these operations exceed typical values provided herein.

During "Marker Pole Evacuation" operations for Phase 7 and Phases 9 – 13, the Contractor's haul route will not be accessible and no employees will be able to enter or leave the work area until the "Marker Pole Evacuation" operation is complete. This scenario creates an "in the box" situation and is subject to "in the box" operations, with the exception that no Airport Operations escort services will be available to the Contractor.

- b. In the event barricades are adjusted or removed to allow vehicle access or for construction work, the Contractor shall supply flagmen to prevent aircraft movements into the work area until the barricades are replaced.
4. During Phases 9 – 13, Taxiway NA will be partially restricted to ADG IV aircraft operations (TOFA – 259 feet, based on a Boeing 767-400ER as the maximum allowable aircraft). During Phases 1 – 6 and Phase 8, open portions of Taxiway NA will be operate with an unrestricted ADG VI TOFA (386 feet).

5. Taxiway NB will be partially restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8), with the following exceptions:
 - a. During Phase 8, Taxiway NB will be restored to unrestricted ADG VI aircraft operations (TOFA – 386 feet).
 - b. During periods of “Marker Pole Evacuation” operations, Taxiway NB will be restored to unrestricted ADG VI aircraft operations (TOFA – 386 feet). During these periods, the Contractor will not be allowed to work inside the unrestricted ADG VI TOFA (386 feet), delineated by marker pole barricades.
6. For those phases or subphases to be closed during nighttime hours then opened to aircraft during daytime hours, barricades shall be furnished, installed, and maintained by the Contractor at the locations shown in the plans. The barricades shall be installed at the beginning of each nighttime work period with the type and locations indicated in the plans. At the end of the nighttime work period, after equipment and materials have been removed from the work area, after all cleanup has been completed, after the owner’s representative and Airport Operations has verified the AOA is in acceptable condition, and prior to 6:00 a.m. CST (0600 hours), the barricades shall be removed from the AOA.

Phase 1 – 75 Calendar Days

1. Phase 1 will consist of a 75-day mobilization / procurement / preparation period. During this period, the Contractor is encouraged to perform the following activities:
 - a. Initiate the badging and safety training processes for Contractor personnel in order to have a sufficient work force properly badged prior to beginning work.
 - b. The Contractor shall begin mobilization, including furnishment and set up of the field offices for both the Contractor and the engineer, set up of the Contractor’s staging / storage area and concrete batch plant site, and procurement of project materials.
 - c. Install appropriate traffic control devices.
 - d. Prepare material submittals, shop drawings, and any RFIs and submit for review, in accordance with Section 01330 – Submittal Procedures. Particular attention should be paid to critical submittals, including but not limited to safety plan(s), quality control plan(s), concrete mix designs, asphalt job mix formula(s) (JMF), electrical items, and other long lead time items.
 - e. Complete initial survey checks and verification of control monuments, along with establishment of temporary benchmarks.
 - f. Perform necessary exploratory excavations for underground utilities in airport-approved locations.
 - g. Procure barricades and other safety items and verify sufficient quantity to close the required areas once work is authorized to begin.
2. The Contractor may request to begin additional construction items during Phase 1. Allowance of such requests will be at the direction of Airport Operations.

Phase 2 – 45 Calendar Days (NOTE: PHASE 2 COMPLETED UNDER PN 675 – PHASE NOT INCLUDED IN OVERALL PROJECT DURATION)

1. Phase 2 will be subject to “in the box” operations. The Contractor shall, to the maximum extent possible, contain all work to areas outside the RSA or active TOFAs. The Contractor shall install marker pole barricades along the RSA or TOFA of each adjacent pavement to set the boundary, or “box”, of each work area. Marker pole barricades shall be installed at the following locations to establish the “box”:
 - a. Approximately 255 feet south of the Runway 8R – 26L centerline.
 - b. For Taxiways NA and CC, approximately 198 feet north or south of its respective taxiway centerline.
 - c. For Taxiways NE, NR, NF, NN, and NP, approximately 198 feet from the respective taxiway centerline.
 - d. For Taxiways NG and NL, approximately 98 feet from the respective taxiway centerline.
 - e. For Taxiways NH and NK, approximately 165 feet from the respective taxiway centerline.

Any work required outside the “box” will require a temporary pavement closure.

2. During Phase 2, it is intended that taxiway closures are minimized as much as possible. In instances where a closure is required in order to intercept existing lighting circuits or perform other related work, the Contractor shall coordinate the appropriate pavement closure with Airport Operations, including access, barricades, and any other safety directives required by Airport Operations. Low-profile barricades shall be required to close any pavement. Approximate low-profile barricade locations are described below, though the Contractor shall note that, for any given work period, only those taxiways or runway for which the Contractor is working inside the TOFA or RSA, respectively, must be closed. The Contractor shall coordinate final required low-profile barricade locations with Airport Operations and submit for approval formally via a WAN.
 - a. For the closure of Taxiways NE, NR, NF, NG, NH, NK, NL, NN, and NP between Runway 8R – 26L and Taxiway NA, low-profile barricades shall be placed approximately 198 feet north of the Taxiway NA centerline (if the closure of Taxiway NA is also required concurrently, the barricade shall be moved to approximately 198 feet north of the Taxiway NB centerline) and approximately 255 feet south of the Runway 8R – 26L centerline. Closures of Taxiways NE, NR, and NF shall be coordinated such that they are scheduled concurrently with Subphase 3A.
 - b. For the closure of taxiways NE, NR, NK, and NP between Runway 8R – 26L and Taxiway CC, low-profile barricades shall be placed approximately 198 feet south of the Taxiway CC centerline and approximately 255 feet north of the Runway 8R – 26L centerline. The closure of Taxiway NE shall be coordinated such that it is scheduled concurrently with Subphase 3A.
 - c. For the partial closure of Taxiway NA or Taxiway CC, low-profile barricades shall be placed approximately 198 feet east or west of the nearest connecting taxiway centerline.
 - d. For the closure of Runway 8R – 26L, install lighted runway closure marker at each runway end.

3. The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with all active taxiways, unless escorted by Airport Operations, whenever construction activities are being performed in Phase 2.

Subphase 3A – 45 Calendar Days (NOTE: PHASE 3 HAUL ROAD COMPLETED UNDER PN 675 – PHASE NOT INCLUDED IN OVERALL PROJECT DURATION)

NOTE: ASPHALT SECTIONS OF PHASE 3 HAUL ROADS COMPLETED UNDER PN 675 WERE CONSTRUCTED TO 100 FEET FROM ACTIVE AIRFIELD PAVEMENTS. CONTRACTOR MUST EXTEND ASPHALT SECTIONS TO 150 FEET FROM ACTIVE AIRFIELD PAVEMENTS . SEE NOTE 7.B ON PLAN SHEET G06.03.1. CONTRACTOR SHALL COMPLETE THIS WORK CONCURRENTLY WITH FIRST PHASE OF WORK AWARDED AFTER FULL NOTICE TO PROCEED IS AWARDED.

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Taxiway NE will be closed from the north side of Taxiway NA to Runway 8R – 26L.
 - b. Taxiway NR will be closed from the north side of Taxiway NA to Runway 8R – 26L.
 - c. Taxiway NF will be closed from the north side of Taxiway NA to Runway 8R – 26L.

Note that on any given night, only those taxiways for which the Contractor is working inside the TOFA must be closed.

2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. Subphase 3A shall be completed concurrently with Phase 2. All work in Subphase 3A shall be limited to nighttime construction hours only. The Contractor will be allowed 45 calendar days to complete Subphase 3A. However, the Contractor is encouraged to complete Subphase 3A as quickly as possible.
4. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
5. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with Taxiways NE, NR, and NF, or as directed by Airport Operations, whenever construction activities are being performed in Subphase 3A. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
6. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
7. Marking changes – No changes are anticipated to pavement markings.
8. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Subphase 3B – 85 calendar days (NOTE: PHASE 3 HAUL ROAD COMPLETED UNDER PN 675 – PHASE NOT INCLUDED IN OVERALL PROJECT DURATION)

NOTE: ASPHALT SECTIONS OF PHASE 3 HAUL ROADS COMPLETED UNDER PN 675 WERE CONSTRUCTED TO 100 FEET FROM ACTIVE AIRFIELD PAVEMENTS. CONTRACTOR MUST

EXTEND ASPHALT SECTIONS TO 150 FEET FROM ACTIVE AIRFIELD PAVEMENTS . SEE NOTE 7.B ON PLAN SHEET G06.03.1. CONTRACTOR SHALL COMPLETE THIS WORK CONCURRENTLY WITH FIRST PHASE OF WORK AWARDED AFTER FULL NOTICE TO PROCEED IS AWARDED.

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Taxiway NG will be closed from Runway 8R – 26L to the north side of Taxiway NB.
 - b. Taxiway NH will be closed from Runway 8R – 26L to Taxiway NA.
 - c. Taxiway NJ will be closed from Taxiway NA to the north side of Taxiway NB.
 - d. Taxiway NK will be closed from Runway 8R – 26L to the north side of Taxiway NB.
 - e. Taxiway NL will be closed from Runway 8R – 26L to Taxiway NA.
 - f. Taxiway NN will be closed from Runway 8R – 26L to the north side of Taxiway NB.
 - g. Taxiway NP will be closed from Runway 8R – 26L to the north side of Taxiway NA will be closed from the east side of Taxiway NF to the east side of Taxiway NP.
 - h. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the east side of Taxiway NF to the east side of Taxiway NP.

Note that on any given night, only those taxiways for which the Contractor is working inside the TOFA must be closed.

2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. All work in Subphase 3B shall be limited to nighttime construction hours only. The Contractor will be allowed 85 calendar days to complete Subphase 3B, however the Contractor is encouraged to complete Subphase 3B as quickly as possible. Subphase 3B shall not commence until Subphase 3A is complete and accepted by Airport Operations.
4. Subphase 3B may have a flexible start date, but shall be completed no later than the completion of Phase 6. The Contractor shall coordinate the construction schedule with Airport Operations.
5. Taxi routes – reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
6. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with Taxiways NP, NN, NK, NJ, and NG, or as directed by Airport Operations, whenever construction activities are being performed in Subphase 3B. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
7. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
8. Marking changes – No changes are anticipated to pavement markings.
9. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Phase 4 – 75 Calendar Days (NOTE: PHASE 4 COMPLETED UNDER PN 675 – PHASE NOT INCLUDED IN OVERALL PROJECT DURATION)

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the west side of Taxiway NG to the east side of Taxiway NE, except when subject to “Marker Pole Evacuation” operations.
 - b. Taxiway NA will be closed to aircraft traffic from the east side of Taxiway NR to the west side of Taxiway NG.
 - c. Taxiway NF will be closed to aircraft traffic from Runway 8R – 26L to the north side of Taxiway NB.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. All work in Phase 4 may be performed during daytime and nighttime construction hours. The Contractor will be allowed 75 calendar days to complete Phase 4.
4. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
5. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with Taxiways NE and NR, or as directed by Airport Operations, whenever construction activities are being performed in Phase 4. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
6. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
7. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
8. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Phase 5 – 65 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the west side of Taxiway NF to the east side of Taxiway NE, except when subject to “Marker Pole Evacuation” operations and during Subphase 5B construction operations.
 - b. During Subphase 5B construction operations (nighttime operations only), Taxiway NB will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the west side of Taxiway NF to the east side of Taxiway NE.
 - c. Taxiway NA will be closed to aircraft traffic from the west side of Taxiway NF to the east side of Taxiway NE.

- d. Taxiway NR will be closed to aircraft traffic from Runway 8R – 26L to the north side of Taxiway NB.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. All work in Subphase 5A may be performed during daytime and nighttime construction hours. The Contractor will be allowed 65 calendar days to complete Subphase 5A.
4. Subphase 5B shall be completed concurrently with Subphase 5A. However, Subphase 5B shall be limited to nighttime construction hours only. The Contractor will be allowed 23 calendar days to complete Subphase 5B.
5. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
6. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossing with Taxiways NE, or as directed by Airport Operations, whenever construction activities are being performed in Phase 5. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
7. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
8. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
9. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Phase 6 – 56 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the west side of Taxiway NR to the east side of Taxiway WB, except when subject to “Marker Pole Evacuation” operations and during Subphase 6B construction operations.
 - b. During Subphase 6B construction operations (nighttime operations only), Taxiway NB will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the west side of Taxiway NR to the east side of Taxiway WB.
 - c. Taxiway NA will be closed to aircraft traffic from the west side of Taxiway NR to the east side of Taxiway WB.
 - d. Taxiway NE will be closed to aircraft traffic from Runway 8R – 26L to the north side of Taxiway NB.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. All work in Subphase 6A may be performed during daytime and nighttime construction hours. The Contractor will be allowed 56 calendar days to complete Subphase 6A.

4. Subphase 6B shall be completed concurrently with Subphase 6A. However, Subphase 6B shall be limited to nighttime construction hours only. The Contractor will be allowed 23 calendar days to complete Subphase 6B.
5. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
6. Flagmen – Flagmen will not be required in Phase 6. There are no anticipated active taxiway crossings. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
7. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
8. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
9. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Phase 7 – 56 Calendar Days (NOTE: PHASE 7 COMPLETED UNDER PN 675 – PHASE NOT INCLUDED IN OVERALL PROJECT DURATION)

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Taxiway NA will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the west side of Taxiway NG to the east side of Taxiway NP.
 - b. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the east side of Taxiway NF to the east side of Taxiway NP, except when subject to “Marker Pole Evacuation” operations.
 - c. Taxiway NA will be closed to aircraft traffic from the east side of Taxiway NF to the west side of Taxiway NG.
 - d. Taxiway NJ will be closed to aircraft traffic from the north side of Taxiway NB to the south side of Taxiway NA.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. All work in Phase 7 may be performed during daytime and nighttime construction hours. The Contractor will be allowed 56 calendar days to complete Phase 7.
4. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
5. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with Taxiways NP, NN, NK, NJ, and NG, or as directed by Airport Operations, whenever construction activities are being performed in Phase 7. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
6. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
7. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.

8. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Phase 8 – 60 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Runway 8R – 26L will be closed.
 - b. Taxiway NE will be closed to aircraft traffic from the north side of Taxiway NA to the south side of Taxiway CC. This taxiway closure is required for Subphase 8A only and shall be returned to service as soon as possible following the commencement of Phase 8.
 - c. Taxiway NR will be closed to aircraft traffic from the north side of Taxiway NA to the south side of Taxiway CC.
 - d. Taxiway NF will be closed to aircraft traffic from the north side of Taxiway NA to Runway 8R – 26L.
 - e. Taxiway NG will be closed to aircraft traffic from the north side of Taxiway NA to Runway 8R – 26L.
 - f. Taxiway NH will be closed to aircraft traffic from the north side of Taxiway NA to Runway 8R – 26L. This taxiway shall not be closed to aircraft traffic until Taxiway NE is re-opened to aircraft traffic.
 - g. Taxiway NK will be closed to aircraft traffic from the north side of Taxiway NA to Runway 8R – 26L. This taxiway shall not be closed to aircraft traffic until Taxiway NE is re-opened to aircraft traffic.
 - h. Taxiway NK will be closed to aircraft traffic from Runway 8R – 26L to the south side of Taxiway CC. This taxiway shall not be closed to aircraft traffic until Taxiway NE is re-opened to aircraft traffic.
 - i. Taxiway NL will be closed to aircraft traffic from the north side of Taxiway NA to Runway 8R – 26L.
 - j. Taxiway NN will be closed to aircraft traffic from the north side of Taxiway NA to Runway 8R – 26L.
 - k. Taxiway NP will be closed to aircraft traffic from the north side of Taxiway NA to the south side of Taxiway CC. During Subphase 8B, Taxiway NP will be closed to aircraft traffic from the north side of Taxiway NA to the south side of Taxiway EE.
 - l. During Subphase 8B, Taxiway CC will be closed.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. Phase 8 may begin no earlier than January 3, 2018 and shall be completed by March 3, 2018.
4. The intent of Phase 8 is to complete each work area as quickly as possible, with priority being the completion of Subphase 8A, Taxiway NE, then the completion of Taxiway NP, then the completion

of Taxiway NR. The commencement of Subphase 8A shall coincide with the commencement of the overall Phase 8. Subphase 8A and Subphase 8B shall not be completed concurrently. Subphase 8B shall not commence until the Subphase 8A work area is opened to all aircraft traffic.

5. All work in Phase 8 may be performed during daytime and nighttime construction hours. The Contractor will be allowed 60 calendar days to complete Phase 8. Subphase 8B shall be limited to no more than four (4) calendar days. The Contractor is expected to work multiple shifts to provide 7 days per week, 20 hour per day production when possible/practical.
6. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
7. Flagmen – The Contractor shall provide designated flagmen along the haul route, at each side of crossings with active taxiways, or as directed by Airport Operations, whenever construction activities are being performed in Phase 8. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
8. Impacts to NAVAIDs – All NAVAIDs for Runway 8R-26L will be disabled during Phase 8 construction operations.
9. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
10. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Phase 9 – 70 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Taxiway NA will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the east side of Taxiway NF to the east side of Taxiway NP.
 - b. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the east side of Taxiway NF to the east side of Taxiway NP, except when subject to “Marker Pole Evacuation” operations and during Subphase 9B construction operations.
 - c. During Subphase 9B construction operations (nighttime operations only), Taxiway NB will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from Taxiway NF to Taxiway NJ.
 - d. Taxiway NA will be closed to aircraft traffic from the east side of Taxiway NF to the west side of Taxiway NK.
 - e. Taxiway NG will be closed to aircraft traffic from Runway 8R – 26L to the north side of Taxiway NB.
 - f. Taxiway NH will be closed to aircraft traffic from Runway 8R – 26L to Taxiway NA.
 - g. Taxiway NJ will be closed to aircraft traffic from Taxiway NA to the north side of Taxiway NB.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.

3. All work in Subphase 9A may be performed during daytime and nighttime construction hours. The Contractor will be allowed 70 calendar days to complete Subphase 9A.
4. Subphase 9B shall be completed concurrently with Subphase 9A. However, Subphase 9B shall be limited to nighttime construction hours only. The Contractor will be allowed 23 calendar days to complete Subphase 9B.
5. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
6. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with Taxiways NP, NN, NK, NJ, and NG, or as directed by Airport Operations, whenever construction activities are being performed in Phase 9. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
7. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
8. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
9. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Phase 10 – 60 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Taxiway NA will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the east side of Taxiway NH to the east side of Taxiway NP.
 - b. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the east side of Taxiway NH to the east side of Taxiway NP, except when subject to “Marker Pole Evacuation” operations and during Subphase 10B construction operations.
 - c. During Subphase 10B construction operations (nighttime operations only), Taxiway NB will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the east side of Taxiway NH to the west side of Taxiway NK.
 - d. Taxiway NA will be closed to aircraft traffic from the east side of Taxiway NH to the west side of Taxiway NK.
 - e. Taxiway NJ will be closed to aircraft traffic from Taxiway NA to the north side of Taxiway NB.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. All work in Subphase 10A may be performed during daytime and nighttime construction hours. The Contractor will be allowed 60 calendar days to complete Subphase 10A.
4. Subphase 10B shall be completed concurrently with Subphase 10A. However, Subphase 10B shall be limited to nighttime construction hours only. The Contractor will be allowed 23 calendar days to complete Subphase 10B.

5. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
6. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with Taxiways NP, NN, and NK, or as directed by Airport Operations, whenever construction activities are being performed in Phase 10. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
7. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
8. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
9. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Subphase 11A – 82 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Subphase:
 - a. Taxiway NA will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the east side of Taxiway NJ to the east side of Taxiway NP.
 - b. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the east side of Taxiway NJ to the east side of Taxiway NP, except when subject to “Marker Pole Evacuation” operations and during Subphase 11C construction operations.
 - c. During Subphase 11C construction operations (nighttime operations only), Taxiway NB will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the east side of Taxiway NJ to the west side of Taxiway NN.
 - d. Taxiway NA will be closed to aircraft traffic from the east side of Taxiway NJ to the west side of Taxiway NN.
 - e. Taxiway NK will be closed to aircraft traffic from Runway 8R – 26L to the north side of Taxiway NB.
 - f. Taxiway NL will be closed to aircraft traffic from Runway 8R – 26L to Taxiway NA.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. The intent of dividing Subphases 11A and 11B is to minimize the overall duration of Phase 11. The Contractor shall focus intently on completing the demolition work of Subphase 11A prior to commencement of Subphase 11B. All work in Subphases 11A and 11B may be performed during daytime and nighttime construction hours.
4. Subphase 11C shall be completed concurrently with Subphase 11A. However, Subphase 11C shall be limited to nighttime construction hours only. The Contractor will be allowed 23 calendar days to complete Subphase 11C.
5. The Contractor will be allowed 82 calendar days to complete Phase 11.

6. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
7. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with Taxiways NP and NN, or as directed by Airport Operations, whenever construction activities are being performed in Phase 11. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
8. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
9. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
10. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Subphase 11B – 82 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Subphase:
 - a. Taxiway NA will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the east side of Taxiway NJ to the east side of Taxiway NP.
 - b. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the east side of Taxiway NJ to the east side of Taxiway NP, except when subject to “Marker Pole Evacuation” operations and during Subphase 11C construction operations.
 - c. During Subphase 11C construction operations (nighttime operations only), Taxiway NB will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the east side of Taxiway NJ to the west side of Taxiway NN.
 - d. Taxiway NA will be closed to aircraft traffic from the east side of Taxiway NJ to the west side of Taxiway NN.
 - e. Taxiway NK will be closed to aircraft traffic from Runway 8R – 26L to the north side of Taxiway NB.
 - f. Taxiway NL will be closed to aircraft traffic from Runway 8R – 26L to Taxiway NA.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. The intent of dividing Subphases 11A and 11B is to minimize the overall duration of Phase 11. The Contractor shall focus intently on completing the demolition work of Subphase 11A prior to commencement of Subphase 11B. All work in Subphases 11A and 11B may be performed during daytime and nighttime construction hours.
4. The Contractor will be allowed 82 calendar days to complete Phase 11.
5. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.

6. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with Taxiways NP and NN, or as directed by Airport Operations, whenever construction activities are being performed in Phase 11. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
7. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
8. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
9. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Subphase 12A – 81 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Subphase:
 - a. Taxiway NA will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the west side of Taxiway NN to the east side of Taxiway NP.
 - b. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the west side of Taxiway NN to the east side of Taxiway NP, except when subject to “Marker Pole Evacuation” operations and during Subphase 12C construction operations.
 - c. during Subphase 12C construction operations (nighttime operations only), Taxiway NB will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the west side of Taxiway NN to the west side of Taxiway NP.
 - d. Taxiway NA will be closed to aircraft traffic from the east side of Taxiway NL to the west side of Taxiway NP.
 - e. Taxiway NK will be closed to aircraft traffic from Runway 8R – 26L to the north side of Taxiway NB.
 - f. Taxiway NL will be closed to aircraft traffic from Runway 8R – 26L to Taxiway NA.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. The intent of dividing Subphases 12A and 12B is to minimize the overall duration of Phase 12. The Contractor shall focus intently on completing the demolition work of Subphase 12A prior to commencement of Subphase 12B. All work in Subphases 12A and 12B may be performed during daytime and nighttime construction hours.
4. Subphase 12C shall be completed concurrently with Subphase 12A. However, Subphase 12C shall be limited to nighttime construction hours only. The Contractor will be allowed 23 calendar days to complete Subphase 12C.
5. The Contractor will be allowed 81 calendar days to complete Phase 12.
6. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.

7. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossing with Taxiways NP, or as directed by Airport Operations, whenever construction activities are being performed in Phase 12. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
8. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
9. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
10. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Subphase 12B – 81 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Subphase:
 - a. Taxiway NA will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the west side of Taxiway NN to the east side of Taxiway NP.
 - b. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the west side of Taxiway NN to the east side of Taxiway NP, except when subject to “Marker Pole Evacuation” operations and during Subphase 12C construction operations.
 - c. during Subphase 12C construction operations (nighttime operations only), Taxiway NB will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the west side of Taxiway NN to the west side of Taxiway NP.
 - d. Taxiway NA will be closed to aircraft traffic from the east side of Taxiway NL to the west side of Taxiway NP.
 - e. Taxiway NK will be closed to aircraft traffic from Runway 8R – 26L to the north side of Taxiway NB.
 - f. Taxiway NL will be closed to aircraft traffic from Runway 8R – 26L to Taxiway NA.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. The intent of dividing Subphases 12A and 12B is to minimize the overall duration of Phase 12. The Contractor shall focus intently on completing the demolition work of Subphase 12A prior to commencement of Subphase 12B. All work in Subphases 12A and 12B may be performed during daytime and nighttime construction hours.
4. The Contractor will be allowed 81 calendar days to complete Phase 12.
5. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
6. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossing with Taxiways NP, or as directed by Airport Operations, whenever construction activities are being performed in Phase 12. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.

7. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
8. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
9. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Phase 13 – 51 Calendar Days

1. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Taxiway NB will be restricted to modified ADG VI aircraft operations (TOFA – 335 feet, maximum aircraft – B-747-8) from the east side of Taxiway NN to the east side of Taxiway NP, except when subject to “Marker Pole Evacuation” operations and during Subphase 13B construction operations.
 - b. During Subphase 13B construction operations (nighttime operations only), Taxiway NB will be restricted to ADG IV aircraft operations (TOFA – 259 feet, maximum aircraft – B-767-400ER) from the east side of Taxiway NN to the east side of Taxiway NP.
 - c. Taxiway NA will be closed to aircraft traffic from the east side of Taxiway NN to the east side of Taxiway NP.
 - d. Taxiway NP will be closed to aircraft traffic from Runway 8R – 26L to the north side of Taxiway NB.
2. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
3. All work in Subphase 13A may be performed during daytime and nighttime construction hours. The Contractor will be allowed 51 calendar days to complete Subphase 13A.
4. Subphase 13B shall be completed concurrently with Subphase 13A. However, Subphase 13B shall be limited to nighttime construction hours only. The Contractor will be allowed 23 calendar days to complete Subphase 13B.
5. Taxi routes – Reference the exhibits of Attachment A of this document for aircraft taxi routes impacted by the construction operations of this Phase.
6. Flagmen – Flagmen will not be required in Phase 13. There are no anticipated active taxiway crossings. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
7. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
8. Marking changes – Taxiway centerlines leading into the closed areas will be obliterated.
9. Reference the exhibits of Attachment A of this document for detailed project scope notes.

Phase 14 – 12 Calendar Days

1. Phase 14 will be subject to “in the box” operations. The Contractor shall install low-profile barricades along the TOFA of each adjacent pavement to set the boundary, or “box”, of each work area. The Contractor shall, contain all work to areas outside active TOFAs.

2. During Phase 14, it is intended that taxiway closures are minimized as much as possible. Only one taxiway connecting the North Ramp to Taxiway NB (Taxiways NE, NR, NF, ND, and NG) may be closed at any given time. The Contractor shall note that only one of the dual access lanes from the North Ramp to Taxiway NB along taxiway ND may be closed at any given time. As such, the work areas of Phase 14 have been subdivided as follows:
 - a. Subphase 14A – Taxiway NE and adjacent portions of Taxiway NC and the North Ramp.
 - b. Subphase 14B – Taxiway NR and adjacent portions of Taxiway NC and the North Ramp.
 - c. Subphase 14C – Taxiway NF and adjacent portions of Taxiway NC and the North Ramp.
 - d. Subphase 14D – Taxiway ND (west) and adjacent portions of Taxiway NC and the North Ramp.
 - e. Subphase 14E – Taxiway ND (east) and adjacent portions of Taxiway NC and the North Ramp.
 - f. Subphase 14F – Taxiway NG and adjacent portions of Taxiway NC and the North Ramp.
3. The following airfield aircraft traffic operations will be modified during this Phase:
 - a. Subphase 14A.
 - Taxiway NE will be closed from Taxiway NB to Taxiway WB.
 - Taxiway NC will be closed from Taxiway NE to Taxiway WB.
 - Taxiway WW will be closed from Taxiway NE to Taxiway WB.
 - b. Subphase 14B.
 - Taxiway WW will be restricted to ADG III aircraft operations (TOFA – 186 feet, Maximum Aircraft – B-737-900ER) between Taxiway NE and Taxiway NR.
 - The two north aircraft parking spots on the North Ramp between Taxiway NR and Taxiway NF will be restricted to tug-in operations.
 - Taxiway NR will be closed from Taxiway NB to the North Ramp.
 - Taxiway NC will be closed from Taxiway NE to Taxiway NF.
 - c. Subphase 14C.
 - The Terminal A northwest gate will be restricted to tug-in operations only.
 - The Terminal A northeast gate will be restricted to tug-in operations only.
 - Taxiway NF will be closed from Taxiway NB to the North Ramp.
 - Taxiway NC will be closed from Taxiway NR to Taxiway ND (West).
 - d. Subphase 14D.
 - The Terminal A northeast gate will be restricted to tug-in operations only.

- Taxiway ND (west) will be closed from Taxiway NB to the North Ramp.
 - Taxiway NC will be closed from Taxiway NF to Taxiway ND (East).
- e. Subphase 14E.
- The North Ramp north centerline will be restricted to ADG III aircraft operations (TOFA – 186 feet, Maximum Aircraft – B-737-900ER) between Taxiway ND (West) and Taxiway NG.
 - Taxiway ND (East) will be closed from Taxiway NB to North Ramp.
 - Taxiway NC will be closed from Taxiway ND (west) to Taxiway NG.
- f. Subphase 14F.
- The North Ramp north centerline will be restricted to ADG III aircraft operations (TOFA – 186 feet, Maximum Aircraft – B-737-900ER) between Taxiway ND (East) and Taxiway NG.
 - Taxiway NG will be closed from Taxiway NB to the North Ramp.
 - Taxiway NC will be closed from Taxiway ND (East) to Taxiway NG.
4. Reference the exhibits of Attachment A of this document for barricade locations and additional safety measures.
 5. All work in Phase 14 must be performed during daytime construction hours. The Contractor will be allowed 12 calendar days to complete Phase 14.
 6. Flagmen – The Contractor shall provide two (2) designated flagmen along the haul route, at each side of crossings with all active taxiways, unless escorted by Airport Operations, whenever construction activities are being performed in Phase 14. Placements of flagmen shall be submitted by the Contractor to Airport Operations for review and approval.
 7. Impacts to NAVAIDs – No impact to airport NAVAIDs are anticipated.
 8. Marking changes – N/A.
 9. Reference the exhibits of Attachment A of this document for detailed project scope notes.

b. Construction Safety Drawings

Graphical exhibits specifically indicating operational safety procedures and methods in areas affected by construction activities associated with this project (by phase) have been provided with this CSPP and incorporated into the project drawing set. Reference Attachment A of this document.

3. Areas and Operations Affected by the Construction Activity

Runways, taxiways and other airfield surfaces shall remain in use by aircraft to the maximum extent possible without compromising safety. The performance of this contract will require the partial closures and/or restrictions of several airfield surfaces on a scheduled and phased basis. These

areas are graphically illustrated in the exhibits of Attachment A of this document. In addition, reference Section C.2, Phasing, of this document.

a. Identification of Affected Areas

Reference the exhibits of Attachment A of this document for graphical identification of areas affected by construction operations. Of particular concern are the following:

1. Closing, or partial closing, of runways, taxiways and aprons

Phase associated closures are identified in Section C.2, Phasing, of this document and are graphically illustrated in the exhibits provided in Attachment A of this document. The term 'partial closure' means a portion of the pavement is unavailable for any aircraft operation. Elements of the project work areas have been found to penetrate the Taxiway/Taxilane Object Free Areas (TOFA and TLOFA) and Runway Safety Areas (RSA) of the surrounding airfield surfaces necessitating actions to maintain safety and separation during construction. These areas have been identified in the exhibits provided in Attachment A of this document. The term 'restriction' means a portion of the active taxiway is available to some but not all aircraft types based on the aircraft's design group and corresponding TOFA and/or TLOFA requirements. Where construction activities require restrictions but not closure, the maximum allowable aircraft design groups have been identified in the exhibits provided in Attachment A.

2. Closing of ARFF access routes

Access into, through, and/or around the project work area by ARFF vehicles may be reduced during construction. It shall be the Contractor's responsibility to maintain access for these emergency response vehicles for the duration of each phase of work.

3. Closing of access routes used by airport and airline support vehicles

It shall be the Contractor's responsibility to maintain access for GSE vehicles servicing aircraft around the terminal for the duration of each phase of work. This will be particularly important for aircraft fueling vehicles.

4. Interruption of utilities

Several utilities have been identified within the project limits. These include but may not be limited to electrical service lines, airfield electrical lines, and storm drain lines. Interruption of utilities is not anticipated.

5. Approach/departure surfaces affected by heights of objects

Contractor equipment conflicts, batch plant area heights of objects, or staging area heights of objects are not anticipated to impact approach/departure surfaces.

6. Construction areas

These areas include the project work areas, staging areas, and Contractor haul routes near or through active airfield surfaces. Contractor haul routes will cross active airfield surfaces. All crossings will be controlled and monitored by dedicated traffic control flagmen familiar

with airfield traffic control procedures on active airfield surfaces. These specific project areas are identified graphically in the exhibits of Attachment A of this document.

b. Mitigation of Effects

This CSPP has established specific requirements and operational procedures necessary to maintain the safety and efficiency of Airport Operations during the construction of this project.

All coordination pertaining to Airport Operations during construction will go through the Airport Operations office.

Any required NOTAMs to be issued will be sent through and issued by the Airport Operations office.

1. Temporary Changes to runway, apron, taxilane, and/or taxiway operations

The affected airfield surfaces identified in Section C.3, Areas and Operations Affected by the Construction Activity, of this document as being temporarily closed entirely to aircraft traffic, will be barricaded by the use of low profile, lighted barricades placed as shown in the exhibits provided in Attachment A of this document. Centerline lead-in lines that direct aircraft into the areas identified for closure for this project shall be removed as indicated by the applicable phase (reference the exhibits of Attachment A of this document). Lighted runway closure markings will be installed at each runway end of temporarily closed runways. For temporarily closed taxiways intersecting the runway, unlit taxiway closure markings will be installed at the entrance to the closed taxiway from the runway. In addition, required NOTAMs shall be issued on the various temporary changes to aircraft access through the affected areas.

2. Detours for ARFF and other airport vehicles

The project work site shall remain open to all ARFF vehicles in emergency situations. The Contractor is required to maintain access in and around the project work area for all ARFF vehicles. Proper routing of this traffic will be effectively communicated to all supervisory personnel involved in the construction project. Vehicle routing shall be maintained for GSE vehicles accessing aircraft parked at active terminal gates.

3. Maintenance of essential utilities

Special attention shall be given to preventing unscheduled interruption of utility services and facilities. Where required due to construction purposes, the FAA shall locate all of their underground utilities. The Contractor shall locate and/or arrange for the location of all the underground utilities. When an underground cable or utility is damaged due to the Contractor's negligence, the Contractor shall immediately repair the affected cable or utility. Full coordination between airport staff, field inspectors, and construction personnel will be exercised to ensure that all airport power and control cables are fully protected prior to any excavation. Locations of cabling and other underground utilities will be marked prior to beginning excavation.

4. Temporary Changes to air traffic control procedures

Changes to air traffic control procedures must be coordinated with the Airport ATO.

4. Protection of NAVAIDs

Before commencing construction activities, parking vehicles, or storing construction equipment and materials near a NAVAID, coordination with the appropriate FAA ATO to evaluate the effects of construction activity and the required distances and direction from the NAVAID is required (reference Section C.9.e.iii, NAVAIDs, of this document). The NAVAIDs of Runway 8R-26L will be affected during the performance of the work under this project.

5. Contractor Access

This CSPP details those areas to which the Contractor must have access, and how Contractor personnel will access those project work areas.

a. Location of Stockpiled Construction Materials

Stockpiled materials and equipment storage are not permitted within any active RSA, TSA, Obstacle Free Zone (OFZ), and if possible should not be placed within any active OFA or TOFA. Stockpiling material within an active OFA or TOFA requires submittal of an *FAA Form 7460-1, Notice of Proposed Construction or Alteration* to the FAA for approval. The FAA must provide approval prior to stockpiling within an active OFA or TOFA. Stockpiled material shall be constrained in a manner to prevent movement resulting from either aircraft jet blast or wind conditions in excess of ten miles per hour. Stockpiles must comply with obstruction height requirements for protected airspace (transitional surface or primary surface) as provided in the *Code of Federal Regulations (CFR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace*.

Additional controls must be installed to prevent siltation of water ways by the use of straw wattles, hay bales, silt fence or other such approved device used in the mitigation of storm water pollutants. Reference those controls and requirements detailed in *FAA Specification P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, of this project for additional details and requirements.

Open trenches exceeding three (3) inches in depth and five (5) inches in width and stockpiled materials are not permitted within the limits of safety areas of operational airfield surfaces.

In addition, all materials removed that are not designated for re-use or re-installation within the scope of the project, or designated as a salvageable material, shall be legally disposed of offsite by the Contractor.

Reference Section C.7, Foreign Object Debris (FOD) Management, and Section C.17, Protection of Runway and Taxiway Safety Areas, of this document for additional information regarding stockpile management.

b. Vehicle and Pedestrian Operations

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 will coordinate requirements for vehicle operations with the affected airport tenants, Contractors and the FAA air traffic manager.

Specific vehicle and pedestrian requirements for this project are as discussed herein.

The Contractor shall be aware that there may be multiple construction projects occurring simultaneously at the airport. The Contractor is expected to work cooperatively with other Contractors to minimize interference to aircraft movements, impact to each work area, and disruptions to Airport Operations. The Contractor is hereby advised that all work must be coordinated between any construction projects and is subject to approval by HAS.

Each ongoing project will be assigned a project specific color. Each Contractor escort vehicle and flagman must be visibly marked, easily legible at 150 feet, with the corresponding project color.

All construction vehicles and personnel shall be restricted to the immediate work areas specified by the contract for this project. These areas include the haul routes into the work area, the designated Contractor staging and stockpiling area, and the specific airfield areas under construction. Use of alternate haul routes or staging areas by the Contractor shall not be permitted without prior notification and approval by the Airport Engineer and/or Airport Operations.

Access or haul routes used by Contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to Airport Operations. Construction traffic must remain on the haul road, never straying from the approved paths. The Contractor shall use colored cones or reflective tape, easily visible from 150 feet, to denote the limits of the haul route. The color shall match that of the project specific color assigned to the project. Maintenance and upkeep of the haul roads are the responsibility of the Contractor.

Dust must be removed from the haul roads by mechanical sweeping and vacuum trucks. Application of water on dirt or gravel haul routes must be provided as often as necessary. Haul roads in any airport traffic areas must be especially monitored for dust and debris to prevent any potential development of Foreign Object Debris (FOD).

The Contractor must also perform a vehicle and equipment FOD and fluid leak inspection immediately prior to entering the AOA. The Contractor shall also ensure that no gravel or other debris will shake loose from tires, beds, bumpers or any other area of the Contractor's vehicles or equipment, thereby becoming a hazard to aircraft utilizing the airfield surfaces.

The Contractor is responsible for any damage caused by construction traffic on the haul roads, regardless of whether such traffic is in an approved or unapproved traffic area. Following construction completion, the Contractor shall grade, reseed, clean or otherwise restore the haul route areas to their original conditions prior to construction activities.

Special attention must be given 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 do not interfere with NAVAIDs or approach surfaces of operational runways.

Contractor parking and equipment staging areas have been identified as the Contractor Staging Area and are graphically identified in the plans and the exhibits of Attachment A of this document. The staging areas and employee parking areas provided for the Contractor are located as shown.

The Contractor must service all construction vehicles within the limits of the project work area or the Contractor's staging area. Parked construction vehicles must be outside the OFZ and never in the safety area of active airfield surfaces. Inactive equipment must not be parked on

closed taxiways or runways. In some cases a complex setup procedure makes movement of specialized equipment infeasible (i.e. slip form paving machines and concrete hard forms). If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees shall 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 NAVAIDs. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by *CFR Part 77* and on NAVAIDs and Instrument Approach Procedures (IAP). Reference Section C.9.c, Emergency Notification Procedures, of this document for further information.

The project area(s) shall be bounded by the low-profile barricades and infield marker pole barricades identifying Contractor personnel and vehicle area operation limits. These barricaded project limits, haul routes, Contractor staging areas, and associated safety and security details are also provided graphically in the exhibits of Attachment A of this document.

All construction-related activity taking place within any active area of the AOA requires the presence of an Airport-approved and badged escort having the ability to communicate and receive commands from IAH Operations. At no time will vehicles or personnel enter portions of the secure AOA outside the contract area unless permitted and accompanied by an Airport-approved escort ~~monitoring ground control radio frequency~~. Contractor escorted vehicles are limited to three (3) vehicles per escort or two (2) 18-wheeler delivery vehicles per escort. Escorts must maintain positive control of all escorted vehicles at all times. All escorted vehicles and personnel must be within visual and verbal communication range and be able to receive and immediately respond to any directive or command at all times.

The Contractor shall furnish to the gate guard a list of authorized delivery vehicles to enter the gate and record the vehicle license plate, the vehicle driver's name and license number, time in and time out for each vehicle using the gate. The gate guard will also verify vehicle entry against the "No Access" list furnished daily by Airport Security. Each Contractor vehicle shall be issued a corresponding project specific color placard by the gate guard upon entry into the AOA for placement in the front window. The Contractor's escorts and flagmen shall only escort vehicles with placard matching his / her project color.

Flagmen shall, at a minimum, be properly badged for access on the airfield and must have successfully completed the supplemental Airport Flagman Training. The Contractor's flagmen shall be required to monitor truck radios and/or have mobile phones for sending and receiving instructions at all times. A sufficient quantity of devices shall be supplied by the Contractor. Such radios and/or phones shall be used only for the Contractor's internal communications, to communicate clearance for movement of equipment, personnel, etc., on or across active AOA areas. Use of radios shall not interfere with frequencies used by the ATCT or Airport Operations. Use of mobile phones shall be restricted to work-related calls within the AOA; no personal calls will be allowed. The Contractor shall maintain an up-to-date contact list with Airport Operations for the duration of all phases of work.

In the rare occasion that emergency operations must occur due to an aircraft in distress or any other incident, the flagman monitoring the radio and/or phone shall have the means to communicate with the superintendent or foreman of the project to stop truck traffic and perform

the requests of airport personnel in regards to routing traffic or vacating the site. Any command or instruction given by the ATCT, IAH/HAS personnel, flagmen, or spotters shall be immediately obeyed by the equipment operator.

~~The Contractor shall supply aviation band radios, set to continuously monitor ground control frequency.~~

- ~~• Each supervisory individual shall be equipped with an approved aviation band radio.~~
- ~~• All Contractor lead/escort vehicles, at minimum, shall be equipped with approved aviation band radios.~~
- ~~• Portable hand-held radios should be provided to any Contractor employees that may be operating outside of their vehicles or equipment, meaning away from hard-wired radio systems.~~
- The Contractor shall be responsible for maintaining all radios at all times for the duration of the project. Should the Contractor fail to provide working radios at any point during construction operations, the Airport may choose to cease all construction activity until working radios are provided. Such stoppages of work shall not affect the overall or phase durations of the contract.
- Contractor radios shall be used for monitoring purposes only and shall not be used to communicate with the air traffic control tower. All communication with the air traffic control tower or other elements of the airport shall be through the owner's representative, Airport Operations, and / or engineer, as appropriate. Air traffic control frequencies are provided below for informational purposes only:

| | Radio Frequency: |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UNICOM: | 122.95 MHz |
| HOUSTON GROUND: | 118.575 MHz / 119.95 MHz (Runway 8L – 26R, Runway 8R – 26L, Runway 9 – 27) 121.7 MHz (Runway 15L – 33R, Runway 15R – 33L) |
| HOUSTON TOWER: | 120.725 (Runway 8L – 26) 125.35 (Runway 8R – 26L) 127.3 (Runway 15R – 33L, Runway 15L – 33R) 135.15 (Runway 9 – 27) 288.25 (Runway 15R – 33L, Runway 15L – 33R) 290.2 (Runway 8L – 26R, Runway 8R – 26L, Runway 9 – 27) |

All contractor vehicles and equipment that are authorized to operate on the airport in the active AOA shall meet the following requirements:

- Display a sign / placard with company logo and phone number of the Contractor, identifying the vehicle with block-type characters of contrasting color that are easily legible at 150 feet;
- Display a flashing amber (yellow) dome-type light on top of the vehicle and of such intensity to conform to local codes for maintenance and emergency vehicles. A checkerboard construction safety flag may be used to supplement the flashing light or for transient vehicles or those specifically onsite for the day to complete a specific task during daytime operations only. Any vehicle operating in the AOA during the hours of darkness shall be equipped with a flashing amber (yellow) dome-type light; and
- ~~Be escorted under the control of a Contractor escort monitoring ground control radio frequency.~~

Beacons and checkerboard construction safety flags must be maintained to standards and in good working and operational condition. Beacons must be located on the uppermost part of the vehicle structure, visible from any direction, and flash 75 +/- 15 flashes per minute. Flags shall be 3' by 3' with alternating 1' by 1' international orange and white squares and shall be replaced by the Contractor if they become faded, discolored, or ragged as determined by Airport Operations.

At no time shall active taxiways or runways be crossed by construction vehicles or equipment without notification and proper approval/clearance from IAH Operations and air traffic control.

Aircraft traffic will continue to use existing runways, aprons, and taxiways of the Airport during the time that work under the project is being performed. The Contractor shall, at all times, conduct the work in such a manner that no hindrance, hazard, or obstacle to aircraft using the Airport is created.

Airport Operations and the Contractor must maintain a high level of security during construction when existing gates are utilized to permit access by construction vehicles to the project work site.

6. Wildlife Management

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.

a. Trash

Food scraps from construction personnel activity must be collected.

b. Standing water

Water shall not be allowed to collect and pool for more than any single 24-hour period.

c. Tall grass and seeds

The use of millet seed in turfing and seeding operations shall not be permitted.

d. Poorly maintained fencing and gates

Contractor shall maintain all installed permanent or temporary fencing and gates for the duration of the project (reference Section C.5.b, Vehicle and Pedestrian Operations, of this document).

e. Disruption of existing wildlife habitat

Not applicable to this project.

7. Foreign Object Debris (FOD) Management

Special care and measures shall be taken to prevent Foreign Object Debris/Damage (FOD) when working in an airport environment. The Contractor shall be held responsible for implementing an approved FOD Management Plan as a part of the SPCD.

The FOD Management Plan will have procedures for prevention, regular cleanup, and containment of construction material, trash, and debris. The Contractor will ensure all vehicles related to the construction project using paved surfaces in the AOA shall be free of any debris, prior to entering the AOA, which could create a FOD hazard. Special attention will be given to the cleaning of cracks and pavement joints. All taxiways, aprons, and runways must remain clean.

Special attention will be given to securing lightweight construction material (concrete insulating blankets, tarps, insulation, etc.). Specific securing procedures and/or chain-link enclosures may be required.

The Contractor shall provide his/her own equipment for vehicle and equipment washing and clean up. The cost of all cleaning equipment, operation of said equipment, and labor and incidentals required for cleaning operations shall be included for payment under the item(s) of this specification.

The Contractor shall provide an adequate number of sweepers, vacuum trucks, and additional cleaning equipment to keep all haul routes, active airfield pavements within the limits of work, and any other pavement areas traversed by the Contractor's vehicles and equipment clean and free of mud, dirt, debris and other FOD. The Contractor shall provide a sweeper and vacuum truck at each active airfield pavement crossing, stationed outside the OFA. No less than two (2) sweepers and two (2) vacuum trucks shall be onsite for the duration of the project, regardless of the number of active airfield pavement crossings. The Contractor shall sweep and / or vacuum, as necessary, or as directed by the Owner's representative, immediately after each active airfield pavement crossing by the Contractor's vehicles or equipment. The Contractor shall additionally ensure that all active airfield pavements affected by construction operations are kept free of any and all FOD deposited as the result of any source.

8. Hazardous materials (HAZMAT) Management

All Contractor personnel operating construction vehicles and equipment on the Airport must be prepared to notify Airport Operations immediately and contain and clean-up spills resulting from fuel, hydraulic fluid, or other chemical fluid leaks within one hour of the spill occurring. Transport and handling of other hazardous materials on an airport also requires special procedures. To that

end, the Contractor is required to develop and implement spill prevention and response procedures for vehicle operations. The Contractor shall incorporate these procedures into the SPCD. This includes maintenance of appropriate MSDS data and appropriate prevention and response equipment on-site.

9. Notification of Construction Activities

Following is information and procedures for immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. In the event of a life threatening emergency, the call to 911 should not be delayed. Airport Operations should be contacted after 911. Non-life threatening emergencies may be reported to Airport Operations.

a. Points of contact/list of responsible representatives

Emergency Telephone Number (Police/Fire/Rescue):

| | |
|----------------------------------|-----------------------|
| National Emergency Number | 911 |
| IAH Airport Police | (281) 230-6800 |

Additional Information, Contacts:

| | |
|---------------------------------------------|-----------------------|
| IAH Airport Operations: | (281) 233-1131 |
| IAH 24-hr Emergency Dispatch Service | (281) 230-3024 |

**(Emergency Notification of Service
Interruption – Data & Telecom)**

b. Notices to Airmen (NOTAM)

Only Airport Operations may initiate or cancel NOTAMs on airport conditions, and Airport Operations is the only entity that can close or open a runway or taxiway surface. The Airport must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (ATCT, approach control, or air traffic control center), and must provide information on closed or hazardous conditions on airport movement areas to the FAA FSS so it can issue a NOTAM. The Airport must file and maintain a list of authorized representatives with the FSS. 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 Airport Operations.

Any NOTAMs for planned airfield closures for this project must be coordinated through the Airport Operations manager and the airports duly appointed construction management representative. Reference Section 2, Phasing, for planned closures for this project, which require issuance of a NOTAM.

c. Emergency Notification Procedures

In the event of an emergency, the Contractor shall be required to contact IAH Airport Operations.

IAH Airport Operations:

(281) 233-1131

In the event of an aircraft emergency, severe weather conditions, or any issue that may affect aircraft operations as determined by IAH, the Contractor's personnel and/or equipment may be required to immediately vacate the area(s) affected. Points of contact for the various parties involved with the project shall be identified and shared at the pre-construction meeting among the various parties (reference Section C.1.c, Pre-construction Conference, of this document). Specific emergency notification procedures shall be incorporated into the Contractor's SPCD.

d. Coordination with ARFF Personnel

The Contractor shall coordinate, through the duly appointed airport representative, with ARFF personnel, mutual aid providers, and other emergency services if construction requires the following:

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

Procedures and methods for addressing any planned or emergency response actions on the airfield concerning this project shall be established and implemented prior to the start of construction.

e. Notification to the FAA

- i. **Part 77.** Any person proposing construction or alteration of objects that affect navigable airspace, as defined in *CFR 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* can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. This form will be completed by the Airport and submitted for FAA review. The Contractor is required to comply with any stipulations set forth in the approved *FAA Form 7460-1*.
- ii. **Part 157.** With some exceptions, *CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports*, requires that the Airport 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. It is not anticipated that Part 157 notifications will be required for this project.
- iii. **NAVAIDs.** For emergency (short-notice) notification about impacts to both Airport-owned and FAA-owned NAVAIDs, contact (866) 432-2622.
 - 1) **Airport-owned, FAA maintained.** If construction operations require a shutdown of more than 24 hours, or more than four (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.

- 2) **FAA Owned.** The Airport 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; impacts to FAA equipment covered by a Reimbursable Agreement (RA) do not have to be reported by the Airport. 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-owned NAVAIDs. In addition, provide seven (7) days of notice to schedule the actual shutdown.

10. Inspection Requirements

a. Daily (or more frequent) Inspections

Inspections shall be conducted by the Contractor at least daily, but more frequently if necessary, to ensure conformance with the CSPP. A sample checklist is provided in *AC 150/5370-2, Operational Safety on Airports During Construction*, current edition, latest change of this document of this document. In addition to the Contractor's required inspections, Airport Operations will inspect the construction site to ensure compliance with the CSPP and the SPCD.

b. Lighting and Signage Inspections.

Inspections shall be conducted by the Contractor at least one (1) hour before sunset on any airfield lights and/or signs affected by the Contractor's operations that day. Coordination for approval is required with Airport Operations.

c. Final inspections

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

11. Underground Utilities

Special attention shall be given to preventing unscheduled interruption of utility services and facilities. Where required due to expected construction operations, the FAA shall locate all of their underground cables prior to the start of any work. The Contractor shall locate and/or arrange for the location of all the underground cables. When an underground cable is damaged due to the Contractor's negligence, the Contractor shall immediately repair the cable affected. Full coordination between airport staff, field inspectors, and construction personnel will be exercised to ensure that all airport power and control cables are fully protected prior to any excavation. Locations of cabling will be marked prior to beginning excavation.

12. Penalties

Failure on the part of the Contractor to adhere to prescribed requirements may have consequences that jeopardize the health, safety or lives of customers and employees at the airport. The Airport may issue warnings on the first offense based upon the circumstances of the incident. Individuals involved in non-compliance violations may be required to surrender their Airport ID badges and/or be prohibited from working at the airport, pending an investigation of the matter.

Samples of penalties for violations related to airport safety and security procedures include, but are not limited to, the items listed in this Section.

Anyone found in violation of the airport rules and regulations will be subject to enforcement by Airport Operations per the Operating Instructions (O.I.) for Violations-Offenses, Charging Instrument including Due Process Provisions.

Excerpts from the O.I. are listed below.

The violation, a/k/a, offense, whether by act or omission, of any Federal, State or Local, law, ordinance, policy, procedure, rule or regulation or any part thereof, whether such violation is due to intentional, knowingly, reckless or negligent conduct or a combination thereof is an offense and shall result in a consequence. All offenses covered by this O.I. are strict liability offenses, meaning that a certain state of mind, *mens reas*, is not an element of the offense, unless otherwise specifically stated. Each ID Badge holder is hereby personally charged with the duty and obligation to know all laws, ordinances, policies, procedures, rules and regulations concerning safety, conduct, and/or security at an HAS airport or other HAS controlled facility. Any offense that is not specifically listed below shall be a Class II offense and shall bear the consequences set forth herein for a Class II offense, subject to any enhancement provisions herein.

Should any offense as committed, whether general or specific, cause or have the reasonable possibility of placing another person in danger of imminent bodily injury or death, or should the offense cause or have the reasonable possibility of placing property in danger of imminent damage in an amount greater than \$5,000.00, or should the offense occur during a time at which the Department of Homeland Security, or its successor, Threat Level for one or more HAS airports is at Level Orange or Level Red, or their successor(s) or should the violation result in a TSA investigation being opened and/or sanction imposed against HAS, or similar to a violation that resulted in a TSA investigation being opened and/or sanction being imposed against HAS within the immediately preceding three hundred sixty-five (365) calendar day period, then the offense shall be enhanced by one (1) degree.

An individual committing an inchoate offense, including, but not limited to, conspiracy, aiding and abetting (either before or after the substantive offense), misprision (failure to report a violation of which the individual has reasonable knowledge to believe has occurred), shall be committing an offense one (1) class below the offense committed by the violator of the substantive offense; however, if the substantive offense is a Class I offense then the individual committing the inchoate offense shall be sanctioned according to a Class I offense.

A violator/offender is subject to the following sanctions, these sanctions are not exclusive, but are cumulative to other sanctions that may be imposed by other laws, ordinances, policies, procedures, rules and regulations. The sanctions herein are mandatory and not subject to compromise, plea bargain, or reduction by a Hearing Officer or court.

Warning Notice: Can be given in the sole discretion of the person issuing the Notice of Violation (NOV) for Class I and II violations, unless a required enhancement would take the offense into a higher class. Two (2) warnings in a three hundred sixty-five (365) consecutive calendar day period will result in the issuance of an NOV for a Class II violation. For the NOV to be a Warning, the Issuer must, at the time of issuance, precede the Violation Details with "WARNING ONLY"

Class I – Sanctions for a Class I violation are that the violator must go to the Badging Office and watch the video and pass the test that the Airport Security Manager and/or the Airport Manager (ASM if security related and AM if non-security related) of that airport has determined is appropriate for the specific offense, unless it is a safety violation related to driving on the AOA, in which case the violator must watch and pass the tests on both the SIDA video and the Driving on AOA video and/or such other prerequisites for driving on the AOA as may then be currently in force and effect. The violator has seven (7) calendar days from the date of the last day to file a Notice of Contest or from the date of the rendering of a decision by a Hearing Officer, whichever is later, to perform the sanctions. A Class I violation carries one (1) sanction point.

Class II – Sanctions for a Class II violation are the same sanctions as Class I violations, with the additional sanction that the violator’s direct line supervisor must attend the viewings at the same time the Class II violator attends and must also pass the tests. As used in this subparagraph, the direct line supervisor “DLS” is the person who was the violator’s supervisor at the time of the commission of the offense; if such person is no longer employed by the violator’s employer, then the violator’s current direct line supervisor can attend with the violator. The violator and his/her DLS has seven (7) calendar days from the date of the last day to file a Notice of Contest or from the date of the rendering of a decision by a Hearing Officer, whichever is later, to perform the sanctions. A Class II violation carries two (2) sanction points.

Class III – Sanctions for a Class III violation are the same sanctions as for Class II violations, with the additional sanction that the violator’s ID Badge and Access Rights are suspended for two (2) of the violator’s normal working days and the Class II sanctions must be completed after the person has returned to work from the suspension. The two (2) calendar day suspension must be on consecutive days and must be working day suspensions, not non-working days. The violator and his/her DLS have seven (7) calendar days from the date of the last day to file a Notice of Contest or from the date of the rendering of a decision by a Hearing Officer to perform all of the sanctions. However, if the violation occurs during a time when any HAS airport is a Level Orange or Level Red, the suspension shall be immediate; in which event and only in which event, the suspension shall be, among other processes, subject to the processes set forth in Subsections 4 (IX), 4 (X) and 4 (XI) hereof. A Class III violation carries three (3) sanction points.

Class IV – Sanctions for a Class IV violation are the same sanctions as for Class II violations, with the additional sanction that the violator’s ID Badge and Access Rights are suspended for seven (7) of the violator’s normal working days and the Class II sanctions must be completed after the person has returned to work at an HAS airport from the suspension, but prior to assuming normal job duties, i.e., their first day back. The seven (7) calendar day suspension must be on consecutive working days and must be working day suspensions, not non-working days. Among other processes, this sanction will be subject to the process set forth in Subsections 4 (IX), 4 (X) and 4 (XI) hereof. A Class IV violation carries four (4) sanction points.

Class V – Sanctions for a Class V violation are Immediate Temporary Suspension and permanent loss of ID Badge and Access Rights at all HAS airports. Among other processes, this sanction will be subject to the process set forth in Subsections 4 (IX), 4 (X) and 4 (XI) hereof.

Specific Violations

- a. Failure to display a valid HAS-approved identification and/or ID Badge or HAS-authorized ID Badge that is appropriate for the airport and the area in the prescribed manner, save and except for special management and public safety purposes, specifically authorized in writing by either

the Deputy Director of Aviation for Public Safety & Technology or the Deputy Director of Aviation for Operation Services is a Class I offense – if such failure is in a SIDA or sterile area it is a Class II offense;

- b.** Displaying and/or using an ID Badge or HAS-authorized ID Badge that has expired, if more than seven (7) calendar days but less than thirty (30) calendar days prior to issuance of the NOV it is a Class I offense, if thirty (30) or more days, but less than sixty (60) days it is a Class II offense, if sixty (60) or more days it is a Class III offense;
- c.** Displaying and/or using an ID Badge that has been reported lost or stolen or has been deactivated – if it is the violator’s own badge, and they have not been terminated by their employer it is a Class III offense, if they have been terminated by their employer or it is someone else’s badge it is a Class V offense;
- d.** Displaying and/or using an ID Badge that is not the violator’s own badge is a Class V offense;
- e.** Violation of the Ten Foot Clear Zone, i.e. having an asset, including a disposed or abandoned asset, located closer than 10 feet to the perimeter fence line in areas where a 10 feet or greater distance is required, either inside or outside of the fence line is a Class I offense and is a company offense of the company or organization whose assets are in violation;
- f.** Failure to challenge someone in a controlled or restricted area who is not properly displaying an ID badge is a Class II offense;
- g.** Failure to show an HAS authorized ID Badge appropriate for the airport and the area when challenged is a Class IV offense;
- h.** Piggybacking – “piggybacking” occurs when one or more individuals, who are holders of an HAS ID Badge, follows another individual through a controlled access point without using their own ID Badge, Security Key or PIN number (unless they are under proper escort procedures and have a legitimate need to move through that portal) to activate/operate and/or record their movement using the portal access device – The person who fails to use their ID Badge in the proper manner for access (the piggybacker) commits a Class II offense;
- i.** Failure to challenge a piggybacker – an HAS ID Badged individual must challenge someone who is piggybacking and wait while the piggybacker exits and returns through the portal properly using their own ID Badge, Security Key or PIN number to activate/operate and/or record their movement through the portal using the portal access device if the piggybacker refuses to so comply an HAS ID Badged individual must attempt to obtain the piggybackers name, but whether they can obtain the name or not they must immediately report the same to PS&T security dispatch, (281) 230-1300 IAH or (713) 845-6555 HOU and EFD and assist PS&T Airport Security Officers in attempting to locate the piggybacker – the individual who fails in the foregoing duties commits a Class II offense;
- j.** Tailgating – “tailgating” occurs when one or more individuals, who are not holders of an HAS authorized ID Badge, follows another HAS ID Badged individual through a controlled access point – this is a serious breach of security and the HAS ID Badged individual must challenge the person, peacefully attempt to get them to leave the area, immediately notify PS&T Security Dispatch, (281) 230-1300 IAH or (713) 845-6555 HOU and EFD and assist PS&T Airport Security Officers in attempting to locate the tailgater – the HAS ID Badged individual who fails in the foregoing duties commits a Class IV offense;

- k. Tailgating also occurs when one or more individuals, who are holders of an HAS authorized ID Badge, but does not have it on their person, follows another HAS ID Badged individual through a controlled access point – the HAS ID Badged individual who does have their ID Badge with them must challenge the person, peacefully attempt to get them to leave the area, immediately notify PS&T Security Dispatch, (281) 230-1300 IAH or (713) 845-6555 HOU and EFD and assist PS&T Airport Security officers in attempting to locate the tailgater – the HAS ID Badged individual who fails in the foregoing duties commits a Class III offense.
- l. Leaving a portal that is to be secured in a unsecured, unattended, and/or in a “timed override” mode without properly securing the portal and/or if necessary, reporting and attending to the portal until a PS&T Airport Security Officer arrives is a Class II offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;
- m. Using controlled portals for other than official or HAS authorized use, including, but not limited to using a controlled portal for personal use when not on duty is a Class III offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;
- n. Forcing a secured portal open instead of using an ID badge, PIN pad, or key is a Class V offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;
- o. Violation of Escort Procedures – the escorting of one or more individuals (on foot or in a vehicle) into a restricted or controlled area and not strictly following the procedures related to proper identification, vehicle signs, and/or the requirement to remain with the individual/vehicle being escorted is a Class III offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring. ****Special Note #1**** Individuals who have been issued an ID Badge but who do not have the badge in their possession (left it home, in vehicle, lost, etc.) may not be escorted through any security access point or in or into any restricted or controlled area – to do so is a Class III offense for both the escort and the escorted. ****Special Note #2**** Individuals who have applied for, but have not yet been issued an HAS or HAS Authorized Badge, if even allowed at all in a restricted or controlled area, must be at all times escorted and remain under strict escort and control of the escorting party at all times they are in a restricted or controlled area.
- p. Failure to follow stop and wait procedures at any security device controlled or security personnel staffed portal, including, but not limited to, vehicle gates, pedestrian gates or door is a Class III offense;
- q. Leaving a restricted or controlled area without securing the portal, including, but not limited to, a vehicle gate, pedestrian gate or doors, whether the portal is staffed by security personnel or not is a Class III offense;
- r. Loaning and/or permitting use of an HAS authorized ID Badge, assigned keys or PIN Number to or by another individual – loaning and/or permitting use of an ID Badge is a Class III offense, loaning and/or permitting use of assigned keys or PIN Number is a Class II offense – these offenses may also be company offenses, if any supervisor for the company had any knowledge that such may be occurring;

- s. Intentionally or knowingly interfering with or failure to follow legitimate instructions from an employee of or Contractor to HAS Public Safety & Technology Division in the performance of their official duties or an employee of Airport Operations in the performance of their official safety duties is a Class IV offense, a second occurrence of this violation by an individual in a 36 month period is a Class V offense – these offenses may also be company offenses, if any supervisor for the company had any knowledge that may be occurring;
- t. Failure or refusal to fully, completely, timely and truthfully cooperate, including appearing when and at the place designated, with an investigation, audit or a proceeding by or instituted by or flowing from the acts of any Division of HAS is a Class III offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;
- u. Using an HAS authorized ID Badge during a period of suspension or accessing restricted or controlled areas during a period of suspension, even if under escort is a separate Class IV offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;
- v. Failure to submit to or perform the requirements of sanctions, after the sanctions have become final under this O.I., within the time allotted in this O.I., is a separate offense which is one class greater than the offense for which the sanctioned party is being sanctioned;
- w. Misrepresentation or falsification of, including, but not limited to, intentionally or knowingly or recklessly leaving off any relevant information on, any document delivered to HAS is a Class V offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;
- x. The failure to immediately notify HAS ID Badging Office of an arrest for an HAS listed disqualifying crime is a Class V offense;
- y. Leaving the scene of a chargeable offense prior to delivery of NOV after being told that an NOV is going to be issued and/or refusing to take delivery of an NOV enhances the offense by one Class level;
- z. Failure to surrender ID Badge upon request to a law enforcement officer is a Class IV offense;
- aa. Failure to immediately surrender an individual's own ID Badge upon termination of employment or contract with the individual's ID Badge employer or sponsor is a Class V offense – the ID Badge may be surrendered to either the employer or sponsor or to HAS ID Badging;
- bb. Failure to forward a surrendered ID Badge to the issuing airport's ID Badging Office within 72 hours of receipt of the surrendered ID Badge is a Class III offense chargeable against each of the employer's or sponsor's Authorized Signatory Authorities, whether or not they were the one to whom the Badge was surrendered – it shall be a defense that the Badge was surrendered directly to a specific Authorized Signatory Authority (ASA) and only that ASA shall be culpable (the burden of proof is upon the ASA(s) claiming the defense) and it shall further be a defense that the employer and/or sponsor has written rules and regulations properly distributed, audited and enforced so that each and every supervisor of the employer and/or sponsor is on notice of their duty to, immediately upon receipt, deliver the surrendered Badge to an ASA and that the non-ASA who failed in that duty has been sanctioned with at least one day of unpaid suspension from an actual working day for the non-ASA – any material misrepresentation as

to any matters set forth in this subparagraph is a Class V offense--this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;

- cc.** It is an offense to use, to duplicate, or reproduce access media or keys or authorizing access to any controlled or restricted area without written permission from either the ID Badging Office or, if not the access device is not under the control of the ID Badging Office then, the owner of the access device, such offense is a Class V offense-- this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;
- dd.** Harassment or intimidation, other than sexual, of a degree which would cause a reasonable person to feel unduly uncomfortable to be at an HAS airport and/or suffer from unreasonable stress or anxiety due to the acts of the harasser – the harassment must either be in an ongoing and unrelenting manner on one occasion or in any manner meeting the aforesaid elements on two or more occasions, such offense is a Class III offense;
- ee.** Sexual harassment of any nature or degree – the harassment must either be on more than one occasion or be actionable under Federal or State civil law, such an offense is a Class V offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;
- ff.** Harassment, intimidation or discrimination against a federally protected class, such an offense is a Class IV offense, unless it rises to the degree of being actionable under Federal or State civil law, in which case it is a Class V offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring;
- gg.** Being convicted, including, but not limited to deferred adjudication and/or plea of no contest or plea of guilty, of any offense on the HAS ID Badge disqualification list, unless such criminal offense has reached final resolution of accusation in their favor, i.e., dismissal by a court of competent jurisdiction or acquitted by a judge or jury, such offense is a Class V offense. As to an arrest, pending disposition, the badge holder will immediately surrender his badge to his employer or the ID Badging Office and may utilize the hearing processes set forth herein for immediate temporary suspension. Additionally, if a criminally charged individual pleads to and/or is sentenced to a lesser offense as part of a plea bargain arrangement or as part of a provision allowing a court to “give the person a break” without the filing of a superseding charging instrument resulting in the formal charging of a new offense that is not on the HAS Badge disqualification list, then for the purpose of this subsection the person shall be considered convicted of the originally charged offense;
- hh.** Displaying a firearm on HAS property, such offense is a Class IV offense; a 2nd violation within a 48 month period is a Class V offense – this offense does not apply to law enforcement officers or security personnel specifically authorized to carry and/or possess firearms on HAS property;
- ii.** Bringing or having an improvised explosive device or explosive materials, destructive device, a weapon of mass destruction or key materials suitable for use therein, or device or key materials for arson on HAS property, save and except for Contractors or air carriers specifically authorized to do so, such offense is a Class V offense;

- jj.** Bringing or having a prohibited weapon not included in the list immediately above on HAS property, such offense is a Class IV offense – it is a Class V offense if the weapon injures anyone;
- kk.** Possession of alcoholic beverages or controlled substances on HAS property, other than by a person licensed or employed by a licensee in the course and scope of their employment for the beverage or controlled substance, such offense is a Class III offense as to alcoholic beverages and a Class V offense as to controlled substances;
- ll.** Consumption of alcoholic beverages (other than off-duty in a licensed establishment), or controlled substances on HAS controlled property or being, legally intoxicated, or to a degree as to represent a danger to one's self or other people or property, under the influence of alcoholic beverages or controlled substances on HAS property, such an offense is a Class IV offense, unless the violator is driving on the AOA, airside ramps and/or tug tunnels, or part of their primary work function involves driving in one or more of the foregoing areas and then offense is a Class V offense;
- mm.** Failure to properly store and/or secure tools, equipment or other items in a controlled or restricted area, such offense is a Class III offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring or by reasonable exercise of due diligence should have discovered that such was occurring;
- nn.** Failure to properly handle, document, store, secure or dispose of Sensitive Security Information, such offense is a Class II offense, however, such offense is a Class III if the SSI material is any manner or amount of plans and/or specifications. In addition to such failure being a violation by an individual, in the event that the specific violator cannot be identified and/or should this be the 2nd or greater violation by an employee of the same company, this shall be a company offense;
- oo.** A Contractor, subcontractor, supplier, architect, engineer, materialman or other non-HAS employer who has three or more of its employees (violations at any of the HAS airports are counted toward this offense) sanctioned for any combination of Class III, IV or V offenses within a 12 calendar month period, must have one of its principals, owners (except for a publicly traded company), President, CEO, CFO or COO, appear at the HAS ID Badging Office not later than the 10th calendar day after notice and view and pass the test on the SIDA video and/or view such other videos and pass such other tests as may be designated by the Airport Security Manager – failure to so appear shall constitute a Class III offense to be levied against all employees of the violator at the same time and such suspension shall not be justification for delay or increased cost;
- pp.** Theft in any amount occurring upon HAS property, save and except theft from the violator's employer is a Class V offense;
- qq.** Using a portal in a manner that has not been specifically authorized by HAS is a Class III offense – this offense may also be a company offense, if any supervisor for the company had knowledge that such may be occurring;
- rr.** An act of violence upon HAS property is a Class IV offense if no working days are lost by the assaulted party due to the assault and is a Class V offense if any working days are lost by the

- assaulted party due, in whole or in part, to the assault or if any kind of a weapon was utilized, including but not limited to a weapon of convenience;
- ss.** Threats to persons or property made while the offender is on HAS property or threatened to be committed upon HAS property, such offense is a Class IV offense, unless the threat involves use of a weapon, threatens great bodily harm or death in which event it is a Class V offense;
 - tt.** Any person arrested for and/or convicted of DUI, including either alcohol and/or controlled substances, or any motor vehicle offense of greater magnitude than a Class C misdemeanor (as defined by Texas law), must notify the HAS ID Badging Office not later than 48 hours after such arrest and/or conviction and during the period from the arrest, on one hand, to conviction, dismissal, or plea of guilty or no contest, on the other hand, the offender's privilege, if any, to drive on the airside shall be temporarily and immediately suspended and upon conviction may be permanently suspended;
 - uu.** The failure to keep and produce immediately upon request from any Division of the Houston Airport System true and correct originals and/or true correct and legible copies of any records required by any law, ordinance, policy, procedure, rule, regulation, contract, or lease, to be made and retained is a Class IV offense and shall also be a company offense;
 - vv.** Other than by law enforcement officers and/or Security personnel specifically authorized to do so, possessing or attempting to bring a firearm into a restricted, secured or controlled area of the Airport is a Class V offense;
 - ww.** Abuse and/or improper usage of an HAS computer or communication device, software or system is a Class II offense, unless the same results in damage to the computer or communication device, software or system and/or the device, software or system is used to harass, intimidate, discriminate against a protected class and/or for any disparagement of an individual or group in a protected class then it shall be a Class IV offense – if the abuse and/or improper usage could have or does result in criminal charges being filed against the violator then it shall be a Class V offense;
 - xx.** Failure to ensure that sponsored individuals are fully aware of all applicable laws, ordinances, policies, procedures, rules and regulations prior to starting work at an HAS airport is a Class II offense and shall also be a company offense;
 - yy.** Failure by a sponsoring organization to have and to maintain required coverages and limits of insurance and/or to annually, or upon request, immediately and without protest, provide a valid true and correct original certificate of insurance to the ID Badging & Access Office on a form acceptable, in the sole discretion of, HAS Finance & Administration;
 - zz.** Failure to display appropriate company signage on both sides of a vehicle and/or HAS PDC issued hangtag, or other permissive vehicle media, on an unattended vehicle parked in a "No Parking", "Tow Away" or "Restricted" parking area is a Class I offense;
 - aaa.** Leaving any vehicle unattended in a landside terminal loading dock area is a Class II offense;
 - bbb.** Possession of an HAS ID Badge that is substantially damaged, broken, faded, illegible is a Class I offense;

- ccc.** Failure to notify, in writing, the Airport Security Manager of any construction project, which requires a TSA approved amendment to the Airport Security Plan (ASP) either during construction or post construction, at least sixty (60) days prior to start of construction is a Class II offense and is also a company offense;
- ddd.** Failure to notify, in writing, the Airport Security Manager of any construction project, whether new, remodeling, renovation, located in the Sterile Area, at least seven (7) days prior to the opening of the space (among other things, this is to allow for scheduling of pre-opening security sweep) is a Class III offense and is also a company offense;
- eee.** Displaying or attempting to use an expired HAS PDC issued hangtag, or other permissive vehicle media is a Class I offense;
- fff.** Displaying or attempting to use a HAS PDC issued hangtag, or other permissive vehicle media that was issued to another vehicle is a Class I offense; and
- ggg.** The violation of any other law, ordinance, policy, procedure, rule or regulation related to HAS and its security, airside safety, life safety or operations, including, but not limited to business and field operations is a Class II offense – this offense may also be a company offense, if any supervisor for the company had any knowledge that such may be occurring, or by exercise of reasonable due diligence should have discovered that the same was occurring.

SPECIFIC VIOLATIONS PRIMARILY ENFORCED BY AIRPORT OPERATIONS

- a.** Failure to yield to an aircraft under either tow or taxiing is a Class II offense;
- b.** Failure to obey airside traffic controls, postings, or devices is a Class I offense;
- c.** Entering the airside Movement Area without Air Traffic Control Tower clearance and/or failure to obey instructions from the Air Traffic Control Tower is a Class III offense;
- d.** Causing a runway incursion is a Class IV offense;
- e.** Towing an excessive number of trailer devices is a Class I offense;
- f.** Operating a ground vehicle on the airside without having required lights in proper working order and/or not having lights in operation is a Class I offense;
- g.** Operating a ground vehicle on the airside without a valid driver's license is a Class I offense;
- h.** Failure to yield to an emergency vehicle is a Class I offense;
- i.** Operating a vehicle on the airside under the influence of drugs or alcohol is a Class V offense;
- j.** Operating a vehicle on the airside without airport authorization is a Class II offense;
- k.** Operating a vehicle on the airside without required markings is a Class I offense;
- l.** Unauthorized vehicle on the Aircraft Operating Area is a Class II offense;
- m.** Improper parking or storage of a ground vehicle on the airside is a Class I offense;
- n.** Abandoning a disabled vehicle on the airside is a Class I offense;

- o. Conducting and/or permitting an unsafe fueling operation anywhere on the airport is a Class II offense;
- p. Failure to report a “reportable” hazardous material spill anywhere on the airport is a Class II offense;
- q. Operating and/or permitting the operation, including the movement thereof, of improperly maintained fueling equipment anywhere on the airport is a Class II offense;
- r. Illegal Dumping and/or permitting illegal dumping anywhere on the airport is a Class III offense;
- s. Improper cleanup and/or permitting improper cleanup of a hazardous material spill anywhere on the airport is a Class II offense;
- t. Failure to follow prescribed engine run-up procedures is a Class II offense;
- u. Smoking in an unauthorized airside area is a Class I offense;
- v. Failure to control, as opposed to failure to properly escort, personnel and equipment on the airside is a Class II offense;
- w. Failure to follow picketing/solicitation procedures anywhere on the airport is a Class I offense, unless it is in a restricted area and then it is a Class III offense;
- x. Operating a ground vehicle on the airside in excess of posted or published speed limit and/or in excess of a safe speed limit considering the conditions of traffic (including but not limited to pedestrian, aircraft, equipment and/or vehicular), driving surface, weather conditions, and/or exigent circumstances and conditions is a Class I offense if the speed is not more than 5 miles an hour over the limit, it is a Class II offense if the speed is more than 5 miles an hour but less than 10 miles an hour over the limit, it is a Class III offense if the speed is 10 miles per hour or more but less than 15 miles per hour over the limit, it is a Class IV offense if the speed is 15 miles an hour or more over the limit;
- y. Operating a ground vehicle in an unsafe manner on the airside is a Class II offense;
- z. Operating a ground vehicle in a reckless manner on the airside is a Class III offense.

Note: project shutdown or misdemeanor citations may be issued on a first offense. When construction operations are suspended, activity shall not resume until all deficiencies are rectified. This shall not affect the overall or phase durations of the contract.

13. Special Conditions

In the event of an aircraft emergency, the Contractor’s personnel and/or equipment may be required to immediately vacate the area. The Contractor will receive notification from Airport Operations and/or airport engineering when special conditions require the construction site to be vacated. In any event, extreme care shall be exercised should construction personnel identify any ARFF vehicle with emergency lights displayed. This will generally mean that an emergency situation is imminent (reference Section C.9.c, Emergency Notification Procedures, of this document).

14. Runway, Taxiway, and Taxilane Visual Aids

Runway, taxiway, and taxilane visual aids include marking, lighting, signs, and other visual NAVAIDs on the airfield. Those areas where aircraft will be operating shall be clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, the Contractor shall inspect and verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs and visual NAVAIDs remain in place and operational.

a. 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, or other wind currents and constructed of materials that would minimize damage to an aircraft in the event of inadvertent contact.

b. Markings

All taxiway and taxilane centerline markings leading into the project work site for each phase shall be obliterated prior to the start of construction of each phase. Locations of those centerline markings to be obliterated are graphically illustrated in the plans. These markings are also graphically shown in the exhibits provided in the exhibits of Attachment A of this document. These markings are to be re-applied at the completion of construction operations. Markings must be in compliance with the standards of *AC 150/5340-1, Standards for Airport Markings*, current edition, latest change, and the drawings and technical specifications of this project.

c. Lighting and visual NAVAIDs

All taxiway edge lights in those sections of taxiways closed to aircraft traffic will be either de-energized or blacked out by use of an appropriately cut length of PVC pipe or other Airport Operations approved device. Centerline lighting that conflicts with the temporarily relocated or closed taxiway routing shall be either de-energized, removed from the circuit by use of jumpers or as detailed in the project drawing set. Reference Attachment A of this document for locations and details.

d. Signs

Airfield signage directing aircraft into the closed airfield surfaces for this project will be blacked out (reference Attachment A of this document).

15. Marking and Signs for Access Routes

Location of haul routes on the airport site shall be as specified in the project drawing set and as provided graphically in the exhibits of Attachment A of this document. It shall be the Contractor's responsibility to coordinate off-site haul routes with the appropriate owner who has jurisdiction over the affected route. The haul routes, to the extent possible, shall be marked and signed in accordance with FAA airfield signage requirements, the *Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD)* and/or state highway specifications. Signs adjacent to areas used by aircraft must meet the airfield general frangibility requirements as required by the airport and subsequent approval by the Owner. Meeting airfield frangibility requirements may require modification to size and height guidance in the *MUTCD*.

16. Hazard Marking and Lighting

a. Purpose

Hazard marking and lighting prevents pilots from entering areas closed to aircraft, and prevents construction personnel from entering areas open to aircraft traffic. To that end, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles shall be installed and maintained by the Contractor for the duration of construction operations.

b. Equipment

Type 1 – Low Profile Barricades of the type detailed in the plans with omnidirectional flashing red lights and orange and alternating white flags shall be placed outside the safety area of intersecting taxiways at the edge of the closed airfield surfaces and the project work limits. Layout locations for this equipment are as shown in the project drawing set and in the exhibits of Attachment A of this document. The Contractor shall 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. Lighting shall be checked for proper operation at least once per day, preferably at dusk.

17. Protection of Runway and Taxiway Safety Areas

Safety area encroachments, improper ground vehicle operations and unmarked or uncovered holes and trenches in the vicinity of aircraft operation surfaces and construction areas are the three most recurring threats to safety during construction. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces shall be a standing requirement for the duration of the project. Reference Section C.9, Notification of Construction Activities, and Section C.14, Runway, Taxiway, and Taxilane Visual Aids, of this document for taxiway closure requirements. Reference Section C.16, Hazard Marking and Lighting, of this document for hazard marking. Reference Section C.18, Other Limitations on Construction, of this document for height restrictions (as required).

a. 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 by aircraft.

| Runway | RSA Distance from Centerline (ft) | RSA Width (ft) | RSA Length from End of Runway (ft) |
|----------|-----------------------------------|----------------|------------------------------------|
| ADG D-VI | 250 | 500 | 1000 |

No construction may occur within the existing RSA while the runway is open. Any construction between the RSA and hold line must be approved with Airport Operations prior to starting work.

The Airport must coordinate any adjustment of RSA dimensions, to meet the above requirement, with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.

Open trenches or excavations are not permitted within the RSA while the runway is open. The Contractor must backfill trenches before the runway is opened. Coverings are not allowed in runway safety areas.

After the Runway has been closed, the Contractor must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the Airport, and light them with red lights during hours of restricted visibility or darkness.

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 firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

It is not anticipated that elements of this project will require work within any RSA.

b. 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 shall not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a *FAA Form 7460-1* and justification provided to the appropriate FAA Airports Regional or District Office for approval.

| Runway | ROFA Distance from Centerline (ft) | ROFA Width (ft) | ROFA Length from End of Runway (ft) |
|----------|------------------------------------|-----------------|-------------------------------------|
| ADG D-VI | 400 | 800 | 1000 |

Elements of this project and associated construction activities will require work within the ROFA for Runway 8R-26L.

c. Taxiway/Taxilane Safety Area (TSA/TLSA)

The 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. No construction may occur within the TSA while the taxiway is open for aircraft operations.

| Taxiway/Taxilane | TSA/TLSA Distance from Centerline (ft.) | TSA/TLSA Width (ft.) |
|------------------|-----------------------------------------|----------------------|
| ADG II | 39.5 | 79 |

| | | |
|---------|------|-----|
| ADG III | 59 | 118 |
| ADG IV | 85.5 | 171 |
| ADG V | 107 | 214 |
| ADG VI | 131 | 262 |

Open trenches or excavations are not permitted within the TSA while the taxiway is open. The Contractor must backfill trenches before the taxiway is opened. Coverings are not allowed in taxiway safety areas.

After the taxiway has been closed, the Contractor must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the Airport, and light them with red lights during hours of restricted visibility or darkness.

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.

d. Taxiway/Taxilane Object Free Area (TOFA/TLOFA)

Unlike the ROFA, aircraft wings regularly penetrate the taxiway and taxilane object free areas during normal operations. Thus the restrictions are more stringent. No construction may occur within the TOFA while the taxiway is open for aircraft operations.

| Taxiway/Taxilane | TOFA/TLOFA Distance from Centerline (ft) | TOFA/TLOFA Width (ft) |
|------------------|------------------------------------------|-----------------------|
| ADG II | 65.5/57.5 | 131/115 |
| ADG III | 93/81 | 186/162 |
| ADG IV | 129.5/112.5 | 259/225 |
| ADG V | 160/138 | 320/276 |
| ADG VI | 193/167 | 386/334 |

Reference Section C.2, Phasing, of this document for details on taxiway and taxilane closures associated with this project.

e. Obstacle Free Zone (OFZ)

Construction personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. The OFZ is a defined volume of airspace centered about and above the runway centerline.

It is not anticipated that any construction activities will take place within or otherwise penetrate the OFZ for this project.

f. Runway Approach/Departure Surfaces

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces. 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.

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

It is not anticipated that there will be any impacts to the approach departure surfaces by construction activity.

18. Other Limitations on Construction

a. Prohibitions

The following prohibitions are in effect for the duration of this project:

- 1) No use of tall equipment (cranes, concrete pumps, and so on) unless a *FAA Form 7460-1* determination letter is issued for such equipment.
- 2) No uses of open flame welding or torches unless fire safety precautions are provided and the Airport has approved their use.
- 3) No use of electrical blasting caps or explosives of any kind on or within 1,000 ft. (300 m) of the airport property.
- 4) No use of flare pots within the AOA.

b. Restrictions

- 1) Construction suspension required during specific Airport Operations – N/A
- 2) Areas that cannot be worked on simultaneously – Contractor shall follow phasing notes as shown in the plans.
- 3) Day or night construction restrictions – For the performance of any night work, reference Section C.5.b, Vehicle and Pedestrian Operations, of this document.

- 4) Seasonal construction restrictions – Work schedules are restricted during the periods noted below. No runway closures or removal of any NAVAIDS from service shall be allowed during these periods. No new airfield pavement closures shall occur during these periods, though work shall continue on pavements that have already been closed prior to the periods noted below. No shifts of phasing will be permitted during these periods, though work shall continue on phases that have already commenced prior to the periods noted below. The Contractor shall prepare any closed runway pavements to be opened during these periods, including, but not limited to, removal of all barricades and pavement closure devices, replacement of pavement markings, and return to service of any temporarily disabled NAVAIDs. The Contractor shall additionally prepare any other possible airfield pavements to be opened during these periods. The Contractor shall anticipate increased aircraft traffic during these periods that may impact access routes and active pavement crossing points. The Contractor shall coordinate requirements with HAS Airport Operations. No construction will be permitted on JFK Blvd., Will Clayton Parkway, or the Terminal Loop Roads during these periods. This work shall be considered subsidiary to the cost of the project and shall not be measured or paid for separately.
- Thanksgiving – Beginning at 6:00 a.m. CST (0600 hours) on the Tuesday before Thanksgiving and ending 11:59 p.m. CST (2359 hours) on the Monday after Thanksgiving.
 - Christmas – Beginning at 6:00 a.m. CST (0600 hours) on December 18 and ending 11:59 p.m. CST (2359 hours) on January 3.
- 5) HAS reserves the right to suspend construction operations for short periods of time (i.e. while an aircraft passes), daily, or between construction phases, and / or change the order of construction phasing during the project if it is determined to be in the best interest of airport operations or safety. The contractor may be directed to move personnel, equipment, and materials to a safe location and / or evacuate the site in order to enable aircraft operations. Necessary extensions in contract time will be granted or a stop work order will be issued due to these delays. However, there will be no adjustments in contract price due to these delays, unless otherwise noted in the contract documents.

ATTACHMENT A

SAFETY, SECURITY, AND PHASING EXHIBITS

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AIRPORT SAFETY REQUIREMENTS

1. THE CONTRACTOR SHALL FAMILIARIZE HIS / HER SUPERVISORS AND EMPLOYEES WITH THE CONSTRUCTION ACTIVITY THAT WILL BE INHERENT TO THIS ACTIVE AIR CARRIER AIRPORT. THE CONTRACTOR SHALL STAFF AND TRAIN ALL PERSONNEL TO COMPLY WITH ALL ROUTINE AND EMERGENCY AIR TRAFFIC REQUIREMENTS AND GUIDELINES ON SAFETY AS SPECIFIED HEREIN OR AS DIRECTED BY THE OWNER.
2. ALL CONSTRUCTION PERSONNEL SHALL ATTEND A DAILY SAFETY BRIEFING PRIOR TO COMMENCING WORK FOR THE DAY. THESE MEETINGS SHALL BE MADE AVAILABLE TO THE OWNER, OWNER'S REPRESENTATIVE, AIRPORT OPERATIONS, AND ANY OTHER GOVERNING AUTHORITY THAT WOULD LIKE TO ATTEND. THERE SHALL ALSO BE A MANDATORY WEEKLY CONSTRUCTION MEETING, THE DATE AND TIME OF WHICH WILL BE ESTABLISHED PRIOR TO THE START OF CONSTRUCTION, WITH AIRPORT OPERATIONS THAT MUST BE ATTENDED BY THE CONTRACTOR'S SENIOR FIELD STAFF, INCLUDING BUT NOT LIMITED TO SUPERINTENDENTS AND TEAM LEADERS. THESE MEETINGS SHALL BE CONDUCTED BILINGUALLY IN ENGLISH AND SPANISH.
3. CONSTRUCTION PERSONNEL AND EQUIPMENT WILL NOT BE ALLOWED WITHIN THE PROJECT WORK AREA UNTIL THE AREA HAS BEEN CLOSED TO AIRCRAFT AND THE APPROPRIATE NOTAMS HAVE BEEN ISSUED.
4. THE CONTRACTOR SHALL BE AWARE THAT CONSTRUCTION MAY OCCUR ADJACENT TO ACTIVE AIRFIELD PAVEMENTS. CONSTRUCTION TRAFFIC SHALL YIELD TO AIRCRAFT AT ALL TIMES.
5. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMAN AT ANY ACTIVE AIRFIELD PAVEMENT CROSSING, AS SHOWN IN THE PLANS, AND AS DIRECTED BY THE OWNER. THE FLAGMANS SHALL BE REQUESTED BY AIRPORT OPERATIONS SHALL BE PROVIDED AT NO ADDITIONAL EXPENSE TO THE OWNER. THE FLAGMEN WILL BE RESPONSIBLE FOR STOPPING OR SLOWING CONSTRUCTION EQUIPMENT THAT CROSSES THE PATH OF TAKING AIRCRAFT. PROPOSED FLAGMAN ROUTES SHALL BE IDENTIFIED AND APPROVED BY AIRPORT OPERATIONS, IN ACCORDANCE WITH SECTION 01330 - SUBMITTAL PROCEDURES, FOR REVIEW AND APPROVAL. FLAGMANS SHALL NOT DIRECT AIRCRAFT MOVEMENT AS THIS IS THE RESPONSIBILITY OF AIRPORT OPERATIONS AND THE ACT. ALL COSTS ASSOCIATED WITH FLAGMEN INCLUDING LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.
6. ALL CONTRACTOR VEHICLES AND TRAFFIC SHALL REMAIN WITHIN THE DESIGNATED CONSTRUCTION LIMITS OR HAIL ROUTES. ABSOLUTELY NO CONTRACTOR VEHICLES OR EQUIPMENT SHALL BE ALLOWED ON AIRFIELD PAVEMENTS, UNLESS OTHERWISE APPROVED BY AIRPORT OPERATIONS. FLAGMEN WILL BE REQUIRED TO DIRECT THE CONTRACTOR'S VEHICLES AND EQUIPMENT AT ALL TIMES WHENEVER CONSTRUCTION ACCESS IS REQUIRED ACROSS ANY ACTIVE AIRFIELD PAVEMENT. THIS SHALL INCLUDE PREPARATION AND CONCLUSIVE WORK AT THE BEGINNING OR END OF CONSTRUCTION PHASES, SUCH AS, BUT NOT LIMITED TO: INSTALLING AND / OR REMOVING BARRICADES OR TEMPORARY PAVEMENT MARKINGS; REMOVAL, TEMPORARY DISABLING OF, AND / OR INSTALLATION OF ELECTRICAL COMPONENTS; AND / OR CLEANING OF WORK AREAS.
 - A. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE NUMBER OF SWEEPERS AND EQUIPMENT TO MAINTAIN CLEAN, SAFE, AND ACTIVE AIRFIELD PAVEMENTS WITHIN THE LIMITS OF WORK, AND ANY OTHER PAVEMENT AREAS TRAVERSED BY THE CONTRACTOR'S VEHICLES AND EQUIPMENT. SWEEPERS SHALL BE OPERATED ON DIRT, DEBRIS, WASTE, LOOSE MATERIAL, AND ANY OTHER FOD CAPABLE OF CAUSING DAMAGE TO AIRCRAFT LANDING GEARS OR PROPPELLERS AND / OR BEING INJURIOUS TO AIRCRAFT. THE CONTRACTOR SHALL PROVIDE A SWEEPER AND VACUUM TRUCK AT EACH ACTIVE AIRFIELD PAVEMENT CROSSING STATIONED OUTSIDE THE OFA, NO LESS THAN TWO (2) SWEEPERS AND TWO (2) VACUUM TRUCKS SHALL BE ON SITE FOR THE DURATION OF THE PROJECT. REGARDLESS OF THE NUMBER OF ACTIVE AIRFIELD PAVEMENT CROSSINGS, THE CONTRACTOR SHALL SWEEP AND / OR VACUUM, IMMEDIATELY AFTER EACH ACTIVE AIRFIELD PAVEMENT CROSSING BY THE CONTRACTOR'S VEHICLE OR EQUIPMENT, OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL ADDITIONALLY ENSURE THAT ALL ACTIVE AIRFIELD PAVEMENTS AFFECTED BY CONSTRUCTION OPERATIONS ARE KEPT FREE OF ANY AND ALL FOD DEPOSITED AS THE RESULT OF ANY SOURCE.
7. ALL CONTRACTOR VEHICLES AND EQUIPMENT THAT ARE AUTHORIZED TO OPERATE ON THE AIRPORT IN THE ACTIVE AOA SHALL MEET THE FOLLOWING REQUIREMENTS:
 - A. DISPLAY A COMPANY LOGO / PLACARD IDENTIFYING THE VEHICLE WITH BLOCK-TYPE CHARACTERS OF CONTRASTING COLOR THAT ARE EASILY LEGIBLE AT 150 FEET;
 - B. DISPLAY A FLASHING AMBER (YELLOW) DOME-TYPE LIGHT ON TOP OF THE VEHICLE AND OF SUCH INTENSITY TO CONFORM TO LOCAL CODES FOR MAINTENANCE AND EMERGENCY VEHICLES. A 3 FEET X 3 FEET OR LARGER, ORANGE AND WHITE CHECKERBOARD CONSTRUCTION SAFETY FLAG, EACH WITH CORNERBOARD COLOR BEING 1-FOOT, MAY BE FIXED ABOVE THE VEHICLE TO SUPPLEMENT THE FLASHING LIGHT FOR OR TRANSPARENT VEHICLES OR THOSE SPECIFICALLY ON SITE FOR THE DAY TO COMPLETE A SPECIAL TASK DURING DAYTIME OPERATIONS ONLY.
 - C. BE ESCORTED UNDER THE CONTROL OF A CONTRACTOR ESCORT MONITORING CONTROL RADIO FREQUENCY.

ANY VEHICLE OPERATING IN THE AOA DURING THE HOURS OF DARKNESS SHALL BE EQUIPPED WITH FLASHING AMBER (YELLOW) DOME-TYPE LIGHT. ALL COSTS ASSOCIATED WITH VEHICLE AND EQUIPMENT IDENTIFICATION SHALL BE CONSIDERED PART OF THE EQUIPMENT PROVIDED BY THE CONTRACTOR AND SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.

 - B. THE CONTRACTOR SHALL SUPPLY AVIATION BAND RADIOS TO EACH SUPERVISORY INDIVIDUAL AND CONTRACTOR LEAD / ESCORT VEHICLE, TO CONTINUOUSLY MONITOR CONTROL FREQUENCY ON 119.95 MHz.
 - A. ALL NON-RADIO EQUIPPED CONTRACTOR VEHICLES AND EQUIPMENT THAT ARE REQUIRED TO OPERATE WITHIN THE AOA SHALL DO SO UNDER THE DIRECT CONTROL OF AN AIRPORT-APPROVED AND BAGGED ESCORT VEHICLE.
 - B. PORTABLE HAND-HELD RADIOS SHOULD BE PROVIDED TO ANY CONTRACTOR EMPLOYEES THAT WE BE OPERATING OUTSIDE OF THEIR VEHICLES OR EQUIPMENT, MEANING AWAY FROM HARD-WIRED RADIO SYSTEMS.
 - C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING, IN WORKING ORDER, ALL RADIOS AT ALL TIMES FOR THE DURATION OF THE PROJECT. SHOULD THE CONTRACTOR FAIL TO PROVIDE

- WORKING RADIOS AT ANY POINT DURING CONSTRUCTION OPERATIONS, THE OWNER MAY CHOOSE TO CESSATE SUCH CONSTRUCTION ACTIVITY UNTIL WORKING RADIOS ARE PROVIDED. SUCH STOPPAGE SHALL NOT AFFECT OVERALL OR PHASE DURATIONS OF THE CONTRACT.
- D. CONTRACTOR RADIOS SHALL BE USED FOR MONITORING PURPOSES ONLY AND SHALL NOT BE USED TO COMMUNICATE WITH THE ACT. ALL COMMUNICATION WITH THE ACT OR OTHER ELEMENTS OF THE AIRPORT SHALL BE THROUGH THE OWNER'S REPRESENTATIVE, AIRPORT OPERATIONS, AND / OR ENGINEER, AS APPROPRIATE.
9. EACH FLAGMAN, SUPERVISORY INDIVIDUAL AND CONTRACTOR LEAD / ESCORT VEHICLE SHALL BE REQUIRED TO MONITOR TRUCK RADIOS AND / OR HAVE MOBILE PHONES FOR SENDING AND RECEIVING INSTRUCTIONS AT ALL TIMES. SUCH RADIOS AND / OR MOBILE PHONES SHALL BE USED ONLY FOR THE CONTRACTOR'S INTERNAL COMMUNICATIONS. USE OF RADIOS SHALL NOT INTERFERE WITH FREQUENCIES USED BY ATCT OR AIRPORT OPERATIONS. USE OF MOBILE PHONES SHALL BE RESTRICTED TO WORK-RELATED CALLS WITHIN THE AOA. NO PERSONAL CALLS WILL BE ALLOWED. THE CONTRACTOR SHALL MAINTAIN AN UP-TO-DATE CONTACT LIST WITH AIRPORT OPERATIONS FOR THE DURATION OF ALL PHASES OF WORK.
 10. CONSTRUCTION EQUIPMENT AND VEHICLES SHALL NOT EXCEED 15 MPH WITHIN THE AOA. REQUESTED ADJUSTMENTS TO HAIL ROUTE SPEEDS MAY BE SUBMITTED TO (VA RF), REVIEWED, COORDINATED, AND APPROVED BY AIRPORT OPERATIONS.
 11. PRIOR TO COMMENCING WORK IN ANY AREA OF THE AOA, THE CONTRACTOR SHALL SUBMIT A WAN AS ATTACHED IN SECTION 01761 - PROTECTION OF EXISTING SERVICES, TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL. THE WAN SHALL BE PERMITTED WITHOUT AN APPROVED WAN, WANS WILL BE PRESENTED TO STAKEHOLDERS BY THE OWNER ON TUESDAYS. WANS SHALL BE SUBMITTED A MINIMUM OF 72 HOURS PRIOR TO THE TUESDAY IN WHICH THE WAN WILL BE PRESENTED TO STAKEHOLDERS. THE WAN SHALL INCLUDE, AT MINIMUM, THE SCOPE AND SCHEDULE OF WORK, THE LOCATION OF WORK, THE CONTRACTOR'S CONTACT PERSON INFORMATION FOR THE PROPOSED WORK, THE CONTRACTOR'S CONTACT PERSON INFORMATION FOR THE CONSTRUCTION CONTACT SHOWING THE PROPOSED WORK OF THE SPECIFIC WAN.
 12. NO AIRFIELD PAVEMENTS SHALL BE CLOSED WITHOUT WRITTEN APPROVAL OF AIRPORT OPERATIONS. TO ENABLE APPROPRIATE NOTAMS OR ADVISORIES TO AIRPORT SERVICES OR TENANTS, A MINIMUM OF TEN (10) DAYS WRITTEN NOTICE INCLUDING CLOSING SHALL BE DIRECTED TO AIRPORT OPERATIONS. THIS SHALL REQUIRE THE SUBMISSION OF A WAN.
 13. AIRPORT OPERATIONS SHALL, AT ALL TIMES, HAVE COMPLETE JURISDICTION OVER THE SAFETY OF ALL AIRCRAFT OPERATIONS DURING THE WORK. WHEREVER THE SAFETY OR AIR TRAFFIC IS CONCERNED, THE DECISIONS OF THE AIRPORT DIRECTOR OR HIS / HER DESIGNATED REPRESENTATIVE, SHALL BE FINAL AS TO METHODS, PROCEDURES AND MEASURES USED.
 14. PRIOR TO OPENING FOR AIRCRAFT USE AND THE DEPARTURE OF THE CONTRACTOR'S WORK CREWS, THE OWNER'S REPRESENTATIVE WILL ARRANGE FOR INSPECTION BY AIRPORT OPERATIONS OF ANY AIRFIELD PAVEMENT, TSA OFA, OFA, OR TOFA THAT HAS BEEN CLOSED FOR WORK, OR THAT HAS BEEN USED FOR A CROSSING POINT OR HAIL ROUTE BY THE CONTRACTOR. THESE AREAS MUST COMPLY WITH THE SAFETY REQUIREMENTS, DEFINED BY FEDERAL AVIATION REGULATIONS PART 139, AS INTERPRETED BY THE DESIGNATED OPERATOR'S INSPECTOR, BEFORE RETURN FOR THE CONTRACTOR'S WORK CREWS TO DEPART WILL BE GRANTED.
 15. THE CONTRACTOR IS DIRECTED TO COMPLY WITH AND ACQUAINT HIS / HER EMPLOYEES WITH CURRENT EDITION, LATEST CHANGE, OF THE FOLLOWING SAFETY FAA ADVISORY CIRCULARS:
 - A. 150 / 5370-2, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION;
 - B. 150 / 5200-18, AIRPORT SAFETY-SELF INSPECTION; AND
 - C. 150 / 5210-5, PAINTING, MARKING AND LIGHTING OF VEHICLES USED ON AIRPORTS.

THESE DOCUMENTS AND RELATED REQUIREMENTS ARE DESCRIBED IN MORE DETAIL IN THE CONTRACT SPECIFICATIONS.
 16. ALL CONTRACTOR PERSONNEL SHALL COMPLY WITH THE AIRPORT'S SAFETY PLAN, THE SAFETY PLAN, ID, AND SECURITY PROGRAMS ARE UNDER CONSTANT REVIEW BY THE TRANSPORTATION SECURITY ADMINISTRATION AND ARE SUBJECT TO CHANGE. THE CONTRACTOR SHALL COMPLY WITH ALL CHANGES TO THE NOTED PROGRAMS AT NO ADDITIONAL COMPENSATION.
 17. THE CONTRACTOR SHALL CONFINE HIS / HER PERSONNEL, EQUIPMENT, OPERATIONS AND TRAVEL TO THE AREA WITHIN THE DEFINED WORK LIMITS SHOWN IN THE PLANS. THE CONTRACTOR SHALL NOT ALLOW EMPLOYEES, SUBCONTRACTORS, SUPPLIERS, OR ANY PERSON UNDER CONTRACT TO ENTER OR REMAIN IN ANY PART OF THE AIRPORT WHICH WOULD BE HAZARDOUS TO PERSONS OR TO AIRCRAFT OPERATIONS. THE CONTRACTOR SHALL INFORM ALL CONSTRUCTION PERSONNEL OF THE PROPER ROUTES, SPEEDS, AND PROCEDURES FOR TRANSPORTING EQUIPMENT AND MATERIALS TO THE CONSTRUCTION SITE AND ALL RESTRICTIONS TO MOVEMENT OF EQUIPMENT OR PERSONNEL WITHIN THE AIR OPERATIONS AREA, ON A DAILY BASIS AND MORE OFTEN IF NECESSARY, ALL PERSONNEL SHALL BE ADVISED OF ANY CHANGES IN AIRPORT OPERATIONS THAT MAY FURTHER RESTRICT THEIR MOVEMENT.
 18. HAS RESERVES THE RIGHT TO SUSPEND CONSTRUCTION OPERATIONS FOR SHORT PERIODS OF TIME (I.E. WHILE AN AIRCRAFT PASSES), DAILY OR BETWEEN CONSTRUCTION PHASES, AND / OR CANCELS THE ORDER OF CONSTRUCTION PHASING DURING THE PROJECT IF IT IS DETERMINED TO BE IN THE BEST INTEREST OF AIRPORT OPERATIONS OR SAFETY. THE CONTRACTOR MAY BE DIRECTED TO MOVE PERSONNEL, EQUIPMENT, AND MATERIALS TO A SAFE LOCATION AND / OR EVACUATE THE SITE IN ORDER TO ENABLE AIRCRAFT OPERATIONS. NECESSARY WORK ORDER WILL BE ISSUED DUE TO THESE DELAYS. HOWEVER, THERE WILL BE NO ADJUSTMENTS IN CONTRACT PRICES DUE TO THESE DELAYS, UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS.
 19. THE CONTRACTOR SHALL ALSO SUBMIT A DESTRUCTIVE / INCLEMENT WEATHER PLAN, IN ACCORDANCE WITH SECTION 01330 - SUBMITTAL PROCEDURES, TO SET FORTH GENERAL GUIDANCE AND INFORMATION FOR THE CONTRACTOR TO COORDINATE PREPAREDNESS PLANS WHEN DESTRUCTIVE WEATHER THREATENS THE AIRPORT ENVIRONMENT.

20. THE CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL, IN ACCORDANCE WITH SECTION 01330 - SUBMITTAL PROCEDURES, A SPCD IN ACCORDANCE WITH FAA AC 150 / 5370-2, CURRENT EDITION, LATEST CHANGE, AND THE FAA'S SPCD MANUAL. THE SPCD SHALL BE SUBMITTED TO A NOTICE TO PROCEED BEING ISSUED, FOR ADDITIONAL SPCD REQUIREMENTS, REFER TO THE CSPP, SECTION 01506 - AIRPORT AND TEMPORARY CONSTRUCTION 01550 - PUBLIC SAFETY AND CONTRACTOR'S SAFETY STAFFING.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL NECESSARY BARRICADES TO MARK CONSTRUCTION AREAS, HAZARDOUS MATERIALS, AND OTHER AREAS. PROMINENTLY MARK OPEN TRENCHES AND EXCAVATIONS AT THE CONSTRUCTION SITE WITH RED OR ORANGE FLAGS, AS APPROVED BY AIRPORT OPERATIONS, AND LIGHT THEM WITH RED LIGHTS DURING RESTRICTED VISIBILITY OR DARKNESS. THE CONTRACTOR SHALL ADDITIONALLY HAVE ALL ACCESS GATES MARKED AND LOCKABLE, AND HAVE ALL VEHICLES AND EQUIPMENT EITHER FLAGGED OR LIGHTED. THE ENTRANCES TO CLOSED PAVEMENTS SHALL BE BARRICADED TO PREVENT AIRCRAFT FROM ENTERING UNSAFE OR HAZARDOUS OPERATIONAL AREAS. BARRICADES SHALL BE INTEGRATED AS A PART OF THE SPCD. THE CONTRACTOR SHALL INSTALL THE COMPONENTS OF THE PLAN AT THE APPROPRIATE TIMES AS SPECIFIED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL INSPECT EVERY ASPECT OF THE SPCD OR AT LEAST A DAILY BASIS AND ENSURE ALL COMPONENTS ARE FUNCTIONING PROPERLY. AIRPORT OPERATIONS WILL ALSO FREQUENTLY INSPECT THE SYSTEM AND IF ANY DEFICIENCIES ARE NOTED, THE CONTRACTOR SHALL IMMEDIATELY CORRECT ANY AND ALL DEFICIENCIES. THE CONTRACTOR SHALL REGULARLY CHECK THE FLASHING LIGHTS ON ALL BARRICADES, ON A DAILY BASIS, 30 MINUTES BEFORE SUNSET FOR EACH OPERATING CONTRACTOR OR AIRPORT OPERATIONS. THE SYSTEM ELEMENTS TO BE INSPECTED AND DEFICIENCIES NOTED ARE AS FOLLOWS:
 - A. BARRICADES SET PROPERLY AND ALL FLASHING WARNING LIGHTS OPERATING PROPERLY.
 - B. ALL CONTRACTOR PERSONNEL AND EQUIPMENT ACCESS GATES MARKED AND SECURITY PROCEDURES IN PLACE.
 - C. ALL VEHICLES AND EQUIPMENT LIGHTED, A CONSTRUCTION SAFETY FLAG MAY BE USED TO SUPPLEMENT THE FLASHING LIGHT OR FOR TRANSPARENT TRUCKS DELIVERING MATERIALS DURING DAYTIME OPERATIONS.
 - D. CONTRACTOR USE OF UNAUTHORIZED AIRPORT ACCESS GATES CHECKED.
 - E. ILLUMINATED RUNWAY CLOSURE LIGHTS IN POSITION AND OPERATIONAL, IF APPLICABLE.

AIRCRAFT OPERATIONS SHALL NOTIFY THE CONTRACTOR IN WRITING OF ANY OF THE ABOVE SAFETY AND SECURITY ITEMS FOUND TO BE DEFICIENT. ANY DEFICIENCIES NOTED BY AIRPORT OPERATIONS SHALL RESULT IN THAT DAY'S PRORATED SAFETY AND SECURITY BID ITEM, ESTABLISHED IN SECTION 01 35 13.14 - SAFETY AND SECURITY, BEING DEDUCTED PERMANENTLY FROM THE CONTRACTOR'S EARNINGS. THE CONTRACTOR SHALL MAKE A CONCERNED EFFORT TO ENSURE ALL WORKING SECURITY ELEMENTS ARE MAINTAINED THROUGHOUT EACH DAY DUE TO THE HEIGHTENED SECURITY STATUS OF THE AIRPORT AND THE CONSIDERABLE LIABILITY ASSOCIATED WITH THE SAFETY AND SECURITY ELEMENTS REQUIRED FOR THE WORK.
22. CLOSED TAXWAYS AND / OR RUNWAY SHALL BE BARRICADED OFF AT INTERSECTIONS WITH AIR TAXIWAYS AND / OR TAXWAYS. THE CONTRACTOR SHALL HAVE PERSONNEL ON CALL 24 HOURS PER DAY FOR EMERGENCY MAINTENANCE OF AIRPORT HAZARD LIGHTING AND BARRICADES.
23. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO ENSURE THE SAFETY OF OPERATING AIRCRAFT AS WELL AS HIS / HER OWN EQUIPMENT AND PERSONNEL. SPECIAL CONSIDERATIONS SHOULD BE GIVEN TO FLIGHT SCHEDULES AND MISCELLANEOUS AIRCRAFT OPERATIONS. THE CONTRACTOR SHALL OBEY ALL INSTRUCTIONS AS TO ROUTES TO BE TAKEN BY VEHICLES AND EQUIPMENT TRAVELING WITHIN THE AOA AND KEEP SUCH VEHICLES AND EQUIPMENT MARKED WITH THE SPECIFIED AIRPORT SAFETY LIGHTS OR FLAGS. EQUIPMENT NOT ACTUALLY IN OPERATION SHALL BE PROHIBITED IN ANY ACTIVE OFA, OFZ, OR TOFA. PERSONNEL SHALL NOT ENTER ACTIVE AIRFIELD PAVEMENTS WITHOUT SPECIFIC PERMISSION.
24. THE CONTRACTOR SHALL COMPLY WITH ALL STEPS TO PROTECT THE EXISTING RUNWAY AND TAXIWAY LIGHTS AND SIGNS, NAVAIDS, UNDERGROUND CABLES, AND ASSOCIATED APPURTENANCES DURING CONSTRUCTION IN ORDER TO ENSURE CONTINUOUS OPERATION, UNLESS OTHERWISE NOTED IN THE PLANS.
25. FOR ANY RESTRICTIONS TO AIRCRAFT OPERATIONS, AIRPORT OPERATIONS SHALL GIVE PROPER NOTICE TO THE NEAREST FAA FLIGHT SERVICE STATION PRIOR TO THE START OF WORK, AND FOR ANY SUBSEQUENT CHANGES NEEDED IN THE NOTAM WHICH MAY BE ISSUED DURING THE PERIOD OF WORK REQUIRED FOR THE PROJECT.
26. ALL CONSTRUCTION SITE PERSONNEL SHALL WEAR HIGH-VISIBILITY WARNING VESTS, OR EQUIPMENT, WHEN NOT ATTENDED BY THE CONTRACTOR WITH ALL APPLICABLE OSHA, ANIA, REA, LOCAL STATE, AND / OR FEDERAL REGULATIONS.
27. ALL CONTRACTOR VEHICLES AND EQUIPMENT BROUGHT INTO THE AOA SHOULD BE SERVICED AND MAINTAINED PRIOR TO ENTERING THE AOA. MATERIALS, VEHICLES, AND EQUIPMENT SHOULD BE INSPECTED FOR LEAKS AND EXCESSIVE EXHAUST THAT MAY CAUSE ENVIRONMENTAL ISSUES. VEHICLES AND EQUIPMENT SHOULD BE MAINTAINED IN ENVIRONMENTALLY DETRIMENTAL CONDITIONS SHALL BE PROHIBITED FROM ENTERING THE AOA. HOWEVER, ALL CONTRACTOR PERSONNEL OPERATING ON THE AIRPORT SHALL BE RESPONSIBLE FOR THE SAFETY OF THE AIRPORT. THE CONTRACTOR SHALL NOTIFY AIRPORT OPERATIONS IMMEDIATELY AND EXPEDITIOUSLY CONTAIN AND CLEAN-UP SPILLS RESULTING FROM LEAKS OF HYDRAULIC FLUID, OR OTHER CHEMICAL FLUID LEAKS WITHIN ONE (1) HOUR OF THE SPILL OCCURRING. TRANSPORT AND HANDLING OF OTHER HAZARDOUS MATERIALS ON AN AIRPORT ARE SUBJECT TO THE FOLLOWING PROCEDURES. TO THAT END, THE CONTRACTOR IS REQUIRED TO DEVELOP AND IMPLEMENT A SPILL PREVENTION AND RESPONSE PLAN. PROCEDURES FOR EACH OPERATIONS. THE CONTRACTOR SHALL INCORPORATE THESE PROCEDURES INTO THE SPCD. THIS INCLUDES MAINTENANCE OF APPROPRIATE MSDS DATA, APPROPRIATE PREVENTION AND RESPONSE EQUIPMENT ON-SITE.

28. THE CONTRACTOR SHALL USE, MANAGE, HANDLE, AND DISPOSE OF ALL HAZARDOUS MATERIALS IN STRICT ACCORDANCE WITH ALL APPLICABLE ENVIRONMENTAL LAWS, FOR THE PURPOSES OF THIS CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING SAFETY FENCING, MARKINGS, AND WARNING DEVICES TO PROTECT HIS / HER OWN EQUIPMENT AND MATERIALS. ANY SECURITY MEASURES DEEMED NECESSARY BY THE CONTRACTOR IN THE PROTECTION OF HIS / HER OWN EQUIPMENT AND MATERIALS SHALL BE SUBMITTED TO AIRPORT OPERATIONS IN ACCORDANCE WITH SECTION 01330 - SUBMITTAL PROCEDURES. FOR REVIEW AND APPROVAL. TEMPORARY BARRICADES, FLAGGING AND FLASHING WARNING LIGHTS WILL BE REQUIRED AT OPERATIONS AREAS. ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF THESE ITEMS INCLUDING EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
29. CONSTRUCTION EQUIPMENT SHALL HAVE A MAXIMUM HEIGHT OF 25 FEET SHOULD THE USE OF CONSTRUCTION EQUIPMENT IN PROGRESS IS GREATER THAN 25 FEET BE REQUIRED, INCLUDING CRANES. THE CONTRACTOR SHALL SUBMIT FAA FORM 7460-1 TO THE FAA FOR APPROVAL. THE FAA MUST PROVIDE APPROVAL PRIOR TO USE OF THE REQUESTED EQUIPMENT - FAA RESPONSE TIME MAY TAKE 60-90 DAYS.
30. CONSTRUCTION ACTIVITIES ARE PROHIBITED IN ANY ACTIVE RSA, OFZ, OR TOFA. WHEN CONSTRUCTION, MEN, OR EQUIPMENT ARE WITHIN ANY RSA, OFZ, OR TOFA, THOSE AREAS WILL BE CLOSED TO ALL AIRCRAFT OPERATIONS OR RESTRICTED, UNLESS OTHERWISE INDICATED IN THE PHASING PLAN SHEETS OR AS APPROVED BY AIRPORT OPERATIONS.
31. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL SHEETING, SHORING AND BRACING IS DONE IN ACCORDANCE WITH CURRENT OSHA REGULATIONS AND REQUIREMENTS. SHEETING, SHORING AND BRACING IS CONSIDERED TO BE AN INCIDENTAL PART OF THE WORK AND SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS OF THE PROJECT, EXCEPT AS PROVIDED IN THE PROJECT MANUAL.
32. SPECIAL ATTENTION TO DUST CONTROL IS REQUIRED, PARTICULARLY WHEN EARTHWORK OR DRILLING OPERATIONS ARE IN PROGRESS. IN THE EVENT OF WIND AND WEATHER CONDITIONS CAUSE EXCESSIVE BLOWING OF DUST, THE CONTRACTOR SHALL BE REQUIRED TO APPLY WATER TO THE AREAS AS DIRECTED BY THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL REGULARLY APPLY WATER TO HAIL ROUTES TO KEEP DUST DOWN. THE CONTRACTOR SHALL HAVE PERSONNEL ON CALL 24 HOURS PER DAY FOR EMERGENCY DUST CONTROL OPERATIONS. THE CONTRACTOR PERSONNEL ON CALL FOR DUST CONTROL SHALL RESPOND WITHIN 20 MINUTES DURING TIMES WHEN THE CONTRACTOR IS ON SITE AND WITHIN TWO (2) HOURS WHEN NO WORK IS BEING PERFORMED.
33. AT THE COMPLETION OF EACH WORK PERIOD, THE CONTRACTOR SHALL CLEAN THE PROJECT WORK AREA AND REMOVE ALL EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE PROJECT WORK AREA. THE CONTRACTOR SHALL SWEEP AND / OR VACUUM ALL PAVEMENTS PRIOR TO LEAVING THE WORK AREA, OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL ENSURE THAT ALL ACTIVE AIRFIELD SURFACES AFFECTED BY CONSTRUCTION OPERATIONS ARE KEPT FREE OF ANY AND ALL FOD DEPOSITED BY EITHER CONSTRUCTION TRAFFIC, CONSTRUCTION OPERATIONS, WINDBLOWN DEBRIS, OR DEBRIS AS DEPOSITED AS THE RESULT OF ANY OTHER SOURCE. ANY DAMAGE TO AIRCRAFT ATTRIBUTABLE TO FOD FROM THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL COSTS ASSOCIATED WITH CLEANING, LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.

AIRPORT SECURITY REQUIREMENTS

1. THE CONTRACTOR SHALL BE REQUIRED TO ATTEND A SPECIAL SECURITY MEETING WITH AIRPORT SECURITY OFFICERS PRIOR TO CONSTRUCTION OPERATIONS. THIS MEETING WILL BE ATTENDED BY THE CONTRACTOR'S SENIOR FIELD STAFF, INCLUDING BUT NOT LIMITED TO SUPERINTENDENTS AND TEAM LEADERS.
2. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE AIRPORT SECURITY PLAN AND WITH THE SECURITY REQUIREMENTS SPECIFIED HEREIN AND AS REQUIRED BY AIRPORT OPERATIONS. THE CONTRACTOR SHALL DESIGNATE TO THE OWNER AND AIRPORT OPERATIONS, IN WRITING, THE NAME OF HIS / HER CONTRACTOR SECURITY AND SAFETY OFFICER (CSO). THE CSO SHALL REPRESENT THE CONTRACTOR ON ALL SECURITY REQUIREMENTS FOR THE CONTRACT. SEE SECTION 01 35 13.14, SAFETY AND SECURITY FOR CSO RESPONSIBILITIES.
3. ALL CONTRACTOR TRAFFIC AUTHORIZED TO ENTER THE AOA SHALL BE EXPERIENCED IN THE ROUTE OR GUIDED BY AN AIRPORT-APPROVED AND BAGGED ESCORT VEHICLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL TO AND FROM THE VARIOUS CONSTRUCTION AREAS ON THE SITE, AND FOR THE OPERATION AND SECURITY OF THE ACCESS GATE TO THE SITE. A CONTRACTOR'S FLAGMAN OR TRAFFIC CONTROL PERSON SHALL MONITOR AND COORDINATE ALL CONTRACTOR TRAFFIC AT THE ACCESS GATE WITH SECURITY. THE CONTRACTOR SHALL NOT PERMIT ANY UNAUTHORIZED PERSONNEL TO ENTER OR REMAIN AT THE SITE AND SHALL PROHIBIT PING-PONGING OF MULTIPLE VEHICLES BEHIND AN AUTHORIZED VEHICLE. ACCESS GATES TO THE SITE SHALL BE LOCKED AND SECURED AT ALL TIMES WHEN NOT ATTENDED BY THE CONTRACTOR. IF THE CONTRACTOR CHOOSES TO LEAVE ANY ACCESS GATE UNATTENDED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE SITE AND SHALL BE RESPONSIBLE FOR THE REQUIREMENTS OF THE AIRPORT OPERATIONS SECURITY PROGRAM. DIRECTIONAL SIGNING FROM THE ACCESS GATE ALONG THE DELIVERY ROUTE TO THE STORAGE AREA, PLANT SITE, OR WORK SITE SHALL BE AS DIRECTED BY AIRPORT OPERATIONS.
4. THE CONTRACTOR SHALL FURNISH TO THE GATE GUARD A LIST OF AUTHORIZED DELIVERY VEHICLES TO ENTER THE GATE AND RECORD THE VEHICLE LICENSE PLATE IN, AND THE TIME OUT FOR EACH VEHICLE USING THE GATE. THE GATE GUARD WILL ISSUE A PLACARD TO EACH DELIVERY VEHICLE. THE GATE GUARD WILL PLACE THE PLACARD IN THE FRONT WINDOW. THIS PLACARD WILL BE ISSUED UPON THE FIRST ENTRY TO THE SITE OF THE GATE, AND COLLECTED UPON THE LAST EXIT FROM THE SITE AT THE END OF THE DAY.
5. ALL CONTRACTOR'S MATERIAL ORDERS FOR DELIVERY TO THE WORK AREA WILL USE A DELIVERY ADDRESS, BY THE STREET NAME ASSIGNED TO THE ACCESS POINT AT THE CONTRACTOR'S STORAGE AREA AS SHOWN IN THE PROJECT PLANS. THE NAME "GEORGE BUSH INTERNATIONAL AIRPORT" SHALL BE USED INSTEAD OF "HUSTON AIRPORT" IN ALL DELIVERY ADDRESS. THIS PLACARD WILL NOT BE USED IN THE DELIVERY ADDRESS AT ANY TIME. THIS WILL PRECLUDE DELIVERY TRUCKS FROM ENTERING INTO THE TERMINAL CHAQUEL, OR TAKING SHORT CUTS THROUGH THE PERIMETER GATES AND INADVERTENTLY ENTERING THE AOA.

6. THE LIMITS OF CONSTRUCTION, MATERIAL STORAGE AREAS, PLANT SITE, EQUIPMENT STORAGE AREA, PARKING AREA AND OTHER AREAS DEFINED AS REQUIRED FOR THE CONTRACTOR'S EXCLUSIVE USE DURING CONSTRUCTION SHALL BE MARKED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING SAFETY FENCING, MARKINGS, AND WARNING DEVICES TO PROTECT HIS / HER OWN EQUIPMENT AND MATERIALS. ANY SECURITY MEASURES DEEMED NECESSARY BY THE CONTRACTOR IN THE PROTECTION OF HIS / HER OWN EQUIPMENT AND MATERIALS SHALL BE SUBMITTED TO AIRPORT OPERATIONS IN ACCORDANCE WITH SECTION 01330 - SUBMITTAL PROCEDURES. FOR REVIEW AND APPROVAL. TEMPORARY BARRICADES, FLAGGING AND FLASHING WARNING LIGHTS WILL BE REQUIRED AT OPERATIONS AREAS. ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF THESE ITEMS INCLUDING EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
7. ALL CONTRACTOR EMPLOYEES, SUBCONTRACTORS, AGENTS, VENDORS, INVITEES, ETC., REQUIRING ACCESS TO THE CONSTRUCTION SITE SHALL, IN ACCORDANCE WITH THE AIRPORT OPERATIONS SECURITY PROGRAM, BE REQUIRED TO DISPLAY AIRPORT ISSUED IDENTIFICATION OR BE UNDER AIRPORT-APPROVED AND BAGGED ESCORT PERSONNEL. THESE BADGES WILL BE IDENTIFIED NUMERICALLY AND ISSUED TO INDIVIDUAL EMPLOYEES WITH A PERMANENT RECORD MAINTAINED ON EACH INDIVIDUAL TO WHOM A BADGE IS ISSUED. IN ADDITION, 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 TRAINING BY AIRPORT OPERATIONS. IN ADDITION TO THE BAGGE APPLICATIONS, WHICH WILL INCLUDE AOA MOVEMENT REQUIREMENTS AND AIRPORT FAMILIARIZATION, ESTIMATED TIME FOR CONSTRUCTION IS TWO (2) HOURS. FLAGMEN MUST BE BAGGED AND MUST HAVE SUCCESSFULLY COMPLETED THE AIRPORT FLAGMAN TRAINING INSTRUCTED BY AIRPORT OPERATIONS. IN ADDITION TO THE REGULAR BAGGE AND AOA MOVEMENT TRAINING, PRIOR TO PERFORMING IN THAT CAPACITY ON AIRPORT PROPERTY, AT THE COMPLETION OF THE CONTRACT ALL BAGGES WILL BE RETURNED TO THE AIRPORT. A CHARGE OF \$100 PER BAGGE WILL BE ASSESSED FOR ALL UNRETURNED BAGGES. GATE GUARDS AND ESCORTS SHALL BE CONSIDERED UNDER THE FLAGMEN CLASSIFICATION AND SHALL BE SUBJECT TO THE SAME REQUIREMENTS AS FLAGMEN.
8. THE CONTRACTOR, THROUGH THE CSO, SHALL ESTABLISH AND MAINTAIN A LIST OF CONTRACTOR AND SUBCONTRACTOR VEHICLES AUTHORIZED TO OPERATE ON THE SITE AND SHALL ISSUE A PERMIT TO EACH VEHICLE TO BE MADE AVAILABLE UPON DEMAND BY AIRPORT OPERATIONS OR ANY AIRPORT REPRESENTATIVES. PERSONAL AND / OR CONTRACTOR EMPLOYEE VEHICLES SHALL BE RESTRICTED TO THE CONTRACTOR'S EMPLOYEE PARKING AREA AND ARE NOT ALLOWED ON THE AOA AT ANY TIME.
9. PAYMENT OF ALL FINES ASSESSED TO THE AIRPORT, DUE TO VIOLATIONS BY THE CONTRACTOR OF FAA / TRANSPORTATION SECURITY ADMINISTRATION SECURITY OR SAFETY REQUIREMENTS, SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE DEDUCTED FROM MONIES DUE THE CONTRACTOR.
 - A. IF A RESTRICTED AREA GATE IS FOUND TO BE OPEN OR UNLOCKED AND UNMANNED, AIRPORT SECURITY POLICE AND / OR TRANSPORTATION SECURITY ADMINISTRATION MAY ISSUE THE CONTRACTOR A CITATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COURT COSTS AND IMPOSED FINES. IN ADDITION, A CHARGE OF \$100 PER VIOLATION WILL BE ISSUED AND / OR TRANSPORTATION SECURITY ADMINISTRATION FOR EACH VIOLATION SO DOCUMENTED AND UPON THE REQUEST FOR FINAL PAYMENT OF THE TOTAL OF ANY SUCH CHARGES WILL BE DEDUCTED FROM MONIES DUE THE CONTRACTOR.
 - B. IN THE EVENT THE CONTRACTOR DEVIATES FROM THE IDENTIFIED CONSTRUCTION LIMITS AND / OR DESIGNATED HAIL ROUTES ONTO AN ACTIVE AIRFIELD PAVEMENT, THE CONTRACTOR WILL BE FINED \$1,000.00 PER OCCURRENCE WHICH WILL BE DEDUCTED FROM THE FINAL CONTRACT AMOUNT DUE THE CONTRACTOR. 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 (SEE CSPP IN PROJECT MANUAL FOR MORE DETAIL).
10. ANYONE FOUND IN VIOLATION OF AIRPORT RULES, REGULATIONS, AND SAFETY PLAN MAY BE PROMPTLY AND PERMANENTLY REMOVED FROM THE JOB SITE AND MAY BE SUBJECT TO ARREST FOR ALL PUNISHABLE STATE AND FEDERAL OFFENSES.

RECONSTRUCTION OF TAXWAY 'A' AT GEORGE BUSH INTERNATIONAL AIRPORT

SAFETY AND SECURITY NOTES

ISSUED FOR NO.

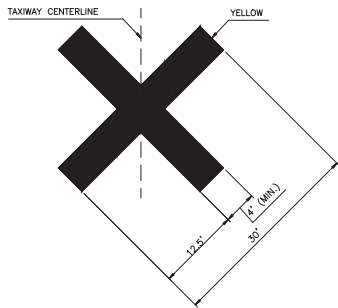
PROJECT MGR: BMS
 DESIGNER: EBN
 DRAWN BY: MFW
 CHECKED BY: SMC
 DATE: NTS
 DATE: JUL 27, 2018

DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
 HUSTON AIRPORT SYSTEMS AUTHORIZED REPRESENTATIVE

PROJECT NO: 0007
 C.I.P. NO: A-000570
 H.A.S. NO.:
 SHEET NO.

FOR ALL EMERGENCIES CONTACT GEORGE BUSH INTERNATIONAL AIRPORT RESCUE AND FIRE RESPONSE AT 911 FOLLOWED BY CALL TO HUSTON OPERATIONS (281) 233-1131

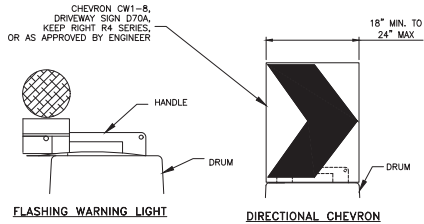
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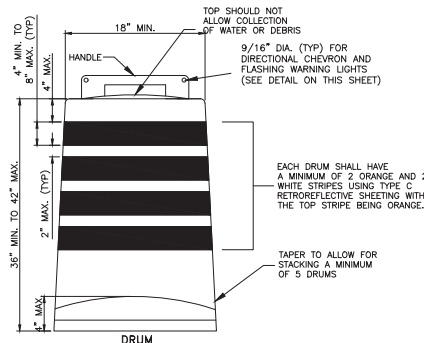
1. THE CONTRACTOR SHALL PROVIDE ONE UNIT TAXIWAY CLOSURE MARKER FOR IDENTIFICATION AT THE INTERSECTION OF THE RUNWAY AND TEMPORARILY CLOSED TAXIWAYS. REFER TO PHASING SHEETS FOR REQUIRED LOCATIONS DURING CORRESPONDING PHASES.
2. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN IN WORKING ORDER UNIT TAXIWAY CLOSURE MARKER DEVICES IN NEW OR GOOD CONDITION. UNIT TAXIWAY CLOSURE MARKER SHALL BE YELLOW AND SHALL BE ADEQUATELY SECURED AGAINST MOVEMENT DUE TO WIND AND/OR AIRCRAFT ENGINE THRUST. PLACEMENT, CONDITION, AND ANCHORAGE SHALL BE INSPECTED AND APPROVED BY AIRPORT OPERATIONS. PLACEMENT AND REMOVAL SHALL BE ONLY AT THE DIRECTION OF THE AIRPORT AND/OR ENGINEER. UNIT TAXIWAY CLOSURE MARKERS SHALL COMPLY WITH FAA AC 150/5370-2, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION, CURRENT EDITION, LATEST CHANGE, AND FAA AC 150/5340-1, STANDARD FAA AIRPORT MARKINGS, CURRENT EDITION, LATEST CHANGE.
3. AN UNIT TAXIWAY CLOSURE MARKER SHALL BE PLACED AT THE ENTRANCE TO THE CLOSED TAXIWAY FROM THE RUNWAY. PLACEMENT TIME SHALL BE COORDINATED WITH AIRPORT OPERATIONS.
4. ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF UNIT TAXIWAY CLOSURE MARKERS INCLUDING LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.

1 UNLIT TAXIWAY CLOSURE MARKER
SCALE:N.T.S.

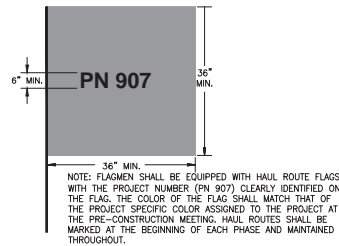


FLASHING WARNING LIGHT

DIRECTIONAL CHEVRON

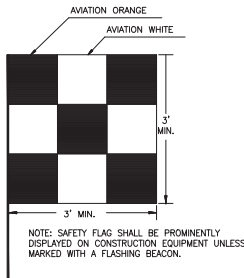


6 CONSTRUCTION BARREL AND TRAFFIC CONE BARRICADES
SCALE:N.T.S.



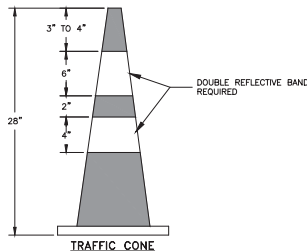
2 HAUL ROUTE FLAG

SCALE:N.T.S.



3 CONSTRUCTION SAFETY FLAG
SCALE:N.T.S.

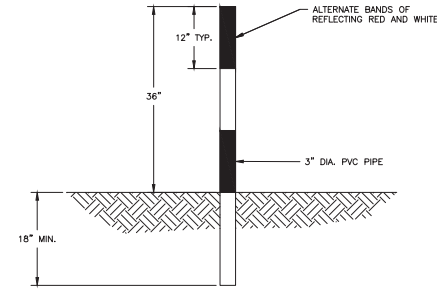
SCALE:N.T.S.



TRAFFIC CONE

NOTES:

1. DRUMS, TRAFFIC CONES, AND ALL RELATED ITEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE CURRENT VERSION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (TMUCD) AND THE "COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST" (CWZDLS).
2. DRUMS, CONES, BASES, AND RELATED MATERIALS SHALL EXHIBIT GOOD WORKMANSHIP AND SHALL BE FREE FROM OBJECTIONABLE MARKS OR DEFECTS THAT WOULD ADVERSELY AFFECT THEIR APPEARANCE OR SERVICEABILITY.
3. THE CONTRACTOR SHALL CONTINUOUSLY MAINTAIN THE PLACEMENT, LOCATION AND OPERATION OF ALL BARRICADES FOR THE DURATION OF THE PROJECT. BARRICADES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND THE OWNER AND ANY DEFICIENCIES FOUND SHALL BE CORRECTED IMMEDIATELY.
4. WARNING LIGHTS OR DIRECTIONAL CHEVRONS MAY BE INSTALLED ON A DRUM.
5. WARNING LIGHTS SHALL NOT BE INSTALLED ON A TRAFFIC CONE OR ON A DRUM THAT HAS A SIGN, CHEVRON, OR VERTICAL PANEL.
6. TRAFFIC CONES MAY BE USED FOR APPROVED TEMPORARY (LESS THAN 12 HOURS), AIRFIELD PAVEMENT CLOSURES. A MINIMUM OF FOUR TRAFFIC CONES OR ONE FOR EVERY 20 FEET OF PAVEMENT TO BE CLOSED (WHICHEVER IS GREATER) IS REQUIRED TO PROPERLY BARRICADE A SECTION OF PAVEMENT.
7. ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF BARRICADES INCLUDING LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.

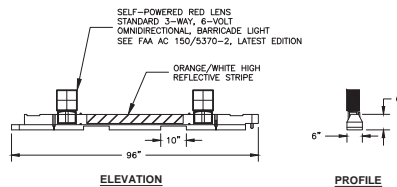


NOTES:

1. INFIELD MARKER POLE BARRICADES TO BE PLACED WHERE NOTED IN THE PLANS OR AS REQUIRED BY THE OWNER, SPACING TO BE 25 FEET MAXIMUM (CENTER TO CENTER).
2. INFIELD BARRICADES ARE ADEQUATELY SECURED AGAINST MOVEMENT DUE TO WIND AND / OR AIRCRAFT ENGINE THRUST.
3. THE CONTRACTOR SHALL CONTINUOUSLY MAINTAIN THE PLACEMENT, LOCATION AND OPERATION OF ALL BARRICADES FOR THE DURATION OF THE PROJECT. BARRICADES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND THE OWNER AND ANY DEFICIENCIES FOUND SHALL BE CORRECTED IMMEDIATELY.
4. ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF BARRICADES INCLUDING LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.

4 MARKER POLE BARRICADE
SCALE:N.T.S.

SCALE:N.T.S.



ELEVATION

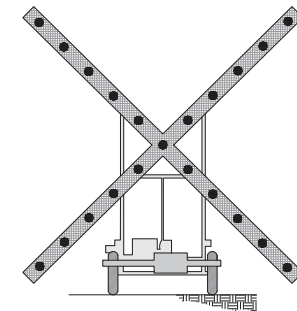
PROFILE

NOTES:

1. LOW-PROFILE BARRICADES SHALL BE FURNISHED AND PLACED BY THE CONTRACTOR WHERE NOTED IN THE PHASING PLANS OR AS REQUIRED BY THE OWNER.
 - A. ADDITIONAL BARRICADES SHALL BE PLACED BY THE CONTRACTOR AROUND ALL EXCAVATIONS EXCEEDING 3" IN DEPTH.
 - B. THE SPACING OF BARRICADES MUST BE SUCH THAT A BREACH IS PHYSICALLY PREVENTED BY A DELIBERATE ACT. BARRICADES SHALL BE CONTINUOUSLY LINKED EXCEPT WHERE GAPS BETWEEN BARRICADES ARE INTENDED TO ALLOW THE PASSAGE OF VEHICLES. THESE GAPS SHALL NOT EXCEED FIFTEEN (15) FEET. CONTINUOUS LINKING MAY BE ACCOMPLISHED THROUGH THE USE OF ROPES, SECURELY ATTACHED TO PREVENT FOD, THOUGH THE GAP BETWEEN PHYSICAL BARRICADES SHALL NOT EXCEED FOUR (4) FEET.
2. WEIGH DOWN EACH BARRICADE BY FILLING WITH WATER.
3. THE CONTRACTOR SHALL CONTINUOUSLY MAINTAIN THE PLACEMENT, LOCATION AND OPERATION OF ALL BARRICADES FOR THE DURATION OF THE PROJECT. BARRICADES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND THE OWNER AND ANY DEFICIENCIES FOUND SHALL BE CORRECTED IMMEDIATELY.
4. ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF LOW-PROFILE BARRICADES INCLUDING LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS. LOW PROFILE BARRICADES SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.

7 LOW-PROFILE BARRICADE
SCALE:N.T.S.

SCALE:N.T.S.

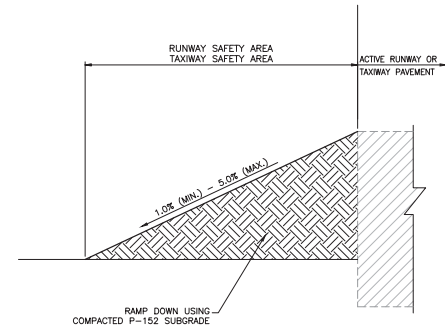


NOTES:

1. LIGHTED CLOSURE MARKERS SHALL BE PLACED ON EACH CLOSED RUNWAY END FACING THE RUNWAY APPROACH WHENEVER A RUNWAY IS CLOSED. PLACE CLOSURE MARKER ON OR AS NEAR AS PRACTICAL TO THE RUNWAY DESIGNATION MARKING.
2. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN IN WORKING ORDER (INCLUDING FUEL) LIGHTED RUNWAY CLOSURE DEVICES. PLACEMENT AND REMOVAL SHALL BE ONLY AT THE DIRECTION OF THE AIRPORT AND / OR ENGINEER. CLOSURE MARKERS SHALL BE NEW OR IN GOOD CONDITION. INSPECTED AND APPROVED BY AIRPORT OPERATIONS. CLOSURE MARKERS SHALL REMAIN IN PLACE FOR THE DURATION OF ANY RUNWAY CLOSURE AND SHALL RUN CONTINUOUSLY, UNLESS OTHERWISE DIRECTED BY AIRPORT STAFF.
3. LIGHTED RUNWAY CLOSURE MARKER SHALL COMPLY WITH FAA AC 150/5345-55, SPECIFICATION FOR L-893, LIGHTED VISUAL AID TO INDICATE TEMPORARY RUNWAY CLOSURE, CURRENT EDITION, LATEST CHANGE, AND FAA AC 150/5370-2, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION, CURRENT EDITION, LATEST CHANGE.
4. ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF LIGHTED RUNWAY CLOSURE MARKERS INCLUDING LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.

5 LIGHTED RUNWAY CLOSURE MARKER
SCALE:N.T.S.

SCALE:N.T.S.



NOTES:

1. OPEN EXCAVATIONS GREATER THAN 3 INCHES IN DEPTH ARE NOT ALLOWED WITHIN ANY ACTIVE RUNWAY OR TAXIWAY SAFETY AREA.
2. THE CONTRACTOR SHALL RAMP DOWN ANY OPEN ACTIVE CONSTRUCTION AREAS WITHIN 250' OF THE RUNWAY CENTERLINE, OR 193' OF ANY TAXIWAY CENTERLINE PRIOR TO OPENING THE RESPECTIVE AIRFIELD PAVEMENT TO AIRCRAFT OPERATIONS.
3. SAFETY AREA RAMP DOWNS SHALL BE INSTALLED TO THE LIMITS OF THE RUNWAY OR TAXIWAY SAFETY AREA AT A MINIMUM SLOPE OF 1:0R AND A MAXIMUM SLOPE OF 5:0R USING COMPACTED SOIL CONFORMING TO THE P-152 SPECIFICATION OR ANOTHER MATERIAL APPROVED BY THE ENGINEER.
4. ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF SAFETY AREA RAMP DOWNS INCLUDING LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.

8 TYPICAL SAFETY AREA RAMP DOWN DETAIL
SCALE:N.T.S.

SCALE:N.T.S.



| REVISIONS | NO. | DESCRIPTION | DATE | BY |
|-----------|-----|-------------|------|----|
| | | | | |

RECONSTRUCTION OF TAXIWAY NA
AT GEORGE BUSH INTERCONTINENTAL AIRPORT

SAFETY AND SECURITY DETAILS

| | |
|----------------|---------------|
| ISSUED FOR BID | |
| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | NTS |
| DATE: | JULY 27, 2018 |



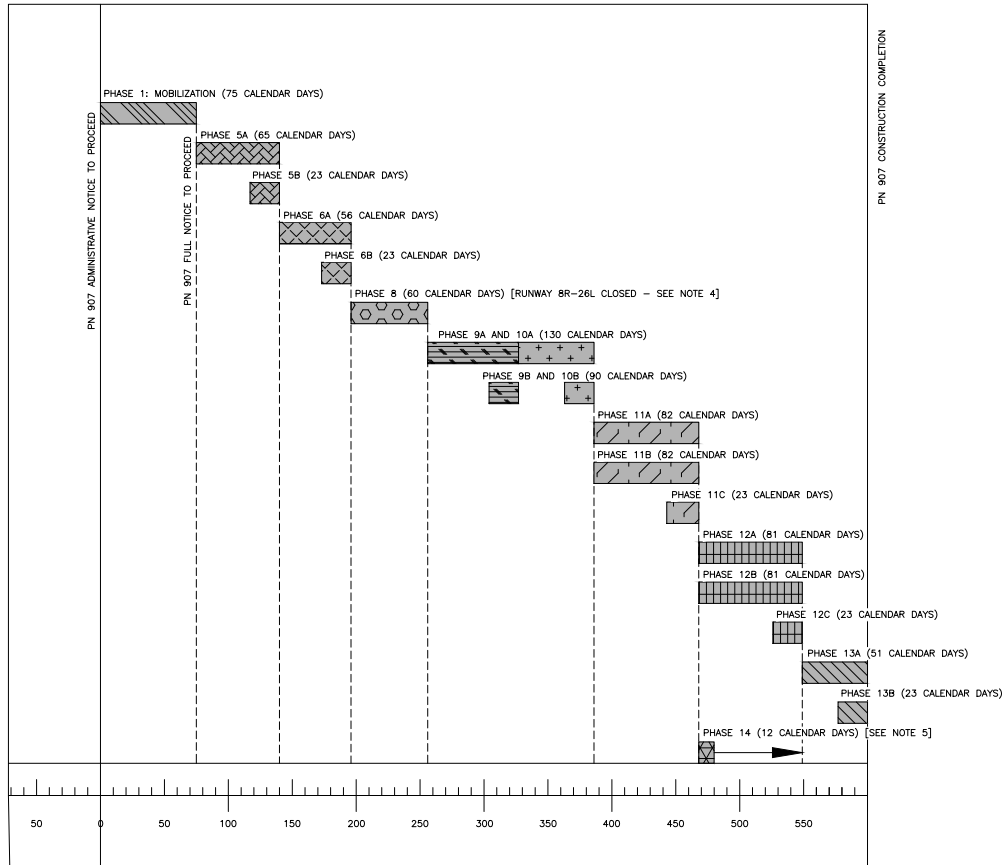
DEPARTMENT OF AVIATION
APPROVED BY: DATE: *Dave Robert*

| | |
|-------------|----------|
| PROJECT NO. | 0007 |
| C.I.P. NO. | A-000570 |
| N.A.S. NO. | |
| SHEET NO. | |

G04.03

PN 907

PN 907 CONSTRUCTION PHASE
DURATION 600 CONSECUTIVE
CALENDAR DAYS



NOTES:

1. PHASES 2, 3, 4, AND 7 COMPLETED UNDER PN 675.
2. HAS SHALL HAVE THE FINAL DIRECTION OF SCHEDULE. CONTRACTOR TO CONFIRM SCHEDULE WITH HAS.
- A. PHASE DURATIONS NOT INCLUDED IN CALCULATION OF OVERALL PROJECT DURATION.
- B. ASPHALT SECTIONS OF PHASE 3 HAUL ROADS COMPLETED UNDER PN 675 WERE CONSTRUCTED TO 100 FEET FROM ACTIVE AIRFIELD PAVEMENTS. CONTRACTOR MUST EXTEND ASPHALT SECTIONS TO 150 FEET FROM ACTIVE AIRFIELD PAVEMENTS. SEE NOTE 7.B ON PLAN SHEET G06.03.1. CONTRACTOR SHALL COMPLETE THIS WORK CONCURRENTLY WITH FIRST PHASE OF WORK AWARDED AFTER FULL NOTICE TO PROCEED IS AWARDED.
3. PHASE 1 WILL CONSIST OF A 75-DAY MOBILIZATION / PROCUREMENT / PREPARATION PERIOD. DURING THIS PERIOD, THE CONTRACTOR IS EXPECTED TO PERFORM THE FOLLOWING ACTIVITIES:
 - A. INITIATE THE BADGING AND SAFETY TRAINING PROCESSES FOR CONTRACTOR PERSONNEL IN ORDER TO HAVE A SUFFICIENT WORK FORCE PROPERLY BADGED PRIOR TO BEGINNING WORK.
 - B. THE CONTRACTOR SHALL BEGIN MOBILIZATION, INCLUDING FURNISHMENT AND SET UP OF THE FIELD OFFICES FOR BOTH THE CONTRACTOR AND THE ENGINEER, SET UP OF THE CONTRACTOR'S STAGING / STORAGE AREA AND CONCRETE BATCH PLANT SITE, AND PROCUREMENT OF PROJECT MATERIALS.
 - C. INSTALL APPROPRIATE TRAFFIC CONTROL DEVICES.
 - D. PREPARE MATERIAL SUBMITTALS, SHOP DRAWINGS, AND ANY RFIS AND SUBMIT FOR REVIEW, IN ACCORDANCE WITH SECTION 01330 - SUBMITTAL PROCEDURES. PARTICULAR ATTENTION SHOULD BE PAID TO CRITICAL SUBMITTALS, INCLUDING BUT NOT LIMITED TO SAFETY PLANS(S), QUALITY CONTROL PLANS(S), CONCRETE MIX DESIGNS, ASPHALT JOB MIX FORMULA(S) (JMF), ELECTRICAL ITEMS, AND OTHER LONG LEAD TIME ITEMS.
 - E. COMPLETE INITIAL SURVEY CHECKS AND VERIFICATION OF CONTROL MONUMENTS, ALONG WITH ESTABLISHMENT OF TEMPORARY BENCHMARKS.
 - F. PERFORM NECESSARY EXPLORATORY EXCAVATIONS FOR UNDERGROUND UTILITIES IN AIRPORT-APPROVED LOCATIONS.
 - G. PROCURE BARRICADES AND OTHER SAFETY ITEMS AND VERIFY SUFFICIENT QUANTITY TO CLOSE THE REQUIRED AREAS ONCE WORK IS AUTHORIZED TO BEGIN.
4. THE PHASE 8 RUNWAY CLOSURE SHALL BE COORDINATED WITH HAS. THE CONTRACTOR WILL BE ALLOWED 60 CALENDAR DAYS TO COMPLETE PHASE 8. THE CONTRACTOR IS EXPECTED TO WORK MULTIPLE SHIFTS TO PROVIDE SEVEN (7) DAYS PER WEEK, 20 HOURS PER DAY PRODUCTION WHEN POSSIBLE / PRACTICAL.
5. PHASE 14 MAY HAVE A FLEXIBLE START DATE, TO BE COMPLETED CONCURRENTLY WITH PHASE 12 (WITH APPROVAL BY AIRPORT OPERATIONS), OR AT AN ALTERNATE TIME TO BE COORDINATED WITH AIRPORT OPERATIONS.

NOTE: PHASES 2, 3, 4, AND 7
COMPLETED UNDER PN 675



RS&H
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11011 Richmond Ave., Suite 900
Houston, Texas 77042
713-914-4455 FAX 713-914-6155
www.rsandh.com
TSP# Registration No. 0-3401

REVISIONS

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| | | | |
| | | | |
| | | | |

RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
PROJECTED PROJECT SCHEDULE

ISSUED FOR BID

PROJECT MGR: BMS
DESIGNER: EBN
DRAWN BY: MRW
CHECKED BY: SMC
SCALE: NTS
DATE: April 19, 2019



DEPARTMENT OF AVIATION
APPROVED BY: DATE:

HOUSTON AIRPORT SYSTEMS
AUTHORIZED REPRESENTATIVE

PROJECT NO.
0907

C.I.P. NO.
A-000670

H.A.S. NO.

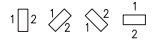
SHEET NO.

G06.00.2



| NO. | DESCRIPTION | DATE | BY |
|-----|-------------|------|----|
| | | | |

SIGN SIDE LEGEND:



TEMPORARY PANEL WITH PARTIAL LEGEND
 TEMPORARY 'BLANK' PANEL

GENERAL NOTES:

- REFER TO PHASING PLANS FOR LOCATION.
- FURNISH AND INSTALL TEMPORARY SIGN MODULES AS SHOWN BELOW. PAYMENT IS INCIDENTAL TO LINE ITEM 260505-19 'PROVIDE TEMPORARY SIGN PANELS DURING CONSTRUCTION FOR PHASING - PER EACH'.

| 'NA' TEMPORARY SIGN SCHEDULE | | | | | | | | | |
|------------------------------|---------------|--------------|-------------|-------------|-------------|-------------|-------------------|--|----------|
| FIELD TAG | FIELD CIRCUIT | SIGN MODULES | SIGN LEGEND | | TEMP LEGEND | | REFERENCE DRAWING | | |
| | | | SIDE 1 | SIDE 2 | SIDE 1 | SIDE 2 | | | |
| PHASE 4 | | | | | | | | | |
| 1 | 1aNSCW | SCW | 3 | \ NA NG | | \ NA NG | | | G06.04.3 |
| 2 | 1bNSCW | SCW | 3 | NG / NA \ | | NG / NA \ | | | G06.04.3 |
| 3 | 5NSCW | SCW | 3 | NR -- NA -- | | NR -- NA -- | | | G06.04.3 |
| 4 | 12NSCW | SCW | 3 | | NR -- NA -- | | NR -- NA -- | | G06.04.3 |
| 5 | 17aNSCW | SCW | 3 | \ NF NB | | \ NF NB | | | G06.04.3 |
| 6 | 17bNSCW | SCW | 2 | NF -- | | NF -- | | | G06.04.3 |
| 7 | 25NSCW | SCW | 3 | | NG -- NA -- | | NG -- NA -- | | G06.04.3 |
| 8 | 34aNSCW | SCW | 3 | | -- NF NB | | -- NF NB | | G06.04.3 |
| 9 | 34bNSCW | SCW | 2 | | NF \ | | NF \ | | G06.04.3 |
| 10 | 1aNSCE | SCE | 3 | / NA \ NG | | / NA \ NG | | | G06.04.3 |
| 11 | 1bNSCE | SCE | 3 | NH NA / | | NH NA / | | | G06.04.3 |
| PHASE 5 | | | | | | | | | |
| 1 | 36WSC1 | WSC1 | 3 | NE -- NA -- | | NE -- NA -- | | | G06.05.3 |
| 2 | 3aNSCW | SCW | 3 | / NA \ NF | | / NA \ NF | | | G06.05.3 |
| 3 | 3bNSCW | SCW | 3 | NF NA / | | NF NA / | | | G06.05.3 |
| 4 | 7NSCW | SCW | 3 | -- NA NE | | -- NA NE | | | G06.05.3 |
| 5 | 10NSCW | SCW | 3 | NE -- NA -- | | NE -- NA -- | | | G06.05.3 |
| 6 | 11NSCW | SCW | 3 | NB -- NR -- | | NB -- NR -- | | | G06.05.3 |
| 7 | 38NSCW | SCW | 3 | NB -- NR -- | | NB -- NR -- | | | G06.05.3 |
| PHASE 6 | | | | | | | | | |
| 1 | 35WSC1 | WSC1 | 3 | NB -- NE -- | | NB -- NE -- | | | G06.06.3 |
| 2 | 5NSCW | SCW | 3 | NR -- NA -- | | NR -- NA -- | | | G06.06.3 |
| 3 | 12NSCW | SCW | 3 | | NR -- NA -- | | NR -- NA -- | | G06.06.3 |
| 4 | 40NSCW | SCW | 3 | NB -- NE -- | | NB -- NE -- | | | G06.06.3 |
| PHASE 7 | | | | | | | | | |
| 1 | 1aNSCW | SCW | 3 | \ NA NG | | \ NA NG | | | G06.07.3 |
| 2 | 1bNSCW | SCW | 3 | NG / NA \ | | NG / NA \ | | | G06.07.3 |
| 3 | 3aNSCW | SCW | 3 | / NA \ NF | | / NA \ NF | | | G06.07.3 |
| 4 | 3bNSCW | SCW | 3 | NF NA / | | NF NA / | | | G06.07.3 |
| 5 | 18aNSCW | SCW | 2 | / NA \ | | / NA \ | | | G06.07.3 |
| 6 | 18bNSCW | SCW | 3 | NF NA / | | NF NA / | | | G06.07.3 |
| 7 | 22aNSCW | SCW | 3 | / NA NF | | / NA NF | | | G06.07.3 |
| 8 | 22bNSCW | SCW | 2 | NA / | | NA / | | | G06.07.3 |
| 9 | 25NSCW | SCW | 3 | | NG -- NA -- | | NG -- NA -- | | G06.07.3 |
| 10 | 1aNSCE | SCE | 3 | / NA \ NG | | / NA \ NG | | | G06.07.3 |
| 11 | 1bNSCE | SCE | 3 | NH NA / | | NH NA / | | | G06.07.3 |

| 'NA' TEMPORARY SIGN SCHEDULE | | | | | | | | | |
|------------------------------|---------------|--------------|-------------|-------------|-------------|-------------|-------------------|----------|----------|
| FIELD TAG | FIELD CIRCUIT | SIGN MODULES | SIGN LEGEND | | TEMP LEGEND | | REFERENCE DRAWING | | |
| | | | SIDE 1 | SIDE 2 | SIDE 1 | SIDE 2 | | | |
| PHASE 8 | | | | | | | | | |
| 1 | 30WSC1 | WSC1 | 3 | NA -- NE -- | | NA -- NE -- | | | G06.08.5 |
| 2 | 6NSCW | SCW | 3 | NA -- NR -- | | NA -- NR -- | | | G06.08.5 |
| 3 | 8NSCW | SCW | 3 | | NA -- NE -- | | NA -- NE -- | | G06.08.5 |
| 4 | 14NSCW | SCW | 3 | | NA -- NR -- | | NA -- NR -- | | G06.08.5 |
| 5 | 8NSCE | SCE | 3 | NA -- NP -- | | NA -- NP -- | | | G06.08.7 |
| PHASE 9 | | | | | | | | | |
| 1 | 3aNSCW | SCW | 3 | / NA \ NF | | / NA \ NF | | | G06.09.3 |
| 2 | 3bNSCW | SCW | 3 | NF NA / | | NF NA / | | | G06.09.3 |
| 3 | 18aNSCW | SCW | 2 | / NA \ | | / NA \ | | | G06.09.3 |
| 4 | 18bNSCW | SCW | 3 | NF NA / | | NF NA / | | | G06.09.3 |
| 5 | 24NSCW | SCW | 3 | NB -- NG -- | | NB -- NG -- | | | G06.09.3 |
| 6 | 44NSCE | SCE | 3 | | NJ -- NA -- | | NJ -- NA -- | | G06.09.3 |
| 7 | 49NSCE | SCE | 3 | | NB -- NG -- | | NB -- NG -- | | G06.09.3 |
| PHASE 10 | | | | | | | | | |
| 1 | 1aNSCW | SCW | 3 | \ NA NG | | \ NA NG | | | G06.10.3 |
| 2 | 1bNSCW | SCW | 3 | NG / NA \ | | NG / NA \ | | | G06.10.3 |
| 3 | 25NSCW | SCW | 3 | | NG -- NA -- | | NG -- NA -- | | G06.10.3 |
| 4 | 1aNSCE | SCE | 3 | / NA \ NG | | / NA \ NG | | | G06.10.3 |
| 5 | 1bNSCE | SCE | 3 | NH NA / | | NH NA / | | | G06.10.3 |
| 6 | 4aNSCE | SCE | 3 | / NA NK | | / NA NK | | | G06.10.3 |
| 7 | 4bNSCE | SCE | 3 | NK / NA \ | | NK / NA \ | | | G06.10.3 |
| 8 | 5aNSCE | SCE | 3 | / NA \ NK | | / NA \ NK | | | G06.10.3 |
| 9 | 5bNSCE | SCE | 3 | NL NA / | | NL NA / | | | G06.10.3 |
| 10 | 32NSCE | SCE | 3 | | NB NJ -- | | NB NJ -- | | G06.10.3 |
| 11 | 38NSCE | SCE | 3 | | NK -- NA -- | | NK -- NA -- | | G06.10.3 |
| 12 | 45NSCE | SCE | 3 | | NB NJ -- | | NB NJ -- | | G06.10.3 |
| PHASE 11 | | | | | | | | | |
| 1 | 7aNSCE | SCE | 3 | \ NA NN | | \ NA NN | | | G06.11.4 |
| 2 | 7bNSCE | SCE | 3 | NN / NA \ | | NN / NA \ | | | G06.11.4 |
| 3 | 28NSCE | SCE | 3 | | NN -- NA -- | | NN -- NA -- | | G06.11.4 |
| 4 | 30NSCE | SCE | 3 | | NB -- NK -- | | NB -- NK -- | | G06.11.4 |
| 5 | 39NSCE | SCE | 3 | | NB -- NK -- | | NB -- NK -- | | G06.11.4 |
| 6 | 44NSCE | SCE | 3 | | NJ -- NA -- | | NJ -- NA -- | | G06.11.4 |
| PHASE 12 | | | | | | | | | |
| 1 | 4aNSCE | SCE | 3 | / NA NK | | / NA NK | | | G06.12.4 |
| 2 | 4bNSCE | SCE | 3 | NK / NA \ | | NK / NA \ | | | G06.12.4 |
| 3 | 5aNSCE | SCE | 3 | / NA \ NK | | / NA \ NK | | | G06.12.4 |
| 4 | 5bNSCE | SCE | 3 | NL NA / | | NL NA / | | | G06.12.4 |
| 5 | 9NSCE | SCE | 3 | NP NA -- | | NP NA -- | | | G06.12.4 |
| 6 | 11NSCE | SCE | 3 | | -- NA NP | | -- NA NP | | G06.12.4 |
| 7 | 16NSCE | SCE | 3 | | -- NA NP | | -- NA NP | | G06.12.4 |
| 8 | 25aNSCE | SCE | 3 | | -- SF NB | | -- SF NB | | G06.12.4 |
| 9 | 25bNSCE | SCE | 2 | | NN -- | | NN -- | | G06.12.4 |
| 10 | 26aNSCE | SCE | 3 | SF | -- NB SF | | SF | -- NB SF | G06.12.4 |
| 11 | 26bNSCE | SCE | 3 | | NN NB -- | | NN NB -- | | G06.12.4 |
| 12 | 29aNSCE | SCE | 3 | -- NN NB | | -- NN NB | | | G06.12.4 |
| 13 | 29bNSCE | SCE | 3 | SF -- | | SF -- | | | G06.12.4 |
| 14 | 38NSCE | SCE | 3 | | NK -- NA -- | | NK -- NA -- | | G06.12.4 |
| PHASE 13 | | | | | | | | | |
| 1 | 7aNSCE | SCE | 3 | \ NA NN | | \ NA NN | | | G06.13.3 |
| 2 | 7bNSCE | SCE | 3 | NN / NA \ | | NN / NA \ | | | G06.13.3 |
| 3 | 14NSCE | SCE | 3 | C A R G O | | C A R G O | | | G06.13.3 |
| 4 | 17NSCE | SCE | 3 | -- NP NB | | -- NP NB | | | G06.13.3 |
| 5 | 28NSCE | SCE | 3 | | NN -- NA -- | | NN -- NA -- | | G06.13.3 |

REHABILITATION OF TAXIWAY NA AT GEORGE BUSH INTERCONTINENTAL AIRPORT

TEMPORARY SIGNAGE SCHEDULE

ISSUED FOR BID

PROJECT MGR: QF
 DESIGNER: RSF
 DRAWN BY: RSF
 CHECKED BY: QF
 SCALE: NOT TO SCALE
 DATE: 07/27/2018



DEPARTMENT OF AVIATION
 APPROVED BY: DP 7/26/18
 HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

PROJECT NO. 0807
 C.I.P. NO. A-000570
 H.A.S. NO.
 SHEET NO.

G06.00.3

| REVISIONS | | | |
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| NO. | DESCRIPTION | DATE | BY |
| | | | |

ISSUED FOR BID

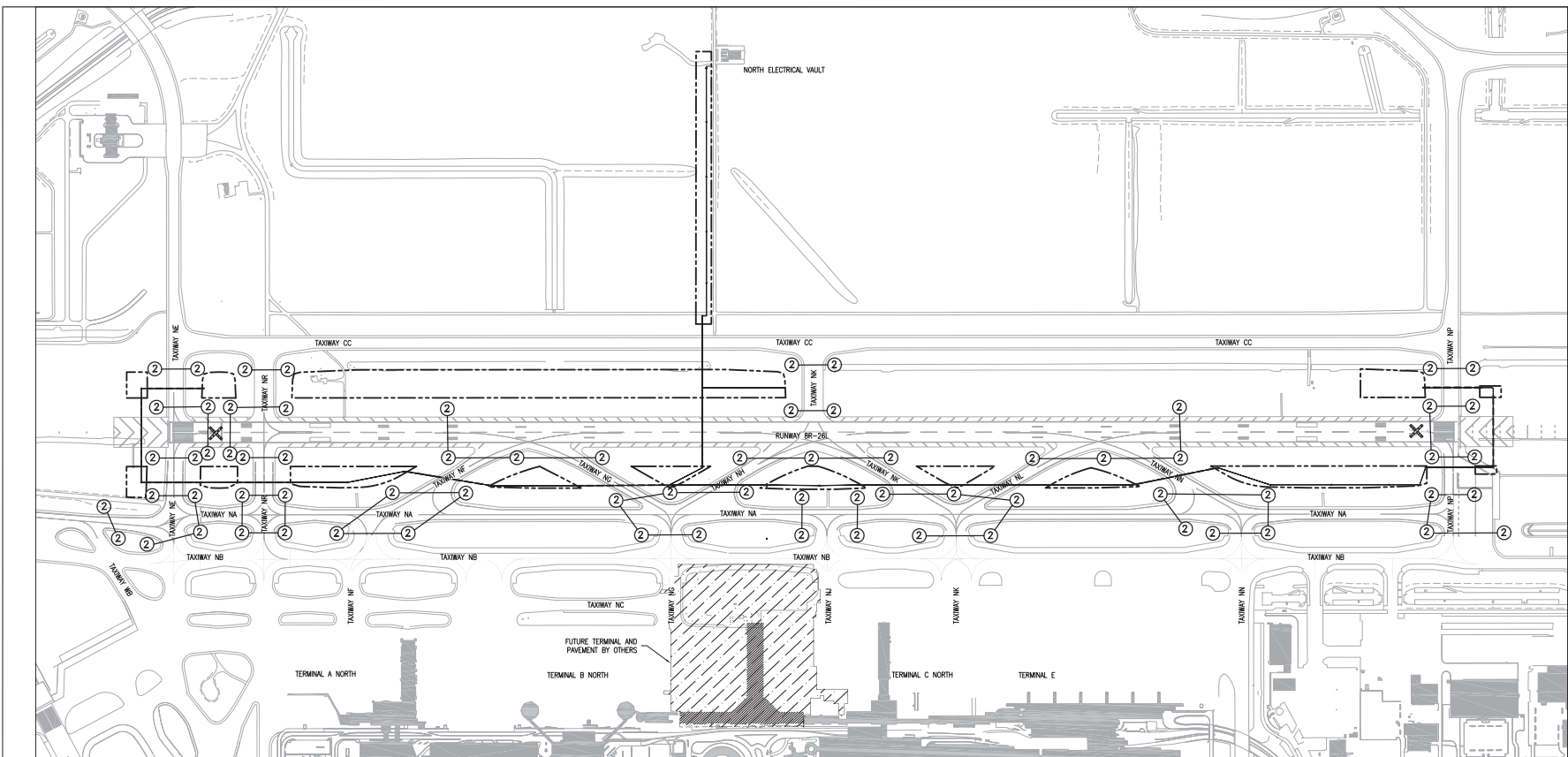
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| PROJECT MGR. | CLF |
| DESIGNER: | RSF |
| DRAWN BY: | RSF |
| CHECKED BY: | CLF |
| SCALE: | 1" = 400' |
| DATE: | 07/27/2018 |



DEPARTMENT OF AVIATION
 APPROVED BY: DP 7/26/18
 AUTHORIZED REPRESENTATIVE

| | |
|-------------|----------|
| PROJECT NO. | 0807 |
| C.I.P. NO. | A-000570 |
| H.A.S. NO. | |
| SHEET NO. | |

G06.02.1



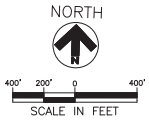
PHASE 2 MOVEMENT NOTES

- PHASE 2 WILL BE SUBJECT TO "IN THE BOX" OPERATIONS. THE CONTRACTOR SHALL TO THE MAXIMUM EXTENT POSSIBLE, CONTAIN ALL WORK TO AREAS OUTSIDE THE RSA OR ACTIVE TOFAS. THE CONTRACTOR SHALL INSTALL MARKER POLE BARRICADES ALONG THE RSA OR ACTIVE TOFAS OF EACH ADJACENT PAVEMENT TO SET THE BOUNDARY, OR "BOX," OF EACH WORK AREA. MARKER POLE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS TO ESTABLISH THE "BOX":
 - APPROXIMATELY 255 FEET NORTH OR SOUTH OF THE RUNWAY BR - 26L CENTERLINE, AS REQUIRED.
 - FOR TAXIWAYS NA AND CC, APPROXIMATELY 198 FEET NORTH OR SOUTH OF ITS RESPECTIVE TAXIWAY CENTERLINE.
 - FOR TAXIWAYS WB, NE, NR, NF, NJ, NN, AND NP, APPROXIMATELY 198 FEET FROM THE RESPECTIVE TAXIWAY CENTERLINE.
 - FOR TAXIWAYS NG AND NL, APPROXIMATELY 98 FEET FROM THE RESPECTIVE TAXIWAY CENTERLINE.
 - FOR TAXIWAYS NH AND NK, APPROXIMATELY 165 FEET FROM THE RESPECTIVE TAXIWAY CENTERLINE.

ANY WORK REQUIRED OUTSIDE THE "BOX" WILL REQUIRE A TEMPORARY PAVEMENT CLOSURE.
- DURING PHASE 2, IT IS INTENDED THAT RUNWAY AND TAXIWAY CLOSURES ARE MINIMIZED AS MUCH AS POSSIBLE. IN INSTANCES WHERE A CLOSURE IS REQUIRED IN ORDER TO INTERCEPT EXISTING LIGHTING CIRCUITS OR PERFORM OTHER RELATED WORK, THE CONTRACTOR SHALL COORDINATE THE APPROPRIATE PAVEMENT CLOSURE WITH AIRPORT OPERATIONS, INCLUDING ACCESS, BARRICADES, AND ANY OTHER SAFETY DIRECTIVES REQUIRED BY AIRPORT OPERATIONS. LOW-PROFILE BARRICADES SHALL BE REQUIRED TO CLOSE ANY PAVEMENT. THE CONTRACTOR SHALL NOTE THAT FOR ANY GIVEN WORK PERIOD, ONLY THOSE TAXIWAYS OR RUNWAY FOR WHICH THE CONTRACTOR IS WORKING INSIDE THE TOFA OR RSA, RESPECTIVELY, MUST BE CLOSED. THE CONTRACTOR SHALL COORDINATE RUNWAY AND TAXIWAY CLOSURES AND RESPECTIVE REQUIRED BARRICADE LOCATIONS WITH AIRPORT OPERATIONS AND SUBMIT FOR APPROVAL FORMALLY VIA A WAY (SEE MAIN SUBMISSION REQUIREMENTS ON SHEET G04.02 AND IN SECTION 01761 - PROTECTION OF EXISTING SERVICES).
 - CLOSURE REQUIREMENTS SHALL BE AS INDICATED ON SHEET G06.02.2 OR AS REQUIRED BY AIRPORT OPERATIONS.
 - CLOSURES OF TAXIWAYS NE, NR, AND NF SHALL BE COORDINATED SUCH THAT THEY ARE SCHEDULED CONCURRENTLY WITH SUBPHASE 3A.
- REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.
 - IF AIRPORT OPERATIONS DECIDES THAT AN AIRPORT OPERATION ESCORT IS NOT NECESSARY FOR CONTRACTOR OPERATIONS IN ANY AREA, THE CONTRACTOR SHALL WORK WITH AIRPORT OPERATIONS TO ESTABLISH A HAUL ROUTE TO THE WORK AREA. THE CONTRACTOR SHALL PROVIDE FLAGMEN ALONG THE HAUL ROUTE, ONE (1) AT EACH SIDE OF CROSSINGS WITH ALL ACTIVE TAXIWAYS, UNLESS ESCORTED BY AIRPORT OPERATIONS. WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 2, PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
 - SEE SHEETS G06.02.3 THROUGH G06.02.8 FOR THE PROPOSED WORK AREAS OF THIS PHASE.

LEGEND

- PROPOSED JCP DUCTBANK
- WORK LIMITS NOT REQUIRING TEMPORARY PAVEMENT CLOSURE ("BOX" LIMITS)
- LOW PROFILE BARRICADE
- LIGHTED RUNWAY CLOSURE MARKER



| PHASE 2 | | | | | |
|------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| DURATION (DAYS) | WORK PERIOD | WORK AREA | PAVEMENT CLOSURES | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
| 45 CALENDAR DAYS | NIGHT ONLY EXCEPT WHEN SPECIFICALLY NOTED AS DAYTIME WORK | TAXIWAY NE, BETWEEN RUNWAY BR - 26L AND TAXIWAY NB (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- TAXIWAY NE CLOSED TAXIWAY NB TO RUNWAY BR - 26L. -- TAXIWAY NA CLOSED TAXIWAY NR TO TAXIWAY WB. | -- ACROSS TAXIWAY NE, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NE, 198' NORTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NA, 198' EAST OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NA, 198' WEST OF TAXIWAY NR CENTERLINE. | SUBPHASE 3A |
| | | TAXIWAY NE, BETWEEN RUNWAY BR - 26L AND TAXIWAY NA (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NE CLOSED TAXIWAY NA TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NE, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NE, 198' NORTH OF TAXIWAY NA CENTERLINE. | |
| | | TAXIWAY NE, BETWEEN RUNWAY BR - 26L AND TAXIWAY CC (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- TAXIWAY NE CLOSED TAXIWAY NA TO TAXIWAY CC. -- RUNWAY BR - 26L CLOSED. | -- ACROSS TAXIWAY NE, 198' NORTH OF TAXIWAY NA CENTERLINE. -- ACROSS TAXIWAY NE, 198' SOUTH OF TAXIWAY CC CENTERLINE. -- LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END. | |
| | | TAXIWAY NE, BETWEEN RUNWAY BR - 26L AND TAXIWAY CC (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NE CLOSED TAXIWAY CC TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NE, 198' NORTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NE, 198' SOUTH OF TAXIWAY CC CENTERLINE. | |
| | | TAXIWAY NR, BETWEEN RUNWAY BR - 26L AND TAXIWAY NB (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- TAXIWAY NR CLOSED TAXIWAY NB TO RUNWAY BR - 26L. -- TAXIWAY NA CLOSED TAXIWAY NE TO TAXIWAY NF. | -- ACROSS TAXIWAY NR, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NR, 198' NORTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NA, 198' EAST OF TAXIWAY NE CENTERLINE. -- ACROSS TAXIWAY NA, 198' WEST OF TAXIWAY NF CENTERLINE. | |
| | | TAXIWAY NR, BETWEEN RUNWAY BR - 26L AND TAXIWAY NA (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NR CLOSED TAXIWAY NA TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NR, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NR, 198' NORTH OF TAXIWAY NA CENTERLINE. | |
| | | TAXIWAY NR, BETWEEN RUNWAY BR - 26L AND TAXIWAY CC (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- TAXIWAY NR CLOSED TAXIWAY NA TO TAXIWAY CC. -- RUNWAY BR - 26L CLOSED. | -- ACROSS TAXIWAY NR, 198' NORTH OF TAXIWAY NA CENTERLINE. -- ACROSS TAXIWAY NR, 198' SOUTH OF TAXIWAY CC CENTERLINE. -- LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END. | |
| | | TAXIWAY NR, BETWEEN RUNWAY BR - 26L AND TAXIWAY CC (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NR CLOSED TAXIWAY CC TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NR, 255' NORTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NR, 198' SOUTH OF TAXIWAY CC CENTERLINE. | |
| | | TAXIWAY NF, BETWEEN RUNWAY BR - 26L AND TAXIWAY NB (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- TAXIWAY NF CLOSED TAXIWAY NB TO RUNWAY BR - 26L. -- TAXIWAY NA CLOSED TAXIWAY NR TO TAXIWAY NG. | -- ACROSS TAXIWAY NF, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NA, 198' EAST OF TAXIWAY NR CENTERLINE. -- ACROSS TAXIWAY NA, 98' WEST OF TAXIWAY NG CENTERLINE. | |
| | | TAXIWAY NF, BETWEEN RUNWAY BR - 26L AND TAXIWAY NA (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NF CLOSED TAXIWAY NA TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NF, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NF, 198' NORTH OF TAXIWAY NA CENTERLINE. | |
| | | TAXIWAYS NG AND NH, BETWEEN RUNWAY BR - 26L AND TAXIWAY NB (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 4 HOUR DAYTIME CLOSURE) | -- TAXIWAY NG CLOSED TAXIWAY NB TO RUNWAY BR - 26L. -- TAXIWAY NH CLOSED TAXIWAY NA TO RUNWAY BR - 26L. -- TAXIWAY NA CLOSED TAXIWAY NF TO TAXIWAY NJ. | -- ACROSS TAXIWAY NG, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NG, 198' NORTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NH, 255' SOUTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NA, 198' EAST OF TAXIWAY NF CENTERLINE. -- ACROSS TAXIWAY NA, 198' WEST OF TAXIWAY NJ CENTERLINE. | |
| | | TAXIWAY NG, BETWEEN RUNWAY BR - 26L AND TAXIWAY NA (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NG CLOSED TAXIWAY NA TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NG, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NG, 198' NORTH OF TAXIWAY NA CENTERLINE. | |
| | | TAXIWAY NH, BETWEEN RUNWAY BR - 26L AND TAXIWAY NA (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NH CLOSED TAXIWAY NA TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NH, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NH, 198' NORTH OF TAXIWAY NA CENTERLINE. | |
| | | TAXIWAYS NK AND NL, BETWEEN RUNWAY BR - 26L AND TAXIWAY NB (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 4 HOUR DAYTIME CLOSURE) | -- TAXIWAY NK CLOSED TAXIWAY NB TO RUNWAY BR - 26L. -- TAXIWAY NL CLOSED TAXIWAY NA TO RUNWAY BR - 26L. -- TAXIWAY NA CLOSED TAXIWAY NJ TO TAXIWAY NN. | -- ACROSS TAXIWAY NK, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NK, 198' NORTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NL, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NA, 198' EAST OF TAXIWAY NJ CENTERLINE. -- ACROSS TAXIWAY NA, 198' WEST OF TAXIWAY NN CENTERLINE. | |
| | | TAXIWAY NK, BETWEEN RUNWAY BR - 26L AND TAXIWAY NA (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NK CLOSED TAXIWAY NA TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NK, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NK, 198' NORTH OF TAXIWAY NA CENTERLINE. | |
| | | TAXIWAY NL, BETWEEN RUNWAY BR - 26L AND TAXIWAY NA (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NL CLOSED TAXIWAY NA TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NL, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NL, 198' NORTH OF TAXIWAY NA CENTERLINE. | |
| | | TAXIWAY NK, BETWEEN RUNWAY BR - 26L AND TAXIWAY CC (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- TAXIWAY NK CLOSED TAXIWAY NA TO TAXIWAY CC. -- TAXIWAY NH CLOSED TAXIWAY NA TO RUNWAY BR - 26L. -- RUNWAY BR - 26L CLOSED. | -- ACROSS TAXIWAY NK, 198' NORTH OF TAXIWAY NA CENTERLINE. -- ACROSS TAXIWAY NH, 198' NORTH OF TAXIWAY NA CENTERLINE. -- ACROSS TAXIWAY NK, 198' SOUTH OF TAXIWAY CC CENTERLINE. -- LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END. | |
| | | TAXIWAY NK, BETWEEN RUNWAY BR - 26L AND TAXIWAY CC (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NK CLOSED TAXIWAY CC TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NK, 255' NORTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NK, 198' SOUTH OF TAXIWAY CC CENTERLINE. | |
| | | TAXIWAY NN, BETWEEN RUNWAY BR - 26L AND TAXIWAY NB (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- TAXIWAY NN CLOSED TAXIWAY NB TO RUNWAY BR - 26L. -- TAXIWAY NA CLOSED TAXIWAY NL TO TAXIWAY NP. | -- ACROSS TAXIWAY NN, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NN, 198' NORTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NA, 98' EAST OF TAXIWAY NL CENTERLINE. -- ACROSS TAXIWAY NA, 198' WEST OF TAXIWAY NP CENTERLINE. | |
| | | TAXIWAY NN, BETWEEN RUNWAY BR - 26L AND TAXIWAY NA (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NN CLOSED TAXIWAY NA TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NN, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NN, 198' NORTH OF TAXIWAY NA CENTERLINE. | |
| | | TAXIWAY NP, BETWEEN RUNWAY BR - 26L AND TAXIWAY NB (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- TAXIWAY NP CLOSED TAXIWAY NB TO RUNWAY BR - 26L. -- TAXIWAY NA CLOSED TAXIWAY NN TO TAXIWAY NP. | -- ACROSS TAXIWAY NP, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NP, 198' NORTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NA, 198' EAST OF TAXIWAY NN CENTERLINE. | |
| | | TAXIWAY NP, BETWEEN RUNWAY BR - 26L AND TAXIWAY NA (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NP CLOSED TAXIWAY NA TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NP, 255' SOUTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NP, 198' NORTH OF TAXIWAY NA CENTERLINE. | |
| | | TAXIWAY NP, BETWEEN RUNWAY BR - 26L AND TAXIWAY CC (SEE SHEET G06.02.7, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- TAXIWAY NP CLOSED TAXIWAY NA TO TAXIWAY CC. -- RUNWAY BR - 26L CLOSED. | -- ACROSS TAXIWAY NP, 198' NORTH OF TAXIWAY NA CENTERLINE. -- ACROSS TAXIWAY NP, 198' SOUTH OF TAXIWAY CC CENTERLINE. -- LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END. | |
| | | TAXIWAY NP, BETWEEN RUNWAY BR - 26L AND TAXIWAY CC (SEE SHEET G06.02.7, NOTE 7.E) | -- TAXIWAY NP CLOSED TAXIWAY CC TO RUNWAY BR - 26L. | -- ACROSS TAXIWAY NP, 255' NORTH OF RUNWAY BR - 26L CENTERLINE. -- ACROSS TAXIWAY NP, 198' SOUTH OF TAXIWAY CC CENTERLINE. | |
| | | RUNWAY BR LAHSO LIGHT BAR (SEE SHEET G06.02.8, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- RUNWAY BR - 26L CLOSED. -- TAXIWAY NP CLOSED TAXIWAY NA TO TAXIWAY CC. | -- ACROSS RUNWAY BR - 26L, 198' EAST OF TAXIWAY NN CENTERLINE. -- ACROSS TAXIWAY NP, 198' NORTH OF TAXIWAY NA CENTERLINE. -- ACROSS TAXIWAY NP, 198' SOUTH OF TAXIWAY CC CENTERLINE. -- LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END. | |
| | | RUNWAY BR LAHSO LIGHT BAR (SEE SHEET G06.02.8, NOTE 7.D, MAXIMUM 4 HOUR NIGHTTIME CLOSURE) | -- RUNWAY BR - 26L CLOSED. | -- ACROSS RUNWAY BR - 26L, 198' WEST OF TAXIWAY NP CENTERLINE. -- ACROSS RUNWAY BR - 26L, 198' EAST OF TAXIWAY NN CENTERLINE. -- LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END. | |
| | | RUNWAY 26L LAHSO LIGHT BAR (SEE SHEET G06.02.8, NOTE 7.A, MAXIMUM 2 HOUR DAYTIME CLOSURE) | -- RUNWAY BR - 26L CLOSED. -- TAXIWAY NR CLOSED TAXIWAY NA TO TAXIWAY CC. | -- ACROSS RUNWAY BR - 26L, 198' EAST OF TAXIWAY NE CENTERLINE. -- ACROSS RUNWAY BR - 26L, 198' WEST OF TAXIWAY NF CENTERLINE. -- ACROSS TAXIWAY NR, 198' NORTH OF TAXIWAY NA CENTERLINE. -- ACROSS TAXIWAY NR, 198' SOUTH OF TAXIWAY CC CENTERLINE. -- LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END. | |
| | | RUNWAY 26L LAHSO LIGHT BAR (SEE SHEET G06.02.8, NOTE 7.D, MAXIMUM 4 HOUR NIGHTTIME CLOSURE) | -- RUNWAY BR - 26L CLOSED. | -- ACROSS RUNWAY BR - 26L, 198' EAST OF TAXIWAY NE CENTERLINE. -- ACROSS RUNWAY BR - 26L, 198' WEST OF TAXIWAY NR CENTERLINE. -- LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END. | |



ISSUED FOR BID

PROJECT MGR: QF

DESIGNER: RSF

DRAWN BY: RSF

CHECKED BY: QF

SCALE: NOT TO SCALE

DATE: 07/27/2018

REHABILITATION OF TAXIWAY NA AT GEORGE BUSH INTERCONTINENTAL AIRPORT
PHASING PLAN - PHASE 2 (2 OF 6)

ISSUED FOR BID

PROJECT MGR: QF

DESIGNER: RSF

DRAWN BY: RSF

CHECKED BY: QF

SCALE: NOT TO SCALE

DATE: 07/27/2018



DEPARTMENT OF AVIATION

APPROVED BY: DP 7/26/18

Houston Airport System Authorized Representative

PROJECT NO. 0807

C.I.P. NO. A-000570

H.A.S. NO.

SHEET NO. G06.02.2



| REVISIONS | | |
|-----------|-------------|------|
| NO. | DESCRIPTION | DATE |
| | | |
| | | |
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REHABILITATION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
PHASING PLAN - PHASE 2
(3 OF 6)

ISSUED FOR BID

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|--------------|------------|
| PROJECT MGR: | CLF |
| DESIGNER: | RSF |
| DRAWN BY: | RSF |
| CHECKED BY: | CLF |
| SCALE: | 1"=150' |
| DATE: | 07/27/2018 |



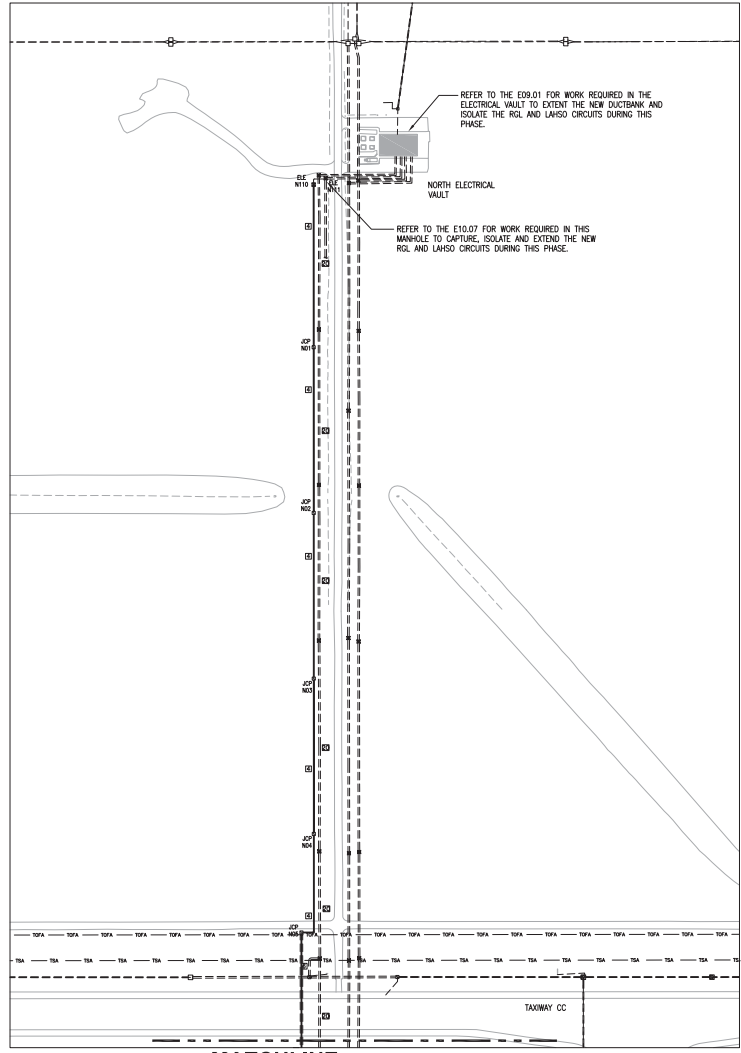
DEPARTMENT OF AVIATION
 APPROVED BY: DP 7/26/18
Doug Blain
 HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

| | |
|-------------|----------|
| PROJECT NO. | 0807 |
| C.I.P. NO. | A-000570 |
| H.A.S. NO. | |
| SHEET NO. | |

G06.02.3

PHASE 2 CONSTRUCTION AND SEQUENCING NOTES

1. PHASE 2 SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 3A. ALL WORK IN PHASE 2 MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS, AS NOTED.
2. THE CONTRACTOR WILL BE ALLOWED 45 CALENDAR DAYS TO COMPLETE PHASE 2. PHASE 2 SHALL BE SUBDIVIDED INTO SEVERAL SUBPHASES TO BE PERFORMED IN SEQUENTIAL ORDER AS FOLLOWS: SUBPHASE 2A - INSTALL JCP INFRASTRUCTURE (20 CALENDAR DAYS); SUBPHASE 2B - INSTALL CONDUCTORS (5 CALENDAR DAYS); SUBPHASE 2C - CUT OVER LAHSD LIGHTS TO NEW INFRASTRUCTURE (3 CALENDAR DAYS); AND SUBPHASE 2D - CUT OVER RGL LIGHTS TO NEW INFRASTRUCTURE (10 CALENDAR DAYS).
3. IT IS INTENDED THAT TAXIWAY CLOSURES ARE ELIMINATED OR MINIMIZED FOR ALL WORK RELATED TO THE NEW DUCTBANK INSTALLATION, INCLUDING DIRECTIONAL AND CASED BORE DRILLING, CASED BORE DRILLING EQUIPMENT AND TRENCHING EQUIPMENT MUST REMAIN OUTSIDE OF THE RSA AND THE RESPECTIVE TOFA WHERE DRILLING OR TRENCHING IS REQUIRED SO THAT A TAXIWAY CLOSURE IS NOT NECESSARY. BORE PITS FOR CASED BORE DRILLING SHALL BE SURROUNDED WITH LOW-PROFILE BARRICADES. IN INSTANCES WHERE A CLOSURE IS REQUIRED IN ORDER TO INTERCEPT EXISTING RGL OR LAHSD LIGHTING CIRCUITS, COORDINATE WORK WITH AIRPORT OPERATIONS TO CLOSE THE RESPECTIVE AIRFIELD PAVEMENTS AS REQUIRED FOR THE AREA OF WORK.
4. ALL TAXIWAY CLOSURES SHALL BE LIMITED TO A SINGLE TAXIWAY AT A GIVEN TIME WITH A MAXIMUM CLOSURE DURATION AS NOTED IN THE SEQUENCE OF INSTALLATION (ITEMS 5.J AND 5.K).
5. CONSTRUCTION TASKS FOR PHASE 2 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.02.1.
 - B. INSTALL BARRICADES FOR REQUIRED CLOSED PAVEMENTS AT THE LOCATIONS NOTED ON SHEET G06.02.1.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH WORK PERIOD. THE LIGHTS SHALL BE RE-ENERGIZED AT THE END OF EACH WORK PERIOD.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE ELECTRICAL PLANS FOR SIGN LOCATIONS). THE SIGNS SHALL BE RE-ENERGIZED AND / OR "BLANK" PANELS REMOVED AT THE END OF EACH NIGHTTIME WORK PERIOD.
 - E. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - F. SUBPHASE 2A - PERFORM REQUIRED EARTHWORK AND DRILLING OPERATIONS TO INSTALL COMPLETE JUNCTION PLAZA SYSTEM AND ASSOCIATED DUCTS FOR THE COMPLETE ROUTE.
 - G. INSTALL THE VAULT CONDUIT TO EXTEND THE NEW JUNCTION PLAZA PATHWAY SYSTEM TO THE APPROPRIATE EQUIPMENT.
 - H. SUBPHASE 2B - INSTALL NEW #8 AWG, L-824C AIRFIELD LIGHTING CABLES FROM THE ELECTRICAL VAULT THROUGH THE JUNCTION PLAZA DUCTBANK SYSTEM LEAVING ENOUGH SLACK AT EACH JUNCTION PLAZA FOR EXTENSION OF THE CIRCUIT TO THE RESPECTIVE EXISTING AND TO THE FUTURE LIGHT BAR NO SPLICES WILL BE ALLOWED IN THE CABLE.
 - I. EACH RGL BAR AND LAHSD BAR SHALL BE CUT OVER SEPARATELY WITH THE LAHSD BARS OCCURRING FIRST AND THE RGL BARS SECOND. REFER TO NOTES BELOW FOR SEQUENCE OF CONSTRUCTION AND TO SHEETS G06.02.7 AND G06.02.8 FOR ENLARGED PLAN OF TYPICAL RGL AND LAHSD LIGHT BAR CUT OVER, RESPECTIVELY.
 - J. SUBPHASE 2C - FOR THE RESPECTIVE LAHSD BAR TO BE CUT OVER, REFER TO SHEET G06.02.8 FOR A DETAILED SEQUENCE OF CONSTRUCTION.
 - K. SUBPHASE 2D - FOR THE RESPECTIVE RGL BAR TO BE CUT OVER, REFER TO SHEET G06.02.7 FOR A DETAILED SEQUENCE OF CONSTRUCTION.
 - L. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - M. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - N. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSOURED GUIDANCE SIGNS.
 - O. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - P. WORK WITH AIRPORT OPERATIONS TO OPEN ANY CLOSED AIRFIELD PAVEMENTS.



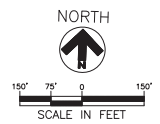
MATCHLINE (SEE SHEET G06.02.5 FOR CONTINUATION)

LEGEND

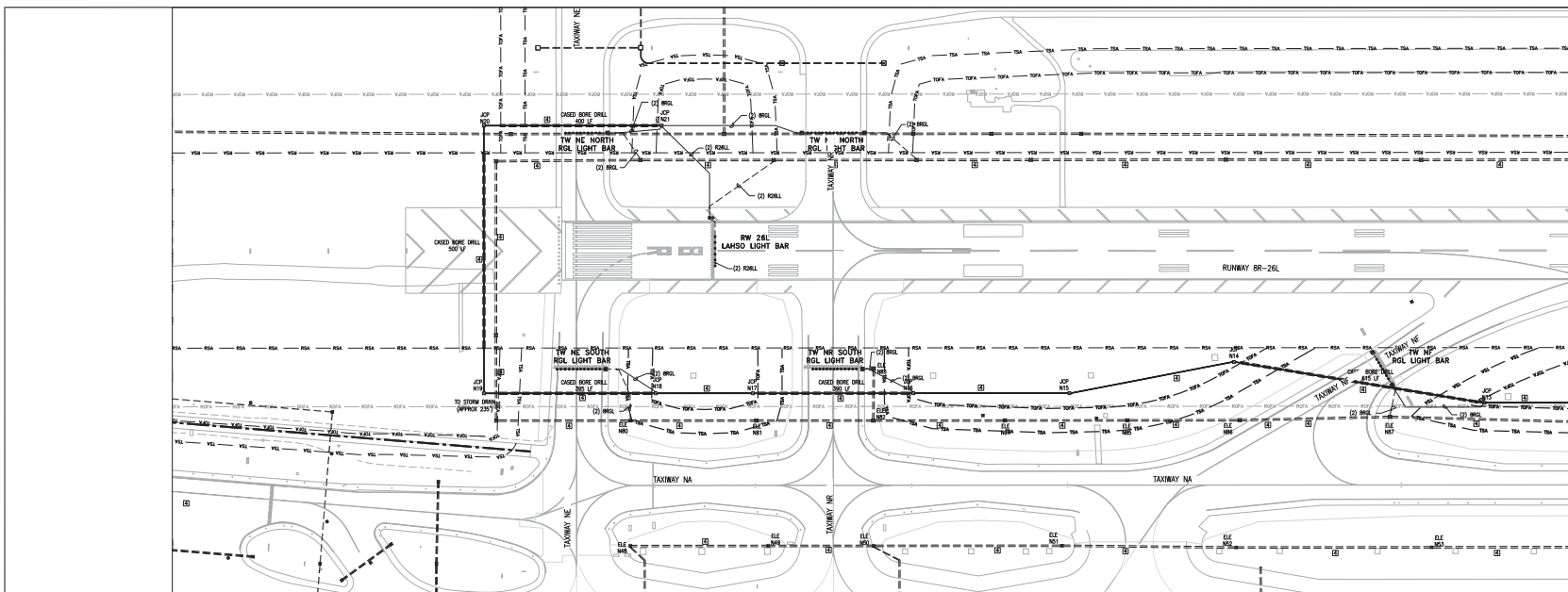
- 4-WAY JUNCTION CAN PLAZA
JCP ID:
JCP INDICATES JUNCTION CAN PLAZA
"N" INDICATES NORTH AIRFIELD
"21" INDICATES MANHOLE NUMBER
- EXISTING HANDHOLE/MANHOLE
- EXISTING L-8670 PULLCAN
- NEW CABLE IN PROPOSED JCP DUCT BANK.
DUCTBANK: [L] INDICATES NUMBER OF 2" DUCTS.
- PROPOSED DUCTBANK BORING.
- EXISTING DUCTBANK BORING.
- PROPOSED 2" SCHED 40 PVC
- EXISTING 2" SCHED 40 PVC
- EXISTING IP RGL OR LAHSD LIGHT-AS NOTED
- PHASE 2 TAXIWAY SAFETY AREA
- PHASE 2 TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA

ABBREVIATIONS

FOR A LIST OF ABBREVIATIONS, REFER TO DRAWING E01.01.



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SEE SHEET G06.02.7 FOR CONTINUATION

LEGEND

- 4-WAY JUNCTION CAN PLAZA
JCP ID
JCP INDICATES JUNCTION CAN PLAZA
"N" INDICATES NORTH AIRFIELD
"21" INDICATES MANHOLE NUMBER
- EXISTING HOLE/AMHOLE
- EXISTING L-8670 PULLDOWN
- NEW CABLE IN PROPOSED JCP DUCT BANK
DUCTBANK: [] INDICATES NUMBER OF 2" DUCTS.
- PROPOSED DUCTBANK BORING.
- EXISTING DUCTBANK BORING.
- PROPOSED 2" SCHED 40 PVC
- EXISTING 2" SCHED 40 PVC
- CONDUIT INTERCEPT LOCATION
- EXISTING IP RGL OR LAHSO LIGHT-AS NOTED
- PHASE 2 TAXIWAY SAFETY AREA
- PHASE 2 TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA

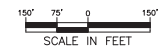
ABBREVIATIONS

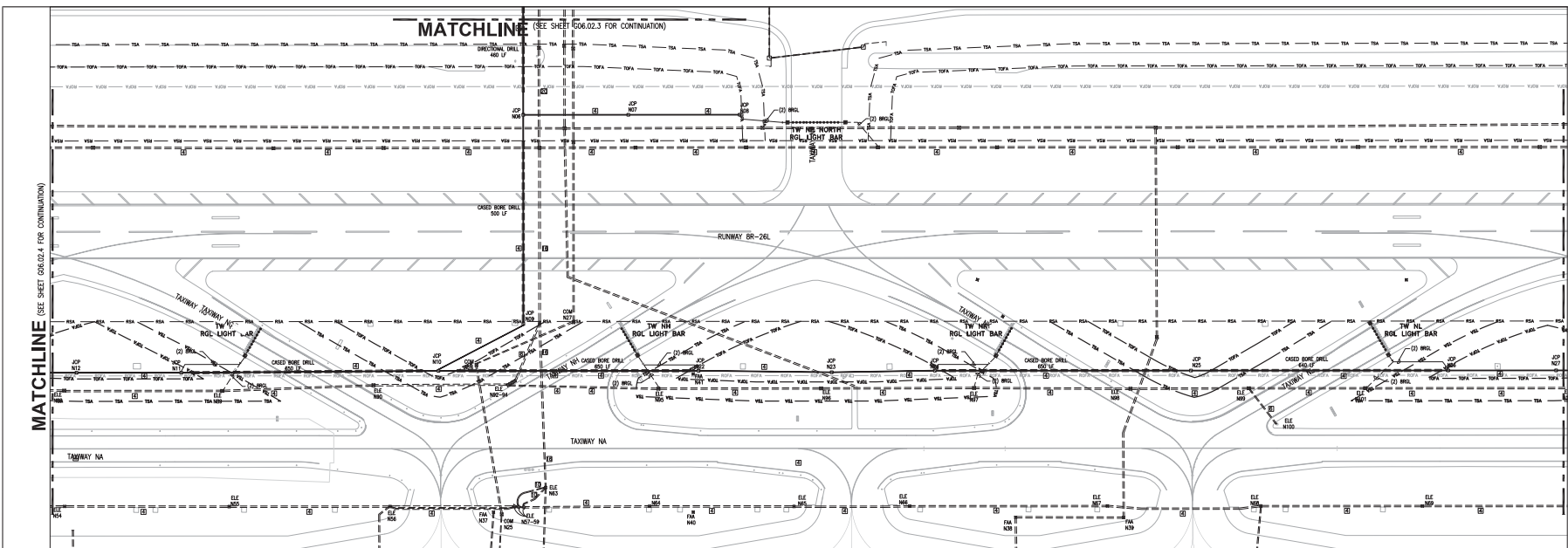
FOR A LIST OF ABBREVIATIONS, REFER TO DRAWING E01.01.

PHASE 2 CONSTRUCTION AND SEQUENCING NOTES

1. PHASE 2 SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 3A. ALL WORK IN PHASE 2 MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS, AS NOTED.
2. THE CONTRACTOR WILL BE ALLOWED 45 CALENDAR DAYS TO COMPLETE PHASE 2. PHASE 2 SHALL BE SUBDIVIDED INTO SEVERAL SUBPHASES TO BE PERFORMED IN SEQUENTIAL ORDER AS FOLLOWS: SUBPHASE 2A - INSTALL JCP INFRASTRUCTURE (20 CALENDAR DAYS); SUBPHASE 2B - INSTALL CONDUCTORS (5 CALENDAR DAYS); SUBPHASE 2C - CUT OVER LAHSO LIGHTS TO NEW INFRASTRUCTURE (3 CALENDAR DAYS); AND SUBPHASE 2D - CUT OVER RGL LIGHTS TO NEW INFRASTRUCTURE (10 CALENDAR DAYS).
3. IT IS INTENDED THAT TAXIWAY CLOSURES ARE ELIMINATED OR MINIMIZED FOR ALL WORK RELATED TO THE NEW DUCTBANK INSTALLATION, INCLUDING DIRECTIONAL AND CASED BORE DRILLING. CASED BORE DRILLING EQUIPMENT AND TRENCHING EQUIPMENT MUST REMAIN OUTSIDE OF THE ISA AND THE RESPECTIVE TOFA WHERE DRILLING OR TRENCHING IS REQUIRED SO THAT A TAXIWAY CLOSURE IS NOT NECESSARY. BORE FITS FOR CASED BORE DRILLING SHALL BE SURROUNDED WITH LOW-PROFILE BARRICADES. IN INSTANCES WHERE A CLOSURE IS REQUIRED IN ORDER TO INTERCEPT EXISTING RGL OR LAHSO LIGHTING CIRCUITS, COORDINATE WORK WITH AIRPORT OPERATIONS TO CLOSE THE RESPECTIVE AIRFIELD PAVEMENTS AS REQUIRED FOR THE AREA OF WORK.
4. ALL TAXIWAY CLOSURES SHALL BE LIMITED TO A SINGLE TAXIWAY AT A GIVEN TIME WITH A MAXIMUM CLOSURE DURATION AS NOTED IN THE SEQUENCE OF INSTALLATION (ITEMS S.J AND S.K).
5. CONSTRUCTION TASKS FOR PHASE 2 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.02.1.
 - B. INSTALL BARRICADES FOR REQUIRED CLOSED PAVEMENTS AT THE LOCATIONS NOTED ON SHEET G06.02.1.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH WORK PERIOD. THE LIGHTS SHALL BE RE-ENERGIZED AT THE END OF EACH WORK PERIOD.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH WORK PERIOD. PROVIDE TEMPORARY BLANK SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE ELECTRICAL PLANS FOR SIGN LOCATIONS). THE SIGNS SHALL BE RE-ENERGIZED AND / OR "BLANK" PANELS REMOVED AT THE END OF EACH NIGHTTIME WORK PERIOD.
 - E. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - F. SUBPHASE 2A - PERFORM REQUIRED EARTHWORK AND DRILLING OPERATIONS TO INSTALL COMPLETE JUNCTION PLAZA SYSTEM AND ASSOCIATED DUCTS FOR THE COMPLETE ROUTE.
 - G. INSTALL THE VAULT CONDUIT TO EXTEND THE NEW JUNCTION PLAZA PATHWAY SYSTEM TO THE APPROPRIATE EQUIPMENT.
 - H. SUBPHASE 2B - INSTALL NEW #6 AWG, L-824C AIRFIELD LIGHTING CABLES FROM THE ELECTRICAL VAULT THROUGH THE JUNCTION PLAZA DUCTBANK SYSTEM LEAVING ENOUGH SLACK AT EACH JUNCTION PLAZA FOR EXTENSION OF THE CIRCUIT TO THE RESPECTIVE EXISTING AND TO THE FUTURE LIGHT BAR NO SPICES WILL BE ALLOWED IN THE CABLE.
 - I. EACH RGL BAR AND LAHSO BAR SHALL BE CUT OVER SEPARATELY WITH THE LAHSO BARS OCCURRING FIRST AND THE RGL BARS SECOND. REFER TO NOTES BELOW FOR SEQUENCE OF CONSTRUCTION AND TO SHEETS G06.02.7 AND G06.02.8 FOR ENLARGED PLAN OF TYPICAL RGL AND LAHSO LIGHT BAR CUT OVER, RESPECTIVELY.
 - J. SUBPHASE 2C - FOR THE RESPECTIVE LAHSO BAR TO BE CUT OVER, REFER TO SHEET G06.02.8 FOR A DETAILED SEQUENCE OF CONSTRUCTION.
 - K. SUBPHASE 2D - FOR THE RESPECTIVE RGL BAR TO BE CUT OVER, REFER TO SHEET G06.02.7 FOR A DETAILED SEQUENCE OF CONSTRUCTION.
 - L. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - M. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - N. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
 - O. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - P. WORK WITH AIRPORT OPERATIONS TO OPEN ANY CLOSED AIRFIELD PAVEMENTS.

NORTH





LEGEND

- 4-WAY JUNCTION CAN PLAZA
JCP ID
- JCP INDICATES JUNCTION CAN PLAZA
- "N" INDICATES NORTH AIRFIELD
- "21" INDICATES MANHOLE NUMBER
- EXISTING HOLE/MAHOLE
- EXISTING L-8670 PULLDOWN
- NEW CABLE IN PROPOSED JCP DUCT BANK
DUCTBANK: [] INDICATES NUMBER OF 2" DUCTS.
- PROPOSED DUCTBANK BORING.
- EXISTING DUCTBANK BORING.
- PROPOSED 2" SCHED 40 PVC
- EXISTING 2" SCHED 40 PVC
- CONDUIT INTERCEPT LOCATION
- EXISTING IP RGL OR LAHSO LIGHT-AS NOTED
- PHASE 2 TAXIWAY SAFETY AREA
- PHASE 2 TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA

PHASE 2 CONSTRUCTION AND SEQUENCING NOTES

1. PHASE 2 SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 3A. ALL WORK IN PHASE 2 MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS, AS NOTED.
2. THE CONTRACTOR WILL BE ALLOWED 45 CALENDAR DAYS TO COMPLETE PHASE 2. PHASE 2 SHALL BE SUBDIVIDED INTO SEVERAL SUBPHASES TO BE PERFORMED IN SEQUENTIAL ORDER AS FOLLOWS: SUBPHASE 2A - INSTALL JCP INFRASTRUCTURE (20 CALENDAR DAYS); SUBPHASE 2B - INSTALL CONDUCTORS (5 CALENDAR DAYS); SUBPHASE 2C - CUT OVER LAHSO LIGHTS TO NEW INFRASTRUCTURE (3 CALENDAR DAYS); AND SUBPHASE 2D - CUT OVER RGL LIGHTS TO NEW INFRASTRUCTURE (10 CALENDAR DAYS).
3. IT IS INTENDED THAT TAXIWAY CLOSURES ARE ELIMINATED OR MINIMIZED FOR ALL WORK RELATED TO THE NEW DUCTBANK INSTALLATION, INCLUDING DIRECTIONAL AND CASED BORE DRILLING. CASED BORE DRILLING EQUIPMENT AND TRENCHING EQUIPMENT MUST REMAIN OUTSIDE OF THE ISA AND THE RESPECTIVE TOFA WHERE DRILLING OR TRENCHING IS REQUIRED SO THAT A TAXIWAY CLOSURE IS NOT NECESSARY. BORE FITS FOR CASED BORE DRILLING SHALL BE SURROUNDED WITH LOW-PROFILE BARRICADES. IN INSTANCES WHERE A CLOSURE IS REQUIRED IN ORDER TO INTERCEPT EXISTING RGL OR LAHSO LIGHTING CIRCUITS, COORDINATE WORK WITH AIRPORT OPERATIONS TO CLOSE THE RESPECTIVE AIRFIELD PAVEMENTS AS REQUIRED FOR THE AREA OF WORK.
4. ALL TAXIWAY CLOSURES SHALL BE LIMITED TO A SINGLE TAXIWAY AT A GIVEN TIME WITH A MAXIMUM CLOSURE DURATION AS NOTED IN THE SEQUENCE OF INSTALLATION (ITEMS S.J AND S.K).
5. CONSTRUCTION TASKS FOR PHASE 2 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.02.1.
 - B. INSTALL BARRICADES FOR REQUIRED CLOSURES AT THE LOCATIONS NOTED ON SHEET G06.02.1.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH WORK PERIOD. THE LIGHTS SHALL BE RE-ENERGIZED AT THE END OF EACH WORK PERIOD.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH WORK PERIOD. PROVIDE TEMPORARY BLANK SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE ELECTRICAL PLANS FOR SIGN LOCATIONS). THE SIGNS SHALL BE RE-ENERGIZED AND / OR "BLANK" PANELS REMOVED AT THE END OF EACH NIGHTTIME WORK PERIOD.
 - E. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - F. SUBPHASE 2A - PERFORM REQUIRED EARTHWORK AND DRILLING OPERATIONS TO INSTALL COMPLETE JUNCTION PLAZA SYSTEM AND ASSOCIATED DUCTS FOR THE COMPLETE ROUTE.
 - G. INSTALL THE VAULT CONDUIT TO EXTEND THE NEW JUNCTION PLAZA PATHWAY SYSTEM TO THE APPROPRIATE EQUIPMENT.
 - H. SUBPHASE 2B - INSTALL NEW #6 AWG, L-824C AIRFIELD LIGHTING CABLES FROM THE ELECTRICAL VAULT THROUGH THE JUNCTION PLAZA DUCTBANK SYSTEM LEAVING ENOUGH SLACK AT EACH JUNCTION PLAZA FOR EXTENSION OF THE CIRCUIT TO THE RESPECTIVE EXISTING AND TO THE FUTURE LIGHT BAR NO SPICES WILL BE ALLOWED IN THE CABLE.
 - I. EACH RGL BAR AND LAHSO BAR SHALL BE CUT OVER SEPARATELY WITH THE LAHSO BARS OCCURRING FIRST AND THE RGL BARS SECOND. REFER TO NOTES BELOW FOR SEQUENCE OF CONSTRUCTION AND TO SHEETS G06.02.7 AND G06.02.8 FOR ENLARGED PLAN OF TYPICAL RGL AND LAHSO LIGHT BAR CUT OVER, RESPECTIVELY.
 - J. SUBPHASE 2C - FOR THE RESPECTIVE LAHSO BAR TO BE CUT OVER, REFER TO SHEET G06.02.8 FOR A DETAILED SEQUENCE OF CONSTRUCTION.
 - K. SUBPHASE 2D - FOR THE RESPECTIVE RGL BAR TO BE CUT OVER, REFER TO SHEET G06.02.7 FOR A DETAILED SEQUENCE OF CONSTRUCTION.
 - L. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - M. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - N. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
 - O. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - P. WORK WITH AIRPORT OPERATIONS TO OPEN ANY CLOSED AIRFIELD PAVEMENTS.

ABBREVIATIONS

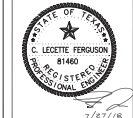
FOR A LIST OF ABBREVIATIONS, REFER TO DRAWING E01.01.



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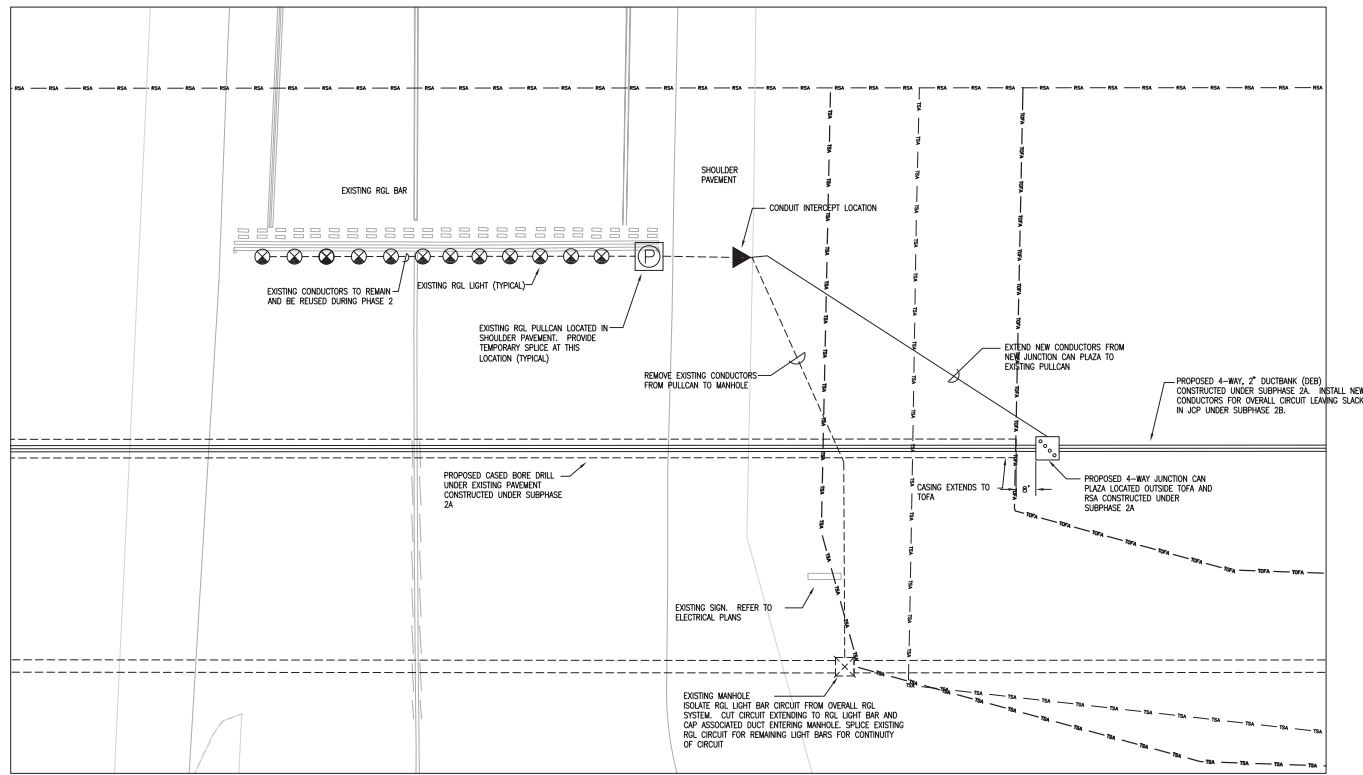
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| PROJECT MGR: | CLF |
| DESIGNER: | RSF |
| DRAWN BY: | RSF |
| CHECKED BY: | CLF |
| SCALE: | 1" = 20' |
| DATE: | 07/27/2018 |



DEPARTMENT OF AVIATION
 APPROVED BY: DP 7/26/18
 AUTHORIZED REPRESENTATIVE

| | |
|-------------|----------|
| PROJECT NO. | 0807 |
| C.I.P. NO. | A-000570 |
| N.A.S. NO. | |
| SHEET NO. | |

G06.02.7



1
 G06.02.7
TYPICAL RGL LIGHT BAR - ENLARGED PLAN
 SCALE: 1" = 20'

ABBREVIATIONS

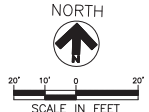
FOR A LIST OF ABBREVIATIONS, REFER TO DRAWING EDI.01.

LEGEND

- 4-WAY JUNCTION CAN PLAZA
 JCP ID: JCP INDICATES JUNCTION CAN PLAZA
 'N' INDICATES NORTH AIRFIELD
 '27' INDICATES MANHOLE NUMBER
- EXISTING HANDHOLE/MANHOLE
- EXISTING L-8670 PULLMAN
- NEW CABLE IN PROPOSED JCP DUCT BANK
 DUCTBANK (E) INDICATES NUMBER OF 2" DUCTS.
- PROPOSED DUCTBANK BORING
- EXISTING DUCTBANK BORING
- PROPOSED 2" SCHED 40 PVC
- EXISTING 2" SCHED 40 PVC
- CONDUIT INTERCEPT LOCATION
- EXISTING IP RGL OR LAHSO LIGHT-AS NOTED
- FLAGMAN
- PHASE INDICATOR
- UNIT TAXIWAY CLOSURE MARKER
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- PHASE 2 TAXIWAY SAFETY AREA
- PHASE 2 TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA

NOTES

1. ALL WORK ON THIS SHEET IS UNDER SUBPHASE 2D UNLESS OTHERWISE NOTED.
2. REFER TO AIRFIELD LIGHTING AND SIGNAGE DEMOLITION PLANS FOR EXISTING ELECTRICAL CONDITIONS.
3. REFER TO E10 SERIES FOR RGL DETAILS AND SCHEMATIC WIRING DIAGRAM.
4. REFER TO E10 SERIES FOR DUCTBANK AND JCP INSTALLATION DETAILS.
5. REFER TO E7 SERIES FOR EXISTING AND PROPOSED DUCTBANK AND JUNCTION CAN PLAZAS.
6. REFER TO E08-03 FOR JCP SCHEDULE.
7. SUBPHASE 2D - FOR THE RESPECTIVE RGL BAR TO BE CUT OVER, THE CONTRACTOR SHALL PERFORM THE FOLLOWING SEQUENCE OF CONSTRUCTION:
 - A. THE EXISTING ELECTRICAL MANHOLE IS LOCATED INSIDE THE TOFA OF TAXIWAY NA AS WELL AS THE RESPECTIVE RGL BAR TAXIWAY, THEREFORE ALL WORK REQUIRED INSIDE THE MANHOLE WILL REQUIRE A CLOSURE OF THE RESPECTIVE TAXIWAY AS WELL AS A PARTIAL TAXIWAY NA CLOSURE DURING THE DAYTIME WHILE THE ELECTRICAL VAULT CAN BE LOCKED-OUT AND TAGGED-OUT. IN ADDITION, FOR THE RGL BAR ON TAXIWAY NE, TAXIWAY NR AND TAXIWAY NP NORTH OF BR / 26L, THE MANHOLE IS LOCATED INSIDE THE RSA AND WILL REQUIRE A RUNWAY CLOSURE. FOR EACH RGL BAR, THE RESPECTIVE PARTIAL TAXIWAY NA OR RUNWAY BR / 26L CLOSURE IS LIMITED TO A 2HR DURATION TO PERFORM THE SCOPE IDENTIFIED UNDER ITEMS 7B AND 7C BELOW. FOR RUNWAY BR / 26L CLOSURES, INSTALL LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END.
 - B. DURING THE DAY, WHILE THE VAULT IS LOCKED OUT AND TAGGED OUT AND THE TAXIWAY NA OR RUNWAY IS CLOSED, CUT THE CIRCUIT AT THE EXISTING MANHOLE SYSTEM AND SPICE THE REMAINING CIRCUIT INSIDE THE MANHOLE SO THAT IT REMAINS ACTIVE. THE CONTRACTOR SHALL PLUG THE DUCT LEADING TO THE LIGHT BAR. THIS TEMPORARY OUTAGE OF THE COMPLETE RGL CIRCUIT IS LIMITED TO TWO (2) DAYTIME HOURS AS COORDINATED WITH AIRPORT OPERATIONS AND THE ATCT. THIS WILL ISOLATE THE RESPECTIVE RGL LIGHT BAR.
 - C. DURING THE SAME TWO (2) HOUR LIGHT SYSTEM OUTAGE AND CLOSURE, INSPECT THE EXISTING RGL CIRCUIT PULLMAN IN THE SHOULDER PAVEMENT TO ENSURE THAT ONLY THE RGL CIRCUIT IS INSIDE THE CAN. IDENTIFY THE RGL BAR CONDUIT PATHWAY TO DETERMINE THE CONDUIT INTERCEPT LOCATION.
 - D. IF IT IS DISCOVERED DURING VERIFICATION THAT THE EXISTING PULLMAN CONTAINS ANY ELECTRICAL CIRCUIT IN ADDITION TO THE RGL CIRCUIT, THEN THE ELECTRICAL VAULT LIGHTING SYSTEM MUST REMAIN LOCKED OUT AND TAGGED OUT FOR THE DURATION OF THIS RGL BAR CUT OVER PHASE. IF IT IS DISCOVERED THAT THE EXISTING PULLMAN ONLY CONTAINS THE RGL CIRCUIT, THEN THE LIGHTING SYSTEM MAY BE RE-ENERGIZED FOR THE DURATION OF THIS PHASE.
 - E. ITEM 7E THRU ITEM 7H REQUIRE A CLOSURE OF ONLY THE RESPECTIVE RGL BAR TAXIWAY. COORDINATE TAXIWAY CLOSURE WITH AIRPORT OPERATIONS.
 - F. INSTALL A 2" SCHEDULE 40 PVC BRANCH CONDUIT FROM THE RESPECTIVE JUNCTION CAN TO THE CONDUIT INTERCEPT LOCATION. EXPOSE BOTH CONDUITS AT THE INTERCEPT LOCATION.
 - G. REMOVE THE EXISTING 'DEAD' L-824C CABLES FROM THE PLUGGED DUCT AT THE MANHOLE TO THE EXISTING PULLMAN IN THE SHOULDER PAVEMENT ADJACENT TO THE RGL LIGHT BAR.
 - H. CUT THE EXISTING CONDUIT WHICH IS NOW EMPTY AT THE INTERCEPT LOCATION AND COUPLE ONTO THE NEW CONDUIT EXTENDING TO THE RESPECTIVE JUNCTION CAN.
 - I. EXTEND THE NEW L-824C CONDUCTORS FROM THE NEW JUNCTION CAN TO THE EXISTING PULLMAN ADJACENT TO THE RGL LIGHT BAR. TEMPORARILY SPICE THE NEW CONDUCTORS TO THE EXISTING CONDUCTORS INSIDE THE PULLMAN. KEEP ENOUGH SLACK IN THE NEW CONDUCTORS AT THE PULLMAN SO THAT THEY CAN BE EXTENDED TO THE NEW RGL FIXTURES AFTER THE NEW FIXTURES HAVE BEEN INSTALLED AND THE SPICE IS ELIMINATED.
 - J. THE TAXIWAY CAN BE RE-OPENED FOR OPERATIONS.
 - K. AT THE NORTH ELECTRICAL VAULT, CONNECT THE NEW RGL CIRCUIT TO THE EXISTING TEMPORARY RGL REGULATOR TO ENERGIZE THE NEW RGL CIRCUIT AND TEST THAT THE LIGHTS ARE OPERATIONAL.



NOTES

- ALL WORK ON THIS SHEET IS UNDER SUBPHASE 2C UNLESS OTHERWISE NOTED.
- REFER TO AIRFIELD LIGHTING AND SIGNAGE DEMOLITION PLANS FOR EXISTING ELECTRICAL CONDITIONS.
- REFER TO E10 SERIES FOR LAHSO DETAILS AND SCHEMATIC WIRING DIAGRAM.
- REFER TO E10 SERIES FOR DUCTBANK AND JCP INSTALLATION DETAILS.
- REFER TO E7 SERIES FOR EXISTING AND PROPOSED DUCTBANK AND JUNCTION CAN PLAZAS.
- REFER TO E08-03 FOR JCP SCHEDULE.
- SUBPHASE 2C - FOR THE RESPECTIVE LAHSO BAR TO BE CUT OVER, THE CONTRACTOR SHALL PERFORM THE FOLLOWING SEQUENCE OF CONSTRUCTION:
 - THE EXISTING ELECTRICAL MANHOLE IS LOCATED INSIDE THE RSA, THEREFORE ALL WORK REQUIRED INSIDE THE MANHOLE WILL REQUIRE A RUNWAY CLOSURE DURING THE DAYTIME WHILE THE ELECTRICAL VAULT CAN BE LOCKED-OUT AND TAGGED-OUT. THIS WORK IS LIMITED TO A 2HR DURATION TO PERFORM THE SCOPE IDENTIFIED UNDER ITEMS 7B AND 7C BELOW. FOR RUNWAY BR / 26L CLOSURES, INSTALL LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END.
 - DURING THE DAY, WHILE THE VAULT IS LOCKED OUT AND TAGGED OUT AND THE RUNWAY IS CLOSED, CUT THE CIRCUIT AT THE EXISTING MANHOLE SYSTEM AND PLUG THE DUCT LEADING TO THE LAHSO LIGHT BAR. THIS WILL ISOLATE THE RESPECTIVE LAHSO LIGHT BAR.
 - DURING THIS SAME DAYTIME RUNWAY BR / 26L CLOSURE, INSPECT THE EXISTING LAHSO CIRCUIT PULLCAN IN THE SHOULDER PAVEMENT TO ENSURE THAT ONLY THE LAHSO CIRCUIT IS INSIDE THE CAN. IDENTIFY THE LAHSO BAR CONDUIT PATHWAY TO DETERMINE THE CONDUIT INTERCEPT LOCATION.
 - ITEM 7E THRU ITEM 7H MUST BE PERFORMED AT NIGHT WHEN RUNWAY BR / 26L CAN BE CLOSED FOR A FOUR (4) HOUR DURATION. THE ELECTRICAL VAULT CAN REMAIN LIVE. COORDINATE RUNWAY CLOSURE WITH AIRPORT OPERATIONS.
 - INSTALL A 2" SCHEDULE 40 PVC BRANCH CONDUIT FROM THE RESPECTIVE NEW JUNCTION CAN PLAZA TO THE CONDUIT INTERCEPT LOCATION. EXPOSE BOTH CONDUITS AT THE INTERCEPT LOCATION.
 - REMOVE THE EXISTING "ODD" L-824C CABLES FROM THE PULSED DUCT AT THE MANHOLE THRU THE EXISTING LAHSO LIGHT BAR.
 - CUT THE EXISTING CONDUIT WHICH IS NOW EMPTY AT THE INTERCEPT LOCATION AND COUPLE ONTO THE NEW CONDUIT EXTENDING TO THE RESPECTIVE JUNCTION CAN.
 - EXTEND THE NEW L-824C CONDUCTORS FROM THE NEW JUNCTION CAN TO RECONNECT ALL LIGHTS IN THE LAHSO LIGHT BAR. PROVIDE NEW TRANSFORMERS AND CONNECTOR KITS TO MATCH EXISTING TAG AND LABEL ALL CONDUCTORS.
 - REMOVE LIGHTED RUNWAY CLOSURE MARKERS FROM EACH RUNWAY END AND RETURN RUNWAY BR / 26L TO SERVICE AS SOON AS POSSIBLE.

AT THE NORTH ELECTRICAL VAULT, DISCONNECT AND DISPOSE OF THE "ODD" LAHSO CONDUCTORS FROM THE LAHSO CONTROLLER BACK TO THE EXISTING S1 CABINET. CONNECT THE NEW LAHSO CIRCUIT TO THE EXISTING LAHSO CONTROLLER TO ENERGIZE THE CIRCUIT AND TEST THAT THE LIGHTS ARE OPERATIONAL.

ABBREVIATIONS

FOR A LIST OF ABBREVIATIONS, REFER TO DRAWING E01.01.

LEGEND

| | | | | |
|--|--------|-------------------------------------|--|-----------------------------------------|
| | JCP | 4-WAY JUNCTION CAN PLAZA | | EXISTING IP RGL OR LAHSO LIGHT-AS NOTED |
| | JCP ID | 4-WAY JUNCTION CAN PLAZA | | FLAGMAN |
| | "N" | INDICATES NORTH ARFIELD | | PHASE INDICATOR |
| | "21" | INDICATES MANHOLE NUMBER | | UNLIT TAXIWAY CLOSURE MARKER |
| | # | EXISTING HANDHOLE/MANHOLE | | MARKER POLE BARRICADE |
| | # | EXISTING L-867D PULLCAN | | LOW PROFILE BARRICADE (EXACT POSITION) |
| | 4 | NEW CABLE IN PROPOSED JCP DUCT BANK | | PHASE 2 TAXIWAY SAFETY AREA |
| | [] | INDICATES NUMBER OF 2" DUCTS. | | PHASE 2 TAXIWAY OBJECT FREE AREA |
| | --- | PROPOSED DUCTBANK BORING. | | RUNWAY SAFETY AREA |
| | --- | EXISTING DUCTBANK BORING. | | RUNWAY OBJECT FREE AREA |
| | --- | PROPOSED 2" SCHED 40 PVC | | |
| | --- | EXISTING 2" SCHED 40 PVC | | |
| | ▶ | CONDUIT INTERCEPT LOCATION | | |

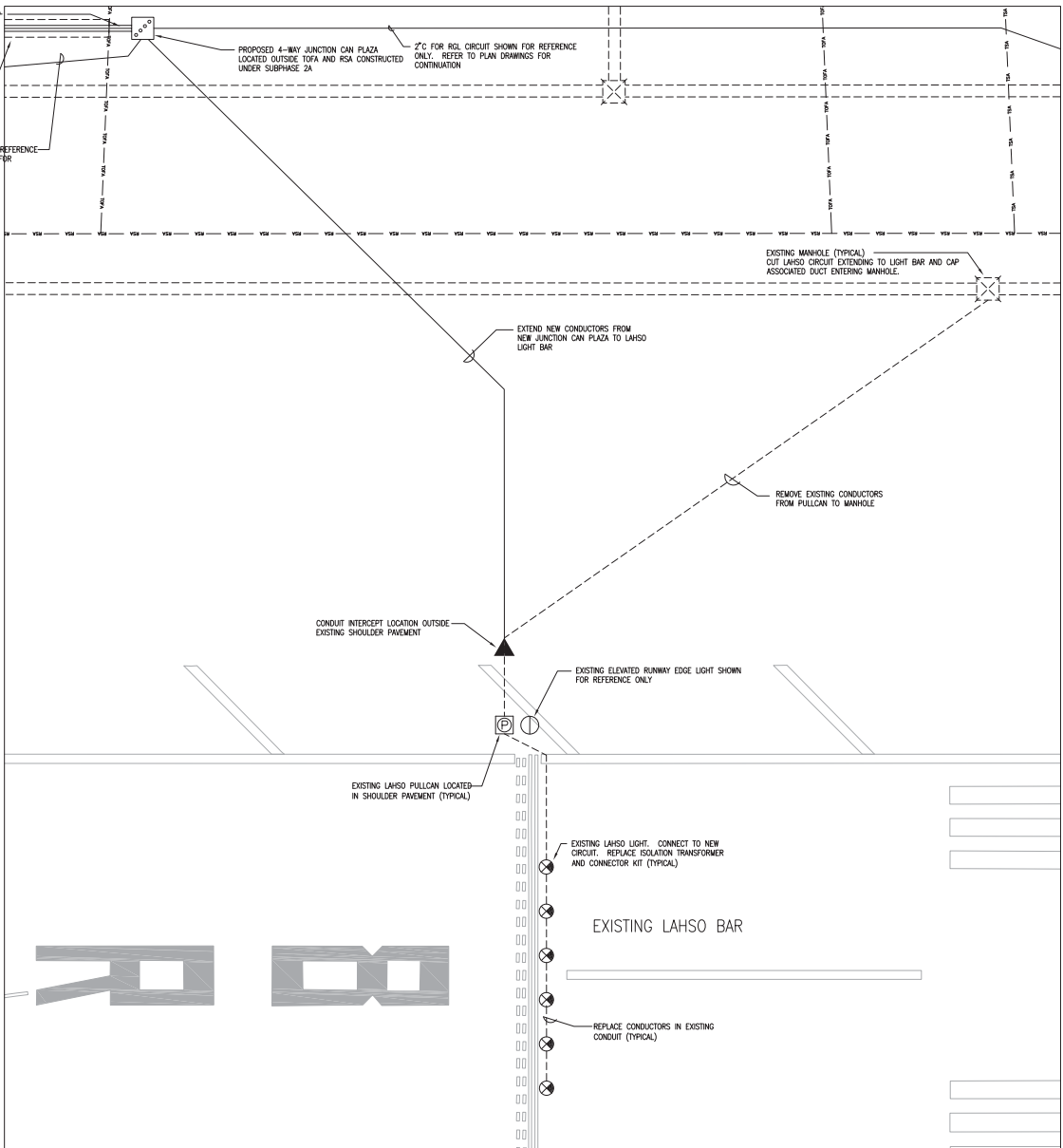
PROPOSED 4-WAY, 2" DUCTBANK (DEB) CONSTRUCTED UNDER SUBPHASE 2A. INSTALL NEW CONDUCTORS FOR OVERALL CIRCUIT LEAVING SLACK IN JCP UNDER SUBPHASE 2B.

PROPOSED CAGED BORE DRILL UNDER EXISTING PAVEMENT CONSTRUCTED UNDER SUBPHASE 2A. CASING EXTENDS TO TOFA

2" C FOR RGL CIRCUIT SHOWN FOR REFERENCE ONLY. REFER TO PLAN DRAWINGS FOR CONTINUATION

PROPOSED 4-WAY JUNCTION CAN PLAZA LOCATED OUTSIDE TOFA AND RSA CONSTRUCTED UNDER SUBPHASE 2A

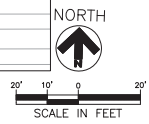
2" C FOR RGL CIRCUIT SHOWN FOR REFERENCE ONLY. REFER TO PLAN DRAWINGS FOR CONTINUATION



1
G06.02.B

TYPICAL LAHSO LIGHT BAR - ENLARGED PLAN

SCALE: 1" = 20'



| REVISIONS | | |
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| NO. | DESCRIPTION | DATE |
| | | |

REHABILITATION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
PHASING PLAN - PHASE 2 -
TYP LAHSO LIGHT BAR ENLARGED PLAN

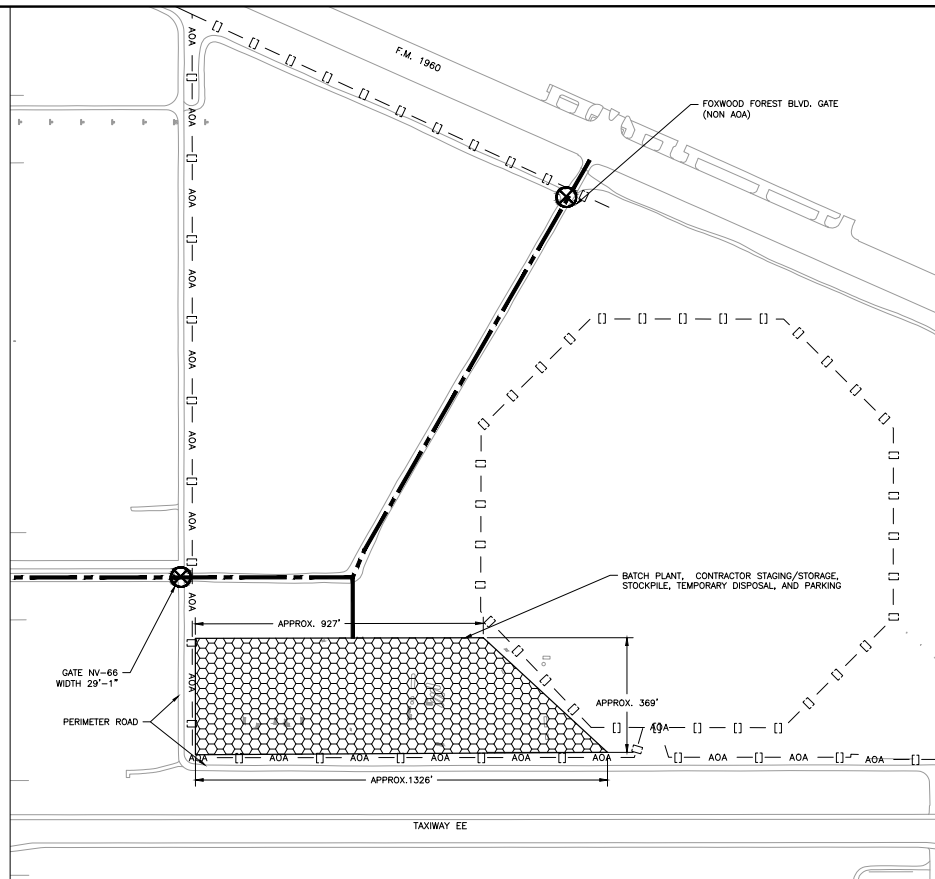
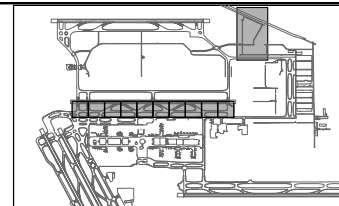
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| ISSUED FOR BID | |
| PROJECT MGR: | OLF |
| DESIGNER: | RSF |
| DRAWN BY: | RSF |
| CHECKED BY: | OLF |
| SCALE: | 1"=20' |
| DATE: | 07/27/2018 |



DEPARTMENT OF AVIATION
 APPROVED BY: DP 7/26/18
Dany P...
 HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

| | |
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| PROJECT NO. | 0807 |
| C.I.P. NO. | A-000570 |
| H.A.S. NO. | |

SHEET NO.
G06.02.8



- LEGEND**
- HAUL ROUTE
 - - - AOA [] AOA FENCE
 - - - [] FENCE (NON AOA)
 - ⊗ CONTRACTOR ACCESS/GATE GUARD
 - [] CONTRACTOR STAGING AREA/EMPLOYEE PARKING/BATCH PLANT SITE

PHASE 1 NOTES

1. PHASE 1 WILL CONSIST OF A 75-DAY MOBILIZATION / PROCUREMENT / PREPARATION PERIOD. DURING THIS PERIOD, THE CONTRACTOR IS EXPECTED TO PERFORM THE FOLLOWING ACTIVITIES:
 - A. INITIATE THE BADGING AND SAFETY TRAINING PROCESSES FOR CONTRACTOR PERSONNEL IN ORDER TO HAVE A SUFFICIENT WORK FORCE PROPERLY BADGED PRIOR TO BEGINNING WORK.
 - B. THE CONTRACTOR SHALL BEGIN MOBILIZATION, INCLUDING FURNISHMENT AND SET UP OF THE FIELD OFFICES FOR BOTH THE CONTRACTOR AND THE ENGINEER, SET UP OF THE CONTRACTOR'S STAGING / STORAGE AREA AND CONCRETE BATCH PLANT SITE, AND PROCUREMENT OF PROJECT MATERIALS.
 - C. INSTALL APPROPRIATE TRAFFIC CONTROL DEVICES.
 - D. PREPARE MATERIAL SUBMITTALS, SHOP DRAWINGS, AND ANY RFSs AND SUBMIT FOR REVIEW, IN ACCORDANCE WITH SECTION 01330 - SUBMITTAL PROCEDURES. PARTICULAR ATTENTION SHOULD BE PAID TO CRITICAL SUBMITTALS, INCLUDING BUT NOT LIMITED TO SAFETY PLAN(S), QUALITY CONTROL PLAN(S), CONCRETE MIX DESIGNS, ASPHALT JOB MIX FORMULA(S) (JMF), ELECTRICAL ITEMS, AND OTHER LONG LEAD TIME ITEMS.
 - E. COMPLETE INITIAL SURVEY CHECKS AND VERIFICATION OF CONTROL MONUMENTS, ALONG WITH ESTABLISHMENT OF TEMPORARY BENCHMARKS.
 - F. PERFORM NECESSARY EXPLORATORY EXCAVATIONS FOR UNDERGROUND UTILITIES IN AIRPORT-APPROVED LOCATIONS.
2. THE CONTRACTOR MAY REQUEST TO BEGIN ADDITIONAL CONSTRUCTION ITEMS DURING PHASE 1. ALLOWANCE OF SUCH REQUESTS WILL BE AT THE DIRECTION OF AIRPORT OPERATIONS
3. SEE SHEET G04-01 FOR ADDITIONAL STAGING / STORAGE AREA, STOCKPILE AREA, DISPOSAL AREA, AND BATCH PLANT SITE REQUIREMENTS.
4. PER AIRPORT SECURITY POLICY NO VEHICLES, EQUIPMENT, OR MATERIAL STORAGE MAY OCCUR WITHIN 10 FEET OF THE AOA FENCE. THE CONTRACTOR SHALL CONSPICUOUSLY MARK AND ENFORCE THE 10' CLEAR ZONE WITH SIGNS, MARKINGS, AND/OR A PHYSICAL BARRIER TO BE APPROVED BY AIRPORT OPERATIONS.
5. PROCURE BARRICADES AND OTHER SAFETY ITEMS AND VERIFY SUFFICIENT QUANTITY TO CLOSE THE REQUIRED AREAS ONCE WORK IS AUTHORIZED TO BEGIN.

| PHASE 1 | | | | | |
|------------------|---------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------|-------------------------|
| DURATION (DAYS) | WORK PERIOD | DAYTIME (0600 HOURS TO 2200 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | NIGHTTIME (2200 HOURS TO 0600 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
| 75 CALENDAR DAYS | DAY AND NIGHT | RESTRICTIONS --N/A CLOSURES --N/A | RESTRICTIONS --N/A CLOSURES --N/A | --N/A | N/A |

REVISIONS

| NO. | DESCRIPTION | DATE | BY |
|-----|-------------|------|----|
| | | | |

RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
PHASING PLAN - PHASE 1 - MOBILIZATION

RECORD DRAWINGS

| | |
|--------------|------------------|
| PROJECT MGR: | BMS |
| DESIGNER: | EN |
| DRAWN BY: | MM |
| CHECKED BY: | SMC |
| SCALE: | 1"=200' |
| DATE: | A April 19, 2019 |

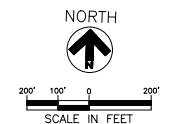
THE RECORD DRAWING IS A COMBINATION OF THE ORIGINAL DRAWING AND ANY REVISIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF THE RECORD DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

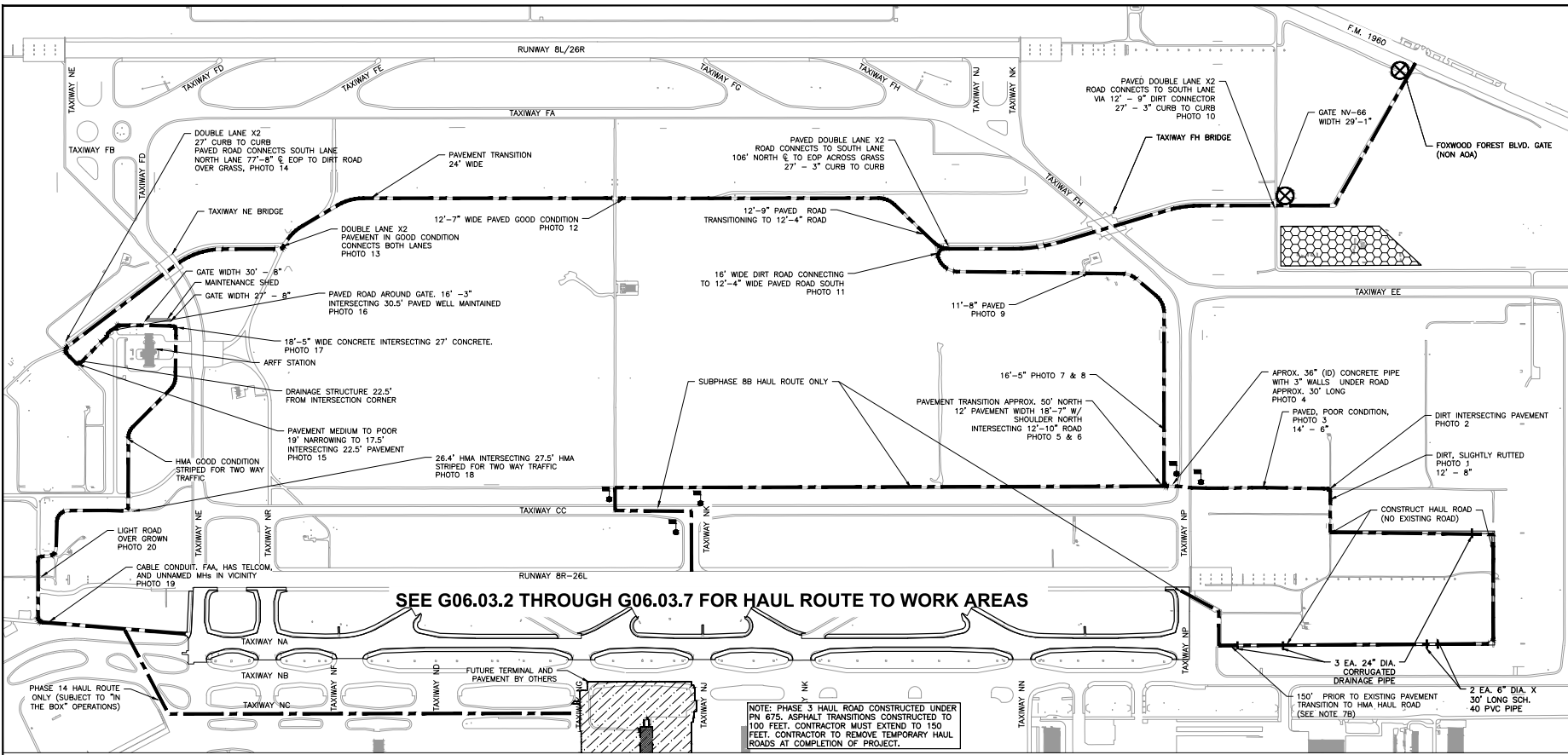
RECORD DRAWING PREPARED BY:
 THE FIRM THAT ORIGINALLY DESIGNED OR PREPARED THE ORIGINAL DRAWING.
 THE FIRM SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE RECORD DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

DEPARTMENT OF AVIATION
 APPROVED BY: DATE:

HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

| | |
|-------------|----------|
| PROJECT NO. | 0675 |
| CLIP NO. | A-000670 |
| H.A.S. NO. | 106675 |
| SHEET NO. | G06.01 |

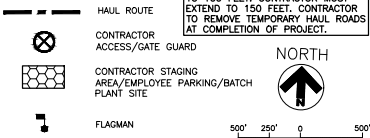




HAUL ROUTE GENERAL NOTES

- CONSTRUCTION ACCESS TO THE ADA SHALL BE THROUGH ACCESS GATE NW-66. ALL OTHER ACCESS SHALL BE BY SPECIAL REQUEST AND SUBJECT TO APPROVAL BY AIRPORT OPERATIONS AND AIRPORT SECURITY. THE CONTRACTOR SHALL MAINTAIN CONTROL AND PASSAGE THROUGH ANY ADA ENTRY POINT UTILIZED FOR CONSTRUCTION ACCESS AND NOT STAFFED BY AIRPORT PERSONNEL. ACCESS GATE NW-66 IS NOT STAFFED BY AIRPORT PERSONNEL.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE OFFSITE HAUL ROUTES (STATE HIGHWAYS, COUNTY ROADS, AND / OR CITY STREETS) WITH THE APPROPRIATE OWNER WHO HAS JURISDICTION OVER THE AFFECTED ROUTE AND OBTAIN HAUL PERMITS AS REQUIRED. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS REGARDING OFFSITE HAUL ROUTES AND SHALL ASSUME SOLE RESPONSIBILITY FOR DAMAGE CAUSED BY CONTRACTOR OPERATIONS.
- LOCATION OF ONSITE HAUL ROUTES SHALL BE AS SHOWN IN THE PLANS.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASSESS THE VIABILITY OF EXISTING HAUL ROADS, INCLUDING WIDTH AND LOADING REQUIREMENTS, NECESSARY FOR THE CONTRACTOR'S PROPOSED OPERATIONS. THE CONTRACTOR MAY WIDEN AND / OR STRENGTHEN EXISTING HAUL ROADS AS DEEMED APPROPRIATE FOR THE CONTRACTOR'S PROPOSED OPERATIONS.
- THE CONTRACTOR SHALL INSPECT ALL CONTRACTOR VEHICLES AND EQUIPMENT UPON ENTERING AND EXITING ANY AIRPORT ACCESS GATE TO ENSURE THAT VEHICLES AND EQUIPMENT ARE CLEAN AND FREE OF MUD, DIRT, DEBRIS, WASTE, LOOSE MATERIAL, AND / OR ANY OTHER MATERIAL CAPABLE OF CREATING FOD ON ANY HAUL ROADS (ONSITE OR OFFSITE). ANY VEHICLE OR EQUIPMENT IN THREAT OF CREATING A FOD ISSUE SHALL BE IMMEDIATELY DISPATCHED TO THE CONTRACTOR'S STAGING / STORAGE AREA OR DISPOSAL AREA FOR CLEANING. ALL COSTS ASSOCIATED WITH INSPECTION OF CONTRACTOR VEHICLES AND EQUIPMENT UPON ENTERING AND EXITING ANY AIRPORT ACCESS GATE, AND SUBSEQUENT REQUIRED CLEANING, INCLUDING LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
- EXISTING ONSITE HAUL ROADS, INCLUDING ASSOCIATED DRAINAGE DEVICES, SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION AS A PASSABLE ROADWAY FOR AIRPORT OPERATIONS VEHICLES. EXISTING HAUL ROADS ONSITE AND OFFSITE SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION, OR BETTER, WHEN NO LONGER NEEDED AS A HAUL ROAD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED BY THE CONTRACTOR'S EQUIPMENT AND PERSONNEL. THE CONTRACTOR WILL FURTHER BE REQUIRED TO MEET THE PROVISIONS OF SECTION 02071 - FAA AC 150 5370-106 GENERAL PROVISIONS, PARAGRAPH 42-05.G. ANY PAVEMENT CROSSED BY CONSTRUCTION TRAFFIC SHALL BE PROTECTED AGAINST DAMAGE AND ALL DAMAGE OCCURRING WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE WITH NO ADDITIONAL COMPENSATION OR CONTRACT TIME. ANY PAVEMENTS DAMAGED BY THE CONSTRUCTION EQUIPMENT SHALL BE REMOVED AND REPLACED TO THE NEAREST PAVEMENT JOINT, BUT A MINIMUM OF AT LEAST TEN (10) FEET ON EACH SIDE OF THE MOST EXTREME OUTER TIRE MARKS TO ENSURE ALL PAVEMENT TRAVERSED BY THE CONSTRUCTION EQUIPMENT IS REMOVED AND REPLACED.
- TEMPORARY HAUL ROADS MUST BE CONSTRUCTED BY THE CONTRACTOR IN AREAS WHERE THERE ARE NO EXISTING HAUL ROADS. THE CONTRACTOR MAY CONSTRUCT TEMPORARY HAUL ROADS AS DEEMED APPROPRIATE FOR THE CONTRACTOR'S PROPOSED OPERATIONS. HOWEVER, THE FOLLOWING PARAMETERS MUST BE FOLLOWED:
 - INTERSECTIONS OF TEMPORARY HAUL ROADS AND ACTIVE AIRFIELD PAVEMENTS SHALL NOT HAVE A VERTICAL SEPARATION OF MORE THAN 1.5 INCHES.
 - TEMPORARY HAUL ROADS SHALL BE CONSTRUCTED OF ASPHALT COMPOSITE MATING SYSTEM COMPONENTS, OR OTHER NON-FOD PRODUCING MATERIAL, WITHIN 150 FEET OF ANY ACTIVE AIRFIELD PAVEMENT OR WHEN CROSSING EXISTING UNDERGROUND FAA CABLES OR FACILITIES. THE CONTRACTOR MAY SUBMIT, IN ACCORDANCE WITH SECTION 01330 - SUBMITTAL PROCEDURES, ALTERNATIVE MATERIALS TO THE ENGINEER FOR REVIEW AND APPROVAL.
 - INSTALL STABILIZED CONSTRUCTION EXITS BETWEEN THE TYPICAL TEMPORARY HAUL ROAD SECTION AND THE 100-FOOT NON-FOD PRODUCING SECTION. STABILIZED CONSTRUCTION EXITS SHALL NOT BE REQUIRED IF ENTIRETY OF TEMPORARY HAUL ROAD SECTION IS COMPOSED OF NON-FOD PRODUCING MATERIAL.
 - GRADES WITHIN ANY ACTIVE SAFETY OR OBJECT FREE AREAS SHALL MEET THE REQUIREMENTS OF FAA AC 150 / 5300-13A, CURRENT EDITION, LATEST CHANGE.
- POSITIVE (CONTINUOUS AND FLOWING) DRAINAGE MUST BE MAINTAINED WHILE THE TEMPORARY HAUL ROAD IS IN PLACE, INCLUDING THE INSTALLATION AND MAINTENANCE OF DRAINAGE STRUCTURES AS REQUIRED.
- FENCING, EARTHWORK, GRADING, DRAINAGE, UTILITY PROTECTION, SWPPP, AND OTHER MISCELLANEOUS CONSTRUCTION COMPONENTS REQUIRED TO CONSTRUCT TEMPORARY HAUL ROADS OR ACCESS POINTS WILL BE THE CONTRACTOR'S RESPONSIBILITY.
- THE CONTRACTOR SHALL, IN ACCORDANCE WITH SECTION 01330 - SUBMITTAL PROCEDURES, SUBMIT ALL PROPOSED HAUL ROUTE IMPROVEMENTS FOR REVIEW AND APPROVAL AS REQUIRED BY SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS, PRIOR TO PERFORMING ANY PROPOSED IMPROVEMENTS.
- SEE PLAN SHEETS G06.03.4 - G06.03.7 FOR ADDITIONAL REQUIREMENTS FOR THE EAST HAUL ROUTE (PHASE 7 AND PHASES 9 - 13).
- TEMPORARY HAUL ROADS SHALL BE REMOVED WHEN NO LONGER NEEDED AS A HAUL ROAD. THE CONTRACTOR IS RESPONSIBLE FOR RETURNING THE LINES AND GRADES OF THESE AREAS TO THEIR PRE-CONSTRUCTION CONDITIONS SUCH THAT POSITIVE (CONTINUOUS AND FLOWING) DRAINAGE OF SURFACE WATER AND A GOOD STAND OF VEGETATION, IN ACCORDANCE WITH THE VEGETATIVE REQUIREMENTS OF THIS PROJECT, ARE PROVIDED.
- THE PRE- AND POST-CONSTRUCTION CONDITION OF ALL EXISTING ONSITE HAUL ROUTES SHALL BE JOINTLY INSPECTED AND DETERMINED BY THE CONTRACTOR AND THE OWNER'S REPRESENTATIVE. PHOTOGRAPHS AND / OR VIDEOS OF ALL HAUL ROUTES MUST BE PROVIDED BY THE CONTRACTOR, IN ACCORDANCE WITH SECTION 01321 - CONSTRUCTION PHOTOGRAPHS.
- ANY MOVEMENT OF THE CONTRACTOR'S VEHICLES AND EQUIPMENT WITHIN AN ACTIVE RSA SHALL ONLY BE UNDER ESCORT BY AIRPORT OPERATIONS OR WHEN THE RUNWAY IS CLOSED.
- ALL ONSITE FAA ACCESS ROADS TO FAA FACILITIES SHOULD NOT BE USED BY THE CONTRACTOR WITHOUT PRIOR WRITTEN APPROVAL BY THE FAA. IF THESE ROADS ARE USED BY THE CONTRACTOR, THEY SHALL REMAIN OPEN AND MAINTAINED AT ALL TIMES.
- THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMAN AT ANY ACTIVE AIRFIELD PAVEMENT CROSSING AS SHOWN IN THE PLANS, OR AS DIRECTED BY AIRPORT OPERATIONS. PLACEMENT OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL. THE FLAGMEN WILL BE RESPONSIBLE FOR STOPPING ANY CONSTRUCTION TRAFFIC THAT CROSSES THE PATH OF TAXIING AIRCRAFT. FLAGMEN MUST BE ESCORTED TO AND FROM THEIR POSITIONS BY AIRPORT OPERATIONS AT THE BEGINNING AND END OF EACH WORK PERIOD.
- THE CONTRACTOR SHALL USE COLORED CONES OR REFLECTIVE TAPE, EASILY VISIBLE FROM 150 FEET, TO DENOTE THE LIMITS OF THE HAUL ROUTE. THE COLOR SHALL MATCH THAT OF THE PROJECT SPECIFIC COLOR ASSIGNED TO THE PROJECT.
- SPECIAL ATTENTION TO DUST CONTROL IS REQUIRED. THE CONTRACTOR SHALL REGULARLY APPLY WATER TO HAUL ROUTES TO KEEP DUST DOWN.
- ALL COSTS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND REMOVAL OF ONSITE HAUL ROUTES INCLUDING LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS SHALL BE AS DESCRIBED IN SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
- PHOTOS REFERENCED ARE INCLUDED IN SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.

LEGEND



NOTE: PHASE 3 HAUL ROAD CONSTRUCTED UNDER PN 675. ASPHALT TRANSITIONS CONSTRUCTED TO 100 FEET. CONTRACTOR MUST EXTEND TO 150 FEET. CONTRACTOR TO REMOVE TEMPORARY HAUL ROADS AT COMPLETION OF PROJECT.

SCALE IN FEET
 500' 250' 0' 250' 500'

REVISIONS

| NO. | DESCRIPTION | DATE | BY |
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| | | | |

PHASING PLAN - SUBPHASE 3A
WEST HAUL ROAD
 RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT

ISSUED FOR BID

| | |
|--------------|----------------|
| PROJECT MGR: | BMS |
| DESIGNER: | ENB |
| DRAWN BY: | MMW |
| CHECKED BY: | SMC |
| SCALE: | 1"=150' |
| DATE: | April 19, 2019 |



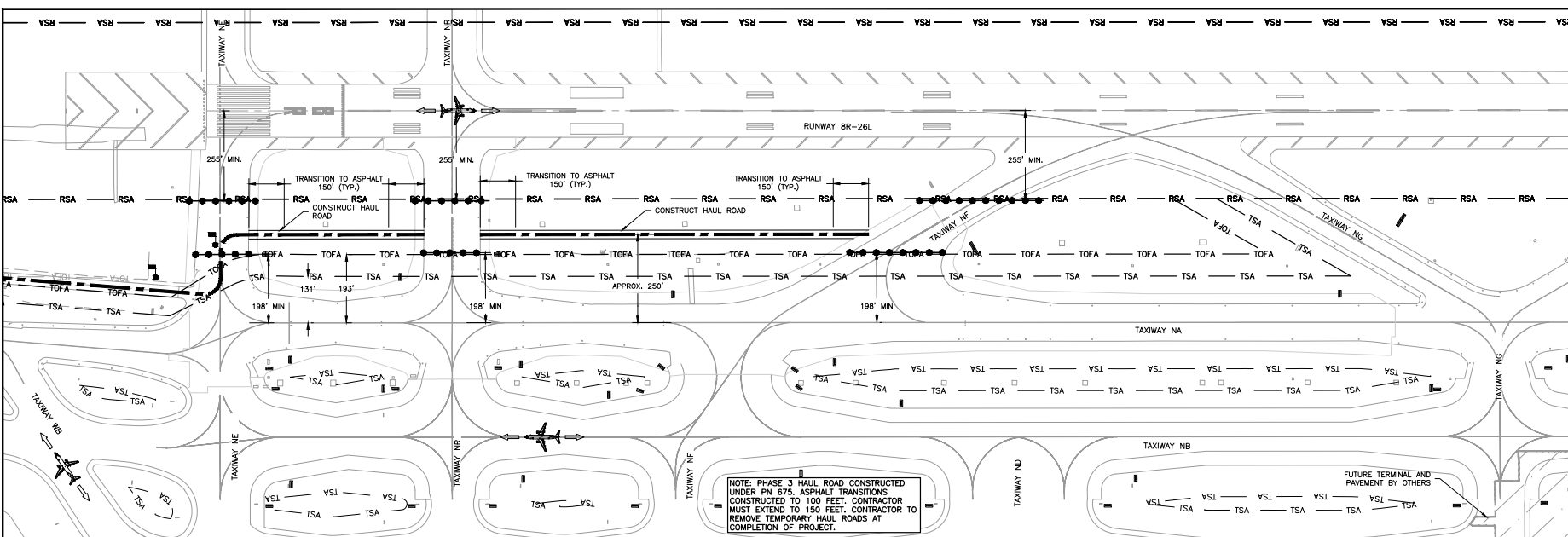
DEPARTMENT OF AVIATION

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| APPROVED BY: | DATE: |
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HOUSTON AIRPORT SYSTEM AUTHORIZED REPRESENTATIVE

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| PROJECT NO. | 0907 |
| C.L.P. NO. | A-000670 |
| H.A.S. NO. | |
| SHEET NO. | |

G06.03.2



NOTE: PHASE 3 HAUL ROAD CONSTRUCTED UNDER PN 675. ASPHALT TRANSITIONS CONSTRUCTED TO 100 FEET. CONTRACTOR MUST EXTEND TO 150 FEET. CONTRACTOR TO REMOVE TEMPORARY HAUL ROADS AT COMPLETION OF PROJECT.

LEGEND

- AIRCRAFT TAXI ROUTE DURING PHASE
- HAUL ROUTE
- PHASE INDICATOR
- RSA - RUNWAY SAFETY AREA
- ROFA - RUNWAY OBJECT FREE AREA
- TSA - SUBPHASE 3A TAXIWAY SAFETY AREA
- TOFA - SUBPHASE 3A TAXIWAY OBJECT FREE AREA
- FLAGMAN
- TABLE LOCATION POINT
- LOW PROFILE BARRICADE (EXACT POSITION)

OPERATIONS FOR REVIEW AND APPROVAL.

4. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

SUBPHASE 3A CONSTRUCTION SEQUENCING AND OPERATION NOTES

- SUBPHASE 3A SHALL BE COMPLETED CONCURRENTLY WITH PHASE 2. ALL WORK IN SUBPHASE 3A SHALL BE LIMITED TO NIGHTTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 45 CALENDAR DAYS TO COMPLETE SUBPHASE 3A. HOWEVER, THE CONTRACTOR IS ENCOURAGED TO COMPLETE SUBPHASE 3A AS QUICKLY AS POSSIBLE.
- CONSTRUCTION TASKS FOR SUBPHASE 3A ARE AS FOLLOWS:
 - WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED IN THE SUBPHASE 3A MOVEMENT NOTES, THIS SHEET.
 - INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL BE REMOVED AT THE COMPLETION OF EACH NIGHTTIME WORK PERIOD SO THAT THESE PAVEMENTS MAY BE REOPENED TO AIRCRAFT TRAFFIC DURING DAYTIME HOURS. THE CONTRACTOR SHALL REINSTALL BARRICADES AT THESE LOCATIONS AT THE BEGINNING OF EACH SUBSEQUENT NIGHTTIME WORK PERIOD.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - CROSS TAXIWAY NE, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - CROSS TAXIWAY NR, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - CROSS TAXIWAY NF, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - CROSS TAXIWAY NE, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE TAXIWAY BR - 26L CENTERLINE.
 - CROSS TAXIWAY NR, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE TAXIWAY BR - 26L CENTERLINE.
 - CROSS TAXIWAY NF, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE TAXIWAY BR - 26L CENTERLINE.
 - DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. THE LIGHTS SHALL BE RE-ENERGIZED AT THE END OF EACH NIGHTTIME WORK PERIOD.
 - DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY BLANK SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE ELECTRICAL PLANS FOR SIGN LOCATIONS). THE SIGNS SHALL BE RE-ENERGIZED AND / OR BLANK PANELS REMOVED AT THE END OF EACH NIGHTTIME WORK PERIOD.
- CROSS TAXIWAY NF, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
- CROSS TAXIWAY NE, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE TAXIWAY BR - 26L CENTERLINE.
- CROSS TAXIWAY NR, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE TAXIWAY BR - 26L CENTERLINE.
- CROSS TAXIWAY NF, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE TAXIWAY BR - 26L CENTERLINE.
- DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. THE LIGHTS SHALL BE RE-ENERGIZED AT THE END OF EACH NIGHTTIME WORK PERIOD.
- DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY BLANK SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE ELECTRICAL PLANS FOR SIGN LOCATIONS). THE SIGNS SHALL BE RE-ENERGIZED AND / OR BLANK PANELS REMOVED AT THE END OF EACH NIGHTTIME WORK PERIOD.

- E. CONSTRUCT TEMPORARY HAUL ROAD, INCLUDING EARTHWORK, GRADING, DRAINAGE, UTILITY PROTECTION, SHIPP, AND OTHER MISCELLANEOUS CONSTRUCTION COMPONENTS REQUIRED.
- AT THE COMPLETION OF EACH NIGHTTIME WORK PERIOD, INTERSECTIONS OF TEMPORARY HAUL ROADS AND ACTIVE AIRFIELD PAVEMENTS SHALL NOT HAVE A VERTICAL SEPARATION OF MORE THAN 1.5 INCHES.
 - AT THE COMPLETION OF EACH NIGHTTIME WORK PERIOD, THERE SHALL BE NO OPEN EXCAVATIONS GREATER THAN THREE (3) INCHES IN DEPTH INSIDE ANY RSA OR TSA. THE CONTRACTOR SHALL FILL ALL OPEN EXCAVATIONS IN ACCORDANCE WITH THE SAFETY AREA RAMP DOWN DETAIL ON SHEET G04.03.
 - AT THE COMPLETION OF EACH NIGHTTIME WORK PERIOD, ALL AIRFIELD PAVEMENTS TO BE REOPENED TO TRAFFIC SHALL BE THOROUGHLY CLEANED.

NOTE: PHASE 3 HAUL ROAD CONSTRUCTED UNDER PN 675. ASPHALT TRANSITIONS CONSTRUCTED TO 100 FEET. CONTRACTOR MUST EXTEND TO 150 FEET. CONTRACTOR TO REMOVE TEMPORARY HAUL ROADS AT COMPLETION OF PROJECT.

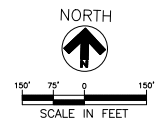
| SUBPHASE 3A HAUL ROAD | | | |
|-----------------------|-------------|-------------|------------|
| POINT # | DESCRIPTION | NORTHING | EASTING |
| 1 | HAUL ROAD | 13927459.37 | 3122531.74 |
| 2 | HAUL ROAD | 13927475.46 | 3123027.52 |
| 3 | HAUL ROAD | 13927490.65 | 3123187.03 |
| 4 | HAUL ROAD | 13927515.64 | 3124265.41 |

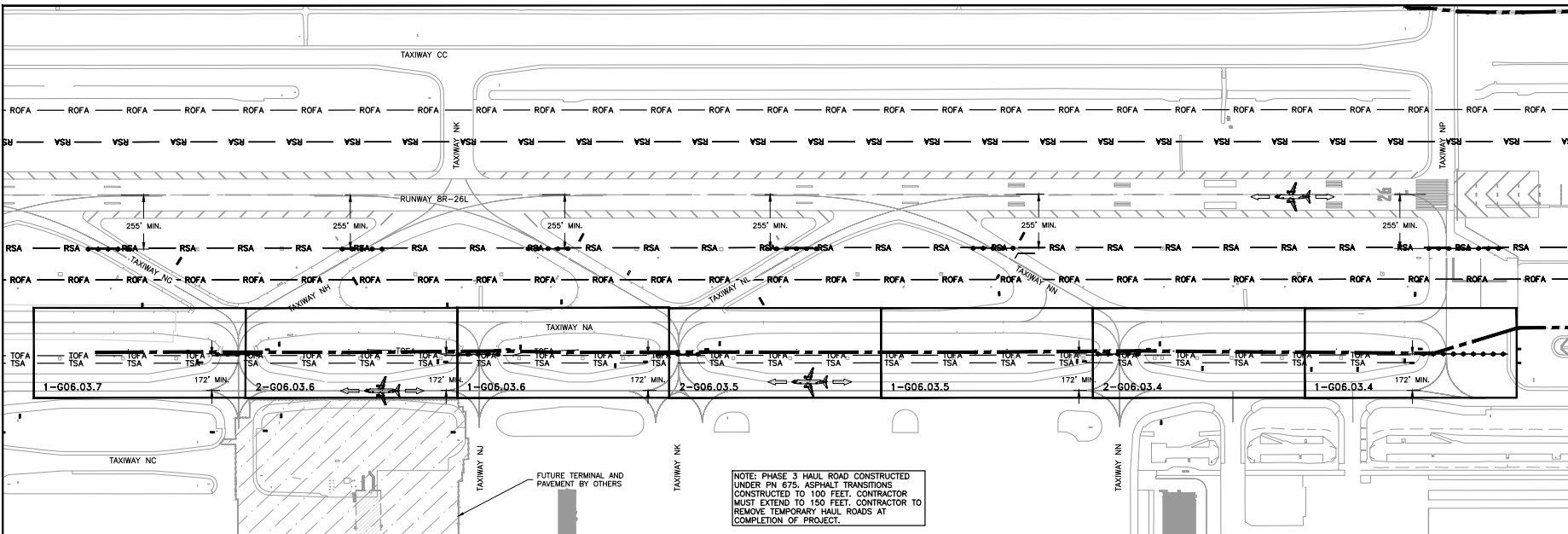
SUBPHASE 3A MOVEMENT NOTES

- SEE PLAN SHEET G06.03.1 FOR COMPLETE PROPOSED HAUL ROUTE.
- THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING SUBPHASE 3A:
 - TAXIWAY NE WILL BE CLOSED FROM THE NORTH SIDE OF TAXIWAY NA TO RUNWAY BR - 26L.
 - TAXIWAY NR WILL BE CLOSED FROM THE NORTH SIDE OF TAXIWAY NA TO RUNWAY BR - 26L.
 - TAXIWAY NF WILL BE CLOSED FROM THE NORTH SIDE OF TAXIWAY NA TO RUNWAY BR - 26L.

NOTE THAT ON ANY GIVEN NIGHT, ONLY THOSE TAXIWAYS FOR WHICH THE CONTRACTOR IS WORKING INSIDE THE TOFA MUST BE CLOSED.
- THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSINGS WITH TAXIWAYS NE, NR, AND NF, OR AS DIRECTED BY AIRPORT OPERATIONS. WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN SUBPHASE 3A, PLACEMENT OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT.

| SUBPHASE 3A | | | | | |
|------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| DURATION (DAYS) | WORK PERIOD | DAYTIME (0600 HOURS TO 2200 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | NIGHTTIME (2200 HOURS TO 0600 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
| 45 CALENDAR DAYS | NIGHT ONLY | RESTRICTIONS --N/A CLOSURES --TAXIWAY NE CLOSED TAXIWAY NA TO RUNWAY BR-26L --TAXIWAY NR CLOSED TAXIWAY NA TO RUNWAY BR-26L --TAXIWAY NF CLOSED TAXIWAY NA TO RUNWAY BR-26L | RESTRICTIONS --N/A CLOSURES --TAXIWAY NE, NORTH OF TAXIWAY NA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. --TAXIWAY NR, NORTH OF TAXIWAY NA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. --TAXIWAY NF, NORTH OF TAXIWAY NA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. | -- CROSS TAXIWAY NE, NORTH OF TAXIWAY NA. -- CROSS TAXIWAY NR, NORTH OF TAXIWAY NA. -- CROSS TAXIWAY NF, NORTH OF TAXIWAY NA. -- CROSS TAXIWAY NE, SOUTH OF RUNWAY BR - 26L, RSA. -- CROSS TAXIWAY NR, SOUTH OF RUNWAY BR - 26L, RSA. -- CROSS TAXIWAY NF, SOUTH OF RUNWAY BR - 26L, RSA. | PHASE 2 |





NOTE: PHASE 3 HAUL ROAD CONSTRUCTED UNDER PN 675, ASPHALT TRANSITIONS CONSTRUCTED TO 100 FEET, CONTRACTOR MUST EXTEND TO 150 FEET, CONTRACTOR TO REMOVE TEMPORARY HAUL ROADS AT COMPLETION OF PROJECT.

LEGEND

- AIRCRAFT TAXI ROUTE DURING PHASE
- HAUL ROUTE
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- SUBPHASE 3B TAXIWAY SAFETY AREA
- SUBPHASE 3B TAXIWAY OBJECT FREE AREA
- LOW PROFILE BARRICADE (EXACT POSITION)

SUBPHASE 3B CONSTRUCTION SEQUENCING AND OPERATION NOTES

1. ALL WORK IN SUBPHASE 3B SHALL BE LIMITED TO NIGHTTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 85 CALENDAR DAYS TO COMPLETE SUBPHASE 3B, HOWEVER THE CONTRACTOR IS ENCOURAGED TO COMPLETE SUBPHASE 3B AS QUICKLY AS POSSIBLE. SUBPHASE 3B SHALL NOT COMMENCE UNTIL SUBPHASE 3A IS COMPLETE AND ACCEPTED BY AIRPORT OPERATIONS.
2. SUBPHASE 3B MAY HAVE A FLEXIBLE START DATE, BUT SHALL BE COMPLETED NO LATER THAN THE COMPLETION OF PHASE 6. THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH AIRPORT OPERATIONS.
3. CONSTRUCTION TASKS FOR SUBPHASE 3B ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED IN THE SUBPHASE 3B MOVEMENT NOTES, THIS SHEET.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL BE REMOVED AT THE COMPLETION OF EACH NIGHTTIME WORK PERIOD SO THAT THESE PAVEMENTS MAY BE REOPENED TO AIRCRAFT TRAFFIC DURING DAYTIME HOURS. THE CONTRACTOR SHALL REINSTALL BARRICADES AT THESE LOCATIONS AT THE BEGINNING OF EACH SUBSEQUENT NIGHTTIME WORK PERIOD.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NG, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-B), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - ii. ACROSS TAXIWAY NA, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-B), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - C. ACROSS TAXIWAY NK, NORTH OF THE OPERATED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-B), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - D. ACROSS TAXIWAY NN, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-B), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - E. ACROSS TAXIWAY NP AND THE RUN UP PAD, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-B), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - F. ACROSS TAXIWAY NG, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - G. ACROSS TAXIWAY NH, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - H. ACROSS TAXIWAY NK, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - I. ACROSS TAXIWAY NL, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - J. ACROSS TAXIWAY NN, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - K. ACROSS TAXIWAY NP AND THE RUN UP PAD, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - L. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NP TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NF CENTERLINE.

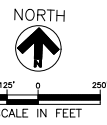
SUBPHASE 3B MOVEMENT NOTES

1. SEE PLAN SHEET G06.03.1 FOR COMPLETE PROPOSED HAUL ROUTE.
2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING SUBPHASE 3B:
 - A. TAXIWAY NG WILL BE CLOSED FROM RUNWAY BR - 26L TO TAXIWAY NA.
 - B. TAXIWAY NA WILL BE CLOSED FROM RUNWAY BR - 26L TO TAXIWAY NA.
 - C. TAXIWAY NK WILL BE CLOSED FROM TAXIWAY NA TO THE NORTH SIDE OF TAXIWAY NB.
 - D. TAXIWAY NK WILL BE CLOSED FROM RUNWAY BR - 26L TO THE NORTH SIDE OF TAXIWAY NB.
 - E. TAXIWAY NL WILL BE CLOSED FROM RUNWAY BR - 26L TO TAXIWAY NA.
 - F. TAXIWAY NN WILL BE CLOSED FROM THE EAST SIDE OF TAXIWAY NF TO THE EAST SIDE OF TAXIWAY NP.
 - G. TAXIWAY NP WILL BE CLOSED FROM RUNWAY BR - 26L TO THE NORTH SIDE OF TAXIWAY NB.
 - H. TAXIWAY NB WILL BE CLOSED FROM THE EAST SIDE OF TAXIWAY NF TO THE EAST SIDE OF TAXIWAY NP.
 - I. TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-B) FROM THE EAST SIDE OF TAXIWAY NF TO THE EAST SIDE OF TAXIWAY NP.
3. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSINGS WITH TAXIWAYS NP, NK, NL, NJ, AND NG, OR AS DIRECTED BY AIRPORT OPERATIONS. WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN SUBPHASE 3B, PLACEMENT OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
4. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

NOTE THAT ON ANY GIVEN NIGHT, ONLY THOSE TAXIWAYS FOR WHICH THE CONTRACTOR IS WORKING INSIDE THE TOFA MUST BE CLOSED.

NOTE: PHASE 3 HAUL ROAD CONSTRUCTED UNDER PN 675, ASPHALT TRANSITIONS CONSTRUCTED TO 100 FEET, CONTRACTOR MUST EXTEND TO 150 FEET, CONTRACTOR TO REMOVE TEMPORARY HAUL ROADS AT COMPLETION OF PROJECT.

| SUBPHASE 3B | | DAYTIME (0600 HOURS TO 2200 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | NIGHTTIME (2200 HOURS TO 0600 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
|------------------|-------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| DURATION (DAYS) | WORK PERIOD | | | | |
| 85 CALENDAR DAYS | NIGHT ONLY | RESTRICTIONS --N/A CLOSURES --N/A | -- TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-B) TAXIWAY NB TO TAXIWAY NP. -- TAXIWAY NB CLOSED TAXIWAY NF TO TAXIWAY NP. -- TAXIWAY NG CLOSED RUNWAY BR - 26L TO TAXIWAY NB. -- TAXIWAY NH CLOSED RUNWAY BR - 26L TO TAXIWAY NA. -- TAXIWAY NK CLOSED RUNWAY BR - 26L TO TAXIWAY NB. -- TAXIWAY NL CLOSED RUNWAY BR - 26L TO TAXIWAY NA. -- TAXIWAY NN CLOSED RUNWAY BR - 26L TO TAXIWAY NA. -- TAXIWAY NP CLOSED RUNWAY BR - 26L TO TAXIWAY NB. | -- ACROSS TAXIWAY NG, NORTH OF TAXIWAY NB. -- ACROSS TAXIWAY NK, NORTH OF TAXIWAY NB. -- ACROSS TAXIWAY NL, NORTH OF TAXIWAY NB. -- ACROSS TAXIWAY NN, NORTH OF TAXIWAY NB. -- ACROSS TAXIWAY NP, NORTH OF TAXIWAY NB. -- ACROSS TAXIWAY NG, SOUTH OF RUNWAY BR - 26L RSA. -- ACROSS TAXIWAY NH, SOUTH OF RUNWAY BR - 26L RSA. -- ACROSS TAXIWAY NK, SOUTH OF RUNWAY BR - 26L RSA. -- ACROSS TAXIWAY NL, SOUTH OF RUNWAY BR - 26L RSA. -- ACROSS TAXIWAY NN, SOUTH OF RUNWAY BR - 26L RSA. -- ACROSS TAXIWAY NP, SOUTH OF RUNWAY BR - 26L RSA. -- ACROSS TAXIWAY NA, EAST OF TAXIWAY NF. | PHASES 4, 5, 6 |



| NO. | DESCRIPTION | DATE | BY |
|-----|-------------|------|----|
| | | | |

| | |
|--------------|----------------|
| PROJECT MGR: | BMS |
| DESIGNER: | ENB |
| DRAWN BY: | MMW |
| CHECKED BY: | SMC |
| SCALE: | 1"=50' |
| DATE: | April 19, 2019 |



DEPARTMENT OF AVIATION
 APPROVED BY: DATE

HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

PROJECT NO.
0907
 C.I.P. NO.
A-000670
 H.A.S. NO.
 SHEET NO.

LEGEND

- PHASE LIMITS
- HAUL ROUTE
- LOW PROFILE BARRICADE
- - - TOFA
- ⊙ TABLE LOCATION POINT
- ⊙ MARKER POLE BARRICADE

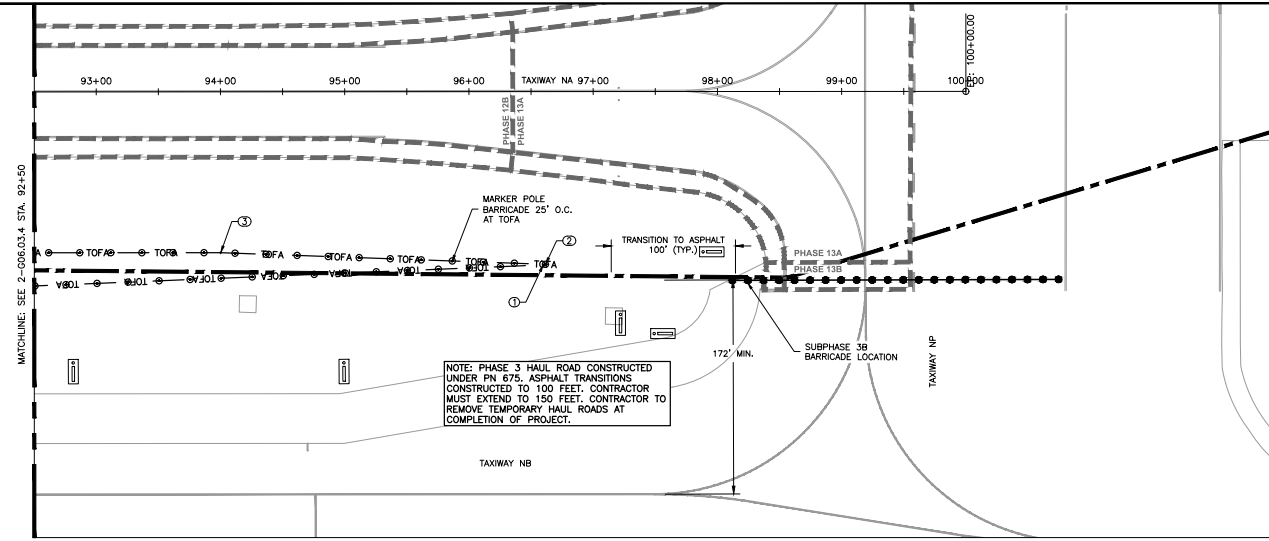
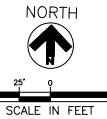
ADDITIONAL EAST HAUL ROUTE CONSTRUCTION REQUIREMENTS

- THE EAST TEMPORARY HAUL ROAD MUST BE CONSTRUCTED SUCH THAT QUEUEING OR "STACKING" OF CONSTRUCTION VEHICLES AND EQUIPMENT BETWEEN ACTIVE TAXIWAYS IS CONTAINED OUTSIDE THE TEMPORARY CONSTRUCTION TOFA OF THE ACTIVE ADJACENT TAXIWAYS (COORDINATES PROVIDED THIS SHEET). CONTRACTOR VEHICLES AND EQUIPMENT MAY NOT PENETRATE THE TOFA OF ANY ACTIVE TAXIWAY PRIOR TO APPROVAL TO MOVE ACROSS THE TAXIWAYS BY THE DESIGNATED FLAGMAN FOR THAT CROSSING.
- THE CONTRACTOR SHALL INSTALL MARKER POLE BARRICADES ALONG THE TEMPORARY CONSTRUCTION TOFA AT MAXIMUM INTERVALS OF 25 FEET ON BOTH SIDES OF THE HAUL ROAD CONSTRUCTED. MARKER POLE BARRICADES INSTALLED IN THIS PHASE SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION WORK IN THE ADJACENT PHASE IS COMPLETE. THE MARKER POLE BARRICADES SHALL NOT BE REMOVED UNTIL THE CONTRACTOR NO LONGER REQUIRES ENTRY INTO THE ADJACENT PHASE.
- THE CONTRACTOR MAY ELECT TO TEMPORARILY RELOCATE EXISTING TAXIWAY LIGHTS AND/OR SIGNS FOUND TO CONFLICT WITH THE CONTRACTOR'S PROPOSED HAUL ROUTE AND TAXIWAY CROSSINGS. MODIFICATIONS TO EXISTING LIGHTS AND/OR SIGNS SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL. ALL LIGHT AND/OR SIGN RELOCATIONS MUST MEET ALL APPLICABLE FAA CRITERIA FOR LOCATION, INSTALLATION, AND OPERATION. ALL COSTS ASSOCIATED WITH TEMPORARY SIGN RELOCATIONS INCLUDING LABOR, EQUIPMENT, MATERIAL, AND OTHER INCIDENTALS SHALL BE SUBSIDIARY TO THE PAY ITEMS OF SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.
- THE CONTRACTOR SHALL PHYSICALLY IDENTIFY THE LINE OF DEMARCATION WHERE THE HAUL ROUTE CROSSES THE TOFA.
 - THE DISTANCE TO THE LINE OF DEMARCATION FROM ADJACENT TAXIWAY CENTERLINES MAY VARY BASED ON THE CONTRACTOR'S PROPOSED HAUL ROUTE WIDTH.
 - THE LINE OF DEMARCATION MAY BE PAINTED, MARKED WITH CONES, OR OTHER METHODS APPROVED BY AIRPORT OPERATIONS. ANY MARKINGS OR MATERIALS PROVIDED TO IDENTIFY THE LINE OF DEMARCATION MUST BE MAINTAINED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE THROUGHOUT CONSTRUCTION.
- ALL CONTRACTOR PROPOSED HAUL ROUTE DIMENSIONS, INCLUDING THE PROPOSED LINES OF DEMARCATION, SHALL BE CLEARLY IDENTIFIED WITH RESPECT TO LOCATION OF THE TOFA IN THE PROPOSED HAUL ROUTE IMPROVEMENTS PLAN TO BE SUBMITTED FOR REVIEW AND APPROVAL, AS REQUIRED IN SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
- SEE INDIVIDUAL PHASING SHEETS FOR STATUS OF TAXIWAY PAVEMENTS OPEN/CLOSED DURING EACH SPECIFIC PHASE.

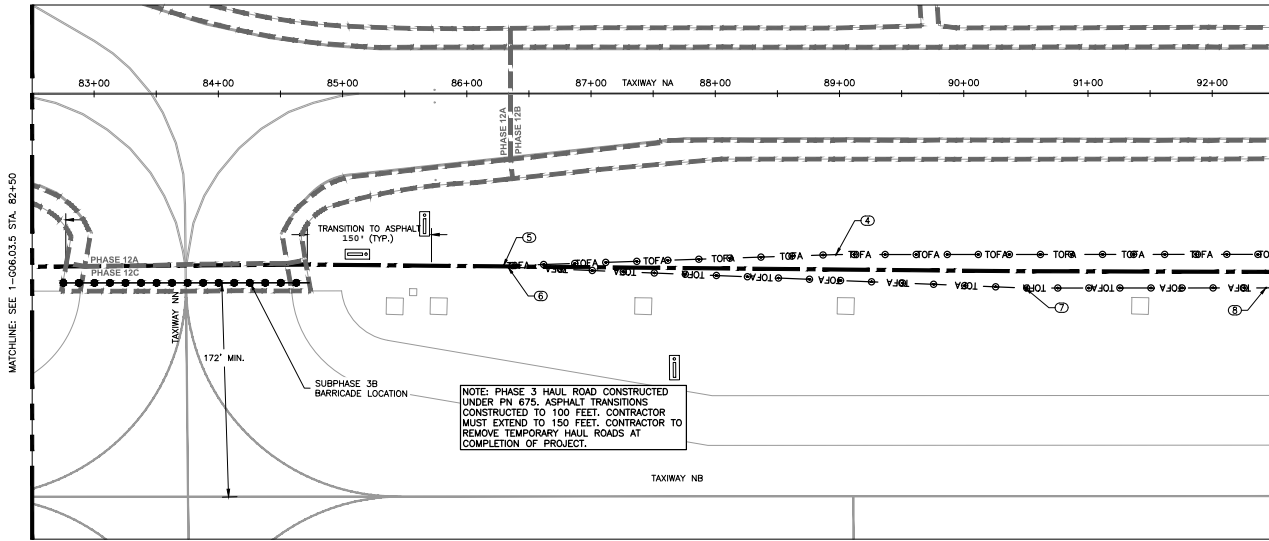
EAST HAUL ROUTE RIGHT OF WAY BOUNDARIES

| POINT # | DESCRIPTION | NORTHING | EASTING |
|---------|-------------|-------------|------------|
| 1 | ISLAND 1 | 13927359.78 | 3131526.02 |
| 2 | ISLAND 1 | 13927360.31 | 3131527.71 |
| 3 | ISLAND 1 | 13927361.39 | 3131266.15 |
| 4 | ISLAND 1 | 13927345.23 | 3130763.44 |
| 5 | ISLAND 1 | 13927327.65 | 3130496.07 |
| 6 | ISLAND 1 | 13927326.76 | 3130499.77 |
| 7 | ISLAND 1 | 13927323.12 | 3130916.42 |
| 8 | ISLAND 1 | 13927329.35 | 3131110.15 |

NOTE: PHASE 3 HAUL ROAD CONSTRUCTED UNDER PH 675, ASPHALT TRANSITIONS CONSTRUCTED TO 100 FEET. CONTRACTOR MUST EXTEND TO 150 FEET. CONTRACTOR TO REMOVE TEMPORARY HAUL ROADS AT COMPLETION OF PROJECT.



1 SUBPHASE 3B ISLAND 1 - TAXIWAY NA STA. 92+50 TO END
 G06.03.4 SCALE: 1" = 50'



2 SUBPHASE 3B ISLAND 1 - TAXIWAY NA STA. 82+50 TO 92+50
 G06.03.4 SCALE: 1" = 50'

REVISIONS

| NO. | DESCRIPTION | DATE | BY |
|-----|-------------|------|----|
| | | | |

RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT

**PHASING PLAN - SUBPHASE 3B EAST
 HAUL ROAD (3 OF 5)**

ISSUED FOR BID

| | |
|--------------|----------------|
| PROJECT MGR: | BMS |
| DESIGNER: | EN |
| DRAWN BY: | MM |
| CHECKED BY: | SMC |
| SCALE: | 1"=50' |
| DATE: | April 19, 2019 |



DEPARTMENT OF AVIATION
 APPROVED BY: DATE

HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

PROJECT NO.
0907

C.I.P. NO.
A-000670

H.A.S. NO.

SHEET NO.

LEGEND

- PHASE LIMITS
- HAUL ROUTE
- LOW PROFILE BARRICADE
- TOFA
- TEMPORARY TOFA
- TABLE LOCATION POINT
- MARKER POLE BARRICADE

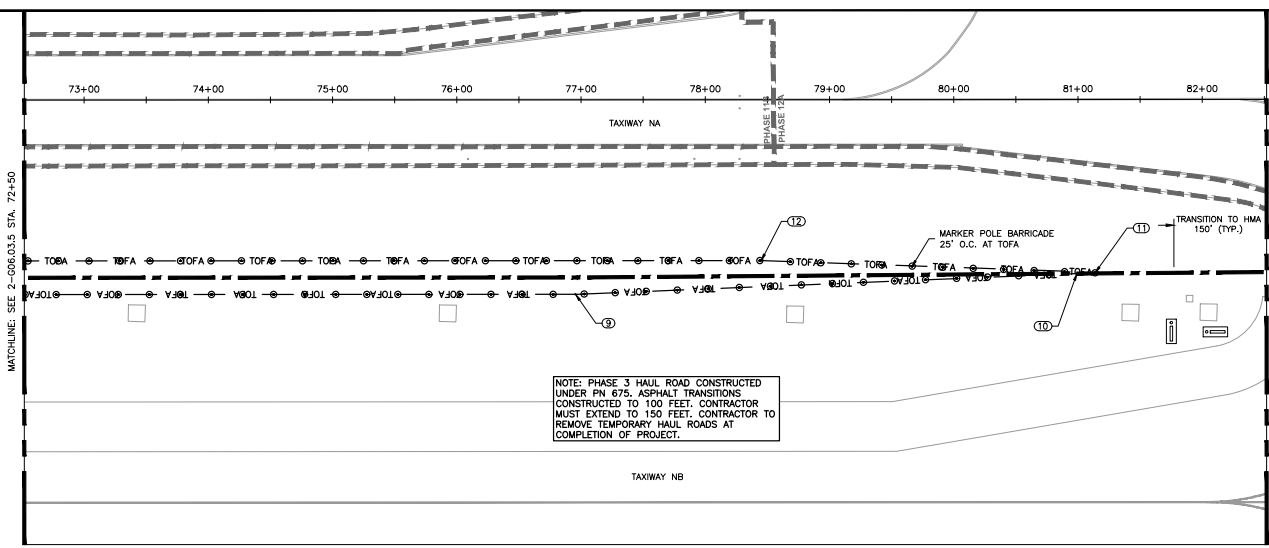
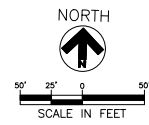
**ADDITIONAL EAST HAUL ROUTE
 CONSTRUCTION REQUIREMENTS**

- THE EAST TEMPORARY HAUL ROAD MUST BE CONSTRUCTED SUCH THAT QUEUING OR "STACKING" OF CONSTRUCTION VEHICLES AND EQUIPMENT BETWEEN ACTIVE TAXIWAYS IS CONTAINED OUTSIDE THE TEMPORARY CONSTRUCTION TOFA OF THE ACTIVE ADJACENT TAXIWAYS (COORDINATES PROVIDED THIS SHEET). CONTRACTOR VEHICLES AND EQUIPMENT MAY NOT PENETRATE THE TOFA OF ANY ACTIVE TAXIWAY PRIOR TO APPROVAL TO MOVE ACROSS THE TAXIWAYS BY THE DESIGNATED FLAGMAN FOR THAT CROSSING.
- THE CONTRACTOR SHALL INSTALL MARKER POLE BARRICADES ALONG THE TEMPORARY CONSTRUCTION TOFA AT MAXIMUM INTERVALS OF 25 FEET ON BOTH SIDES OF THE HAUL ROAD CONSTRUCTED. MARKER POLE BARRICADES INSTALLED IN THIS PHASE SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION WORK IN THE ADJACENT PHASE IS COMPLETE. THE MARKER POLE BARRICADES SHALL NOT BE REMOVED UNTIL THE CONTRACTOR NO LONGER REQUIRES ENTRY INTO THE ADJACENT PHASE.
- THE CONTRACTOR MAY ELECT TO TEMPORARILY RELOCATE EXISTING TAXIWAY LIGHTS AND/OR SIGNS FOUND TO CONFLICT WITH THE CONTRACTOR'S PROPOSED HAUL ROUTE AND TAXIWAY CROSSINGS. MODIFICATIONS TO EXISTING LIGHTS AND/OR SIGNS SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL. ALL LIGHT AND/OR SIGN RELOCATIONS MUST MEET ALL APPLICABLE FAA CRITERIA FOR LOCATION, INSTALLATION, AND OPERATION. ALL COSTS ASSOCIATED WITH TEMPORARY SIGN RELOCATIONS INCLUDING LABOR, EQUIPMENT, MATERIAL, AND OTHER INCIDENTALS SHALL BE SUBSIDIARY TO THE PAY ITEMS OF SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.
- THE CONTRACTOR SHALL PHYSICALLY IDENTIFY THE LINE OF DEMARCATION WHERE THE HAUL ROUTE CROSSES THE TOFA.
 - THE DISTANCE TO THE LINE OF DEMARCATION FROM ADJACENT TAXIWAY CENTERLINES MAY VARY BASED ON THE CONTRACTOR'S PROPOSED HAUL ROUTE WIDTH.
 - THE LINE OF DEMARCATION MAY BE PAINTED, MARKED WITH CONES, OR OTHER METHODS APPROVED BY AIRPORT OPERATIONS. ANY MARKINGS OR MATERIALS PROVIDED TO IDENTIFY THE LINE OF DEMARCATION MUST BE MAINTAINED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE THROUGHOUT CONSTRUCTION.
- ALL CONTRACTOR PROPOSED HAUL ROUTE DIMENSIONS, INCLUDING THE PROPOSED LINES OF DEMARCATION, SHALL BE CLEARLY IDENTIFIED WITH RESPECT TO LOCATION OF THE TOFA IN THE PROPOSED HAUL ROUTE IMPROVEMENTS PLAN TO BE SUBMITTED FOR REVIEW AND APPROVAL, AS REQUIRED IN SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
- SEE INDIVIDUAL PHASING SHEETS FOR STATUS OF TAXIWAY PAVEMENTS OPEN/CLOSED DURING EACH SPECIFIC PHASE.

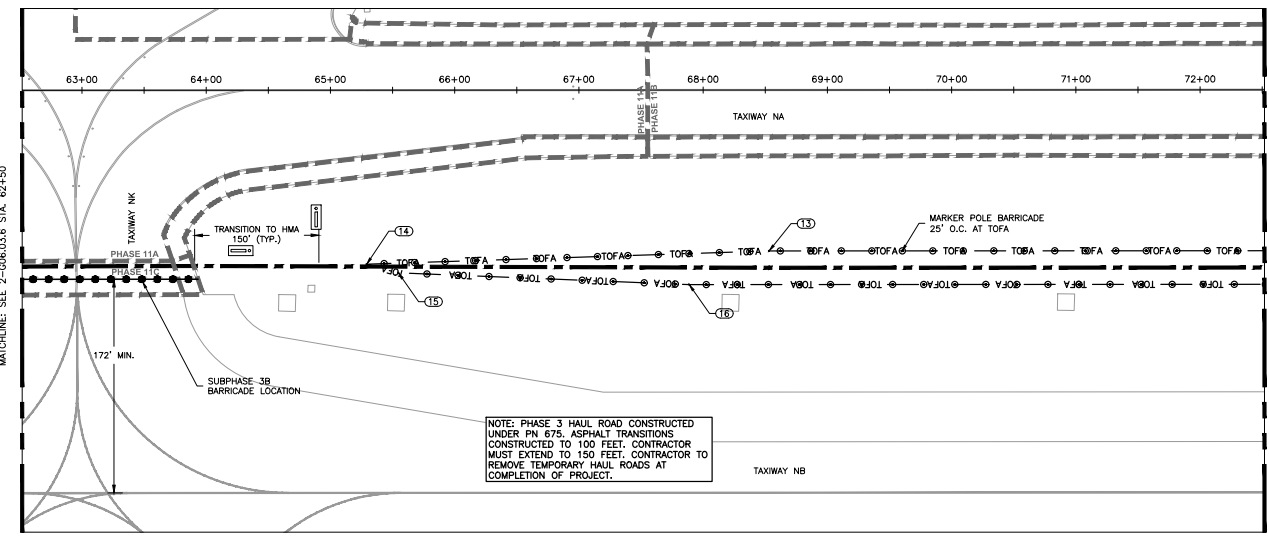
EAST HAUL ROUTE RIGHT OF WAY BOUNDARIES

| POINT # | DESCRIPTION | NORTHING | EASTING |
|---------|-------------|-------------|------------|
| 9 | ISLAND 2 | 13927279.52 | 3129563.30 |
| 10 | ISLAND 2 | 13927309.01 | 3129966.20 |
| 11 | ISLAND 2 | 13927310.07 | 3129980.74 |
| 12 | ISLAND 2 | 13927311.41 | 3129711.79 |
| 13 | ISLAND 2 | 13927279.53 | 3128720.31 |
| 14 | ISLAND 2 | 13927258.63 | 3128396.91 |
| 15 | ISLAND 2 | 13927252.48 | 3128422.64 |

NOTE: PHASE 3 HAUL ROAD CONSTRUCTED UNDER PN 675, ASPHALT TRANSITIONS CONSTRUCTED TO 100 FEET, CONTRACTOR MUST EXTEND TO 150 FEET, CONTRACTOR TO REMOVE TEMPORARY HAUL ROADS AT COMPLETION OF PROJECT.



1 SUBPHASE 3B ISLAND 2 - TAXIWAY NA STA. 72+50 TO 82+50
 G06.03.5 SCALE: 1" = 50'



2 SUBPHASE 3B ISLAND 2 - TAXIWAY NA STA. 62+50 TO 72+50
 G06.03.5 SCALE: 1" = 50'

REVISIONS

| NO. | DESCRIPTION | DATE | BY |
|-----|-------------|------|----|
| | | | |
| | | | |

RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT

**PHASING PLAN - SUBPHASE 3B EAST
 HAUL ROAD (4 OF 5)**

ISSUED FOR BID

| | |
|--------------|----------------|
| PROJECT MGR: | BMS |
| DESIGNER: | ENB |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=50' |
| DATE: | April 19, 2019 |



DEPARTMENT OF AVIATION
 APPROVED BY: DATE

HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

PROJECT NO.
0907

C.I.P. NO.
A-000670

H.A.S. NO.

SHEET NO.

LEGEND

- PHASE LIMITS
- HAUL ROUTE
- LOW PROFILE BARRICADE
- - - TOFA
- ⊙ TABLE LOCATION POINT
- ⊙ MARKER POLE BARRICADE

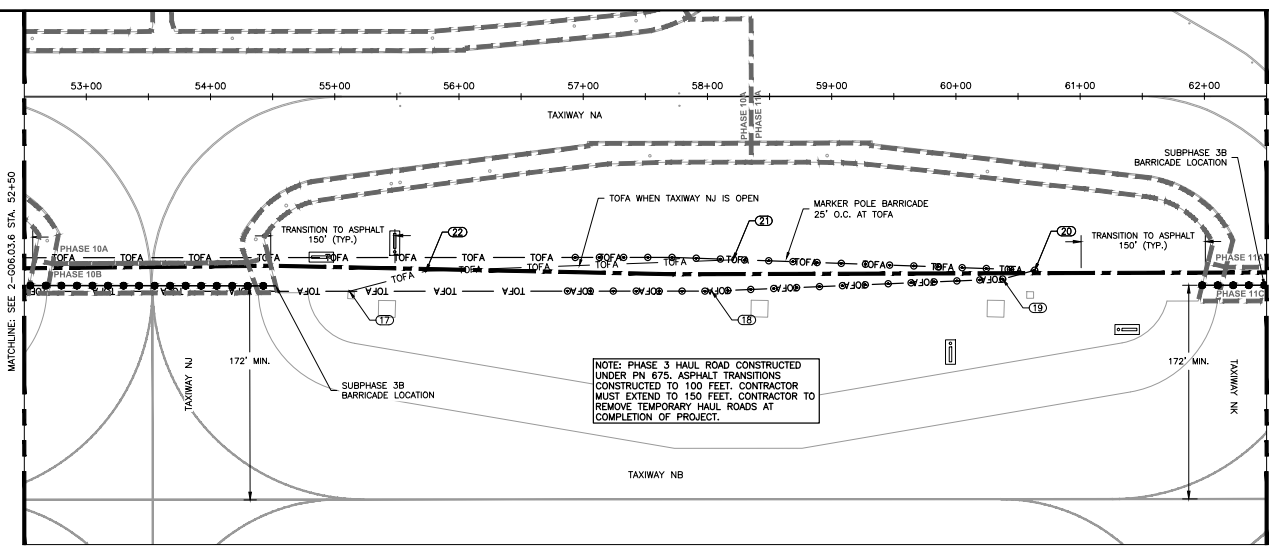
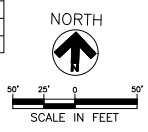
ADDITIONAL EAST HAUL ROUTE CONSTRUCTION REQUIREMENTS

- THE EAST TEMPORARY HAUL ROAD MUST BE CONSTRUCTED SUCH THAT QUEUING OR "STACKING" OF CONSTRUCTION VEHICLES AND EQUIPMENT BETWEEN ACTIVE TAXIWAYS IS CONFINED OUTSIDE THE TEMPORARY CONSTRUCTION TOFA OF THE ACTIVE ADJACENT TAXIWAYS (COORDINATES PROVIDED THIS SHEET). CONTRACTOR VEHICLES AND EQUIPMENT MAY NOT PENETRATE THE TOFA OF ANY ACTIVE TAXIWAY PRIOR TO APPROVAL TO MOVE ACROSS THE TAXIWAYS BY THE DESIGNATED FLAGMAN FOR THAT CROSSING.
- THE CONTRACTOR SHALL INSTALL MARKER POLE BARRICADES ALONG THE TEMPORARY CONSTRUCTION TOFA AT MAXIMUM INTERVALS OF 25 FEET ON BOTH SIDES OF THE HAUL ROAD CONSTRUCTED. MARKER POLE BARRICADES INSTALLED IN THIS PHASE SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION WORK IN THE ADJACENT PHASE IS COMPLETE. THE MARKER POLE BARRICADES SHALL NOT BE REMOVED UNTIL THE CONTRACTOR NO LONGER REQUIRES ENTRY INTO THE ADJACENT PHASE.
- THE CONTRACTOR MAY ELECT TO TEMPORARILY RELOCATE EXISTING TAXIWAY LIGHTS AND/OR SIGNS FOUND TO CONFLICT WITH THE CONTRACTOR'S PROPOSED HAUL ROUTE AND TAXIWAY CROSSINGS. MODIFICATIONS TO EXISTING LIGHTS AND/OR SIGNS SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL. ALL LIGHT AND/OR SIGN RELOCATIONS MUST MEET ALL APPLICABLE FAA CRITERIA FOR LOCATION, INSTALLATION, AND OPERATION. ALL COSTS ASSOCIATED WITH TEMPORARY SIGN RELOCATIONS INCLUDING LABOR, EQUIPMENT, MATERIAL, AND OTHER INCIDENTALS SHALL BE SUBSIDIARY TO THE PAY ITEMS OF SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.
- THE CONTRACTOR SHALL PHYSICALLY IDENTIFY THE LINE OF DEMARCATION WHERE THE HAUL ROUTE CROSSES THE TOFA.
 - THE DISTANCE TO THE LINE OF DEMARCATION FROM ADJACENT TAXIWAY CENTERLINES MAY VARY BASED ON THE CONTRACTOR'S PROPOSED HAUL ROUTE WIDTH.
 - THE LINE OF DEMARCATION MAY BE PAINTED, MARKED WITH CONES, OR OTHER METHODS APPROVED BY AIRPORT OPERATIONS. ANY MARKINGS OR MATERIALS PROVIDED TO IDENTIFY THE LINE OF DEMARCATION MUST BE MAINTAINED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE THROUGHOUT CONSTRUCTION.
- ALL CONTRACTOR PROPOSED HAUL ROUTE DIMENSIONS, INCLUDING THE PROPOSED LINES OF DEMARCATION, SHALL BE CLEARLY IDENTIFIED WITH RESPECT TO LOCATION OF THE TOFA IN THE PROPOSED HAUL ROUTE IMPROVEMENTS PLAN TO BE SUBMITTED FOR REVIEW AND APPROVAL, AS REQUIRED IN SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
- SEE INDIVIDUAL PHASING SHEETS FOR STATUS OF TAXIWAY PAVEMENTS OPEN/CLOSED DURING EACH SPECIFIC PHASE.

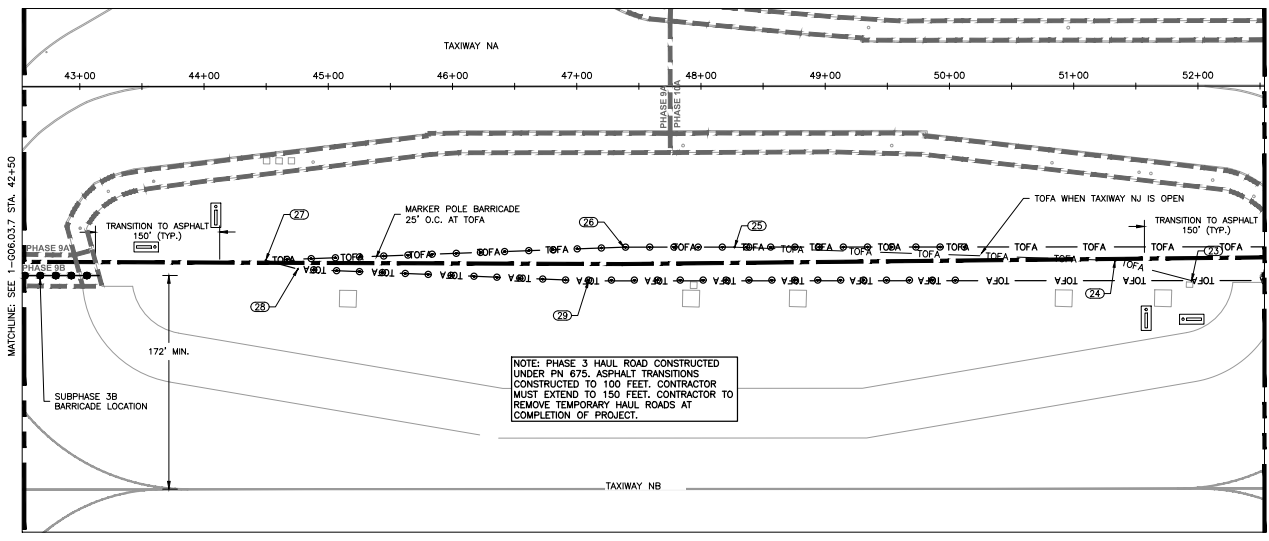
EAST HAUL ROUTE RIGHT OF WAY BOUNDARIES

| POINT # | DESCRIPTION | NORTHING | EASTING |
|---------|-------------|-------------|------------|
| 17 | ISLAND 3 | 13927209.37 | 3127380.69 |
| 18 | ISLAND 3 | 13927218.74 | 3127672.03 |
| 19 | ISLAND 3 | 13927235.86 | 3127905.93 |
| 20 | ISLAND 3 | 13927243.73 | 3127931.47 |
| 21 | ISLAND 3 | 13927244.44 | 3127688.35 |
| 22 | ISLAND 3 | 13927227.53 | 3127441.68 |
| 23 | ISLAND 3 | 13927199.18 | 3127063.88 |
| 24 | ISLAND 3 | 13927213.37 | 3127001.89 |
| 25 | ISLAND 3 | 13927214.41 | 3126895.31 |
| 26 | ISLAND 3 | 13927211.62 | 3126606.45 |
| 27 | ISLAND 3 | 13927191.87 | 3126318.49 |
| 28 | ISLAND 3 | 13927185.63 | 3126344.62 |
| 29 | ISLAND 3 | 13927183.58 | 3126578.91 |

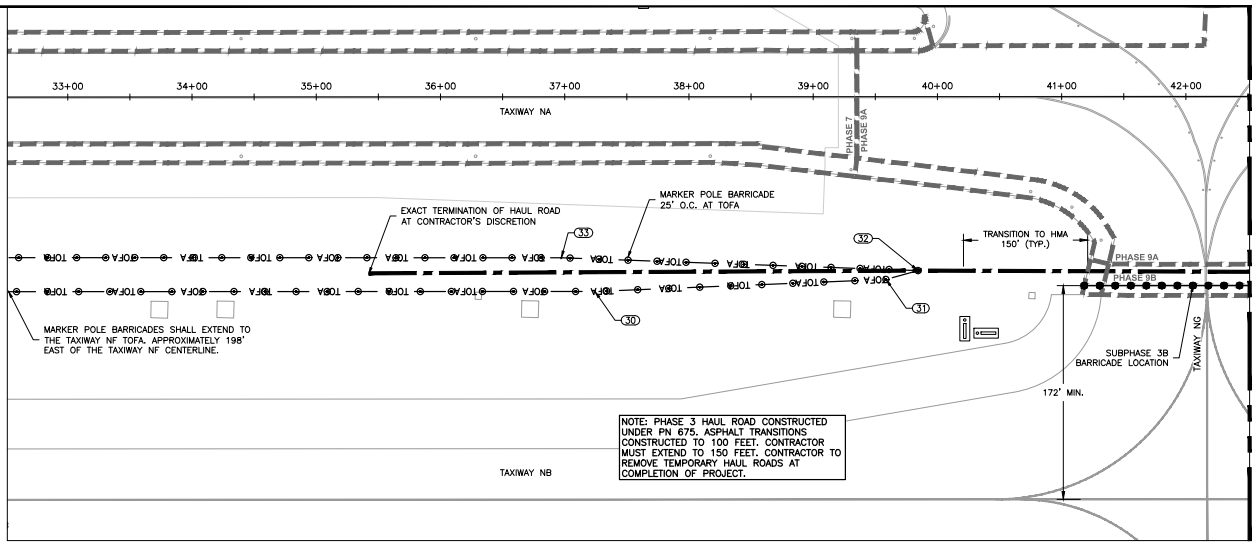
NOTE: PHASE 3 HAUL ROAD CONSTRUCTED UNDER PN 675. ASPHALT TRANSITIONS CONSTRUCTED TO 100 FEET. CONTRACTOR MUST EXTEND TO 150 FEET. CONTRACTOR TO REMOVE TEMPORARY HAUL ROADS AT COMPLETION OF PROJECT.



1 SUBPHASE 3B ISLAND 3 - TAXIWAY NA STA. 52+50 TO 62+50
 G06.03.6 SCALE: 1" = 50'



2 SUBPHASE 3B ISLAND 3 - TAXIWAY NA STA. 42+50 TO 52+50
 G06.03.6 SCALE: 1" = 50'



1
G06.03.7
SUBPHASE 3B ISLAND 4 - TAXIWAY NA STA. 32+50 TO 42+50
SCALE: 1" = 50'

LEGEND

- PHASE LIMITS
- - - HAUL ROUTE
- LOW PROFILE BARRICADE
- - - TOFA
- ⊙ TEMPORARY TOFA
- ⊙ TABLE POINT POINT
- ⊙ MARKER POLE BARRICADE

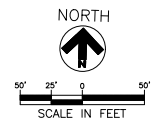
ADDITIONAL EAST HAUL ROUTE CONSTRUCTION REQUIREMENTS

1. THE EAST TEMPORARY HAUL ROAD MUST BE CONSTRUCTED SUCH THAT QUEUING OR "STACKING" OF CONSTRUCTION VEHICLES AND EQUIPMENT BETWEEN ACTIVE TAXIWAYS IS CONTAINED OUTSIDE THE TEMPORARY CONSTRUCTION TOFA OF THE ACTIVE ADJACENT TAXIWAYS (COORDINATES PROVIDED THIS SHEET). CONTRACTOR VEHICLES AND EQUIPMENT MAY NOT PENETRATE THE TOFA OF ANY ACTIVE TAXIWAY PRIOR TO APPROVAL TO MOVE ACROSS THE TAXIWAYS BY THE DESIGNATED FLAGMAN FOR THAT CROSSING.
2. THE CONTRACTOR SHALL INSTALL MARKER POLE BARRICADES ALONG THE TEMPORARY CONSTRUCTION TOFA AT MAXIMUM INTERVALS OF 25 FEET ON BOTH SIDES OF THE HAUL ROAD CONSTRUCTED. MARKER POLE BARRICADES INSTALLED IN THIS PHASE SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION WORK IN THE ADJACENT PHASE IS COMPLETE. THE MARKER POLE BARRICADES SHALL NOT BE REMOVED UNTIL THE CONTRACTOR NO LONGER REQUIRES ENTRY INTO THE ADJACENT PHASE.
3. THE CONTRACTOR MAY ELECT TO TEMPORARILY RELOCATE EXISTING TAXIWAY LIGHTS AND/OR SIGNS FOUND TO CONFLICT WITH THE CONTRACTOR'S PROPOSED HAUL ROUTE AND TAXIWAY CROSSINGS. MODIFICATIONS TO EXISTING LIGHTS AND/OR SIGNS SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL. ALL LIGHT AND/OR SIGN RELOCATIONS MUST MEET ALL APPLICABLE FAA CRITERIA FOR LOCATION, INSTALLATION, AND OPERATION. ALL COSTS ASSOCIATED WITH TEMPORARY SIGN RELOCATIONS INCLUDING LABOR, EQUIPMENT, MATERIAL, AND OTHER INCIDENTALS SHALL BE SUBSIDIARY TO THE PAY ITEMS OF SECTION 01 59 01, TEMPORARY CONSTRUCTION BID ITEMS.
4. THE CONTRACTOR SHALL PHYSICALLY IDENTIFY THE LINE OF DEMARCATION WHERE THE HAUL ROUTE CROSSES THE TOFA.
 - A. THE DISTANCE TO THE LINE OF DEMARCATION FROM ADJACENT TAXIWAY CENTERLINES MAY VARY BASED ON THE CONTRACTOR'S PROPOSED HAUL ROUTE WIDTH.
 - B. THE LINE OF DEMARCATION MAY BE PAINTED, MARKED WITH CONES, OR OTHER METHODS APPROVED BY AIRPORT OPERATIONS. ANY MARKINGS OR MATERIALS PROVIDED TO IDENTIFY THE LINE OF DEMARCATION MUST BE MAINTAINED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE THROUGHOUT CONSTRUCTION.
5. ALL CONTRACTOR PROPOSED HAUL ROUTE DIMENSIONS, INCLUDING THE PROPOSED LINES OF DEMARCATION, SHALL BE CLEARLY IDENTIFIED WITH RESPECT TO LOCATION OF THE TOFA IN THE PROPOSED HAUL ROUTE IMPROVEMENTS PLAN TO BE SUBMITTED FOR REVIEW AND APPROVAL, AS REQUIRED IN SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
6. SEE INDIVIDUAL PHASING SHEETS FOR STATUS OF TAXIWAY PAVEMENTS OPEN/CLOSED DURING EACH SPECIFIC PHASE.

EAST HAUL ROUTE RIGHT OF WAY BOUNDARIES

| POINT # | DESCRIPTION | NORTHING | EASTING |
|---------|-------------|-------------|------------|
| 30 | ISLAND 4 | 13927151.89 | 3125594.01 |
| 31 | ISLAND 4 | 13927169.01 | 3125827.91 |
| 32 | ISLAND 4 | 13927176.92 | 3125853.57 |
| 33 | ISLAND 4 | 13927178.11 | 3125566.15 |

NOTE: PHASE 3 HAUL ROAD CONSTRUCTED UNDER PN 675. ASPHALT TRANSITIONS CONSTRUCTED TO 100 FEET. CONTRACTOR MUST EXTEND TO 150 FEET. CONTRACTOR TO REMOVE TEMPORARY HAUL ROADS AT COMPLETION OF PROJECT.



HOUSTON AIRPORT SYSTEM
GEORGE BUSH INTERCONTINENTAL AIRPORT HOUSTON, TEXAS

RSH
RSH, Inc.
11011 Redwood Lane, Suite 900
Houston, Texas 77042
713-914-6455 FAX 713-914-6155
www.rshinc.com
TSPC Registration No. 0-3401

REVISIONS

| NO. | DESCRIPTION | DATE | BY |
|-----|-------------|------|----|
| | | | |

RECONSTRUCTION OF TAXIWAY NA AT GEORGE BUSH INTERCONTINENTAL AIRPORT

PHASING PLAN - SUBPHASE 3B EAST HAUL ROAD (5 OF 5)

ISSUED FOR BID

PROJECT MGR: BMS
DESIGNER: EBN
DRAWN BY: MRW
CHECKED BY: SMC
SCALE: 1"=50'
DATE: April 19, 2019



DEPARTMENT OF AVIATION
APPROVED BY: DATE:

HOUSTON AIRPORT SYSTEMS AUTHORIZED REPRESENTATIVE

PROJECT NO. 0907
C.I.P. NO. A-000670
H.A.S. NO.
SHEET NO. G06.03.7

| REVISIONS | | | |
|-----------|-------------|------|----|
| NO. | DESCRIPTION | DATE | BY |
| | | | |

RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
PHASING PLAN - PHASE 4
 (1 OF 2)

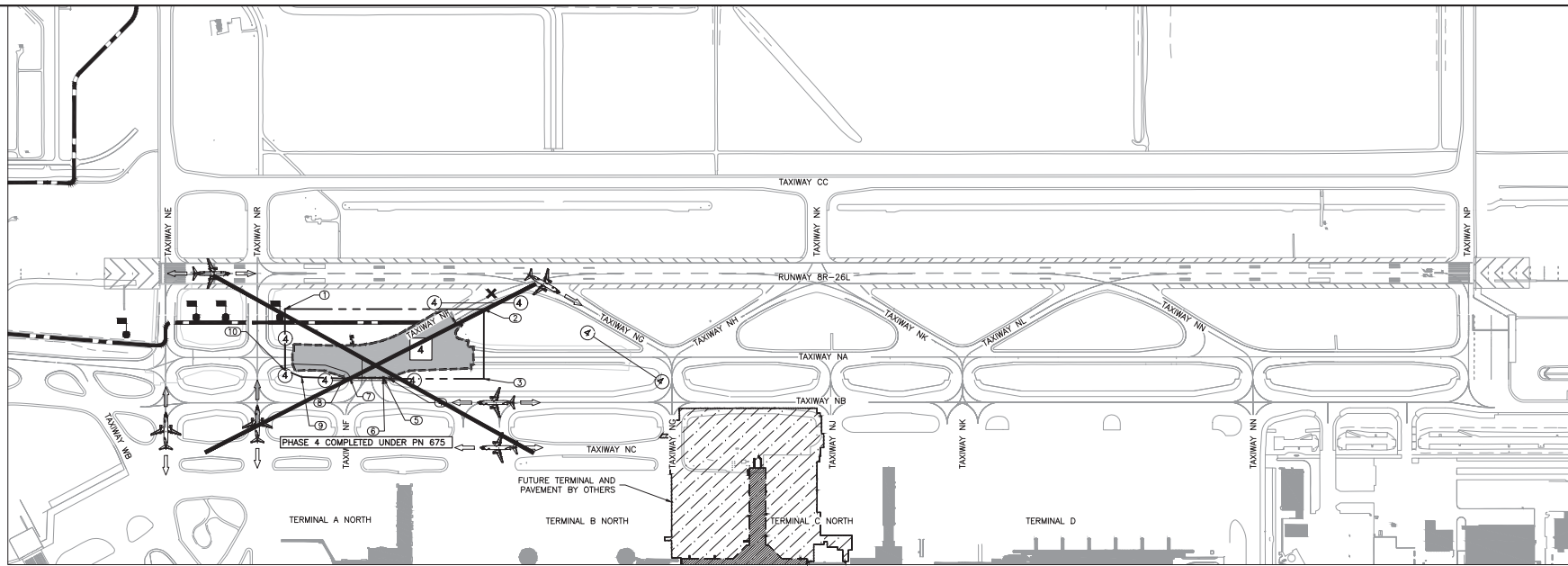
| | |
|----------------|---------------|
| ISSUED FOR BID | |
| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1" = 400' |
| DATE: | JULY 27, 2018 |



| | |
|-----------------------------------------------------|-------|
| DEPARTMENT OF AVIATION | |
| APPROVED BY: | DATE: |
| <i>David Robert</i> | |
| HOUSTON AIRPORT SYSTEM AUTHORIZED REPRESENTATIVE | |

| | |
|-------------|----------|
| PROJECT NO. | 0807 |
| C.I.P. NO. | A-000570 |
| H.A.S. NO. | |
| SHEET NO. | |

G06.04.1



LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- TABLE LOCATION POINT
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- APPROXIMATE BARRICADE LOCATION (SEE NEXT SHEET FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS

PHASE 4 MOVEMENT NOTES

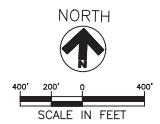
1. SEE PLAN SHEET G06.03.1 AND G06.03.2 FOR PROPOSED HAUL ROUTE.
2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 4:
 - A. TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) FROM THE WEST SIDE OF TAXIWAY NG TO THE EAST SIDE OF TAXIWAY NE, EXCEPT WHEN SUBJECT TO 'MARKER POLE EVACUATION' OPERATIONS.
 - B. TAXIWAY NA WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE EAST SIDE OF TAXIWAY NR TO THE WEST SIDE OF TAXIWAY NG.
 - C. TAXIWAY NF WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO THE NORTH SIDE OF TAXIWAY NE.
3. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSINGS WITH TAXIWAYS NE AND NR, OR AS DIRECTED BY AIRPORT OPERATIONS, WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 4. PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
4. THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF 'MARKER POLE EVACUATION' OPERATIONS. FLAGMEN AND ALL OTHER CONTRACTOR PERSONNEL SHALL BE ON CONSTANT ALERT TO IDENTIFY ANY AIRCRAFT EXCEEDING THE OPERATIONAL CAPACITY OF THE MODIFIED ADG VI TOFA (I.E. AIRBUS A-380-800, ANTONOV AN 124, ANTONOV AN 225).
5. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

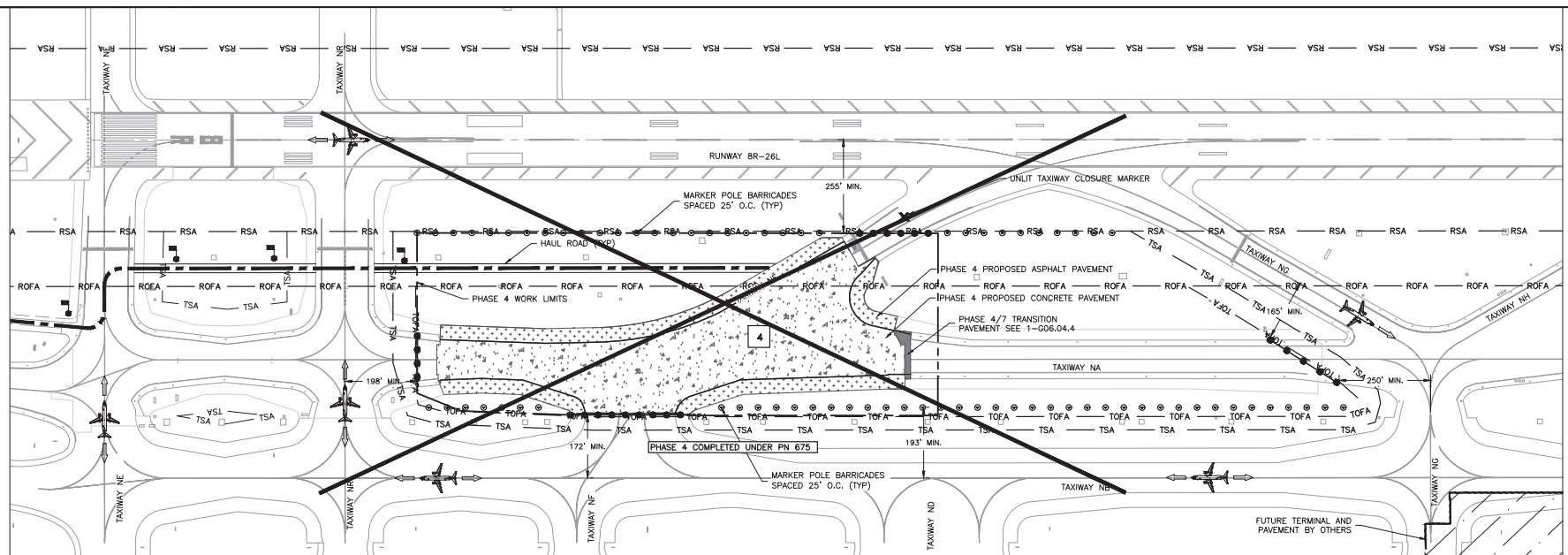
PHASE 4 WORK LIMITS

| POINT # | NORTHING | EASTING |
|---------|-------------|------------|
| 1 | 13927580.91 | 3123301.41 |
| 2 | 13927625.01 | 3124724.95 |
| 3 | 13927127.39 | 3124740.16 |
| 4 | 13927105.90 | 3124063.03 |
| 5 | 13927110.58 | 3124023.50 |
| 6 | 13927110.74 | 3124019.50 |
| 7 | 13927103.09 | 3123781.62 |
| 8 | 13927097.20 | 3123736.89 |
| 9 | 13927098.70 | 3123436.75 |
| 10 | 13927143.41 | 3123315.49 |

| PHASE 4 DURATION (DAYS) | WORK PERIOD | DAYTIME (0600 HOURS TO 2200 HOURS) | NIGHTTIME (2200 HOURS TO 0600 HOURS) | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
|-------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| | | PAVEMENT CLOSURES / RESTRICTIONS | PAVEMENT CLOSURES / RESTRICTIONS | | |
| 75 CALENDAR DAYS | DAY AND NIGHT | RESTRICTIONS -- TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NE TO TAXIWAY NC. CLOSURES -- TAXIWAY NA CLOSED TAXIWAY NR TO TAXIWAY NG. -- TAXIWAY NF CLOSED RUNWAY BR - 26L TO TAXIWAY NB. | RESTRICTIONS -- TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NG TO TAXIWAY NE. CLOSURES -- TAXIWAY NA CLOSED TAXIWAY NR TO TAXIWAY NG. -- TAXIWAY NF CLOSED RUNWAY BR - 26L TO TAXIWAY NB. | -- ACROSS TAXIWAY NF, NORTH OF TAXIWAY NB. -- ACROSS TAXIWAY NF, SOUTH OF THE RSA. -- ACROSS TAXIWAY NA, EAST OF TAXIWAY NR. -- ACROSS TAXIWAY NA, WEST OF TAXIWAY NG. | SUBPHASE 3B |

NOTE: PHASE 4
 COMPLETED
 UNDER PN 675



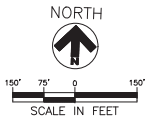


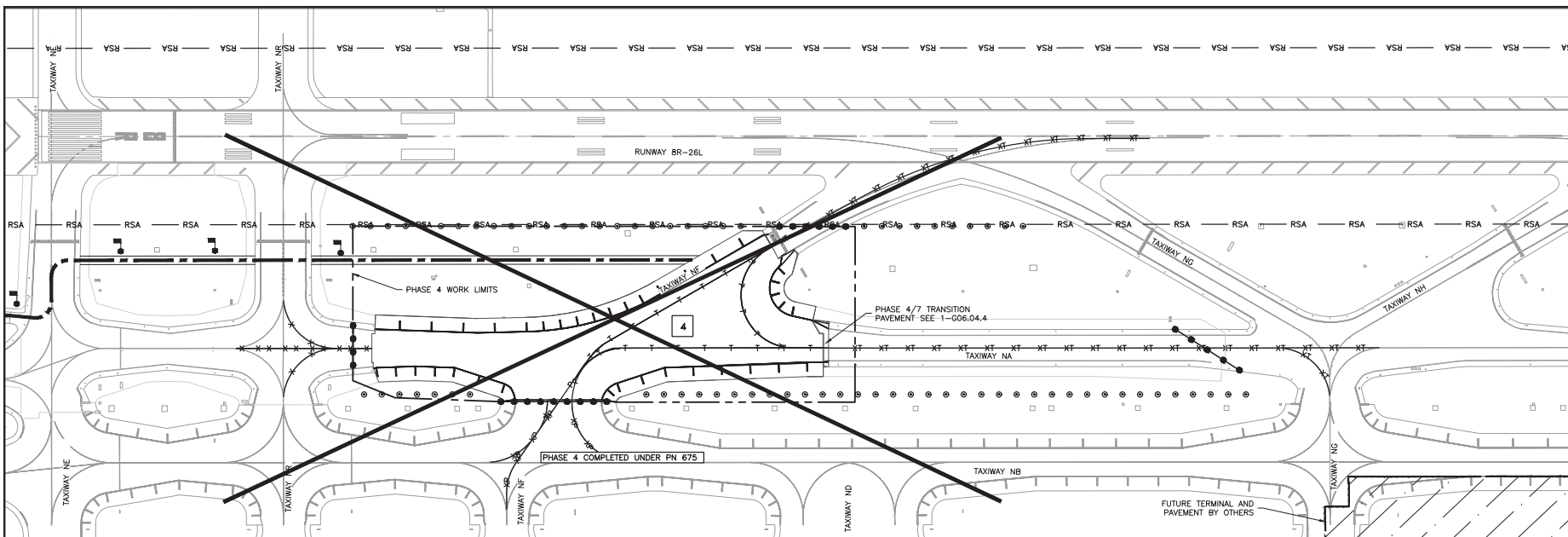
PHASE 4 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

- LEGEND**
- PROPOSED CONCRETE PAVEMENT THIS PHASE
 - PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
 - TRANSITION PAVEMENT THIS PHASE
 - AIRCRAFT TAXI ROUTE DURING PHASE
 - FLAGMAN
 - PHASE INDICATOR
 - UNLIT TAXIWAY CLOSURE MARKER
 - MARKER POLE BARRICADE
 - LOW PROFILE BARRICADE (EXACT POSITION)
 - HAUL ROUTE
 - PHASE LIMITS
 - PHASE 4 TAXIWAY SAFETY AREA
 - PHASE 4 TAXIWAY OBJECT FREE AREA
 - RUNWAY SAFETY AREA
 - RUNWAY OBJECT FREE AREA

1. ALL WORK IN PHASE 4 MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS. THE CONTRACTOR WILL BE ALLOWED 75 CALENDAR DAYS TO COMPLETE PHASE 4.
2. CONSTRUCTION TASKS FOR PHASE 4 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.04.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 4.
 - i. ACROSS TAXIWAY NF, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-8), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - ii. ACROSS TAXIWAY NF, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - iii. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NR TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NR CENTERLINE.
 - iv. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NG TOFA, APPROXIMATELY 165 FEET FROM THE TAXIWAY NG CENTERLINE.
3. MARKER POLE BARRICADES SHALL BE INSTALLED AT MAXIMUM INTERVALS OF 25 FEET AT THE FOLLOWING LOCATIONS:
 - i. IN THE TAXIWAY NA / TAXIWAY NB INFIELD, APPROXIMATELY 193 FEET FROM THE TAXIWAY NB CENTERLINE, BETWEEN TAXIWAYS NE AND NR, BETWEEN TAXIWAYS NR AND NF, AND BETWEEN TAXIWAYS NF AND NG.
 - ii. IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE, BETWEEN TAXIWAYS NR AND NF, AND BETWEEN TAXIWAYS NF AND NG.
4. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 4.
5. D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBSCURED THROUGHOUT THE DURATION OF PHASE 4.
6. E. INSTALL UNLIT TAXIWAY CLOSURE MARKER AT THE ENTRANCE OF TAXIWAY NF FROM RUNWAY BR - 26L.
7. F. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.04.3.
8. G. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
9. H. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
10. I. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
11. J. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
12. K. DEWATER EXCAVATION AREAS, AS APPLICABLE.
13. L. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
14. M. INSTALL NEW ELECTRICAL COMPONENTS.
15. N. CONSTRUCT NEW PAVEMENT SECTION.
16. O. CONSTRUCT TEMPORARY PHASE TRANSITION PAVEMENT.
17. P. REMOVE SECTION OF TEMPORARY HAUL ROAD BETWEEN TAXIWAY NR AND TAXIWAY NF NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 5 CONSTRUCTION OPERATIONS.
18. Q. PERFORM FINISH GRADING ACTIVITIES.
19. R. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
20. S. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS, CLEAN ADJACENT AREAS IMPACTED.
21. T. INSTALL END OF PHASE PAVEMENT MARKINGS. SEE SHEET G06.04.3.
22. U. PERFORM A FINAL CLEANING OF THE WORK AREA.
23. V. REMOVE UNLIT TAXIWAY CLOSURE MARKER.
24. W. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
25. X. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
26. Y. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
27. Z. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.

NOTE: PHASE 4 COMPLETED UNDER PN 675





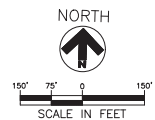
LEGEND

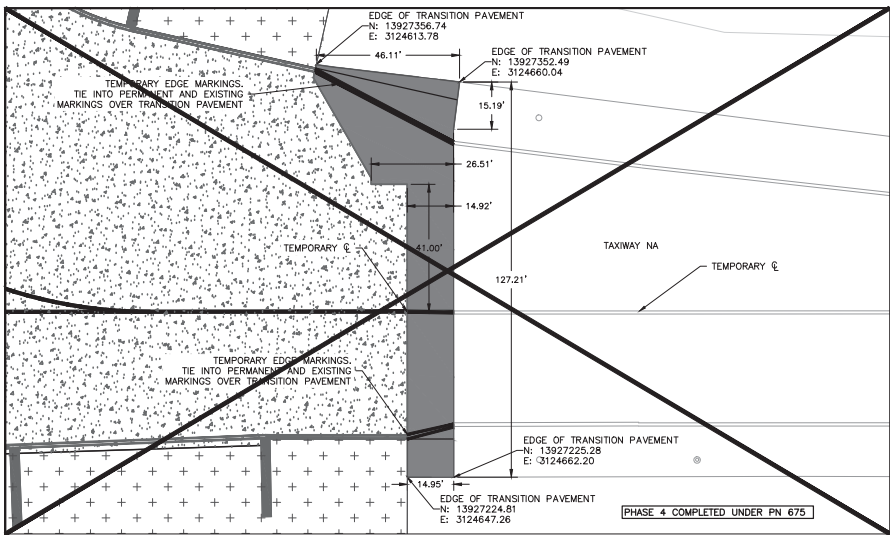
- # PHASE INDICATOR
- FLAGMAN
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- RSA RUNWAY SAFETY AREA
- X X MARKING REMOVAL
- XT XT MARKING REMOVAL, REPLACE WITH TEMPORARY @ INSTALLED THIS PHASE
- XP XP MARKING REMOVAL, REPLACE WITH PERMANENT @ INSTALLED THIS PHASE
- P P PERMANENT @ INSTALLED THIS PHASE
- T T TEMPORARY @ INSTALLED THIS PHASE
- 12 SIGN ON FOUNDATION, SUBSCRIPT DENOTES SIGN NUMBER; REFER TO TEMPORARY SIGN SCHEDULE
- NCSW
- NA ND SIGN PANEL LEGEND, RE: SCHEDULE
- BL-26BL BLANK SIGN PANEL
- L-85BL LOCATION PANEL (L-85BL)
- L-85BR MANDATORY INSTRUCTION PANEL (L-85BR)

PHASING PLAN MARKING NOTES

1. ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 90.34, REMOVAL OF MARKINGS.
 2. ALL PERMANENT MARKINGS SHALL BE INSTALLED AT THE END OF EACH PHASE IN ACCORDANCE WITH THE PAVEMENT MARKINGS PLAN SHEETS (COB SERIES). THE PERMANENT MARKINGS SHOWN ON THIS SHEET ARE ONLY SHOWN AS A GENERAL GUIDANCE OF PERMANENT MARKING SEGMENTS TO BE INSTALLED IN THIS PHASE. THIS SHEET SHALL NOT BE USED TO INSTALL PERMANENT MARKINGS OTHER THAN AS A DESCRIPTOR OF PERMANENT MARKING SEGMENTS INSTALLED IN THIS PHASE.
 - A. ALL PAVEMENT MARKINGS SHOWN ON THE PHASING DRAWINGS ASSUME ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS, INCLUDING PAVEMENT CURING WAITING PERIODS, HAVE BEEN ACHIEVED. IF THE PROJECT SCHEDULE REQUIRES THE CONTRACTOR TO OPEN ANY CLOSED PAVEMENT(S) BEFORE PERMANENT MARKINGS CAN BE APPLIED, OR IF SO DIRECTED BY AIRPORT OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY MARKINGS AS NECESSARY IN ORDER TO OPEN CLOSED PAVEMENT(S).
 - B. TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - C. TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
 3. TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA ITEM P-600, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 - A. TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 - B. TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - C. TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
 4. THE CONTRACTOR SHALL COMPLETELY OBLITERATE ALL MARKINGS DAMAGED BY THE CONTRACTOR DURING THIS PHASE AND NOT SCHEDULED FOR REMOVAL AND / OR REPLACEMENT DURING THIS PHASE. THESE MARKINGS SHALL BE REINSTALLED BY THE CONTRACTOR PRIOR TO PHASE COMPLETION. ANY MARKING THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 5. ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION, OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 6. SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.
- AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
- THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02, WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.

NOTE: PHASE 4
 COMPLETED
 UNDER PN 675





1
G06.04.4
PHASE 4/7 - TAXIWAY NA TRANSITION PAVEMENT
SCALE: 1" = 20'

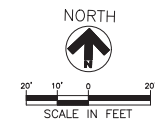
LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- TRANSITION PAVEMENT THIS PHASE
- LOW PROFILE BARRICADE (EXACT POSITION)
- RSA RUNWAY SAFETY AREA
- EXISTING PAVEMENT MARKING
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (001 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (C02 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.
2. TEMPORARY TRANSITION PAVEMENTS SHALL BE INSTALLED IN ORDER TO RETURN A TAXIWAY SEGMENT TO SERVICE BETWEEN THIS PHASE AND A SUBSEQUENT PHASE. TEMPORARY TRANSITION PAVEMENTS SHALL BE CONSTRUCTED SUCH THAT:
 - A. A SMOOTH TRANSITION WITH RESPECT TO TIE-IN GRADES IS PROVIDED BETWEEN REMAINING EXISTING PAVEMENT AND NEW PAVEMENT INSTALLED IN THIS PHASE.
 - B. PAVEMENT MARKINGS ARE INSTALLED THROUGH TRANSITION PAVEMENT AREAS TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE CONTINUOUS, NON-BROKEN MARKINGS.
 - C. ALL ELECTRICAL COMPONENTS SHALL BE RETURNED TO SERVICE WITH THEIR CORRESPONDING PAVEMENT AREAS.
 - D. DISTURBED AREAS OUTSIDE PAVED TEMPORARY TRANSITION PAVEMENTS SHALL BE GRADED IN GENERAL CONFORMANCE WITH THE GRADING PLAN SHEET REQUIREMENTS AND VEGETATED IN GENERAL CONFORMANCE WITH THE SWPPP PLAN SHEET REQUIREMENTS.
 - E. THEY ARE IN ACCORDANCE WITH DETAIL 7A-C03.15.
3. TRANSITION PAVEMENT AREAS WILL BE REMOVED IN A SUBSEQUENT PHASE AND REPLACED WITH A PERMANENT PAVEMENT SECTION.

NOTE: PHASE 4
COMPLETED
UNDER PN 675



| REVISIONS | | | |
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| NO. | DESCRIPTION | DATE | BY |
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RECONSTRUCTION OF TAXIWAY NA
AT GEORGE BUSH INTERCONTINENTAL AIRPORT
**PHASING PLAN - PHASE 4
TRANSITIONS AND TIE-INS**

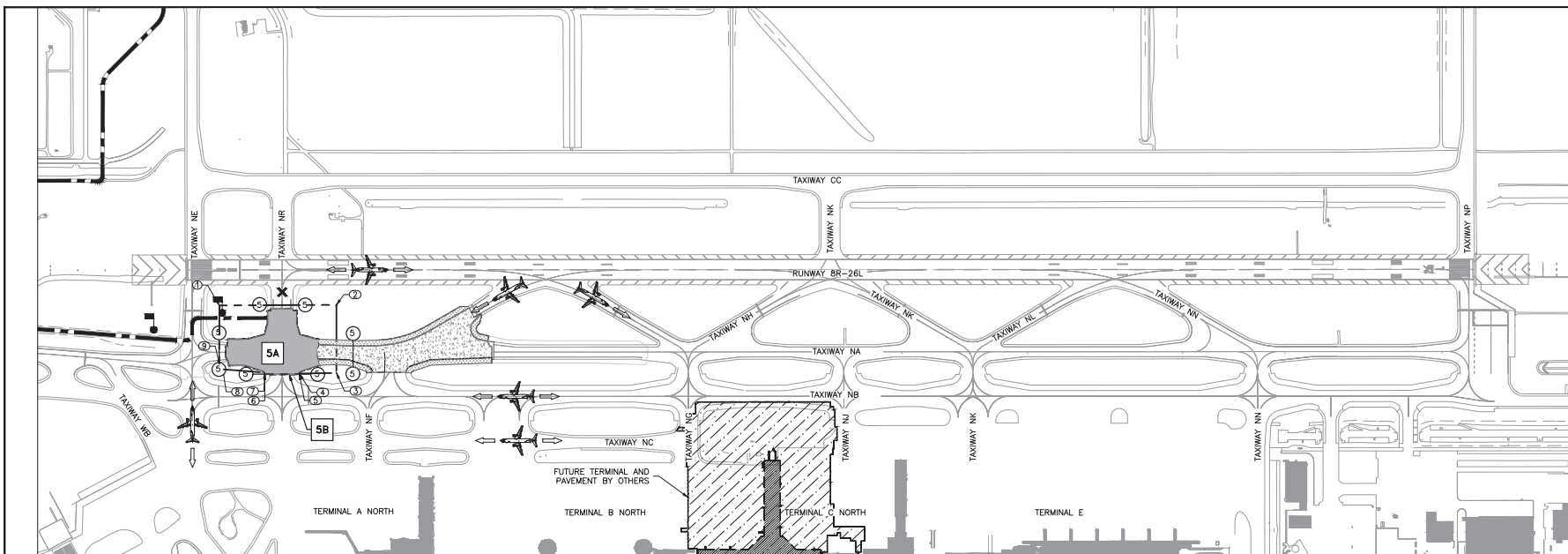
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| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1" = 20' |
| DATE: | JULY 27, 2018 |



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| DEPARTMENT OF AVIATION | |
| APPROVED BY: | DATE: |
| <i>David Robert</i> | |
| HOUSTON AIRPORT SYSTEMS | |
| AUTHORIZED REPRESENTATIVE | |

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| PROJECT NO. | 0807 |
| C.I.P. NO. | A-000570 |
| H.A.S. NO. | |
| SHEET NO. | |

G06.04.4



LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- TABLE LOCATION POINT
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- APPROXIMATE BARRICADE LOCATION (SEE NEXT SHEET FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS

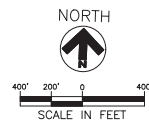
| PHASE 5 WORK LIMITS | | |
|---------------------|-------------|------------|
| POINT # | NORTHING | EASTING |
| 1 | 13927554.99 | 3122646.66 |
| 2 | 13927586.48 | 3123500.91 |
| 3 | 13927089.86 | 3123516.73 |
| 4 | 13927076.30 | 3123245.87 |
| 5 | 13927072.99 | 3123246.00 |
| 6 | 13927064.30 | 3122995.27 |
| 7 | 13927075.53 | 3122993.55 |
| 8 | 13927089.63 | 3122686.31 |
| 9 | 13927113.71 | 3122662.73 |

PHASE 5 MOVEMENT NOTES

1. SEE PLAN SHEET G06.03.1 AND G06.03.2 FOR PROPOSED HAUL ROUTE.
2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 5:
 - A. TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) FROM THE WEST SIDE OF TAXIWAY NF TO THE EAST SIDE OF TAXIWAY NE, EXCEPT WHEN SUBJECT TO MARKER POLE EVACUATION OPERATIONS AND DURING SUBPHASE 5B CONSTRUCTION OPERATIONS.
 - B. DURING SUBPHASE 5B CONSTRUCTION OPERATIONS (NIGHTTIME OPERATIONS ONLY), TAXIWAY NB WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE WEST SIDE OF TAXIWAY NF TO THE EAST SIDE OF TAXIWAY NE.
 - C. TAXIWAY NA WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE WEST SIDE OF TAXIWAY NF TO THE EAST SIDE OF TAXIWAY NE.
 - D. TAXIWAY NR WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO THE NORTH SIDE OF TAXIWAY NB.
3. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSING WITH TAXIWAY NE, OR AS DIRECTED BY AIRPORT OPERATIONS, WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 5.
4. THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF MARKER POLE EVACUATION OPERATIONS, FLAGMEN AND ALL OTHER CONTRACTOR PERSONNEL SHALL BE ON CONSTANT ALERT TO IDENTIFY ANY AIRCRAFT EXCEEDING THE OPERATIONAL CAPACITY OF THE MODIFIED ADG VI TOFA (I.E. AIRBUS A-380-800, ANTONOV AN 124, ANTONOV AN 225).
5. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

PLACEMENT OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.

| PHASE 5 | | DAYTIME (0600 HOURS TO 2200 HOURS) | NIGHTTIME (2200 HOURS TO 0600 HOURS) | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
|--------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| DURATION (DAYS) | WORK PERIOD | PAVEMENT CLOSURES / RESTRICTIONS | PAVEMENT CLOSURES / RESTRICTIONS | | |
| SUBPHASE 5A - 65 CALENDAR DAYS | SUBPHASE 5A - DAY AND NIGHT | RESTRICTIONS --- DURING SUBPHASE 5A, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NF TO TAXIWAY NE. | RESTRICTIONS --- DURING SUBPHASE 5A, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NF TO TAXIWAY NE. --- DURING SUBPHASE 5B, TAXIWAY NB RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NF TO TAXIWAY NE. | --- ACROSS TAXIWAY NR, NORTH OF TAXIWAY NB. --- ACROSS TAXIWAY NR, SOUTH OF THE RSA. --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NE. --- ACROSS TAXIWAY NA, WEST OF TAXIWAY NF. | SUBPHASE 3B, SUBPHASES 5A / 5B |
| SUBPHASE 5B - 23 CALENDAR DAYS | SUBPHASE 5B - NIGHT ONLY | RESTRICTIONS --- TAXIWAY NA CLOSED TAXIWAY NF TO TAXIWAY NE. --- TAXIWAY NR CLOSED RUNWAY BR - 26L TO TAXIWAY NB. | RESTRICTIONS --- TAXIWAY NA CLOSED TAXIWAY NF TO TAXIWAY NE. --- TAXIWAY NR CLOSED RUNWAY BR - 26L TO TAXIWAY NB. | | |



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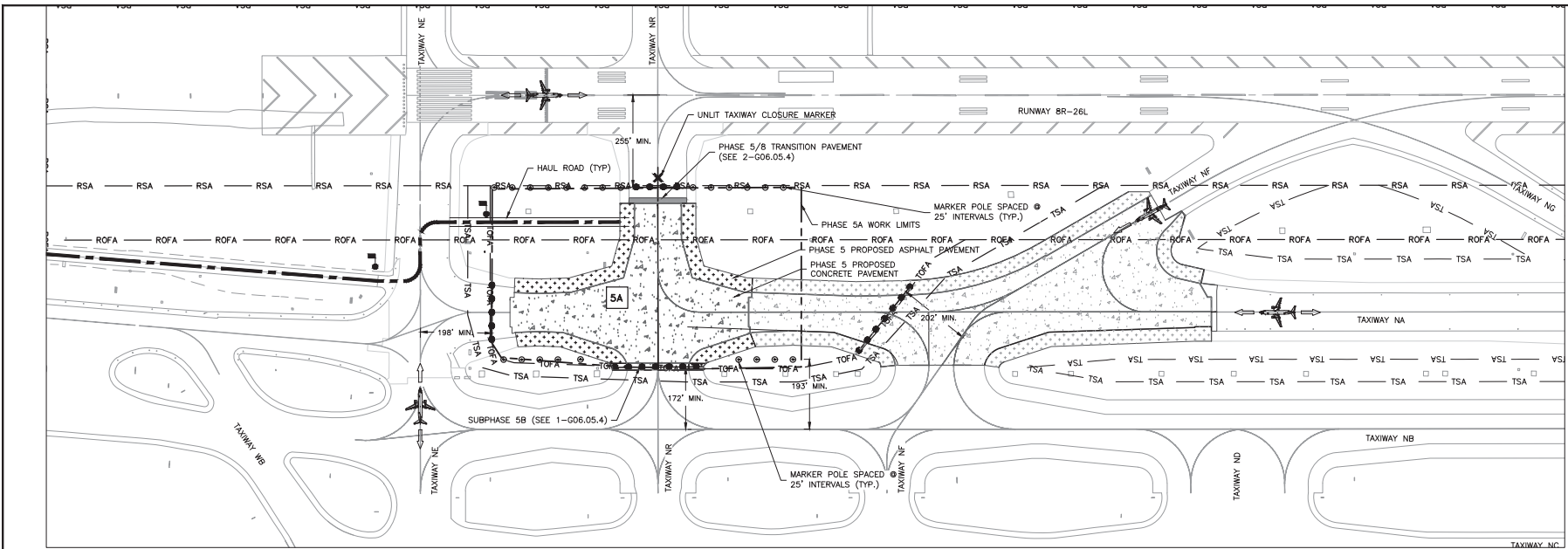
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| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=150' |
| DATE: | JULY 27, 2018 |



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| DEPARTMENT OF AVIATION | |
| APPROVED BY: | DATE: |
| <i>David Robert</i> | |
| HOUSTON AIRPORT SYSTEM AUTHORIZED REPRESENTATIVE | |

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| PROJECT NO. | 0807 |
| C.L.P. NO. | A-000570 |
| H.A.S. NO. | |
| SHEET NO. | G06.05.2 |



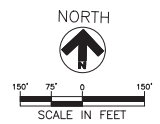
PHASE 5 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

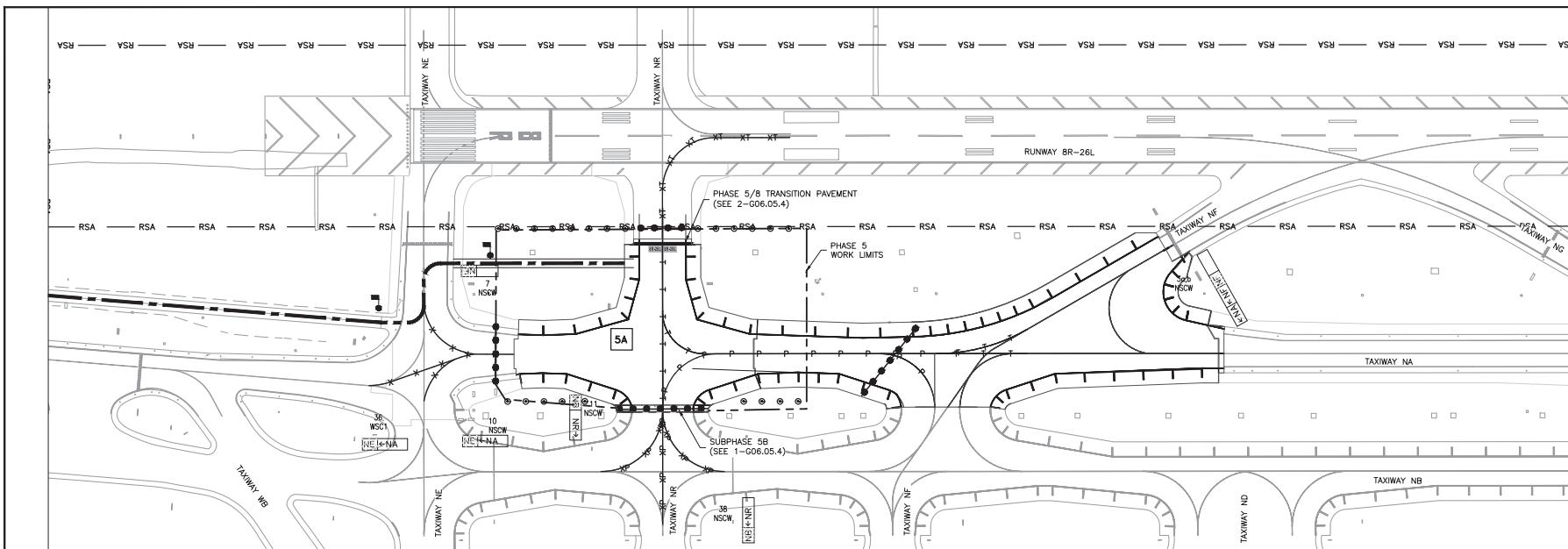
LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER COMPLETED IN PREVIOUS PHASES
- TRANSITION PAVEMENT THIS PHASE
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- PHASE 5 TAXIWAY SAFETY AREA
- PHASE 5 TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA

1. PHASE 5 MAY NOT COMMENCE UNTIL THE PHASE 4 WORK AREA IS OPENED TO ALL AIRCRAFT TRAFFIC.
2. ALL WORK IN SUBPHASE 5A MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS. THE CONTRACTOR WILL BE ALLOWED 65 CALENDAR DAYS TO COMPLETE SUBPHASE 5A.
3. SUBPHASE 5B SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 5A. HOWEVER, SUBPHASE 5B SHALL BE LIMITED TO NIGHTTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 23 CALENDAR DAYS TO COMPLETE SUBPHASE 5B.
4. CONSTRUCTION TASKS FOR PHASE 5 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.05.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 5.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NR, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-8), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.

DURING SUBPHASE 5B, THESE BARRICADES WILL BE TEMPORARILY RELOCATED TO APPROXIMATELY 10 FEET SOUTH OF THE SUBPHASE 5B PAVING LIMITS.
 - ii. ACROSS TAXIWAY NR, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - iii. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NE TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NE CENTERLINE.
 - iv. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NF TOFA, APPROXIMATELY 202 FEET FROM THE TAXIWAY NF CENTERLINE.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 5.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.05.3) FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBTURED THROUGHOUT THE DURATION OF PHASE 5.
 - E. INSTALL UNLIT TAXIWAY CLOSURE MARKER AT THE ENTRANCE OF TAXIWAY NR FROM RUNWAY BR - 26L.
 - F. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.05.3.
 - G. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - H. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
 - I. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
 - J. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
 - K. DEWATER EXCAVATION AREAS, AS APPLICABLE.
 - L. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
 - M. INSTALL NEW ELECTRICAL COMPONENTS.
 - N. CONSTRUCT NEW PAVEMENT SECTION.
 - O. CONSTRUCT TEMPORARY PHASE TRANSITION PAVEMENT.
 - P. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NR AND TAXIWAY NF. REMOVE SECTION OF TEMPORARY HAUL ROAD BETWEEN TAXIWAY NE AND TAXIWAY NR NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 6 CONSTRUCTION OPERATIONS OR PHASE 8 CONSTRUCTION OPERATIONS.
 - Q. PERFORM FINISH GRADING ACTIVITIES.
 - R. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
 - S. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED.
 - T. INSTALL END OF PHASE PAVEMENT MARKINGS. SEE SHEET G06.05.4.
 - U. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - V. REMOVE UNLIT TAXIWAY CLOSURE MARKER.
 - W. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - X. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBTURED GUIDANCE SIGNS.
 - Y. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - Z. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.



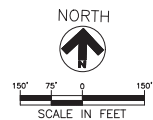


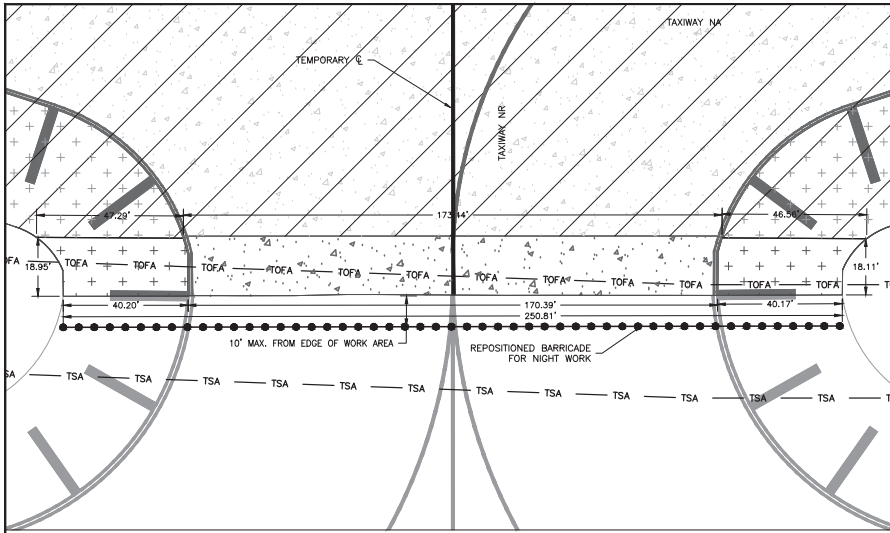
LEGEND

- # PHASE INDICATOR
- MARKER POLE BARRICADE
- FLAGMAN
- LOW PROFILE BARRICADE (EXACT POSITION)
- HUAL ROUTE
- PHASE LIMITS
- RSA — RUNWAY SAFETY AREA
- ⊖ MARKING REMOVAL
- ⊖ XT XT ⊖ MARKING REMOVAL, REPLACE WITH TEMPORARY ⊖ INSTALLED THIS PHASE
- XP XP — MARKING REMOVAL, REPLACE WITH PERMANENT ⊖ INSTALLED THIS PHASE
- P P — PERMANENT ⊖ INSTALLED THIS PHASE
- T T — TEMPORARY ⊖ INSTALLED THIS PHASE
- 12 NCSW SIGN ON FOUNDATION, SUBSCRIPT DENOTES SIGN NUMBER, REFER TO TEMPORARY SIGN SCHEDULE
- [K NA ND] SIGN PANEL LEGEND. RE: SCHEDULE
- BLANK SIGN PANEL
- BL-26R LOCATION PANEL (L-858L)
- DESTINATION MANDATORY INSTRUCTION PANEL (L-858Y) PANEL (L-858R)

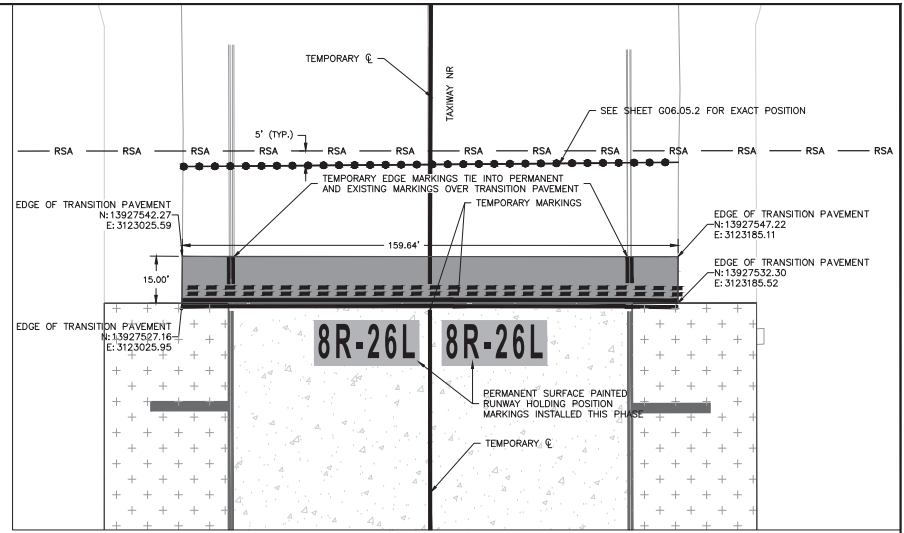
PHASING PLAN MARKING NOTES

1. ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 90.34, REMOVAL OF MARKINGS.
 2. ALL PERMANENT MARKINGS SHALL BE INSTALLED AT THE END OF EACH PHASE IN ACCORDANCE WITH THE PAVEMENT MARKINGS PLAN SHEETS (COB SERIES). THE PERMANENT MARKINGS SHOWN ON THIS SHEET ARE ONLY SHOWN AS A GENERAL GUIDANCE OF PERMANENT MARKING SEGMENTS TO BE INSTALLED IN THIS PHASE. THIS SHEET SHALL NOT BE USED TO INSTALL PERMANENT MARKINGS OTHER THAN AS A DESCRIPTOR OF PERMANENT MARKING SEGMENTS INSTALLED IN THIS PHASE.
 - A. TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 - B. TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - C. TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
 3. TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA ITEM P-620, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 4. THE CONTRACTOR SHALL COMPLETELY OBLITERATE ALL MARKINGS DAMAGED BY THE CONTRACTOR DURING THIS PHASE AND NOT SCHEDULED FOR REMOVAL AND / OR REPLACEMENT DURING THIS PHASE. THESE MARKINGS SHALL BE REINSTALLED BY THE CONTRACTOR PRIOR TO PHASE COMPLETION. ANY MARKING THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 5. ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION, OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 6. SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.
- AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
- THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02, WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.





1
G06.05.4
SUBPHASE 5B PAVEMENT - TAXIWAY NR
SCALE: 1" = 20'



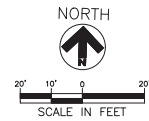
2
G06.05.4
PHASE 5A/8 - TAXIWAY NR TRANSITION PAVEMENT
SCALE: 1" = 20'

LEGEND

- CONCRETE PAVEMENT COMPLETED CONCURRENTLY
- ASPHALT SHOULDER PAVEMENT COMPLETED CONCURRENTLY
- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- TRANSITION PAVEMENT THIS PHASE
- LOW PROFILE BARRICADE (EXACT POSITION)
- TSA TAXIWAY SAFETY AREA
- TOFA TAXIWAY OBJECT FREE AREA
- RSA RUNWAY SAFETY AREA
- EXISTING PAVEMENT MARKING
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (CD1 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (CD2 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.
2. TEMPORARY TRANSITION PAVEMENTS SHALL BE INSTALLED IN ORDER TO RETURN A TAXIWAY SEGMENT TO SERVICE BETWEEN THIS PHASE AND A SUBSEQUENT PHASE. TEMPORARY TRANSITION PAVEMENTS SHALL BE CONSTRUCTED SUCH THAT:
 - A. A SMOOTH TRANSITION WITH RESPECT TO TIE-IN GRADES IS PROVIDED BETWEEN REMAINING EXISTING PAVEMENT AND NEW PAVEMENT INSTALLED IN THIS PHASE.
 - B. PAVEMENT MARKINGS ARE INSTALLED THROUGH TRANSITION PAVEMENT AREAS TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE CONTINUOUS, NON-BROKEN MARKINGS.
 - C. ALL ELECTRICAL COMPONENTS SHALL BE RETURNED TO SERVICE WITH THEIR CORRESPONDING PAVEMENT AREAS.
 - D. DISTURBED AREAS OUTSIDE PAVED TEMPORARY TRANSITION PAVEMENTS SHALL BE GRADED IN GENERAL CONFORMANCE WITH THE GRADING PLAN SHEET REQUIREMENTS AND VEGETATED IN GENERAL CONFORMANCE WITH THE SWPPP PLAN SHEET REQUIREMENTS.
 - E. THEY ARE IN ACCORDANCE WITH DETAIL 7A-C03.15.
3. TRANSITION PAVEMENT AREAS WILL BE REMOVED IN A SUBSEQUENT PHASE AND REPLACED WITH A PERMANENT PAVEMENT SECTION.



| REVISIONS | | | |
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| NO. | DESCRIPTION | DATE | BY |
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RECONSTRUCTION OF TAXIWAY NR
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
**PHASING PLAN - PHASE 5
 TRANSITIONS AND TIE-INS**

ISSUED FOR BID

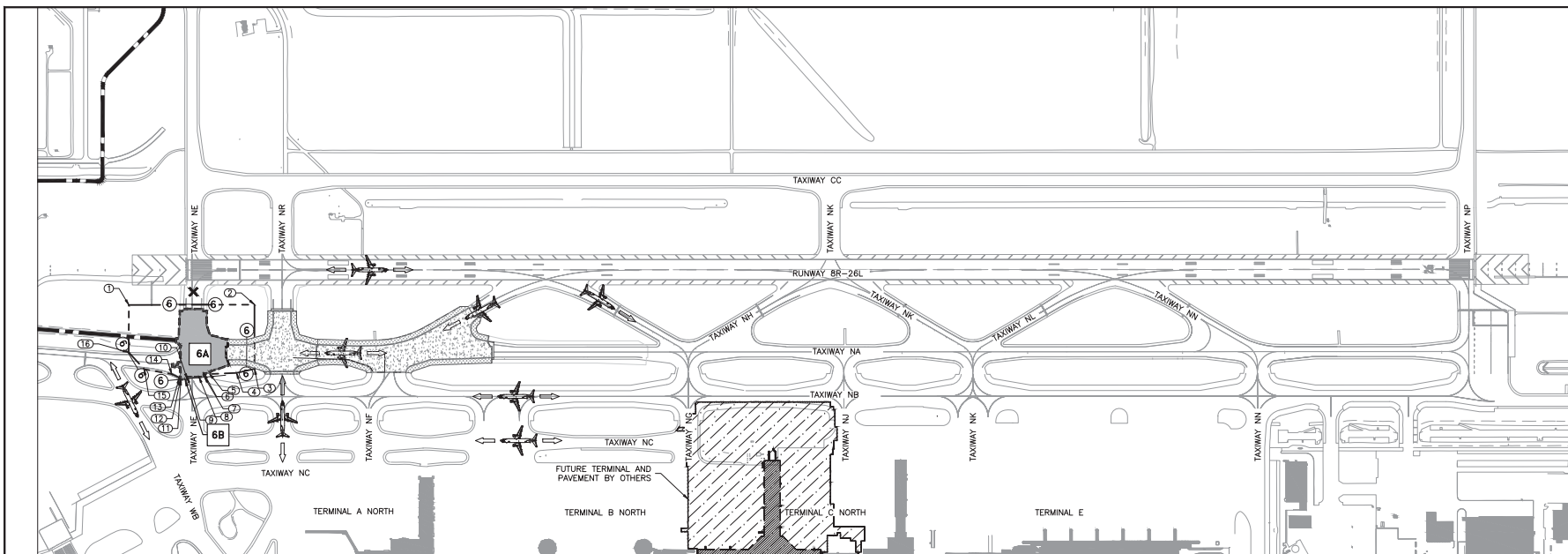
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| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=20' |
| DATE: | JULY 27, 2018 |



DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
David Robert
 HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

PROJECT NO. **0807**
 C.I.P. NO. **A-000570**
 H.A.S. NO.
 SHEET NO.

G06.05.4



LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- TABLE LOCATION POINT
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- APPROXIMATE BARRICADE LOCATION (SEE NEXT SHEET FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS

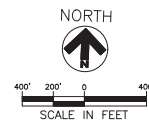
PHASE 6 MOVEMENT NOTES

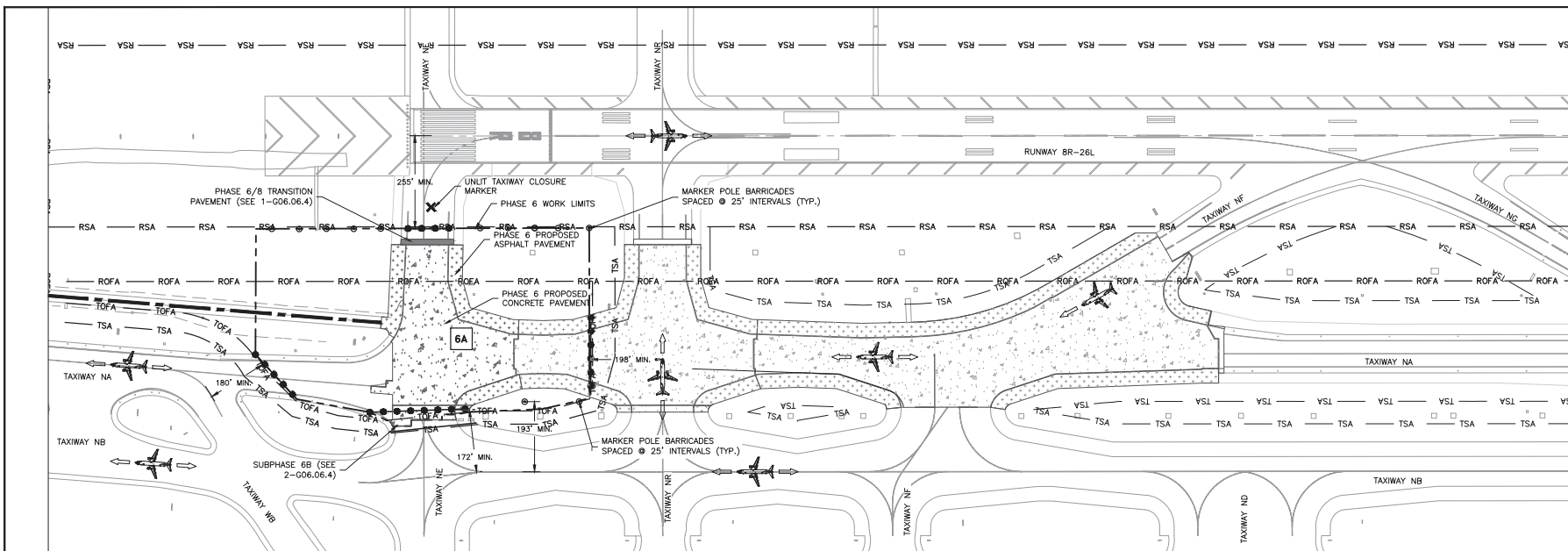
1. SEE PLAN SHEET G06.03.1 AND G06.03.2 FOR PROPOSED HAUL ROUTE.
2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 6:
 - A. TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) FROM THE WEST SIDE OF TAXIWAY NR TO THE EAST SIDE OF TAXIWAY WB, EXCEPT WHEN SUBJECT TO MARKER POLE EVACUATION OPERATIONS AND DURING SUBPHASE 6B CONSTRUCTION OPERATIONS.
 - B. DURING SUBPHASE 6B CONSTRUCTION OPERATIONS (NIGHTTIME OPERATIONS ONLY), TAXIWAY NB WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE WEST SIDE OF TAXIWAY NR TO THE EAST SIDE OF TAXIWAY WB.
 - C. TAXIWAY NA WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE WEST SIDE OF TAXIWAY NR TO THE EAST SIDE OF TAXIWAY WB.
 - D. TAXIWAY NE WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO THE NORTH SIDE OF TAXIWAY NB.
3. PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
4. THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF MARKER POLE EVACUATION OPERATIONS, FLAGMEN AND ALL OTHER CONTRACTOR PERSONNEL SHALL BE ON CONSTANT ALERT TO IDENTIFY ANY AIRCRAFT EXCEEDING THE OPERATIONAL CAPACITY OF THE MODIFIED ADG VI TOFA (I.E. AIRBUS A-380-800, ANTONOV AN 124, ANTONOV AN 225).
5. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

PHASE 6 WORK LIMITS

| POINT # | NORTHING | EASTING |
|---------|-------------|------------|
| 1 | 13927537.54 | 3121985.43 |
| 2 | 13927568.93 | 3122902.63 |
| 3 | 13927100.53 | 3122917.86 |
| 4 | 13927066.51 | 3122787.54 |
| 5 | 13927057.70 | 3122588.42 |
| 6 | 13927056.42 | 3122548.44 |
| 7 | 13927029.57 | 3122553.71 |
| 8 | 13927028.30 | 3122514.03 |
| 9 | 13927025.56 | 3122429.07 |
| 10 | 13927008.57 | 3122429.62 |
| 11 | 13927007.05 | 3122382.49 |
| 12 | 13927005.69 | 3122379.81 |
| 13 | 13927018.36 | 3122371.32 |
| 14 | 13927042.97 | 3122314.80 |
| 15 | 13927072.55 | 3122112.71 |
| 16 | 13927191.74 | 3121995.09 |

| PHASE 6 | | DAYTIME (0600 HOURS TO 2200 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | NIGHTTIME (2200 HOURS TO 0600 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
|--------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| SUBPHASE 6A - 56 CALENDAR DAYS | SUBPHASE 6A - DAY AND NIGHT | RESTRICTIONS --- TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NR TO TAXIWAY WB. --- DURING SUBPHASE 6B, TAXIWAY NB RESTRICTED TO ADG IV CLOSURES --- TAXIWAY NA CLOSED TAXIWAY NR TO TAXIWAY WB. --- TAXIWAY NE CLOSED RUNWAY BR - 26L TO TAXIWAY NB. | RESTRICTIONS --- DURING SUBPHASE 6A, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NR TO TAXIWAY WB. --- DURING SUBPHASE 6B, TAXIWAY NB RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NR TO TAXIWAY NE. --- TAXIWAY NA CLOSED TAXIWAY NR TO TAXIWAY WB. --- TAXIWAY NE CLOSED RUNWAY BR - 26L TO TAXIWAY NB. | --- ACROSS TAXIWAY NE, NORTH OF TAXIWAY NB. --- ACROSS TAXIWAY NE, SOUTH OF THE RSA. --- ACROSS TAXIWAY NA, EAST OF TAXIWAY WB. --- ACROSS TAXIWAY NA, WEST OF TAXIWAY NC. | SUBPHASE 3B, SUBPHASES 6A / 6B |
| SUBPHASE 6B - 23 CALENDAR DAYS | SUBPHASE 6B - NIGHT ONLY | | | | |



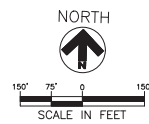


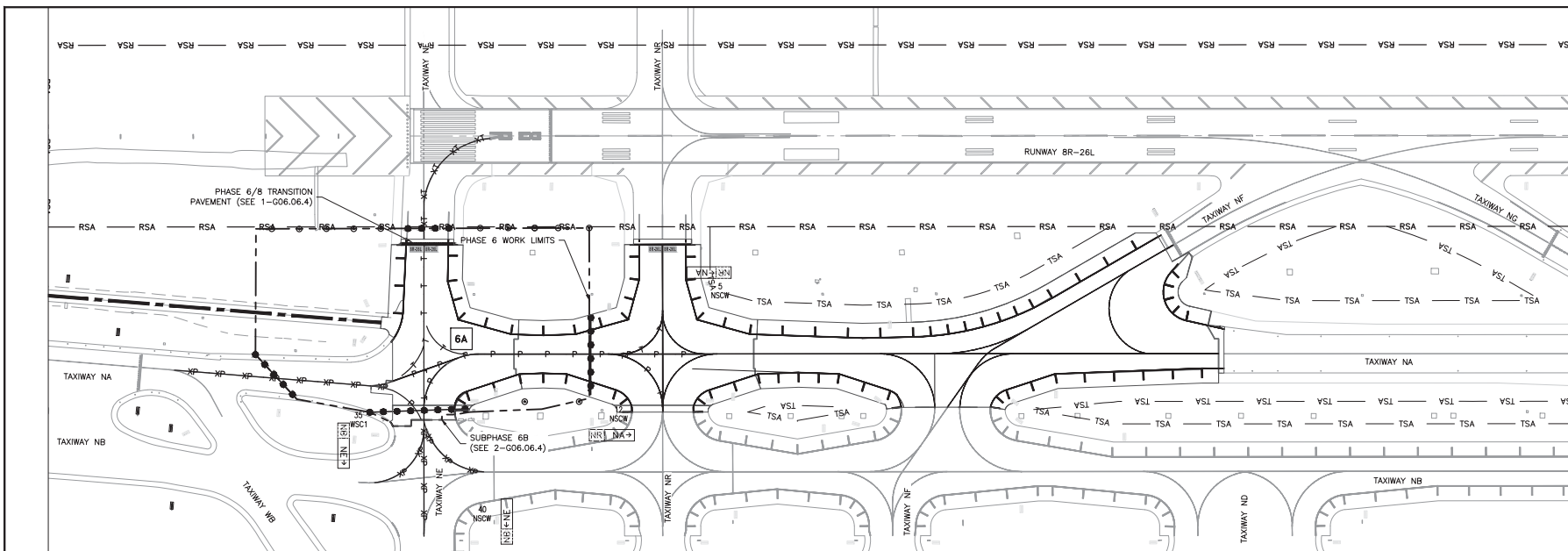
LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT PAVEMENT SHOULDER COMPLETED IN PREVIOUS PHASES
- TRANSITION PAVEMENT THIS PHASE
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- PHASE 6 TAXIWAY SAFETY AREA
- PHASE 6 TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA

PHASE 6 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

1. PHASE 6 MAY NOT COMMENCE UNTIL THE PHASE 5 WORK AREA IS OPENED TO ALL AIRCRAFT TRAFFIC.
2. ALL WORK IN SUBPHASE 6A MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS. THE CONTRACTOR WILL BE ALLOWED 56 CALENDAR DAYS TO COMPLETE SUBPHASE 6A.
3. SUBPHASE 6B SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 6A. HOWEVER, SUBPHASE 6B SHALL BE LIMITED TO NIGHTTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 23 CALENDAR DAYS TO COMPLETE SUBPHASE 6B.
4. PHASE 6 MUST BE COMPLETED PRIOR TO THE COMMENCEMENT OF PHASE 8, UNLESS OTHERWISE APPROVED BY AIRPORT OPERATIONS.
5. CONSTRUCTION TASKS FOR PHASE 6 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.06.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 6.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NE, NORTH OF THE MODIFIED TAXIWAY NB ADD VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-B), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - ii. ACROSS TAXIWAY NE, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - iii. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY WB TOFA, APPROXIMATELY 150 FEET FROM THE TAXIWAY WB CENTERLINE.
 - iv. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NR TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NR CENTERLINE.
 MARKER POLE BARRICADES SHALL BE INSTALLED AT MAXIMUM INTERVALS OF 25 FEET AT THE FOLLOWING LOCATIONS:
 - i. IN THE TAXIWAY NA / TAXIWAY NB INFIELD, APPROXIMATELY 193 FEET FROM THE TAXIWAY NB CENTERLINE, BETWEEN TAXIWAYS NE AND NR. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 4 CONSTRUCTION OPERATIONS.
 - ii. IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE, BETWEEN TAXIWAYS NE AND NR. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 4 CONSTRUCTION OPERATIONS.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 6.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBSCURED THROUGHOUT THE DURATION OF PHASE 6.
 - E. INSTALL UNLIT TAXIWAY CLOSURE MARKER AT THE ENTRANCE OF TAXIWAY NE FROM RUNWAY BR - 26L.
 - F. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.06.3.
 - G. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - H. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
 - i. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
 - j. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
 - k. DEWATER EXCAVATION AREAS, AS APPLICABLE.
 - l. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
 - m. INSTALL NEW ELECTRICAL COMPONENTS.
 - N. CONSTRUCT NEW PAVEMENT SECTION.
 - O. CONSTRUCT TEMPORARY PHASE TRANSITION PAVEMENT. THIS PAVEMENT TRANSITION MAY NOT BE REQUIRED IF THERE IS NO DURATION GAP BETWEEN THE COMPLETION OF PHASE 6 AND THE COMMENCEMENT OF PHASE 8. CONFIRM NECESSITY OF PAVEMENT TRANSITION WITH THE OWNER'S REPRESENTATIVE.
 - P. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NE AND TAXIWAY NR NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 6 CONSTRUCTION OPERATIONS.
 - Q. PERFORM FINISH GRADING ACTIVITIES.
 - R. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
 - S. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED.
 - T. INSTALL END OF PHASE PAVEMENT MARKINGS. SEE SHEET G06.06.3.
 - U. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - V. REMOVE UNLIT TAXIWAY CLOSURE MARKER.
 - W. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - X. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
 - Y. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - Z. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.



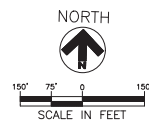


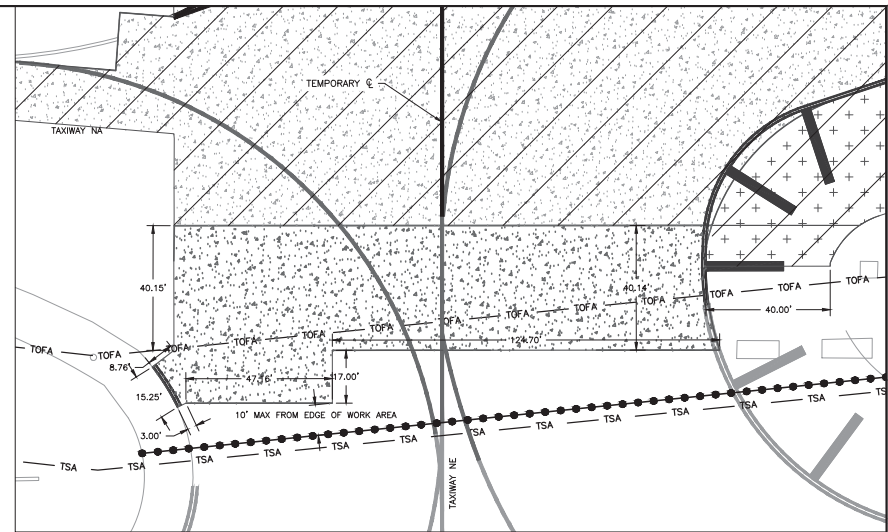
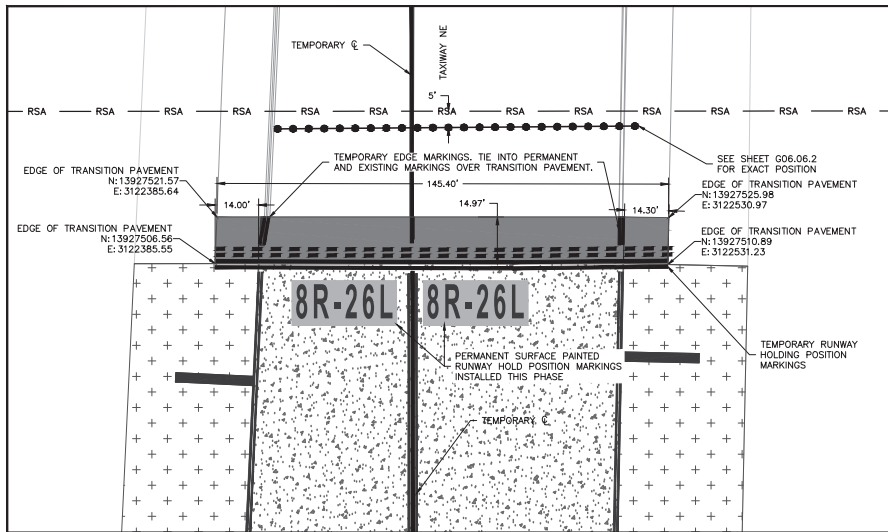
LEGEND

- # PHASE INDICATOR
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAIL ROUTE
- - - PHASE LIMITS
- RSA — RUNWAY SAFETY AREA
- ⊗ MARKING REMOVAL
- ⊗ XT MARKING REMOVAL, REPLACE WITH TEMPORARY ⊗ INSTALLED THIS PHASE
- ⊗ XP MARKING REMOVAL, REPLACE WITH PERMANENT ⊗ INSTALLED THIS PHASE
- ⊗ PERMANENT ⊗ INSTALLED THIS PHASE
- ⊗ TEMPORARY ⊗ INSTALLED THIS PHASE
- 12 NSCW SIGN ON FOUNDATION. SUBSCRIPT DENOTES SIGN NUMBER. REFER TO TEMPORARY SIGN SCHEDULE
- NA ND SIGN PANEL LEGEND. RE: SCHEDULE
- BL-26R BLANK SIGN PANEL
- LOCATION PANEL (L-858L)
- MANDATORY INSTRUCTION PANEL (L-858R)

PHASING PLAN MARKING NOTES

1. ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 90.34, REMOVAL OF MARKINGS.
2. ALL PERMANENT MARKINGS SHALL BE INSTALLED AT THE END OF EACH PHASE IN ACCORDANCE WITH THE PAVEMENT MARKINGS PLAN SHEETS (COB SERIES). THE PERMANENT MARKINGS SHOWN ON THIS SHEET ARE ONLY SHOWN AS A GENERAL GUIDANCE OF PERMANENT MARKING SEGMENTS TO BE INSTALLED IN THIS PHASE. THIS SHEET SHALL NOT BE USED TO INSTALL PERMANENT MARKINGS OTHER THAN AS A DESCRIPTOR OF PERMANENT MARKING SEGMENTS INSTALLED IN THIS PHASE.
 - A. ALL PAVEMENT MARKINGS SHOWN ON THE PHASING DRAWINGS ASSUME ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS, INCLUDING PAVEMENT CURING WAITING PERIODS, HAVE BEEN ACHIEVED. IF THE PROJECT SCHEDULE REQUIRES THE CONTRACTOR TO OPEN ANY CLOSED PAVEMENT(S) BEFORE PERMANENT MARKINGS CAN BE APPLIED, OR IF SO DIRECTED BY AIRPORT OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY MARKINGS AS NECESSARY IN ORDER TO OPEN CLOSED THE CLOSED PAVEMENT(S).
 - B. AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
 - C. THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02, WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
3. TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA ITEM P-620, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 - A. TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 - B. TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - C. TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
4. THE CONTRACTOR SHALL COMPLETELY OBLITERATE ALL MARKINGS DAMAGED BY THE CONTRACTOR DURING THIS PHASE AND NOT SCHEDULED FOR REMOVAL AND / OR REPLACEMENT DURING THIS PHASE. THESE MARKINGS SHALL BE REINSTALLED BY THE CONTRACTOR PRIOR TO PHASE COMPLETION. ANY MARKING THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
5. ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION, OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
6. SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.





1 PHASE 6/8 - TAXIWAY NE TRANSITION PAVEMENT
G06.06.4 SCALE: 1" = 20'

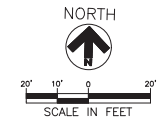
2 SUBPHASE 6B - TAXIWAY NE
G06.06.4 SCALE: 1" = 20'

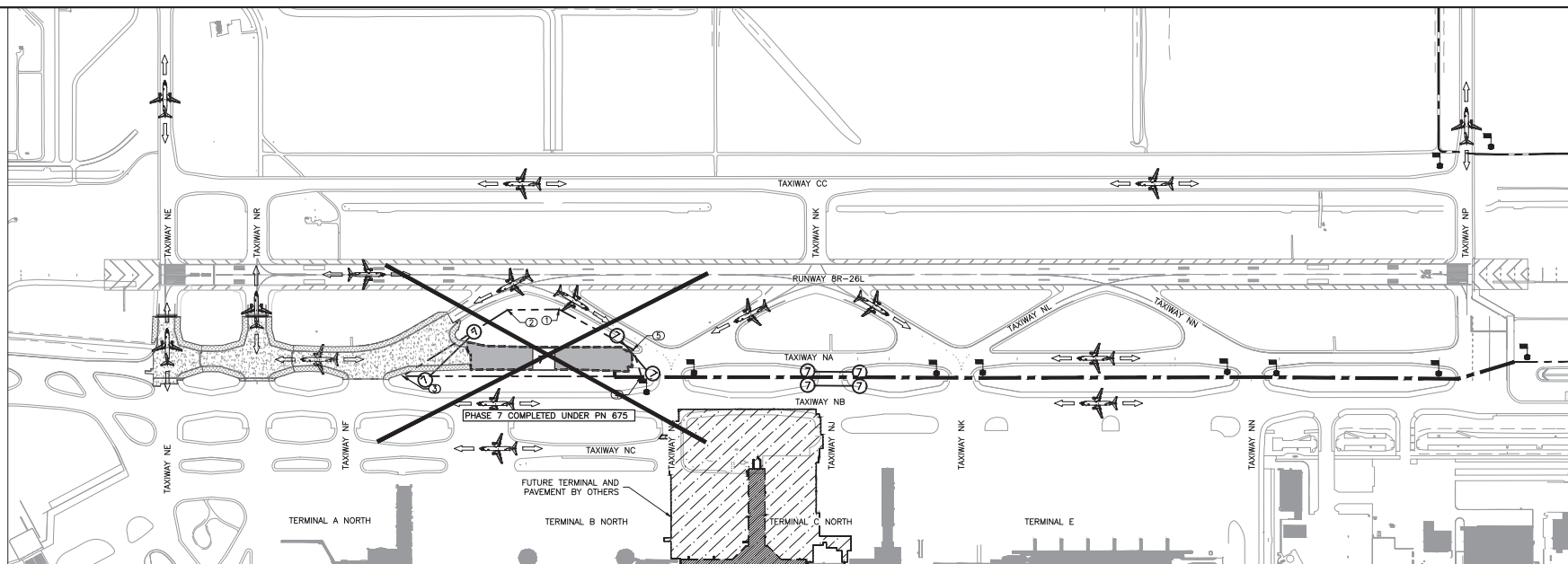
LEGEND

- CONCRETE PAVEMENT COMPLETED CONCURRENTLY
- ASPHALT SHOULDER PAVEMENT COMPLETED CONCURRENTLY
- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- TRANSITION PAVEMENT THIS PHASE
- LOW PROFILE BARRICADE (EXACT POSITION)
- TAXIWAY SAFETY AREA
- TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- EXISTING PAVEMENT MARKING
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (D01 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (D02 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.
2. TEMPORARY TRANSITION PAVEMENTS SHALL BE INSTALLED IN ORDER TO RETURN A TAXIWAY SEGMENT TO SERVICE BETWEEN THIS PHASE AND A SUBSEQUENT PHASE. TEMPORARY TRANSITION PAVEMENTS SHALL BE CONSTRUCTED SUCH THAT:
 - A. A SMOOTH TRANSITION WITH RESPECT TO TIE-IN GRADES IS PROVIDED BETWEEN REMAINING EXISTING PAVEMENT AND NEW PAVEMENT INSTALLED IN THIS PHASE.
 - B. PAVEMENT MARKINGS ARE INSTALLED THROUGH TRANSITION PAVEMENT AREAS TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE CONTINUOUS, NON-BROKEN MARKINGS.
 - C. ALL ELECTRICAL COMPONENTS SHALL BE RETURNED TO SERVICE WITH THEIR CORRESPONDING PAVEMENT AREAS.
 - D. DISTURBED AREAS OUTSIDE PAVED TEMPORARY TRANSITION PAVEMENTS SHALL BE GRADED IN GENERAL CONFORMANCE WITH THE GRADING PLAN SHEET REQUIREMENTS AND VEGETATED IN GENERAL CONFORMANCE WITH THE SWPPP PLAN SHEET REQUIREMENTS.
 - E. THEY ARE IN ACCORDANCE WITH DETAIL 7A-C03.15.
3. TRANSITION PAVEMENT AREAS WILL BE REMOVED IN A SUBSEQUENT PHASE AND REPLACED WITH A PERMANENT PAVEMENT SECTION.





LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- TABLE LOCATION POINT
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- APPROXIMATE BARRICADE LOCATION (SEE NEXT SHEET FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS

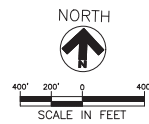
PHASE 7 MOVEMENT NOTES

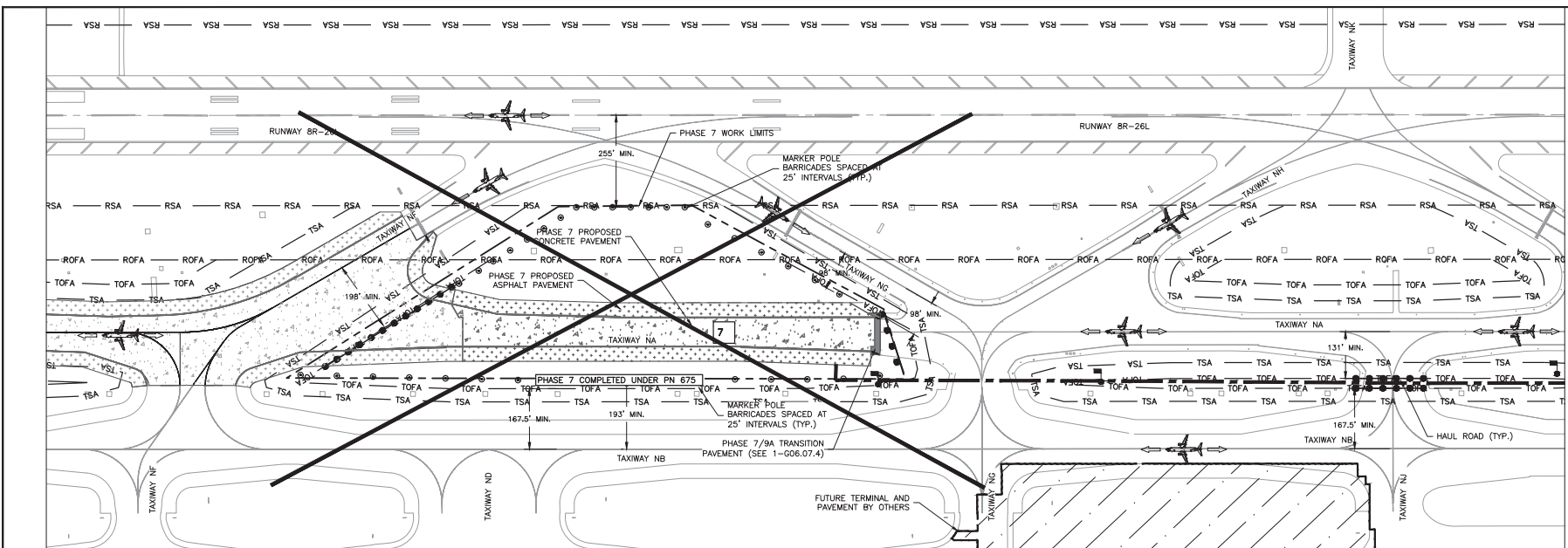
1. SEE PLAN SHEET G06.03.1 AND G06.03.3-G06.03.7 FOR PROPOSED HAUL ROUTE.
2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 7:
 - A. TAXIWAY NA WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE WEST SIDE OF TAXIWAY NG TO THE EAST SIDE OF TAXIWAY NP.
 - B. TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) FROM THE EAST SIDE OF TAXIWAY NF TO THE EAST SIDE OF TAXIWAY NP, EXCEPT WHEN SUBJECT TO 'MARKER POLE EVACUATION' OPERATIONS.
 - C. TAXIWAY NA WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE EAST SIDE OF TAXIWAY NF TO THE WEST SIDE OF TAXIWAY NG.
 - D. TAXIWAY NJ WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NB TO THE SOUTH SIDE OF TAXIWAY NA.
3. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSINGS WITH TAXIWAYS NP, NN, NK, AND NG, OR AS DIRECTED BY AIRPORT OPERATIONS. WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 7, PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
4. THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF 'MARKER POLE EVACUATION' OPERATIONS. FLAGMEN AND ALL OTHER CONTRACTOR PERSONNEL SHALL BE ON CONSTANT ALERT TO IDENTIFY ANY AIRCRAFT EXCEEDING THE OPERATIONAL CAPACITY OF THE MODIFIED ADG VI TOFA (I.E. AIRBUS A-380-800, ANTONOV AN 124, ANTONOV AN 225).
5. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G06.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

| PHASE 7 WORK LIMITS | | | |
|---------------------|-------------|------------|--|
| POINT # | NORTHING | EASTING | |
| 1 | 13927649.15 | 3125267.08 | |
| 2 | 13927633.41 | 3124898.84 | |
| 3 | 13927135.63 | 3124163.06 | |
| 4 | 13927187.12 | 3125872.73 | |
| 5 | 13927378.33 | 3125808.01 | |

| PHASE 7 | | | | | |
|------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| DURATION (DAYS) | WORK PERIOD | DAYTIME (0600 HOURS TO 2200 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | NIGHTTIME (2200 HOURS TO 0600 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
| 56 CALENDAR DAYS | DAY AND NIGHT | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NG TO TAXIWAY NP. --- TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NF TO TAXIWAY NP. --- TAXIWAY NA CLOSED TAXIWAY NF TO TAXIWAY NG. --- TAXIWAY NJ CLOSED TAXIWAY NA TO TAXIWAY NB. | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NG TO TAXIWAY NP. --- TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NF TO TAXIWAY NP. --- TAXIWAY NA CLOSED TAXIWAY NF TO TAXIWAY NG. --- TAXIWAY NJ CLOSED TAXIWAY NA TO TAXIWAY NB. | --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NF. --- ACROSS TAXIWAY NA, WEST OF TAXIWAY NG. --- ACROSS TAXIWAY NJ, NORTH OF TAXIWAY NB. --- ACROSS TAXIWAY NJ, SOUTH OF TAXIWAY NA. | N/A |

NOTE: PHASE 4 COMPLETED UNDER PN 675





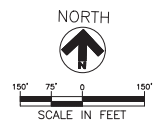
PHASE 7 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

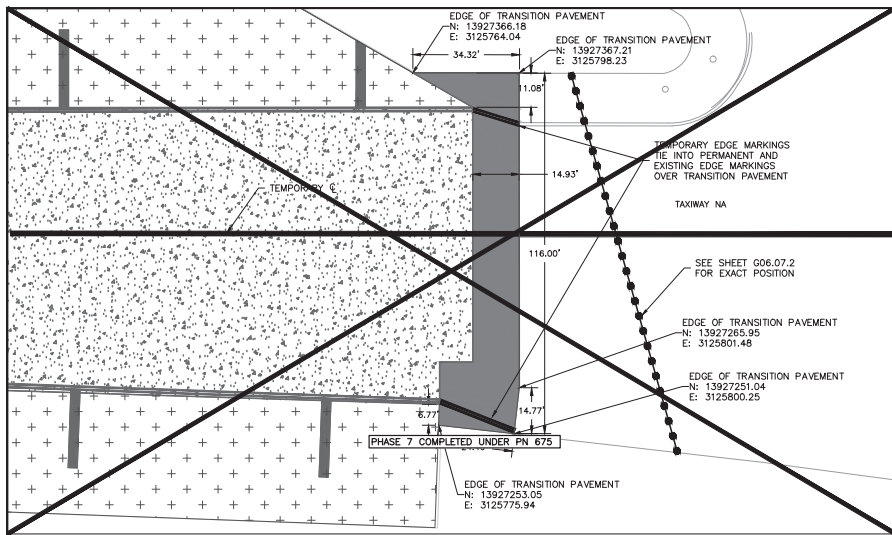
LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT PAVEMENT COMPLETED IN PREVIOUS PHASES
- TRANSITION PAVEMENT THIS PHASE
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- TSA PHASE 7 TAXIWAY SAFETY AREA
- TOFA PHASE 7 TAXIWAY OBJECT FREE AREA
- ROFA RUNWAY SAFETY AREA
- ROFA RUNWAY OBJECT FREE AREA

1. PHASE 7 MAY HAVE A FLEXIBLE START DATE, TO BE COMPLETED EITHER BEFORE OR AFTER PHASE 8, UNLESS IT CAN BE COMPLETED IN ITS ENTIRETY PRIOR TO THE COMMENCEMENT OF PHASE 8. THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH AIRPORT OPERATIONS. PHASE 7 MAY NOT COMMENCE UNTIL ALL OTHER PHASE WORK AREAS ARE OPENED TO ALL AIRCRAFT TRAFFIC.
2. THE CONTRACTOR WILL BE ALLOWED 56 CALENDAR DAYS TO COMPLETE PHASE 7.
3. CONSTRUCTION TASKS FOR PHASE 7 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.07.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 7.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NF TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NF CENTERLINE.
 - ii. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NG TOFA, APPROXIMATELY 98 FEET FROM THE TAXIWAY NG CENTERLINE.
 - iii. ACROSS TAXIWAY NJ, NORTH OF THE MODIFIED TAXIWAY NB ADG IV TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-8), APPROXIMATELY 167.5 FEET FROM THE TAXIWAY NB CENTERLINE.
 - iv. ACROSS TAXIWAY NJ, SOUTH OF THE TAXIWAY NA ADG IV TOFA (259 FEET, MAXIMUM AIRCRAFT - B-767-400ER), APPROXIMATELY 131 FEET FROM THE TAXIWAY NA CENTERLINE.
 MARKER POLE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 1. IN THE TAXIWAY NA / TAXIWAY NB INFIELD, APPROXIMATELY 193 FEET FROM THE TAXIWAY NB CENTERLINE, BETWEEN TAXIWAYS NF AND NG, BETWEEN TAXIWAYS NG AND NJ, BETWEEN TAXIWAYS NJ AND NK, BETWEEN TAXIWAYS NK AND NN, AND BETWEEN TAXIWAYS NN AND NP.
 2. IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE, BETWEEN TAXIWAYS NF AND NG.
 3. IN THE INFIELD NORTH OF TAXIWAY NA, OUTSIDE THE RSA, APPROXIMATELY 193 FEET FROM THE TAXIWAY NF CENTERLINE.
 4. IN THE INFIELD NORTH OF TAXIWAY NA, OUTSIDE THE RSA, APPROXIMATELY 98 FEET FROM THE TAXIWAY NG CENTERLINE.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 7.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY 'BLANK' SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBSCURED THROUGHOUT THE DURATION OF PHASE 7.
 - E. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.07.3.
 - F. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - G. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
 - H. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT, INCLUDING TRANSITION PAVEMENTS CONSTRUCTED IN PHASE 4. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
 - I. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
 - J. DEWATER EXCAVATION AREAS, AS APPLICABLE.
 - K. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
 - L. INSTALL NEW ELECTRICAL COMPONENTS.
 - M. CONSTRUCT NEW PAVEMENT SECTION.
 - N. CONSTRUCT TEMPORARY PHASE TRANSITION PAVEMENT. THIS PAVEMENT TRANSITION MAY NOT BE REQUIRED IF PHASE 7 OCCURS AFTER THE COMPLETION OF PHASE 8 AND THERE IS NO DURATION GAP BETWEEN THE COMPLETION OF PHASE 7 AND THE COMMENCEMENT OF PHASE 8. CONFIRM NECESSITY OF PAVEMENT TRANSITION WITH THE OWNER'S REPRESENTATIVE.
 - O. REMOVE HAUL ROAD BETWEEN TAXIWAY NF AND TAXIWAY NG. REMOVE SECTION OF TEMPORARY HAUL ROAD BETWEEN TAXIWAY NG AND TAXIWAY NJ NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 9 CONSTRUCTION OPERATIONS.
 - P. PERFORM FINISH GRADING ACTIVITIES.
 - Q. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
 - R. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED.
 - S. INSTALL END OF PHASE PAVEMENT MARKINGS. SEE SHEET G06.07.3.
 - T. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - U. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - V. RE-ENERGIZE OR REMOVE 'BLANK' SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
 - W. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - X. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.

NOTE: PHASE 4 COMPLETED UNDER PN 675





1
G06.07.4 PHASE 7/9A TAXIWAY NA TRANSITION PAVEMENT
SCALE: 1" = 20'

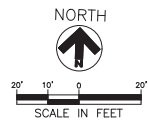
LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- TRANSITION PAVEMENT THIS PHASE
- LOW PROFILE BARRICADE (EXACT POSITION)
- EXISTING PAVEMENT MARKING
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (D01 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (D02 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.
2. TEMPORARY TRANSITION PAVEMENTS SHALL BE INSTALLED IN ORDER TO RETURN A TAXIWAY SEGMENT TO SERVICE BETWEEN THIS PHASE AND A SUBSEQUENT PHASE. TEMPORARY TRANSITION PAVEMENTS SHALL BE CONSTRUCTED SUCH THAT:
 - A. A SMOOTH TRANSITION WITH RESPECT TO TIE-IN GRADIES IS PROVIDED BETWEEN REMAINING EXISTING PAVEMENT AND NEW PAVEMENT INSTALLED IN THIS PHASE.
 - B. PAVEMENT MARKINGS ARE INSTALLED THROUGH TRANSITION PAVEMENT AREAS TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE CONTINUOUS, NON-BROKEN MARKINGS.
 - C. ALL ELECTRICAL COMPONENTS SHALL BE RETURNED TO SERVICE WITH THEIR CORRESPONDING PAVEMENT AREAS.
 - D. DISTURBED AREAS OUTSIDE PAVED TEMPORARY TRANSITION PAVEMENTS SHALL BE GRADED IN GENERAL CONFORMANCE WITH THE GRADING PLAN SHEET REQUIREMENTS AND VEGETATED IN GENERAL CONFORMANCE WITH THE SWPPP PLAN SHEET REQUIREMENTS.
 - E. THEY ARE IN ACCORDANCE WITH DETAIL 7A-C03.15.
3. TRANSITION PAVEMENT AREAS WILL BE REMOVED IN A SUBSEQUENT PHASE AND REPLACED WITH A PERMANENT PAVEMENT SECTION.

NOTE: PHASE 4 COMPLETED UNDER PN 675



HOUSTON AIRPORT SYSTEMS
 GEORGE BUSH INTERCONTINENTAL AIRPORT HOUSTON, TEXAS

RS&H

RS&H, Inc.
 11011 Richmond Ave., Suite 900
 Houston, Texas 77042
 7139444600 FAX 7139449195
 www.rsandh.com P 3401
 TSPC Registration No. 7-3401

REVISIONS

| NO. | DESCRIPTION | DATE | BY |
|-----|-------------|------|----|
| | | | |

RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT

**PHASING PLAN - PHASE 7
 TRANSITIONS AND TIE-INS**

ISSUED FOR BID

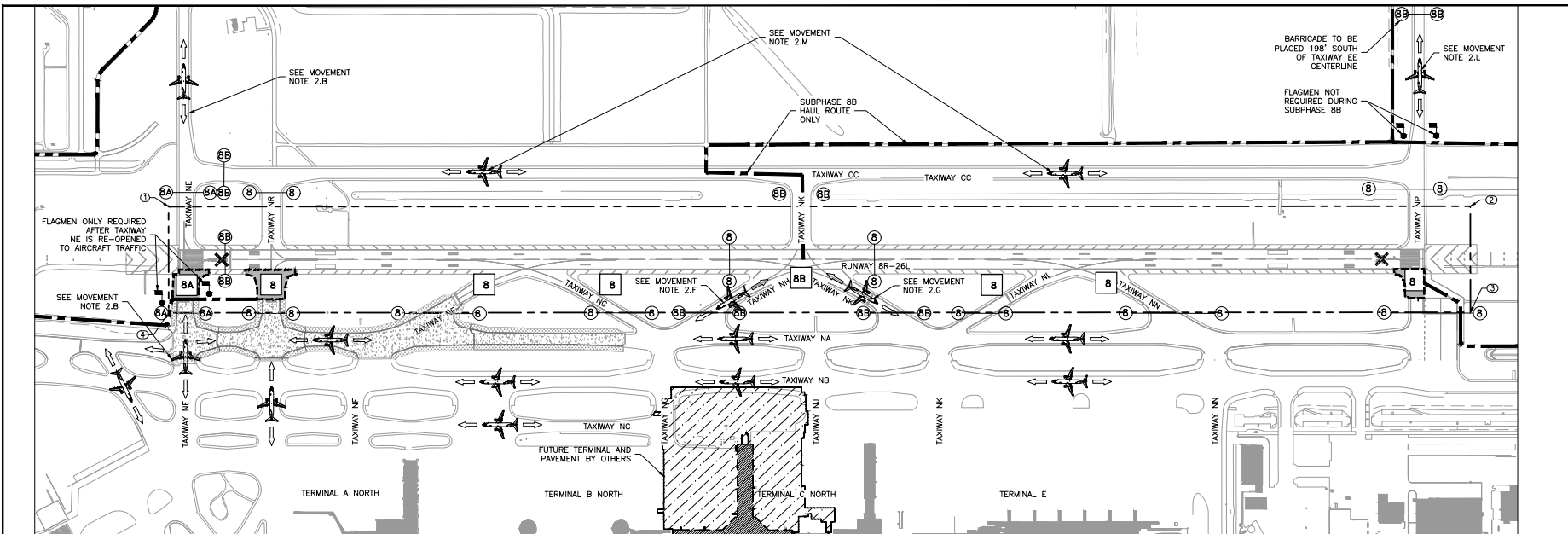
| | |
|--------------|---------------|
| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=20' |
| DATE: | JULY 27, 2018 |



DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
James Robert
 HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

PROJECT NO. **0807**
 C.I.P. NO. **A-000570**
 H.A.S. NO.

SHEET NO. **G06.07.4**



LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- TABLE LOCATION POINT
- PHASE INDICATOR
- LIGHTED RUNWAY CLOSURE MARKER
- APPROXIMATE BARRICADE LOCATION (SEE FOLLOWING SHEETS FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS

PHASE 8 GENERAL NOTES

1. THE PHASE 8 RUNWAY CLOSURE SHALL BE COORDINATED WITH HAS.
2. THE INTENT OF PHASE 8 IS TO COMPLETE EACH WORK AREA AS QUICKLY AS POSSIBLE, WITH PRIORITY BEING THE COMPLETION OF SUBPHASE 8A, TAXIWAY NE, THEN TAXIWAY NP, THEN TAXIWAY NR, THE COMMENCEMENT OF SUBPHASE 8A SHALL COINCIDE WITH THE COMMENCEMENT OF THE OVERALL PHASE 8. SUBPHASE 8A AND SUBPHASE 8B SHALL NOT BE COMPLETED CONCURRENTLY. SUBPHASE 8B SHALL NOT COMMENCE UNTIL THE SUBPHASE 8A WORK AREA IS OPENED TO ALL AIRCRAFT TRAFFIC.
3. ALL WORK IN PHASE 8 MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS, THE CONTRACTOR WILL BE ALLOWED 60 CALENDAR DAYS TO COMPLETE PHASE 8. SUBPHASE 8B SHALL BE LIMITED TO NO MORE THAN FOUR (4) DAYS, THE CONTRACTOR IS EXPECTED TO WORK MULTIPLE SHIFTS TO PROVIDE SEVEN (7) DAYS PER WEEK, 20 HOURS PER DAY PRODUCTION WHEN POSSIBLE / PRACTICAL.
4. PHASE 8 SHALL CONSIST OF THE FOLLOWING CONSTRUCTION IMPROVEMENTS FOR EACH TAXIWAY INSIDE THE RUNWAY BR - 26L RSA:

- A. TAXIWAY NE (SUBPHASE 8A) - FULL RECONSTRUCTION.
- B. TAXIWAY NR - FULL RECONSTRUCTION.
- C. TAXIWAY NF - ELECTRICAL IMPROVEMENTS ONLY (EO3 SERIES).
- D. TAXIWAY NG - ELECTRICAL IMPROVEMENTS ONLY (EO3 SERIES).
- E. TAXIWAY NH (SUBPHASE 8B) - ELECTRICAL IMPROVEMENTS ONLY (EO3 SERIES).
- F. TAXIWAY NK (SUBPHASE 8B) - ELECTRICAL IMPROVEMENTS ONLY (EO3 SERIES).
- G. TAXIWAY NL - ELECTRICAL IMPROVEMENTS ONLY (EO3 SERIES).
- H. TAXIWAY NN - ELECTRICAL IMPROVEMENTS ONLY (EO3 SERIES).
- I. TAXIWAY NP - FULL RECONSTRUCTION.

PHASE 8 MOVEMENT NOTES

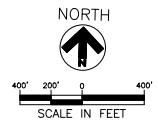
1. SEE PLAN SHEET G06.03.1 FOR PROPOSED HAUL ROUTE.
2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 8:
 - A. RUNWAY BR - 26L WILL BE CLOSED.
 - B. TAXIWAY NE WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NA TO THE SOUTH SIDE OF TAXIWAY CC. THIS TAXIWAY CLOSURE IS REQUIRED FOR SUBPHASE 8A ONLY AND SHALL BE RETURNED TO SERVICE AS SOON AS POSSIBLE FOLLOWING THE COMMENCEMENT OF PHASE 8.
 - C. TAXIWAY NR WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NA TO THE SOUTH SIDE OF TAXIWAY CC.
 - D. TAXIWAY NF WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NA TO RUNWAY BR - 26L.
 - E. TAXIWAY NG WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NA TO RUNWAY BR - 26L.
 - F. TAXIWAY NH WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NA TO RUNWAY BR - 26L. THIS TAXIWAY CLOSURE IS REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE CLOSED TO AIRCRAFT TRAFFIC UNTIL TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC.

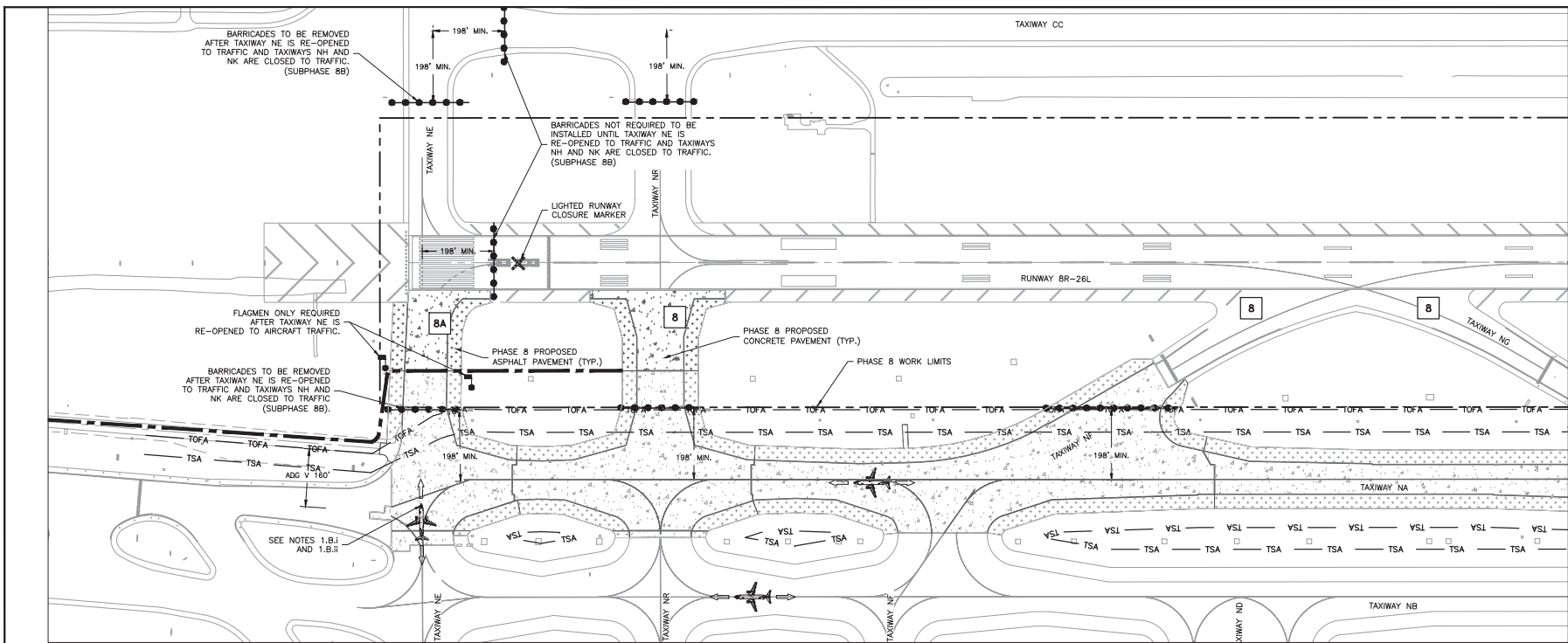
- G. TAXIWAY NK WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NA TO RUNWAY BR - 26L. THIS TAXIWAY CLOSURE IS REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE CLOSED TO AIRCRAFT TRAFFIC UNTIL TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC.
- H. TAXIWAY NL WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO THE SOUTH SIDE OF TAXIWAY CC. THIS TAXIWAY CLOSURE IS REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE CLOSED TO AIRCRAFT TRAFFIC UNTIL TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC.
- I. TAXIWAY NN WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NA TO RUNWAY BR - 26L.
- J. TAXIWAY NP WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NA TO RUNWAY BR - 26L.
- K. DURING SUBPHASE 8A, TAXIWAY NP WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE NORTH SIDE OF TAXIWAY NA TO THE SOUTH SIDE OF TAXIWAY CC.
- L. DURING SUBPHASE 8B, TAXIWAY NP WILL BE CLOSED FROM THE NORTH SIDE OF TAXIWAY NA TO THE SOUTH SIDE OF TAXIWAY EE.
- M. DURING SUBPHASE 8B, TAXIWAY CC WILL BE CLOSED.

3. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSINGS WITH ACTIVE TAXIWAYS, OR AS OTHERWISE DIRECTED BY AIRPORT OPERATIONS. PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
4. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES, ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

| PHASE 8 | | DAYTIME (0600 HOURS TO 2200 HOURS) | | NIGHTTIME (2200 HOURS TO 0600 HOURS) | | BARRICADE LOCATIONS | | ALLOWED CONCURRENT WORK | |
|-----------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------|--|
| DURATION (DAYS) | WORK PERIOD | PAVEMENT CLOSURES / RESTRICTIONS | | RESTRICTIONS | | CLOSURES | | | |
| 60 | DAY AND NIGHT | RESTRICTIONS --/A CLOSURES -- RUNWAY BR - 26L CLOSED. -- TAXIWAY NE CLOSED TAXIWAY NA TO TAXIWAY CC. THIS TAXIWAY CLOSURE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL BE RETURNED TO SERVICE AS SOON AS POSSIBLE. -- TAXIWAY NR CLOSED TAXIWAY NA TO TAXIWAY CC. -- TAXIWAY NF CLOSED TO AIRCRAFT TRAFFIC TAXIWAY NA TO RUNWAY BR - 26L. -- TAXIWAY NG CLOSED TAXIWAY NA TO RUNWAY BR - 26L. -- TAXIWAY NH CLOSED TAXIWAY NA TO TAXIWAY CC. THIS TAXIWAY CLOSURE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL NOT BE CLOSED UNTIL TAXIWAY NE IS RE-OPENED. -- TAXIWAY NK CLOSED TAXIWAY NA TO RUNWAY BR - 26L. THIS TAXIWAY CLOSURE REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE CLOSED UNTIL TAXIWAY NE IS RE-OPENED. -- TAXIWAY NL CLOSED TAXIWAY NA TO TAXIWAY CC. THIS TAXIWAY CLOSURE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL NOT BE CLOSED UNTIL TAXIWAY NE IS RE-OPENED. -- TAXIWAY NN CLOSED TAXIWAY NA TO TAXIWAY CC. -- DURING SUBPHASE 8A, TAXIWAY NP CLOSED TAXIWAY NA TO TAXIWAY CC. -- DURING SUBPHASE 8B, TAXIWAY NP CLOSED TAXIWAY NA TO TAXIWAY EE. -- DURING SUBPHASE 8B, TAXIWAY CC CLOSED. | | RESTRICTIONS --/A CLOSURES -- RUNWAY BR - 26L CLOSED. -- TAXIWAY NE CLOSED TAXIWAY NA TO TAXIWAY CC. THIS TAXIWAY CLOSURE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL BE RETURNED TO SERVICE AS SOON AS POSSIBLE. -- TAXIWAY NR CLOSED TAXIWAY NA TO TAXIWAY CC. -- TAXIWAY NF CLOSED TO AIRCRAFT TRAFFIC TAXIWAY NA TO RUNWAY BR - 26L. -- TAXIWAY NG CLOSED TAXIWAY NA TO RUNWAY BR - 26L. -- TAXIWAY NH CLOSED TAXIWAY NA TO TAXIWAY CC. THIS TAXIWAY CLOSURE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL NOT BE CLOSED UNTIL TAXIWAY NE IS RE-OPENED. -- TAXIWAY NK CLOSED TAXIWAY NA TO RUNWAY BR - 26L. THIS TAXIWAY CLOSURE REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE CLOSED UNTIL TAXIWAY NE IS RE-OPENED. -- TAXIWAY NL CLOSED TAXIWAY NA TO TAXIWAY CC. THIS TAXIWAY CLOSURE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL NOT BE CLOSED UNTIL TAXIWAY NE IS RE-OPENED. -- TAXIWAY NN CLOSED TAXIWAY NA TO TAXIWAY CC. -- DURING SUBPHASE 8A, TAXIWAY NP CLOSED TAXIWAY NA TO TAXIWAY CC. -- DURING SUBPHASE 8B, TAXIWAY NP CLOSED TAXIWAY NA TO TAXIWAY EE. -- DURING SUBPHASE 8B, TAXIWAY CC CLOSED. | | -- ACROSS TAXIWAY NE, NORTH OF TAXIWAY NA. THESE BARRICADES REMOVED AFTER TAXIWAY NE IS RE-OPENED. -- ACROSS TAXIWAY NE, SOUTH OF TAXIWAY CC. THESE BARRICADES REMOVED AFTER TAXIWAY NE IS RE-OPENED. -- ACROSS TAXIWAY NR, NORTH OF TAXIWAY NA. -- ACROSS TAXIWAY NR, SOUTH OF TAXIWAY CC. -- ACROSS TAXIWAY NF, NORTH OF TAXIWAY NA. -- ACROSS TAXIWAY NF, SOUTH OF TAXIWAY CC. -- ACROSS TAXIWAY NG, NORTH OF TAXIWAY NA. -- ACROSS TAXIWAY NG, SOUTH OF TAXIWAY CC. -- ACROSS TAXIWAY NH, NORTH OF TAXIWAY NA. THESE BARRICADES NOT INSTALLED UNTIL TAXIWAY NE IS RE-OPENED AND TAXIWAYS NH AND NK ARE CLOSED. -- ACROSS TAXIWAY NH, NORTH OF TAXIWAY NA. THESE BARRICADES NOT INSTALLED UNTIL TAXIWAY NE IS RE-OPENED AND TAXIWAYS NH AND NK ARE CLOSED. -- ACROSS TAXIWAY NK, SOUTH OF TAXIWAY CC. THESE BARRICADES NOT INSTALLED UNTIL TAXIWAY NE IS RE-OPENED AND TAXIWAYS NH AND NK ARE CLOSED. -- ACROSS TAXIWAY NL, NORTH OF TAXIWAY NA. -- ACROSS TAXIWAY NN, NORTH OF TAXIWAY NA. -- ACROSS TAXIWAY NN, SOUTH OF TAXIWAY CC. THESE BARRICADES TO BE RELOCATED SOUTH OF TAXIWAY EE DURING SUBPHASE 8B. -- ACROSS TAXIWAY NP AND NORTH OF TAXIWAY NA. -- ACROSS RUNWAY BR - 26L, WEST OF TAXIWAY NH. THESE BARRICADES REMOVED AFTER TAXIWAY NE IS RE-OPENED. -- ACROSS RUNWAY BR - 26L, EAST OF TAXIWAY NK. THESE BARRICADES REMOVED AFTER TAXIWAY NE IS RE-OPENED. -- ACROSS RUNWAY BR - 26L, EAST OF TAXIWAY NE. THESE BARRICADES NOT INSTALLED UNTIL TAXIWAY NE IS RE-OPENED AND TAXIWAYS NH AND NK ARE CLOSED. | | N/A | |

| POINT # | NORTHING | EASTING |
|---------|-------------|------------|
| 1 | 13928203.50 | 3122308.99 |
| 2 | 13928517.94 | 3132134.65 |
| 3 | 13927718.35 | 3132160.36 |
| 4 | 13927403.91 | 3122334.70 |



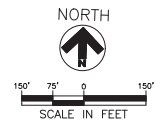


PHASE 8 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- PHASE INDICATOR
- LIGHTED RUNWAY CLOSURE MARKER
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- PHASE 8 TAXIWAY SAFETY AREA
- PHASE 8 TAXIWAY OBJECT FREE AREA

1. CONSTRUCTION TASKS FOR EACH CLOSED PAVEMENT AREA OF PHASE 8, AS APPLICABLE, ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.08.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES DENOTED WITH AN "8A" OR "8B" (SEE SHEET G06.08.1) MARKER SHALL BE INSTALLED OR REMOVED IN ACCORDANCE WITH THE COMMENCEMENT OR COMPLETION OF SUBPHASES 8A AND 8B, RESPECTIVELY. BARRICADES DENOTED WITHOUT AN "8A" OR "8B" MARKER SHALL BE INSTALLED AT THE COMMENCEMENT OF PHASE 8, TO REMAIN THROUGHOUT THE DURATION OF PHASE 8.
 - i. ACROSS TAXIWAY NE, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL BE REMOVED AFTER TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - ii. ACROSS TAXIWAY NE, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY CC CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL BE REMOVED AFTER TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - iii. ACROSS TAXIWAY NR, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - iv. ACROSS TAXIWAY NR, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - v. ACROSS TAXIWAY NF, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - vi. ACROSS TAXIWAY NG, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - vii. ACROSS TAXIWAY NH, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE INSTALLED UNTIL TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - viii. ACROSS TAXIWAY NK, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE INSTALLED UNTIL TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - ix. ACROSS TAXIWAY NK, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE INSTALLED UNTIL TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - x. ACROSS TAXIWAY NL, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - xi. ACROSS TAXIWAY NN, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - xii. ACROSS TAXIWAY NP, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - xiii. ACROSS TAXIWAY NP, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. DURING SUBPHASE 8B, THESE BARRICADES SHALL BE MOVED ACROSS TAXIWAY NP, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - C. TURN OFF THE APPROPRIATE NAVAIDS (SEE ELECTRICAL PLANS FOR REQUIREMENTS). THE NAVAIDS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 8.
 - D. DE-ENERGIZE RUNWAY AND TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF THE ASSOCIATED PAVEMENT CLOSURE.
 - E. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBSCURED THROUGHOUT THE DURATION OF THE ASSOCIATED PAVEMENT CLOSURE.
 - F. INSTALL LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END.
 - G. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEETS G06.08.5, G06.08.6 AND G06.08.7.
 - H. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - I. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
 - J. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT, INCLUDING TRANSITION PAVEMENTS CONSTRUCTED IN PHASES 5 AND 6. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
 - K. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL AND DRAINAGE COMPONENTS.
 - L. DENATURE EXCAVATION AREAS, AS APPLICABLE.
 - M. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
 - N. INSTALL NEW DRAINAGE COMPONENTS.
 - O. INSTALL NEW ELECTRICAL COMPONENTS.
 - P. CONSTRUCT NEW PAVEMENT SECTION.
 - Q. CONSTRUCT TEMPORARY PHASE TRANSITION PAVEMENT.
 - R. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NE AND TAXIWAY NR.
 - S. PERFORM FINISH GRADING ACTIVITIES.
 - T. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
 - U. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED.
 - V. INSTALL END OF PHASE PAVEMENT MARKINGS. SEE SHEETS G06.08.5, G06.08.6 AND G06.08.7.
 - W. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - X. REMOVE LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END.
 - Y. RE-ENERGIZE RUNWAY AND TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - Z. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSOURED GUIDANCE SIGNS.
 - AA. TURN ON NAVAIDS IN THE WORK AREA.
 - BB. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - CC. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.



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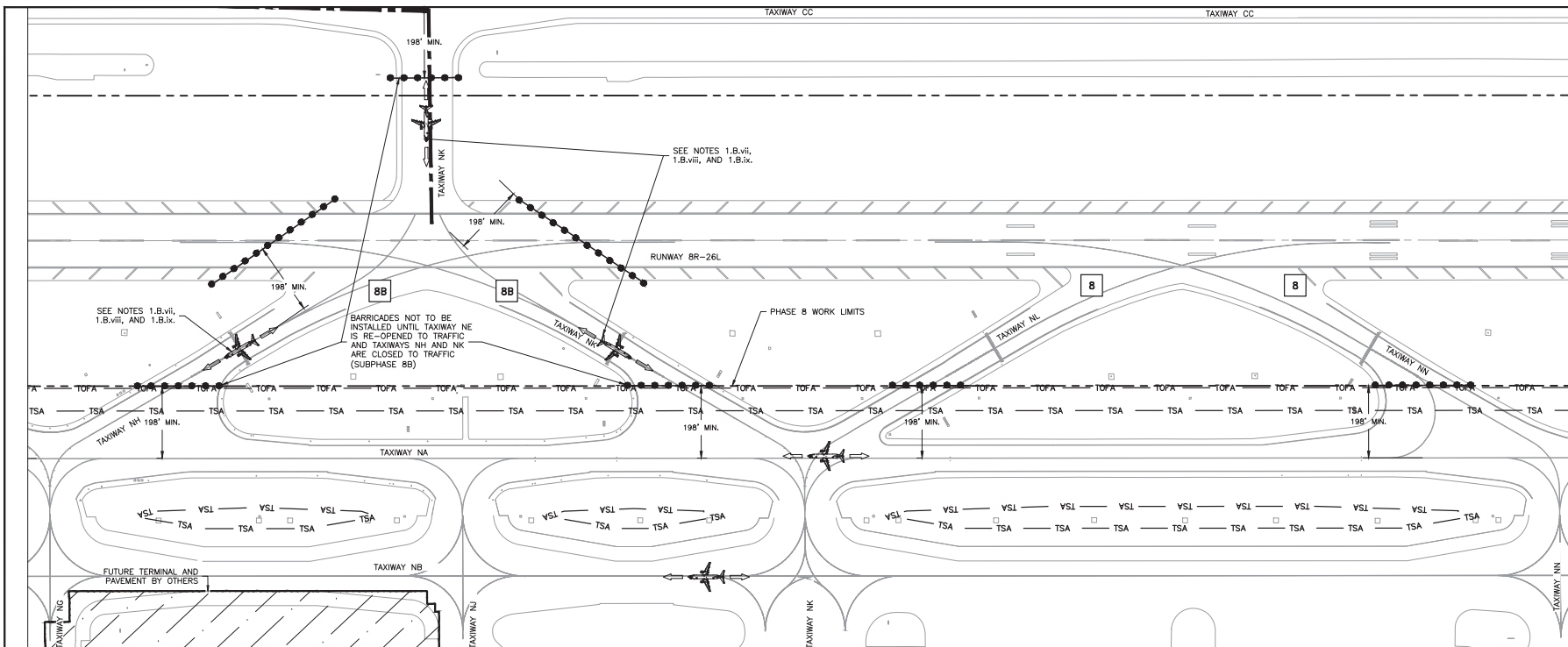
PROJECT MGR: BMS
 DESIGNER: EBN
 DRAWN BY: MRW
 CHECKED BY: SMC
 SCALE: 1"=150'
 DATE: JULY 27, 2018



DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
 [Signature]
 HOUSTON AIRPORT SYSTEM
 AUTHORIZED REPRESENTATIVE

PROJECT NO. **0807**
 C.I.P. NO. **A-000570**
 H.A.S. NO.
 SHEET NO.

G06.08.2

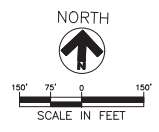


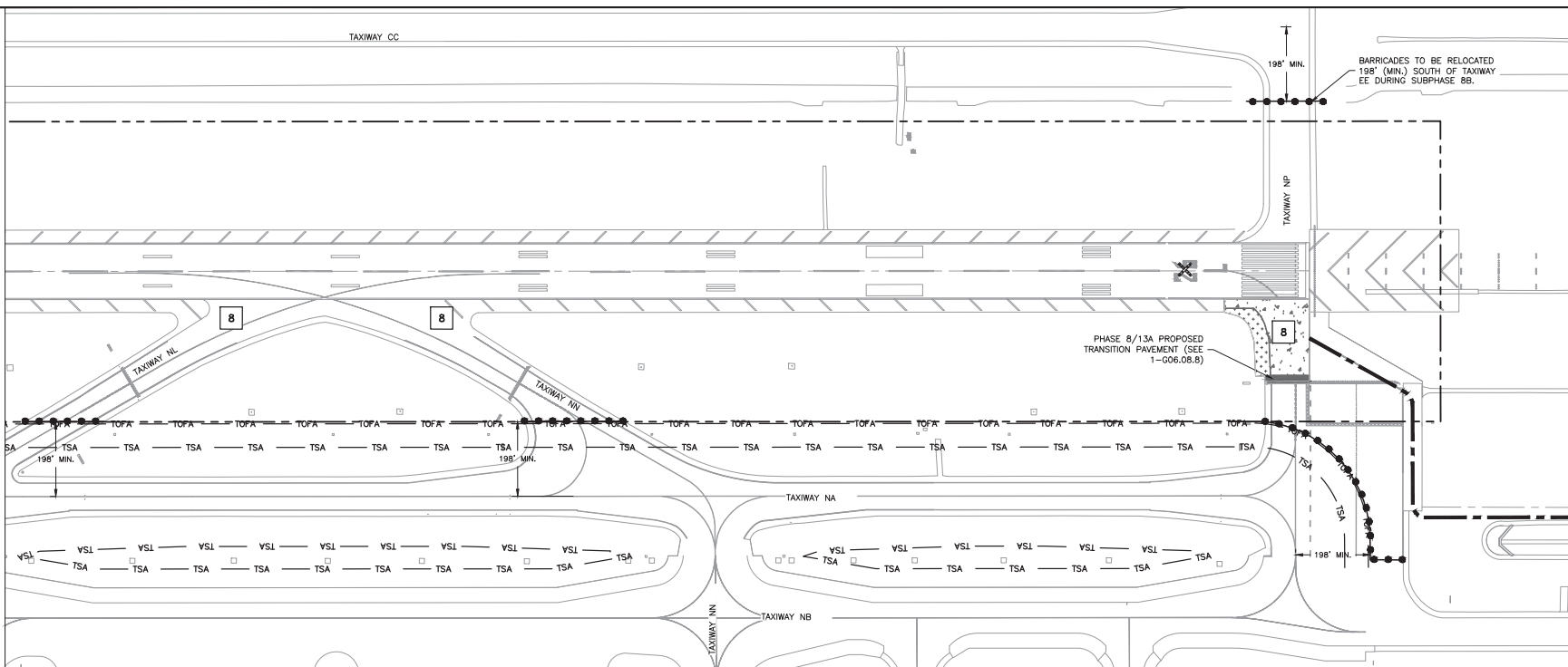
LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- TRANSITION PAVEMENT THIS PHASE
- AIRCRAFT TAXI ROUTE DURING PHASE
- PHASE INDICATOR
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- PHASE 8 TAXIWAY SAFETY AREA
- PHASE 8 TAXIWAY OBJECT FREE AREA

PHASE 8 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

1. CONSTRUCTION TASKS FOR EACH CLOSED PAVEMENT AREA OF PHASE 8, AS APPLICABLE, ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.08.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES DENOTED WITH AN "8A" OR "8B" (SEE SHEET G06.08.1 MARKER SHALL BE INSTALLED OR REMOVED IN ACCORDANCE WITH THE COMMENCEMENT OR COMPLETION OF SUBPHASES 8A AND 8B, RESPECTIVELY. BARRICADES DENOTED WITHOUT AN "8A" OR "8B" MARKER SHALL BE INSTALLED AT THE COMMENCEMENT OF PHASE 8, TO REMAIN THROUGHOUT THE DURATION OF PHASE 8.
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 - v. ACROSS TAXIWAY NF, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
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 - xi. ACROSS TAXIWAY NN, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - xii. ACROSS TAXIWAY NP AND RUN UP PAD, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - xiii. ACROSS TAXIWAY NP, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY CC CENTERLINE. DURING SUBPHASE 8B, THESE BARRICADES SHALL BE MOVED ACROSS TAXIWAY NP, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY CENTERLINE.
2. DURATION OF THE ASSOCIATED PAVEMENT CLOSURE.
 - F. INSTALL LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END.
 - G. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEETS G06.08.5, G06.08.6 AND G06.08.7.
 - H. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - I. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
 - J. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT, INCLUDING TRANSITION PAVEMENTS CONSTRUCTED IN PHASES 5 AND 6. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
 - K. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL AND DRAINAGE COMPONENTS.
 - L. DENATURE EXCAVATION AREAS, AS APPLICABLE.
 - M. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
 - N. INSTALL NEW DRAINAGE COMPONENTS.
 - O. INSTALL NEW ELECTRICAL COMPONENTS.
 - P. CONSTRUCT NEW PAVEMENT SECTION.
 - Q. CONSTRUCT TEMPORARY PHASE TRANSITION PAVEMENT.
 - R. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NE AND TAXIWAY NR.
 - S. PERFORM FINISH GRADING ACTIVITIES.
 - T. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
 - U. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED.
 - V. INSTALL END OF PHASE PAVEMENT MARKINGS. SEE SHEETS G06.08.5, G06.08.6 AND G06.08.7.
 - W. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - X. REMOVE LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END.
 - Y. RE-ENERGIZE RUNWAY AND TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - Z. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
 - AA. TURN ON NAVAIDS IN THE WORK AREA.
 - BB. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - CC. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.

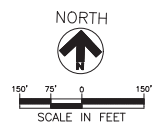


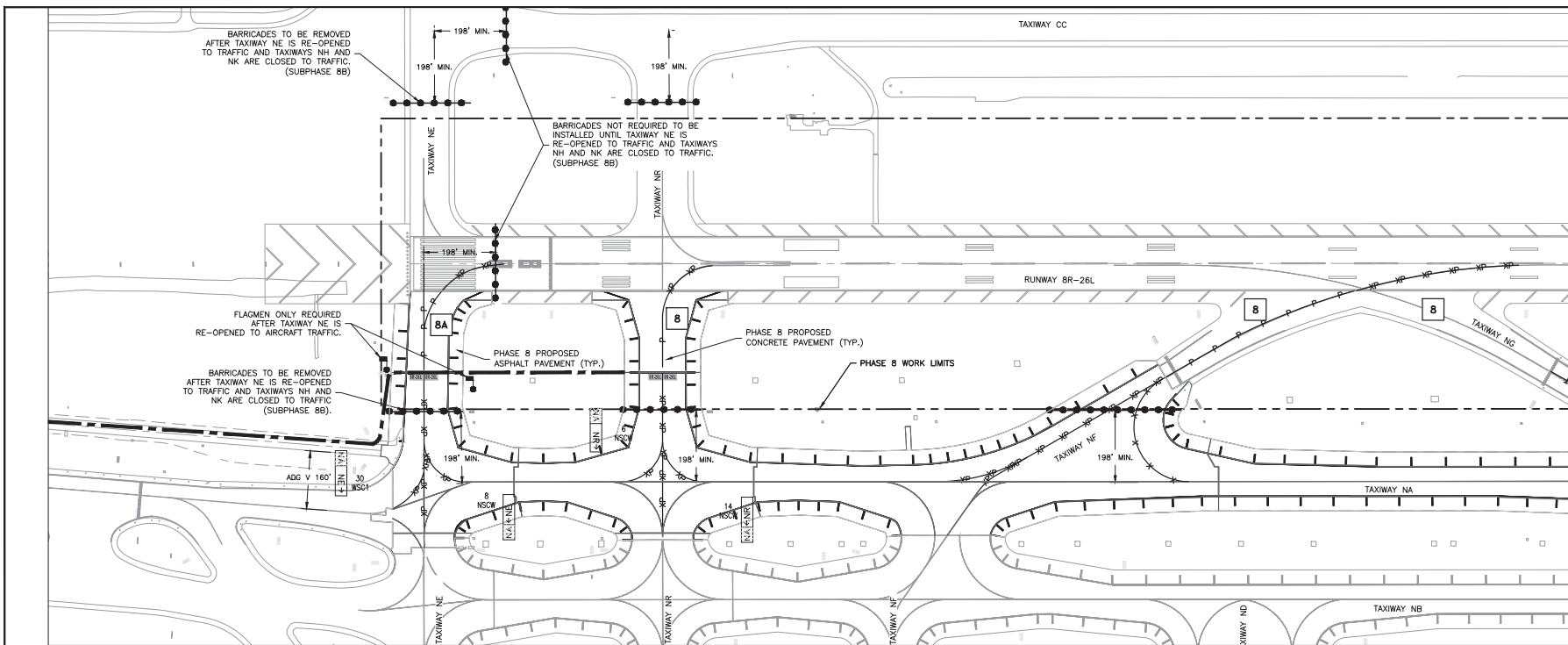


PHASE 8 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

- LEGEND**
- PROPOSED CONCRETE PAVEMENT THIS PHASE
 - PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
 - CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
 - ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
 - TRANSITION PAVEMENT THIS PHASE
 - AIRCRAFT TAXI ROUTE DURING PHASE
 - PHASE INDICATOR
 - LIGHTED RUNWAY CLOSURE MARKER
 - LOW PROFILE BARRICADE (EXACT POSITION)
 - HAUL ROUTE
 - PHASE LIMITS
 - PHASE 8 TAXIWAY SAFETY AREA
 - PHASE 8 TAXIWAY OBJECT FREE AREA

1. CONSTRUCTION TASKS FOR EACH CLOSED PAVEMENT AREA OF PHASE 8, AS APPLICABLE, ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.08.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES DENOTED WITH AN "8A" OR "8B" (SEE SHEET G06.08.1) MARKER SHALL BE INSTALLED OR REMOVED IN ACCORDANCE WITH THE COMMENCEMENT OR COMPLETION OF SUBPHASES 8A AND 8B, RESPECTIVELY. BARRICADES DENOTED WITHOUT AN "8A" OR "8B" MARKER SHALL BE INSTALLED AT THE COMMENCEMENT OF PHASE 8, TO REMAIN THROUGHOUT THE DURATION OF PHASE 8.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NE, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL BE REMOVED AFTER TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - ii. ACROSS TAXIWAY NE, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY CC CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8A ONLY AND SHALL BE REMOVED AFTER TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - iii. ACROSS TAXIWAY NR, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - iv. ACROSS TAXIWAY NR, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY CC CENTERLINE.
 - v. ACROSS TAXIWAY NF, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - vi. ACROSS TAXIWAY NG, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - vii. ACROSS TAXIWAY NH, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE INSTALLED UNTIL TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - viii. ACROSS TAXIWAY NK, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE INSTALLED UNTIL TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - ix. ACROSS TAXIWAY NK, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY CC CENTERLINE. THESE BARRICADES ARE REQUIRED FOR SUBPHASE 8B ONLY AND SHALL NOT BE INSTALLED UNTIL TAXIWAY NE IS RE-OPENED TO AIRCRAFT TRAFFIC AND TAXIWAYS NH AND NK ARE CLOSED TO TRAFFIC.
 - x. ACROSS TAXIWAY NL, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
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 - xii. ACROSS TAXIWAY NP AND RUN UP PAD, NORTH OF THE UNRESTRICTED ADG VI TAXIWAY NA TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NA CENTERLINE.
 - xiii. ACROSS TAXIWAY NP, SOUTH OF THE TAXIWAY CC TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY CC CENTERLINE. DURING SUBPHASE 8B, THESE BARRICADES SHALL BE MOVED ACROSS TAXIWAY NP, SOUTH OF THE TAXIWAY EE TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY CENTERLINE.
 - C. TURN OFF THE APPROPRIATE NAVAIDS (SEE ELECTRICAL PLANS FOR REQUIREMENTS). THE NAVAIDS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 8.
 - D. DE-ENERGIZE RUNWAY AND TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF THE ASSOCIATED PAVEMENT CLOSURE.
 - E. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBSCURED THROUGHOUT THE DURATION OF THE ASSOCIATED PAVEMENT CLOSURE.
 - F. INSTALL LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END.
 - G. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEETS G06.08.5, G06.08.6 AND G06.08.7.
 - H. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - I. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
 - J. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT, INCLUDING TRANSITION PAVEMENTS CONSTRUCTED IN PHASES 5 AND 6. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
 - K. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL AND DRAINAGE COMPONENTS.
 - L. DENATURE EXCAVATION AREAS, AS APPLICABLE.
 - M. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
 - N. INSTALL NEW DRAINAGE COMPONENTS.
 - O. INSTALL NEW ELECTRICAL COMPONENTS.
 - P. CONSTRUCT NEW PAVEMENT SECTION.
 - Q. CONSTRUCT TEMPORARY PHASE TRANSITION PAVEMENT.
 - R. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NE AND TAXIWAY NR.
 - S. PERFORM FINISH GRADING ACTIVITIES.
 - T. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
 - U. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED.
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 - W. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - X. REMOVE LIGHTED RUNWAY CLOSURE MARKER AT EACH RUNWAY END.
 - Y. RE-ENERGIZE RUNWAY AND TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - Z. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
 - AA. TURN ON NAVAIDS IN THE WORK AREA.
 - BB. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - CC. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.





LEGEND

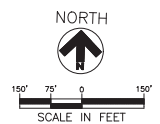
- TRANSITION PAVEMENT THIS PHASE
- PHASE INDICATOR
- FLAGMAN
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- RUNWAY SAFETY AREA
- MARKING REMOVAL
- MARKING REMOVAL, REPLACE WITH TEMPORARY MARKING INSTALLED THIS PHASE
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE
- SIGN ON FOUNDATION, SUBSCRIPT DENOTES SIGN NUMBER, REFER TO TEMPORARY SIGN SCHEDULE
- SIGN PANEL LEGEND, RE: SCHEDULE
- BLANK SIGN PANEL
- LOCATION PANEL (L-858L)
- DESTINATION PANEL (L-858Y)
- MANDATORY INSTRUCTION PANEL (L-858R)

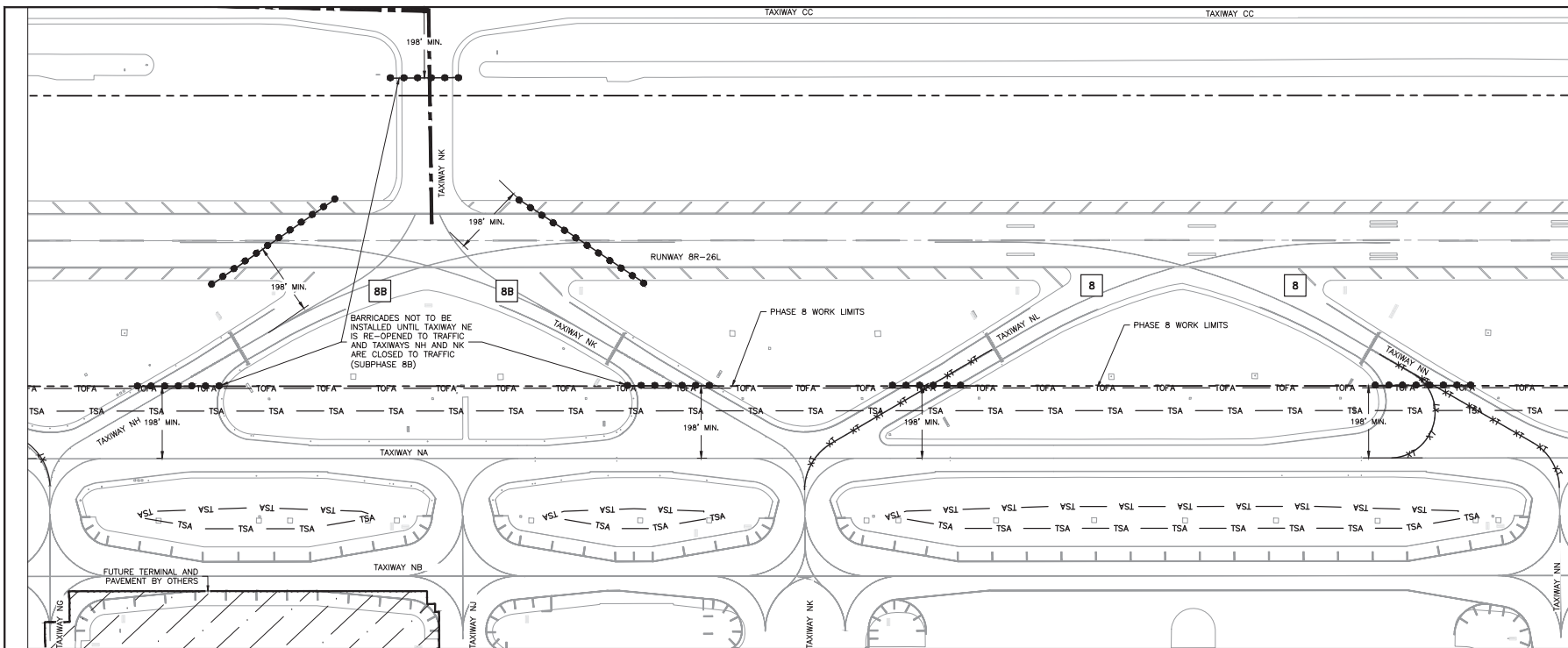
PHASING PLAN MARKING NOTES

1. ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 00.34, REMOVAL OF MARKINGS.
2. ALL PERMANENT MARKINGS SHALL BE INSTALLED AT THE END OF EACH PHASE IN ACCORDANCE WITH THE PAVEMENT MARKINGS PLAN SHEETS (COB SERIES). THE PERMANENT MARKINGS SHOWN ON THIS SHEET ARE ONLY SHOWN AS A GENERAL GUIDANCE OF PERMANENT MARKING SEGMENTS TO BE INSTALLED IN THIS PHASE. THIS SHEET SHALL NOT BE USED TO INSTALL PERMANENT MARKINGS OTHER THAN AS A DESCRIPTOR OF PERMANENT MARKING SEGMENTS INSTALLED IN THIS PHASE.
 - A. ALL PAVEMENT MARKINGS SHOWN ON THE PHASING DRAWINGS ASSUME ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS, INCLUDING PAVEMENT CURING WAITING PERIODS, HAVE BEEN ACHIEVED. IF THE PROJECT SCHEDULE REQUIRES THE CONTRACTOR TO OPEN AND CLOSE PAVEMENT(S) BEFORE PERMANENT MARKINGS CAN BE APPLIED, OR IF SO DIRECTED BY AIRPORT OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY MARKINGS AS NECESSARY IN ORDER TO OPEN AND CLOSE THE CLOSED PAVEMENT(S).

AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.

THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02, WHICH MAY REQUIRE AN AIRPORT SAFETY ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CLOSURE ITEMS.
3. TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA ITEM P-620, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 - A. TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 - B. TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - C. TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
4. THE CONTRACTOR SHALL COMPLETELY OBLITERATE ALL MARKINGS DAMAGED BY THE CONTRACTOR DURING THIS PHASE AND NOT SCHEDULED FOR REMOVAL AND / OR REPLACEMENT DURING THIS PHASE. THESE MARKINGS SHALL BE REINSTALLED BY THE CONTRACTOR PRIOR TO PHASE COMPLETION. ANY MARKING THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
5. ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
6. SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.





LEGEND

- TRANSITION PAVEMENT THIS PHASE
- PHASE INDICATOR
- FLAGMAN
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- RUNWAY SAFETY AREA
- MARKING REMOVAL
- MARKING REMOVAL, REPLACE WITH PERMANENT MARKING INSTALLED THIS PHASE
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE
- SIGN ON FOUNDATION, SUBSCRIPT DENOTES SIGN NUMBER, REFER TO TEMPORARY SIGN SCHEDULE
- SIGN PANEL LEGEND, REI SCHEDULE
- BLANK SIGN PANEL
- LOCATION PANEL (L-858L)
- MANDATORY INSTRUCTION PANEL (L-858R)

PHASING PLAN MARKING NOTES

1. ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 00.34, REMOVAL OF MARKINGS.
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 3. TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA ITEM P-620, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 - A. TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 - B. TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - C. TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
 4. THE CONTRACTOR SHALL COMPLETELY OBLITERATE ALL MARKINGS DAMAGED BY THE CONTRACTOR DURING THIS PHASE AND NOT SCHEDULED FOR REMOVAL AND / OR REPLACEMENT DURING THIS PHASE. THESE MARKINGS SHALL BE REINSTALLED BY THE CONTRACTOR PRIOR TO PHASE COMPLETION. ANY MARKING THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 5. ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION, OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 6. SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.
- AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
- THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02, WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS, REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.

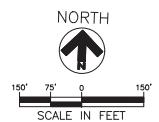
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| NO. | DESCRIPTION | DATE |
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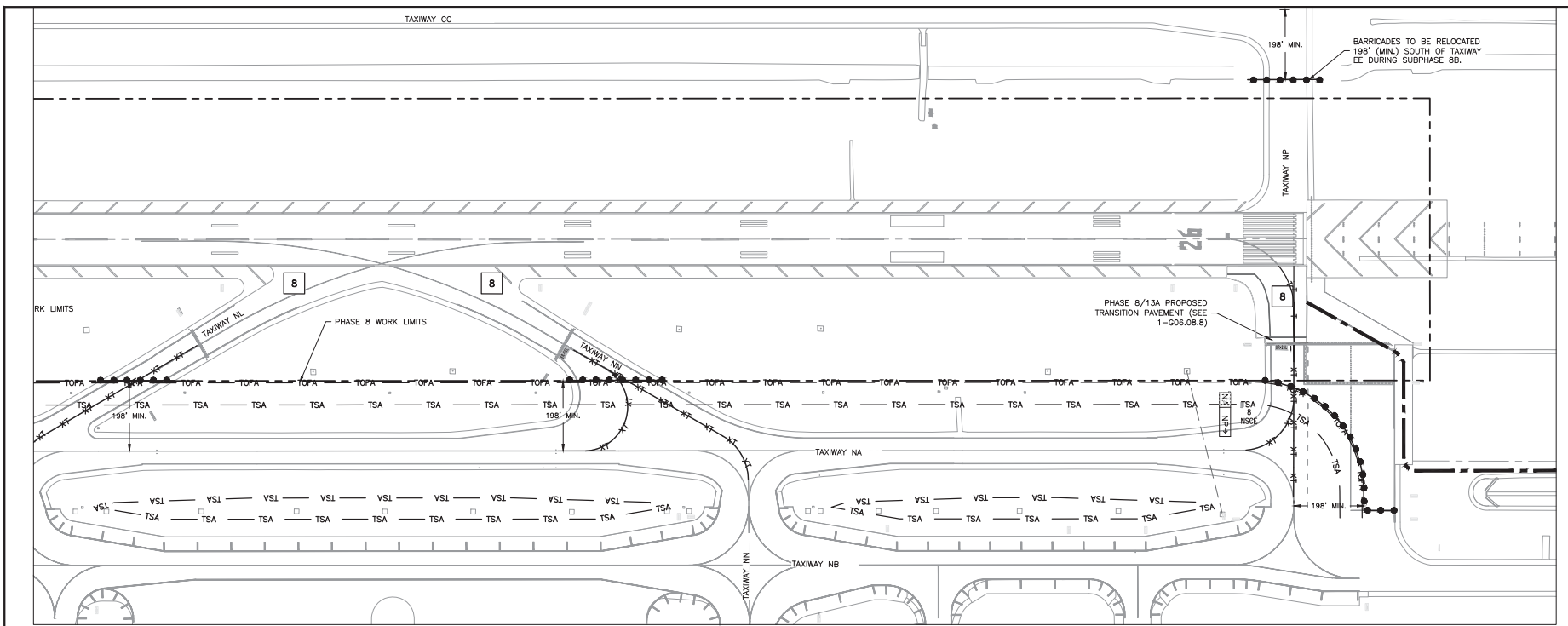
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| ISSUED FOR BID | |
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| DESIGNER: | EBN |
| DRAWN BY: | MLW |
| CHECKED BY: | SMC |
| SCALE: | 1"=150' |
| DATE: | JULY 27, 2018 |



| | | |
|------------------------|---------------------------|-------|
| DEPARTMENT OF AVIATION | APPROVED BY: | DATE: |
| | <i>David Robert</i> | |
| HOUSTON AIRPORT SYSTEM | AUTHORIZED REPRESENTATIVE | |

| | |
|-------------|----------|
| PROJECT NO. | 0807 |
| C.I.P. NO. | A-000570 |
| H.A.S. NO. | |
| SHEET NO. | |





HOUSTON AIRPORT SYSTEM
GEORGE BUSH INTERCONTINENTAL AIRPORT
HOUSTON, TEXAS

RS&H
 RS&H, Inc.
 11011 Richmond Ave., Suite 900
 Houston, Texas 77042
 7139444455 FAX 7139448955
 www.rsandh.com
 TSPC Registration No. F-2401

REVISIONS

| NO. | DESCRIPTION | DATE | BY |
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ISSUED FOR BID

PROJECT MGR: BMS
 DESIGNER: EBN
 DRAWN BY: MRL
 CHECKED BY: SMC
 SCALE: 1"=150'
 DATE: JULY 27, 2018

RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT

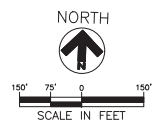
**PHASING PLAN - PHASE 8
 MARKING (3 OF 3)**

LEGEND

- TRANSITION PAVEMENT THIS PHASE
- PHASE INDICATOR
- FLAGMAN
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- RUNWAY SAFETY AREA
- MARKING REMOVAL
- MARKING REMOVAL, REPLACE WITH TEMPORARY MARKING INSTALLED THIS PHASE
- MARKING REMOVAL, REPLACE WITH PERMANENT MARKING INSTALLED THIS PHASE
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE
- SIGN ON FOUNDATION, SUBSCRIPT DENOTES SIGN NUMBER, REFER TO TEMPORARY SIGN SCHEDULE
- SIGN PANEL LEGEND, REI SCHEDULE
- BLANK SIGN PANEL
- LOCATION PANEL (L-858L)
- MANDATORY INSTRUCTION PANEL (L-858R)

PHASING PLAN MARKING NOTES

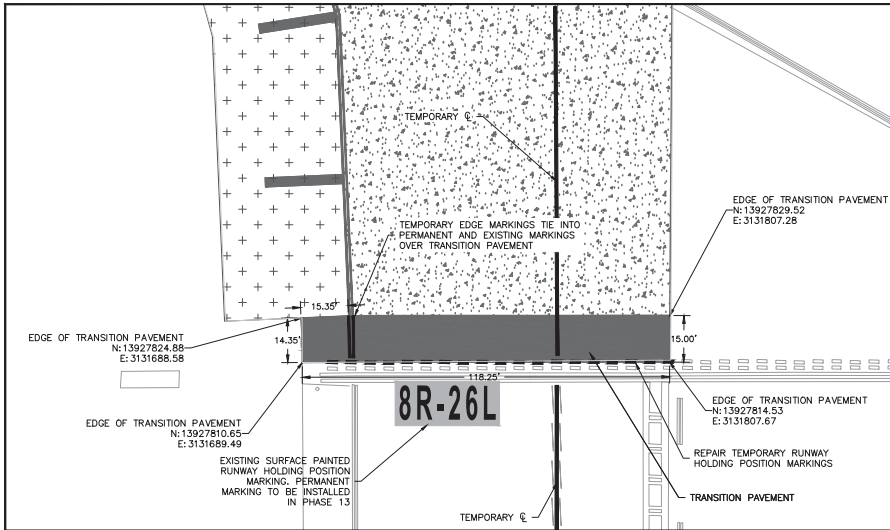
- ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 00.14, REMOVAL OF MARKINGS.
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- AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
- THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02, WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS, REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.
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- SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.



DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
 HOUSTON AIRPORT SYSTEM
 AUTHORIZED REPRESENTATIVE







PROJECT NO. **0807**
 C.I.P. NO. **A-000570**
 H.A.S. NO.
 SHEET NO.

G06.08.7



1
G06.08.8
PHASE 8/13A - TAXIWAY NP TRANSITION PAVEMENT
SCALE: 1" = 20'

LEGEND

-  PROPOSED CONCRETE PAVEMENT THIS PHASE
-  PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
-  TRANSITION PAVEMENT THIS PHASE
-  EXISTING PAVEMENT MARKING
-  PERMANENT MARKING INSTALLED THIS PHASE
-  TEMPORARY MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (D01 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (D02 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.
2. TEMPORARY TRANSITION PAVEMENTS SHALL BE INSTALLED IN ORDER TO RETURN A TAXIWAY SEGMENT TO SERVICE BETWEEN THIS PHASE AND A SUBSEQUENT PHASE. TEMPORARY TRANSITION PAVEMENTS SHALL BE CONSTRUCTED SUCH THAT:
 - A. A SMOOTH TRANSITION WITH RESPECT TO TIE-IN GRADES IS PROVIDED BETWEEN REMAINING EXISTING PAVEMENT AND NEW PAVEMENT INSTALLED IN THIS PHASE.
 - B. PAVEMENT MARKINGS ARE INSTALLED THROUGH TRANSITION PAVEMENT AREAS TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE CONTINUOUS, NON-BROKEN MARKINGS.
 - C. ALL ELECTRICAL COMPONENTS SHALL BE RETURNED TO SERVICE WITH THEIR CORRESPONDING PAVEMENT AREAS.
 - D. DISTURBED AREAS OUTSIDE PAVED TEMPORARY TRANSITION PAVEMENTS SHALL BE GRADED IN GENERAL CONFORMANCE WITH THE GRADING PLAN SHEET REQUIREMENTS AND VEGETATED IN GENERAL CONFORMANCE WITH THE SWPPP PLAN SHEET REQUIREMENTS.
 - E. THEY ARE IN ACCORDANCE WITH DETAIL 7A-C03.15.
3. TRANSITION PAVEMENT AREAS WILL BE REMOVED IN A SUBSEQUENT PHASE AND REPLACED WITH A PERMANENT PAVEMENT SECTION.



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www.rsandh.com P 3401
TSPC Registration No. P-3401

REVISIONS

| NO. | DESCRIPTION | DATE | BY |
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RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
**PHASING PLAN - PHASE 8
 TRANSITIONS AND TIE-INS**

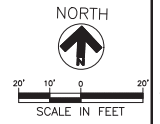
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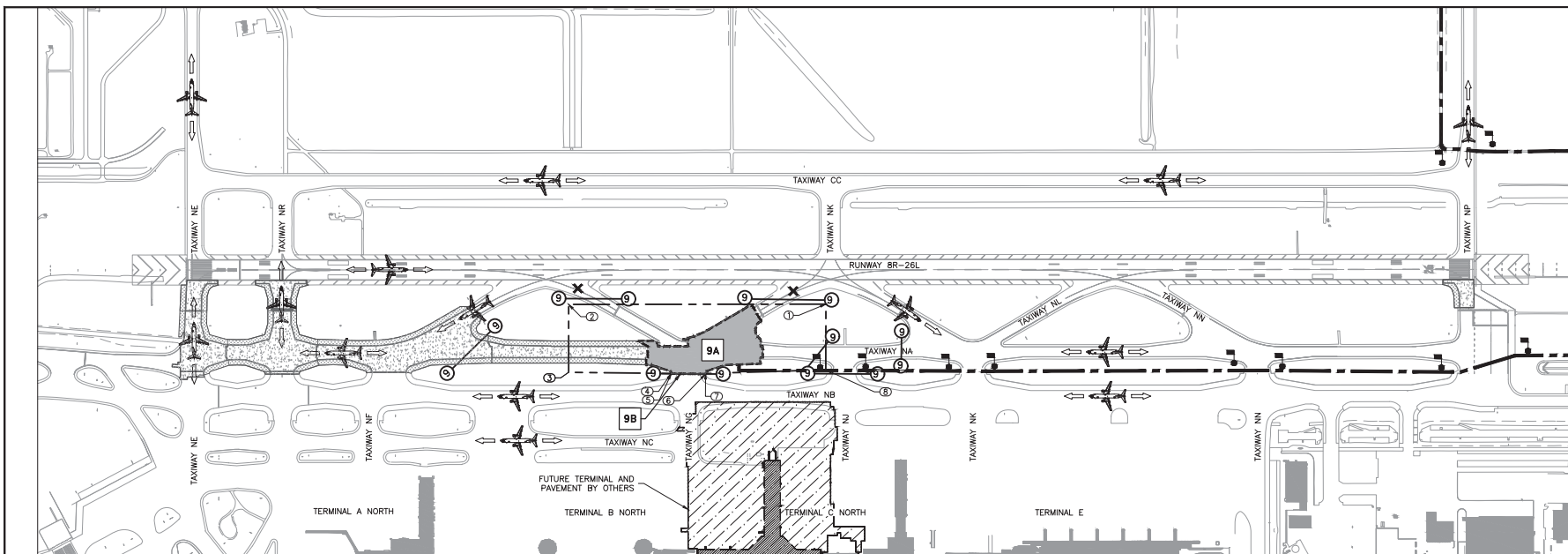
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| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=20' |
| DATE: | JULY 27, 2018 |



DEPARTMENT OF AVIATION
APPROVED BY: DATE:
David Robert
HOUSTON AIRPORT SYSTEM
AUTHORIZED REPRESENTATIVE

PROJECT NO. **0807**
C.I.P. NO. **A-000570**
H.A.S. NO.
SHEET NO.





LEGEND

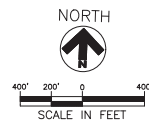
- PAVEMENT CONSTRUCTED THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNIT RUNWAY CLOSURE MARKER
- APPROXIMATE BARRICADE LOCATION (SEE NEXT SHEET FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS
- TABLE LOCATION POINT

PHASE 9 MOVEMENT NOTES

1. SEE PLAN SHEET G06.03.1 AND G06.03.3-G06.03.7 FOR PROPOSED HAUL ROUTE.
2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 9:
 - A. TAXIWAY NA WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE EAST SIDE OF TAXIWAY NF TO THE EAST SIDE OF TAXIWAY NP.
 - B. TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) FROM THE EAST SIDE OF TAXIWAY NF TO THE EAST SIDE OF TAXIWAY NP, EXCEPT WHEN SUBJECT TO 'MARKER POLE EVACUATION' OPERATIONS AND DURING SUBPHASE 9B CONSTRUCTION OPERATIONS.
 - C. DURING SUBPHASE 9B CONSTRUCTION OPERATIONS (NIGHTTIME OPERATIONS ONLY), TAXIWAY NB WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM TAXIWAY NF TO TAXIWAY NJ.
 - D. DURING DAYTIME HOURS TAXIWAY NA WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE EAST SIDE OF TAXIWAY NF TO THE WEST SIDE OF TAXIWAY NJ. DURING NIGHT TIME CONSTRUCTION HOURS CONSTRUCTION HOURS THE NA CLOSURE WILL BE EXTENDED TO THE WEST SIDE OF TAXIWAY NK.
 - E. TAXIWAY NG WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO THE NORTH SIDE OF TAXIWAY NB.
 - F. TAXIWAY NH WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO TAXIWAY NA.
 - G. DURING DAYTIME CONSTRUCTION HOURS TAXIWAY NJ WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE NORTH SIDE OF TAXIWAY NB TO THE SOUTH SIDE OF TAXIWAY NA.
 - H. TAXIWAY NJ WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE SOUTH SIDE OF TAXIWAY NA TO THE NORTH SIDE OF TAXIWAY NB DURING NIGHT TIME CONSTRUCTION HOURS ONLY.
3. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSINGS WITH TAXIWAYS NP, NN, NK, NJ, AND NG, OR AS DIRECTED BY AIRPORT OPERATIONS. WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 9, FLAGMAN WILL NOT BE REQUIRED AT TAXIWAY NJ WHEN TAXIWAY NJ IS CLOSED. PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
4. THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF MARKER POLE EVACUATION OPERATIONS. FLAGMEN AND ALL OTHER CONTRACTOR PERSONNEL SHALL BE ON CONSTANT ALERT TO IDENTIFY ANY AIRCRAFT EXCEEDING THE OPERATIONAL CAPACITY OF THE MODIFIED ADG VI TOFA (I.E. AIRBUS A-380-800, ANTONOV AN 124, ANTONOV AN 225).
5. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

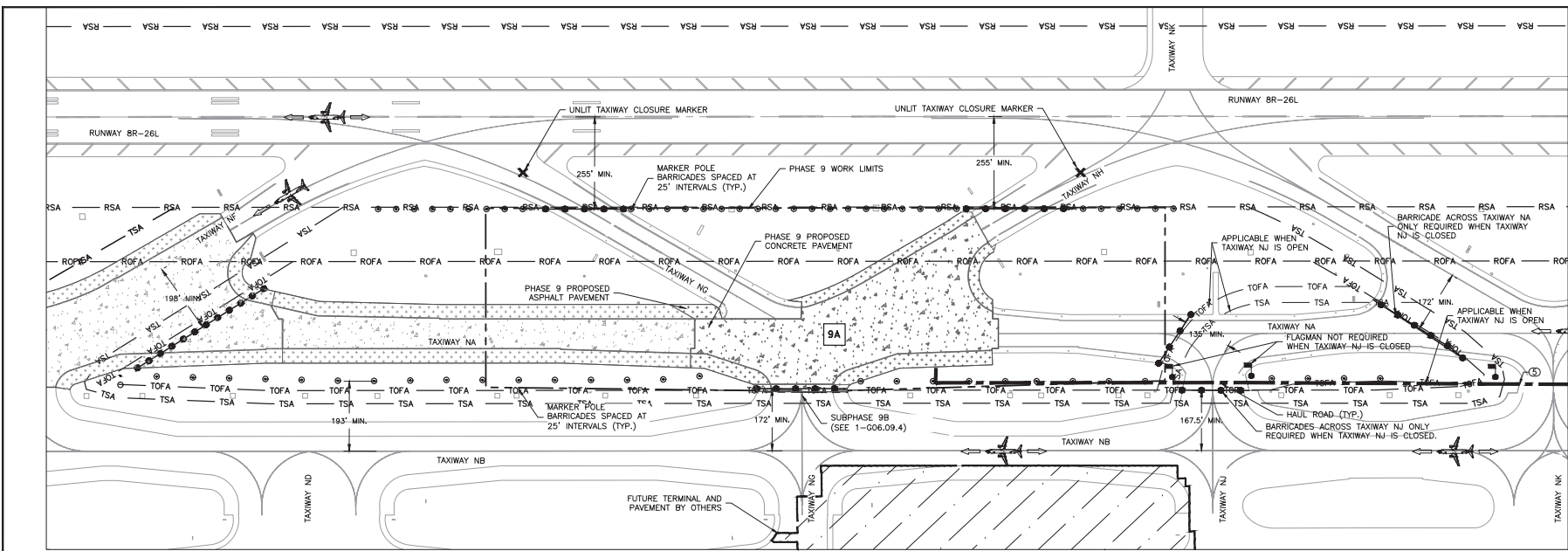
| PHASE 9 WORK LIMITS | | |
|---------------------|-------------|------------|
| POINT # | NORTHING | EASTING |
| 1 | 13927704.67 | 3127074.50 |
| 2 | 13927843.15 | 3125196.22 |
| 3 | 13927148.18 | 3125212.43 |
| 4 | 13927162.93 | 3125961.37 |
| 5 | 13927160.96 | 3125961.41 |
| 6 | 13927167.60 | 3126212.13 |
| 7 | 13927170.80 | 3126212.05 |
| 8 | 13927225.72 | 3127089.38 |

| PHASE 9 | | DAYTIME (0600 HOURS TO 2200 HOURS) | NIGHTTIME (2200 HOURS TO 0600 HOURS) | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
|--------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| DURATION (DAYS) | WORK PERIOD | PAVEMENT CLOSURES / RESTRICTIONS | PAVEMENT CLOSURES / RESTRICTIONS | | |
| | | RESTRICTIONS -- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NF TO TAXIWAY NP. -- DURING SUBPHASE 9A, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NF TO TAXIWAY NP. -- TAXIWAY NJ RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NA TO TAXIWAY NB. CLOSURES -- TAXIWAY NA CLOSED TAXIWAY NF TO TAXIWAY NA. -- TAXIWAY NG CLOSED RUNWAY BR - 26L TO TAXIWAY NB. -- TAXIWAY NH CLOSED RUNWAY BR - 26L TO TAXIWAY NA. -- TAXIWAY NJ CLOSED TAXIWAY NA TO TAXIWAY NB. | RESTRICTIONS -- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NF TO TAXIWAY NP. -- DURING SUBPHASE 9A, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NF TO TAXIWAY NP. -- DURING SUBPHASE 9B, TAXIWAY NB RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NF TO TAXIWAY NJ. CLOSURES -- TAXIWAY NA CLOSED TAXIWAY NF TO TAXIWAY NA. -- TAXIWAY NG CLOSED RUNWAY BR - 26L TO TAXIWAY NB. -- TAXIWAY NH CLOSED TAXIWAY NA TO TAXIWAY NA. -- TAXIWAY NJ CLOSED TAXIWAY NA TO TAXIWAY NB. | -- ACROSS TAXIWAY NA, EAST OF TAXIWAY NF. -- ACROSS TAXIWAY NG, NORTH OF TAXIWAY NB. -- ACROSS TAXIWAY NB, SOUTH OF THE RSA. -- ACROSS TAXIWAY NA, WEST OF TAXIWAY NB (NIGHT ONLY) -- ACROSS TAXIWAY NJ, NORTH OF TAXIWAY NB (NIGHT ONLY) -- ACROSS TAXIWAY NA, WEST OF TAXIWAY NK (NIGHT ONLY) | SUBPHASES 9A / 9B |
| SUBPHASE 9A - 70 CALENDAR DAYS | SUBPHASE 9A - DAY AND NIGHT | | | | |
| SUBPHASE 9B - 23 CALENDAR DAYS | SUBPHASE 9B - NIGHT ONLY | | | | |



DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
 [Signature]
 HOUSTON AIRPORT SYSTEM
 AUTHORIZED REPRESENTATIVE

PROJECT NO. **0807**
 C.I.P. NO. **A-000570**
 H.A.S. NO.
 SHEET NO.



LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- TSA PHASE 9 TAXIWAY SAFETY AREA
- ROFA PHASE 9 TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA

PHASE 9 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

1. PHASE 9 MAY NOT COMMENCE UNTIL THE PHASE 7 WORK AREA IS RE-OPENED TO ALL AIRCRAFT TRAFFIC.
2. SUBPHASE 9B SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 9A. HOWEVER, SUBPHASE 9B SHALL BE LIMITED TO NIGHTTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 23 CALENDAR DAYS TO COMPLETE SUBPHASE 9B.
3. THE CONTRACTOR WILL BE ALLOWED 70 CALENDAR DAYS TO COMPLETE PHASE 9.
4. CONSTRUCTION TASKS FOR PHASE 9 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET REOPENED TO AIRCRAFT TRAFFIC DURING DAY TIME HOURS.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 9.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NF TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NF CENTERLINE.
 - ii. ACROSS TAXIWAY NG, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-8), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - DURING SUBPHASE 9B, THESE BARRICADES WILL BE TEMPORARILY RELOCATED TO APPROXIMATELY 10 FEET SOUTH OF THE SUBPHASE 9B PAVING LIMITS.
 - iii. ACROSS TAXIWAY NH, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY 8R - 26L CENTERLINE.
 - iv. ACROSS TAXIWAY NJ, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY 8R - 26L CENTERLINE.
 - v. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NJ TOFA, APPROXIMATELY 135 FEET FROM THE TAXIWAY NA CENTERLINE.
 - vi. ACROSS TAXIWAY NU, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-8), APPROXIMATELY 167.5 FEET FROM THE TAXIWAY NB CENTERLINE. THESE BARRICADES SHALL ONLY BE INSTALLED DURING NIGHT TIME CONSTRUCTION HOURS. THESE BARRICADES SHALL BE REMOVED AT THE COMPLETION OF EACH NIGHT TIME WORK PERIOD SO THAT THESE PAVEMENTS MAY BE REOPENED TO AIRCRAFT TRAFFIC DURING DAYTIME HOURS.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 9.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.09.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBTURED THROUGHOUT THE DURATION OF PHASE 9.
 - E. INSTALL UNLIT TAXIWAY CLOSURE MARKER AT THE
5. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NK TOFA, APPROXIMATELY 172' FROM THE TAXIWAY NK CENTERLINE. THESE BARRICADES SHALL ONLY BE INSTALLED DURING NIGHT TIME CONSTRUCTION HOURS. THESE BARRICADES SHALL BE REMOVED AT THE COMPLETION OF EACH NIGHT TIME WORK PERIOD SO THAT THESE PAVEMENTS MAY BE REOPENED TO AIRCRAFT TRAFFIC DURING DAYTIME HOURS.
6. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.09.3.
7. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
8. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
9. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT, INCLUDING TRANSITION PAVEMENTS CONSTRUCTED IN PHASE 7. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
10. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
11. DEWATER EXCAVATION AREAS, AS APPLICABLE.
12. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
13. INSTALL NEW ELECTRICAL COMPONENTS.
14. CONSTRUCT NEW PAVEMENT SECTION.
15. REMOVE HAUL ROAD BETWEEN TAXIWAY NF AND TAXIWAY NG. REMOVE SECTION OF TEMPORARY HAUL ROAD BETWEEN TAXIWAY NG AND TAXIWAY NJ NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 10 CONSTRUCTION OPERATIONS.
16. PERFORM FINISH GRADING ACTIVITIES.
17. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
18. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED.
19. INSTALL END OF PHASE PAVEMENT MARKINGS. SEE SHEET G06.09.3.
20. PERFORM A FINAL CLEANING OF THE WORK AREA.
21. REMOVE UNLIT TAXIWAY CLOSURE MARKERS.
22. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
23. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBTURED GUIDANCE SIGNS.
24. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
25. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.

| REVISIONS | | | |
|-----------|-------------|------|----|
| NO. | DESCRIPTION | DATE | BY |
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RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
**PHASING PLAN - PHASE 9
 MARKINGS**

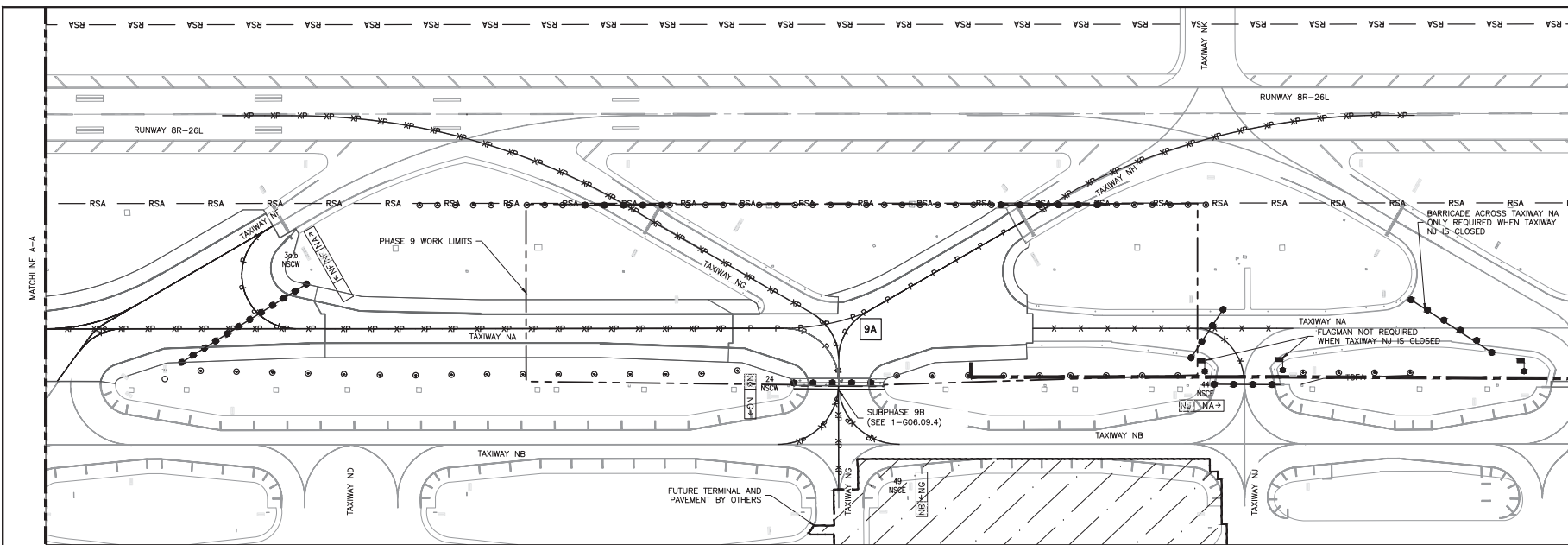
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|----------------|---------------|
| ISSUED FOR BID | |
| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=150' |
| DATE: | JULY 27, 2018 |



DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
David Robert
 HOUSTON AIRPORT SYSTEM
 AUTHORIZED REPRESENTATIVE

PROJECT NO. **0807**
 C.I.P. NO. **A-000570**
 H.A.S. NO.
 SHEET NO.

G06.09.3

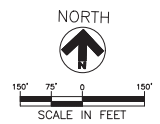
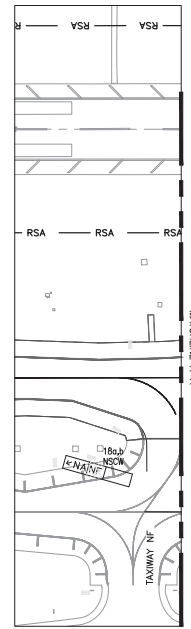


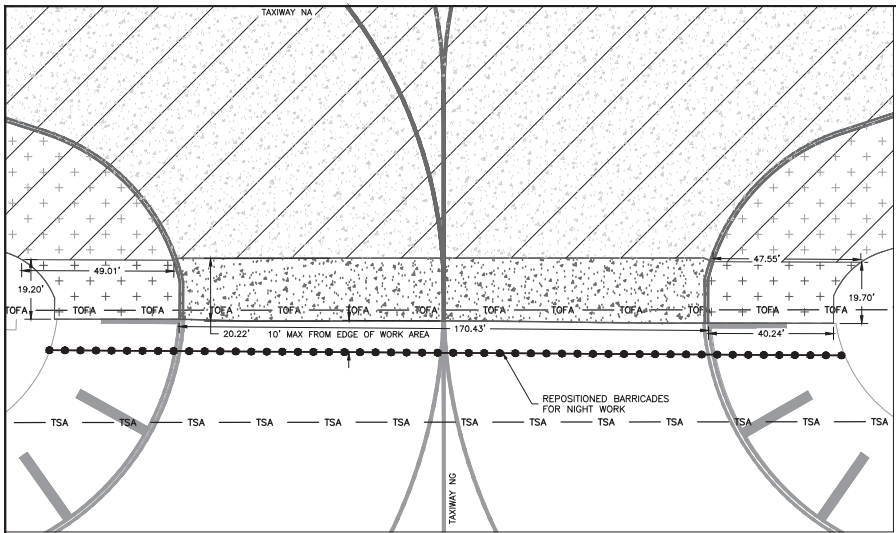
PHASING PLAN MARKING NOTES

- ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 90.34, REMOVAL OF MARKINGS.
 - ALL PERMANENT MARKINGS SHALL BE INSTALLED AT THE END OF EACH PHASE IN ACCORDANCE WITH THE PAVEMENT MARKINGS PLAN SHEETS (COB SERIES). THE PERMANENT MARKINGS SHOWN ON THIS SHEET ARE ONLY SHOWN AS A GENERAL GUIDANCE OF PERMANENT MARKING SEGMENTS TO BE INSTALLED IN THIS PHASE. THIS SHEET SHALL NOT BE USED TO INSTALL PERMANENT MARKINGS OTHER THAN AS A DESCRIPTOR OF PERMANENT MARKING SEGMENTS INSTALLED IN THIS PHASE.
 - ALL PAVEMENT MARKINGS SHOWN ON THE PHASING DRAWINGS ASSUME ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS, INCLUDING PAVEMENT CURING WAITING PERIODS, HAVE BEEN ACHIEVED. IF THE PROJECT SCHEDULE REQUIRES THE CONTRACTOR TO OPEN ANY CLOSED PAVEMENT(S) BEFORE PERMANENT MARKINGS CAN BE APPLIED, OR IF SO DIRECTED BY AIRPORT OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY MARKINGS AS NECESSARY IN ORDER TO OPEN CLOSED THE CLOSED PAVEMENT(S).
 - AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
 - TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA TEM P-620, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 - TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 - TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
 - THE CONTRACTOR SHALL COMPLETELY OBLITERATE ALL MARKINGS DAMAGED BY THE CONTRACTOR DURING THIS PHASE AND NOT SCHEDULED FOR REMOVAL AND / OR REPLACEMENT DURING THIS PHASE. THESE MARKINGS SHALL BE REINSTALLED BY THE CONTRACTOR PRIOR TO PHASE COMPLETION. ANY MARKING THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 - ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION, OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 - SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.
- THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02, WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.

LEGEND

| | |
|--|----------------------------------------------------------------------------------------|
| | PHASE INDICATOR |
| | MARKER POLE BARRICADE |
| | FLAGMAN |
| | LOW PROFILE BARRICADE (EXACT POSITION) |
| | HAUL ROUTE |
| | PHASE LIMITS |
| | RSA RUNWAY SAFETY AREA |
| | ⊗ MARKING REMOVAL |
| | ⊗ MARKING REMOVAL, REPLACE WITH TEMPORARY ⊗ INSTALLED THIS PHASE |
| | ⊗ MARKING REMOVAL, REPLACE WITH PERMANENT ⊗ INSTALLED THIS PHASE |
| | ⊖ PERMANENT ⊖ INSTALLED THIS PHASE |
| | ⊕ TEMPORARY ⊕ INSTALLED THIS PHASE |
| | 12 SIGN ON FOUNDATION, SUBSCRIPT DENOTES SIGN NUMBER, REFER TO TEMPORARY SIGN SCHEDULE |
| | ⊠ NA ND SIGN PANEL LEGEND, RE: SCHEDULE |
| | □ BLANK SIGN PANEL |
| | ⊡ (L-858L) LOCATION PANEL (L-858L) |
| | ⊡ (L-858Y) DESTINATION PANEL (L-858Y) |
| | ⊡ (L-858R) MANDATORY INSTRUCTION PANEL (L-858R) |





1
G06.09.4 SUBPHASE 9B - TAXIWAY NG
SCALE: 1" = 20'

LEGEND

- CONCRETE PAVEMENT COMPLETED CONCURRENTLY
- ASPHALT SHOULDER PAVEMENT COMPLETED CONCURRENTLY
- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- LOW PROFILE BARRICADE (EXACT POSITION)
- TAXIWAY SAFETY AREA
- TAXIWAY OBJECT FREE AREA
- EXISTING PAVEMENT MARKING
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (D1 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (D2 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.

| REVISIONS | | | |
|-----------|-------------|------|----|
| NO. | DESCRIPTION | DATE | BY |
| | | | |

RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
**PHASING PLAN - PHASE 9
 TRANSITIONS AND TIE-INS**

ISSUED FOR BID

| | |
|--------------|---------------|
| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=20' |
| DATE: | JULY 27, 2018 |

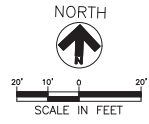


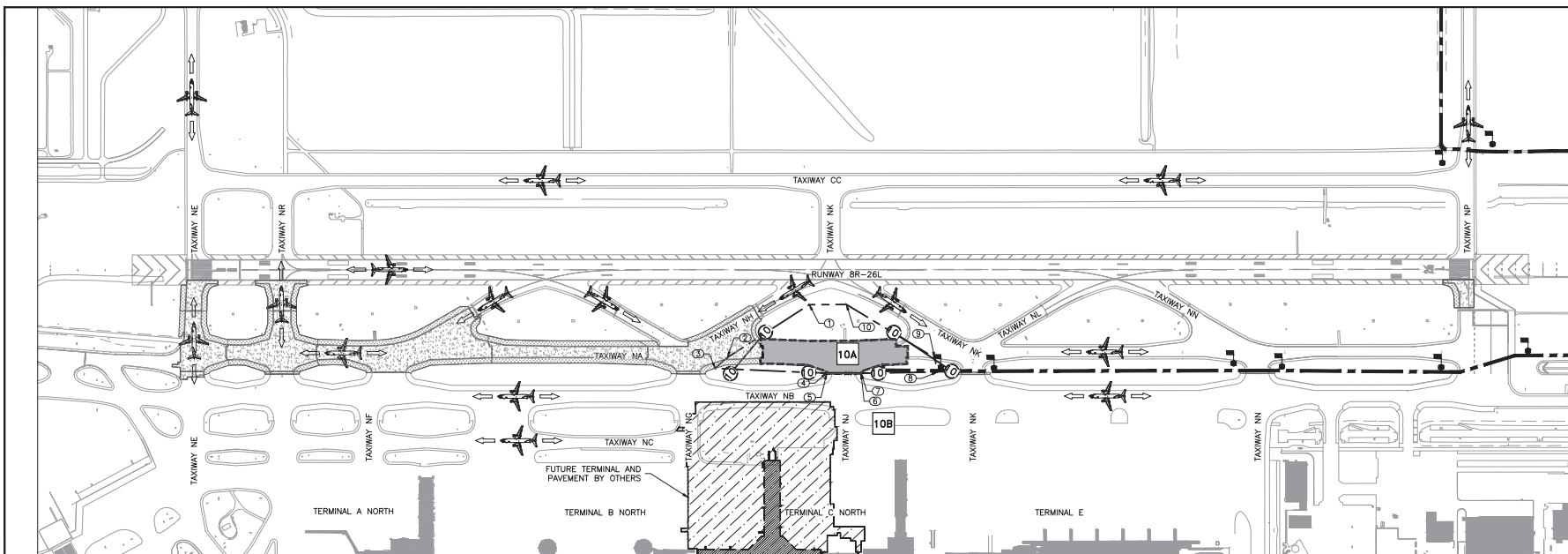
DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
James Robert
 HOUSTON AIRPORT SYSTEMS
 AUTHORIZED REPRESENTATIVE

PROJECT NO. 0807
 C.I.P. NO. A-000570
 H.A.S. NO.

SHEET NO.

G06.09.4





LEGEND

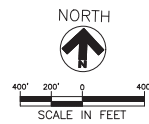
- PAVEMENT CONSTRUCTED THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- TABLE LOCATION POINT
- PHASE INDICATOR
- APPROXIMATE BARRICADE LOCATION (SEE NEXT SHEET FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS

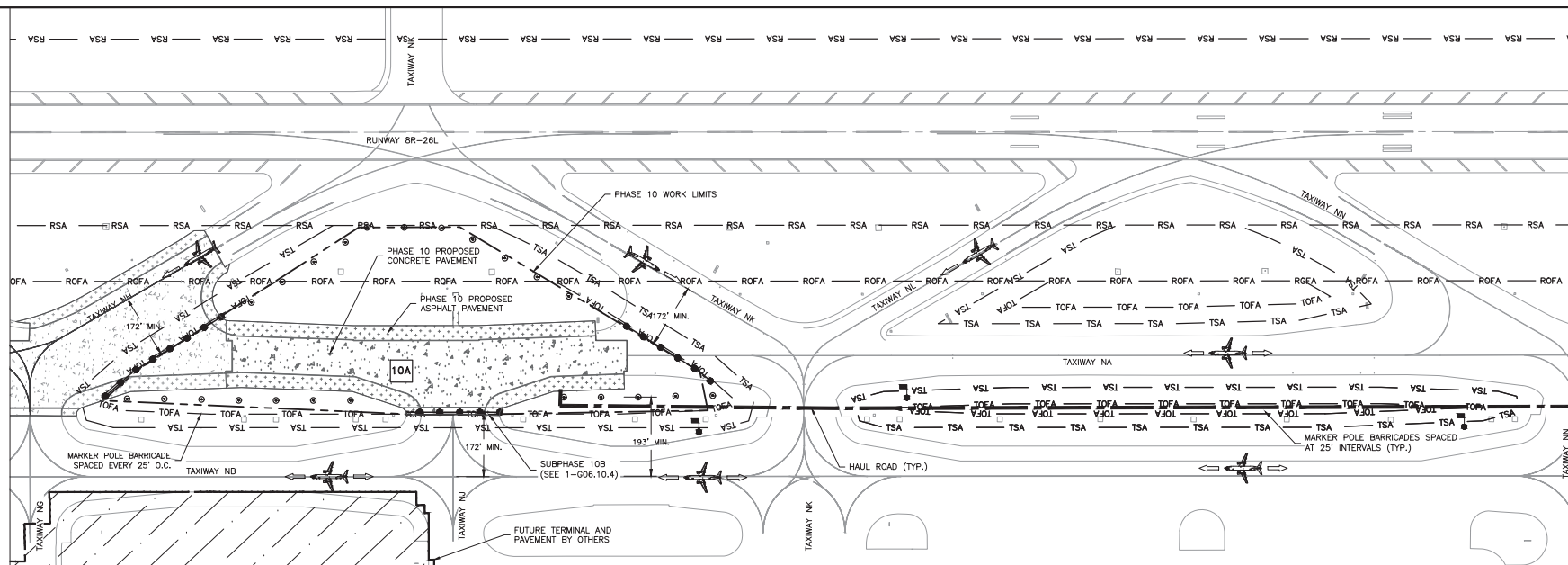
PHASE 10 MOVEMENT NOTES

1. SEE PLAN SHEET G06.03.1 AND G06.03.3-G06.03.7 FOR PROPOSED HAUL ROUTE.
 2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 10:
 - A. TAXIWAY NA WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE EAST SIDE OF TAXIWAY NH TO THE EAST SIDE OF TAXIWAY NP.
 - B. TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) FROM THE EAST SIDE OF TAXIWAY NH TO THE EAST SIDE OF TAXIWAY NP, EXCEPT WHEN SUBJECT TO 'MARKER POLE EVALUATION' OPERATIONS AND DURING SUBPHASE 10B CONSTRUCTION OPERATIONS.
 - C. DURING SUBPHASE 10B CONSTRUCTION OPERATIONS (NIGHTTIME OPERATIONS ONLY), TAXIWAY NB WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE EAST SIDE OF TAXIWAY NH TO THE WEST SIDE OF TAXIWAY NK.
 - D. TAXIWAY NA WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE EAST SIDE OF TAXIWAY NH TO THE WEST SIDE OF TAXIWAY NK.
 - E. TAXIWAY NJ WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM TAXIWAY NA TO THE NORTH SIDE OF TAXIWAY NB.
 3. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSINGS WITH TAXIWAYS NP, NN, AND NK, OR AS DIRECTED BY AIRPORT OPERATIONS, WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 10. PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
 4. THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF 'MARKER POLE EVALUATION' OPERATIONS (FLAGMEN) AND ALL OTHER CONTRACTOR PERSONNEL SHALL BE ON CONSTANT ALERT TO IDENTIFY ANY AIRCRAFT EXCEEDING THE OPERATIONAL CAPACITY OF THE MODIFIED ADG VI TOFA (I.E. AIRBUS A-380-800, ANTONOV AN 124, ANTONOV AN 225).
 5. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES.
- ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

| PHASE 10 WORK LIMITS | | |
|----------------------|-------------|------------|
| POINT # | NORTHING | EASTING |
| 1 | 13927697.06 | 3126953.26 |
| 2 | 13927293.65 | 3126369.20 |
| 3 | 13927210.82 | 3126281.33 |
| 4 | 13927204.68 | 3127096.87 |
| 5 | 13927198.78 | 3127097.21 |
| 6 | 13927207.16 | 3127347.39 |
| 7 | 13927211.75 | 3127347.24 |
| 8 | 13927235.86 | 3127905.93 |
| 9 | 13927338.96 | 3127881.60 |
| 10 | 13927706.80 | 3127224.54 |

| PHASE 10 | | | | | | |
|---------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--|
| DURATION (DAYS) | WORK PERIOD | DAYTIME (0600 HOURS TO 2200 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | NIGHTTIME (2200 HOURS TO 0600 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK | |
| SUBPHASE 10A - 60 CALENDAR DAYS | SUBPHASE 10A - DAY AND NIGHT | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NH TO TAXIWAY NP. --- DURING SUBPHASE 10A, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NH TO TAXIWAY NP. | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NH TO TAXIWAY NP. --- DURING SUBPHASE 10A, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NH TO TAXIWAY NP. | --- ACROSS TAXIWAY NA, NORTH OF TAXIWAY NB. --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NH. --- ACROSS TAXIWAY NA, WEST OF TAXIWAY NK. | SUBPHASES 10A / 10B | |
| SUBPHASE 10B - 23 CALENDAR DAYS | SUBPHASE 10B - NIGHT ONLY | RESTRICTIONS --- TAXIWAY NA CLOSED TAXIWAY NH TO TAXIWAY NK. --- TAXIWAY NJ CLOSED TAXIWAY NA TO TAXIWAY NB. | RESTRICTIONS --- TAXIWAY NA CLOSED TAXIWAY NH TO TAXIWAY NK. --- TAXIWAY NJ CLOSED TAXIWAY NA TO TAXIWAY NB. | | | |





LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- MARKER POLE BARRICADE (EXACT POSITION)
- LOW PROFILE BARRICADE (APPROXIMATE POSITION)
- HAUL ROUTE
- PHASE LIMITS
- PHASE 10 TAXIWAY SAFETY AREA
- PHASE 10 TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA

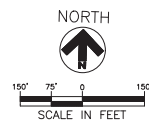
PHASE 10 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

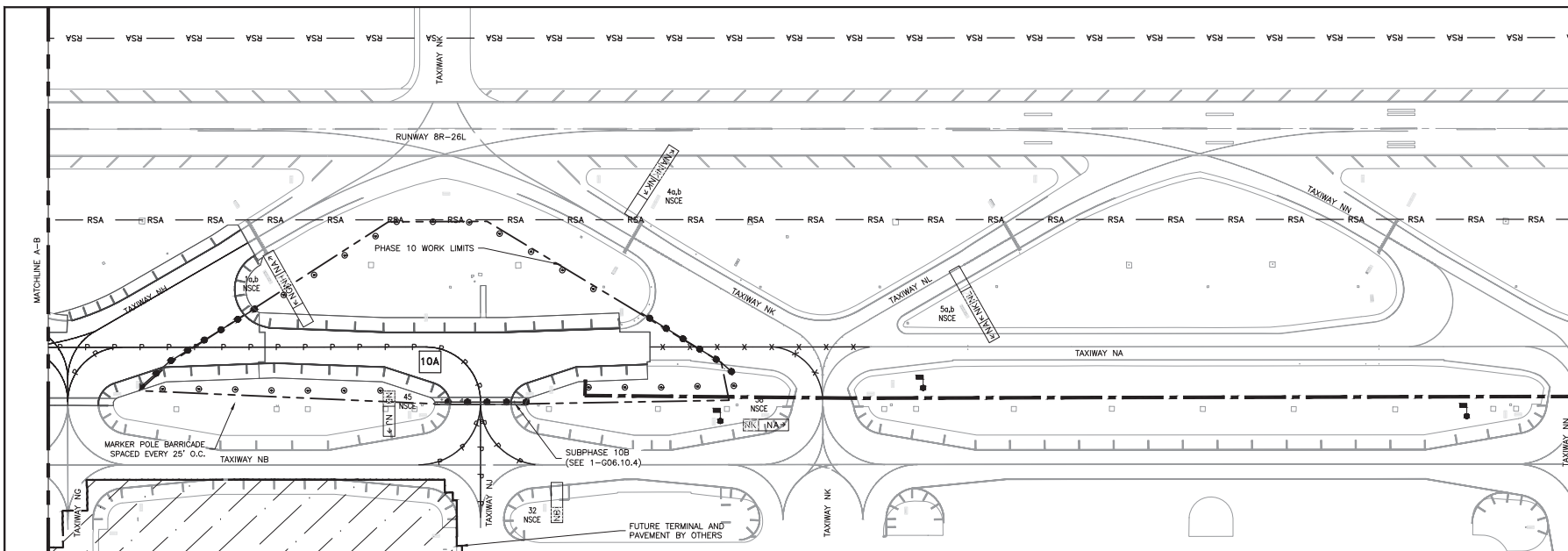
1. PHASE 10 MAY NOT COMMENCE UNTIL THE PHASE 9 WORK AREA IS OPEN TO ALL AIRCRAFT TRAFFIC.
2. ALL WORK IN SUBPHASE 10A MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS. THE CONTRACTOR WILL BE ALLOWED 60 CALENDAR DAYS TO COMPLETE SUBPHASE 10A.
3. SUBPHASE 10B SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 10B. HOWEVER, SUBPHASE 10B SHALL BE LIMITED TO NIGHTTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 23 CALENDAR DAYS TO COMPLETE SUBPHASE 10B.
4. CONSTRUCTION TASKS FOR PHASE 10 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.10.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 10.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NJ, NORTH OF THE MODIFIED TAXIWAY NB ADD V TOFA (335 FEET, MAXIMUM AIRCRAFT - 5-747-B), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.

DURING SUBPHASE 10B, THESE BARRICADES WILL BE TEMPORARILY RELOCATED TO APPROXIMATELY 10 FEET SOUTH OF THE SUBPHASE 10B PAVING LIMITS.
 - ii. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NH TOFA, APPROXIMATELY 172 FEET FROM THE TAXIWAY NH CENTERLINE.
 - iii. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NK TOFA, APPROXIMATELY 172 FEET FROM THE TAXIWAY NK CENTERLINE.

MARKER POLE BARRICADES SHALL BE INSTALLED AT MAXIMUM INTERVALS OF 25 FEET AT THE FOLLOWING LOCATIONS:

 - i. IN THE TAXIWAY NA / TAXIWAY NB INFIELD, APPROXIMATELY 193 FEET FROM THE TAXIWAY NB CENTERLINE, BETWEEN TAXIWAYS NG AND NJ, BETWEEN TAXIWAYS NJ AND NK, BETWEEN TAXIWAYS NK AND NN, AND BETWEEN TAXIWAYS NN AND NP. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 7 CONSTRUCTION OPERATIONS.
 - ii. IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY 8R - 26L CENTERLINE, BETWEEN TAXIWAYS NH AND NK. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 9 CONSTRUCTION OPERATIONS.
 - iii. IN THE INFIELD NORTH OF TAXIWAY NA, OUTSIDE THE RSA, APPROXIMATELY 172 FEET FROM THE TAXIWAY NH CENTERLINE.
 - iv. IN THE INFIELD NORTH OF TAXIWAY NA, OUTSIDE THE RSA, APPROXIMATELY 172 FEET FROM THE TAXIWAY NK CENTERLINE.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 10.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL INFORMATION LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBSCURED THROUGHOUT THE DURATION OF PHASE 10.
 - E. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.10.3.
 - F. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - G. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
 - H. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
 - I. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
 - J. DEWATER EXCAVATION AREAS, AS APPLICABLE.
 - K. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
 - L. INSTALL NEW ELECTRICAL COMPONENTS.
 - M. CONSTRUCT NEW PAVEMENT SECTION.
 - N. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NG AND TAXIWAY NJ. REMOVE SECTION OF TEMPORARY HAUL ROAD BETWEEN TAXIWAY NJ AND TAXIWAY NK NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 11 CONSTRUCTION OPERATIONS.
 - O. PERFORM FINISH GRADING ACTIVITIES.
 - P. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
 - Q. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED.
 - R. INSTALL END OF PHASE PAVEMENT MARKINGS. SEE SHEET G06.10.3.
 - S. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - T. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - U. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
 - V. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - W. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.



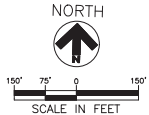
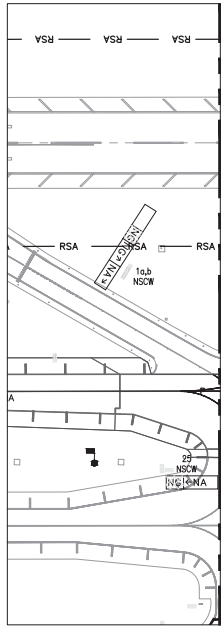


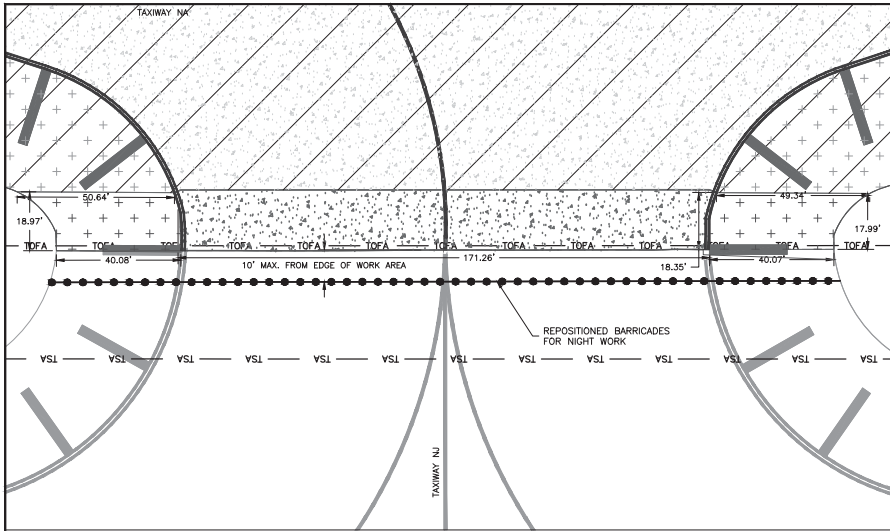
LEGEND

- # PHASE INDICATOR
- MARKER POLE BARRICADE
- FLAGMAN
- LOW PROFILE BARRICADE (EXACT POSITION)
- Haul ROUTE
- PHASE LIMITS
- RSA RUNWAY SAFETY AREA
- ⊗ MARKING REMOVAL
- ⊗ XT MARKING REMOVAL, REPLACE WITH TEMPORARY ⊗ INSTALLED THIS PHASE
- ⊗ XP MARKING REMOVAL, REPLACE WITH PERMANENT ⊗ INSTALLED THIS PHASE
- ⊗ PERMANENT ⊗ INSTALLED THIS PHASE
- ⊗ TEMPORARY ⊗ INSTALLED THIS PHASE
- 12 NSCW SIGN ON FOUNDATION, SUBSCRIPT DENOTES SIGN NUMBER, REFER TO TEMPORARY SIGN SCHEDULE
- [K NA ND] SIGN PANEL LEGEND, RE: SCHEDULE
- BLANK SIGN PANEL
- [8L-26R] LOCATION PANEL (L-858L)
- [8L-26R] MANDATORY INSTRUCTION PANEL (L-858R)

PHASING PLAN MARKING NOTES

1. ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 90.34, REMOVAL OF MARKINGS.
 2. ALL PERMANENT MARKINGS SHALL BE INSTALLED AT THE END OF EACH PHASE IN ACCORDANCE WITH THE PAVEMENT MARKINGS PLAN SHEETS (COB SERIES). THE PERMANENT MARKINGS SHOWN ON THIS SHEET ARE ONLY SHOWN AS A GENERAL GUIDANCE OF PERMANENT MARKING SEGMENTS TO BE INSTALLED IN THIS PHASE. THIS SHEET SHALL NOT BE USED TO INSTALL PERMANENT MARKINGS OTHER THAN AS A DESCRIPTOR OF PERMANENT MARKING SEGMENTS INSTALLED IN THIS PHASE.
 - A. ALL PAVEMENT MARKINGS SHOWN ON THE PHASING DRAWINGS ASSUME ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS, INCLUDING PAVEMENT CURING WAITING PERIODS, HAVE BEEN ACHIEVED. IF THE PROJECT SCHEDULE REQUIRES THE CONTRACTOR TO OPEN ANY CLOSED PAVEMENT(S) BEFORE PERMANENT MARKINGS CAN BE APPLIED, OR IF SO DIRECTED BY AIRPORT OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY MARKINGS AS NECESSARY IN ORDER TO OPEN CLOSED THE CLOSED PAVEMENT(S).
 3. TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA ITEM P-600, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 - A. TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 - B. TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - C. TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
 4. THE CONTRACTOR SHALL COMPLETELY OBLITERATE ALL MARKINGS DAMAGED BY THE CONTRACTOR DURING THIS PHASE AND NOT SCHEDULED FOR REMOVAL AND / OR REPLACEMENT DURING THIS PHASE. THESE MARKINGS SHALL BE REINSTALLED BY THE CONTRACTOR PRIOR TO PHASE COMPLETION. ANY MARKING THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 5. ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION, OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 6. SEE PLAN SHEET 006.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.
- AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
- THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET 004.02 WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.





1
G06.10.4
SUBPHASE 10B - TAXIWAY NJ
SCALE: 1" = 20'

LEGEND

- CONCRETE PAVEMENT COMPLETED CONCURRENTLY
- PROPOSED ASPHALT SHOULDER PAVEMENT COMPLETED CONCURRENTLY
- PROPOSED CONCRETE PAVEMENT THIS PHASE
- ASPHALT SHOULDER PAVEMENT THIS PHASE
- LOW PROFILE BARRICADE (EXACT POSITION)
- TAXIWAY SAFETY AREA
- TAXIWAY OBJECT FREE AREA
- EXISTING PAVEMENT MARKING
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (C01 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (C02 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.

| REVISIONS | | |
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| NO. | DESCRIPTION | DATE |
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RECONSTRUCTION OF TAXIWAY NA AT GEORGE BUSH INTERCONTINENTAL AIRPORT
PHASING PLAN - PHASE 10 TRANSITIONS AND TIE-INS

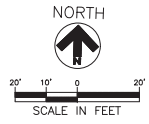
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| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=20' |
| DATE: | JULY 27, 2018 |

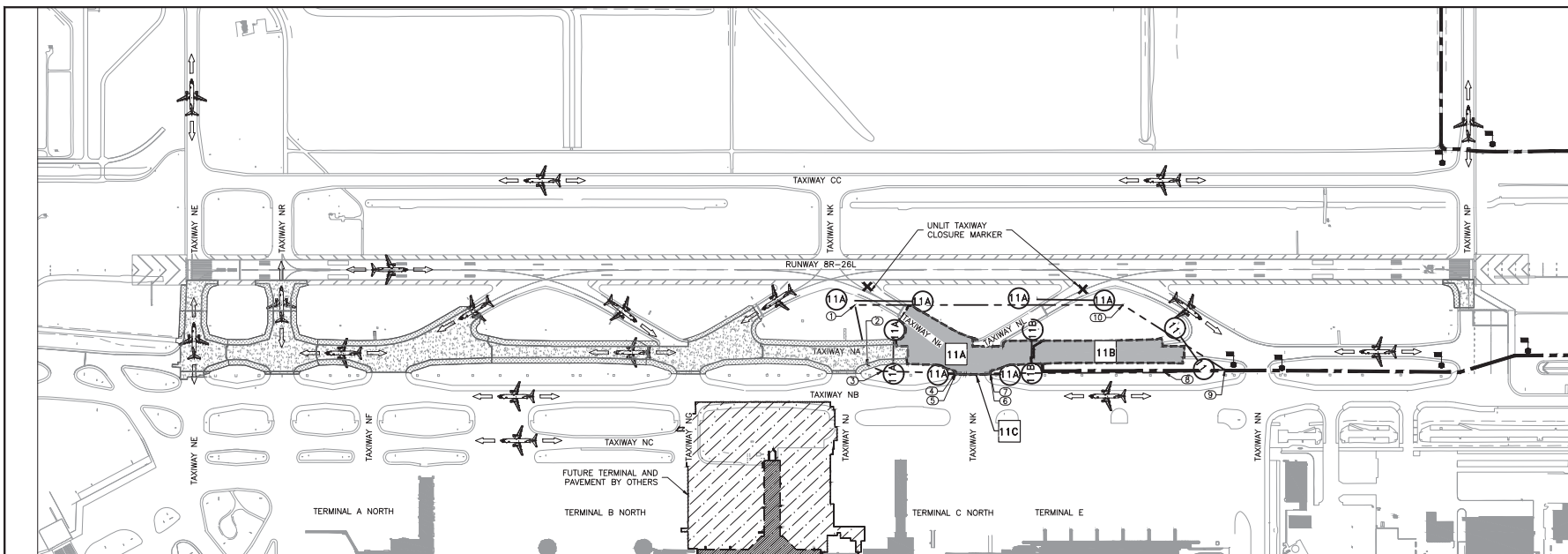


DEPARTMENT OF AVIATION
APPROVED BY: DATE:
James Robert
HOUSTON AIRPORT SYSTEMS
AUTHORIZED REPRESENTATIVE

| | |
|-------------|----------|
| PROJECT NO. | 0807 |
| C.I.P. NO. | A-000570 |
| H.A.S. NO. | |
| SHEET NO. | |



G06.10.4



LEGEND

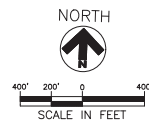
- PAVEMENT CONSTRUCTED THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- TABLE LOCATION POINT
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- APPROXIMATE BARRICADE LOCATION (SEE NEXT SHEET FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS

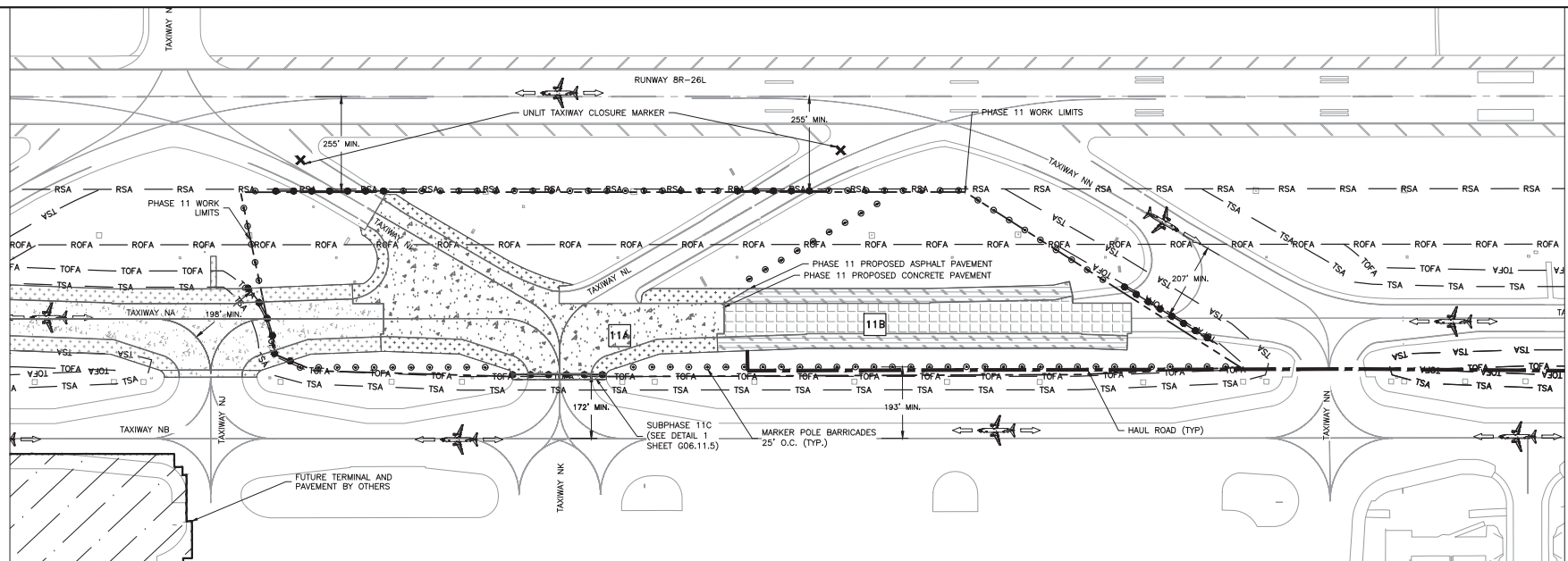
PHASE 11 MOVEMENT NOTES

1. SEE PLAN SHEET G06.03.1 AND G06.03.3-G06.03.7 FOR PROPOSED HAUL ROUTE.
2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 11:
 - A. TAXIWAY NA WILL BE RESTRICTED TO ADD IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE EAST SIDE OF TAXIWAY NJ TO THE EAST SIDE OF TAXIWAY NP.
 - B. TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) FROM THE EAST SIDE OF TAXIWAY NJ TO THE EAST SIDE OF TAXIWAY NP, EXCEPT WHEN SUBJECT TO MARKER POLE EVACUATION OPERATIONS AND DURING SUBPHASE 11C CONSTRUCTION OPERATIONS.
 - C. DURING SUBPHASE 11C CONSTRUCTION OPERATIONS (NIGHTTIME OPERATIONS ONLY), TAXIWAY NB WILL BE RESTRICTED TO ADD IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE EAST SIDE OF TAXIWAY NJ TO THE WEST SIDE OF TAXIWAY NN.
 - D. TAXIWAY NA WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE EAST SIDE OF TAXIWAY NJ TO THE WEST SIDE OF TAXIWAY NN.
 - E. TAXIWAY NK WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO THE NORTH SIDE OF TAXIWAY NB.
3. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSINGS WITH TAXIWAYS NP AND NN, OR AS DIRECTED BY AIRPORT OPERATIONS. WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 11, PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
4. THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF MARKER POLE EVACUATION OPERATIONS, FLAGMEN AND ALL OTHER CONTRACTOR PERSONNEL SHALL BE ON CONSTANT ALERT TO IDENTIFY ANY AIRCRAFT EXCEEDING THE OPERATIONAL CAPACITY OF THE MODIFIED ADG VI TOFA (I.E. AIRBUS A-380-800, ANTONOV AN 124, ANTONOV AN 225).
5. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

| PHASE 11 WORK LIMITS | | |
|----------------------|-------------|------------|
| POINT # | NORTHING | EASTING |
| 1 | 13927705.27 | 3127287.25 |
| 2 | 13927270.38 | 3127392.59 |
| 3 | 13927229.04 | 3127502.23 |
| 4 | 13927230.53 | 3128038.37 |
| 5 | 13927222.36 | 3128038.63 |
| 6 | 13927230.80 | 3128291.00 |
| 7 | 13927238.47 | 3128290.71 |
| 8 | 13927284.16 | 3129564.50 |
| 9 | 13927317.00 | 3130002.31 |
| 10 | 13927767.24 | 3129243.33 |

| PHASE 11 | | DAYTIME (0600 HOURS TO 2200 HOURS) | | NIGHTTIME (2200 HOURS TO 0600 HOURS) | | ALLOWED CONCURRENT WORK |
|-----------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------|
| DURATION (DAYS) | WORK PERIOD | PAVEMENT CLOSURES / RESTRICTIONS | PAVEMENT CLOSURES / RESTRICTIONS | BARRICADE LOCATIONS | BARRICADE LOCATIONS | |
| | | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADD IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NJ TO TAXIWAY NP. --- DURING SUBPHASE 11A AND 11B, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NJ TO TAXIWAY NP. CLOSURES --- TAXIWAY NA CLOSED TAXIWAY NJ TO TAXIWAY NN. CLOSURES --- TAXIWAY NK CLOSED RUNWAY BR - 26L TO TAXIWAY NB. CLOSURES --- TAXIWAY NL CLOSED RUNWAY BR - 26L TO TAXIWAY NA. CLOSURES | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADD IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NJ TO TAXIWAY NP. --- DURING SUBPHASE 11A AND 11B, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NJ TO TAXIWAY NP. CLOSURES --- TAXIWAY NA CLOSED TAXIWAY NJ TO TAXIWAY NN. CLOSURES --- TAXIWAY NK CLOSED RUNWAY BR - 26L TO TAXIWAY NB. CLOSURES --- TAXIWAY NL CLOSED RUNWAY BR - 26L TO TAXIWAY NA. CLOSURES | --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NJ. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 11A. --- ACROSS TAXIWAY NK, NORTH OF TAXIWAY NB. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 11A. --- ACROSS TAXIWAY NK, SOUTH OF THE RSA. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 11A. --- ACROSS TAXIWAY NL, SOUTH OF THE RSA. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 11A. --- ACROSS TAXIWAY NA, WEST OF TAXIWAY NN. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 11A. --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NL. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 11A. AND RETURN TO SERVICE OF TAXIWAYS NK AND NL. | --- | SUBPHASES 11A / 11B / 11C |





PHASE 11 CONSTRUCTION SEQUENCING AND OPERATIONS

NOTES - SUBPHASE 11A

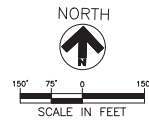
- PHASE 11 MAY NOT COMMENCE UNTIL THE PHASE 10 WORK AREA IS OPENED TO ALL AIRCRAFT TRAFFIC.
- THE INTENT OF DIVIDING SUBPHASES 11A AND 11B IS TO MINIMIZE THE OVERALL DURATION OF PHASE 11. THE CONTRACTOR SHALL FOCUS INTENTLY ON COMPLETING THE DEMOLITION WORK OF SUBPHASE 11A PRIOR TO COMMENCEMENT OF SUBPHASE 11B. ALL WORK IN SUBPHASES 11A AND 11B MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS.
- SUBPHASE 11C SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 11A. HOWEVER, SUBPHASE 11C SHALL BE LIMITED TO NIGHTTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 23 CALENDAR DAYS TO COMPLETE SUBPHASE 11C.
- THE CONTRACTOR WILL BE ALLOWED 82 CALENDAR DAYS TO COMPLETE PHASE 11.
- CONSTRUCTION TASKS FOR PHASE SUBPHASE 11A ARE AS FOLLOWS:
 - WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.11.1.
 - INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 11.
 - CROSS TAXIWAY NA, EAST OF THE TAXIWAY NJ TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NJ CENTERLINE.
 - CROSS TAXIWAY NK, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-8), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - CROSS TAXIWAY NK, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - CROSS TAXIWAY NL, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - CROSS TAXIWAY NA, WEST OF THE TAXIWAY NN TOFA, APPROXIMATELY 207 FEET FROM THE TAXIWAY NN CENTERLINE.

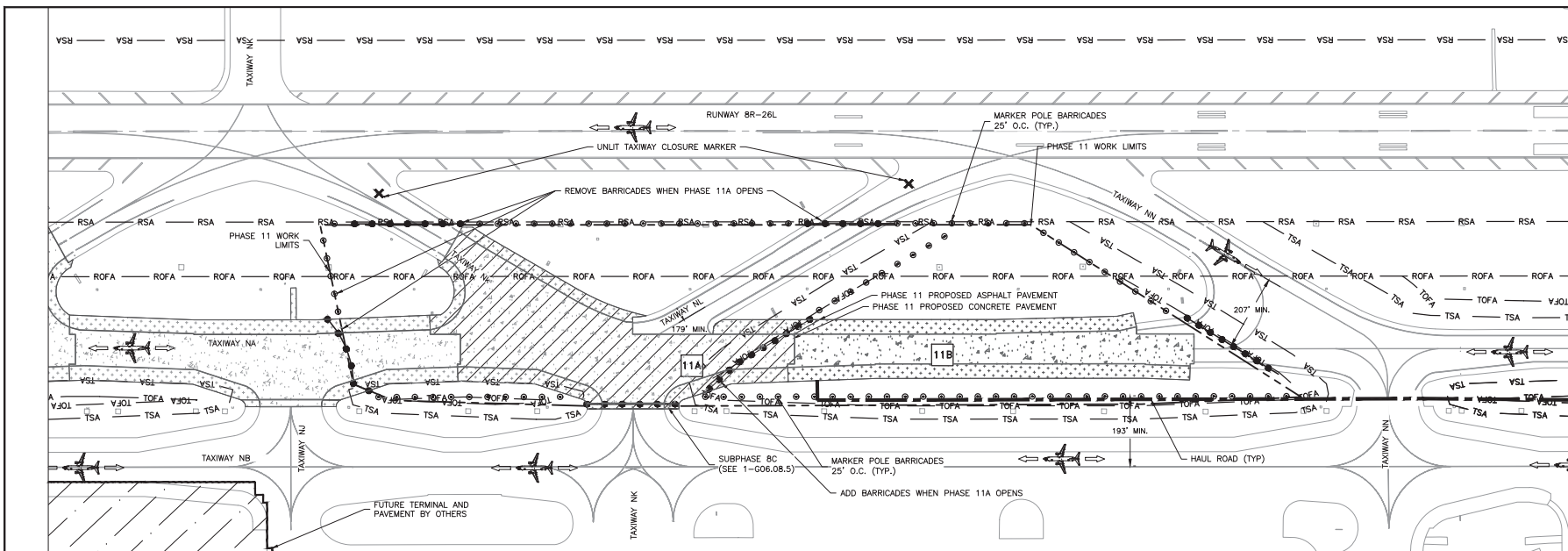
- MARKER POLE BARRICADES SHALL BE INSTALLED AT MAXIMUM INTERVALS OF 25 FEET AT THE FOLLOWING LOCATIONS:
- IN THE TAXIWAY NA / TAXIWAY NB INFIELD, APPROXIMATELY 193 FEET FROM THE TAXIWAY NB CENTERLINE, BETWEEN TAXIWAYS NJ AND NK, BETWEEN TAXIWAYS NK AND NN, AND BETWEEN TAXIWAYS NN AND NP. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 7 CONSTRUCTION OPERATIONS.
 - IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE, BETWEEN TAXIWAYS NH AND NK. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 9 CONSTRUCTION OPERATIONS.
 - IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE, BETWEEN TAXIWAYS NK AND NL, AND BETWEEN TAXIWAYS NL AND NN.
- DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 11.
 - DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBLSCURED THROUGHOUT THE DURATION OF PHASE 11.
 - INSTALL UNLIT TAXIWAY CLOSURE MARKER AT THE ENTRANCE OF TAXIWAY NK FROM RUNWAY BR - 26L.
 - INSTALL UNLIT TAXIWAY CLOSURE MARKER AT THE ENTRANCE OF TAXIWAY NL FROM RUNWAY BR - 26L.
 - REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.11.4.
 - VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.

- INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
- SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
- REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
- DEWATER EXCAVATION AREAS, AS APPLICABLE.
- PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
- INSTALL NEW ELECTRICAL COMPONENTS.
- CONSTRUCT NEW PAVEMENT SECTION.
- REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NJ AND TAXIWAY NK. REMOVE SECTION OF TEMPORARY HAUL ROAD BETWEEN TAXIWAY NK AND TAXIWAY NN NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 12 CONSTRUCTION OPERATIONS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11B CONSTRUCTION OPERATIONS.
- PERFORM FINISH GRADING ACTIVITIES.
- INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
- REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED. THIS SHALL BE CONCURRENT WITH SUBPHASE 11B CONSTRUCTION OPERATIONS.
- INSTALL END OF PHASE PAVEMENT MARKINGS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11B CONSTRUCTION OPERATIONS. SEE SHEET G06.11.4.
- PERFORM A FINAL CLEANING OF THE WORK AREA. THIS SHALL BE CONCURRENT WITH SUBPHASE 11B CONSTRUCTION OPERATIONS.
- REMOVE UNLIT TAXIWAY CLOSURE MARKERS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11B CONSTRUCTION OPERATIONS.
- RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11B CONSTRUCTION OPERATIONS.
- RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11B CONSTRUCTION OPERATIONS.

LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- PROPOSED CONCRETE PAVEMENT IN FOLLOWING SUBPHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT IN FOLLOWING SUBPHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- PHASE 11 TAXIWAY SAFETY AREA
- PHASE 11 TAXIWAY OBJECT FREE AREA
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA





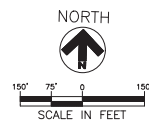
LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED CONCURRENTLY
- ASPHALT SHOULDER PAVEMENT COMPLETED CONCURRENTLY
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- MARKER POLE BARRICADE (LOW PROFILE BARRICADE (EXACT POSITION))
- HAUL ROUTE
- PHASE LIMITS
- TSA - PHASE 11 TAXIWAY SAFETY AREA
- TOFA - PHASE 11 TAXIWAY OBJECT FREE AREA
- RSA - RUNWAY SAFETY AREA
- ROFA - RUNWAY OBJECT FREE AREA

PHASE 11 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES - SUBPHASE 11B

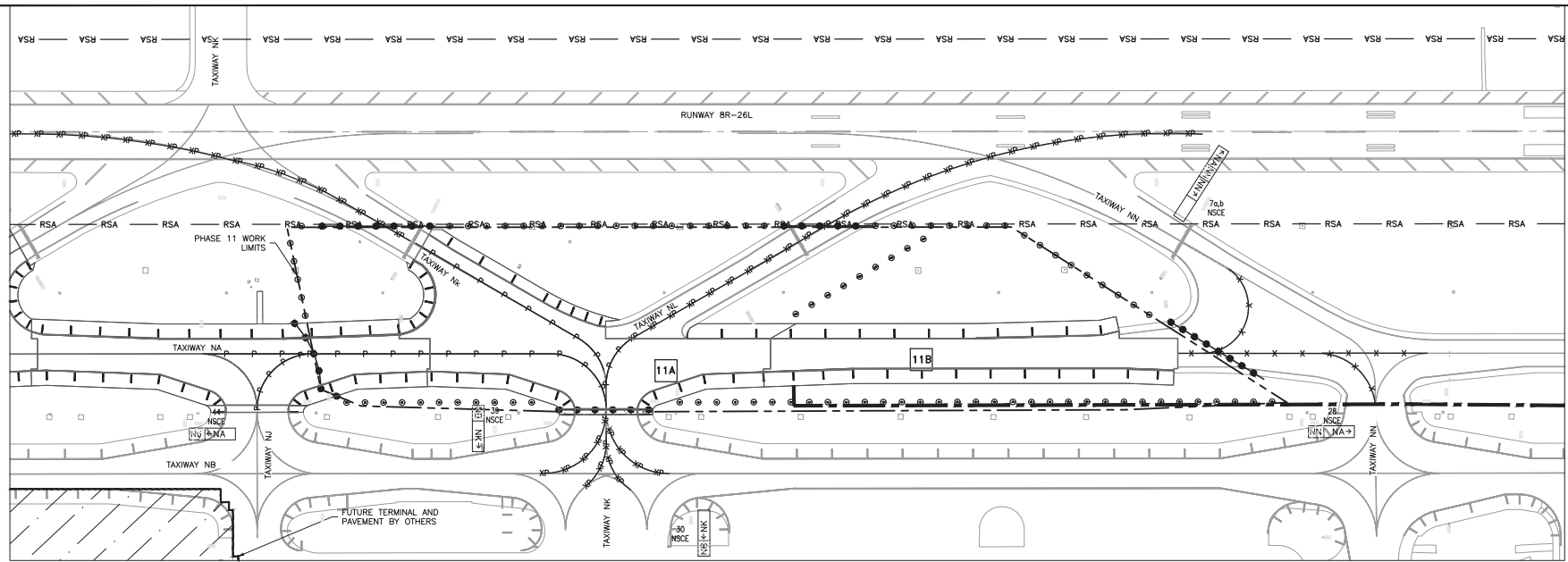
1. PHASE 11 MAY NOT COMMENCE UNTIL THE PHASE 10 WORK AREA IS OPENED TO ALL AIRCRAFT TRAFFIC.
2. THE INTENT OF DIVIDING SUBPHASES 11A AND 11B IS TO MINIMIZE THE OVERALL DURATION OF PHASE 11. THE CONTRACTOR SHALL FOCUS INTENTLY ON COMPLETING THE DEMOLITION WORK OF SUBPHASE 11A PRIOR TO COMMENCEMENT OF SUBPHASE 11B. ALL WORK IN SUBPHASES 11A AND 11B MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS.
3. THE CONTRACTOR WILL BE ALLOWED 82 CALENDAR DAYS TO COMPLETE PHASE 11.
4. CONSTRUCTION TASKS FOR SUBPHASE 11B ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.11.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 11.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NU TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NJ CENTERLINE. THESE LOW-PROFILE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 11A CONSTRUCTION OPERATIONS. REMOVE THESE BARRICADES UPON COMPLETION OF SUBPHASE 11A.
 - ii. ACROSS TAXIWAY NK, NORTH OF THE MODIFIED TAXIWAY NB ADD VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-8), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE. THESE LOW-PROFILE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 11A CONSTRUCTION OPERATIONS. REMOVE THESE BARRICADES UPON COMPLETION OF SUBPHASE 11A.
 - iii. ACROSS TAXIWAY NK, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE. THESE LOW-PROFILE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 11A CONSTRUCTION OPERATIONS. REMOVE THESE BARRICADES UPON COMPLETION OF SUBPHASE 11A.

- iv. ACROSS TAXIWAY NL, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE. THESE LOW-PROFILE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 11A CONSTRUCTION OPERATIONS. REMOVE THESE BARRICADES UPON COMPLETION OF SUBPHASE 11A.
 - v. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NN TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NN CENTERLINE. THESE LOW-PROFILE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 11A CONSTRUCTION OPERATIONS.
 - vi. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NL TOFA, APPROXIMATELY 179 FEET FROM THE TAXIWAY NL CENTERLINE. INSTALL THESE BARRICADES UPON COMPLETION OF SUBPHASE 11A AND RETURN TO SERVICE OF TAXIWAYS NK AND NL.
- MARKER POLE BARRICADES SHALL BE INSTALLED AT MAXIMUM INTERVALS OF 25 FEET AT THE FOLLOWING LOCATIONS:
 - i. IN THE TAXIWAY NA / TAXIWAY NB INFIELD, APPROXIMATELY 193 FEET FROM THE TAXIWAY NB CENTERLINE, BETWEEN TAXIWAYS NJ AND NK, BETWEEN TAXIWAYS NK AND NN, AND BETWEEN TAXIWAYS NN AND NP. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 7 CONSTRUCTION OPERATIONS.
 - ii. IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE, BETWEEN TAXIWAYS NH AND NK, BETWEEN TAXIWAYS NK AND NL, AND BETWEEN TAXIWAYS NL AND NN. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 11A CONSTRUCTION OPERATIONS.
 - iii. IN THE INFIELD NORTH OF TAXIWAY NA, OUTSIDE THE RSA, APPROXIMATELY 207 FEET FROM THE TAXIWAY NN CENTERLINE.
- C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 11.
- D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBTURED THROUGHOUT THE DURATION OF PHASE 11.
- E. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.11.4.
- F. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
- G. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
- H. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
- I. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
- J. REMOVE AND SALVAGE / DISPOSE OF EXISTING DRAINAGE COMPONENTS.
- K. DEWATER EXCAVATION AREAS, AS APPLICABLE.
- L. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
- M. INSTALL NEW DRAINAGE COMPONENTS.
- N. INSTALL NEW ELECTRICAL COMPONENTS.
- O. CONSTRUCT NEW PAVEMENT SECTION.
- P. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NJ AND TAXIWAY NK. REMOVE SECTION OF TEMPORARY HAUL ROAD BETWEEN TAXIWAY NK AND TAXIWAY NN NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 12 CONSTRUCTION OPERATIONS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11A CONSTRUCTION OPERATIONS.
- Q. PERFORM FINISH GRADING ACTIVITIES.
- R. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
- S. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED. THIS SHALL BE CONCURRENT WITH SUBPHASE 11A CONSTRUCTION OPERATIONS.
- T. INSTALL END OF PHASE PAVEMENT MARKINGS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11A CONSTRUCTION OPERATIONS. SEE SHEET G06.11.4.
- U. PERFORM A FINAL CLEANING OF THE WORK AREA. THIS SHALL BE CONCURRENT WITH SUBPHASE 11A CONSTRUCTION OPERATIONS.
- V. REMOVE UNLIT TAXIWAY CLOSURE MARKERS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11A CONSTRUCTION OPERATIONS.
- W. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11A CONSTRUCTION OPERATIONS.
- X. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBTURED GUIDANCE SIGNS. THIS SHALL BE CONCURRENT WITH SUBPHASE 11A CONSTRUCTION OPERATIONS.
- Y. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA. THIS SHALL BE CONCURRENT WITH SUBPHASE 11A CONSTRUCTION OPERATIONS.
- Z. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.



DEPARTMENT OF AVIATION
 APPROVED BY: DATE
 David Robert
 HOUSTON AIRPORT SYSTEM
 AUTHORIZED REPRESENTATIVE

PROJECT NO. **0807**
 C.L.P. NO. **A-000570**
 H.A.S. NO.
 SHEET NO.

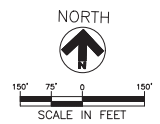


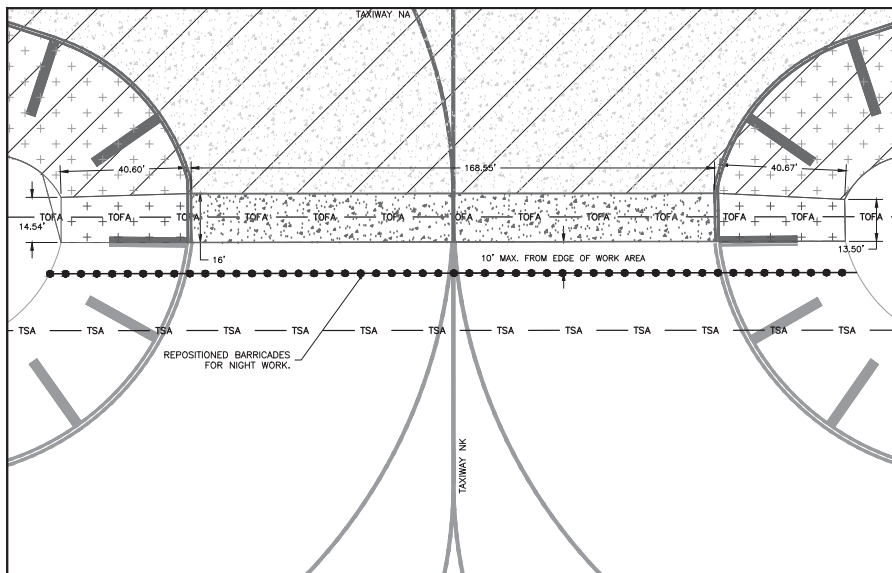
LEGEND

- # PHASE INDICATOR
- o MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- Haul ROUTE
- PHASE LIMITS
- RSA RUNWAY SAFETY AREA
- X X MARKING REMOVAL
- ⊗ MARKING REMOVAL, REPLACE WITH TEMPORARY ⊗ INSTALLED THIS PHASE
- ⊗ MARKING REMOVAL, REPLACE WITH PERMANENT ⊗ INSTALLED THIS PHASE
- P P PERMANENT ⊗ INSTALLED THIS PHASE
- T T TEMPORARY ⊗ INSTALLED THIS PHASE
- 12 SIGN ON FOUNDATION, SUBSCRIPT DENOTES SIGN NUMBER, REFER TO TEMPORARY SIGN SCHEDULE
- NA IND SIGN PANEL LEGEND, RE: SCHEDULE
- BLANK SIGN PANEL
- LOCATION PANEL (L-858L)
- DESTINATION PANEL (L-858Y)
- MANDATORY INSTRUCTION PANEL (L-858R)

PHASING PLAN MARKING NOTES

1. ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 00.34, REMOVAL OF MARKINGS.
2. ALL PERMANENT MARKINGS SHALL BE INSTALLED AT THE END OF EACH PHASE IN ACCORDANCE WITH THE PAVEMENT MARKINGS PLAN SHEETS (COB SERIES). THE PERMANENT MARKINGS SHOWN ON THIS SHEET ARE ONLY SHOWN AS A GENERAL GUIDANCE OF PERMANENT MARKING SEGMENTS TO BE INSTALLED IN THIS PHASE. THIS SHEET SHALL NOT BE USED TO INSTALL PERMANENT MARKINGS OTHER THAN AS A DESCRIPTOR OF PERMANENT MARKING SEGMENTS INSTALLED IN THIS PHASE.
 - A. ALL PAVEMENT MARKINGS SHOWN ON THE PHASING DRAWINGS ASSUME ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS, INCLUDING PAVEMENT CURING WAITING PERIODS, HAVE BEEN ACHIEVED. IF THE PROJECT SCHEDULE REQUIRES THE CONTRACTOR TO OPEN ANY CLOSED PAVEMENT(S) BEFORE PERMANENT MARKINGS CAN BE APPLIED, OR IF SO DIRECTED BY AIRPORT OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY MARKINGS AS NECESSARY IN ORDER TO OPEN CLOSED THE CLOSED PAVEMENT(S).
 - 3. TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA ITEM P-620, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 - 4. TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 - 5. TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED AS PERMANENT MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - 6. TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
 - 7. THE CONTRACTOR SHALL COMPLETELY OBLITERATE ALL MARKINGS DAMAGED BY THE CONTRACTOR DURING THIS PHASE AND NOT SCHEDULED FOR REMOVAL AND / OR REPLACEMENT DURING THIS PHASE. THESE MARKINGS SHALL BE REINSTALLED BY THE CONTRACTOR PRIOR TO PHASE COMPLETION. ANY MARKING THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 - 8. ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION, OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 - 9. SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.
3. AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
 - A. THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02, WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.





1
G06.11.5
SUBPHASE 11C - TAXIWAY NK
SCALE: 1" = 20'

LEGEND

- CONCRETE PAVEMENT COMPLETED CONCURRENTLY
- ASPHALT SHOULDER PAVEMENT COMPLETED CONCURRENTLY
- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- LOW PROFILE BARRICADE (EXACT POSITION)
- TAXIWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- EXISTING PAVEMENT MARKING
- PERMANENT MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (D1 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (D2 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.

| REVISIONS | | | |
|-----------|-------------|------|----|
| NO. | DESCRIPTION | DATE | BY |
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RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
PHASING PLAN - PHASE 11
TRANSITIONS AND TIE-INS

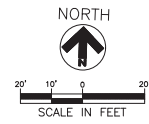
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| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=20' |
| DATE: | JULY 27, 2018 |

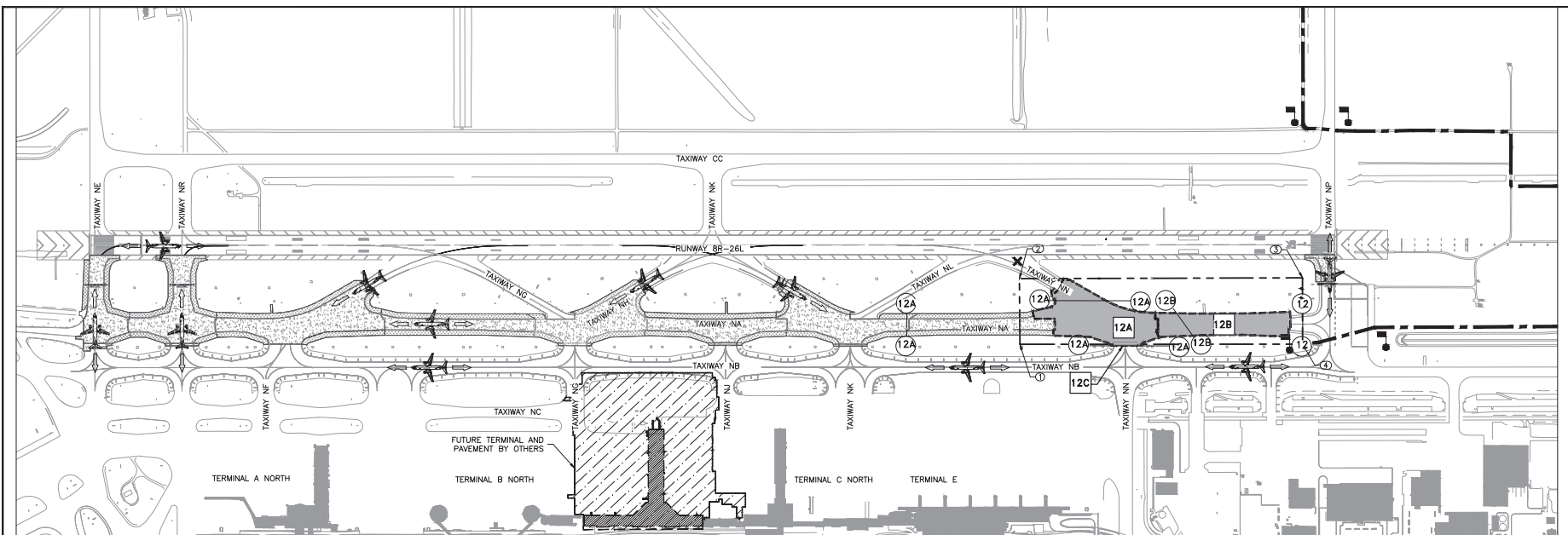


DEPARTMENT OF AVIATION
APPROVED BY: DATE:
James Robert
HOUSTON AIRPORT SYSTEMS
AUTHORIZED REPRESENTATIVE

PROJECT NO. 0807
C.I.P. NO. A-000570
H.A.S. NO.



SHEET NO. G06.11.5



PHASE 12 MOVEMENT NOTES

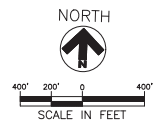
- SEE PLAN SHEETS G06.03.1 AND G06.03.3 - G06.03.7 FOR PROPOSED HAUL ROUTE.
- THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 12:
 - TAXIWAY NA WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE WEST SIDE OF TAXIWAY NN TO THE EAST SIDE OF TAXIWAY NP.
 - TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) FROM THE WEST SIDE OF TAXIWAY NN TO THE EAST SIDE OF TAXIWAY NP, EXCEPT WHEN SUBJECT TO MARKER POLE EVACUATION OPERATIONS AND DURING SUBPHASE 12C CONSTRUCTION OPERATIONS.
 - DURING SUBPHASE 12C CONSTRUCTION OPERATIONS (NIGHTTIME OPERATIONS ONLY), TAXIWAY NB WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE WEST SIDE OF TAXIWAY NN TO THE WEST SIDE OF TAXIWAY NP.
 - TAXIWAY NA WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE EAST SIDE OF TAXIWAY NL TO THE WEST SIDE OF TAXIWAY NP.
 - TAXIWAY NK WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO THE NORTH SIDE OF TAXIWAY NB.
 - TAXIWAY NL WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO TAXIWAY NA.
- THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSING WITH TAXIWAY NP, OR AS DIRECTED BY AIRPORT OPERATIONS, WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 12. PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
- THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF "MARKER POLE EVACUATION" OPERATIONS, FLAGMEN AND ALL OTHER CONTRACTOR PERSONNEL SHALL BE ON CONSTANT ALERT TO IDENTIFY ANY AIRCRAFT EXCEEDING THE OPERATIONAL CAPACITY OF THE MODIFIED ADG VI TOFA (I.E. AIRBUS A-380-800, ANTONOV AN 124, ANTONOV AN 225).
- REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ADVANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

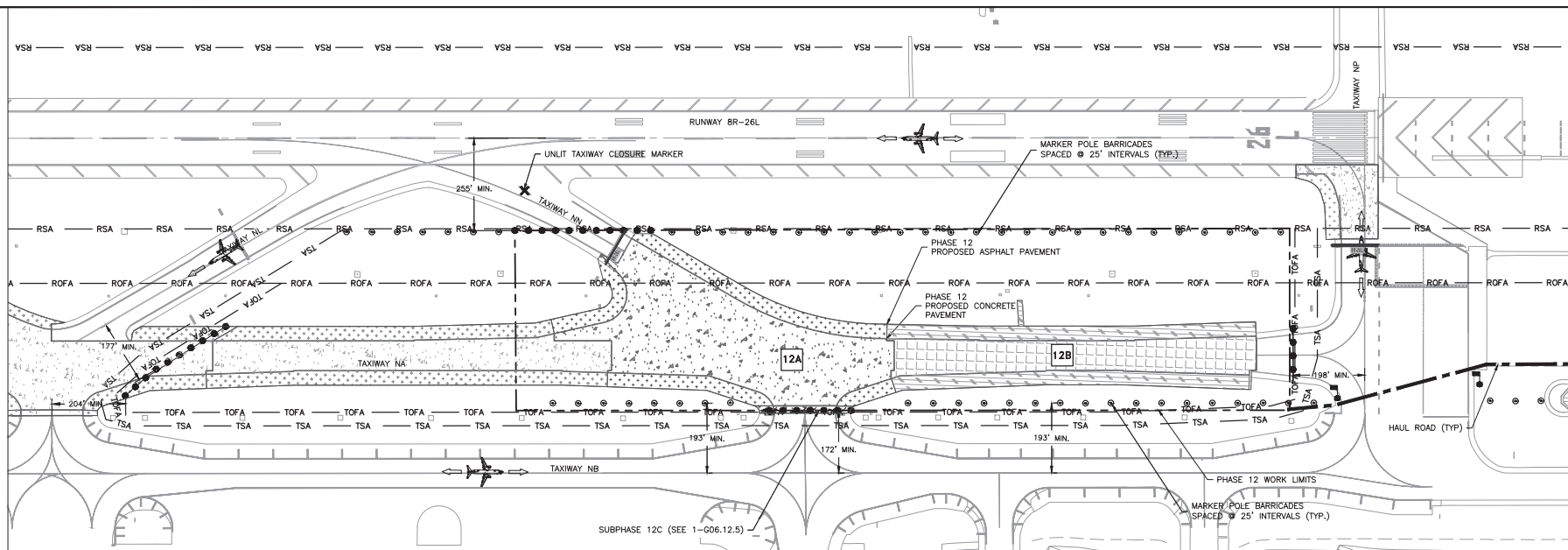
LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- TABLE LOCATION POINT
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- APPROXIMATE BARRICADE LOCATION (SEE NEXT SHEET FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS

| PHASE 12 WORK LIMITS | | |
|----------------------|-------------|------------|
| POINT # | NORTHING | EASTING |
| 1 | 13927281.12 | 3129445.08 |
| 2 | 13927777.05 | 3129425.54 |
| 3 | 13927850.72 | 3131562.48 |
| 4 | 13927349.63 | 3131578.59 |

| PHASE 12 | | | | | |
|-----------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| DURATION (DAYS) | WORK PERIOD | DAYTIME (0600 HOURS TO 2200 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | NIGHTTIME (2200 HOURS TO 0600 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
| 1 | SUBPHASE 12A - DAY AND NIGHT | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NN TO TAXIWAY NP. --- DURING SUBPHASE 12A AND 12B, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NN TO TAXIWAY NP. | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NN TO TAXIWAY NP. --- DURING SUBPHASE 12A AND 12B, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NN TO TAXIWAY NP. --- DURING SUBPHASE 12C, TAXIWAY NB RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NN TO TAXIWAY NP. --- TAXIWAY NA CLOSED TAXIWAY NL TO TAXIWAY NP. --- TAXIWAY NK CLOSED TO RUNWAY BR - 26L TO TAXIWAY NB. --- TAXIWAY NL CLOSED TO RUNWAY BR - 26L TO TAXIWAY NA. | --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NL. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 12A. --- ACROSS TAXIWAY NN, NORTH OF TAXIWAY NB. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 12A. --- ACROSS TAXIWAY NN, SOUTH OF THE RSA. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 12A. --- ACROSS TAXIWAY NA, WEST OF TAXIWAY NP. --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NL. | SUBPHASES 12A / 12B / 12C PHASE 14 |
| 2 | SUBPHASE 12B - DAY AND NIGHT | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NN TO TAXIWAY NP. --- DURING SUBPHASE 12A AND 12B, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NN TO TAXIWAY NP. | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NN TO TAXIWAY NP. --- DURING SUBPHASE 12A AND 12B, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NN TO TAXIWAY NP. --- DURING SUBPHASE 12C, TAXIWAY NB RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NN TO TAXIWAY NP. --- TAXIWAY NA CLOSED TAXIWAY NL TO TAXIWAY NP. --- TAXIWAY NK CLOSED TO RUNWAY BR - 26L TO TAXIWAY NB. --- TAXIWAY NL CLOSED TO RUNWAY BR - 26L TO TAXIWAY NA. | --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NL. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 12A. --- ACROSS TAXIWAY NN, NORTH OF TAXIWAY NB. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 12A. --- ACROSS TAXIWAY NN, SOUTH OF THE RSA. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 12A. --- ACROSS TAXIWAY NA, WEST OF TAXIWAY NP. --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NL. | SUBPHASES 12A / 12B / 12C PHASE 14 |
| 3 | SUBPHASE 12C - 23 CALENDAR DAYS | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NN TO TAXIWAY NP. --- DURING SUBPHASE 12A AND 12B, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NN TO TAXIWAY NP. | RESTRICTIONS --- TAXIWAY NA RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NN TO TAXIWAY NP. --- DURING SUBPHASE 12A AND 12B, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-8) TAXIWAY NN TO TAXIWAY NP. --- DURING SUBPHASE 12C, TAXIWAY NB RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) TAXIWAY NN TO TAXIWAY NP. --- TAXIWAY NA CLOSED TAXIWAY NL TO TAXIWAY NP. --- TAXIWAY NK CLOSED TO RUNWAY BR - 26L TO TAXIWAY NB. --- TAXIWAY NL CLOSED TO RUNWAY BR - 26L TO TAXIWAY NA. | --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NL. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 12A. --- ACROSS TAXIWAY NN, NORTH OF TAXIWAY NB. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 12A. --- ACROSS TAXIWAY NN, SOUTH OF THE RSA. THESE BARRICADES REMOVED UPON COMPLETION OF SUBPHASE 12A. --- ACROSS TAXIWAY NA, WEST OF TAXIWAY NP. --- ACROSS TAXIWAY NA, EAST OF TAXIWAY NL. | SUBPHASES 12A / 12B / 12C PHASE 14 |



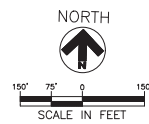


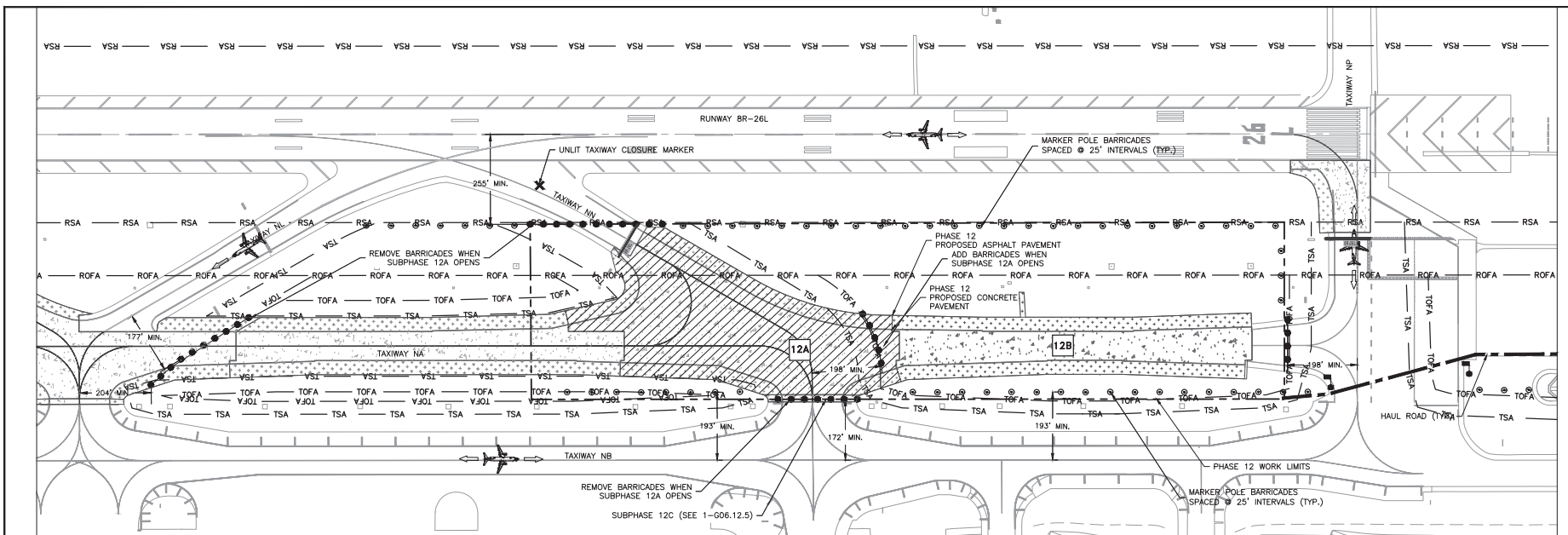
LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- PROPOSED CONCRETE PAVEMENT IN FOLLOWING SUBPHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT IN FOLLOWING SUBPHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- MARKER POLE BARRICADE (EXACT POSITION)
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- TSA PHASE 12 TAXIWAY SAFETY AREA
- TOFA PHASE 12 TAXIWAY OBJECT FREE AREA
- RSA RUNWAY SAFETY AREA
- ROFA RUNWAY OBJECT FREE AREA

PHASE 12 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES - SUBPHASE 12A

1. PHASE 12 MAY NOT COMMENCE UNTIL THE PHASE 11 WORK AREA IS OPENED TO ALL AIRCRAFT TRAFFIC.
2. THE INTENT OF DIVIDING SUBPHASES 12A AND 12B IS TO MINIMIZE THE OVERALL DURATION OF PHASE 12. THE CONTRACTOR SHALL FOCUS INTENTLY ON COMPLETING THE DEMOLITION WORK OF SUBPHASE 12A PRIOR TO COMMENCEMENT OF SUBPHASE 12B. ALL WORK IN SUBPHASES 12A AND 12B MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS.
3. SUBPHASE 12C SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 12A. HOWEVER, SUBPHASE 12C SHALL BE LIMITED TO NIGHTTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 23 CALENDAR DAYS TO COMPLETE SUBPHASE 12C.
4. THE CONTRACTOR WILL BE ALLOWED 81 CALENDAR DAYS TO COMPLETE PHASE 12.
5. CONSTRUCTION TASKS FOR SUBPHASE 12A ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.12.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 12.
 - i. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NL TOFA, APPROXIMATELY 177 FEET FROM THE TAXIWAY NL CENTERLINE.
 - ii. ACROSS TAXIWAY NN, NORTH OF THE MODIFIED TAXIWAY NB ADG VI TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-8), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - C. DURING SUBPHASE 12C, THESE BARRICADES WILL BE TEMPORARILY RELOCATED TO APPROXIMATELY 10 FEET SOUTH OF THE SUBPHASE 12C PAVING LIMITS.
 - iii. ACROSS TAXIWAY NN, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - iv. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NP TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NP CENTERLINE.
6. MARKER POLE BARRICADES SHALL BE INSTALLED AT MAXIMUM INTERVALS OF 25 FEET AT THE FOLLOWING LOCATIONS:
 - i. IN THE TAXIWAY NA / TAXIWAY NB INFIELD, APPROXIMATELY 193 FEET FROM THE TAXIWAY NB CENTERLINE - BETWEEN TAXIWAYS NN AND NN AND BETWEEN TAXIWAYS NN AND NP. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 7 CONSTRUCTION OPERATIONS.
 - ii. IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE, BETWEEN TAXIWAYS NL AND NN. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 11 CONSTRUCTION OPERATIONS.
 - iii. IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE, BETWEEN TAXIWAYS NN AND NP.
7. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 12.
8. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBLSCURED THROUGHOUT THE DURATION OF PHASE 12.
9. REMOVE UNLIT TAXIWAY CLOSURE MARKER AT THE ENTRANCE OF TAXIWAY NN FROM RUNWAY BR - 26L.
10. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.12.4.
11. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
12. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
13. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT, CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
14. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
15. REMOVE AND SALVAGE / DISPOSE OF EXISTING DRAINAGE COMPONENTS.
16. DEWATER EXCAVATION AREAS, AS APPLICABLE.
17. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
18. INSTALL NEW DRAINAGE COMPONENTS.
19. INSTALL NEW ELECTRICAL COMPONENTS.
20. CONSTRUCT NEW PAVEMENT SECTION.
21. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NK AND TAXIWAY NN. REMOVE SECTION OF TEMPORARY HAUL ROAD BETWEEN TAXIWAY NN AND TAXIWAY NP NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 13 CONSTRUCTION OPERATIONS. THIS SHALL BE CONCURRENT WITH SUBPHASE 12B CONSTRUCTION OPERATIONS.
22. PERFORM FINISH GRADING ACTIVITIES.
23. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
24. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED. THIS SHALL BE CONCURRENT WITH SUBPHASE 12B CONSTRUCTION OPERATIONS.
25. INSTALL END OF PHASE PAVEMENT MARKINGS. THIS SHALL BE CONCURRENT WITH SUBPHASE 12B CONSTRUCTION OPERATIONS. SEE SHEET G06.12.4.
26. PERFORM A FINAL CLEANING OF THE WORK AREA. THIS SHALL BE CONCURRENT WITH SUBPHASE 12B CONSTRUCTION OPERATIONS.
27. REMOVE UNLIT TAXIWAY CLOSURE MARKER. THIS SHALL BE CONCURRENT WITH SUBPHASE 12B CONSTRUCTION OPERATIONS.
28. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THIS SHALL BE CONCURRENT WITH SUBPHASE 12B CONSTRUCTION OPERATIONS.
29. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FOR OBLSCURED GUIDANCE SIGNS. THIS SHALL BE CONCURRENT WITH SUBPHASE 12B CONSTRUCTION OPERATIONS.
30. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA. THIS SHALL BE CONCURRENT WITH SUBPHASE 12B CONSTRUCTION OPERATIONS.
31. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.



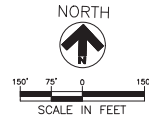


LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED CONCURRENTLY
- ASPHALT SHOULDER PAVEMENT COMPLETED CONCURRENTLY
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- PHASE 12 TAXIWAY SAFETY AREA
- TSA PHASE 12 TAXIWAY OBJECT FREE AREA
- RSA RUNWAY SAFETY AREA
- ROFA RUNWAY OBJECT FREE AREA

PHASE 12 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES - SUBPHASE 12B

1. PHASE 12 MAY NOT COMMENCE UNTIL THE PHASE 11 WORK AREA IS OPENED TO ALL AIRCRAFT TRAFFIC.
2. THE INTENT OF DIVIDING SUBPHASES 12A AND 12B IS TO MINIMIZE THE OVERALL DURATION OF PHASE 12. THE CONTRACTOR SHALL FOCUS INTENTLY ON COMPLETING THE DEMOLITION WORK OF SUBPHASE 12A PRIOR TO COMMENCEMENT OF SUBPHASE 12B. ALL WORK IN SUBPHASES 12A AND 12B MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS.
3. THE CONTRACTOR WILL BE ALLOWED 81 CALENDAR DAYS TO COMPLETE PHASE 12.
4. CONSTRUCTION TASKS FOR PHASE 12B ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.12.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 12.
 - LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NL TOFA, APPROXIMATELY 177 FEET FROM THE TAXIWAY NL CENTERLINE. THESE LOW-PROFILE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 12A CONSTRUCTION OPERATIONS. REMOVE THESE BARRICADES UPON COMPLETION OF SUBPHASE 12A.
 - ii. ACROSS TAXIWAY NN, NORTH OF THE MODIFIED TAXIWAY NB ADJ V1 TOFA (335 FEET, MAXIMUM AIRCRAFT - B-747-40), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE. THESE LOW-PROFILE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 12A CONSTRUCTION OPERATIONS. REMOVE THESE BARRICADES UPON COMPLETION OF SUBPHASE 12A.
 - iii. ACROSS TAXIWAY NN, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE. THESE LOW-PROFILE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 12A CONSTRUCTION OPERATIONS. REMOVE THESE BARRICADES UPON COMPLETION OF SUBPHASE 12A.
 - iv. ACROSS TAXIWAY NA, WEST OF THE TAXIWAY NP TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NP CENTERLINE. THESE LOW-PROFILE BARRICADES SHOULD ALREADY BE IN PLACE FROM SUBPHASE 12A CONSTRUCTION OPERATIONS.
 - v. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NN TOFA, APPROXIMATELY 198 FEET FROM THE TAXIWAY NN CENTERLINE. INSTALL THESE BARRICADES UPON COMPLETION OF SUBPHASE 12A AND RETURN TO SERVICE OF TAXIWAY NA.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 12.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.0.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBLSCURED THROUGHOUT THE DURATION OF PHASE 12.
 - E. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.12.4.
 - F. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - G. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
 - H. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
 - I. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
 - J. REMOVE AND SALVAGE / DISPOSE OF EXISTING DRAINAGE COMPONENTS.
 - K. Dewater EXCAVATION AREAS, AS APPLICABLE.
 - L. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
 - M. INSTALL NEW DRAINAGE COMPONENTS.
 - N. INSTALL NEW ELECTRICAL COMPONENTS.
 - O. CONSTRUCT NEW PAVEMENT SECTION.
 - P. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NN AND TAXIWAY NP. REMOVE SECTION OF TEMPORARY HAUL ROAD BETWEEN TAXIWAY NN AND TAXIWAY NP NOT REQUIRED FOR USE BY THE CONTRACTOR DURING PHASE 13 CONSTRUCTION OPERATIONS. THIS SHALL BE CONCURRENT WITH SUBPHASE 12A CONSTRUCTION OPERATIONS.
 - Q. PERFORM FINISH GRADING ACTIVITIES.
 - R. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
 - S. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED. THIS SHALL BE CONCURRENT WITH SUBPHASE 12A CONSTRUCTION OPERATIONS. SEE SHEET G06.12.4.
 - T. INSTALL END OF PHASE PAVEMENT MARKINGS. THIS SHALL BE CONCURRENT WITH SUBPHASE 12A CONSTRUCTION OPERATIONS.
 - U. PERFORM A FINAL CLEANING OF THE WORK AREA. THIS SHALL BE CONCURRENT WITH SUBPHASE 12A CONSTRUCTION OPERATIONS.
 - V. REMOVE UNLIT TAXIWAY CLOSURE MARKER. THIS SHALL BE CONCURRENT WITH SUBPHASE 12A CONSTRUCTION OPERATIONS.
 - W. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THIS SHALL BE CONCURRENT WITH SUBPHASE 12A CONSTRUCTION OPERATIONS.
 - X. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBLSCURED GUIDANCE SIGNS. THIS SHALL BE CONCURRENT WITH SUBPHASE 12A CONSTRUCTION OPERATIONS.
 - Y. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA. THIS SHALL BE CONCURRENT WITH SUBPHASE 12A CONSTRUCTION OPERATIONS.
 - Z. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.



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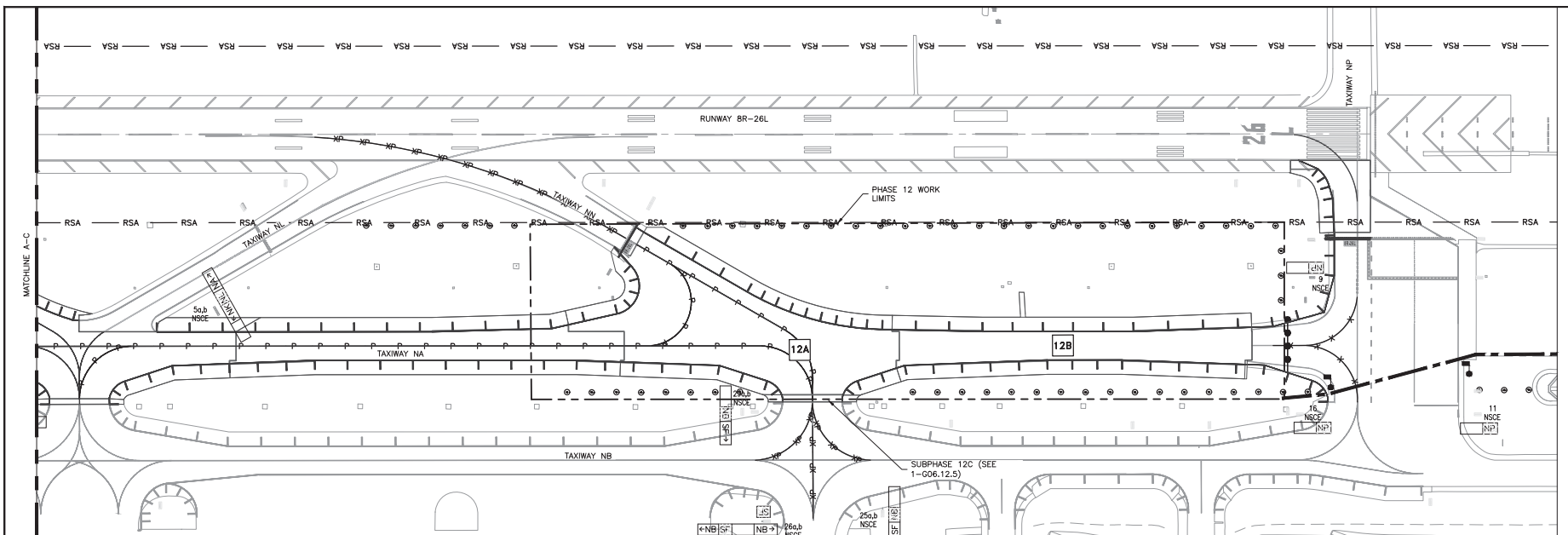
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 DATE: JULY 27, 2018



DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
 David J. Robert
 HOUSTON AIRPORT SYSTEM
 AUTHORIZED REPRESENTATIVE

PROJECT NO.:
0807
 C.I.P. NO.:
A-000570
 H.A.S. NO.:
 SHEET NO.

G06.12.4

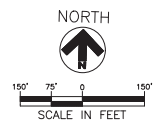
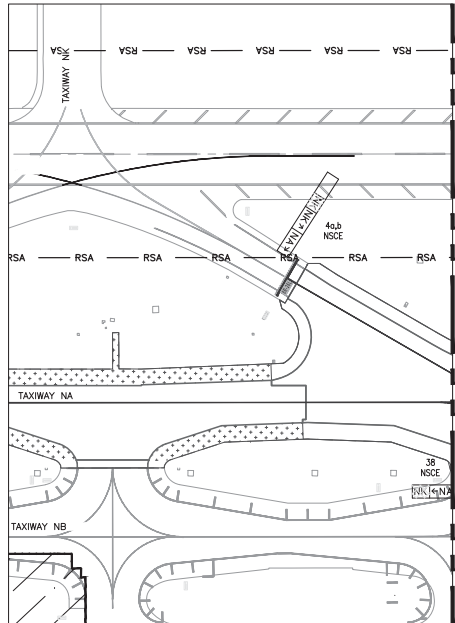


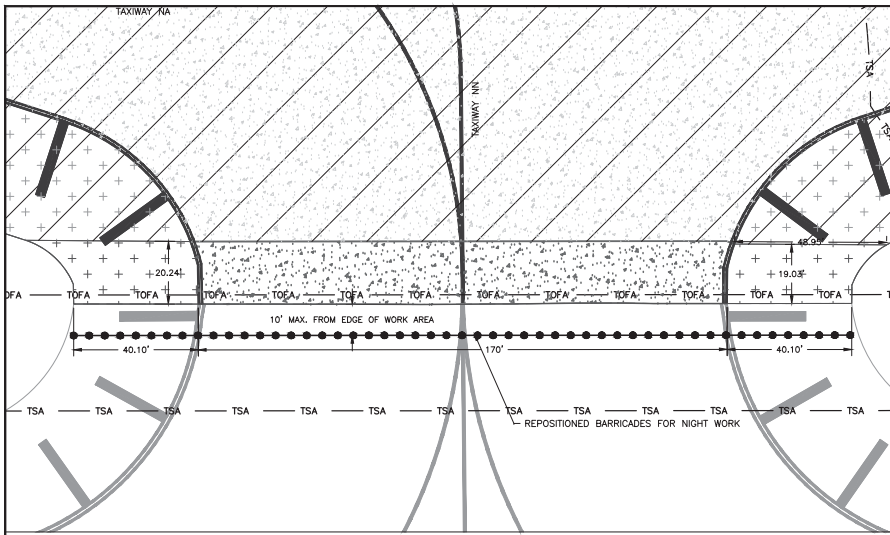
LEGEND

- # PHASE INDICATOR
- MARKER POLE BARRICADE
- FLAGMAN
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- RSA RUNWAY SAFETY AREA
- X-X MARKING REMOVAL
- XT-XT MARKING REMOVAL, REPLACE WITH TEMPORARY C INSTALLED THIS PHASE
- XP-XP MARKING REMOVAL, REPLACE WITH PERMANENT C INSTALLED THIS PHASE
- P-P PERMANENT C INSTALLED THIS PHASE
- T-T TEMPORARY C INSTALLED THIS PHASE
- 12 SIGN ON FOUNDATION, SUBSCRIPT DENOTES SIGN NUMBER. REFER TO TEMPORARY SIGN SCHEDULE
- NA NB SIGN PANEL LEGEND. RE: SCHEDULE
- BL-BL BLANK SIGN PANEL
- 81-26L LOCATION PANEL (L-858L)
- DESTINATION PANEL (L-858Y) MANDATORY INSTRUCTION PANEL (L-858B)

PHASING PLAN MARKING NOTES

1. ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 90.34, REMOVAL OF MARKINGS.
 2. ALL PERMANENT MARKINGS SHALL BE INSTALLED AT THE END OF EACH PHASE IN ACCORDANCE WITH THE PAVEMENT MARKINGS PLAN SHEETS (COB SERIES). THE PERMANENT MARKINGS SHOWN ON THIS SHEET ARE ONLY SHOWN AS A GENERAL GUIDANCE OF PERMANENT MARKING SEGMENTS TO BE INSTALLED IN THIS PHASE. THIS SHEET SHALL NOT BE USED TO INSTALL PERMANENT MARKINGS OTHER THAN AS A DESCRIPTOR OF PERMANENT MARKING SEGMENTS INSTALLED IN THIS PHASE.
 - A. ALL PAVEMENT MARKINGS SHOWN ON THE PHASING DRAWINGS ASSUME ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS, INCLUDING PAVEMENT CURING WAITING PERIODS, HAVE BEEN ACHIEVED. IF THE PROJECT SCHEDULE REQUIRES THE CONTRACTOR TO OPEN ANY CLOSED PAVEMENT(S) BEFORE PERMANENT MARKINGS CAN BE APPLIED, OR IF SO DIRECTED BY AIRPORT OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY MARKINGS AS NECESSARY IN ORDER TO OPEN CLOSED THE CLOSED PAVEMENT(S).
 - 3. TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA ITEM P-620, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 - 4. TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 - 5. TEMPORARY MARKINGS THROUGH TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE INSTALLED TO CONNECT ANY NEW MARKINGS AND REMAINING EXISTING MARKINGS IN ORDER TO PROVIDE A CONTINUOUS, NON-BROKEN MARKING AS THE PAVEMENT IS RETURNED TO SERVICE.
 - 6. TEMPORARY MARKINGS INSTALLED IN THIS PHASE WILL BE REMOVED IN A SUBSEQUENT PHASE AND PERMANENT MARKINGS WILL BE INSTALLED AT THAT TIME.
 - 7. THE CONTRACTOR SHALL COMPLETELY OBLITERATE ALL MARKINGS DAMAGED BY THE CONTRACTOR DURING THIS PHASE AND NOT SCHEDULED FOR REMOVAL AND / OR REPLACEMENT DURING THIS PHASE. THESE MARKINGS SHALL BE REINSTALLED BY THE CONTRACTOR PRIOR TO PHASE COMPLETION. ANY MARKING THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 - 8. ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION, OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 - 9. SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.
- AFTER ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
- THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04.02, WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURE(S) REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.





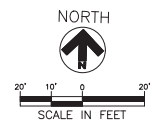
1
G06.12.5
SUBPHASE 12C - TAXIWAY NN
SCALE: 1" = 20'

LEGEND

- CONCRETE PAVEMENT COMPLETED CONCURRENTLY
- ASPHALT PAVEMENT COMPLETED CONCURRENTLY
- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- LOW PROFILE BARRICADE (EXACT POSITION)
- TAXIWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- EXISTING PAVEMENT MARKING
- PERMANENT MARKING INSTALLED THIS PHASE
- TEMPORARY MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (D1 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (D2 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.



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TSPC Registration No. F-3401

| REVISIONS | | | |
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| NO. | DESCRIPTION | DATE | BY |
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RECONSTRUCTION OF TAXIWAY NA
AT GEORGE BUSH INTERCONTINENTAL AIRPORT

**PHASING PLAN - PHASE 12
TRANSITIONS AND TIE-INS**

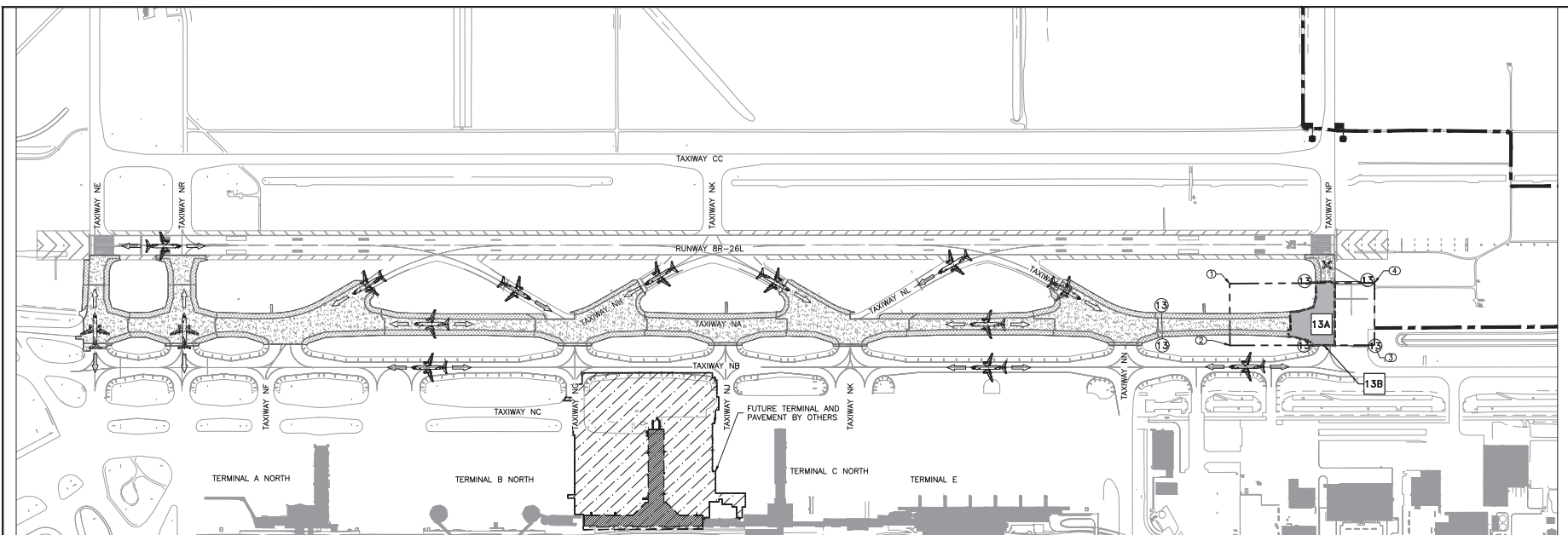
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| ISSUED FOR BID | |
| PROJECT MGR: | BMS |
| DESIGNER: | ARM |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=20' |
| DATE: | JULY 27, 2018 |



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| DEPARTMENT OF AVIATION | |
| APPROVED BY: | DATE: |
| <i>James Robert</i> | |
| HOUSTON AIRPORT SYSTEM AUTHORIZED REPRESENTATIVE | |

| | |
|-------------|----------|
| PROJECT NO. | 0807 |
| C.I.P. NO. | A-000570 |
| H.A.S. NO. | |
| SHEET NO. | |

G06.12.5



LEGEND

- PAVEMENT CONSTRUCTED THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- APPROXIMATE BARRICADE LOCATION (SEE NEXT SHEET FOR EXACT LOCATIONS)
- HAUL ROUTE
- PHASE LIMITS

PHASE 13 NOTES MOVEMENT NOTES

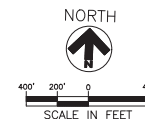
1. SEE PLAN SHEET G06.03.1 AND G06.03.3 - G06.03.7 FOR PROPOSED HAUL ROUTE.
2. THE FOLLOWING AIRFIELD AIRCRAFT TRAFFIC OPERATIONS WILL BE MODIFIED DURING PHASE 13:
 - A. TAXIWAY NB WILL BE RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-B) FROM THE EAST SIDE OF TAXIWAY NN TO THE EAST SIDE OF TAXIWAY NP, EXCEPT WHEN SUBJECT TO 'MARKER POLE EVALUATION' OPERATIONS AND DURING SUBPHASE 13B CONSTRUCTION OPERATIONS.
 - B. DURING SUBPHASE 13B CONSTRUCTION OPERATIONS (NIGHTTIME OPERATIONS ONLY), TAXIWAY NB WILL BE RESTRICTED TO ADG IV AIRCRAFT OPERATIONS (TOFA - 259 FEET, MAXIMUM AIRCRAFT - B-767-400ER) FROM THE EAST SIDE OF TAXIWAY NN TO THE EAST SIDE OF TAXIWAY NP.
 - C. TAXIWAY NA WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM THE EAST SIDE OF TAXIWAY NN TO THE EAST SIDE OF TAXIWAY NP.
 - D. TAXIWAY NP WILL BE CLOSED TO AIRCRAFT TRAFFIC FROM RUNWAY BR - 26L TO THE NORTH SIDE OF TAXIWAY NB.
3. THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSING WITH TAXIWAY NP, OR AS DIRECTED BY AIRPORT OPERATIONS, WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 13. PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED BY THE CONTRACTOR TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
4. THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF 'MARKER POLE EVALUATION' OPERATIONS. FLAGMEN AND ALL OTHER CONTRACTOR PERSONNEL SHALL BE ON CONSTANT ALERT TO IDENTIFY ANY AIRCRAFT EXCEEDING THE OPERATIONAL CAPACITY OF THE MODIFIED ADG VI TOFA (I.E. AIRBUS A-380-800, ANTONOV AN 124, ANTONOV AN 225).
5. REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL, INCLUDING COORDINATION AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G04-02 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

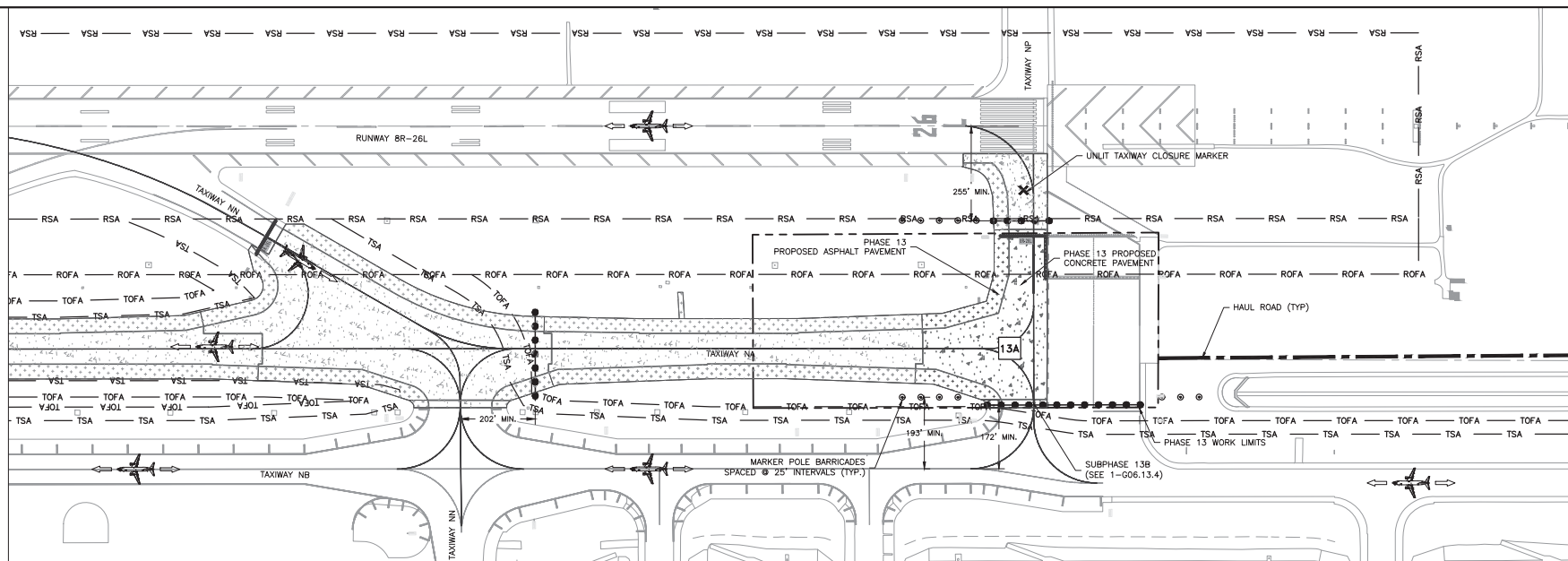
PHASE 13 WORK LIMITS

| POINT # | NORTHING | EASTING |
|---------|-------------|------------|
| 1 | 13927790.64 | 3131013.93 |
| 2 | 13927323.67 | 3131030.76 |
| 3 | 13927359.47 | 3132121.02 |
| 4 | 13927830.59 | 3132107.46 |

PHASE 13

| DURATION (DAYS) | WORK PERIOD | DAYTIME (0600 HOURS TO 2200 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | NIGHTTIME (2200 HOURS TO 0600 HOURS) PAVEMENT CLOSURES / RESTRICTIONS | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
|------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| SUBPHASE 13A - 51 CALENDAR DAYS | SUBPHASE 13A - DAY AND NIGHT | RESTRICTIONS -- DURING SUBPHASE 13A, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-B) TAXIWAY NN TO TAXIWAY NP. | RESTRICTIONS -- DURING SUBPHASE 13A, TAXIWAY NB RESTRICTED TO MODIFIED ADG VI AIRCRAFT OPERATIONS (TOFA - 335 FEET, MAXIMUM AIRCRAFT - B-747-B) TAXIWAY NN TO TAXIWAY NP. | -- ACROSS TAXIWAY NP AND THE RUN UP PAD, NORTH OF TAXIWAY NB. -- ACROSS TAXIWAY NP, SOUTH OF THE RSA. -- ACROSS TAXIWAY NA, EAST OF TAXIWAY NN. | SUBPHASES 13A / 13B, PHASE 14 |
| SUBPHASE 13B - 23 CALENDAR DAYS | SUBPHASE 13B - NIGHT ONLY | CLOSURES -- TAXIWAY NA CLOSED TAXIWAY NN TO TAXIWAY NP. -- TAXIWAY NP CLOSED RUNWAY BR - 26L TO TAXIWAY NB. | CLOSURES -- TAXIWAY NA CLOSED TAXIWAY NN TO TAXIWAY NP. -- TAXIWAY NP CLOSED RUNWAY BR - 26L TO TAXIWAY NB. | | |



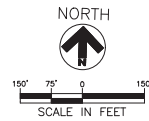


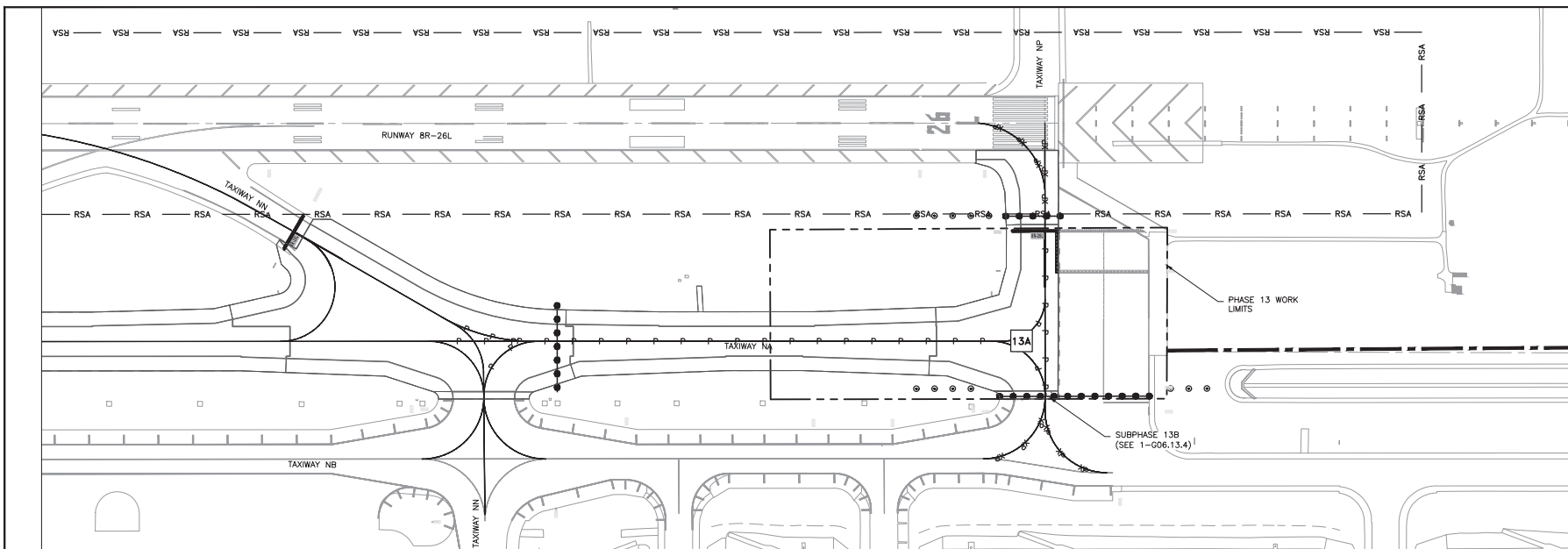
LEGEND

- PROPOSED CONCRETE PAVEMENT THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- CONCRETE PAVEMENT COMPLETED IN PREVIOUS PHASES
- ASPHALT SHOULDER PAVEMENT COMPLETED IN PREVIOUS PHASES
- AIRCRAFT TAXI ROUTE DURING PHASE
- FLAGMAN
- PHASE INDICATOR
- UNLIT TAXIWAY CLOSURE MARKER
- MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- PHASE LIMITS
- TSA — PHASE 13 TAXIWAY SAFETY AREA
- TOFA — PHASE 13 TAXIWAY OBJECT FREE AREA
- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA

PHASE 13 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

1. PHASE 13 MAY NOT COMMENCE UNTIL THE PHASE 12 WORK AREA IS OPENED TO ALL AIRCRAFT TRAFFIC.
2. ALL WORK IN SUBPHASE 13A MAY BE PERFORMED DURING DAYTIME AND NIGHTTIME CONSTRUCTION HOURS. THE CONTRACTOR WILL BE ALLOWED 51 CALENDAR DAYS TO COMPLETE SUBPHASE 13A.
3. SUBPHASE 13B SHALL BE COMPLETED CONCURRENTLY WITH SUBPHASE 13A, HOWEVER, SUBPHASE 13B SHALL BE LIMITED TO NIGHTTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 23 CALENDAR DAYS TO COMPLETE SUBPHASE 13B.
4. CONSTRUCTION TASKS FOR PHASE 13 ARE AS FOLLOWS:
 - A. WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED ON SHEET G06.13.1.
 - B. INSTALL BARRICADES AT THE LOCATIONS SHOWN. BARRICADES SHALL REMAIN THROUGHOUT THE DURATION OF PHASE 13.
 - i. LOW-PROFILE BARRICADES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - i. ACROSS TAXIWAY NP AND THE RUN UP PAD, NORTH OF THE MODIFIED TAXIWAY NB ADD VI TOFA (335 FEET, MAXIMUM AIRCRAFT - 8-747-R), APPROXIMATELY 172 FEET FROM THE TAXIWAY NB CENTERLINE.
 - DURING SUBPHASE 13B, THESE BARRICADES WILL BE TEMPORARILY RELOCATED TO APPROXIMATELY 10 FEET SOUTH OF THE SUBPHASE 13B PAVING LIMITS.
 - ii. ACROSS TAXIWAY NP, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE.
 - iii. ACROSS TAXIWAY NA, EAST OF THE TAXIWAY NN TOFA, APPROXIMATELY 202 FEET FROM THE TAXIWAY NN CENTERLINE.
 - MARKER POLE BARRICADES SHALL BE INSTALLED AT MAXIMUM INTERVALS OF 25 FEET AT THE FOLLOWING LOCATIONS:
 - i. IN THE TAXIWAY NA / TAXIWAY NB INFIELD, APPROXIMATELY 193 FEET FROM THE TAXIWAY NB CENTERLINE, BETWEEN TAXIWAYS NN AND NP. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 7 CONSTRUCTION OPERATIONS.
 - ii. IN THE INFIELD NORTH OF TAXIWAY NA, SOUTH OF THE RSA, APPROXIMATELY 255 FEET FROM THE RUNWAY BR - 26L CENTERLINE, BETWEEN TAXIWAYS NN AND NP. THESE MARKER POLE BARRICADES SHOULD ALREADY BE IN PLACE FROM PHASE 12 CONSTRUCTION OPERATIONS.
 - C. DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF PHASE 13.
 - D. DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH NIGHTTIME WORK PERIOD. PROVIDE TEMPORARY "BLANK" SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBSCURED THROUGHOUT THE DURATION OF PHASE 13.
 - E. INSTALL UNLIT TAXIWAY CLOSURE MARKER AT THE ENTRANCE OF TAXIWAY NP FROM RUNWAY BR - 26L.
 - F. REMOVE REQUIRED EXISTING PAVEMENT MARKINGS. SEE SHEET G06.13.3.
 - G. VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
 - H. INSTALL APPROPRIATE TEMPORARY EROSION CONTROL MEASURES.
 - I. SAWCUT, REMOVE, AND DISPOSE OF EXISTING PAVEMENT, INCLUDING TRANSITION PAVEMENTS CONSTRUCTED IN PHASE 8. CLEAN ADJACENT AREAS IMPACTED BY SAWCUTTING AND PAVEMENT REMOVAL OPERATIONS.
 - J. REMOVE AND SALVAGE / DISPOSE OF EXISTING ELECTRICAL COMPONENTS.
 - K. REMOVE AND SALVAGE / DISPOSE OF EXISTING DRAINAGE COMPONENTS.
 - L. DEWATER EXCAVATION AREAS, AS APPLICABLE.
 - M. PERFORM REQUIRED EARTHWORK AND GRADING OPERATIONS.
 - N. INSTALL NEW DRAINAGE COMPONENTS.
 - O. INSTALL NEW ELECTRICAL COMPONENTS.
 - P. CONSTRUCT NEW PAVEMENT SECTION.
 - Q. CONSTRUCT TEMPORARY PHASE TRANSITION PAVEMENT.
 - R. REMOVE REMAINDER OF HAUL ROAD BETWEEN TAXIWAY NN AND TAXIWAY NP.
 - S. PERFORM FINISH GRADING ACTIVITIES.
 - T. INSTALL THE APPROPRIATE VEGETATION IMMEDIATELY AFTER COMPLETION OF GRADING ACTIVITIES.
 - U. REMOVE CURING COMPOUND FOR PAVEMENT MARKING AREAS. CLEAN ADJACENT AREAS IMPACTED.
 - V. INSTALL END OF PHASE PAVEMENT MARKINGS. SEE SHEET G06.13.3.
 - W. PERFORM A FINAL CLEANING OF THE WORK AREA.
 - X. REMOVE UNLIT TAXIWAY CLOSURE MARKER.
 - Y. RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
 - Z. RE-ENERGIZE OR REMOVE "BLANK" SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
 - AA. REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
 - BB. WORK WITH AIRPORT OPERATIONS TO OPEN THE AIRFIELD PAVEMENTS MENTIONED ABOVE.



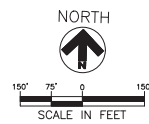


LEGEND

- # PHASE INDICATOR
- ⊙ MARKER POLE BARRICADE
- LOW PROFILE BARRICADE (EXACT POSITION)
- HAUL ROUTE
- - - PHASE LIMITS
- RSA — RUNWAY SAFETY AREA
- X X ⊕ MARKING REMOVAL
- KT KT ⊕ MARKING REMOVAL, REPLACE WITH TEMPORARY ⊕ INSTALLED THIS PHASE
- MP MP ⊕ MARKING REMOVAL, REPLACE WITH PERMANENT ⊕ INSTALLED THIS PHASE
- P P ⊕ PERMANENT ⊕ INSTALLED THIS PHASE
- T T ⊕ TEMPORARY ⊕ INSTALLED THIS PHASE
- 12 SIGN ON FOUNDATION. SUBSCRIPT DENOTES SIGN NUMBER. REFER TO TEMPORARY SIGN SCHEDULE
- NA ND SIGN PANEL LEGEND. RE: SCHEDULE
- BLANK SIGN PANEL
- BL-26R LOCATION PANEL (L-858L)
- DESTINATION MANDATORY INSTRUCTION PANEL (L-858Y) PANEL (L-858R)

PHASING PLAN MARKING NOTES

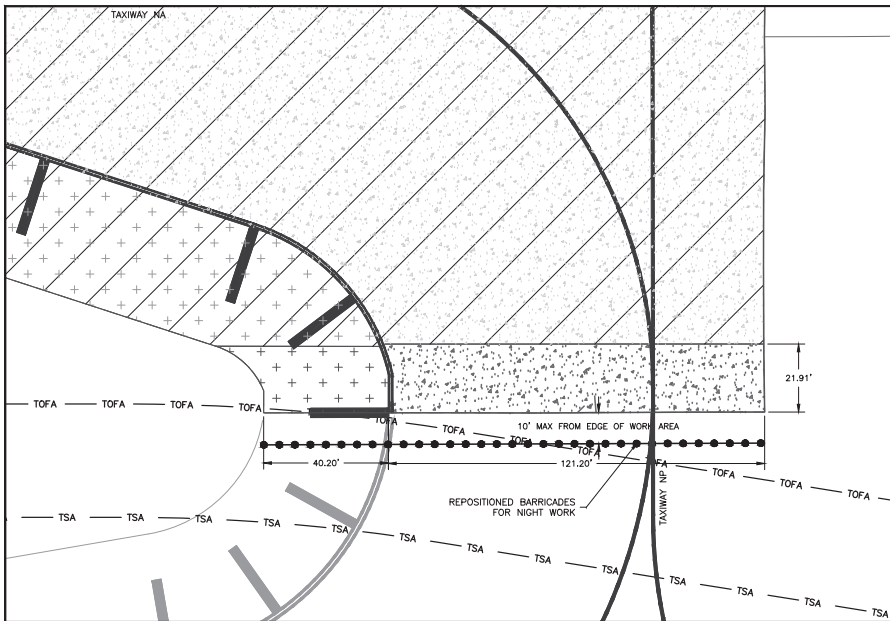
1. ALL PAVEMENT MARKING REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 32 01 90.34, REMOVAL OF MARKINGS.
 2. ALL PERMANENT MARKINGS SHALL BE INSTALLED AT THE END OF EACH PHASE IN ACCORDANCE WITH THE PAVEMENT MARKINGS PLAN SHEETS (C08 SERIES). THE PERMANENT MARKINGS SHOWN ON THIS SHEET ARE ONLY SHOWN AS A GENERAL GUIDANCE OF PERMANENT MARKING SEGMENTS TO BE INSTALLED IN THIS PHASE. THIS SHEET SHALL NOT BE USED TO INSTALL PERMANENT MARKINGS OTHER THAN AS A DESCRIPTOR OF PERMANENT MARKING SEGMENTS INSTALLED IN THIS PHASE.
 3. TEMPORARY MARKINGS SHOWN SHALL BE INSTALLED AT THE END OF EACH PHASE IN GENERAL CONFORMANCE WITH THE LOCATIONS, COLORS, AND DETAILS REQUIRED FOR PERMANENT MARKINGS. TEMPORARY MARKINGS SHALL BE INSTALLED USING THE PAINT TYPE(S), APPLICATION RATE(S), AND REQUIRED MEDIA SPECIFIED IN FAA ITEM P-620, RUNWAY AND TAXIWAY MARKING, FOR TEMPORARY MARKINGS.
 4. TAXIWAY CENTERLINE MARKINGS AND MARKINGS WITHIN ANY TEMPORARY TRANSITION PAVEMENT AREAS SHALL BE THE ONLY TYPES OF MARKINGS INSTALLED AS TEMPORARY MARKINGS, UNLESS ADDITIONAL TEMPORARY MARKINGS ARE REQUIRED PER NOTE 2.A. ALL OTHER MARKINGS SHALL BE INSTALLED AS PERMANENT MARKINGS WITHIN THE PHASE THAT THE PAVEMENT ON WHICH THEY ARE INSTALLED IS CONSTRUCTED.
 5. ANY MARKING (TEMPORARY OR PERMANENT) THAT IS NOT INSTALLED CORRECTLY WITH RESPECT TO LOCATION, DIMENSIONS, COLOR, MEDIA APPLICATION, OR ALIGNMENT SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 6. SEE PLAN SHEET 006.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS.
- A. ALL PAVEMENT MARKINGS SHOWN ON THE PHASING DRAWINGS ASSUME ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS, INCLUDING PAVEMENT CURING WAITING PERIODS, HAVE BEEN ACHIEVED. IF THE PROJECT SCHEDULE REQUIRES THE CONTRACTOR TO OPEN ANY CLOSED PAVEMENT(S) BEFORE PERMANENT MARKINGS CAN BE APPLIED, OR IF SO DIRECTED BY AIRPORT OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY MARKINGS AS NECESSARY IN ORDER TO OPEN CLOSED THE CLOSED PAVEMENT(S).
- BEFORE ALL NECESSARY PERMANENT MARKING APPLICATION CONDITIONS HAVE BEEN MET, THE CONTRACTOR SHALL RETURN TO THE APPROPRIATE PAVEMENT(S), REMOVE ALL TEMPORARY MARKINGS, AND REMARK WITH PERMANENT MARKINGS. THIS WORK WILL BE CONSIDERED CONCLUSIVE WORK OUTSIDE THE IDENTIFIED PHASE LIMITS AND SHALL BE COMPLETED DURING NIGHTTIME CONSTRUCTION HOURS.
- THE CONTRACTOR SHALL COORDINATE ACCESS TO AND TEMPORARY CLOSURES OF THE APPROPRIATE PAVEMENT(S) WITH AIRPORT OPERATIONS IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET 004.02, WHICH MAY REQUIRE AN AIRPORT OPERATIONS ESCORT. ALL COSTS ASSOCIATED WITH PAVEMENT CLOSURES REQUIRED FOR THIS WORK, INCLUDING LABOR, EQUIPMENT, MATERIALS, TEMPORARY BARRICADES, TEMPORARY LIGHTING, AND OTHER INCIDENTALS REQUIRED BY AIRPORT OPERATIONS SHALL BE SUBSIDIARY TO THE SECTION 01 59 01, TEMPORARY CONSTRUCTION ITEMS.



DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
David Robert
 HOUSTON AIRPORT SYSTEM
 AUTHORIZED REPRESENTATIVE

PROJECT NO. **0807**
 C.I.P. NO. **A-000570**
 H.A.S. NO.
 SHEET NO.

G06.13.3



1
G06.13.4

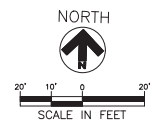
SUBPHASE 13B - TAXIWAY NP
SCALE: 1" = 20'

LEGEND

- CONCRETE PAVEMENT COMPLETED CONCURRENTLY
- ASPHALT PAVEMENT COMPLETED CONCURRENTLY
- PROPOSED CONCRETE PAVEMENT COMPLETED THIS PHASE
- PROPOSED ASPHALT SHOULDER PAVEMENT THIS PHASE
- LOW PROFILE BARRICADE (EXACT POSITION)
- TAXIWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- EXISTING PAVEMENT MARKING
- PERMANENT MARKING INSTALLED THIS PHASE

NOTES

1. REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN SHEETS (C01 SERIES) AND PROPOSED GEOMETRY PLAN SHEETS (C02 SERIES) FOR PAVEMENT REMOVAL AND CONSTRUCTION LIMITS.



| REVISIONS | | | |
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RECONSTRUCTION OF TAXIWAY NA
AT GEORGE BUSH INTERCONTINENTAL AIRPORT

**PHASING PLAN - PHASE 13
TRANSITIONS AND TIE-INS**

ISSUED FOR BID

| | |
|--------------|---------------|
| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | 1"=20' |
| DATE: | JULY 27, 2018 |



DEPARTMENT OF AVIATION
APPROVED BY: DATE:
James Robert
HOUSTON AIRPORT SYSTEMS
AUTHORIZED REPRESENTATIVE

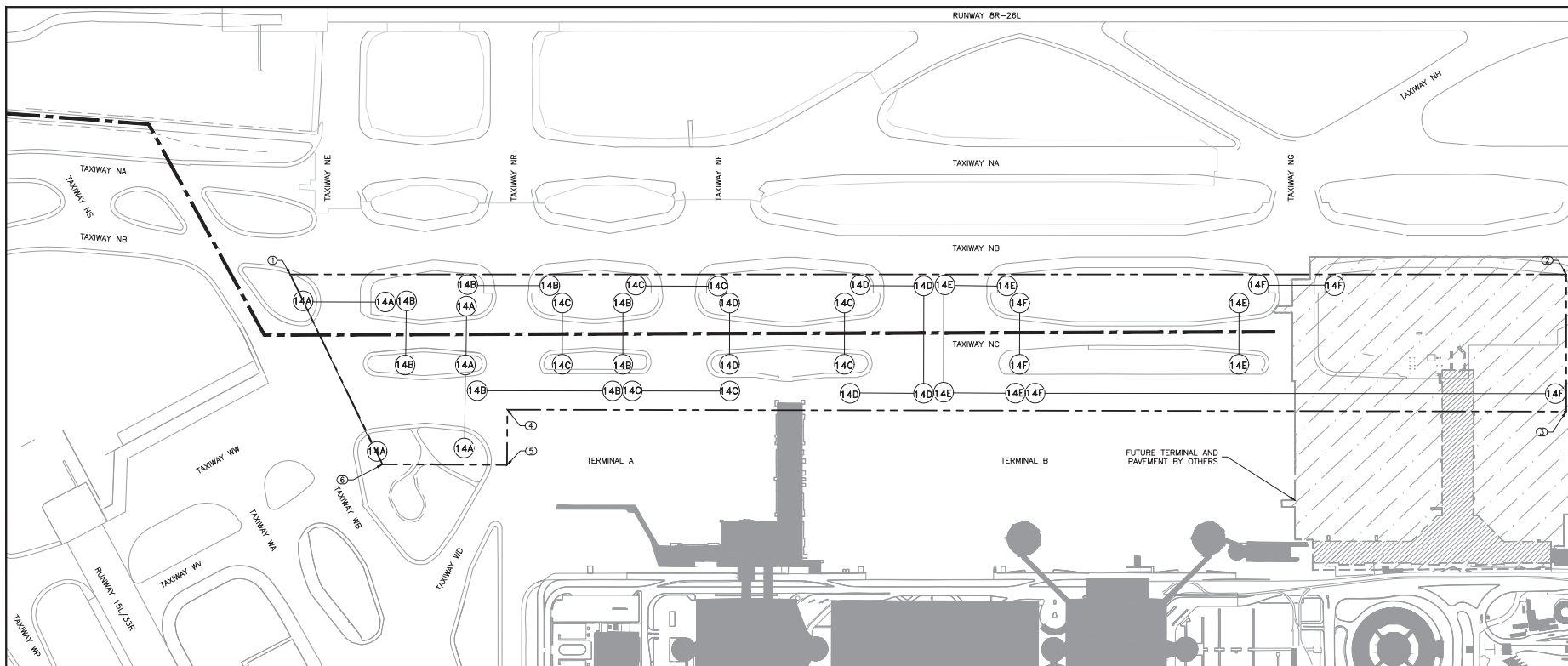
PROJECT NO.
0807

C.I.P. NO.
A-000570

H.A.S. NO.

SHEET NO.

G06.13.4



PHASE 14 MOVEMENT NOTES

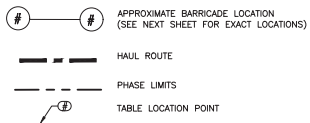
- SEE PLAN SHEET G06.03.1 FOR PROPOSED HAUL ROUTE.
- PHASE 14 WILL BE SUBJECT TO 'IN THE BOX' OPERATIONS. THE CONTRACTOR SHALL INSTALL LOW-PROFILE BARRICADES ALONG THE TOFA OF EACH ADJACENT PAVEMENT TO SET THE BOUNDARY, OR 'BOX', OF EACH WORK AREA. THE CONTRACTOR SHALL CONTAIN ALL WORK TO AREAS OUTSIDE ACTIVE TOFAS.
- DURING PHASE 14, IT IS INTENDED THAT TAXIWAY CLOSURES ARE MINIMIZED AS MUCH AS POSSIBLE. ONLY ONE TAXIWAY CONNECTING THE NORTH RAMP TO TAXIWAY NB (TAXIWAYS NE, NR, NF, ND, AND NG) MAY BE CLOSED AT ANY GIVEN TIME. THE CONTRACTOR SHALL NOTE THAT ONLY ONE OF THE DUAL ACCESS LANES FROM THE NORTH RAMP TO TAXIWAY NB ALONG TAXIWAY ND MAY BE CLOSED AT ANY GIVEN TIME. AS SUCH, THE WORK AREAS OF PHASE 14 HAVE BEEN SUBDIVIDED AS FOLLOWS:
 - SUBPHASE 14A - TAXIWAY NE AND ADJACENT PORTIONS OF TAXIWAY NC AND THE NORTH RAMP.
 - SUBPHASE 14B - TAXIWAY NR AND ADJACENT PORTIONS OF TAXIWAY NC AND THE NORTH RAMP.
 - SUBPHASE 14C - TAXIWAY NF AND ADJACENT PORTIONS OF TAXIWAY NC AND THE NORTH RAMP.
 - SUBPHASE 14D - TAXIWAY ND (WEST) AND ADJACENT PORTIONS OF TAXIWAY NC AND THE NORTH RAMP.
 - SUBPHASE 14E - TAXIWAY ND (EAST) AND ADJACENT PORTIONS OF TAXIWAY NC AND THE NORTH RAMP.
 - SUBPHASE 14F - TAXIWAY NG AND ADJACENT PORTIONS OF TAXIWAY NC AND THE NORTH RAMP.

- THE CONTRACTOR SHALL INSTALL BARRICADES FOR ONLY ONE SUBPHASE AT A TIME AND SHALL NOT INSTALL BARRICADES FOR A SUBPHASE EXCEPT IMMEDIATELY PRIOR TO PERFORMING THE REQUIRED WORK OF THAT SUBPHASE.
- THE CONTRACTOR SHALL PROVIDE TWO (2) DESIGNATED FLAGMEN ALONG THE HAUL ROUTE, AT EACH SIDE OF CROSSINGS WITH ALL ACTIVE TAXIWAYS, UNLESS ESCORTED BY AIRPORT OPERATIONS. WHENEVER CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN PHASE 14, PLACEMENTS OF FLAGMEN SHALL BE SUBMITTED TO AIRPORT OPERATIONS FOR REVIEW AND APPROVAL.
- REQUIRED WORK ITEMS OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS (TYPICALLY PREPARATORY, COMPLEMENTARY, OR CONCLUSIVE IN NATURE WITH RESPECT TO THE WORK SPECIFIED WITHIN THE PRIMARY PHASE LIMITS) SHOULD BE PERFORMED IN A MANNER SO AS TO MINIMIZE THE NUMBER, FREQUENCY, AND DURATION OF ADDITIONAL PAVEMENT CLOSURES. THE CONTRACTOR IS EXPECTED TO WORK IN A MANNER TO HELP MEET THIS INTENDED GOAL. IN ADDITION, THE CONTRACTOR IS EXPECTED TO COORDINATE AND ORGANIZATION OF CONTRACTOR AND SUBCONTRACTOR WORK FORCES. ADDITIONAL PAVEMENT CLOSURES FOR ALL NECESSARY RELATED WORK OUTSIDE OF THE IDENTIFIED PHASE LIMITS / BARRICADED AREAS SHALL BE COORDINATED IN ACCORDANCE WITH THE AIRPORT SAFETY REQUIREMENTS PROVIDED ON SHEET G06.00.3 AND MAY REQUIRE AN AIRPORT OPERATIONS ESCORT.

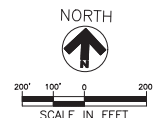
PHASE 14 CONSTRUCTION SEQUENCING AND OPERATIONS NOTES

- PHASE 14 MAY HAVE A FLEXIBLE START DATE, TO BE COMPLETED CONCURRENTLY WITH PHASES 12 OR 13 (WITH APPROVAL BY AIRPORT OPERATIONS), OR AT AN ALTERNATE TIME TO BE COORDINATED WITH AIRPORT OPERATIONS. PHASE 14 MAY NOT OCCUR WHEN ANY PORTION OF EITHER TAXIWAY NA OR TAXIWAY NB WEST OF TAXIWAY NJ IS CLOSED, UNLESS OTHERWISE APPROVED BY AIRPORT OPERATIONS.
- ALL WORK IN PHASE 14 SHALL BE LIMITED TO DAYTIME CONSTRUCTION HOURS ONLY. THE CONTRACTOR WILL BE ALLOWED 12 CALENDAR DAYS TO COMPLETE PHASE 14.
- CONSTRUCTION TASKS FOR PHASE 14 ARE AS FOLLOWS:
 - WORK WITH AIRPORT OPERATIONS TO MODIFY THE AIRFIELD PAVEMENTS AS NOTED IN THE PHASE 14 MOVEMENT NOTES, THIS SHEET.
 - INSTALL LOW-PROFILE BARRICADES AS NOTED IN THE TABLE, ON SHEET G06.14.2.
 - DE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS. THE LIGHTS SHALL REMAIN OFF THROUGHOUT THE DURATION OF THE APPROPRIATE SUBPHASE OF PHASE 14.
 - DE-ENERGIZE APPROPRIATE GUIDANCE SIGNS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS AT THE BEGINNING OF EACH WORK PERIOD. PROVIDE TEMPORARY 'BLANK' SIGN PANELS FOR ANY DIRECTIONAL SIGNAGE LEADING TO CLOSED PAVEMENT AREAS IF THE SIGN HAS ADDITIONAL DIRECTIONAL INFORMATION THAT MUST REMAIN (SEE PLAN SHEET G06.00.3 FOR TEMPORARY GUIDANCE SIGN SCHEDULE REQUIREMENTS). THE SIGNS SHALL REMAIN DISABLED OR OBSCURED THROUGHOUT THE DURATION OF THE APPROPRIATE SUBPHASE OF PHASE 14.
- VERIFY LOCATION(S) OF UTILITIES WITHIN THE WORK AREA.
- PERFORM REQUIRED ELECTRICAL IMPROVEMENTS.
- PERFORM A FINAL CLEANING OF THE WORK AREA.
- RE-ENERGIZE TAXIWAY EDGE AND CENTERLINE LIGHTS WITHIN OR LEADING TO CLOSED PAVEMENT AREAS.
- RE-ENERGIZE OR REMOVE 'BLANK' SIGN PANELS FROM OBSCURED GUIDANCE SIGNS.
- REMOVE ALL BARRICADES, EQUIPMENT, MATERIALS, AND PERSONNEL FROM THE WORK AREA.
- WORK WITH AIRPORT OPERATIONS TO OPEN ANY CLOSED AIRFIELD PAVEMENTS.

LEGEND



| PHASE 14 WORK LIMITS | | |
|----------------------|-------------|------------|
| POINT # | NORTHING | EASTING |
| 1 | 13926772.71 | 3122291.81 |
| 2 | 13926925.61 | 3127118.11 |
| 3 | 13926406.56 | 3127134.55 |
| 4 | 13926286.73 | 3123129.40 |
| 5 | 13926077.79 | 3123134.70 |
| 6 | 13926065.08 | 3122663.62 |





| REVISIONS | | | |
|-----------|-------------|------|----|
| NO. | DESCRIPTION | DATE | BY |
| | | | |
| | | | |

| PHASE 14 | | | | | |
|------------------|-------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| DURATION (DAYS) | WORK PERIOD | SUBPHASE | PAVEMENT CLOSURES/RESTRICTIONS | BARRICADE LOCATIONS | ALLOWED CONCURRENT WORK |
| 12 CALENDAR DAYS | DAY ONLY | SUBPHASE 14 | RESTRICTIONS -- N/A CLOSURES -- TAXIWAY NE CLOSED TAXIWAY NB TO TAXIWAY WB. -- TAXIWAY NC CLOSED TAXIWAY NE TO TAXIWAY WB. -- TAXIWAY WW CLOSED TAXIWAY NE TO TAXIWAY WB. | -- ACROSS TAXIWAY NE, 198' SOUTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAYS NC AND WW, 198' EAST OF TAXIWAY WB CENTERLINE. -- ACROSS TAXIWAY NC, 198' WEST OF TAXIWAY NR CENTERLINE. -- ACROSS TAXIWAY WW, 198' WEST OF TAXIWAY NR CENTERLINE. | TO BE DETERMINED |
| | | SUBPHASE 14B | RESTRICTIONS -- TAXIWAY WW RESTRICTED TO ADG III AIRCRAFT OPERATIONS (TOFA - 186 FEET, MAXIMUM AIRCRAFT - B-737-900ER) BETWEEN TAXIWAY NE AND TAXIWAY NR. -- TWO NORTH AIRCRAFT PARKING SPOTS ON NORTH RAMP BETWEEN TAXIWAY NR AND TAXIWAY NF RESTRICTED TO TUG-IN OPERATIONS. CLOSURES -- TAXIWAY NR CLOSED TAXIWAY NB TO NORTH RAMP. -- TAXIWAY NC CLOSED TAXIWAY NE TO TAXIWAY NF. | -- ACROSS TAXIWAY NR, 198' SOUTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NC, 198' WEST OF TAXIWAY NF CENTERLINE. -- ACROSS TAXIWAY NC, 198' EAST OF TAXIWAY NE CENTERLINE. -- ACROSS NORTH EDGE OF NORTH RAMP, AT CONCRETE / ASPHALT SHOULDER DEMARCATION, FROM 198' WEST OF TAXIWAY NR CENTERLINE TO 198' WEST OF TAXIWAY NF CENTERLINE. -- ACROSS TAXIWAY NR, IN LINE WITH NORTH EDGE OF NORTH RAMP. | |
| | | SUBPHASE 14C | RESTRICTIONS -- TERMINAL A NORTHWEST GATE RESTRICTED TO TUG-IN OPERATIONS ONLY. -- TERMINAL A NORTHEAST GATE RESTRICTED TO TUG-IN OPERATIONS ONLY. CLOSURES -- TAXIWAY NF CLOSED TAXIWAY NB TO NORTH RAMP. -- TAXIWAY NC CLOSED TAXIWAY NR TO TAXIWAY ND (WEST). | -- ACROSS TAXIWAY NF, 198' SOUTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NC, 198' WEST OF TAXIWAY ND (WEST) CENTERLINE. -- ACROSS TAXIWAY NC, 198' EAST OF TAXIWAY NR CENTERLINE. -- ACROSS NORTH EDGE OF NORTH RAMP, AT CONCRETE / ASPHALT SHOULDER DEMARCATION, FROM 198' WEST OF TAXIWAY NF CENTERLINE TO 198' WEST OF TAXIWAY ND (WEST) CENTERLINE. -- ACROSS TAXIWAY NF, IN LINE WITH NORTH EDGE OF NORTH RAMP. | |
| | | SUBPHASE 14D | RESTRICTIONS -- TERMINAL A NORTHEAST GATE RESTRICTED TO TUG-IN OPERATIONS ONLY. CLOSURES -- TAXIWAY ND (WEST) CLOSED TAXIWAY NB TO NORTH RAMP. -- TAXIWAY NC CLOSED TAXIWAY NF TO TAXIWAY ND (EAST). | -- ACROSS TAXIWAY ND (WEST), 198' SOUTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NC, 198' WEST OF TAXIWAY ND (EAST) CENTERLINE. -- ACROSS TAXIWAY NC, 198' EAST OF TAXIWAY NF CENTERLINE. -- ACROSS TAXIWAY ND (WEST), IN LINE WITH NORTH EDGE OF NORTH RAMP, AT CONCRETE / ASPHALT SHOULDER DEMARCATION, FROM 198' WEST OF TAXIWAY ND (WEST) CENTERLINE TO 198' WEST OF TAXIWAY ND (EAST) CENTERLINE. | |
| | | SUBPHASE 14E | RESTRICTIONS -- NORTH RAMP NORTH CENTERLINE RESTRICTED TO ADG III AIRCRAFT OPERATIONS (TOFA - 186 FEET, MAXIMUM AIRCRAFT - B-737-900ER) BETWEEN TAXIWAY ND (WEST) AND TAXIWAY NC. CLOSURES -- TAXIWAY ND (EAST) CLOSED TAXIWAY NB TO NORTH RAMP. -- TAXIWAY NC CLOSED TAXIWAY ND (WEST) TO TAXIWAY NG. | -- ACROSS TAXIWAY ND (EAST), 198' SOUTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NC, 198' WEST OF TAXIWAY NG CENTERLINE. -- ACROSS TAXIWAY NC, 198' EAST OF TAXIWAY ND (WEST) CENTERLINE. -- ACROSS TAXIWAY ND (EAST), IN LINE WITH NORTH EDGE OF NORTH RAMP, AT CONCRETE / ASPHALT SHOULDER DEMARCATION, FROM 198' EAST OF TAXIWAY ND (WEST) CENTERLINE TO 198' EAST OF TAXIWAY ND (EAST) CENTERLINE. | |
| | | SUBPHASE 14F | RESTRICTIONS -- NORTH RAMP NORTH CENTERLINE RESTRICTED TO ADG III AIRCRAFT OPERATIONS (TOFA - 186 FEET, MAXIMUM AIRCRAFT - B-737-900ER) BETWEEN TAXIWAY ND (EAST) AND TAXIWAY NC. CLOSURES -- TAXIWAY NG CLOSED TAXIWAY NB TO NORTH RAMP. -- TAXIWAY NC CLOSED TAXIWAY ND (EAST) TO TAXIWAY NG. | -- ACROSS TAXIWAY NG, 198' SOUTH OF TAXIWAY NB CENTERLINE. -- ACROSS TAXIWAY NC, 198' EAST OF TAXIWAY ND (EAST) CENTERLINE. -- ACROSS NORTH EDGE OF NORTH RAMP, AT CONCRETE / ASPHALT SHOULDER DEMARCATION, FROM 198' EAST OF TAXIWAY ND (EAST) CENTERLINE TO 425' EAST OF TAXIWAY ND CENTERLINE. -- ACROSS TAXIWAY NG, IN LINE WITH NORTH EDGE OF NORTH RAMP. | |

RECONSTRUCTION OF TAXIWAY NA
 AT GEORGE BUSH INTERCONTINENTAL AIRPORT
PHASING PLAN - PHASE 14
 (2 OF 2)

ISSUED FOR BID

| | |
|--------------|---------------|
| PROJECT MGR: | BMS |
| DESIGNER: | EBN |
| DRAWN BY: | MRW |
| CHECKED BY: | SMC |
| SCALE: | N.T.S. |
| DATE: | JULY 27, 2018 |



DEPARTMENT OF AVIATION
 APPROVED BY: DATE:
David Robert
 HOUSTON AIRPORT SYSTEM
 AUTHORIZED REPRESENTATIVE

PROJECT NO.
0807
 C.I.P. NO.
A-000570
 H.A.S. NO.
 SHEET NO.

G06.14.2



GEOTECHNICAL INVESTIGATION
HOUSTON AIRPORT SYSTEM
GEORGE BUSH INTERCONTINENTAL AIRPORT
RECONSTRUCTION OF TAXIWAY NA
HAS PROJECT NO. 675
HOUSTON, TEXAS

1.0 INTRODUCTION

1.1 Project Description

This report contains the results of a geotechnical investigation performed by Aviles Engineering Corporation (AEC) for the Houston Airport System's (HAS) proposed reconstruction of Taxiway November Alpha (NA) at George Bush Intercontinental Airport (BIAH), located in Houston, Texas (Houston Key Map No: 333Z, 334W, X, and Y). A vicinity map is presented on Plate A-1, in Appendix A. The scope of this project includes: (i) performing pavement cores and soil borings along Taxiway NA; (ii) performing field and soil laboratory tests; and (iii) preparing a geotechnical report.

1.2 Purpose and Scope

The purpose of this geotechnical investigation is to determine the thickness of existing pavement and subsurface soil and groundwater conditions along Taxiway NA, as well as perform geotechnical laboratory testing on subgrade soils to determine soil index properties. The scope of this geotechnical investigation is summarized as below:

1. Soil drilling and sampling for 27 geotechnical borings, typically to a depth of 10 feet below existing grade/top of pavement along the taxiway alignment.
2. Soil laboratory testing on selected soil samples to determine index properties of the subgrade soils along the taxiway alignment.
3. Soil laboratory testing on soil samples collected from sample pits to determine maximum dry density and moisture content of subgrade soils and subgrade California Bearing Ratio.
4. Engineering analysis and recommendations for pavement subgrade stabilization.

The purpose of this geotechnical investigation is limited to providing field and soil laboratory test data, as well as recommendations for subgrade stabilization only; engineering analysis and pavement design of the taxiway reconstruction will be performed by others.



2.0 FIELD EXPLORATION

Subsurface conditions along the taxiway alignment were investigated by drilling 27 borings to 10 feet deep (Borings B-26 through B-52). The pavement boring depths were measured from the top of existing pavement or ground surface. Borings B-1 through B-25 were performed by AEC for HAS Project 647, “Reconstruction of Taxiway NB”, AEC Report G114-12, dated August 2012.

Boring locations were marked by United Engineers in the field, based on a layout prepared by AEC. The boring locations were surveyed as they were marked. Boring survey data [coordinates are presented in surface values of the Texas Coordinate System, South Central Zone, NAD 83 (2011)] is presented on the representative boring logs. A Boring Location Plan is presented on Plates A-2a and A-2b, in Appendix A.

Soil Borings: Prior to drilling, existing pavement and stabilized subgrade at the boring locations was first cored with a core barrel. The pavement cores were labeled and transported to AEC’s laboratory for photographs and thickness measurements. After concrete coring, field drilling was conducted using a truck-mounted drilling rig. The borings were advanced using dry auger method. Undisturbed samples of cohesive soils were obtained from the borings by pushing 3-inch diameter thin-wall, seamless steel Shelby tube samplers in accordance with ASTM D 1587. Strength of the cohesive soils was estimated in the field using a hand penetrometer. The undisturbed samples of cohesive soils were extruded mechanically from the core barrels in the field and wrapped in aluminum foil; all samples were sealed in plastic bags to reduce moisture loss and disturbance. The samples were then placed in core boxes and transported to the AEC laboratory for testing and further study. After completion of drilling, borings located off pavement were backfilled with bentonite chips, while borings located on pavement were grouted with cement-bentonite. Existing pavement was patched with non-shrink grout after drilling was completed.

Sample Pits: In addition to soil borings, five sample pits (Borings/Pits B-29, B-34, B-39, B-45, and B-49) were performed to collect subgrade materials for California Bearing Ratio (CBR) testing. The sample pits were located in the grass away from existing pavement. In each of the sample pits, a truck mounted drill rig used an auger to collect samples continuously from a depth of 4 to 7 feet below grade. The samples were then bagged and transported to the AEC laboratory for testing. The pits were backfilled from the bottom of the pit to 2 feet below grade with soil cuttings and the top 2 feet of the pits were backfilled with bentonite chips.



3.0 LABORATORY TESTING

3.1 Geotechnical Tests

Index Properties: Soil laboratory testing was performed by AEC personnel. Samples from the borings were examined and classified in the laboratory by a technician under supervision of a geotechnical engineer. Laboratory tests were performed on selected soil samples in order to evaluate the engineering properties of the foundation soils in accordance with applicable ASTM Standards. Atterberg limits, dry unit weight, moisture contents, and percent passing a No. 200 sieve tests were performed on typical samples to establish the index properties and confirm field classification of the subsurface soils. Details of the soils encountered in the borings are presented on Plates A-3 through A-29, in Appendix A. A key to the boring logs, classification of soils for engineering purposes, terms used on boring logs, and reference ASTM Standards for laboratory testing are presented on Plates A-30 through A-33, in Appendix A.

Compaction and CBR: Soils (from a depth of 4 to 7 feet below grade) recovered from the sample pits were mixed and split in general accordance with ASTM C 702. After splitting, Atterberg limits and percent passing a No. 200 sieve tests were performed to determine the index properties of the samples. The samples were then molded and compacted in accordance with ASTM D 1557 (Modified Proctor). After the samples were compacted, they were soaked for a period of 96 hours and CBR (ASTM D 1883) tests were performed. An additional sample from Boring B-34 was also stabilized with 4 percent hydrated lime and 10 percent fly ash (by dry soil weight) to evaluate CBR values for stabilized subgrade. A summary of CBR test results is presented on Table 1. CBR test results are presented on Plates B-1 through B-12, in Appendix B. A summary of sample pit index properties are presented on Table 2. Compaction and index property test results are presented on Plates B-13 through B-18, in Appendix B.

Table 1. California Bearing Ratio Test Results

| Sample Pit | Percent Compaction (%), ASTM D 1557 | Dry Density (pcf) | CBR (%) |
|------------------------------------|----------------------------------------|----------------------|---------|
| B-29 | 95 | 116.8 | 3.76 |
| | 90 | 110.6 | 1.92 |
| | 85 | 104.5 | 1.27 |
| B-34 | 100 | 124.8 | 37.2 |
| | 95 | 118.6 | 16.8 |
| | 90 | 112.3 | 7.0 |
| B-34, w/4% lime and 10% fly ash | 95 | 119.5 | 176.4 |
| | 90 | 113.2 | 114.5 |



| Sample Pit | Percent Compaction (%), ASTM D 1557 | Dry Density (pcf) | CBR (%) |
|------------|----------------------------------------|----------------------|---------|
| B-39 | 95 | 126.3 | 37.1 |
| | 90 | 120.0 | 21.2 |
| | 85 | 113.7 | 7.8 |
| B-45 | 100 | 127.5 | 42.7 |
| | 95 | 121.1 | 26.5 |
| | 90 | 114.8 | 11.9 |
| B-49 | 100 | 124.1 | 53.3 |
| | 95 | 117.9 | 28.7 |

Table 2. Sample Pit Soil Properties

| Sample Pit | Soil Description | Liquid Limit (%) | Plasticity Index (%) | Percent Passing #200 Sieve (%) | ASTM D 1557 Maximum Dry Density (pcf) | ASTM D 1557 Optimum Moisture Content (%) |
|------------|-------------------------------|---------------------|-------------------------|--------------------------------------|---------------------------------------------|---------------------------------------------------|
| B-29 | Sandy Lean Clay (CL) | 47 | 34 | 65.9 | 122.9 | 10.0 |
| B-34 | Fill: Sandy Lean Clay (CL) | 29 | 12 | 52.6 | 124.8 | 9.7 |
| B-39 | Clayey Sand (SC) | 28 | 11 | 47.2 | 126.3 | 9.0 |
| B-45 | Sandy Silty Clay (CL-ML) | 23 | 7 | 53.6 | 127.5 | 8.8 |
| B-49 | Clayey Sand (SC) | 30 | 13 | 45.7 | 124.1 | 10.0 |

Organic Content: To evaluate the organic content of soils at the site, ten organic content tests were performed on selected soil samples in accordance with ASTM D 2974. A summary of organic content test results are presented on Table 3. The results of the organic content tests are presented on Plate B-19, in Appendix B.

Table 3. Organic Content Test Results

| Sample ID | Sample Description | Organic Content (%) |
|---------------|----------------------------|------------------------|
| B-27, 3.6'-4' | Fill: Sandy Lean Clay (CL) | 1.4 |
| B-30, 3.5'-4' | Fill: Clayey Sand (SC) | 1.4 |
| B-32, 6'-8' | Lean Clay (CL) | 1.9 |
| B-35, 4'-6' | Fill: Silty Sand (SM) | 1.4 |
| B-37, 6'-8' | Sandy Lean Clay (CL) | 2.4 |
| B-39, 8'-10' | Sandy Silt (ML) | 1.2 |
| B-42, 4'-6' | Fill: Lean Clay (CL) | 1.4 |
| B-45, 2'-4' | Fill: Silty Sand (SM) | 0.8 |
| B-48, 3'-4' | Fill: Silty Sand (SM) | 1.1 |



| Sample ID | Sample Description | Organic Content (%) |
|-------------|-----------------------|---------------------|
| B-51, 6'-8' | Fill: Silty Sand (SM) | 1.3 |

Permeability: To evaluate permeability of the in-situ clay soils at the site, three samples were selected for permeability testing in accordance with ASTM D 5084. Each sample had two permeability tests performed on it. A summary of permeability test results are presented on Table 4. The results of the permeability tests are presented on Plates B-20 through B-25, in Appendix B.

Table 4. Permeability Test Results

| Sample ID | Sample Description | Hydraulic Conductivity (cm/sec) | Average Hydraulic Conductivity (cm/sec) |
|-------------|--------------------------------------------------|---------------------------------|-----------------------------------------|
| B-26, 4'-6' | Fill: Sandy Lean Clay (CL), with sand and gravel | 2.98x10 ⁻⁸ | 2.24x10 ⁻⁸ |
| | | 1.50x10 ⁻⁸ | |
| B-39, 2'-4' | Fill: Silty Clayey Sand (SC-SM) | 2.74x10 ⁻⁷ | 2.70x10 ⁻⁷ |
| | | 2.65x10 ⁻⁷ | |
| B-40, 4'-6' | Fill: Sandy Lean Clay (CL) | 2.46x10 ⁻⁷ | 2.48x10 ⁻⁷ |
| | | 2.49x10 ⁻⁷ | |

3.2 Chemical Tests

To evaluate the potential for sulfate and chloride attack on pavements, AEC selected five soil samples for chemical analyses. Resistivity, Sulfate, and pH tests were performed by AEC, while Chloride tests were performed by A & B Laboratories, Inc. A summary of the analysis results are presented on Table 5 below. A&B Laboratories' report is presented on Plates C-1 through C-6, in Appendix C.

Table 5. Resistivity, Sulfate, Chloride, and pH Analysis Results

| Sample ID | Resistivity (ohm/cm) | Sulfate (mg/kg) | Chloride (mg/kg) | pH | Aggressive Environment |
|-------------|----------------------|-----------------|------------------|------|------------------------|
| B-29, 2'-4' | 3,015 | 47 | BRL | 7.57 | No |
| B-34, 4'-6' | 3,070 | 27 | 3.84 | 8.39 | No |
| B-39, 0'-2' | 2,491 | 33 | 9.45 | 8.42 | No |
| B-44, 4'-6' | 3,124 | BRL | 8.04 | 8.86 | No |
| B-49, 4'-6' | 5,390 | BRL | 1.73 | 9.12 | No |

Note: (a) BRL = Below Reportable Limit.



According to the Federal Highway Administration (FHWA) Design Manual “Design and Construction of Driven Pile Foundations”, concrete design should be based on an aggressive subsurface environment whenever the pH value is 4.5 or less. Alternately, if the resistivity is less than 2,000 ohms/cm, the soils should be treated as an aggressive environment. If the soil resistivity is between 2,000 and 5,000 ohms/cm, and the chloride ion content is greater than 100 parts per million (ppm) or the sulfate ion content is greater than 200 ppm, the foundation design should be based on an aggressive subsurface environment. Resistivity values greater than 5,000 ohms/cm can be considered non-aggressive environments.

Based on the test results in Table 5 and FHWA criteria, the tested soil samples are considered a non-aggressive environment.

Sulfate ions in soils and ground water result in an expansive chemical reaction with Portland cement. Expansion of concrete often leads to cracking and spalling which can significantly reduce the available structural capacity of footings. Chloride ions do not attack concrete directly; instead, they cause corrosion of reinforcement steel, which then causes expansion cracking and spalling of the concrete as products of steel corrosion are formed. This loss of bond between steel and concrete can result in a reduction of foundation capacity. Protective measures which can reduce the potential for corrosion attack include increased concrete cover around the reinforcing steel, the use of galvanized or epoxy coated reinforcement, or using Type II Portland cement (with moderate sulfate resistance) for pavement.

4.0 SITE CONDITIONS

Based on our site visits, it appears that the existing pavement along Taxiway NA, as well portions of NE, NR, NF, NG, NH, NK, NL, NN, and NP have experienced some degree of surface cracking. Mapping of the pavement cracks and evaluation of the pavement distress were not included in AEC’s scope of services for this project.

During field operations, AEC observed several locations where water flowed into the bore holes through the existing pavement after concrete coring was completed, but before the drill rig began to collect samples. AEC also observed some locations where groundwater appeared to be pressurized. Details regarding where groundwater was encountered during drilling are presented in Section 4.2 of this report.



4.1 Pavement Cores

Recovered concrete cores were returned to AEC for classification and measurement. A summary of pavement thicknesses encountered in our borings are presented in Table 6. Photographs of concrete core sections are presented on Plates 1 through 29, in the Illustrations. Note that the term “CSS” used in Table 6 stands for “Cemented Soil Subgrade” (and not cement stabilized sand), since AEC was unable to determine if the subgrade was stabilized with cement only, or if lime and/or fly ash were used as well.

Table 6. Existing Pavement Thickness

| Boring ID | Pavement Section |
|------------------|-----------------------------------------------------------------------------|
| B-26 | 17.125" PCC, 2" ABB, 12.125" PCC, 10.25" CSS |
| B-27 | 18" PCC, 1.5" ABB, 11.5" PCC, 13.25" CSS |
| B-28 | 19" PCC, 1.625" ABB, 12" PCC, 1.625" CSS, 7.5" CSS, 7.25" LSS |
| B-30 | 17.25" PCC, 1.875" ABB, 11.875" PCC, 9.5" CSS |
| B-31 | 17.875" PCC, 1" ABB, 13.75" PCC, 8.875" CSS |
| B-32 | 17.5" PCC, 1.875" ABB, 14.125" PCC, 14.625" CSB |
| B-33 | 17" PCC, 2" ABB, 11.875" PCC, 1" CSS, 7.75" CSS |
| B-35 | 17.375" PCC, 1.625" ABB, 12.125" PCC, 8.75" CSS, 1.75" <no recovery> |
| B-36 | 18" PCC, 1.875" ABB, 14.375" PCC, 9.5" CSS |
| B-37 | 17.5" PCC, 2" ABB, 11.875" PCC, 1.5" CSS, 7.5" CSS, 3" LSS |
| B-38 | 17.375" PCC, 2.125" ABB, 12" PCC, 1.25" LSS, 3" LSS, 6" CSS |
| B-40 | 17" PCC, 2.25" ABB, 12" PCC, 2.5" LSS, 6.875" CSS |
| B-41 | 17.125" PCC, 2.125" ABB, 12" PCC, 8.625" CSS |
| B-42 | 16.875" PCC, 2.25" ABB, 14.25" PCC, 1.75" CSS, 7.375" CSS |
| B-43 | 17.5" PCC, 2.5" ABB, 12.25" PCC, 8.875" CSS, 1.75" CSS |
| B-44 | 18" PCC, 2.25" ABB, 11.875" PCC, 2.5" LSS, 7.5" LSS |
| B-46 | 17.75" PCC, 1.5" ABB, 12.375" PCC, 9" CSS |
| B-47 | 18.875" PCC, 2" ABB, 11.5" PCC, .375" LSS, 2.75" LSS, 6" CSS |
| B-48 | 17.5" PCC, 1.5" ABB, 12.25" PCC, 1.375" CSS, 0.75" <no recovery>, 7.25" CSS |
| B-50 | 17.75" PCC, 2.375" ABB, 12.125" PCC, 0.875" CSS, 8.625" CSS |
| B-51 | 17.625" PCC, 1.625" ABB, 6.25" PCC, 7.75" PCC, 7.25" CSS, 2.25" CSS |
| B-52 | 19.75" PCC, 1" ABB, 12.25" PCC, 5.75" CSS, 2.625" LSS |

Note: (a) PCC = Portland Cement Concrete, ABB = Asphalt Bond Breaker, CSB = Cement Stabilized Base, LSB = Lime Stabilized Base, CSS = Cemented Soil Subgrade, LSS = Lime Stabilized Subgrade.



4.2 Subsurface Conditions

Soil strata encountered in our borings are summarized below:

| <u>Boring</u> | <u>Depth (ft)</u> | <u>Description of Stratum</u> |
|---------------|-------------------|-----------------------------------------------------------------------------------------|
| B-26 | 0 - 3.5 | Pavement: See Table 6 |
| | 3.5 - 6 | Fill: hard, Sandy Lean Clay (CL), with sand partings and gravel |
| | 6 - 10 | Clayey Sand (SC) |
| B-27 | 0 - 3.7 | Pavement: See Table 6 |
| | 3.7 - 6 | Fill: stiff to hard, Sandy Lean Clay (CL), with sand seams |
| | 6 - 8 | Very stiff, Sandy Lean Clay (CL) |
| | 8 - 10 | Very stiff to hard, Fat Clay (CH) |
| B-28 | 0 - 4.1 | Pavement: See Table 6 |
| | 4.1 - 6 | Fill: firm to very stiff, Sandy Lean Clay (CL), with abundant silt partings |
| | 6 - 8 | Stiff, Sandy Lean Clay (CL), with silt seams, pockets, and partings |
| | 8 - 10 | Stiff, Lean Clay (CL), with abundant silt partings |
| B-29 | 0 - 2 | Fill: stiff, Lean Clay (CL), with sand seams, pockets, and roots |
| | 2 - 6 | Very stiff to hard, Sandy Lean Clay (CL), with abundant silt partings |
| | 6 - 10 | Stiff to very stiff, Fat Clay (CH) |
| B-30 | 0 - 3.4 | Pavement: See Table 6 |
| | 3.4 - 4 | Fill: hard, Clayey Sand (SC), with clay pockets |
| | 4 - 6 | Fill: hard, Sandy Lean Clay (CL), with sand layers and pockets |
| | 6 - 8 | Fill: very stiff, Lean Clay (CL), with silt layers and pockets |
| | 8 - 10 | Stiff to very stiff, Fat Clay (CH), with vertical silt partings |
| B-31 | 0 - 3.5 | Pavement: See Table 6 |
| | 3.5 - 10 | Fill: very stiff to hard, Sandy Lean Clay (CL), with abundant silt partings |
| B-32 | 0 - 4.1 | Pavement: See Table 6 |
| | 4.1 - 6 | Fill: Silty Clayey Sand (SC-SM), with lean clay pockets |
| | 6 - 10 | Stiff to very stiff, Lean Clay (CL) |
| B-33 | 0 - 3.3 | Pavement: See Table 6 |
| | 3.3 - 4 | Fill: Sandy Silt (ML), with lean clay pockets and organics |
| | 4 - 6 | Fill: Clayey Sand (SC) |
| | 6 - 10 | Fill: hard, Sandy Lean Clay (CL), with silty sand pockets |
| B-34 | 0 - 2 | Fill: Silty Sand (SM), with silty clay pockets and roots |
| | 2 - 4 | Fill: Clayey Sand (SC), with silty sand layers |
| | 4 - 6 | Fill: Sandy Silt (ML), with sandy clay layers |
| | 6 - 8 | Fill: very stiff to hard, Lean Clay (CL), with clayey sand seams and silty sand pockets |
| | 8 - 10 | Very stiff, Sandy Lean Clay (CL), with silty sand seams and pockets |



| <u>Boring</u> | <u>Depth (ft)</u> | <u>Description of Stratum</u> |
|---------------|-------------------|--------------------------------------------------------------------------------------------|
| B-35 | 0 - 3.5 | Pavement: See Table 6 |
| | 3.5 - 4 | Fill: hard, Lean Clay (CL), with silty sand seams and pockets |
| | 4 - 6 | Fill: Silty Sand (SM), with clay pockets |
| | 6 - 8 | Fill: stiff to very stiff, Lean Clay (CL), with clayey sand seams and silty sand pockets |
| | 8 - 10 | Stiff to hard, Sandy Lean Clay (CL), with abundant silty sand seams and silty clay pockets |
| B-36 | 0 - 3.6 | Pavement: See Table 6 |
| | 3.6 - 8 | Fill: very stiff to hard, Sandy Lean Clay (CL) |
| | 8 - 10 | Very stiff, Lean Clay (CL), with silt partings and pockets |
| B-37 | 0 - 3.6 | Pavement: See Table 6 |
| | 3.6 - 4 | Fill: stiff to hard, Sandy Lean Clay (CL), with silty sand partings and lime stabilization |
| | 4 - 6 | Fill: Clayey Sand (SC), with lean clay pockets |
| | 6 - 10 | Stiff to very stiff, Lean Clay (CL) |
| B-38 | 0 - 3.5 | Pavement: See Table 6 |
| | 3.5 - 4 | Fill: very stiff, Silty Clay (CL-ML), with wet sand layers |
| | 4 - 6 | Fill: firm to very stiff, Sandy Lean Clay (CL), with silt partings |
| | 6 - 8 | Stiff to very stiff, Fat Clay (CH), with silt partings and pockets |
| | 8 - 10 | Very stiff, Lean Clay (CL) |
| B-39 | 0 - 2 | Fill: stiff, Sandy Lean Clay (CL), with sand seams and pockets |
| | 2 - 6 | Fill: Silty Clayey Sand (SC-SM), with sand pockets and clay pockets |
| | 6 - 8 | Fill: firm to stiff, Sandy Lean Clay (CL), with clayey sand pockets |
| | 8 - 10 | Sandy Silt (ML), with roots, silty clay, and lean clay pockets |
| B-40 | 0 - 3.4 | Pavement: See Table 6 |
| | 3.4 - 8 | Fill: firm to hard, Sandy Lean Clay (CL) |
| | 8 - 10 | Clayey Sand (SC), with roots and silty clay pockets |
| B-41 | 0 - 3.3 | Pavement: See Table 6 |
| | 3.3 - 6 | Fill: Sandy Silt (ML), with sandy clay pockets |
| | 6 - 10 | Very stiff to hard, Lean Clay (CL) |
| B-42 | 0 - 3.5 | Pavement: See Table 6 |
| | 3.5 - 4 | Fill: Silty Sand (SM), with lean clay pockets |
| | 4 - 6 | Fill: very stiff to hard, Lean Clay (CL), with fat clay pockets and sand seams |
| | 6 - 8 | Silty Sand (SM) |
| | 8 - 10 | Very stiff, Sandy Lean Clay (CL), with sand seams |
| B-43 | 0 - 3.6 | Pavement: See Table 6 |
| | 3.6 - 8 | Fill: stiff to hard, Lean Clay (CL), with sand seams and fat clay pockets |
| | 8 - 10 | Silty Sand (SM), with clayey sand pockets |



| <u>Boring</u> | <u>Depth (ft)</u> | <u>Description of Stratum</u> |
|---------------|-------------------|------------------------------------------------------------------------------------------|
| B-44 | 0 - 3.5 | Pavement: See Table 6 |
| | 3.5 - 4 | Fill: Silty Sand (SM), with cement stabilization |
| | 4 - 10 | Fill: Silty Sand (SM) |
| B-45 | 0 - 2 | Fill: stiff, Lean Clay (CL), with sand pockets |
| | 2 - 6 | Fill: Silty Sand (SM) |
| | 6 - 8 | Fill: stiff, Sandy Silty Clay (CL-ML), with fat clay pockets |
| | 8 - 10 | Very stiff to hard, Sandy Lean Clay (CL), with silty sand pockets and partings |
| B-46 | 0 - 3.4 | Pavement: See Table 6 |
| | 3.4 - 6 | Fill: hard, Lean Clay (CL), with sand seams and layers |
| | 6 - 8 | Sandy Silt (ML) |
| | 8 - 10 | Clayey Sand (SC) |
| B-47 | 0 - 3.5 | Pavement: See Table 6 |
| | 3.5 - 6 | Fill: stiff to hard, Sandy Lean Clay (CL), with silty sand layers and silty clay pockets |
| | 6 - 10 | Clayey Sand (SC), with lean clay pockets |
| B-48 | 0 - 3.4 | Pavement: See Table 6 |
| | 3.4 - 6 | Fill: Silty Sand (SM), with lean clay pockets |
| | 6 - 8 | Fill: Sandy Lean Clay (CL), with silty sand layers |
| | 8 - 10 | Hard, Sandy Lean Clay (CL) |
| B-49 | 0 - 2 | Fill: Clayey Sand (SC), with lean clay seams |
| | 2 - 5 | Fill: Silty Sand (SM) |
| | 5 - 10 | Clayey Sand (SC), with lean clay seams |
| B-50 | 0 - 3.5 | Pavement: See Table 6 |
| | 3.5 - 4 | Fill: Silty Sand (SM), with fat clay partings and wood fragments |
| | 4 - 6 | Fill: Clayey Sand (SC), with fat clay seams and pockets |
| | 6 - 8 | Very stiff, Sandy Silty Clay (CL-ML), with silty sand seams |
| | 8 - 10 | Very stiff, Fat Clay (CH), with silty sand pockets |
| B-51 | 0 - 3.6 | Pavement: See Table 6 |
| | 3.6 - 4 | Fill: lime stabilized Silty Sand (SM) |
| | 4 - 8 | Fill: stiff to hard, Sandy Lean Clay (CL), with abundant silty sand seams |
| | 8 - 10 | Silty Sand (SM), with clayey sand pockets |
| B-52 | 0 - 3.5 | Pavement: See Table 6 |
| | 3.5 - 4 | Fill: stabilized Silty Sand (SM) |
| | 4 - 6 | Fill: very stiff to hard, Sandy Silty Clay (CL-ML), with sand pockets |
| | 6 - 10 | Silty Sand (SM) |

Subsurface Soil Properties: The in-situ cohesive soils (which exclude clayey sands and silts) encountered in the borings have Liquid Limits (LL) that varied from 20 to 46 and Plasticity Indices (PI) that varied from 4 to 32. This indicates that the cohesive soils at the site have none to high plasticity. The cohesive soils encountered in the borings are classified as CL-ML, CL, and CH type soils and the granular soils encountered are classified as



ML, SM, SC, and SC-SM type soils in accordance with the Unified Soil Classification System (USCS). “CL” soils with lower LL (less than 40) and PI (less than 20) generally do not undergo significant volume changes with changes in moisture content. However, “CL” soils with LL approaching 50 and PI greater than 20 essentially behave as “CH” soils and could undergo significant volume changes.

Groundwater: Groundwater depths encountered during drilling in the borings are presented on Table 7. At several borings, groundwater was observed to flow into the borehole (through the pavement layers) after concrete coring was completed, but before drilling was started. The pavement water could be perched water that infiltrated through the pavement layers from cracks and joints in the pavement surface. AEC field personnel were careful to determine that the water was not a result of the concrete coring operations. Based on Table 7, groundwater at portions of the site (such as Borings B-32, B-41, B-47, and B-50) could be pressurized, while in other areas (such as Borings B-37, B-38, B-42, B-46, and B-52) the groundwater could be perched.

Table 7. Summary of Groundwater Depth in Borings

| Boring No. | Date Drilled | Boring Depth (ft) | Water Level (ft) | Cave-in Depth (ft) |
|-------------------|---------------------|--------------------------|----------------------------------|---------------------------|
| B-26 | 6/18/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-27 | 6/18/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-28 | 6/18/2015 | 10 | 4.1 (Drilling) 3.8 (Complete) | - |
| B-29 | 6/20/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-30 | 6/18/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-31 | 7/6/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-32 | 7/6/2015 | 10 | 4.0 (Drilling) 1.8 (Complete) | - |
| B-33 | 7/6/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-34 | 6/20/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-35 | 6/18/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-36 | 6/20/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-37 | 6/20/2015 | 10 | 6.0 (Drilling) 9.5 (Complete) | - |
| B-38 | 6/20/2015 | 10 | 3.5 (Drilling) 7.0 (Complete) | - |



| Boring No. | Date Drilled | Boring Depth (ft) | Water Level (ft) | Cave-in Depth (ft) |
|------------|--------------|-------------------|----------------------------------|--------------------|
| B-39 | 6/20/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-40 | 6/20/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-41 | 7/6/2015 | 10 | 3.5 (Drilling) 2.8 (Complete) | - |
| B-42 | 7/6/2015 | 10 | 3.6 (Drilling) 5.0 (Complete) | - |
| B-43 | 7/6/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-44 | 7/7/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-45 | 7/7/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-46 | 7/7/2015 | 10 | 3.4 (Drilling) 6.3 (Complete) | - |
| B-47 | 7/7/2015 | 10 | 3.6 (Drilling) 0.6 (Complete) | - |
| B-48 | 7/7/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-49 | 7/7/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-50 | 7/8/2015 | 10 | 3.5 (Drilling) 1.4 (Complete) | - |
| B-51 | 7/8/2015 | 10 | Dry (Drilling) Dry (Complete) | - |
| B-52 | 7/8/2015 | 10 | 3.5 (Drilling) 5.8 (Complete) | - |

It should be noted that our ground water observations are short-term; ground water depths and subsurface soil moisture contents will vary with environmental variations such as frequency and magnitude of rainfall and the time of year when construction is in progress.

4.3 Subsurface Variations

It should be emphasized that: (i) at any given time, ground water depths can vary from location to location, and (ii) at any given location, ground water depths can change with time. Ground water depths will vary with seasonal rainfall and other climatic/environmental events. Subsurface conditions may vary away from and in between the boring locations.



Clay soils in the Houston area typically have secondary features such as slickensides and contain sand/silt seams/lenses/layers/pockets. It should be noted that the information in the boring log is based on 3-inch diameter soil samples which were generally continuously obtained at intervals of 2 feet from the ground/pavement surface to the boring termination depth of 10 feet below existing grade. A detailed description of the soil secondary features may not have been obtained due to the small sample size and sampling interval between the samples. Therefore, while some of AEC's logs show the soil secondary features, it should not be assumed that the features are absent where not indicated on the logs.

5.0 ENGINEERING ANALYSIS AND RECOMMENDATIONS

5.1 Pavement Subgrade

For the taxiway reconstruction, it is AEC's opinion that it will be sound engineering practice for the subgrade soils beneath the pavement to be stabilized with lime and fly-ash in order to provide uniform and long-lasting subgrade support of the pavement, as well as provide a weather resistant work platform during construction.

Lime and Fly-Ash Stabilized Subgrade: The subgrade soils beneath the pavement that were encountered in the borings along the taxiway alignments generally consist of sandy silty/lean clay (CL-ML/CL) and silty/clayey sand (SM/SC). Based on the soil conditions, lab test results, and shallow groundwater levels (encountered in some of the borings), AEC suggests that a minimum of 8 inches of existing subgrade soils beneath the proposed pavement be stabilized with a minimum of 4 percent lime and 10 percent fly ash (by dry soil weight) slurry. As an alternative to using lime, the 4 percent hydrated lime can instead be substituted with 4 percent cement.

5.1.1 Determination of Modulus of Subgrade Reaction for Rigid Pavement

Determination of the subgrade resilient modulus, E, the foundation modulus, k, and CBR is required for rigid pavement design. Using the regular laboratory and CBR test results presented on Table 1 in Section 3.1 in this report, AEC determined the subgrade moduli using the Federal Highway Administration (FHWA) method (Reference 2) and the American Association of State Highway and Transportation Officials (AASHTO) method (Reference 3), while incorporating the Federal Aviation Administration (FAA) design manual (Reference 1).

Influence depth of subgrade for resilient modulus E (or CBR, or k modulus): The second paragraph (Page 34) of Item 326 of FAA AC 150/5360-06E (Reference 1) states that, "If the subgrade is accessible then the k-value can be determined directly by plate-load testing". For a plate-load test, the 30-inch diameter plate is directly placed



on top of the subgrade, while the influence depth for the test is at least $1.5B$, where B is the diameter of the plate. For a 30 inch diameter plate, the resulting influence depth is approximately 45 inches, which can be rounded up to approximately 4 feet. Correspondingly, at least 3 or 4 feet of the subgrade soils will support or “feel” the load from the load plate (References 2 and 3), instead of only the top 8 inches of compacted or stabilized subgrade. Therefore, utilizing the AASHTO and FHWA method to determine the composite modulus of subgrade reaction is reasonable and justified.

Determination of design CBR value for design: To determine the design CBR value of natural subgrade soils, AEC compared the average dry density of the natural clayey soils (CL/CL-ML/SC) encountered in the borings to the dry densities from the lab CBR tests (see Table 1 in Section 3.1 of this report). It is AEC’s opinion that using a design CBR of 8 for the natural subgrade in the pavement design is reasonable. The corresponding dry densities of the recommended CBR values are similar to the prevailing dry densities of the in-situ soils encountered in the borings.

To determine a representative value of CBR for a stabilized subgrade, AEC stabilized a subgrade soil sample with 4 percent hydrated lime and 10 percent fly ash in the lab. For an 8 inch thick stabilized subgrade with 4 percent lime and 10 percent fly ash, AEC selected a CBR value of 175 based on our lab test data (see Table 1 in Section 3.1 of this report). Based on a natural subgrade CBR of 8 (see paragraph above) and a stabilized subgrade CBR of 175, AEC calculated the effective modulus of subgrade reaction, k_{eff} (References 4 and 5). The composite k_{eff} , was then converted to the effective CBR_{eff} of the subgrade to be used for design of rigid pavement:

- a) $\text{CBR}_{\text{eff}} = 22$ based on the empirical formulas between E and CBR, k and CBR as listed in FAA design manual (Reference 1); and
- b) $\text{CBR}_{\text{eff}} = 14$ based on the empirical formulas between E and CBR, k and CBR as listed in FHWA and AASHTO manuals (References 4 & 5).

AEC recommends using a CBR of 14 for the pavement design, assuming that the top 8 inches of exposed subgrade will be stabilized with 4 percent hydrated lime (or cement) and 10 percent fly ash (by dry soil weight).

5.1.2 Subgrade Preparation

Subgrade preparation should extend to 5 feet beyond the paved area perimeters. Removal of existing pavement shall be performed in accordance with Item P-101 of the FAA AC 150/5370-10G Airport Construction Standards. After pavement demolition, the exposed subgrade should be inspected and proof rolled to detect and



remove any weak, compressible, or other unsuitable materials; such materials should be replaced with compacted competent sandy clay soil, free of deleterious materials. Excavation and subgrade preparation shall be performed in accordance with Item P-152 of the FAA AC 150/5370-10G Airport Construction Standards.

Scarify the top 8 inches of the exposed subgrade and stabilize with a minimum of 4 percent hydrated lime and 10 percent fly-ash (by dry weight) slurry. The stabilized soils should be compacted to 95 percent of their ASTM D 698 (Standard Proctor) dry density at a moisture content ranging from optimum to 3 percent above optimum. Lime and fly ash stabilization shall be performed in accordance with Items P-155 and P-158 of the FAA AC 150/5370-10G Airport Construction Standards, respectively. As an alternative, lime and fly-ash stabilization can be performed in accordance with Section 02337 of the 2015 City of Houston Standard Construction Specifications (COHSCS).

6.0 GENERAL

The information contained in this report summarizes conditions found on the dates the borings were drilled. The attached boring logs are true representations of the soils encountered at the specific boring locations on the dates of drilling. Due to variations encountered in the subsurface conditions across the site, changes in soil conditions from those presented in this report should be anticipated.

7.0 LIMITATIONS

The investigation was performed using the standard level of care and diligence normally practiced by recognized geotechnical engineering firms in this area, presently performing similar services under similar circumstances. The report has been prepared exclusively for the project and location described in this report, and is intended to be used in its entirety. The information presented in this report should not be used for other structures located at this site or similar structures located at other sites, without additional evaluation and/or investigation.



REFERENCES

- 1) U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular - AC 150/5320-6E "Airport Pavement Design and Evaluation", September 30, 2009, AAS-100, Office of Airport Safety & Standards, Airport Engineering Division.
- 2) U.S. Department of Transportation, Federal Highway Administration, FHWA NHI-06-089, "Soils and Foundations Reference Manual Volume II", December 2006.
- 3) American Association of State Highway and Transportation Officials, "LRFD Bridge Design Specifications, Customary U.S. Units, 6th Edition", 2012.
- 4) U.S. Department of Transportation, Federal Highway Administration, FHWA NHI-05-037, "Geotechnical Aspects of Pavements Reference Manual", May 2006.
- 5) American Association of State Highway and Transportation Officials, "AASHTO Guide for Design of Pavement Structures, Volume I", 1993.
- 6) U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular - AC 150/5370-10G "Standards for Specifying Construction of Airports", July 21, 2014, AAS-100, Office of Airport Safety & Standards, Airport Engineering Division.



ILLUSTRATIONS

Plates 1 to 29

Pavement Core Photos

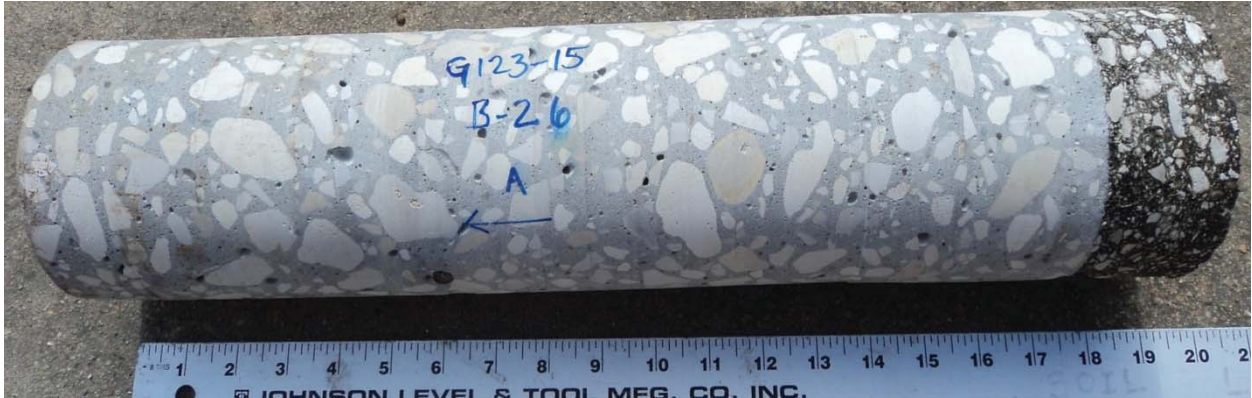


Photo 1 - Boring B-26, Part 1



Photo 2 - Boring B-26, Part 2



Photo 3 - Boring B-27, Part 1



Photo 4 - Boring B-27, Part 2



Photo 5 - Boring B-28, Part 1



Photo 6 - Boring B-28, Part 2



Photo 7 - Boring B-28, Part 3

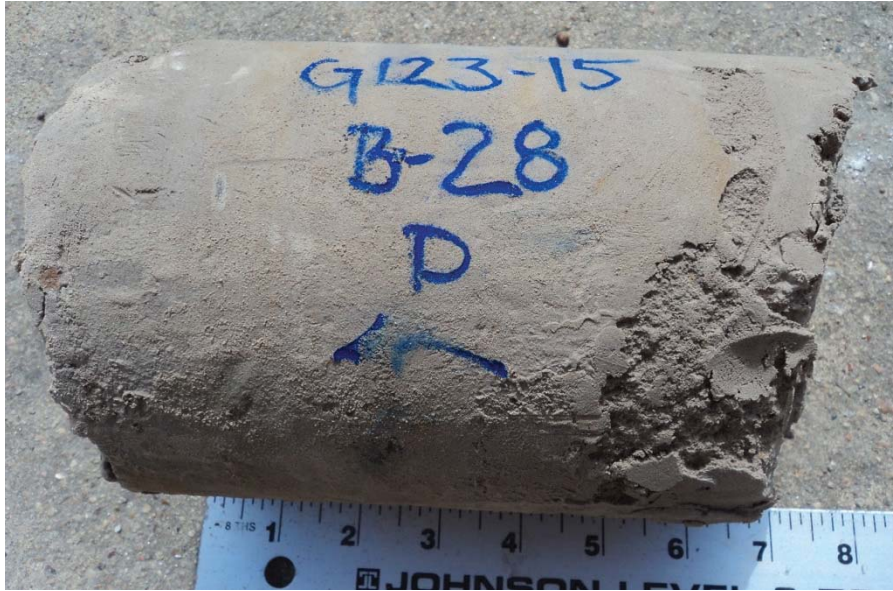


Photo 8 - Boring B-28, Part 4



Photo 9 - Boring B-30, Part 1

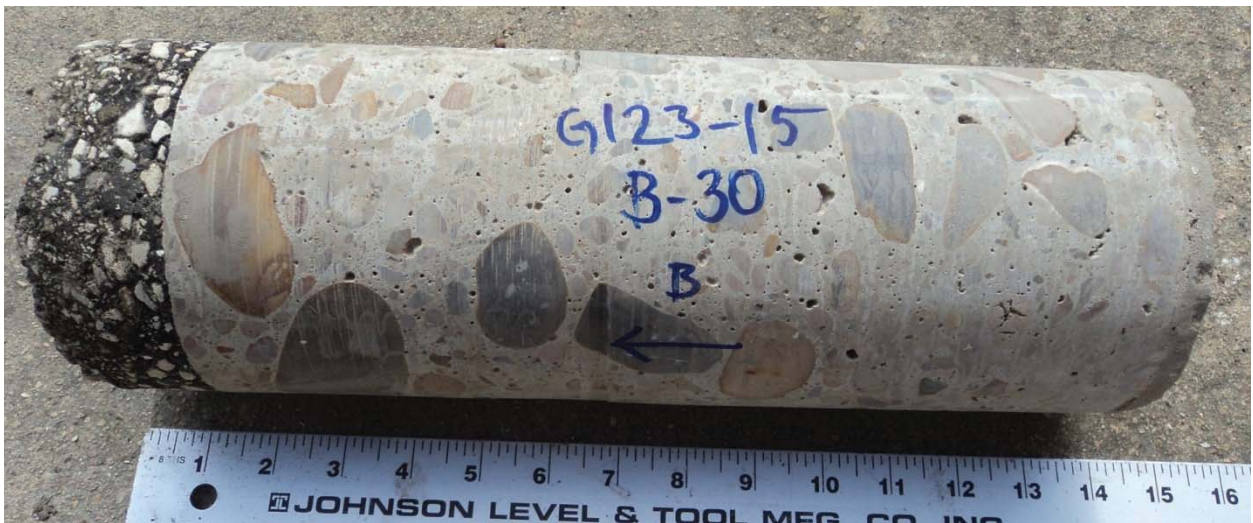


Photo 10 - Boring B-30, Part 2

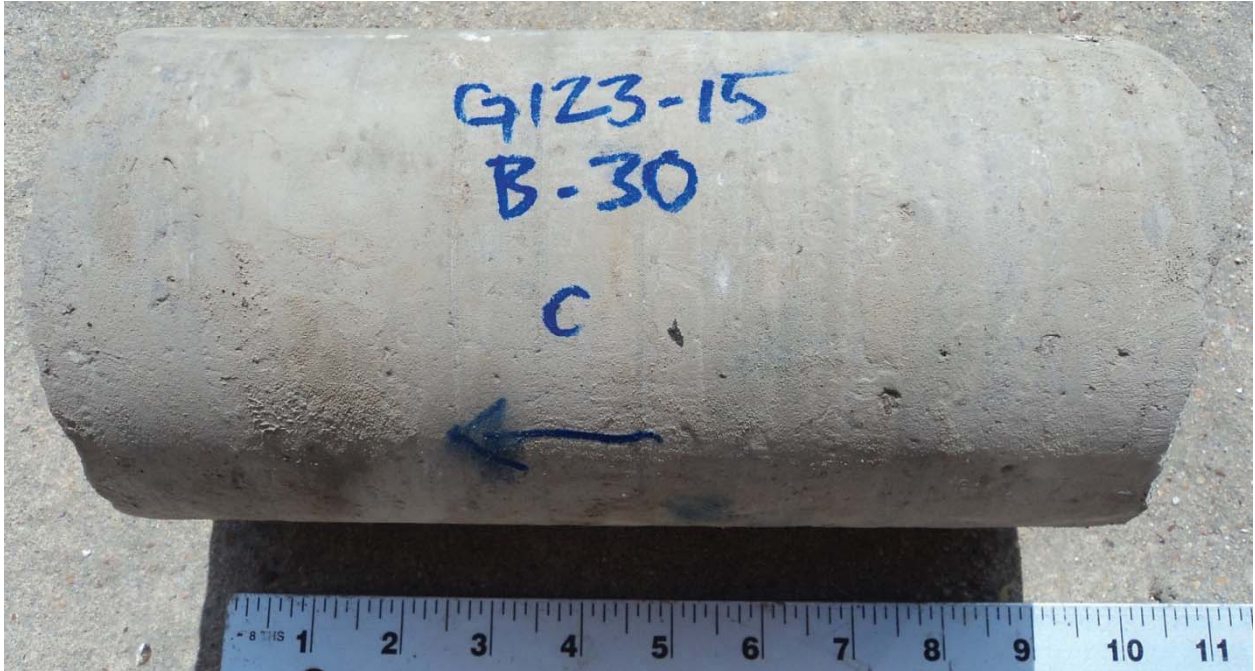


Photo 11 - Boring B-30, Part 3

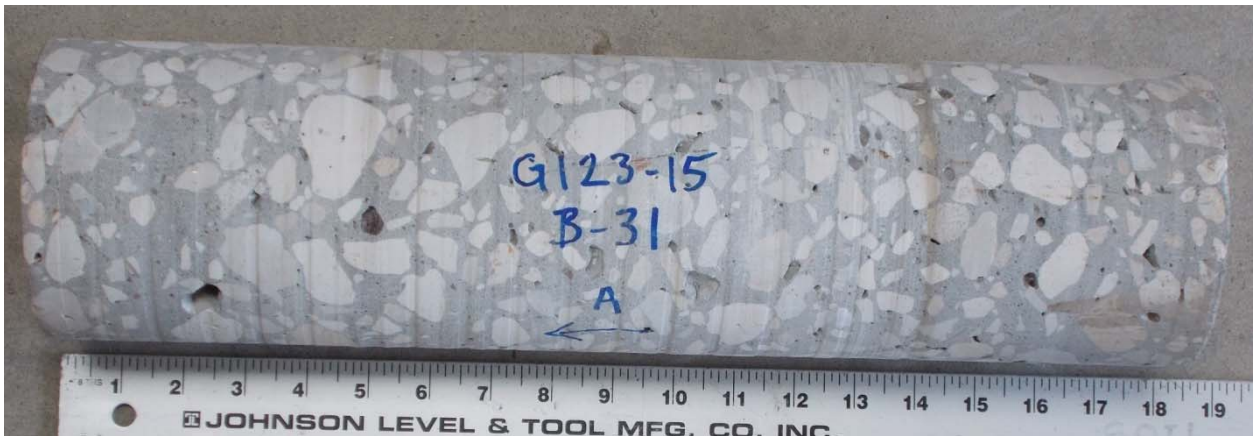


Photo 12 - Boring B-31, Part 1



Photo 13 - Boring B-31, Part 2

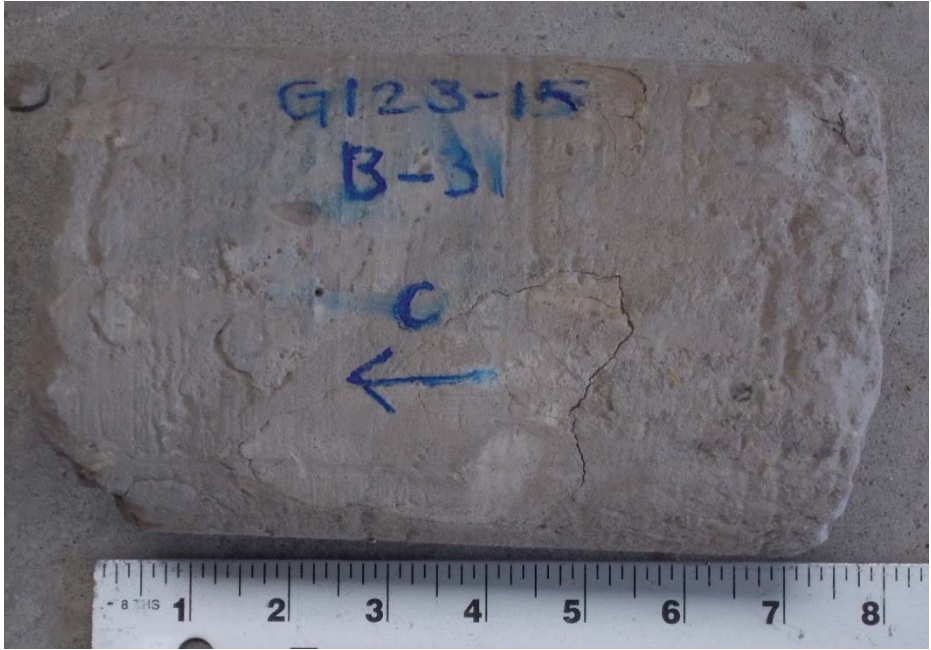


Photo 14 - Boring B-31, Part 3

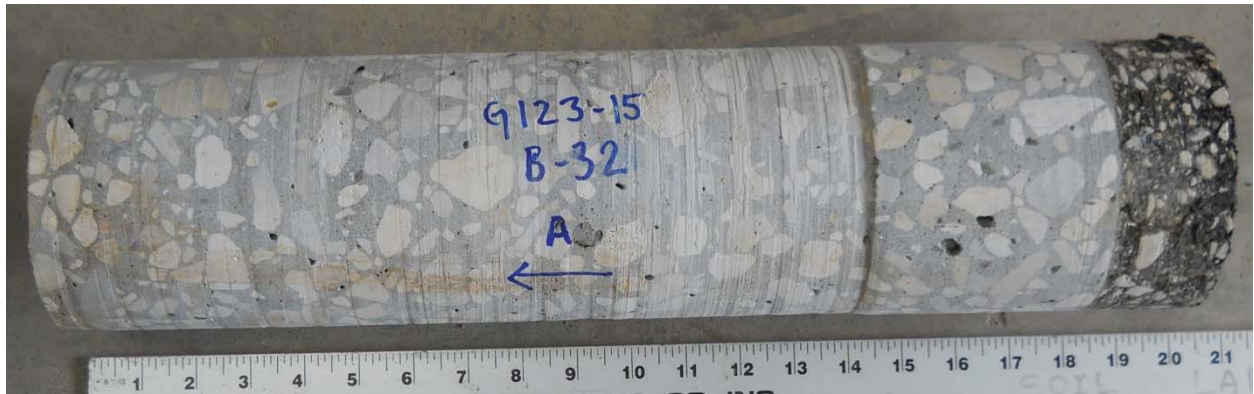


Photo 15 - Boring B-32, Part 1



Photo 16 - Boring B-32, Part 2

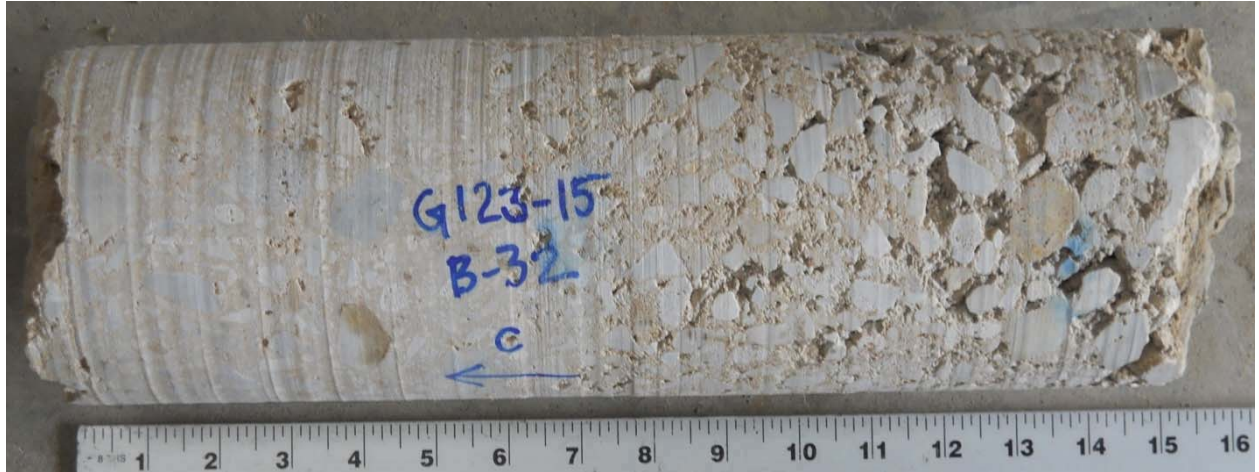


Photo 17 - Boring B-32, Part 3



Photo 18 - Boring B-33, Part 1



Photo 19 - Boring B-33, Part 2



Photo 20 - Boring B-33, Part 3



Photo 21 - Boring B-33, Part 4



Photo 22 - Boring B-35, Part 1



Photo 23 - Boring B-35, Part 2

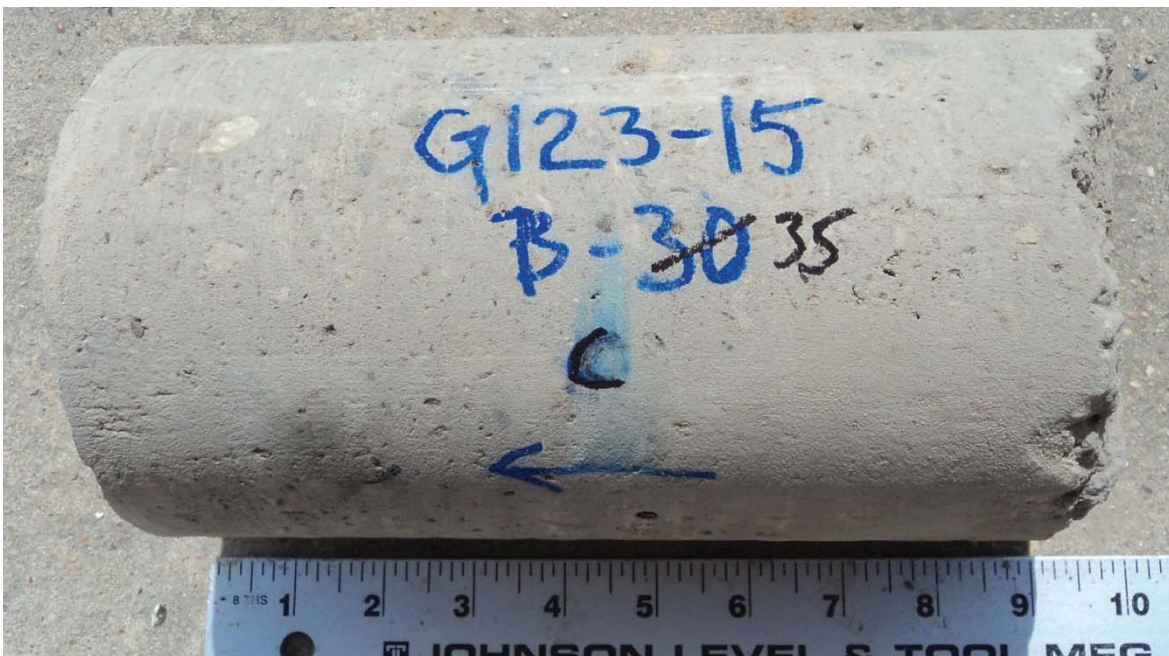


Photo 24 - Boring B-35, Part 3



Photo 25 - Boring B-36, Part 1



Photo 26 - Boring B-36, Part 2

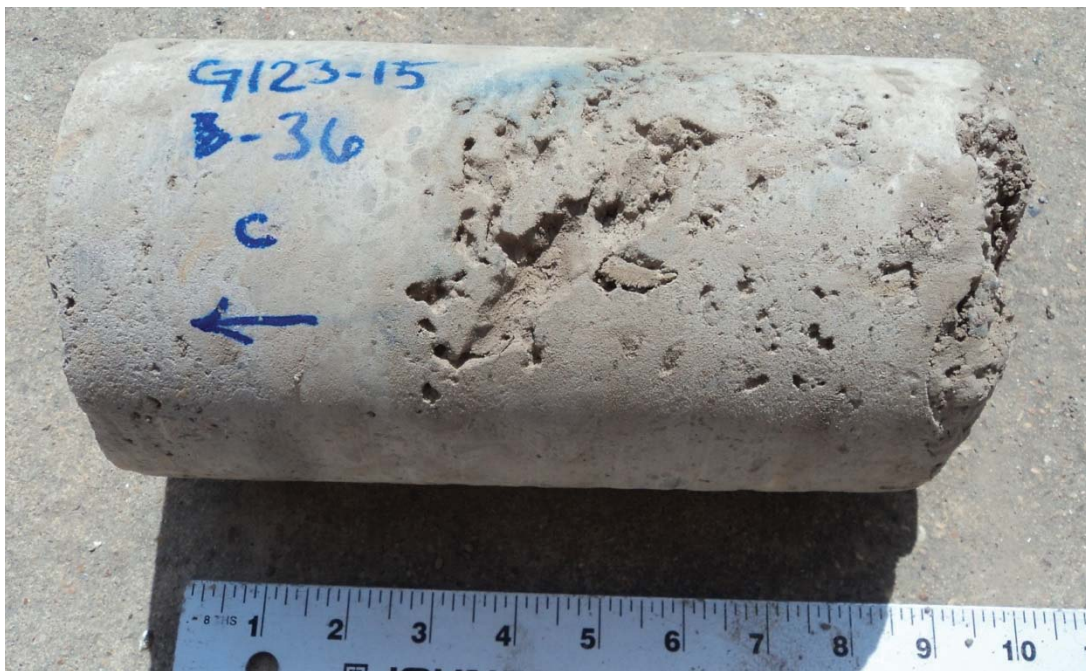


Photo 27 - Boring B-36, Part 3



Photo 28 - Boring B-37, Part 1



Photo 29 - Boring B-37, Part 2



Photo 30 - Boring B-37, Part 3



Photo 31 - Boring B-37 Part 4



Photo 32 - Boring B-37, Part 5



Photo 33 - Boring B-38, Part 1



Photo 34 - Boring B-38, Part 2



Photo 35 - Boring B-38, Part 3



Photo 36 - Boring B-38, Part 4



Photo 37 - Boring B-40, Part 1



Photo 38 - Boring B-40, Part 2



Photo 39 - Boring B-40, Part 3



Photo 40 - Boring B-40, Part 4



Photo 41 - Boring B-40, Part 5



Photo 42 - Boring B-41, Part 1



Photo 43 - Boring B-41, Part 2

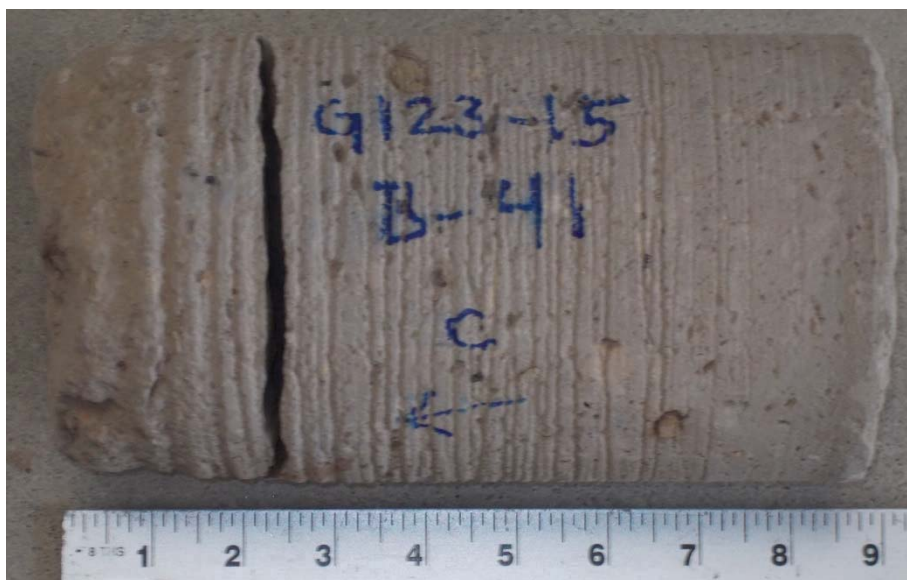


Photo 44 - Boring B-41 Part 3

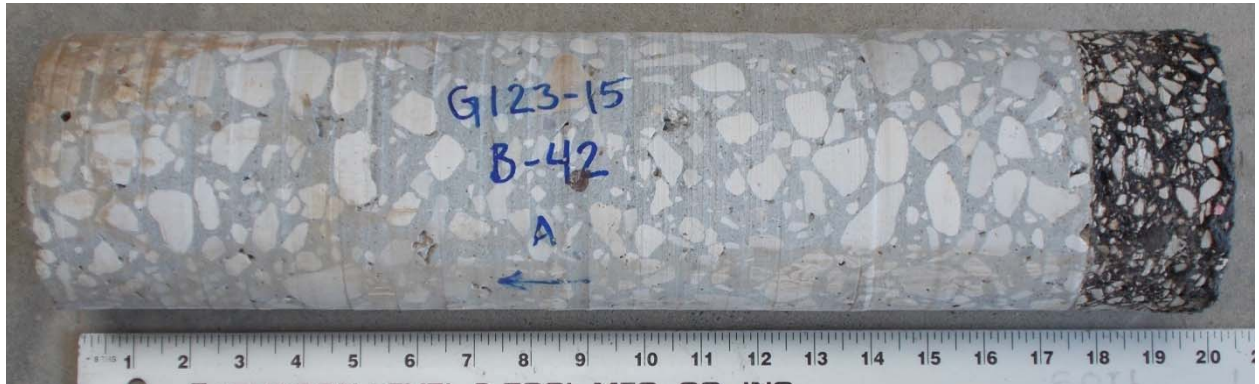


Photo 45 - Boring B-42, Part 1



Photo 46 - Boring B-42, Part 2



Photo 47 - Boring B-42, Part 3

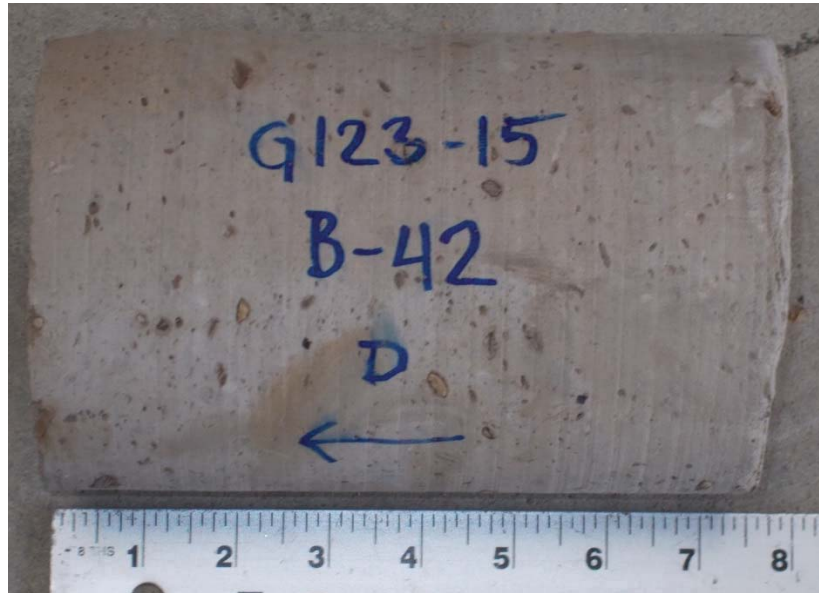


Photo 48 - Boring B-42, Part 4

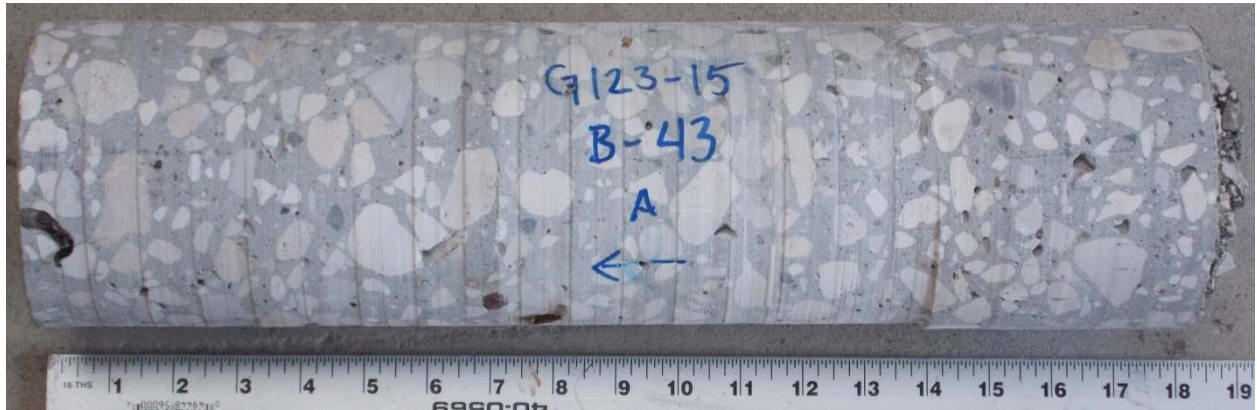


Photo 49 - Boring B-43, Part 1



Photo 50 - Boring B-43, Part 2

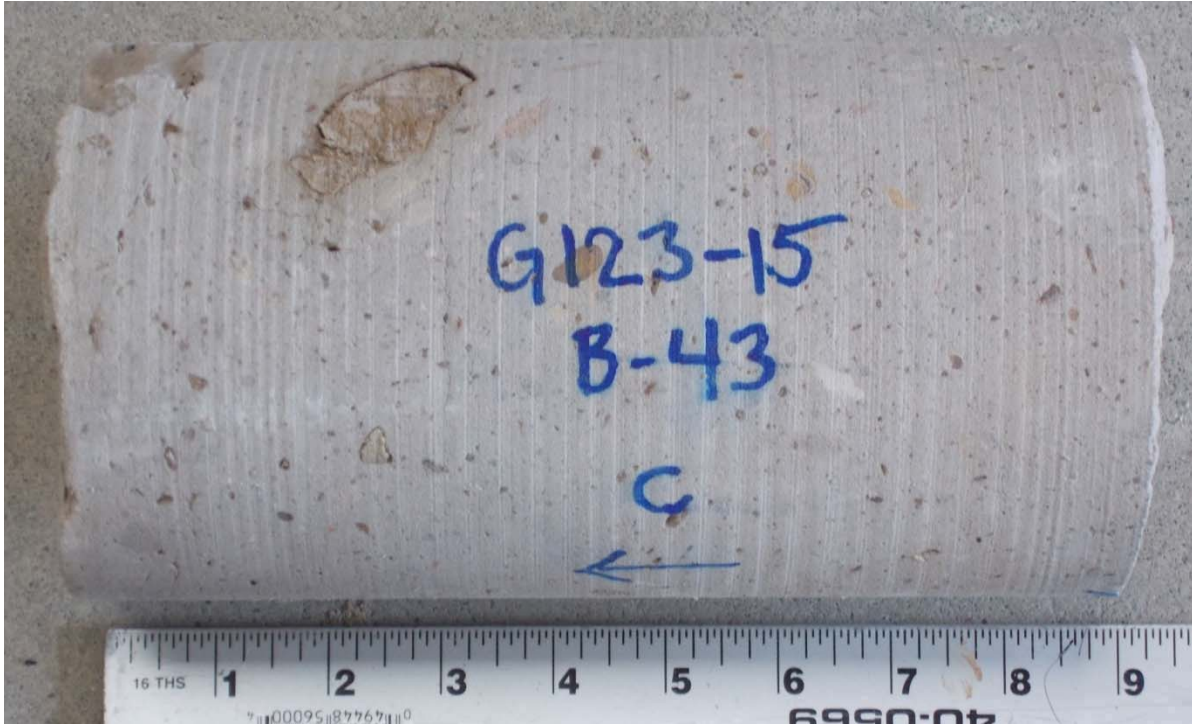


Photo 51 - Boring B-43, Part 3



Photo 52 - Boring B-43, Part 4



Photo 53 - Boring B-44, Part 1

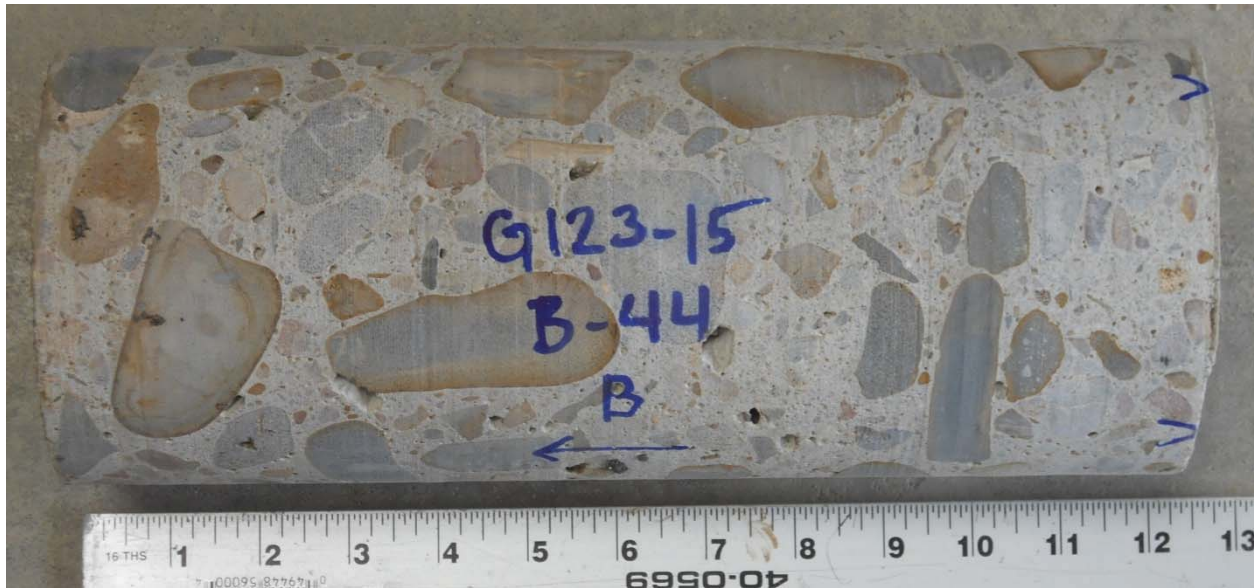


Photo 54 - Boring B-44, Part 2

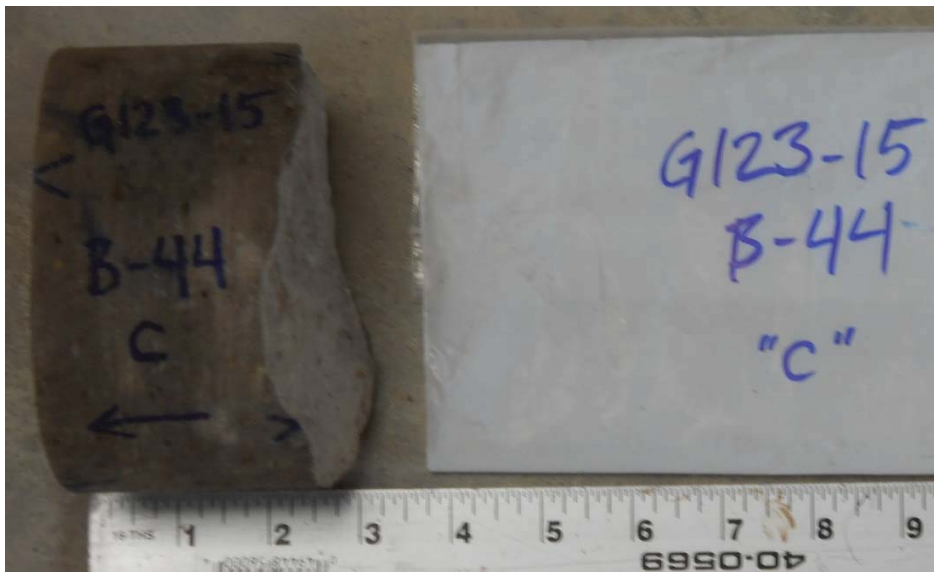


Photo 55 - Boring B-44, Part 3



Photo 56 - Boring B-44, Part 4



Photo 57 - Boring B-44, Part 5



Photo 58 - Boring B-46, Part 1



Photo 59 - Boring B-46, Part 2

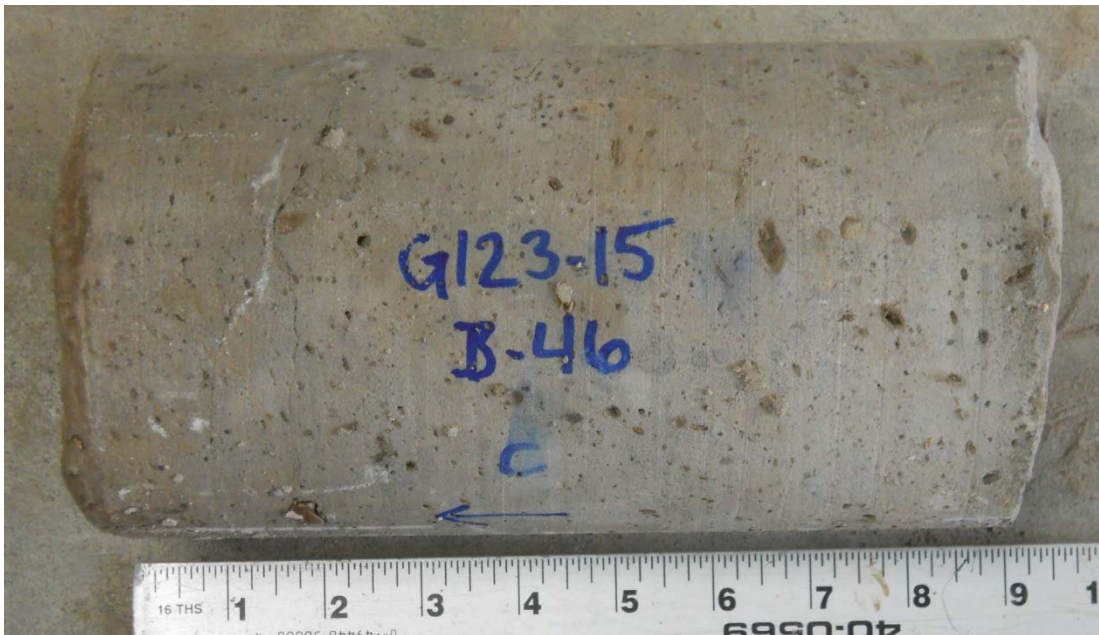


Photo 60 - Boring B-46, Part 3



Photo 61 - Boring B-47, Part 1



Photo 62 - Boring B-47, Part 2



Photo 63 - Boring B-47, Part 2.5

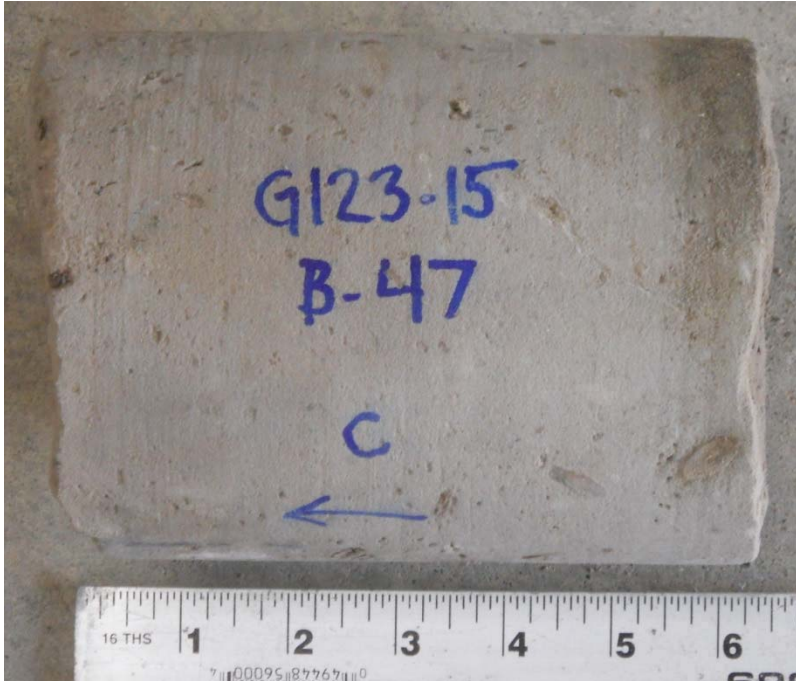


Photo 64 - Boring B-47, Part 3



Photo 65 - Boring B-48, Part 1

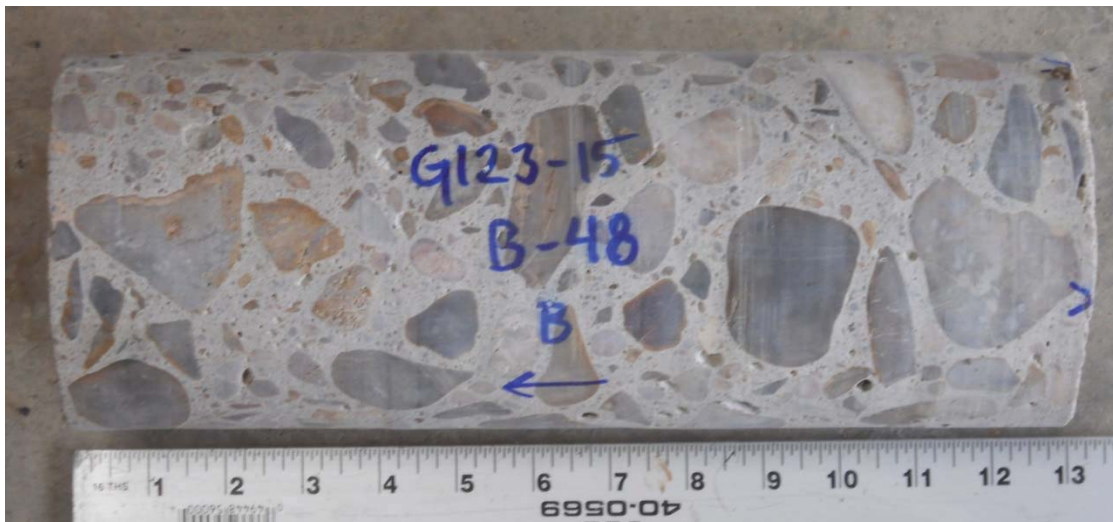


Photo 66 - Boring B-48, Part 2

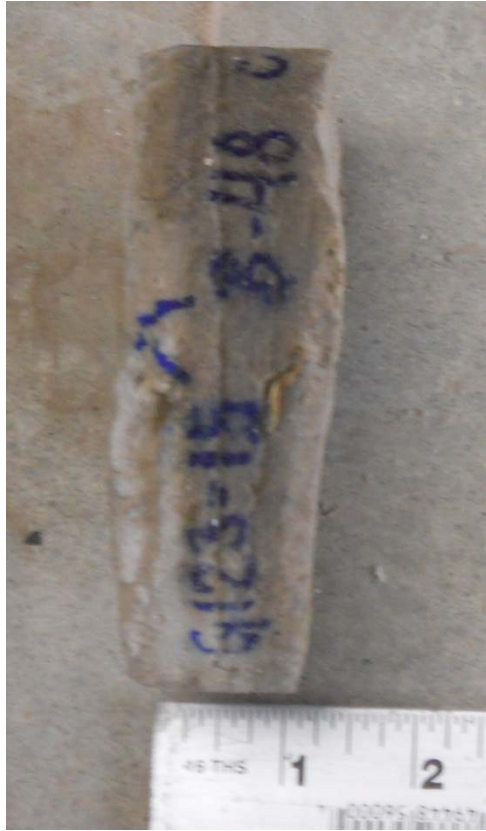


Photo 67 - Boring B-48, Part 3

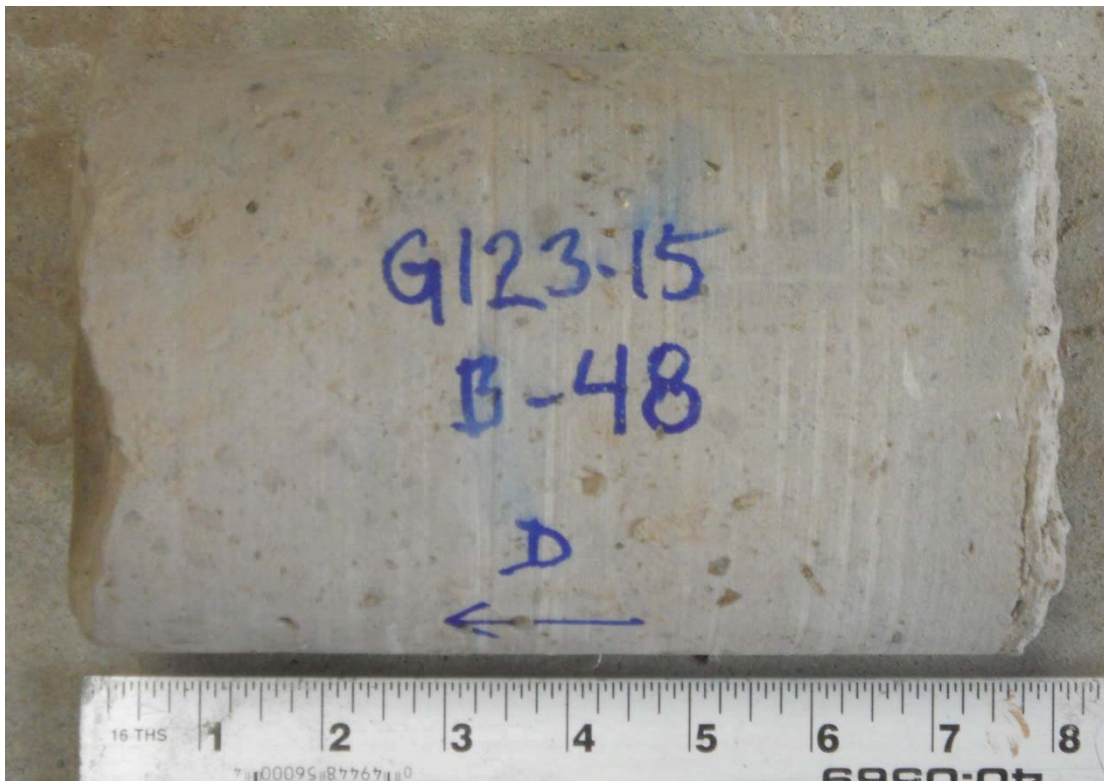


Photo 68 - Boring B-48, Part 4



Photo 69 - Boring B-50, Part 1



Photo 70 - Boring B-50, Part 2



Photo 71 - Boring B-50, Part 3



Photo 72 - Boring B-51, Part 1



Photo 73 - Boring B-51, Part 2



Photo 74 - Boring B-51, Part 3

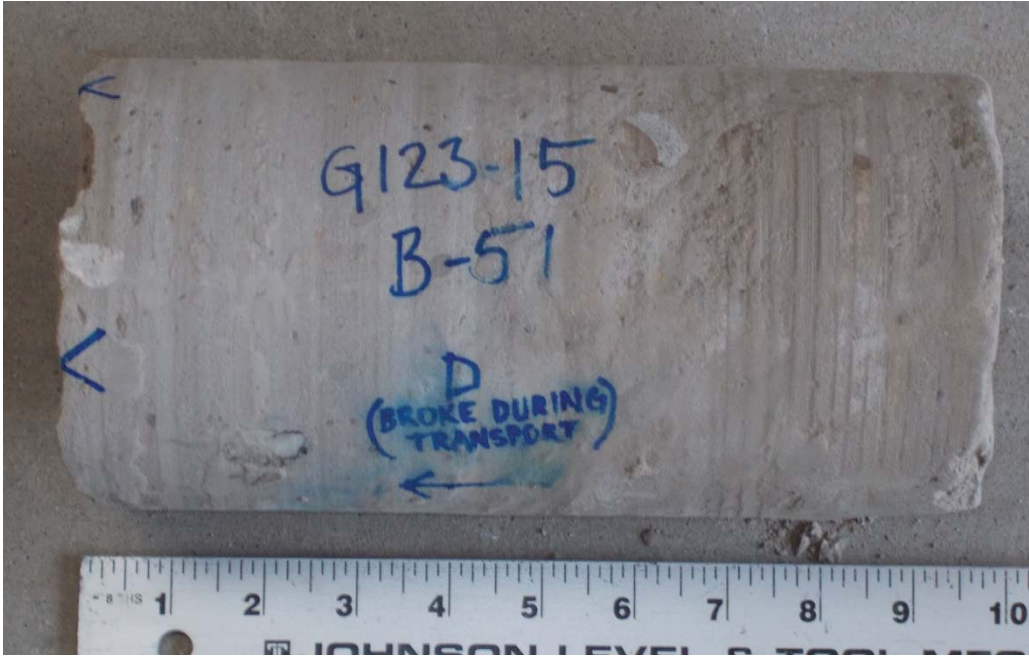


Photo 75 - Boring B-51, Part 4

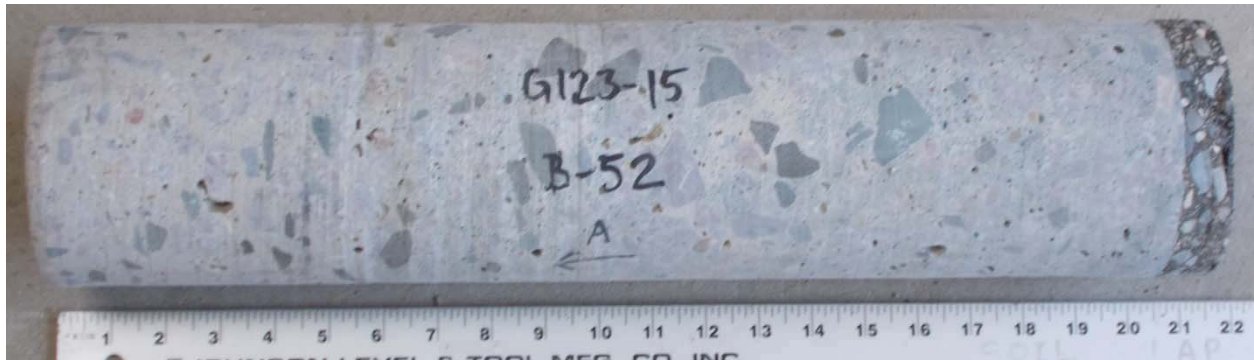


Photo 76 - Boring B-52, Part 1



Photo 77 - Boring B-52, Part 2

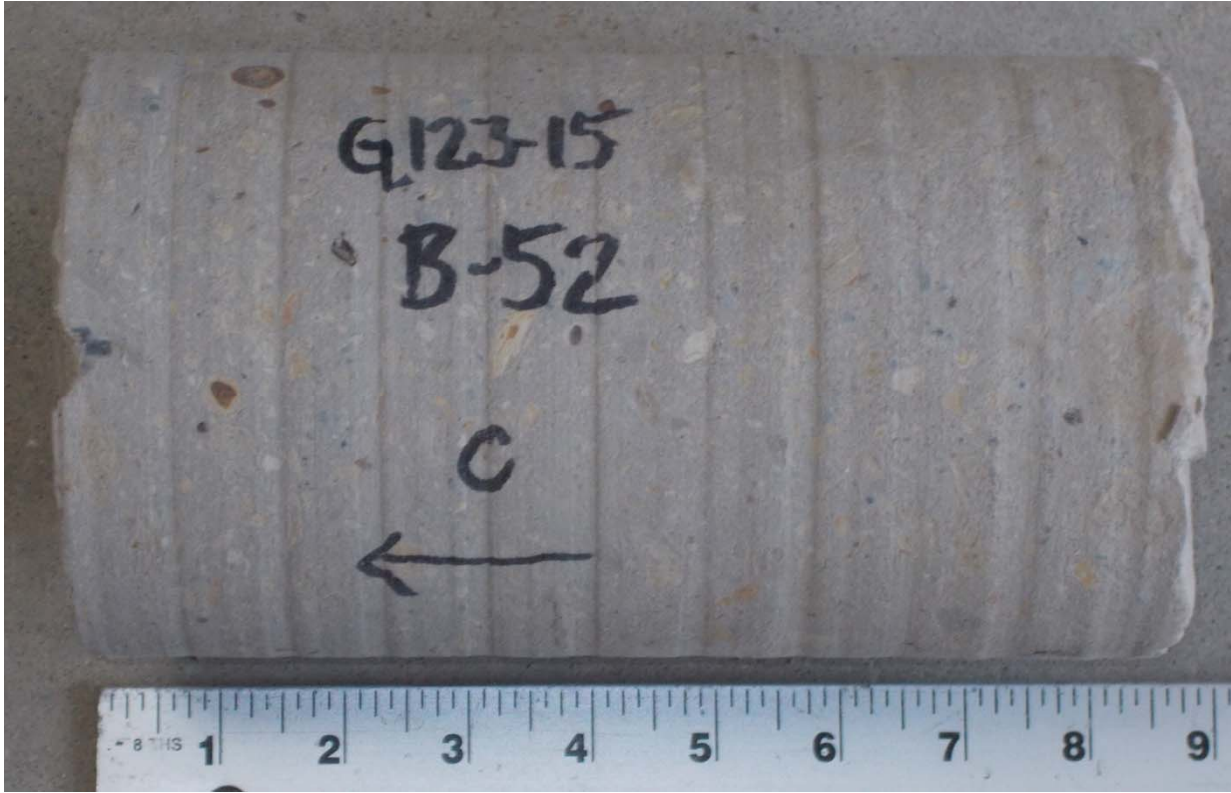
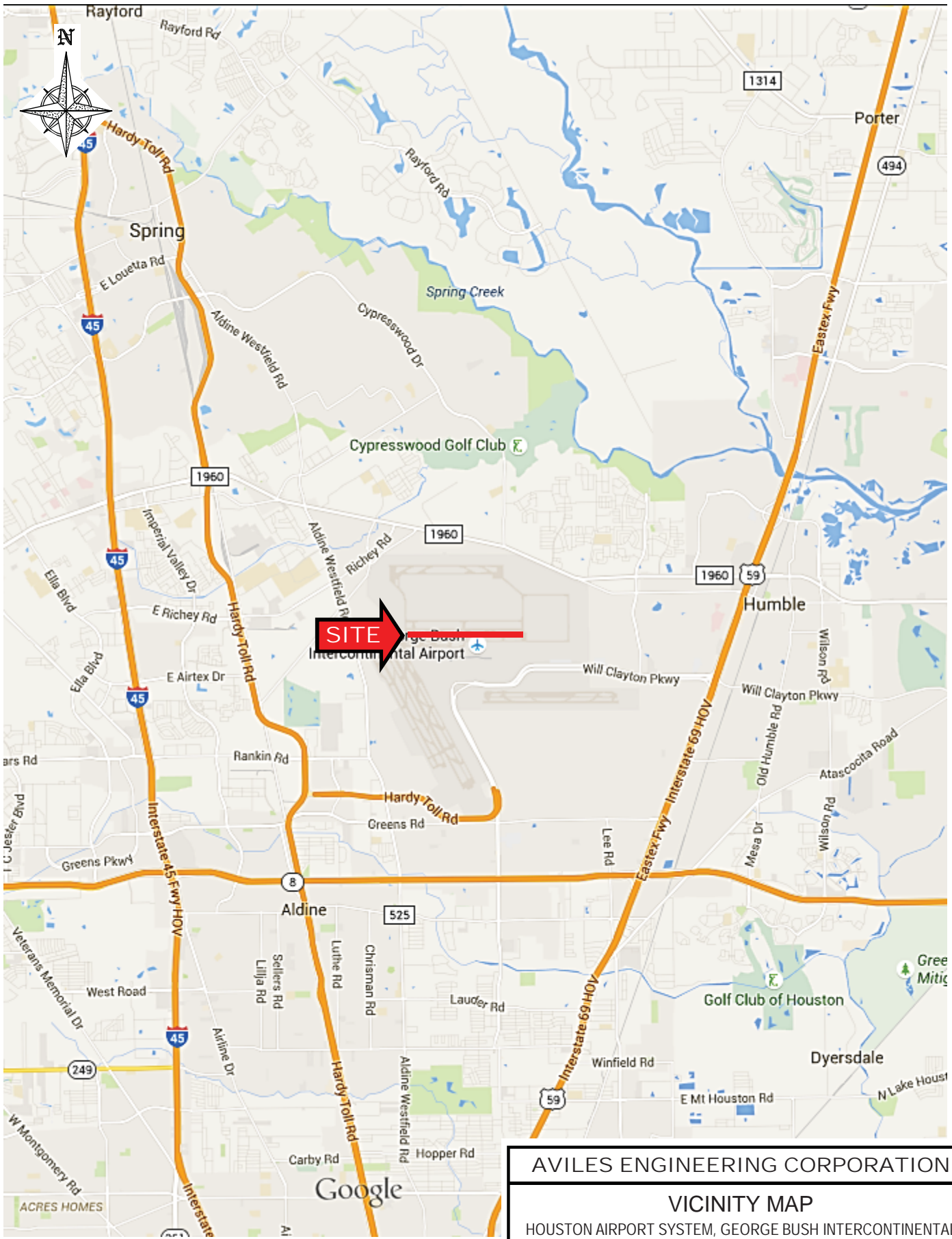


Photo 78 - Boring B-52, Part 3



APPENDIX A

| | |
|----------------------|----------------------------------------------------|
| Plate A-1 | Vicinity Map |
| Plates A-2a and A-2b | Boring Location Plan |
| Plates A-3 to A-29 | Boring Logs |
| Plate A-30 | Key to Symbols |
| Plate A-31 | Classification of Soils for Engineering Purposes |
| Plate A-32 | Terms Used on Boring Logs |
| Plate A-33 | ASTM & TXDOT Designation for Soil Laboratory Tests |

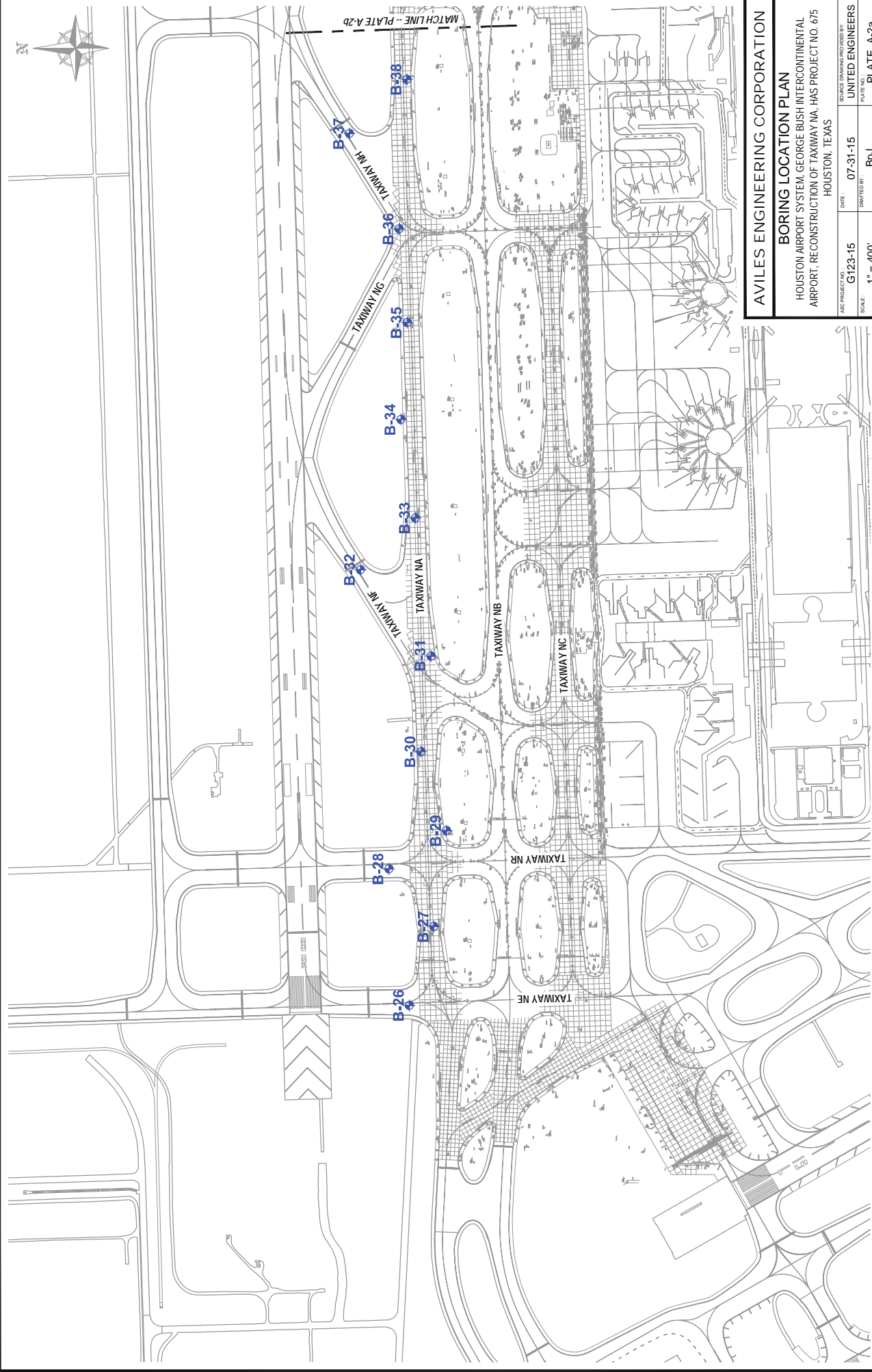


AVILES ENGINEERING CORPORATION

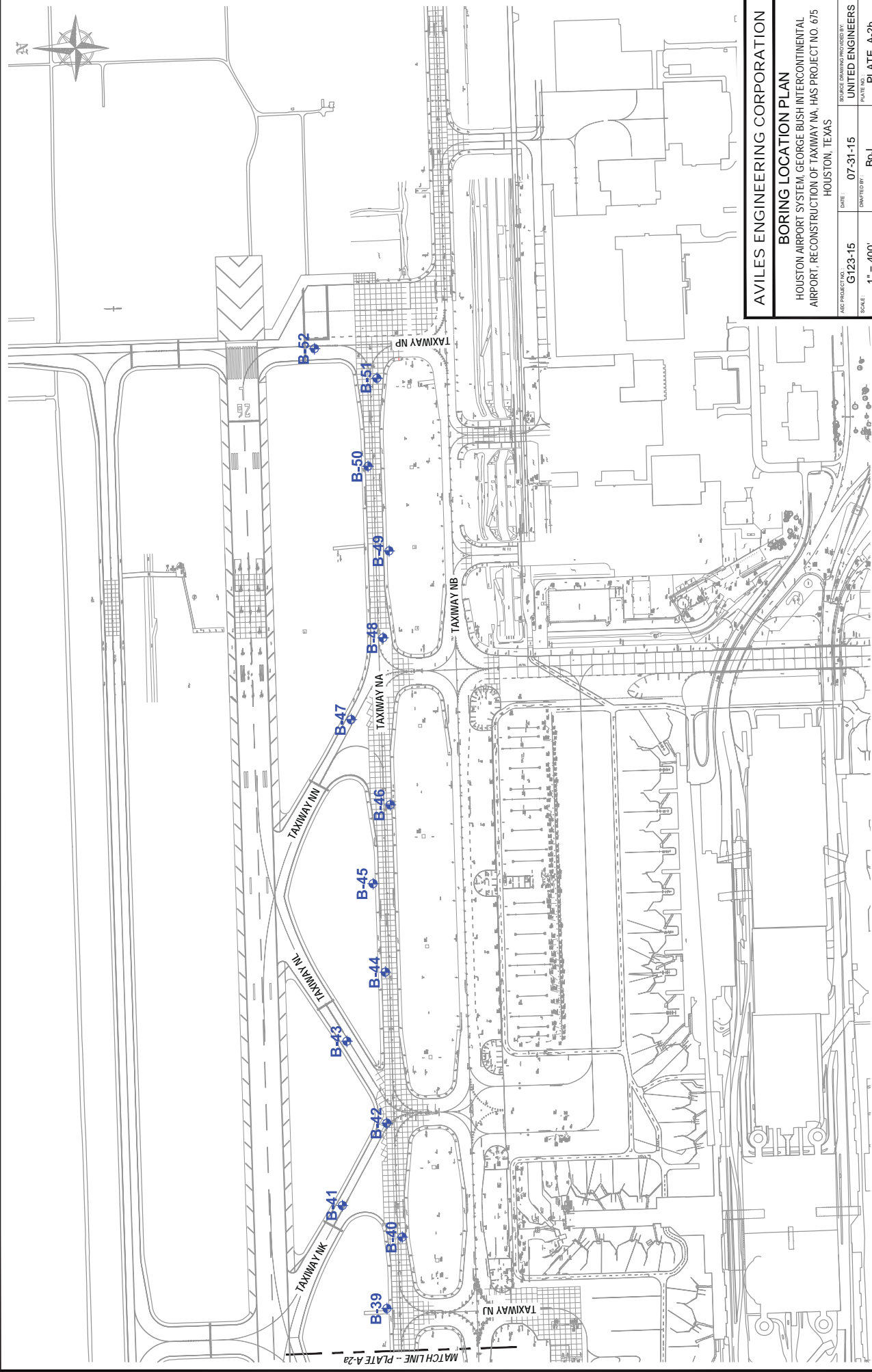
VICINITY MAP

HOUSTON AIRPORT SYSTEM, GEORGE BUSH INTERCONTINENTAL AIRPORT, RECONSTRUCTION OF TAXIWAY NA, HAS PROJECT NO. 675 HOUSTON, TEXAS

| | | | | | |
|------------------|---------|-------------|----------|-------------------|-----------|
| AEC PROJECT NO.: | G123-15 | DATE: | 07-31-15 | KEYMAP REFERENCE: | 334 W |
| APPROX. SCALE: | N.T.S. | DRAFTED BY: | WLW | PLATE NO.: | PLATE A-1 |



| | |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------|
| AVILES ENGINEERING CORPORATION | |
| BORING LOCATION PLAN | |
| HOUSTON AIRPORT SYSTEM, GEORGE BUSH INTERCONTINENTAL AIRPORT, RECONSTRUCTION OF TAXIWAY NA, HAS PROJECT NO. 675 HOUSTON, TEXAS | |
| AGE PROJECT NO. : G123-15 | DATE : 07-31-15 |
| SCALE : 1" = 400' | DRAWN BY : BpJ |
| SOURCE DRAWING PROVIDED BY : UNITED ENGINEERS | |
| PLATE NO. : PLATE A-2a | |



AVILES ENGINEERING CORPORATION

BORING LOCATION PLAN
 HOUSTON AIRPORT SYSTEM, GEORGE BUSH INTERCONTINENTAL
 AIRPORT, RECONSTRUCTION OF TAXIWAY NA, HAS PROJECT NO. 675
 HOUSTON, TEXAS

DATE: 07-31-15
 DRAWN BY: BpJ
 CHECKED BY: BpJ
 SCALE: 1" = 400'
 SHEET NO.: G123-15
 PROJECT NO.: G123-15
 SOURCE DRAWING PROVIDED BY: UNITED ENGINEERS
 PLATE NO.: PLATE A-2b

MATCH LINE - PLATE A-2a

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-26**

DATE **6/18/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|
| | | | | | | | △ | ● | ○ | □ | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3122443.71 Northing: 13927317.71 Elevation: 92.09 | | | | | | | | | | | |
| 0 - 1.75 | | | 17 1/8" Portland Cement Concrete | | | | | | | | | | | |
| 1.75 - 2.0 | | | 2" Asphaltic Concrete Bond Breaker | | | | | | | | | | | |
| 2.0 - 3.75 | | | 12 1/8" Portland Cement Concrete | | | | | | | | | | | |
| 3.75 - 4.0 | | | 10 1/4" Cemented Soil Subgrade | | | | | | | | | | | |
| 4.0 - 6.0 | | | Fill: hard, dark gray and brown Sandy Lean Clay (CL), with sand partings, gravel, and calcareous nodules | | 13 | | | | | | 53 | 36 | 12 | 24 |
| 6.0 - 8.0 | | | Light gray and dark gray Clayey Sand (SC) | | 16 | | | | | | | | | |
| 8.0 - 10.0 | | | -light gray and tan, with ferrous nodules 8'-10' | | 12 | 115 | | | | | 47 | 28 | 15 | 13 |
| 10.0 - 14.0 | | | Termination depth = 10' | | 12 | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-27**

DATE **6/18/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 18" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 1 1/2" Asphaltic Concrete Bond Breaker 11 1/2" Portland Cement Concrete | | | | | | | | | | | | |
| 4 | | | 13 1/4" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4 | | | Fill: stiff to hard, dark gray Sandy Lean Clay (CL), with sand seams and ferrous nodules | | 16 | | | | | | | | | | |
| 6 | | | Very stiff, light gray and dark gray Sandy Lean Clay (CL) | | 13 | 116 | | | | | 55 | 27 | 16 | 11 | |
| 8 | | | Very stiff to hard, light gray and tan Fat Clay (CH) | | 16 | | | | | | | | | | |
| 10 | | | Termination depth = 10' | | 14 | 121 | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-28**

DATE **6/18/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|-----------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 19" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 1 5/8" Asphaltic Concrete Bond Breaker 12" Portland Cement Concrete | | | | | | | | | | | | |
| | | | 1 5/8" Cemented Soil Subgrade 7 1/2" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4 | | | 7 1/4" Lime Stabilized Subgrade | | | | | | | | | | | | |
| | | | Fill: firm to very stiff, gray Sandy Lean Clay (CL), with abundant silt partings | 15 | 113 | | | △ | ○ | | | 25 | 16 | 9 | |
| 6 | | | Stiff, gray and light gray Sandy Lean Clay (CL), with silt seams, pockets, and partings | 16 | | | | | ○ | | 60 | 27 | 16 | 11 | |
| 8 | | | Stiff, gray and tan Lean Clay (CL), with ferrous nodules and abundant silt partings | 15 | 117 | | | | ● | | | | | | |
| 10 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 4.1 FEET WHILE DRILLING
 WATER LEVEL AT 3.8 FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-29**

DATE **6/19/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|-----------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3123267.16 Northing: 13927142.94 Elevation: 92.63 | | | | | | | | | | | | |
| 0 - 2 | | | Fill: stiff, gray and tan Lean Clay (CL), with sand seams, pockets, and roots | | | | | | | | | | | | |
| 2 - 4 | | | Very stiff to hard, brown and dark gray Sandy Lean Clay (CL), with abundant silt partings -with ferrous nodules 2'-4' | | | | | | | | | | | | |
| 4 - 6 | | | -gray, with silty clay pockets 4'-6' | | | | | | | | | | | | |
| 6 - 8 | | | Stiff to very stiff, dark gray and brown Fat Clay (CH) -with vertical sand seams 6'-8' | | | | | | | | | | | | |
| 8 - 10 | | | -gray and red, with sand seams 8'-10' | | | | | | | | | | | | |
| 10 - 14 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-30**

DATE **6/19/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3123638.94 Northing: 13927263.18 Elevation: 94.32 | | | | | | | | | | | | |
| 0 - 1.75 | | | 17 1/4" Portland Cement Concrete | | | | | | | | | | | | |
| 1.75 - 2.0 | | | 1 7/8" Asphaltic Concrete Bond Breaker | | | | | | | | | | | | |
| 2.0 - 3.5 | | | 11 7/8" Portland Cement Concrete | | | | | | | | | | | | |
| 3.5 - 4.0 | | | 9 1/2" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4.0 - 4.5 | | | Fill: hard, gray Clayey Sand (SC), with clay pockets | | 13 | | | | | | | | | | |
| 4.5 - 6.0 | | | Fill: hard, brown and gray Sandy Lean Clay (CL), with sand layers and pockets | | 12 | 120 | | | | | 46 | 26 | 17 | 9 | |
| 6.0 - 8.0 | | | Fill: very stiff, dark gray and brown Lean Clay (CL), with silt layers and pockets | | 13 | | | | | | | | | | |
| 8.0 - 10.0 | | | Stiff to very stiff, dark gray and brown Fat Clay (CH), with vertical silt partings | | 16 | 112 | | | | | | | | | |
| 10.0 - 14.0 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-31**

DATE **7/6/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|----|-----------|--------------|---------------|------------------|
| | | | | | | | △ | ● | ○ | □ | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3124089.45 Northing: 13927215.92 Elevation: 94.05 | | | | | | | | | | | |
| 0 - 1.75 | | | 17 7/8" Portland Cement Concrete | | | | | | | | | | | |
| 1.75 - 2.0 | | | 1" Asphaltic Concrete Bond Breaker | | | | | | | | | | | |
| 2.0 - 3.5 | | | 13 3/4" Portland Cement Concrete | | | | | | | | | | | |
| 3.5 - 4.0 | | | 8 7/8" Cemented Soil Subgrade | | | | | | | | | | | |
| 4.0 - 10.0 | | | Fill: very stiff to hard, dark gray Sandy Lean Clay (CL), with abundant silt partings -with sand layers 4'-6', and lean clay pockets 4'-10' | | | | | | | | | | | |
| 10.0 - 14.0 | | | Termination depth = 10' | | | | | | | | | | | |
| | | | | 119 | | | | | | 63 | 26 | 18 | 8 | |
| | | | | | | | | | | 25 | 17 | 8 | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-32**

DATE **7/6/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|----|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3124495.82 Northing: 13927547.99 Elevation: 92.92 | | | | | | | | | | | | |
| 0 - 1.75 | | | 17 1/2" Portland Cement Concrete | | | | | | | | | | | | |
| 1.75 - 2.0 | | | 1 7/8" Asphaltic Concrete Bond Breaker | | | | | | | | | | | | |
| 2.0 - 3.625 | | | 14 1/8" Portland Cement Concrete | | | | | | | | | | | | |
| 3.625 - 4.0 | | | 14 5/8" Cement Stabilized Base -with numerous voids | | | | | | | | | | | | |
| 4.0 - 6.0 | | | 5/8" Lime Stabilized Base Fill: gray Silty Clayey Sand (SC-SM), with lean clay pockets | | 13 | | | | | 46 | 21 | 16 | 5 | | |
| 6.0 - 8.0 | | | Stiff to very stiff, gray and tan Lean Clay (CL) -with sand seams and sand pockets 6'-8' | | 15 | | | | | | | | | | |
| 8.0 - 10.0 | | | -with vertical silt partings 8'-10' | | 17 | 105 | | | | 39 | 12 | 27 | | | |
| 10.0 - 14.0 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 4.0 FEET WHILE DRILLING
 WATER LEVEL AT 1.8 FEET AFTER **COMPLETE**
 DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-33**

DATE **7/6/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|-------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|----|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 17" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 2" Asphaltic Concrete Bond Breaker 11 7/8" Portland Cement Concrete | | | | | | | | | | | | |
| 4 | | | 1" Cemented Soil Subgrade 7 3/4" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4 | | | Fill: gray and tan Sandy Silt (ML), with lean clay pockets and organics | 14 | 120 | | | | | 53 | 22 | 19 | 3 | | |
| 4 | | | Fill: gray and tan Clayey Sand (SC) | | | | | | | | | | | | |
| 6 | | | Fill: hard, gray and tan Sandy Lean Clay (CL), with silty sand pockets | | | | | | | 58 | 27 | 17 | 10 | | |
| 8 | | | -with clayey sand seams and calcareous nodules 8'-10' | | | | | | | | | | | | |
| 10 | | | Termination depth = 10' | 12 | 122 | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

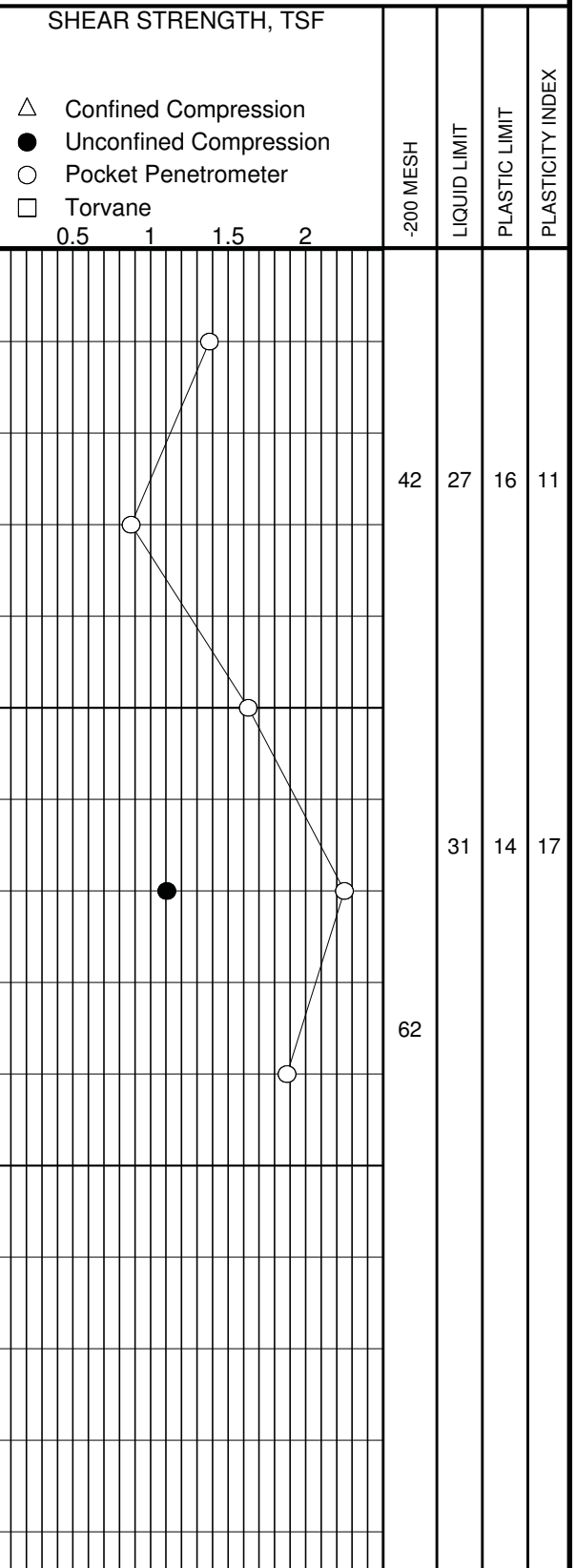
PROJECT: **Reconstruction of Taxiway NA**



BORING **B-34**

DATE **6/19/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3125203.87 Northing: 13927357.32 Elevation: 94.05 | | | | | | | | | | | | |
| 0 - 2 | | | Fill: light gray and tan Silty Sand (SM), with silty clay pockets and roots | | | | | | | | | | | | |
| 2 - 4 | | | Fill: light gray and dark gray Clayey Sand (SC), with silty sand layers | | | | | | | | | | | | |
| 4 - 6 | | | Fill: dark brown Sandy Silt (ML), with sandy clay layers | | | | | | | | | | | | |
| 6 - 8 | | | Fill: very stiff to hard, gray and dark gray Lean Clay (CL), with clayey sand seams and silty sand pockets | | | | | | | | | | | | |
| 8 - 10 | | | Very stiff, light tan and gray Sandy Lean Clay (CL), with silty sand seams and pockets | | | | | | | | | | | | |
| 10 - 14 | | | Termination depth = 10' | | | | | | | | | | | | |



BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING 
 WATER LEVEL AT n/a FEET AFTER **COMPLETE** 
 DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-35**

DATE **6/18/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 17 3/8" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 1 5/8" Asphaltic Concrete Bond Breaker 12 1/8" Portland Cement Concrete | | | | | | | | | | | | |
| | | | 8 3/4" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4 | | | 1 3/4" (disintegrated) Fill: hard, gray and tan Lean Clay (CL), with silty sand seams and pockets Fill: tan Silty Sand (SM), with clay pockets | | 13 | | | | | | | | | | |
| 6 | | | Fill: stiff to very stiff, dark gray and light gray Lean Clay (CL), with clayey sand seams and silty sand pockets | | 11 | | | | | | | | | | |
| 8 | | | Stiff to hard, light gray Sandy Lean Clay (CL), with abundant silty sand seams and silty clay pockets | | 14 | 118 | | | | | | | | | |
| 10 | | | Termination depth = 10' | | 13 | 118 | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-36**

DATE **6/19/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|----------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 18" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 1 7/8" Asphaltic Concrete Bond Breaker 14 3/8" Portland Cement Concrete | | | | | | | | | | | | |
| 4 | | | 9 1/2" Cemented Soil Subgrade -with numerous voids | | | | | | | | | | | | |
| 4 | | | Fill: very stiff to hard, tan and gray Sandy Lean Clay (CL) -with lean clay pockets 4'-6' | | 15 | 119 | | | | | | | | | |
| 6 | | | -light gray and dark gray, with fat clay layers 6'-8' | | 12 | 122 | | | | | | | | | |
| 8 | | | Very stiff, gray and reddish tan Lean Clay (CL), with silt partings and pockets | | 12 | | | | | | | | | | |
| 10 | | | Termination depth = 10' | | 15 | 116 | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-37**

DATE **6/19/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3126550.12 Northing: 13927599.68 Elevation: 93.43 | | | | | | | | | | | | |
| 0 - 1.5 | | | 17 1/2" Portland Cement Concrete | | | | | | | | | | | | |
| 1.5 - 2.0 | | | 2" Asphaltic Concrete Bond Breaker | | | | | | | | | | | | |
| 2.0 - 2.5 | | | 11 7/8" Portland Cement Concrete | | | | | | | | | | | | |
| 2.5 - 3.5 | | | 1 1/2" Cemented Soil Subgrade (friable) | | | | | | | | | | | | |
| 3.5 - 4.0 | | | 7 1/2" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4.0 - 4.5 | | | 3" Lime Stabilized Subgrade | | | | | | | | | | | | |
| 4.5 - 5.5 | | | Fill: stiff to hard, gray Sandy Lean Clay (CL), with silty sand partings and trace of lime stabilization | 14 | 121 | | | | | | | | | | |
| 5.5 - 6.0 | | | Fill: gray and tan Clayey Sand (SC), with lean clay pockets | 16 | 116 | | | | | | | | | | |
| 6.0 - 6.5 | | | Stiff to very stiff, gray Lean Clay (CL), with ferrous stains | | | | | | | | | | | | |
| 6.5 - 10.0 | | | -gray and reddish tan 8'-10' | | | | | | | | | | | | |
| 10.0 - 10.5 | | | Termination depth = 10' | | | | | | | | | | | | |
| 10.5 - 11.0 | | | | 17 | 114 | | | | | | | | | | |
| 11.0 - 11.5 | | | | | | | | | | | | | | | |
| 11.5 - 12.0 | | | | | | | | | | | | | | | |
| 12.0 - 12.5 | | | | | | | | | | | | | | | |
| 12.5 - 13.0 | | | | | | | | | | | | | | | |
| 13.0 - 13.5 | | | | | | | | | | | | | | | |
| 13.5 - 14.0 | | | | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 6.0 FEET WHILE DRILLING
 WATER LEVEL AT 9.5 FEET AFTER COMPLETE
 DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-38**

DATE **6/19/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|
| | | | | | | | △ | ● | ○ | □ | | | | |
| | | | Texas Coordinate System, Surface (ft): Easting: 3126805.19 Northing: 13927328.94 Elevation: 94.76 | | | | | | | | | | | |
| 0 | | | 17 3/8" Portland Cement Concrete | | | | | | | | | | | |
| 2 | | | 2 1/8" Asphaltic Concrete Bond Breaker 12" Portland Cement Concrete | | | | | | | | | | | |
| | | | 1 1/4" Lime Stabilized Subgrade (friable) | | | | | | | | | | | |
| | | | 3" Lime Stabilized Subgrade | | | | | | | | | | | |
| 4 | | | 6" Cemented Soil Subgrade | | | | | | | | | | | |
| | | | Fill: very stiff, gray and dark gray Silty Clay (CL-ML), with wet sand layers | | 19 | 112 | | | | | | | | |
| | | | Fill: firm to very stiff, gray and tan Sandy Lean Clay (CL), with silt partings | | 15 | 118 | | | | | 50 | 25 | 15 | 10 |
| 6 | | | Stiff to very stiff, dark gray and brown Fat Clay (CH), with silt partings and pockets | | | | | | | | | | | |
| 8 | | | Very stiff, gray and reddish tan Lean Clay (CL), with ferrous stains | | | | | | | | | | | |
| 10 | | | Termination depth = 10' | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 3.5 FEET WHILE DRILLING
 WATER LEVEL AT 7.0 FEET AFTER COMPLETE
 DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-39**

DATE **6/19/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|---|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3127240.29 Northing: 13927423.28 Elevation: 94.09 | | | | | | | | | | | | |
| 0 - 2 | | | Fill: stiff, gray, tan and light gray Sandy Lean Clay (CL), with sand seams and pockets | | | | | | | | | | | | |
| 2 - 4 | | | Fill: brown Silty Clayey Sand (SC-SM), with sand pockets and clay pockets | | | | | | | | | 37 | 23 | 16 | 7 |
| 4 - 6 | | | Fill: firm to stiff, brown Sandy Lean Clay (CL), with clayey sand pockets | | | | | | | | | | | | |
| 6 - 8 | | | Fill: firm to stiff, brown Sandy Lean Clay (CL), with clayey sand pockets | | | | | | | | | 51 | 26 | 17 | 9 |
| 8 - 10 | | | Light tan Sandy Silt (ML), with roots, silty clay and lean clay pockets | | | | | | | | | | | | |
| 10 - 14 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-40**

DATE **6/19/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 17" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 2 1/4" Asphaltic Concrete Bond Breaker 12" Portland Cement Concrete | | | | | | | | | | | | |
| | | | 2 1/2" Lime Stabilized Subgrade (friable) 6 7/8" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4 | | | Fill: firm to hard, gray and black Sandy Lean Clay (CL) -with organics 3.4'-4' -gray and tan 4'-8', with clayey sand pockets 4'-6' | | | | | | | | | | | | |
| 6 | | | -with silty sand pockets 6'-8' | | | | | | | | | | | | |
| 8 | | | Gray and tan Clayey Sand (SC), with roots and silty clay pockets | | | | | | | | | | | | |
| 10 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/RJM

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-41**

DATE **7/6/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|---------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|----|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 17 1/8" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 2 1/8" Asphaltic Concrete Bond Breaker 12" Portland Cement Concrete | | | | | | | | | | | | |
| | | | 8 5/8" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4 | | | Fill: dark gray and brown Sandy Silt (ML), with sandy clay pockets | | 13 | 121 | | | | 56 | 20 | 17 | 3 | | |
| 6 | | | Very stiff to hard, gray and tan Lean Clay (CL) -with silty sand seams 6'-8' | | 13 | 119 | | | | | | | | | |
| 8 | | | -with ferrous nodules 8'-10' | | 15 | | | | | | 39 | 14 | 25 | | |
| 10 | | | Termination depth = 10' | | 14 | 120 | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 3.5 FEET WHILE DRILLING
 WATER LEVEL AT 2.8 FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-42**

DATE **7/6/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|--------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|----|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 16 7/8" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 2 1/4" Asphaltic Concrete Bond Breaker 14 1/4" Portland Cement Concrete | | | | | | | | | | | | |
| 4 | | | 1 3/4" Cemented Soil Subgrade 7 3/8" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4 | | | Fill: gray and tan Silty Sand (SM), with lean clay pockets | 12 | 121 | | | | | | | | | | |
| 4.6 | | | Fill: very stiff to hard, dark gray and tan Lean Clay (CL), with fat clay pockets and sand seams | 15 | 119 | | | | | | | 31 | 13 | 18 | |
| 6 | | | Gray and tan Silty Sand (SM) | | | | | | | | | | | | |
| 8 | | | Very stiff, tan and gray Sandy Lean Clay (CL), with sand seams and ferrous nodules | 15 | | | | | | | | 58 | 41 | 14 | 27 |
| 10 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 3.6 FEET WHILE DRILLING
 WATER LEVEL AT 5.0 FEET AFTER COMPLETE
 DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-43**

DATE **7/6/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|----|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3128498.84 Northing: 13927611.54 Elevation: 93.15 | | | | | | | | | | | | |
| 0 - 1.5 | | | 17 1/2" Protland Cement Concrete | | | | | | | | | | | | |
| 1.5 - 2 | | | 2 1/2" Asphaltic Concrete Bond Breaker | | | | | | | | | | | | |
| 2 - 3.5 | | | 12 1/4" Portland Cement Concrete | | | | | | | | | | | | |
| 3.5 - 4.25 | | | 8 7/8" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4.25 - 4.75 | | | 1 3/4" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4.75 - 6 | | | Fill: stiff to hard, gray and brown Lean Clay (CL), with sand seams and fat clay pockets | | 11 | | | | | 54 | 25 | 17 | 8 | | |
| 6 - 8 | | | -tan and gray 6'-8' | | 12 | 118 | | | | | | | | | |
| 8 - 10 | | | Light tan and gray Silty Sand (SM), with clayey sand pockets | | 12 | | | | | 25 | 17 | 8 | | | |
| 10 - 14 | | | Termination depth = 10' | | 14 | 115 | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-44**

DATE **7/7/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|----------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 18" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 2 1/4" Asphaltic Concrete Bond Breaker 11 7/8" Portland Cement Concrete | | | | | | | | | | | | |
| 4 | | | 2 1/2" Lime Stabilized Subgrade 7 1/2" Lime Stabilized Subgrade (friable) | | | | | | | | | | | | |
| 4 | | | Fill: brown and black Silty Sand (SM), with trace amount of cement stabilization | | 24 | | | | | | | | | | |
| 4 | | | Fill: brown, gray, and tan Silty Sand (SM) -with lean clay pockets 4'-6' | | 13 | 118 | | | | | 31 | | | | |
| 6 | | | -with fat clay pockets 6'-8' | | 12 | 119 | | | | | | 27 | 16 | 11 | |
| 8 | | | -with abundant lean clay pockets 8'-10' | | 14 | | | | | | | | | | |
| 10 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-45**

DATE **7/7/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3129241.07 Northing: 13927488.50 Elevation: 92.86 | | | | | | | | | | | | |
| 0 - 2 | | | Fill: stiff, gray and light gray Lean Clay (CL), with sand pockets | 16 | 114 | | | | | | 61 | 40 | 13 | 27 | |
| 2 - 4 | | | Fill: light gray Silty Sand (SM) -with fat clay pockets 2'-4' | 11 | | | | | | | | | | | |
| 4 - 6 | | | -light gray and dark gray, with lean clay layers 4'-6' | 13 | 113 | | | | | | | | | | |
| 6 - 8 | | | Fill: stiff, gray and tan Sandy Silty Clay (CL-ML), with fat clay pockets | 12 | | | | | | | 61 | 22 | 16 | 6 | |
| 8 - 10 | | | Very stiff to hard, gray and tan Sandy Lean Clay (CL), with silty sand pockets and partings | 13 | 121 | | | | | | | | | | |
| 10 - 14 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-46**

DATE **7/7/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX |
|---------------|--------|-----------------|----------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|
| | | | | | | | △ | ● | ○ | □ | | | | |
| 0 | | | 17 3/4" Portland Cement Concrete | | | | | | | | | | | |
| 2 | | | 1 1/2" Asphaltic Concrete Bond Breaker 12 3/8" Portland Cement Concrete | | | | | | | | | | | |
| | | | 9" Cemented Soil Subgrade | | | | | | | | | | | |
| 4 | | | Fill: hard, gray and tan Lean Clay (CL), with sand seams and layers | 14 | 121 | | | | | | 28 | 14 | 14 | |
| 6 | | | Dark gray and brown Sandy Silt (ML) | | | | | | | | | | | |
| 8 | | | Tan and gray Clayey Sand (SC) | | | | | | | | 49 | 31 | 16 | 15 |
| 10 | | | Termination depth = 10' | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 3.4 FEET WHILE DRILLING
 WATER LEVEL AT 6.3 FEET AFTER COMPLETE
 DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-47**

DATE **7/7/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|----------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 18 7/8" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 2" Asphaltic Concrete Bond Breaker 11 1/2" Portland Cement Concrete | | | | | | | | | | | | |
| 4 | | | 3/8" Lime Stabilized Subgrade 2 3/4" Lime Stabilized Subgrade (friable) 6" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4 | | | Fill: stiff to hard, gray and brown Sandy Lean Clay (CL), with silty sand layers and silty clay pockets | | 17 | 116 | | | | | 63 | 20 | 11 | 9 | |
| 6 | | | Light gray and reddish brown Clayey Sand (SC), with lean clay pockets -with silty sand partings 6'-8' | | 13 | 118 | | | | | | | | | |
| 8 | | | -with vertical sand seams 8'-10' | | 15 | 118 | | | | | 47 | 35 | 16 | 19 | |
| 10 | | | Termination depth = 10' | | 11 | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 3.6 FEET WHILE DRILLING
 WATER LEVEL AT 0.6 FEET AFTER COMPLETE

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-48**

DATE **7/7/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|----|-----------|--------------|---------------|------------------|
| | | | | | | | △ | ● | ○ | □ | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3130399.10 Northing: 13927441.90 Elevation: 93.25 | | | | | | | | | | | |
| 0 - 1.5 | | | 17 1/2" Portland Cement Concrete | | | | | | | | | | | |
| 1.5 - 2.0 | | | 1 1/2" Asphaltic Concrete Bond Breaker | | | | | | | | | | | |
| 2.0 - 2.5 | | | 12 1/4" Portland Cement Concrete | | | | | | | | | | | |
| 2.5 - 3.0 | | | 1 3/8" Cemented Soil Subgrade | | | | | | | | | | | |
| 3.0 - 3.5 | | | 3/4" (disintegrated) | | | | | | | | | | | |
| 3.5 - 4.0 | | | 7 1/4" Cemented Soil Subgrade | | | | | | | | | | | |
| 4.0 - 6.0 | | | Fill: brown, gray, and tan Silty Sand (SM), with lean clay pockets | 15 | 113 | | | | | | 18 | 16 | 2 | |
| 6.0 - 8.0 | | | Fill: hard, dark gray Sandy Lean Clay (CL), with silty sand layers | 15 | | | | | | | | | | |
| 8.0 - 10.0 | | | Hard, gray and reddish brown Sandy Lean Clay (CL) | 12 | | | | | | 57 | 29 | 15 | 14 | |
| 10.0 - 14.0 | | | Termination depth = 10' | 14 | 122 | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL



PROJECT: **Reconstruction of Taxiway NA**

BORING **B-49**

DATE **7/7/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|-----|---|-----------|--------------|---------------|------------------|
| | | | | | | | △ | ● | ○ | □ | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3130808.26 Northing: 13927413.38 Elevation: 92.19 | | | | 0.5 | 1 | 1.5 | 2 | | | | |
| 0 - 2 | | | Fill: gray, reddish brown, and brown Clayey Sand (SC), with lean clay seams | | | | | | | | | | | |
| 2 - 4 | | | Fill: tan and gray Silty Sand (SM) | | | | | | | | | | | |
| 4 - 6 | | | -gray and brown, with ferrous nodules 4'-6' | | | | | | | | | | | |
| 6 - 8 | | | Gray and reddish brown Clayey Sand (SC), with lean clay seams and ferrous nodules | | | | | | | | | | | |
| 8 - 10 | | | -with silty sand seams 6'-8' | | | | | | | | | | | |
| 10 | | | Termination depth = 10' | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING 
 WATER LEVEL AT n/a FEET AFTER **COMPLETE** 
 DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-50**

DATE **7/8/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|---------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | 17 3/4" Portland Cement Concrete | | | | | | | | | | | | |
| 2 | | | 2 3/8" Asphaltic Concrete Bond Breaker 12 1/8" Portland Cement Concrete | | | | | | | | | | | | |
| 4 | | | 7/8" Cemented Soil Subgrade 8 5/8" Cemented Soil Subgrade | | | | | | | | | | | | |
| 4 | | | Fill: gray and brown Silty Sand (SM), with fat clay partings and wood fragments | | 14 | 118 | | | | | 44 | 18 | 17 | 1 | |
| 4 | | | Fill: gray and brown Clayey Sand (SC), wit fat clay seams and pockets | | 12 | 120 | | | | | | | | | |
| 6 | | | Very stiff, dark gray and brown Sandy Silty Clay (CL-ML), with silty sand seams | | 12 | | | | | | 53 | 21 | 17 | 4 | |
| 8 | | | Very stiff, gray and reddish brown Fat Clay (CH), with silty sand pockets | | 17 | | | | | | | | | | |
| 10 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 3.5 FEET WHILE DRILLING
 WATER LEVEL AT 1.4 FEET AFTER **COMPLETE**
 DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-51**

DATE **7/8/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX |
|---------------|--------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|
| | | | | | | | △ | ● | ○ | □ | | | | |
| 0 | | | 17 5/8" Portland Cement Concrete | | | | | | | | | | | |
| 2 | | | 1 5/8" Asphaltic Concrete Bond Breaker 6 1/4" Portland Cement Concrete 7 3/4" Portland Cement Concrete 7 1/4" Cemented Soil Subgrade | | | | | | | | | | | |
| 4 | | | 2 1/4" Cemented Soil Subgrade Fill: dark gray and brown, lime-stabilized Silty Sand (SM) Fill: stiff to hard, tan, gray, and brown Sandy Lean Clay (CL) with abundant silty sand seams | 12 | | | | | | | | | | |
| 6 | | | | 12 | 121 | | | | | | | | | |
| 8 | | | Tan and gray Silty Sand (SM), with clayey sand pockets | 14 | 111 | | | | | | | | | |
| 10 | | | Termination depth = 10' | 11 | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING
 WATER LEVEL AT n/a FEET AFTER **COMPLETE**

DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

PROJECT: **Reconstruction of Taxiway NA**

BORING **B-52**

DATE **7/8/15** TYPE **4" Dry Auger**

LOCATION **See Boring Location Plan**

| DEPTH IN FEET | SYMBOL | SAMPLE INTERVAL | DESCRIPTION | S.P.T. BLOWS / FT. | MOISTURE CONTENT, % | DRY DENSITY, PCF | SHEAR STRENGTH, TSF | | | | -200 MESH | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | |
|---------------|--------|-----------------|------------------------------------------------------------------------------------------------------------|--------------------|---------------------|------------------|---------------------|---|---|---|-----------|--------------|---------------|------------------|--|
| | | | | | | | △ | ● | ○ | □ | | | | | |
| 0 | | | Texas Coordinate System, Surface (ft): Easting: 3131760.78 Northing: 13927764.36 Elevation: 89.15 | | | | | | | | | | | | |
| 0 - 1.75 | | | 19 3/4" Portland Cement Concrete | | | | | | | | | | | | |
| 1.75 - 2.0 | | | 1" Asphaltic Concrete Bond Breaker | | | | | | | | | | | | |
| 2.0 - 3.25 | | | 12 1/4" Portland Cement Concrete | | | | | | | | | | | | |
| 3.25 - 3.75 | | | 5 3/4" Cemented Soil Subgrade | | | | | | | | | | | | |
| 3.75 - 4.0 | | | 2 5/8" Lime Stabilized Subgrade | | | | | | | | | | | | |
| 4.0 - 4.5 | | | Fill: gray and tan, stabilized Silty Sand (SM) | | 14 | | | | | | 61 | | | | |
| 4.5 - 5.8 | | | Fill: very stiff to hard, gray and tan Sandy Silty Clay (CL-ML), with sand pockets | | 12 | 114 | | | | | 61 | 23 | 18 | 5 | |
| 5.8 - 6.0 | | | Gray Silty Sand (SM) | | 12 | | | | | | | | | | |
| 6.0 - 8.0 | | | -light gray and tan 8'-10' | | 18 | 114 | | | | | | 21 | 18 | 3 | |
| 8.0 - 10.0 | | | Termination depth = 10' | | | | | | | | | | | | |

BORING DRILLED TO 10 FEET WITHOUT DRILLING FLUID
 WATER ENCOUNTERED AT 3.5 FEET WHILE DRILLING
 WATER LEVEL AT 5.8 FEET AFTER COMPLETE
 DRILLED BY J.H. Drilling CHECKED BY BPJ LOGGED BY ME/CHL

KEY TO SYMBOLS

Symbol Description

Strata symbols



Description not given for:
"D9"



Paving



Gravel frac



Description not given for:
"D"



Fill



Clayey sand



Low plasticity
clay



High plasticity
clay



Description not given for:
"FK"



(empty)



Silt



Silty sand



Silty low plasticity
clay

Misc. Symbols



Pocket Penetrometer



Unconfined Compression

Symbol Description



Confined Compression



Water table depth
during drilling



Subsequent water
table depth

Soil Samplers



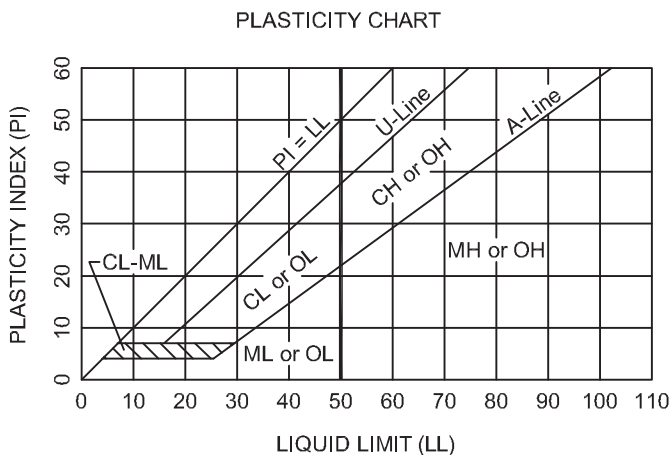
Rock core



Undisturbed thin wall
Shelby tube

| MAJOR DIVISIONS | | GROUP SYMBOL | TYPICAL NAMES | |
|--------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| COARSE-GRAINED SOILS (Less than 50% passes No. 200 sieve) | GRAVELS (Less than 50% of coarse fraction passes No. 4 sieve) | CLEAN GRAVELS (Less than 5% passes No. 200 sieve) | | |
| | | GW | Well-graded gravel, well-graded gravel with sand | |
| | | GP | Poorly-graded gravel, poorly-graded gravel with sand | |
| | | GRAVELS WITH FINES (More than 12% passes No. 200 sieve) | Limits plot below "A" line & hatched zone on plasticity chart | GM |
| | Limits plot above "A" line & hatched zone on plasticity chart | | GC | Clayey gravel, clayey gravel with sand |
| | SANDS (50% or more of coarse fraction passes No. 4 sieve) | CLEAN SANDS (Less than 5% passes No. 200 sieve) | | |
| | | SW | Well-graded sand, well-graded sand with gravel | |
| | | SP | Poorly-graded sand, poorly-graded sand with gravel | |
| SANDS WITH FINES (More than 12% passes No. 200 sieve) | | Limits plot below "A" line & hatched zone on plasticity chart | SM | Silty sand, silty sand with gravel |
| | Limits plot above "A" line & hatched zone on plasticity chart | SC | Clayey sand, clayey sand with gravel | |
| FINE-GRAINED SOILS (50% or more passes No. 200 sieve) | SILTS AND CLAYS (Liquid Limit Less Than 50%) | | ML | Silt, silt with sand, silt with gravel, sandy silt, gravelly silt |
| | | | CL | Lean clay, lean clay with sand, lean clay with gravel, sandy lean clay, gravelly lean clay |
| | | | OL | Organic clay, organic clay with sand, sandy organic clay, organic silt, sandy organic silt |
| | SILTS AND CLAYS (Liquid Limit 50% or More) | | MH | Elastic silt, elastic silt with sand, sandy elastic silt, gravelly elastic silt |
| | | | CH | Fat clay, fat clay with sand, fat clay with gravel, sandy fat clay, gravelly fat clay |
| | | | OH | Organic clay, organic clay with sand, sandy organic clay, organic silt, sandy organic silt |

NOTE: Coarse soils between 5% and 12% passing the No. 200 sieve and fine-grained soils with limits plotting in the hatched zone of the plasticity chart are to have dual symbols.

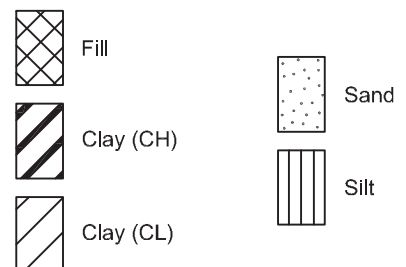


Equation of A-Line: Horizontal at $PI=4$ to $LL=25.5$, then $PI=0.73(LL-20)$
 Equation of U-Line: Vertical at $LL=16$ to $PI=7$, then $PI=0.9(LL-8)$

DEGREE OF PLASTICITY OF COHESIVE SOILS

| Degree of Plasticity | Plasticity Index |
|----------------------|------------------|
| None | 0 - 4 |
| Slight | 5 - 10 |
| Medium | 11 - 20 |
| High | 21 - 40 |
| Very High | >40 |

SOIL SYMBOLS





TERMS USED ON BORING LOGS

SOIL GRAIN SIZE

U.S. STANDARD SIEVE

| | | | | | | | | | |
|----------|---------|--------|------|--------|--------|-------|-------|-------|--|
| | 6" | 3" | 3/4" | #4 | #10 | #40 | #200 | | |
| BOULDERS | COBBLES | GRAVEL | | SAND | | | SILT | CLAY | |
| | | COARSE | FINE | COARSE | MEDIUM | FINE | | | |
| | 152 | 76.2 | 19.1 | 4.76 | 2.00 | 0.420 | 0.074 | 0.002 | |

SOIL GRAIN SIZE IN MILLIMETERS

STRENGTH OF COHESIVE SOILS

| <u>Consistency</u> | Undrained Shear Strength, Kips per Sq. ft. |
|--------------------|--------------------------------------------------|
| Very Soft | less than 0.25 |
| Soft | 0.25 to 0.50 |
| Firm | 0.50 to 1.00 |
| Stiff | 1.00 to 2.00 |
| Very Stiff | 2.00 to 4.00 |
| Hard | greater than 4.00 |

RELATIVE DENSITY OF COHESIONLESS SOILS FROM STANDARD PENETRATION TEST

| | |
|--------------------|-----------|
| Very Loose | <4 bpf |
| Loose | 5-10 bpf |
| Medium Dense | 11-30 bpf |
| Dense | 31-50 bpf |
| Very Dense | >50 bpf |

SPLIT-BARREL SAMPLER DRIVING RECORD

| Blows per Foot | Description |
|----------------|------------------------------------------------------------------------------|
| 25 | 25 blows driving sampler 12 inches, after initial 6 inches of seating. |
| 50/7" | 50 blows driving sampler 7 inches, after initial 6 inches of seating. |
| Ref/3" | 50 blows driving sampler 3 inches, during initial 6-inches seating interval. |

NOTE: To avoid change to sampling tools, driving is limited to 50 blows during or after seating interval.

DRY STRENGTH ASTM D2488

| | |
|-----------|-----------------------------------------------------------------------------------------------------|
| None | Dry specimen crumbles into powder with mere pressure of handling |
| Low | Dry specimen crumbles into powder with some finger pressure |
| Medium | Dry specimen breaks into pieces or crumbles with considerable pressure |
| High | Dry specimen cannot be broken with finger pressure, it can be broken between thumb and hard surface |
| Very High | Dry specimen cannot be broken between thumb and hard surface |

MOISTURE CONDITION ASTM D2488

| | |
|-------|----------------------------------------------|
| Dry | Absence of moisture, dusty, dry to the touch |
| Moist | Damp but no visible water |
| Wet | Visible free water |

SOIL STRUCTURE

| | |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Slickensided | Having planes of weakness that appear slick and glossy. The degree of slickensidedness depends upon the spacing of slickensides and the easiness of breaking along these planes. |
| Fissured | Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical. |
| Pocket | Inclusion of material of different texture that is smaller than the diameter of the sample. |
| Parting | Inclusion less than 1/8 inch thick extending through the sample. |
| Seam | Inclusion 1/8 inch to 3 inches thick extending through the sample. |
| Layer | Inclusion greater than 3 inches thick extending through the sample. |
| Laminated | Soil sample composed of alternating partings or seams of different soil types. |
| Interlayered | Soil sample composed of alternating layers of different soil types. |
| Intermixed | Soil sample composed of pockets of different soil types and layered or laminated structure is not evident. |
| Calcareous | Having appreciable quantities of calcium material. |

ASTM & TXDOT DESIGNATION FOR SOIL LABORATORY TESTS

| NAME OF TEST | ASTM TEST DESIGNATION | TXDOT TEST DESIGNATION |
|------------------------------------|-----------------------|------------------------|
| Moisture Content | D 2216 | Tex-103-E |
| Specific Gravity | D 854 | Tex-108-E |
| Sieve Analysis | D 421 D 422 | Tex-110-E (Part 1) |
| Hydrometer Analysis | D 422 | Tex-110-E (Part 2) |
| Minus No. 200 Sieve | D 1140 | Tex-111-E |
| Liquid Limit | D 4318 | Tex-104-E |
| Plastic Limit | D 4318 | Tex-105-E |
| Shrinkage Limit | D 427 | Tex-107-E |
| Standard Proctor Compaction | D 698 | Tex-114-E |
| Modified Proctor Compaction | D 1557 | Tex-113-E |
| Permeability (constant head) | D 2434 | - |
| Consolidation | D 2435 | - |
| Direct Shear | D 3080 | - |
| Unconfined Compression | D 2166 | - |
| Unconsolidated-Undrained Triaxial | D 2850 | Tex-118-E |
| Consolidated-Undrained Triaxial | D 4767 | Tex-131-E |
| Pinhole Test | D 4647 | - |
| California Bearing Ratio | D 1883 | - |
| Unified Soil Classification System | D 2487 | Tex-142-E |

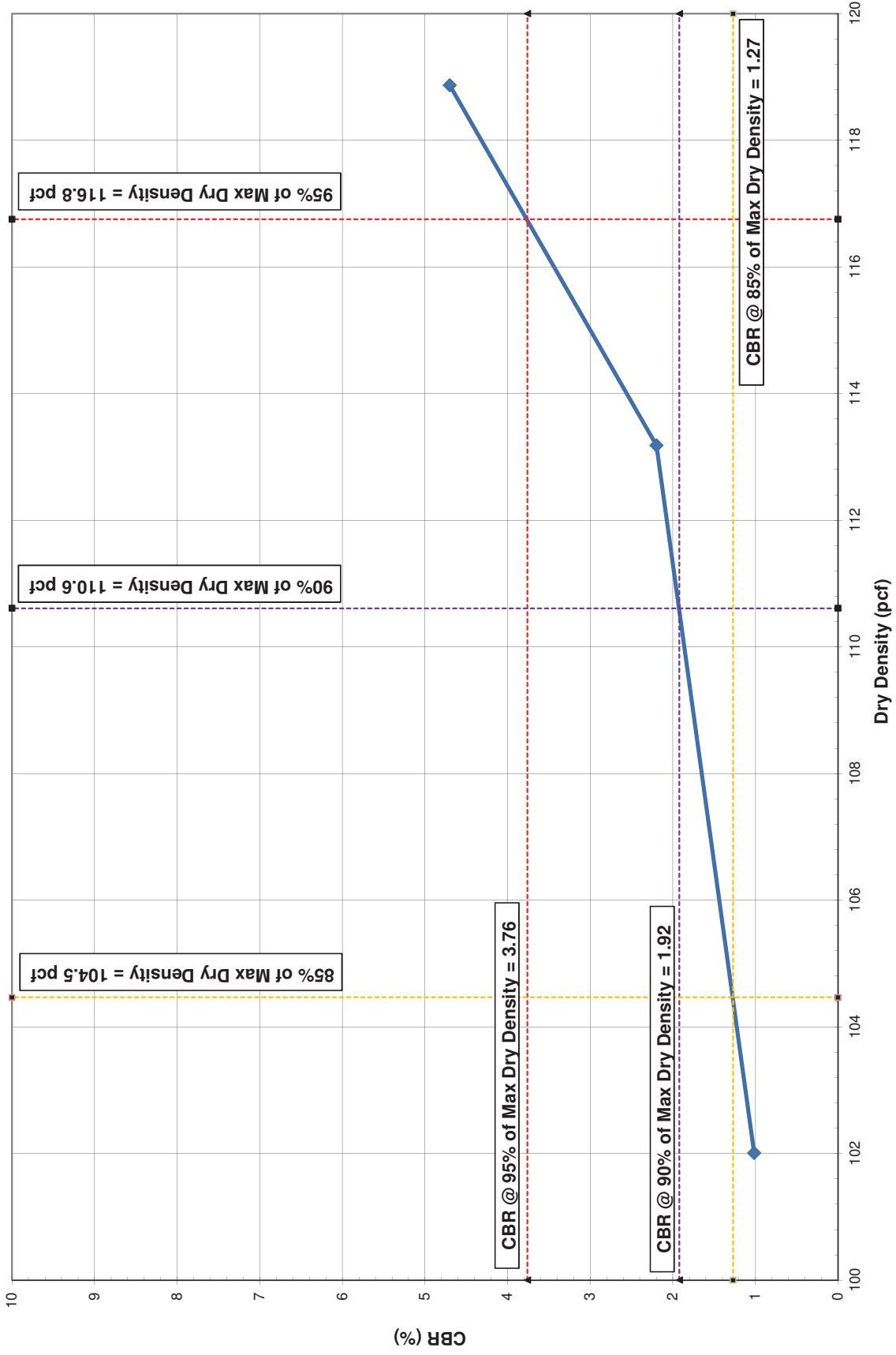


APPENDIX B

| | |
|---------------------|---------------------------------------|
| Plates B-1 to B-12 | California Bearing Ratio Test Results |
| Plate B-13 to B-18 | Modified Proctor Test Results |
| Plate B-19 | Organic Content Test Results |
| Plates B-20 to B-25 | Permeability Test Results |

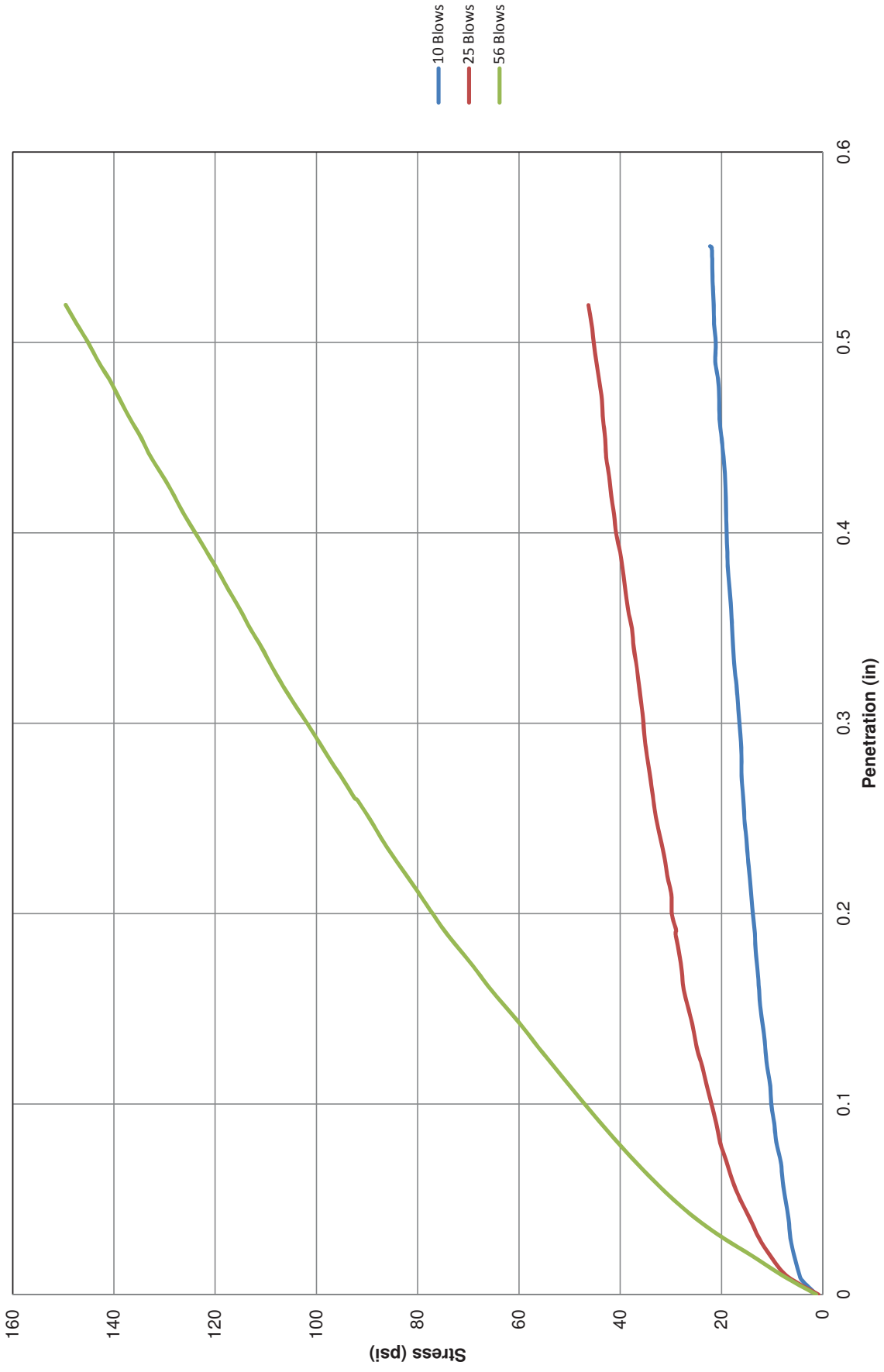
G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

Boring/Pit B-29 - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 122.9 pcf and Optimum Moisture = 10.0%



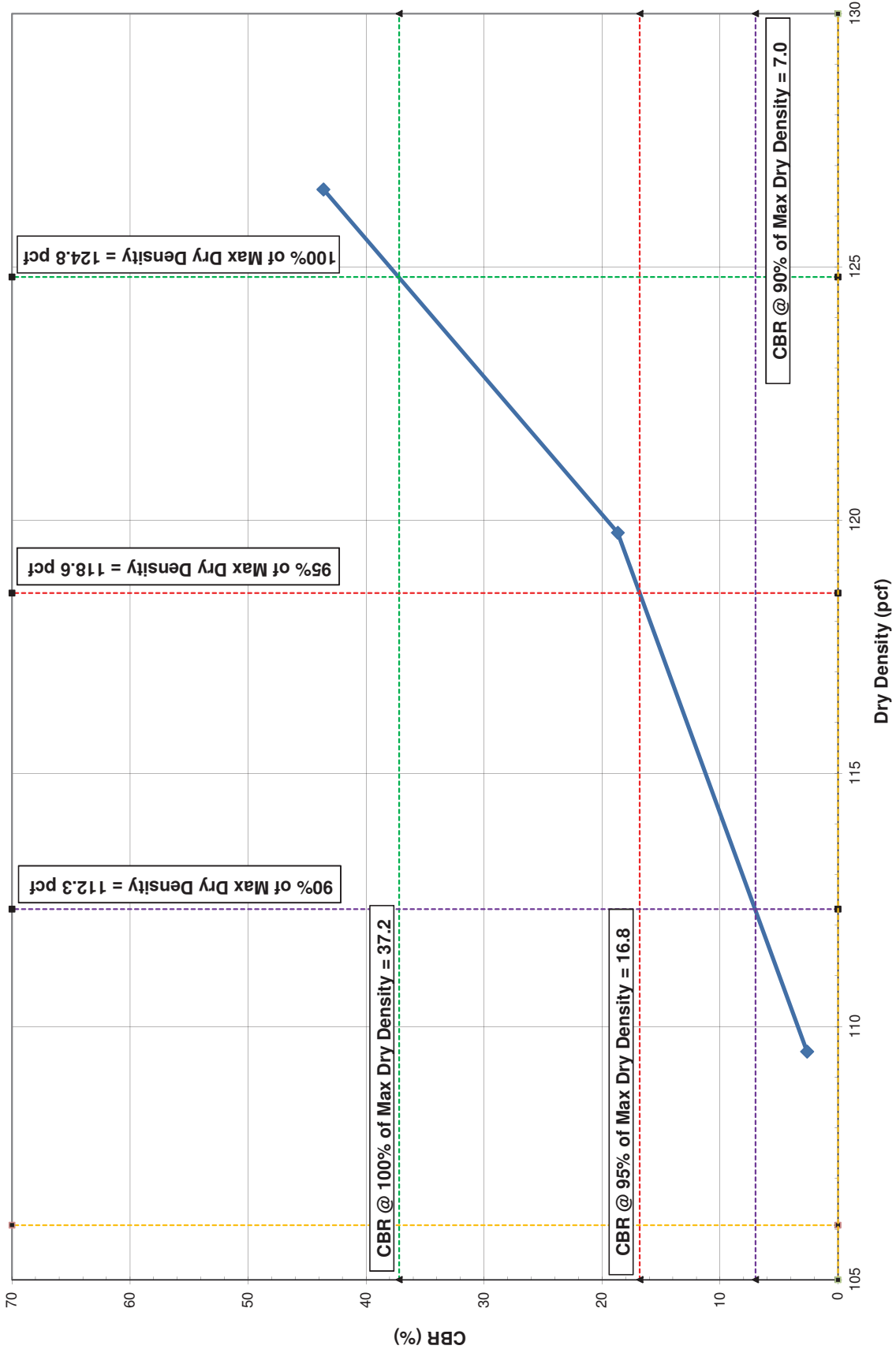
G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

Boring/Pit B-29 - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 122.9 pcf and Optimum Moisture = 10.0%



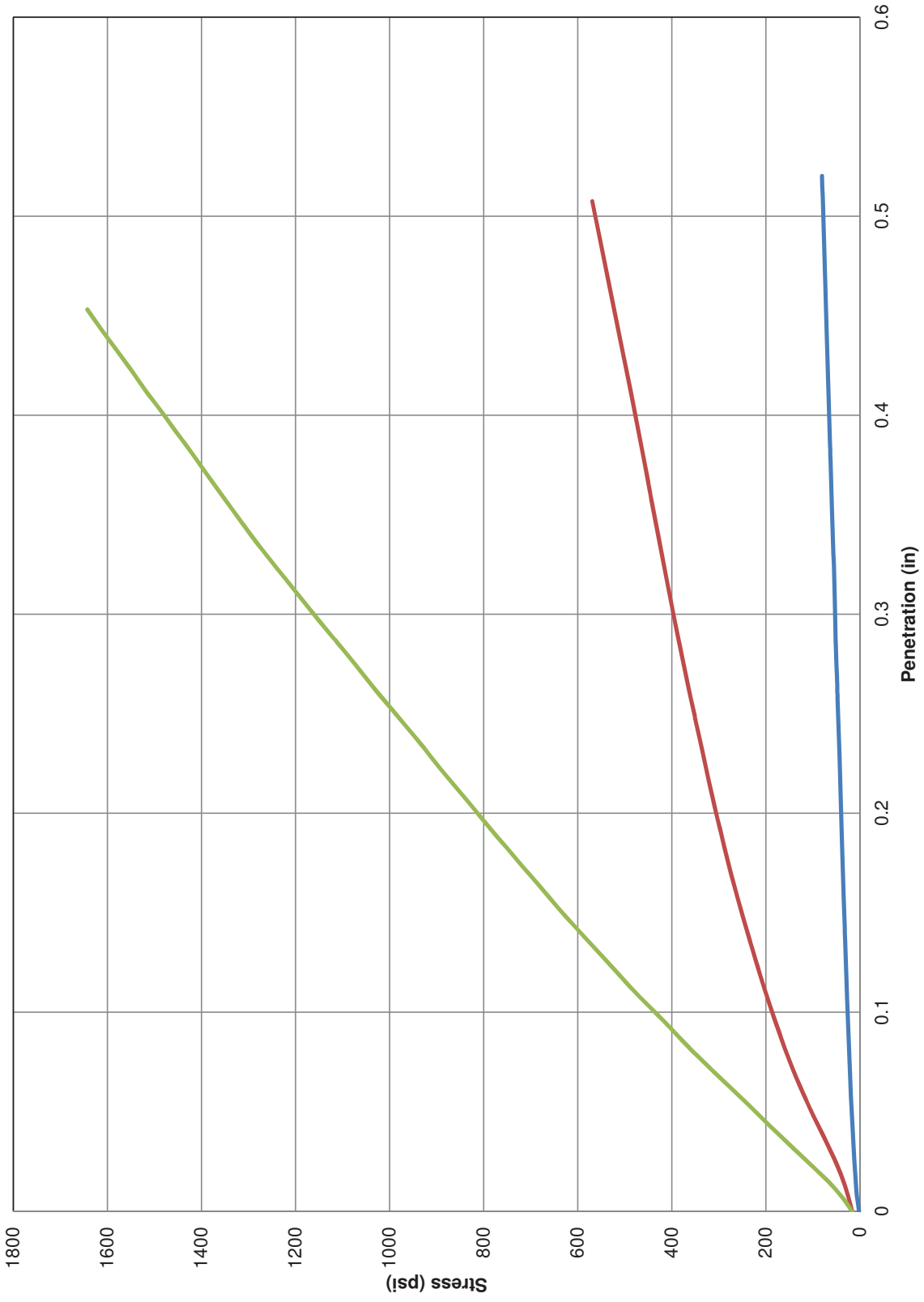
G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

Boring/Pit B-34 - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 124.8 pcf and Optimum Moisture = 9.7%



G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

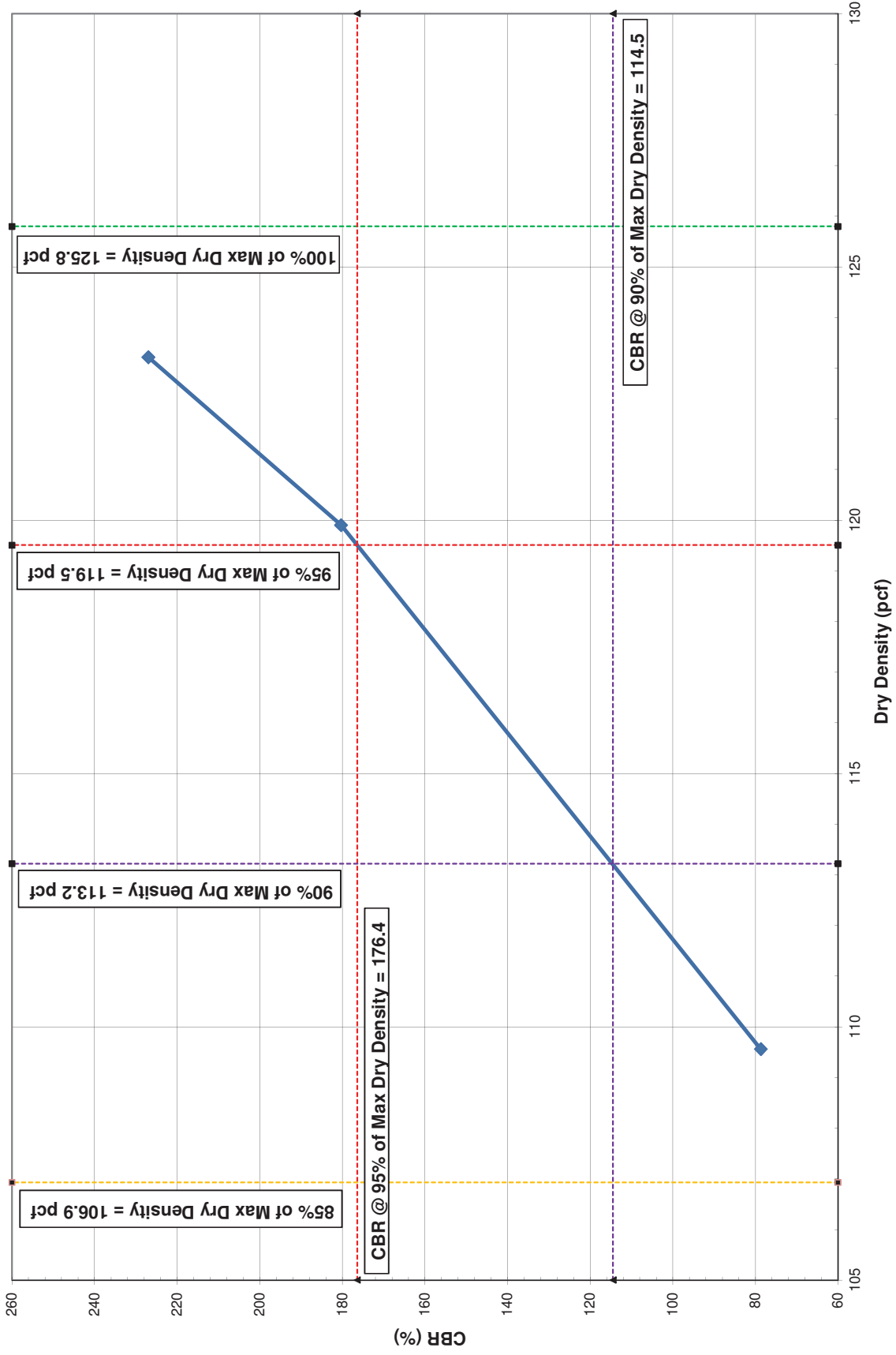
Boring/Pit B-34 - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 124.8 pcf and Optimum Moisture = 9.7%



10 Blows
25 Blows
56 Blows

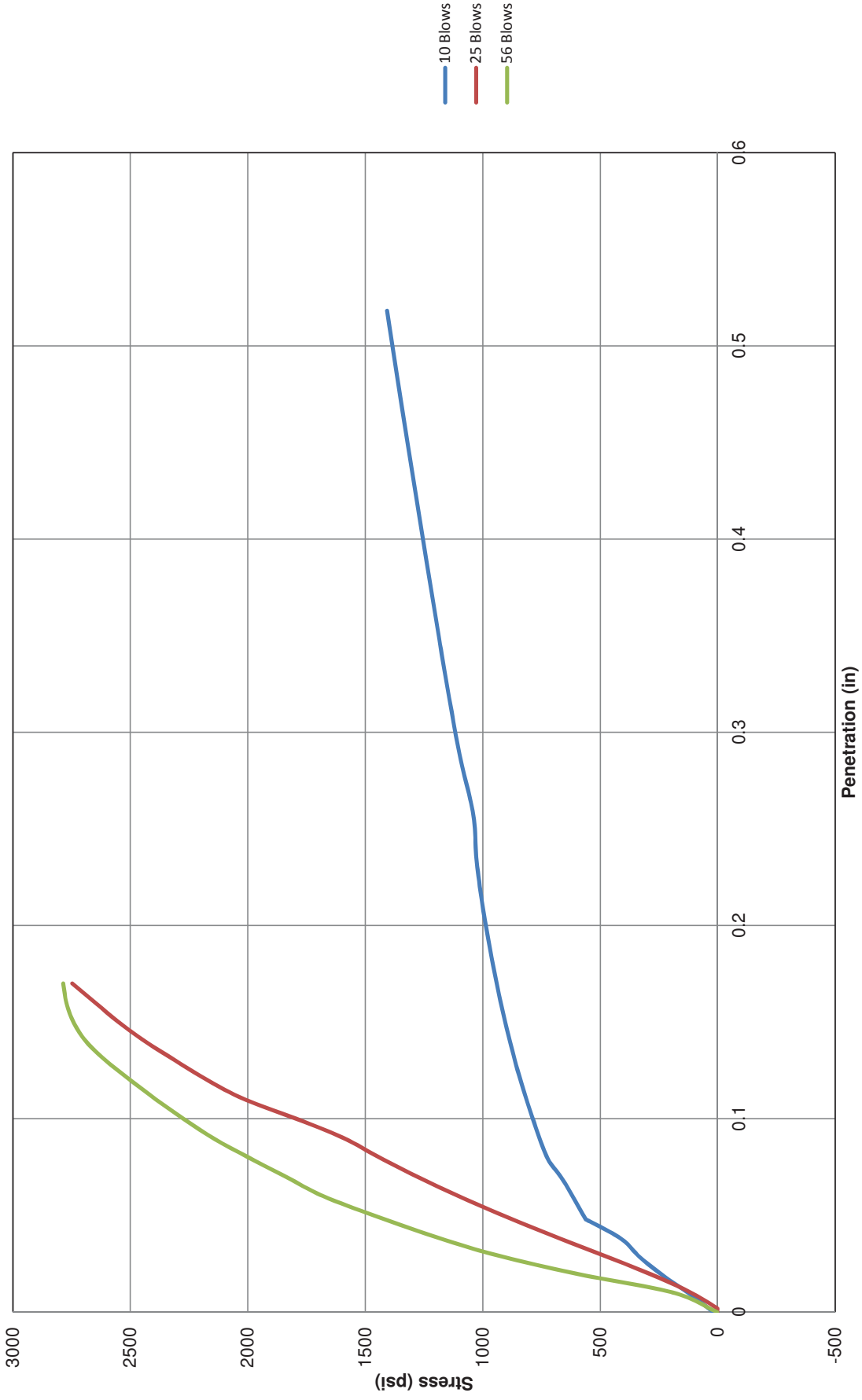
G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

Boring/Pit B-34, w/4% lime and 10% fly ash - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 125.8 pcf and Optimum Moisture = 9.4%



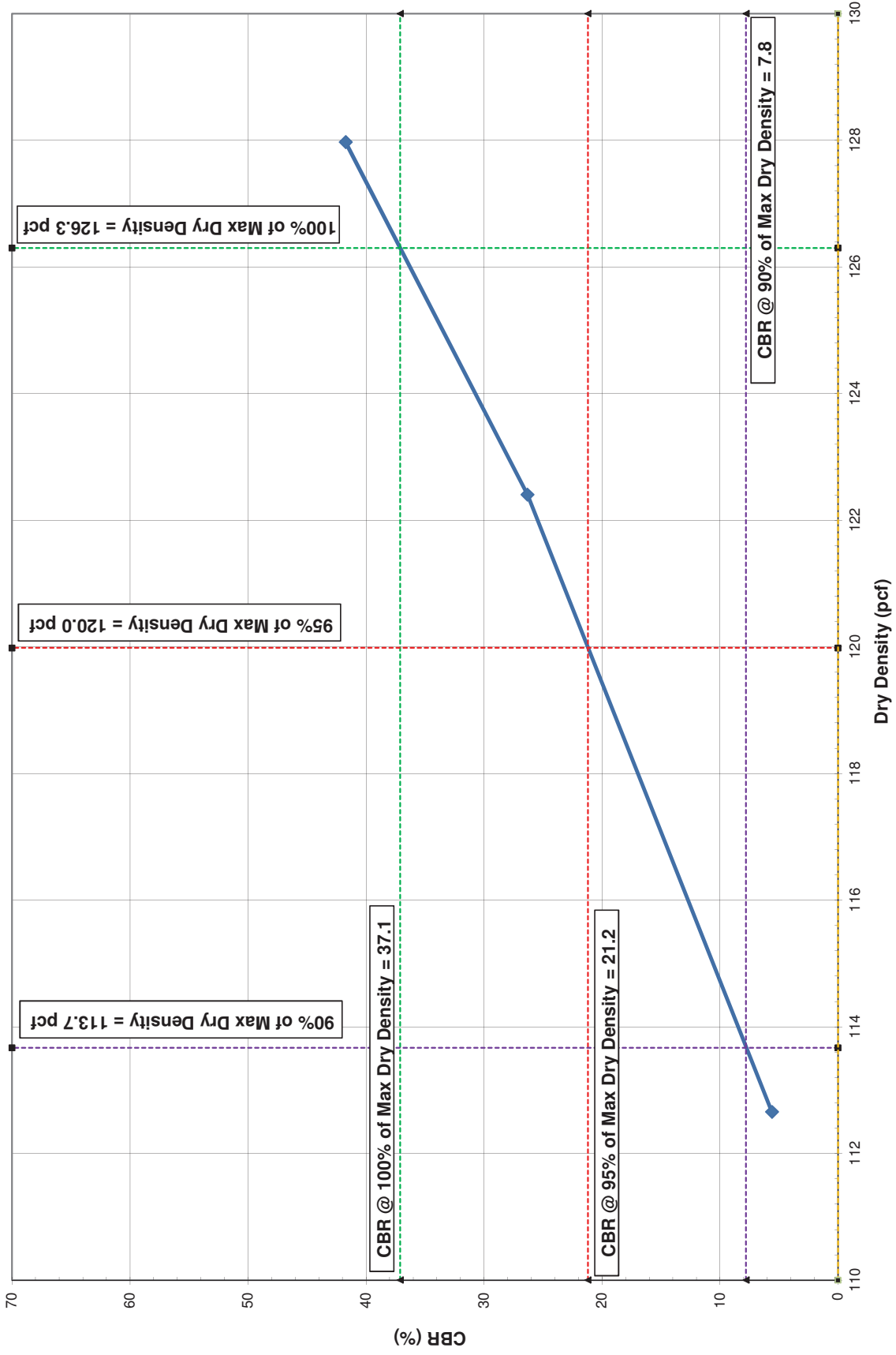
G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

Boring/Pit B-34, w/4% lime and 10% fly ash - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 125.8 pcf and Optimum Moisture = 9.4%



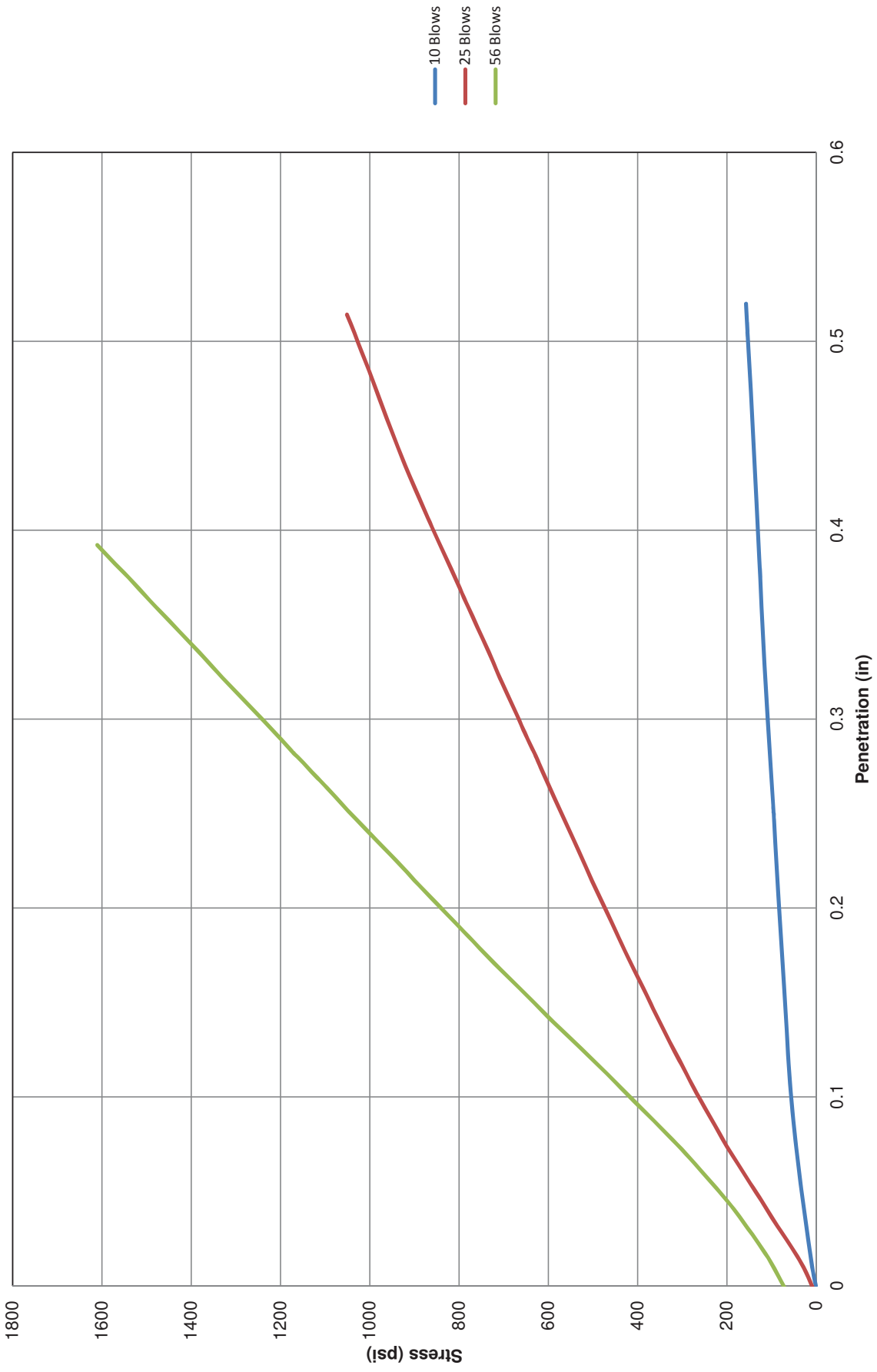
G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

Boring/Pit B-39 - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 126.3 pcf and Optimum Moisture = 9.0%



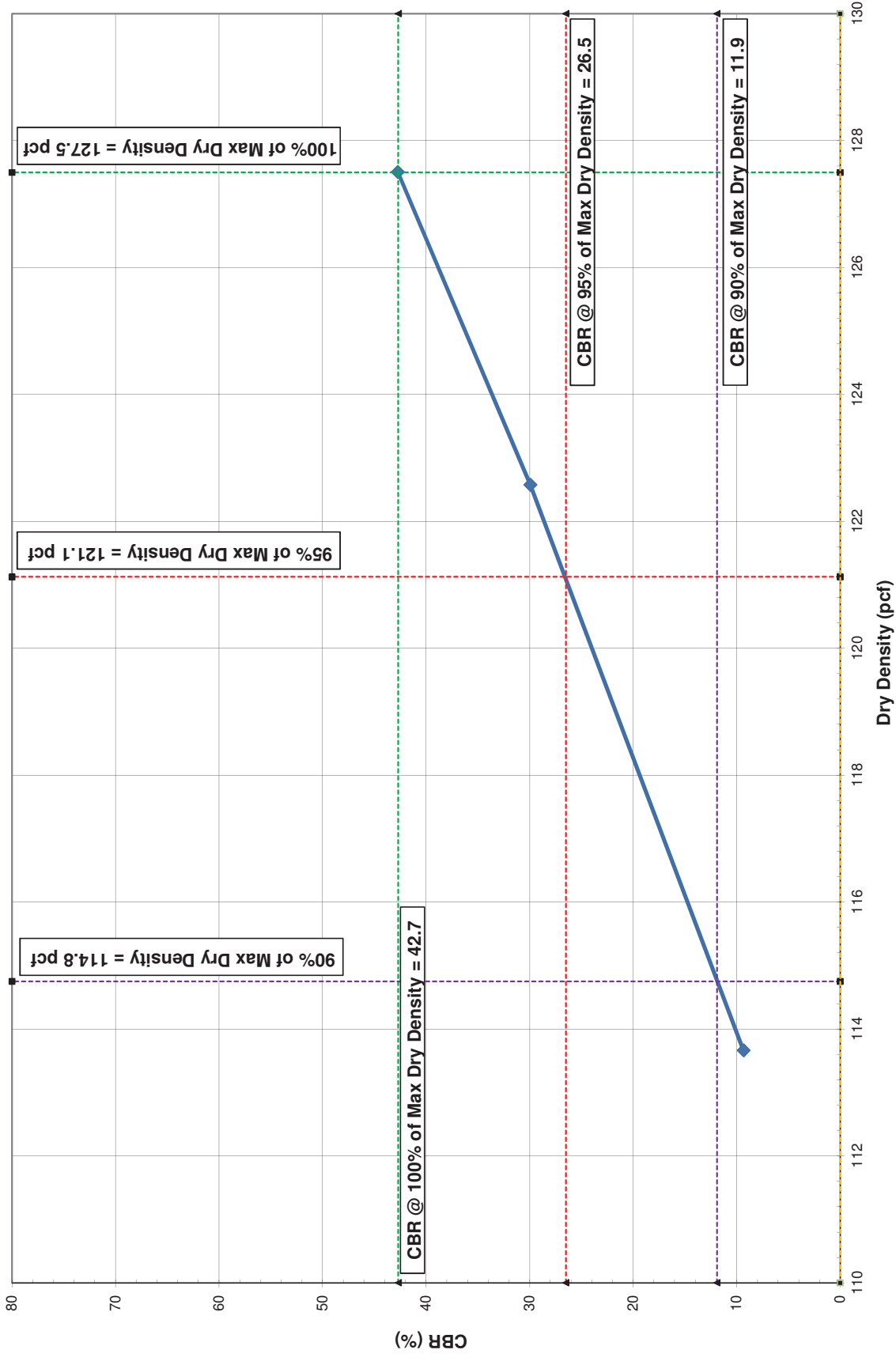
G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

Boring/Pit B-39 - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 126.3 pcf and Optimum Moisture = 9.0%



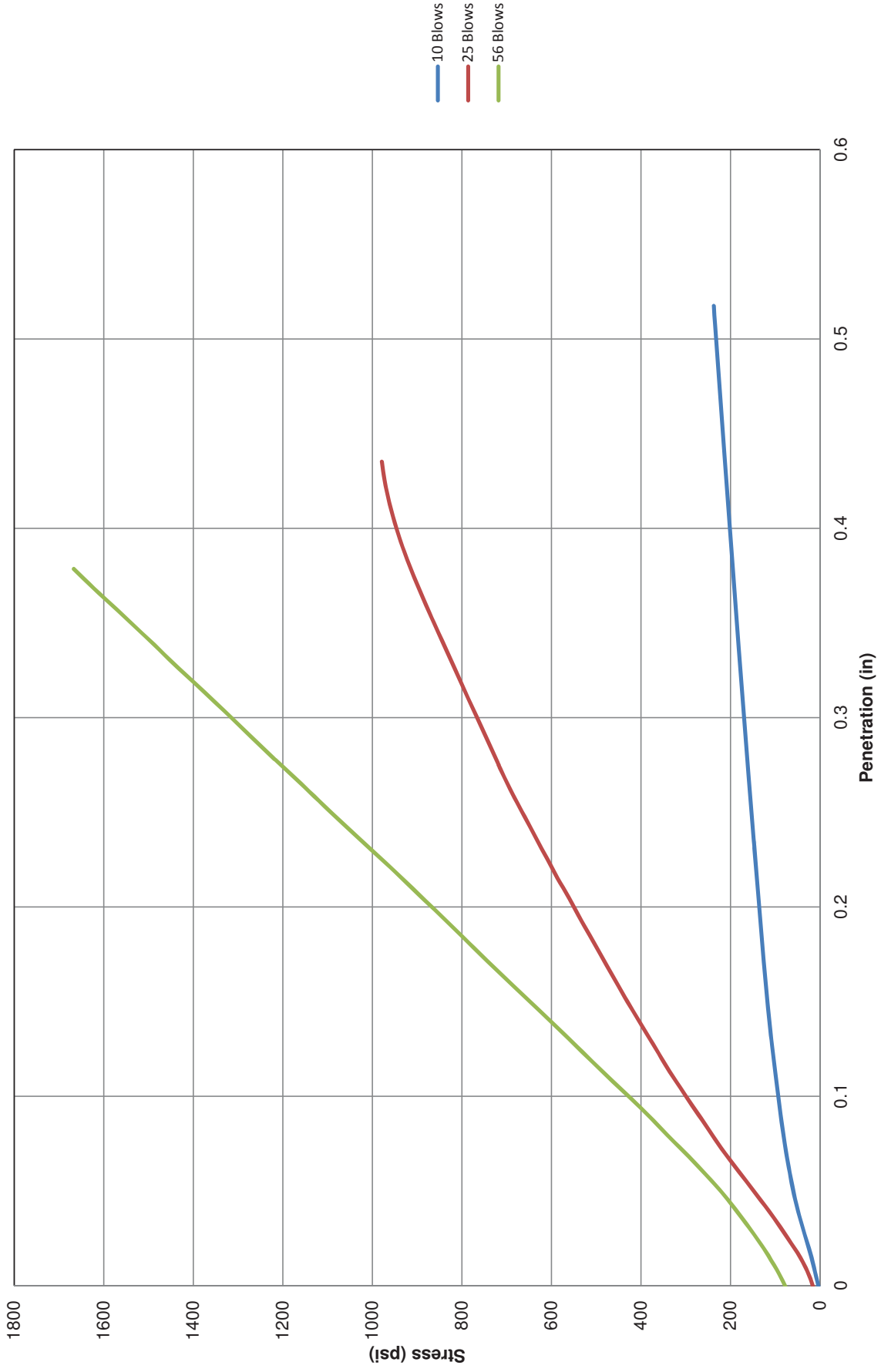
G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

Boring/Pit B-45 - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 127.5 pcf and Optimum Moisture = 8.8%



G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

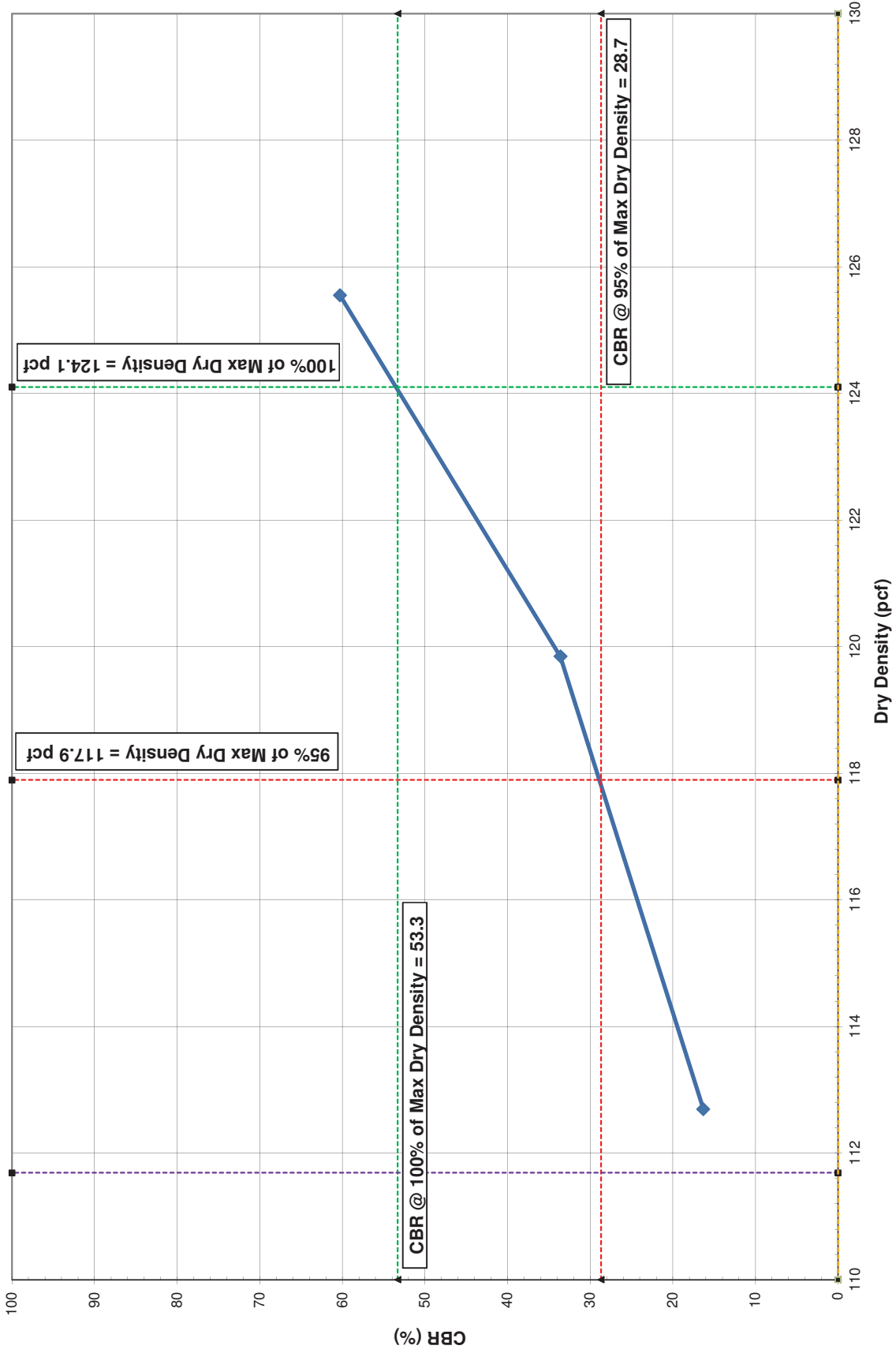
Boring/Pit B-45 - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 127.5 pcf and Optimum Moisture = 8.8%



G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

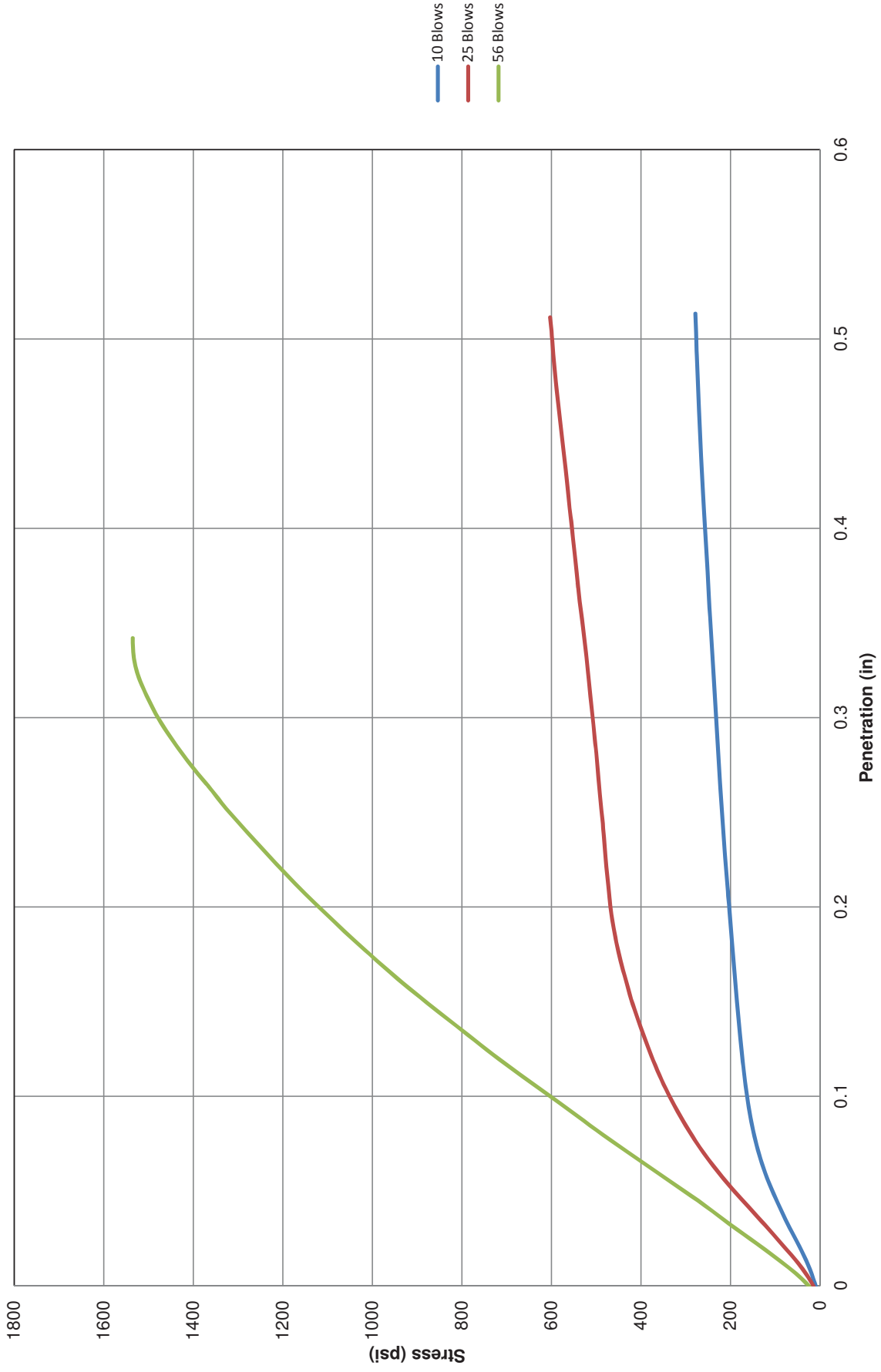
Boring/Pit B-49 - Modified Proctor (ASTM D-1557)

Maximum Dry Density = 124.1 pcf and Optimum Moisture = 10.0%



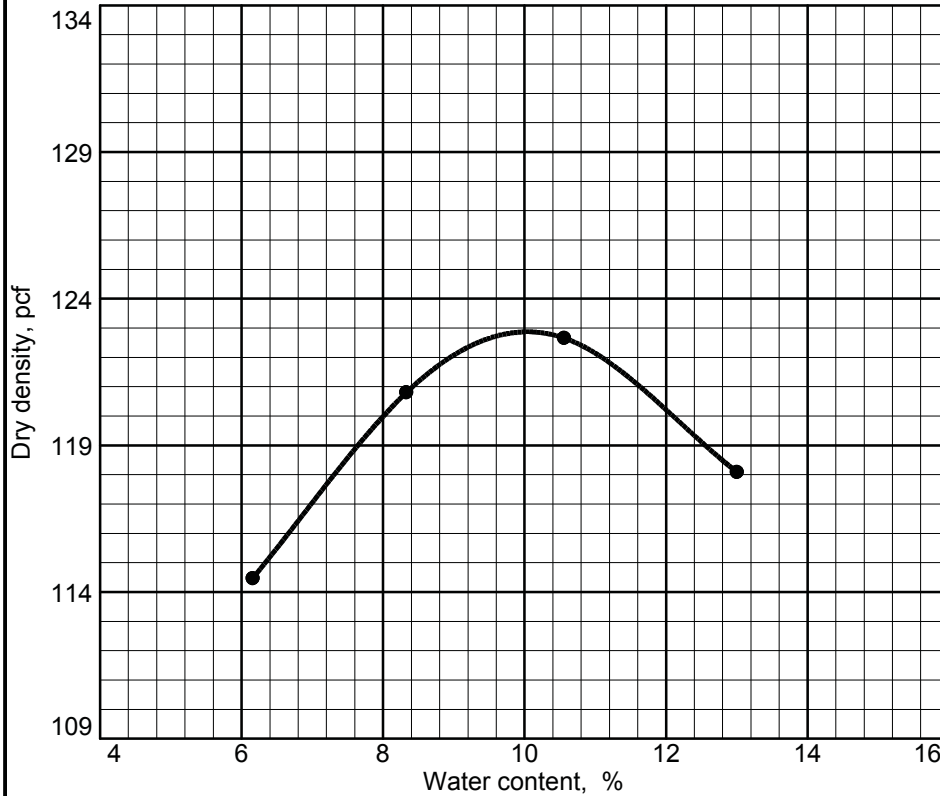
G123-15 Reconstruction of Taxiway NA
California Bearing Ratio (ASTM D-1883)

Boring/Pit B-49 - Modified Proctor (ASTM D-1557)
Maximum Dry Density = 124.1 pcf and Optimum Moisture = 10.0%



COMPACTION TEST REPORT

Curve No.



Test Specification:

ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material

Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** _____
LL 47 **PI** 34
%>No.4 _____ **%<#200** 66
USCS CL **AASHTO** _____

TESTING DATA

| | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------|--------|--------|--------|--------|---|---|
| WM + WS | 3830.5 | 3971.9 | 4043.6 | 4010.8 | | |
| WM | 1993.4 | 1993.4 | 1993.4 | 1993.4 | | |
| WW + T #1 | 822.70 | 865.10 | 782.90 | 793.50 | | |
| WD + T #1 | 785.16 | 812.08 | 724.88 | 721.80 | | |
| TARE #1 | 175.30 | 175.60 | 175.50 | 170.30 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOISTURE | 6.2 | 8.3 | 10.6 | 13.0 | | |
| DRY DENSITY | 114.5 | 120.8 | 122.7 | 118.1 | | |

TEST RESULTS

Maximum dry density = 122.9 pcf
 Optimum moisture = 10.0 %

Material Description

Brown and gray, Sandy Lean Clay (CL)

Project No. G123-15 **Client:** United Engineers
Project: Reconstruction of Taxiway NA

Remarks:

Composite sample, from 4 to 7 feet

● **Source:** B-29

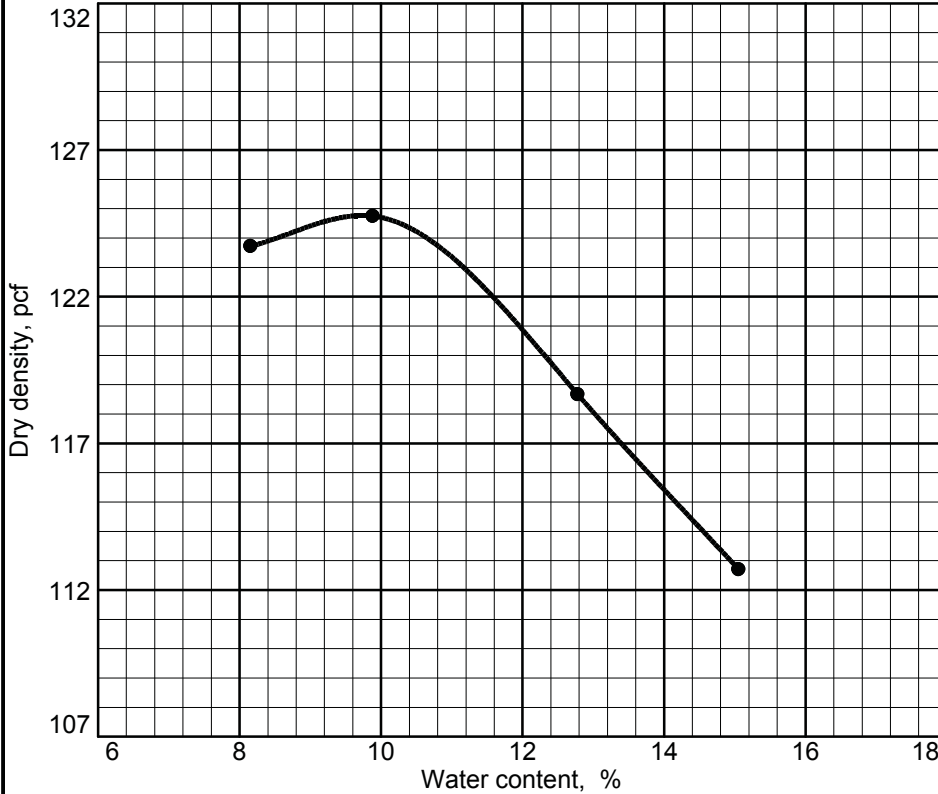
Sample No.: Composite Sample 1

COMPACTION TEST REPORT

Aviles Engineering Corp.

COMPACTION TEST REPORT

Curve No.



Test Specification:

ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material

Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** _____
LL 29 **PI** 12
%>No.4 _____ **%<#200** 53
USCS CL **AASHTO** _____

TESTING DATA

| | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------|--------|--------|--------|--------|---|---|
| WM + WS | 4016.4 | 4065.8 | 4016.8 | 3953.8 | | |
| WM | 1993.4 | 1993.4 | 1993.4 | 1993.4 | | |
| WW + T #1 | 721.90 | 638.30 | 981.90 | 784.00 | | |
| WD + T #1 | 680.21 | 596.00 | 889.70 | 703.80 | | |
| TARE #1 | 168.90 | 168.00 | 168.00 | 170.90 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOISTURE | 8.2 | 9.9 | 12.8 | 15.0 | | |
| DRY DENSITY | 123.7 | 124.8 | 118.7 | 112.7 | | |

TEST RESULTS

Maximum dry density = 124.8 pcf
 Optimum moisture = 9.7 %

Material Description

Fill: gray Sandy Lean Clay (CL), with silty sand pockets

Project No. G123-15 **Client:** United Engineers
Project: Reconstruction of Taxiway NA

Remarks:

Composite sample, from 4 to 7 feet

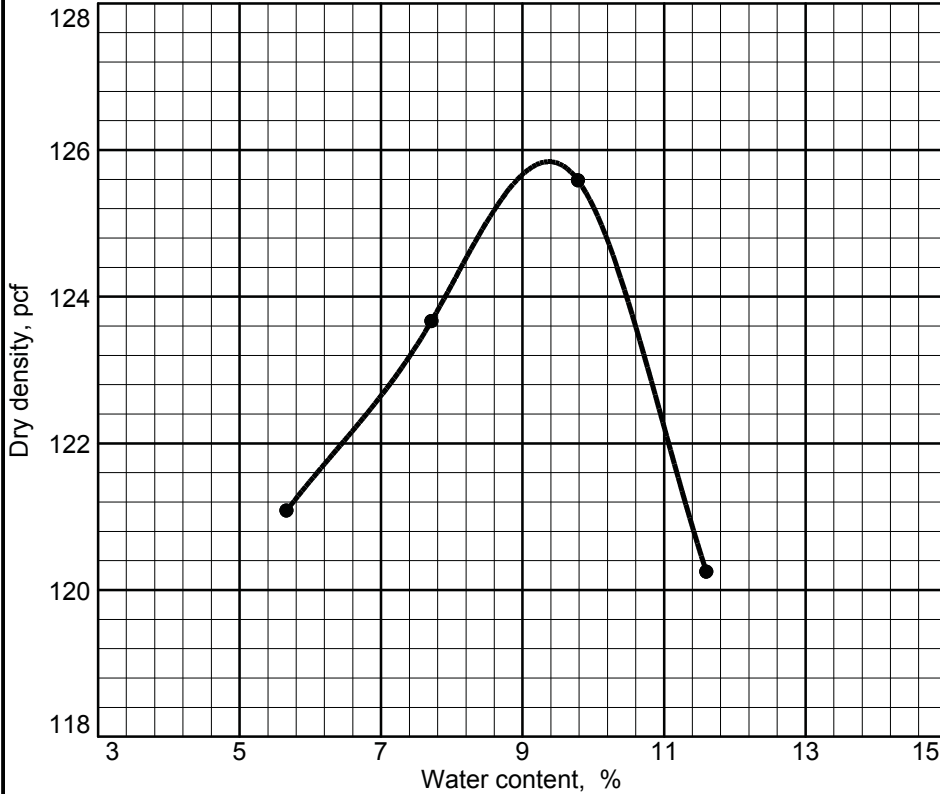
● **Source:** B-34

Sample No.: Composite Sample 1

COMPACTION TEST REPORT

Aviles Engineering Corp.

COMPACTION TEST REPORT



Curve No. _____

Test Specification:

ASTM D 1557-91 Procedure A Modified

Hammer Wt.: _____ 10 lb.

Hammer Drop: _____ 18 in.

Number of Layers: _____ five

Blows per Layer: _____ 25

Mold Size: _____ .03333 cu.ft.

Test Performed on Material

Passing _____ No.4 _____ Sieve

Soil Data

NM _____ Sp.G. _____

LL _____ PI _____

%>No.4 _____ %<#200 _____

USCS _____ AASHTO _____

TESTING DATA

| | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------|---------|--------|--------|--------|---|---|
| WM + WS | 3927.2 | 4006.8 | 4077.4 | 4021.8 | | |
| WM | 1993.0 | 1993.0 | 1993.0 | 1993.0 | | |
| WW + T #1 | 1105.80 | 883.50 | 754.40 | 942.16 | | |
| WD + T #1 | 1055.50 | 832.27 | 702.33 | 862.66 | | |
| TARE #1 | 167.34 | 167.95 | 170.16 | 177.21 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOISTURE | 5.7 | 7.7 | 9.8 | 11.6 | | |
| DRY DENSITY | 121.1 | 123.7 | 125.6 | 120.2 | | |

TEST RESULTS

Maximum dry density = 125.8 pcf

Optimum moisture = 9.4 %

Material Description

Composite sample, with 4% lime, and 10% fly ash

Project No. G123-15 **Client:** United Engineers

Project: Reconstruction of Taxiway NA

Remarks:

● **Source:** B-34 Stabilized

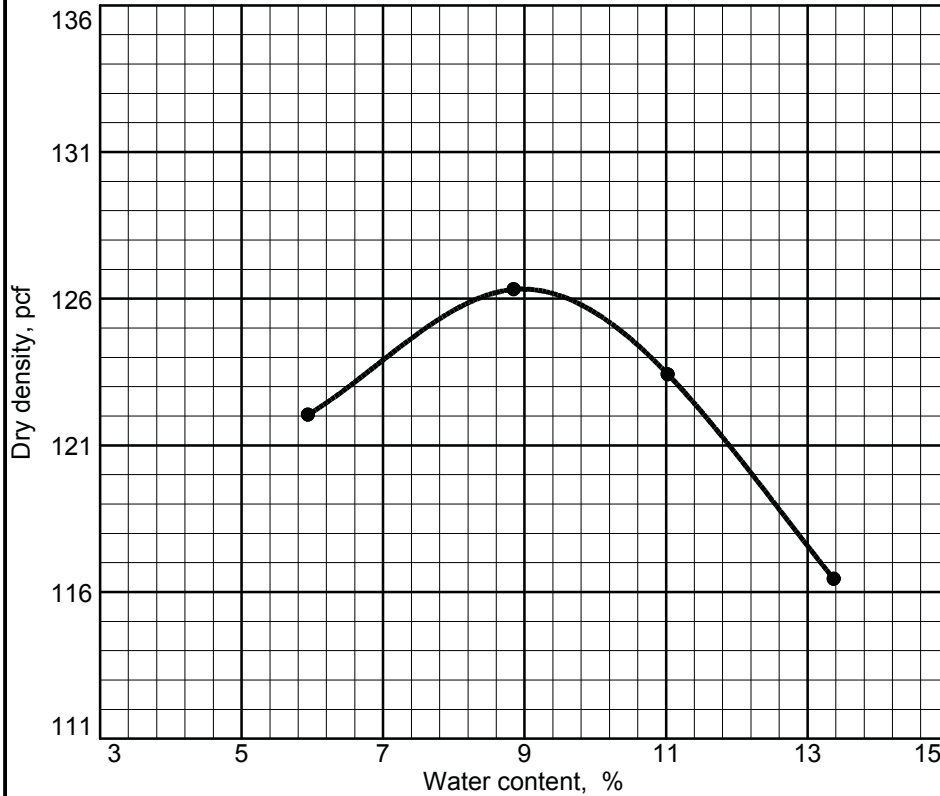
Sample No.: COMPOSITE SAMPLE 1

COMPACTION TEST REPORT

Aviles Engineering Corp.

COMPACTION TEST REPORT

Curve No.



Test Specification:

ASTM D 1557-91 Procedure A Modified

Hammer Wt.: _____ 10 lb.
Hammer Drop: _____ 18 in.
Number of Layers: _____ five
Blows per Layer: _____ 25
Mold Size: _____ .03333 cu.ft.

Test Performed on Material

Passing _____ No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** _____
LL _____ 28 **PI** _____ 11
%>No.4 _____ **%<#200** _____ 47
USCS _____ SC **AASHTO** _____

TESTING DATA

| | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------|--------|--------|--------|--------|---|---|
| WM + WS | 3948.0 | 4072.0 | 4065.0 | 3989.2 | | |
| WM | 1993.4 | 1993.4 | 1993.4 | 1993.4 | | |
| WW + T #1 | 889.60 | 848.20 | 823.10 | 989.80 | | |
| WD + T #1 | 849.69 | 792.85 | 758.68 | 893.59 | | |
| TARE #1 | 177.60 | 167.20 | 174.40 | 174.10 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOISTURE | 5.9 | 8.8 | 11.0 | 13.4 | | |
| DRY DENSITY | 122.0 | 126.3 | 123.4 | 116.4 | | |

TEST RESULTS

Maximum dry density = 126.3 pcf
 Optimum moisture = 9.0 %

Material Description

Gray and brown Clayey Sand (SC)

Project No. G123-15 **Client:** United Engineers
Project: Reconstruction of Taxiway NA

Remarks:

Composite sample, 4 to 7 feet

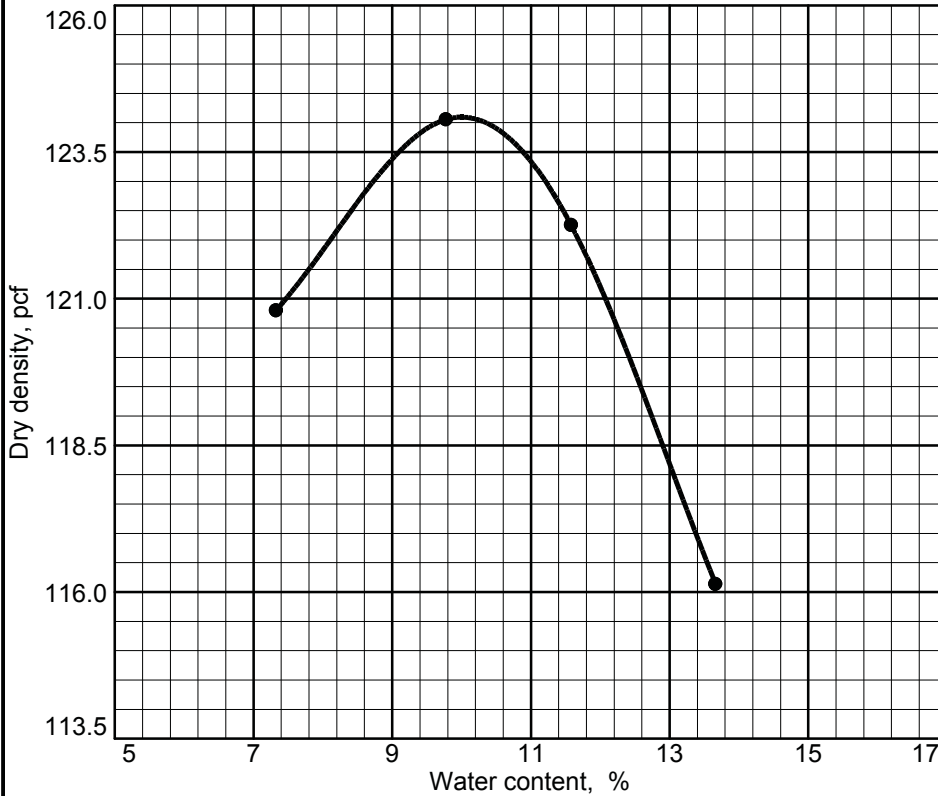
● **Source:** B-39

Sample No.: Composite Sample 1

COMPACTION TEST REPORT

Aviles Engineering Corp.

COMPACTION TEST REPORT



Curve No. _____

Test Specification:

ASTM D 1557-91 Procedure A Modified

Hammer Wt.: _____ 10 lb.

Hammer Drop: _____ 18 in.

Number of Layers: _____ five

Blows per Layer: _____ 25

Mold Size: _____ .03333 cu.ft.

Test Performed on Material

Passing _____ No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** _____

LL _____ 23 **PI** _____ 7

%>No.4 _____ **%<#200** _____ 54

USCS _____ CL-ML **AASHTO** _____

TESTING DATA

| | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------|--------|--------|--------|--------|---|---|
| WM + WS | 3953.1 | 4052.0 | 4055.4 | 3988.7 | | |
| WM | 1993.1 | 1993.1 | 1993.1 | 1993.1 | | |
| WW + T #1 | 648.90 | 796.90 | 771.20 | 832.90 | | |
| WD + T #1 | 616.75 | 740.81 | 709.39 | 753.34 | | |
| TARE #1 | 177.70 | 167.10 | 175.50 | 171.00 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOISTURE | 7.3 | 9.8 | 11.6 | 13.7 | | |
| DRY DENSITY | 120.8 | 124.1 | 122.3 | 116.1 | | |

TEST RESULTS

Maximum dry density = 124.1 pcf

Optimum moisture = 10.0 %

Material Description

Gray and brown Sandy Silty Clay (CL-ML)

Project No. G123-15 **Client:** United Engineers

Project: Reconstruction of Taxiway NA

Remarks:

Composite sample, 4 to 7 feet

● **Source:** B-49

Sample No.: Composite Sample 1

COMPACTION TEST REPORT

Aviles Engineering Corp.

Plate B-17

AVILES ENGINEERING CORPORATION

Consulting Engineers - Geotechnical, Construction Materials Testing, Environmental

ORGANIC MATTER IN SOILS

ASTM D 2974-07, Test Method C

Project : Reconstruction of Taxiway NA
Location of Project: Houston, Texas

Job No.: G123-15
Date of Testing:

| | | | | |
|-------------------------------|----------------------------|------------------------|----------------|-----------------------|
| Boring | B-27 | B-30 | B-32 | B-35 |
| Depth (ft) | 3.6 to 4 | 3.5 to 4 | 6 to 8 | 4 to 6 |
| Soil Description | Fill: Sandy Lean Clay (CL) | Fill: Clayey Sand (SC) | Lean Clay (CL) | Fill: Silty Sand (SM) |
| Organic Matter Content | 1.4% | 1.4% | 1.9% | 1.4% |
| Furnace Temperature, °C | 440 | 440 | 440 | 440 |

| | | | | |
|-------------------------------|----------------------|-----------------|----------------------|-----------------------|
| Boring | B-37 | B-39 | B-42 | B-45 |
| Depth (ft) | 6 to 8 | 8 to 10 | 4 to 6 | 2 to 4 |
| Soil Description | Sandy Lean Clay (CL) | Sandy Silt (ML) | Fill: Lean Clay (CL) | Fill: Silty Sand (SM) |
| Organic Matter Content | 2.4% | 1.2% | 1.4% | 0.8% |
| Furnace Temperature, °C | 440 | 440 | 440 | 440 |

| | | | | |
|-------------------------------|-----------------------|-----------------------|--|--|
| Boring | B-48 | B-51 | | |
| Depth (ft) | 3 to 4 | 6 to 8 | | |
| Soil Description | Fill: Silty Sand (SM) | Fill: Silty Sand (SM) | | |
| Organic Matter Content | 1.1% | 1.3% | | |
| Furnace Temperature, °C | 440 | 440 | | |

| | | | | |
|-------------------------------|--|--|--|--|
| Boring | | | | |
| Depth (ft) | | | | |
| Soil Description | | | | |
| Organic Matter Content | | | | |
| Furnace Temperature, °C | | | | |

Permeability Test using a Flexible Wall Permeameter (Constant Volume - Falling Head Method, ASTM D 5084)

Test Data Summary/Report:

Project: Reconstruction of Taxiway NA
 Sample ID: B-26, 4'-6', Trial 1

Job No.: G123-15
 Location of Project: Houston, Texas

1. Testing Method: ASTM D 5084 Method F: Constant Volume - Falling Head, Flexible Wall Permeameter

2. Specimen Preparation:

3. **Before Permeability Test:**

| | | |
|-------------------------------------|----------------|---------------------------------------------|
| Initial specimen height, h_i = | 3.087 in = | 7.841 cm |
| Initial specimen diameter, d_i = | 2.714 in = | 6.894 cm |
| Initial area of specimen, A_i = | 5.785 sq in = | 37.323 sq cm |
| Initial volume of specimen, V_i = | 17.859 cu in = | 292.649 cu cm |
| Specific gravity, assumed G_s = | 2.72 | |
| Initial weight of specimen, W_i = | 650.76 gram = | 1.435 lbs |
| Initial Moist Unit Weight, r_i = | 138.82 pcf | Initial moisture content, w_i = 10.2% |
| Initial Dry Unit Weight, r_{di} = | 126.00 pcf | Initial degree of saturation, S_i = 79.7% |

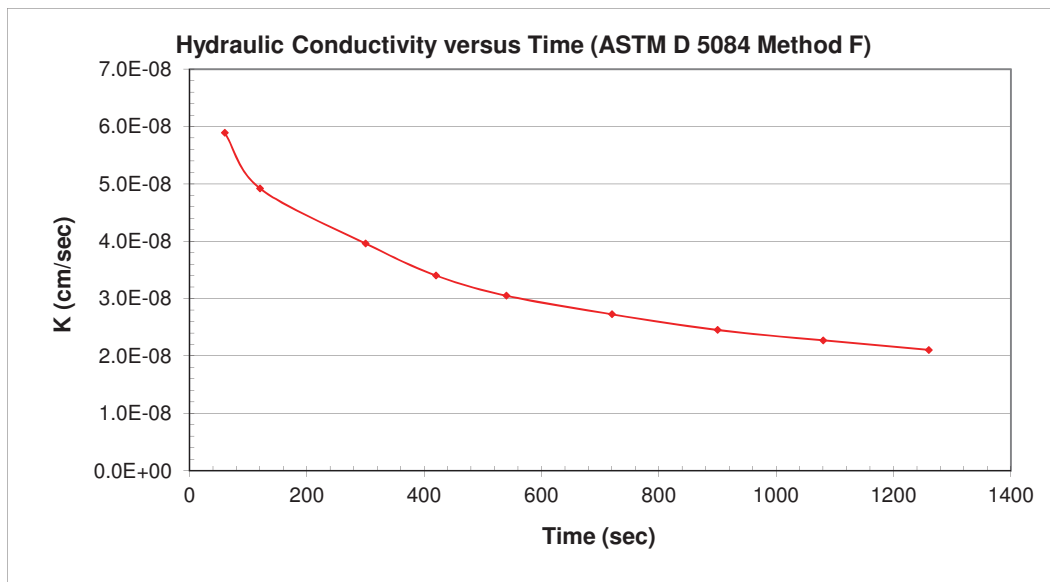
After Permeability Test:

| | | |
|-----------------------------------|----------------|-------------------------------------------|
| Final specimen height, h_f = | 3.086 in = | 7.838 cm |
| Final specimen diameter, d_f = | 2.724 in = | 6.919 cm |
| Final area of specimen, A_f = | 5.828 sq in = | 37.599 sq cm |
| Final volume of specimen, V_f = | 17.985 cu in = | 294.714 cu cm |
| Final weight of specimen, W_f = | 661.84 gram = | 1.459 lbs |
| Final Moist Unit Weight, r_f = | 140.19 pcf | Final moisture content, w_f = 12.9% |
| Final Dry Unit Weight, r_{df} = | 124.19 pcf | Final degree of saturation, S_f = 95.6% |

4. Type of Permeant Liquid: De-aired tap water Total Back Pressure: 66.0 psi
 Cell Pressure: 70.0 psi Effective Overburden Pressure: 4.0 psi

5. Corrected Hydraulic Conductivity, k_{20}

| | |
|------------------------------------------------------|------------------------|
| Temperature, T = | 21.0 cel. deg. |
| Hydraulic Conductivity, k_T = | 3.05E-08 cm/sec |
| Temperature Ratio, R_t = | 0.976 |
| Hydraulic Conductivity, k_{20} = | 2.98E-08 cm/sec |



Permeability Test using a Flexible Wall Permeameter (Constant Volume - Falling Head Method, ASTM D 5084)

Test Data Summary/Report:

Project: Reconstruction of Taxiway NA
 Sample ID: B-26, 4'-6', Trial 2

Job No.: G123-15
 Location of Project: Houston, Texas

1. Testing Method: ASTM D 5084 Method F: Constant Volume - Falling Head, Flexible Wall Permeameter

2. Specimen Preparation:

3. **Before Permeability Test:**

| | | |
|-------------------------------------|----------------|---------------------------------------------|
| Initial specimen height, h_i = | 3.087 in = | 7.841 cm |
| Initial specimen diameter, d_i = | 2.714 in = | 6.894 cm |
| Initial area of specimen, A_i = | 5.785 sq in = | 37.323 sq cm |
| Initial volume of specimen, V_i = | 17.859 cu in = | 292.649 cu cm |
| Specific gravity, assumed G_s = | 2.72 | |
| Initial weight of specimen, W_i = | 650.76 gram = | 1.435 lbs |
| Initial Moist Unit Weight, r_i = | 138.82 pcf | Initial moisture content, w_i = 10.2% |
| Initial Dry Unit Weight, r_{di} = | 126.00 pcf | Initial degree of saturation, S_i = 79.7% |

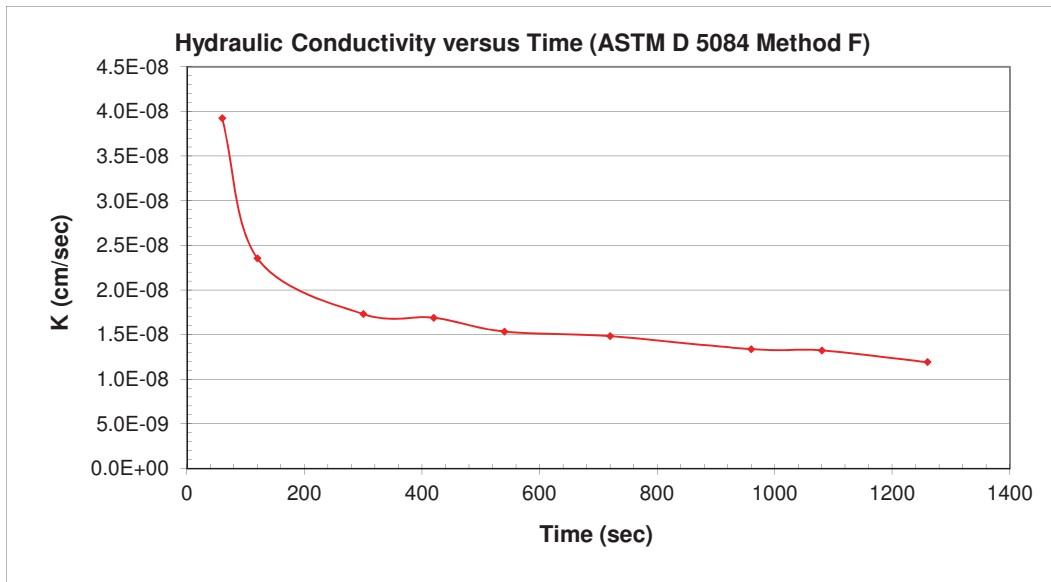
After Permeability Test:

| | | |
|-----------------------------------|----------------|-------------------------------------------|
| Final specimen height, h_f = | 3.086 in = | 7.838 cm |
| Final specimen diameter, d_f = | 2.724 in = | 6.919 cm |
| Final area of specimen, A_f = | 5.828 sq in = | 37.599 sq cm |
| Final volume of specimen, V_f = | 17.985 cu in = | 294.714 cu cm |
| Final weight of specimen, W_f = | 661.84 gram = | 1.459 lbs |
| Final Moist Unit Weight, r_f = | 140.19 pcf | Final moisture content, w_f = 12.9% |
| Final Dry Unit Weight, r_{df} = | 124.19 pcf | Final degree of saturation, S_f = 95.6% |

4. Type of Permeant Liquid: De-aired tap water Total Back Pressure: 66.0 psi
 Cell Pressure: 70.0 psi Effective Overburden Pressure: 4.0 psi

5. Corrected Hydraulic Conductivity, k_{20}

| | |
|------------------------------------------------------|------------------------|
| Temperature, T = | 21.0 cel. deg. |
| Hydraulic Conductivity, k_T = | 1.54E-08 cm/sec |
| Temperature Ratio, R_t = | 0.976 |
| Hydraulic Conductivity, k_{20} = | 1.50E-08 cm/sec |



Permeability Test using a Flexible Wall Permeameter (Constant Volume - Falling Head Method, ASTM D 5084)

Test Data Summary/Report:

Project: Reconstruction of Taxiway NA
 Sample ID: B-39, 2'-4', Trial 1

Job No.: G123-15
 Location of Project: Houston, Texas

1. Testing Method: ASTM D 5084 Method F: Constant Volume - Falling Head, Flexible Wall Permeameter

2. Specimen Preparation:

3. **Before Permeability Test:**

| | | |
|-------------------------------------|----------------|---------------------------------------------|
| Initial specimen height, h_i = | 4.755 in = | 12.078 cm |
| Initial specimen diameter, d_i = | 2.778 in = | 7.056 cm |
| Initial area of specimen, A_i = | 6.061 sq in = | 39.104 sq cm |
| Initial volume of specimen, V_i = | 28.821 cu in = | 472.287 cu cm |
| Specific gravity, assumed G_s = | 2.72 | |
| Initial weight of specimen, W_i = | 990.45 gram = | 2.184 lbs |
| Initial Moist Unit Weight, r_i = | 130.92 pcf | Initial moisture content, w_i = 12.3% |
| Initial Dry Unit Weight, r_{di} = | 116.56 pcf | Initial degree of saturation, S_i = 73.5% |

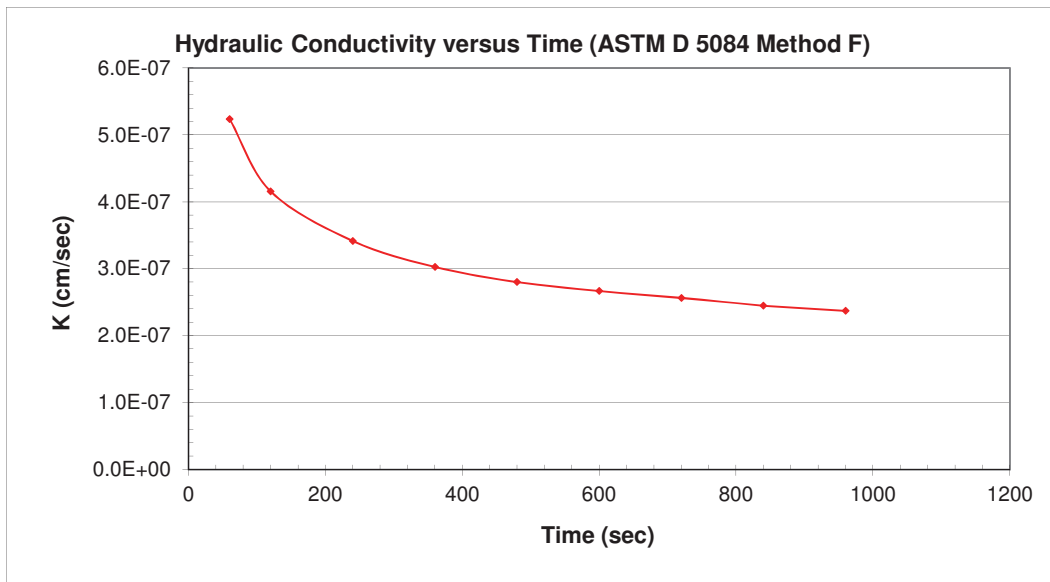
After Permeability Test:

| | | |
|-----------------------------------|----------------|-------------------------------------------|
| Final specimen height, h_f = | 4.708 in = | 11.958 cm |
| Final specimen diameter, d_f = | 2.758 in = | 7.005 cm |
| Final area of specimen, A_f = | 5.974 sq in = | 38.543 sq cm |
| Final volume of specimen, V_f = | 28.126 cu in = | 460.910 cu cm |
| Final weight of specimen, W_f = | 1005.60 gram = | 2.217 lbs |
| Final Moist Unit Weight, r_f = | 136.20 pcf | Final moisture content, w_f = 15.6% |
| Final Dry Unit Weight, r_{df} = | 117.79 pcf | Final degree of saturation, S_f = 96.4% |

4. Type of Permeant Liquid: De-aired tap water Total Back Pressure: 47.0 psi
 Cell Pressure: 50.0 psi Effective Overburden Pressure: 3.0 psi

5. Corrected Hydraulic Conductivity, k_{20}

| | |
|------------------------------------------------------|------------------------|
| Temperature, T = | 21.0 cel. deg. |
| Hydraulic Conductivity, k_T = | 2.80E-07 cm/sec |
| Temperature Ratio, R_t = | 0.976 |
| Hydraulic Conductivity, k_{20} = | 2.74E-07 cm/sec |



Permeability Test using a Flexible Wall Permeameter (Constant Volume - Falling Head Method, ASTM D 5084)

Test Data Summary/Report:

Project: Reconstruction of Taxiway NA
 Sample ID: B-39, 2'-4', Trial 2

Job No.: G123-15
 Location of Project: Houston, Texas

1. Testing Method: ASTM D 5084 Method F: Constant Volume - Falling Head, Flexible Wall Permeameter

2. Specimen Preparation:

3. **Before Permeability Test:**

| | | |
|-------------------------------------|----------------|---------------------------------------------|
| Initial specimen height, h_i = | 4.755 in = | 12.078 cm |
| Initial specimen diameter, d_i = | 2.778 in = | 7.056 cm |
| Initial area of specimen, A_i = | 6.061 sq in = | 39.104 sq cm |
| Initial volume of specimen, V_i = | 28.821 cu in = | 472.287 cu cm |
| Specific gravity, assumed G_s = | 2.72 | |
| Initial weight of specimen, W_i = | 990.45 gram = | 2.184 lbs |
| Initial Moist Unit Weight, r_i = | 130.92 pcf | Initial moisture content, w_i = 12.3% |
| Initial Dry Unit Weight, r_{di} = | 116.56 pcf | Initial degree of saturation, S_i = 73.5% |

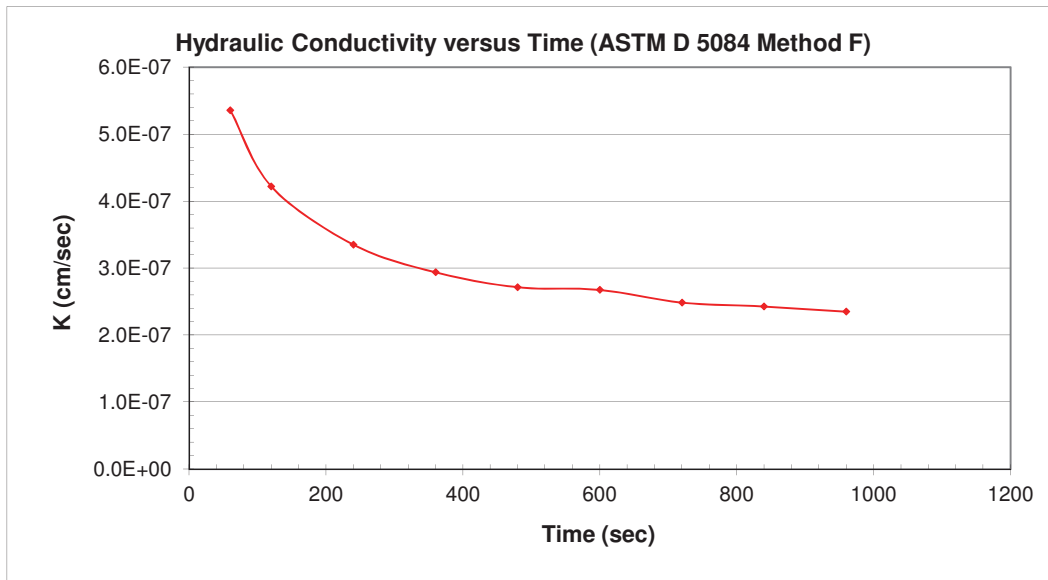
After Permeability Test:

| | | |
|-----------------------------------|----------------|-------------------------------------------|
| Final specimen height, h_f = | 4.708 in = | 11.958 cm |
| Final specimen diameter, d_f = | 2.758 in = | 7.005 cm |
| Final area of specimen, A_f = | 5.974 sq in = | 38.543 sq cm |
| Final volume of specimen, V_f = | 28.126 cu in = | 460.910 cu cm |
| Final weight of specimen, W_f = | 1005.60 gram = | 2.217 lbs |
| Final Moist Unit Weight, r_f = | 136.20 pcf | Final moisture content, w_f = 15.6% |
| Final Dry Unit Weight, r_{df} = | 117.79 pcf | Final degree of saturation, S_f = 96.4% |

4. Type of Permeant Liquid: De-aired tap water Total Back Pressure: 47.0 psi
 Cell Pressure: 50.0 psi Effective Overburden Pressure: 3.0 psi

5. Corrected Hydraulic Conductivity, k_{20}

| | |
|------------------------------------------------------|------------------------|
| Temperature, T = | 21.0 cel. deg. |
| Hydraulic Conductivity, k_T = | 2.72E-07 cm/sec |
| Temperature Ratio, R_t = | 0.976 |
| Hydraulic Conductivity, k_{20} = | 2.65E-07 cm/sec |



Permeability Test using a Flexible Wall Permeameter (Constant Volume - Falling Head Method, ASTM D 5084)

Test Data Summary/Report:

Project: Reconstruction of Taxiway NA
 Sample ID: B-40, 4'-6', Trial 1

Job No.: G123-15
 Location of Project: Houston, Texas

1. Testing Method: ASTM D 5084 Method F: Constant Volume - Falling Head, Flexible Wall Permeameter

2. Specimen Preparation:

3. **Before Permeability Test:**

| | | |
|-------------------------------------|----------------|---------------------------------------------|
| Initial specimen height, h_i = | 3.772 in = | 9.581 cm |
| Initial specimen diameter, d_i = | 2.735 in = | 6.947 cm |
| Initial area of specimen, A_i = | 5.875 sq in = | 37.903 sq cm |
| Initial volume of specimen, V_i = | 22.160 cu in = | 363.143 cu cm |
| Specific gravity, assumed G_s = | 2.72 | |
| Initial weight of specimen, W_i = | 789.82 gram = | 1.741 lbs |
| Initial Moist Unit Weight, r_i = | 135.78 pcf | Initial moisture content, w_i = 11.9% |
| Initial Dry Unit Weight, r_{di} = | 121.38 pcf | Initial degree of saturation, S_i = 81.0% |

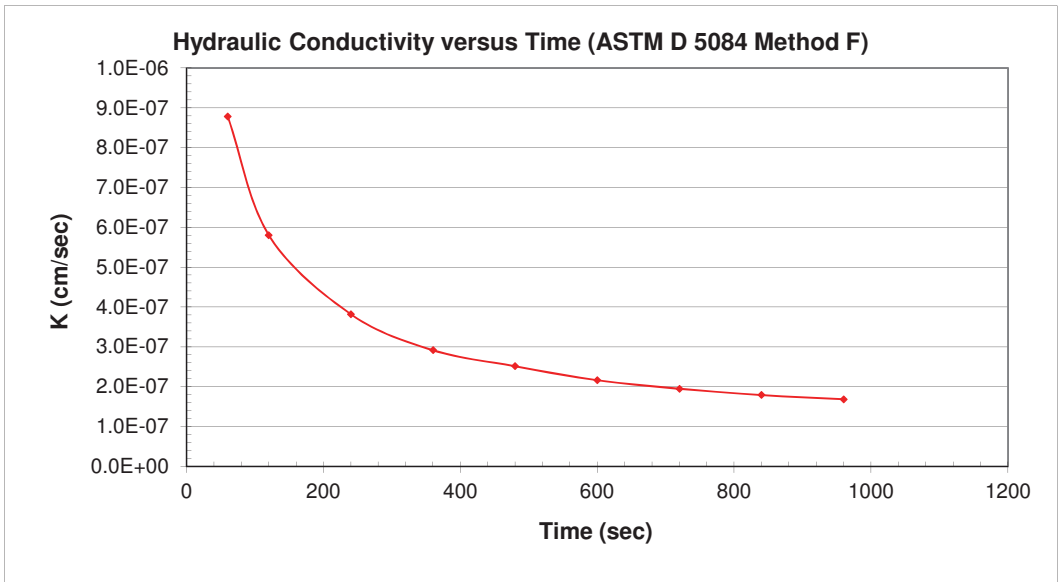
After Permeability Test:

| | | |
|-----------------------------------|----------------|-------------------------------------------|
| Final specimen height, h_f = | 3.754 in = | 9.535 cm |
| Final specimen diameter, d_f = | 2.735 in = | 6.947 cm |
| Final area of specimen, A_f = | 5.875 sq in = | 37.903 sq cm |
| Final volume of specimen, V_f = | 22.055 cu in = | 361.410 cu cm |
| Final weight of specimen, W_f = | 798.52 gram = | 1.760 lbs |
| Final Moist Unit Weight, r_f = | 137.93 pcf | Final moisture content, w_f = 13.7% |
| Final Dry Unit Weight, r_{df} = | 121.32 pcf | Final degree of saturation, S_f = 93.3% |

4. Type of Permeant Liquid: De-aired tap water Total Back Pressure: 26.0 psi
 Cell Pressure: 30.0 psi Effective Overburden Pressure: 4.0 psi

5. Corrected Hydraulic Conductivity, k_{20}

| | |
|------------------------------------------------------|------------------------|
| Temperature, T = | 21.0 cel. deg. |
| Hydraulic Conductivity, k_T = | 2.52E-07 cm/sec |
| Temperature Ratio, R_t = | 0.976 |
| Hydraulic Conductivity, k_{20} = | 2.46E-07 cm/sec |



Permeability Test using a Flexible Wall Permeameter (Constant Volume - Falling Head Method, ASTM D 5084)

Test Data Summary/Report:

Project: Reconstruction of Taxiway NA
 Sample ID: B-40, 4'-6', Trial 2

Job No.: G123-15
 Location of Project: Houston, Texas

1. Testing Method: ASTM D 5084 Method F: Constant Volume - Falling Head, Flexible Wall Permeameter

2. Specimen Preparation:

3. **Before Permeability Test:**

| | | |
|-------------------------------------|----------------|---------------------------------------------|
| Initial specimen height, h_i = | 3.772 in = | 9.581 cm |
| Initial specimen diameter, d_i = | 2.735 in = | 6.947 cm |
| Initial area of specimen, A_i = | 5.875 sq in = | 37.903 sq cm |
| Initial volume of specimen, V_i = | 22.160 cu in = | 363.143 cu cm |
| Specific gravity, assumed G_s = | 2.72 | |
| Initial weight of specimen, W_i = | 789.82 gram = | 1.741 lbs |
| Initial Moist Unit Weight, r_i = | 135.78 pcf | Initial moisture content, w_i = 11.9% |
| Initial Dry Unit Weight, r_{di} = | 121.38 pcf | Initial degree of saturation, S_i = 81.0% |

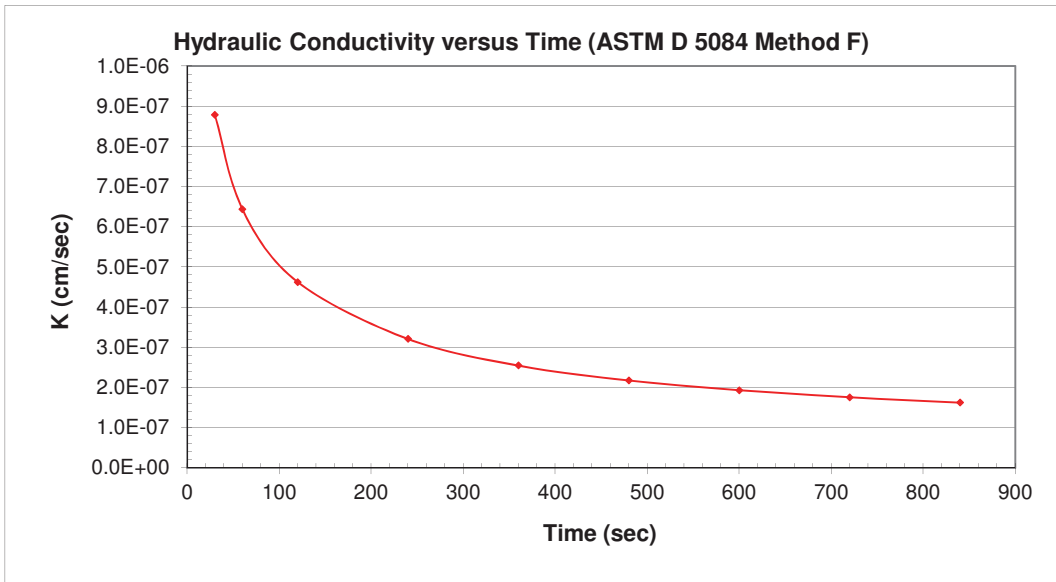
After Permeability Test:

| | | |
|-----------------------------------|----------------|-------------------------------------------|
| Final specimen height, h_f = | 3.754 in = | 9.535 cm |
| Final specimen diameter, d_f = | 2.735 in = | 6.947 cm |
| Final area of specimen, A_f = | 5.875 sq in = | 37.903 sq cm |
| Final volume of specimen, V_f = | 22.055 cu in = | 361.410 cu cm |
| Final weight of specimen, W_f = | 798.52 gram = | 1.760 lbs |
| Final Moist Unit Weight, r_f = | 137.93 pcf | Final moisture content, w_f = 13.7% |
| Final Dry Unit Weight, r_{df} = | 121.32 pcf | Final degree of saturation, S_f = 93.3% |

4. Type of Permeant Liquid: De-aired tap water Total Back Pressure: 26.0 psi
 Cell Pressure: 30.0 psi Effective Overburden Pressure: 4.0 psi

5. Corrected Hydraulic Conductivity, k_{20}

| | |
|------------------------------------------------------|------------------------|
| Temperature, T = | 21.0 cel. deg. |
| Hydraulic Conductivity, k_T = | 2.55E-07 cm/sec |
| Temperature Ratio, R_t = | 0.976 |
| Hydraulic Conductivity, k_{20} = | 2.49E-07 cm/sec |





APPENDIX C

Plates C-1 to C-6

Chemical Test Results

Laboratory Analysis Report

Total Number of Pages: 6

Job ID : 15071386



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

Client Project Name :
G123-15 / IAH Taxi Way

Report To : Client Name: Aviles Engineering
Attn: Wilber Wang
Client Address: 5790 Windfern
City, State, Zip: Houston, Texas, 77041

P.O.#.: 1150012
Sample Collected By: william Thomas
Date Collected: 07/24/15

A&B Labs has analyzed the following samples...

| Client Sample ID | Matrix | A&B Sample ID |
|------------------|--------|---------------|
| B-29 2'-4' | Soil | 15071386.01 |
| B-39 0'-2' | Soil | 15071386.02 |
| B-44 4'-6' | Soil | 15071386.03 |
| B-49 4'-6' | Soil | 15071386.04 |
| B-34 4'-6' | Soil | 15071386.05 |

A handwritten signature in black ink that reads "Alisha Hughes".

Released By: Alisha Hughes
Title: Project Manager
Date: 8/3/2015



This Laboratory is NELAP (T104704213-15-13) accredited. Effective: 04/01/2015; Expires: 03/31/2016

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 07/24/2015 15:47



Job ID : 15071386

Date : 8/3/2015

CLIENT Name : Aviles Engineering
PROJECT Name : G123-15 / IAH Taxi Way

ATTN : Wilber Wang

| Method | ClientSampleID Parameter | Result | Units | Matrix | D.F | Rpt Limit | Reg Limit | Collection Date/Time | Analysis Date/Time | Analyst | SampleID | Q |
|-----------|--------------------------------------------------------|--------|-------|--------|-----|-----------|--------------|-------------------------|-----------------------|---------|-------------|---|
| EPA 300.0 | B-29 2:-4: Water Soluble Anions Chloride | BRL | mg/Kg | Soil | 1 | 1 | | 07/24/15 09:00 | 07/27/15 12:05 | JKD | 15071386.01 | |
| EPA 300.0 | B-39 0:-2: Water Soluble Anions Chloride | 9.45 | mg/Kg | Soil | 1 | 1 | | 07/24/15 09:00 | 07/27/15 12:54 | JKD | 15071386.02 | |
| EPA 300.0 | B-44 4:-6: Water Soluble Anions Chloride | 8.04 | mg/Kg | Soil | 1 | 1 | | 07/24/15 09:00 | 07/27/15 13:10 | JKD | 15071386.03 | |
| EPA 300.0 | B-49 4:-6: Water Soluble Anions Chloride | 1.73 | mg/Kg | Soil | 1 | 1 | | 07/24/15 09:00 | 07/27/15 13:42 | JKD | 15071386.04 | |
| EPA 300.0 | B-34 4:-6: Water Soluble Anions Chloride | 3.84 | mg/Kg | Soil | 1 | 1 | | 07/24/15 09:00 | 07/27/15 14:15 | JKD | 15071386.05 | |



LABORATORY QUALITY CONTROL CERTIFICATE

A&B Job ID : 15071386

Date : 8/3/2015

| QCType: LCS and LCSD | | | | | | | | | | | |
|-----------------------------|-----------|-------------|------------|-------------|-----------|------------|-----|---------------|---------------|------------|------|
| Parameter | Method | Spike Added | LCS Result | LCSD Result | LCS Rec % | LCSD Rec % | RPD | % RPD CLimits | % Rec CLimits | QCBatchID | Qual |
| Chloride | EPA 300.0 | 10 | 10.9 | 10.9 | 109 | 109 | 0 | 20 | 90-110 | Qb15080104 | |

| QCType: MS and MSD | | | | | | | | | | | |
|---------------------------|-----------|---------------|-------------|-----------|------------|----------|-----------|-----|---------------|---------------|-------------|
| Parameter | Method | Sample Result | Spike Added | MS Result | MSD Result | MS Rec % | MSD Rec % | RPD | % RPD CLimits | % Rec CLimits | QCSampleID |
| Chloride | EPA 300.0 | BRL | 10 | 9.65 | | 88.1 | | | | 80-120 | 15071386.01 |

| QCType: Method Blank | | | | | | | | | | | |
|-----------------------------|-----------|------------|--------|-------|------|-----------|------------|------|--|--|--|
| Parameter | Method | CAS # | Result | Units | D.F. | Rpt Limit | QCBatchID | Qual | | | |
| Chloride | EPA 300.0 | 16887-00-6 | BRL | mg/Kg | 0.1 | 0.1 | Qb15080104 | | | | |

LABORATORY TERM AND QUALIFIER DEFINITION REPORT



Job ID : 15071386

Date: 8/3/2015

General Term Definition

| | | | |
|----------|-------------------------------------|----------|-----------------------------|
| Back-Wt | Back Weight | Post-Wt | Post Weight |
| BRL | Below Reporting Limit | ppm | parts per million |
| cfu | colony-forming units | Pre-Wt | Previous Weight |
| Conc. | Concentration | Q | Qualifier |
| D.F. | Dilution Factor | RegLimit | Regulatory Limit |
| Front-Wt | Front Weight | RPD | Relative Percent Difference |
| LCS | Laboratory Check Standard | RptLimit | Reporting Limit |
| LCSD | Laboratory Check Standard Duplicate | SDL | Sample Detection Limit |
| MS | Matrix Spike | surr | Surrogate |
| MSD | Matrix Spike Duplicate | T | Time |
| MW | Molecular Weight | TNTC | Too numerous to count |

Qualifier Definition



Sample Condition Checklist

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------|--------------|---|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|--|
| A&B JobID : 15071386 | Date Received : 07/24/2015 | Time Received : 3:47PM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Client Name : Aviles Engineering | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Temperature : 5.2+0.7cf=5.9°C | Sample pH : n/a | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Thermometer ID : 140539697 | pH Paper ID : n/a | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check Points | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. | Cooler seal present and signed. | Yes | No | N/A | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | Sample(s) in a cooler. | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. | If yes, ice in cooler. | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. | Sample(s) received with chain-of-custody. | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. | C-O-C signed and dated. | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6. | Sample(s) received with signed sample custody seal. | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7. | Sample containers arrived intact. (If no comment). | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8. | <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;">Matrix</td> <td style="width: 10%;">Water</td> <td style="width: 10%;">Soil</td> <td style="width: 10%;">Liquid</td> <td style="width: 10%;">Sludge</td> <td style="width: 10%;">Solid</td> <td style="width: 10%;">Cassette</td> <td style="width: 10%;">Tube</td> <td style="width: 10%;">Bulk</td> <td style="width: 10%;">Badge</td> <td style="width: 10%;">Food</td> <td style="width: 10%;">Other</td> </tr> <tr> <td>:</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table> | Matrix | Water | Soil | Liquid | Sludge | Solid | Cassette | Tube | Bulk | Badge | Food | Other | : | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | |
| Matrix | Water | Soil | Liquid | Sludge | Solid | Cassette | Tube | Bulk | Badge | Food | Other | | | | | | | | | | | | | | | | | |
| : | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | |
| 9. | Sample(s) were received in appropriate container(s). | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. | Sample(s) were received with proper preservative | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. | All samples were logged or labeled. | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12. | Sample ID labels match C-O-C ID's | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13. | Bottle count on C-O-C matches bottles found. | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14. | Sample volume is sufficient for analyses requested. | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15. | Samples were received within the hold time. | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16. | VOA vials completely filled. | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 17. | Sample accepted. | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Comments : Include actions taken to resolve discrepancies/problem: | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Received by : AHall

Check in by/date : AHall / 07/24/2015



U.S. Department
of Transportation

Federal Aviation
Administration

Advisory Circular

Subject: Operational Safety on
Airports During Construction

Date: 9/29/11
Initiated by: AAS-100

AC No: 150/5370-2F

- 1. Purpose.** This AC sets forth guidelines for operational safety on airports during construction.
- 2. What this AC Cancels.** This AC cancels AC 150/5370-2E, Operational Safety on Airports During Construction, dated January 17, 2003.
- 3. Whom This AC Affects.** This AC assists airport operators in complying with Title 14 Code of Federal Regulations (CFR) Part 139, Certification of Airports (Part 139). 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) or the Passenger Facility Charge (PFC) Program. See Grant Assurance No. 34, "Policies, Standards, and Specifications," and PFC Assurance No. 9, "Standard and Specifications." While we do not require non-certificated airports without grant agreements to adhere to these guidelines, we recommend that they do so to help these airports maintain operational safety during construction.
- 4. Principal Changes.**
 - a.** Construction activities are prohibited in safety areas while the associated runway or taxiway is open to aircraft.
 - b.** Guidance is provided in incorporating Safety Risk Management.
 - c.** Recommended checklists are provided for writing Construction Safety and Phasing Plans and for daily inspections.
- 5. Reading Material Related to this AC.** Numerous ACs are referenced in the text of this AC. These references do not include a revision letter, as they are to be read as referring to the latest version. Appendix 1 contains a list of reading material on airport construction, design, and potential safety hazards during construction, as well as instructions for obtaining these documents.

Michael J. O'Donnell
Director of Airport Safety and Standards

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Chapter 1. Planning an Airfield Construction Project

101. 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, some of the concepts, methods and procedures described may also enhance the day-to-day airport maintenance operations, such as lighting maintenance and snow removal operations.

102. 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. As they are identified, 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 in order 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:

a. 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.

b. 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 Reference Code (ACRC) for each runway; Airplane Design Group (ADG) and Taxiway Design Group (TDG)¹ for each affected taxiway; designated approach visibility minimums; available approach and departure procedures; most demanding aircraft; declared distances; available air traffic control services; airport Surface Movement Guidance and Control System plan; and others. The applicable seasons, days and times for certain operations should also be identified as applicable.

c. 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,

¹ Taxiway Design Group will be introduced in AC 150/5300-13A.

and other changes. An example of a table showing temporary operations versus current operations is shown in Table 3-1 Sample Operations Effects.

d. Take Required Measures to Revised 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 so widely among airports, this AC presents general guidance on those subjects.

e. Manage Safety Risk. Certain airport projects may require the airport operator to provide a Project Proposal Summary to help the FAA to determine the appropriate level of Safety Risk Management (SRM) documentation. 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 SRM documentation. See FAA Order 5200.11, FAA Airports (ARP) Safety Management System (SMS), for more information. If the FAA requires SRM documentation, 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.

103. 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 1, Related Reading Material for a list of related reading material.

a. List Requirements. A CSPP must be developed for each on-airfield construction project funded by the Airport Improvement Program (AIP) or the Passenger Facility Charge (PFC) program or located on an airport certificated under Part 139. As per Order 5200.11, such projects 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 102.e above). Additional information may be found in Order 5200.11.

b. Prepare a Safety Plan Compliance Document. 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.

c. 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.

104. Who Is Responsible for Safety During Construction?

a. 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. 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.

b. 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) 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.

(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.

(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 150/5300-9, *Predesign, Prebid, and Preconstruction Conferences for Airport Grant 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.)

(4) Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.

(5) Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.

(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.

(7) Ensure construction personnel know of any applicable airport procedures and of changes to those procedures that may affect their work.

(8) Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.

(9) **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.

(10) **At certificated airports**, ensure each CSPP and SPCD is consistent with Part 139.

(11) **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.

(12) **Resolve safety deficiencies immediately.** At airports subject to 49 CFR Part 1542, Airport Security, ensure construction access complies with the security requirements of that regulation.

(13) **Notify appropriate parties** when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).

(14) **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. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.

(15) **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. Coordinate with appropriate local and other federal government agencies, such as EPA, OSHA, TSA, and the state environmental agency.

c. Define Construction Contractor's Responsibilities. The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

(1) **Submit a Safety Plan Compliance Document (SPCD)** to the airport operator describing how it will comply with the requirements of the CSPP and supplying any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor that indicates it understands the operational safety requirements of the CSPP and it asserts it will not deviate from 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.

(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.

(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.

(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 whenever active construction is taking place.

(5) **Conduct inspections** sufficiently frequently to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.

(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.

(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.

(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, 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.

d. 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 must:

(1) Develop, or have a consultant develop, a project specific CSPP and submit it to the airport operator for certification and subsequent approval by the FAA. The approved CSPP must be made part of any contract awarded by the tenant for construction work.

(2) In coordination with its contractor, develop an SPCD and submit it to the airport operator for approval to be issued prior to issuance of a Notice to Proceed.

(3) Ensure that construction personnel are familiar with safety procedures and regulations on the airport.

(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 whenever 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, and as specified in the CSPP and SPCD.

(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, other.), stock piles, and haul routes. The FAA encourages online submittal of forms for expediency.

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Chapter 2. Construction Safety and Phasing Plans

Section 1. Basic Considerations

201. Overview. Aviation safety is the primary consideration at airports, especially during construction. The airport operator's Construction Safety and Phasing Plan (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 all 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.

202. 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.

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

a. 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.

b. Submit a Construction Safety and Phasing Plan (CSPP). The CSPP should be formally submitted for FAA approval when the project design is 80% to 90% 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.

c. Submit a Safety Plan Compliance Document (SPCD). The contractor should submit the SPCD to the airport operator for approval to be issued prior to the Notice to Proceed.

d. Submit CSPP Revisions. All revisions to the CSPP or SPCD should be submitted to the FAA for approval as soon as required changes are identified.

204. Meet CSPP Requirements.

a. To the extent possible, the CSPP should address the following as outlined in Section 2, Plan Requirements and Chapter 3, Guidelines for Writing a CSPP, as appropriate. 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) Notices to Airmen (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.

(15) Marking and signs for access routes.

(16) Hazard marking and lighting.

- (a) Purpose.
- (b) Equipment.

(17) 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).
- (d) Taxiway Object Free Area (TOFA).
- (e) Obstacle Free Zone (OFZ).
- (f) Runway approach/departure surfaces.

(18) Other limitations on construction.

- (a) Prohibitions.
- (b) Restrictions.

b. 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) Whom 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 material (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) 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) Protection of runway and taxiway safety areas. including 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 for separation of construction operations from aircraft operations, including details of barricades.

(18) Other limitations on construction should be identified in the CSPP and should not require an entry in the SPCD.

Section 2. Plan Requirements

205. Coordination. Airport operators, or tenants conducting construction on their leased properties, should use predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction (see AC 150/5300-9). In addition, the following should be coordinated as required:

a. Contractor Progress Meetings. Operational safety should be a standing agenda item for discussion during progress meetings throughout the project.

b. Scope or Schedule Changes. Changes in the scope or duration of the project may necessitate revisions to the CSPP and review and approval by the airport operator and the FAA.

c. FAA ATO Coordination. Early coordination with FAA ATO is required to schedule airway facility shutdowns and restarts. Relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, 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 213.e(3)(b) for required FAA notification regarding FAA owned NAVAIDs.)

206. 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 such a 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.

a. Phase Elements. For each phase the CSPP should detail:

- Areas closed to aircraft operations

- Duration of closures
- Taxi routes
- ARFF access routes
- Construction staging areas
- Construction access and haul routes
- Impacts to NAVAIDs
- Lighting and marking changes
- Available runway length
- Declared distances (if applicable)
- Required hazard marking and lighting
- Lead times for required notifications

b. Construction Safety Drawings. Drawings specifically indicating operational safety procedures and methods in affected areas (that is, construction safety drawings) should be developed for each construction phase. Such drawings should be included in the CSPP as referenced attachments and should likewise be included in the contract drawing package.

207. 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 Air Traffic Organization (ATO) will support operational simulations. See Chapter 3 for an example of a table showing temporary operations versus current operations.

a. Identification of Affected Areas. Identifying areas and operations affected by the construction will help to determine possible safety problems. The affected areas should be identified in the construction safety drawings for each construction phase. (See 206.b above.) Of particular concern are:

(1) **Closing, or partial closing, of runways, taxiways and aprons.** When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing, landing, or taking off 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 available for take-off in the direction of the displacement and for landing and taking off in the opposite direction. Misunderstanding this difference, and issuance of a subsequently inaccurate NOTAM, can lead to a hazardous condition.

(2) **Closing of Aircraft Rescue and Fire Fighting access routes.**

(3) **Closing of access routes used by airport and airline support vehicles.**

(4) **Interruption of utilities, including water supplies for fire fighting.**

(5) **Approach/departure surfaces affected by heights of objects.**

(6) **Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.**

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

(1) **Temporary changes to runway and/or taxi operations.**

(2) **Detours for ARFF and other airport vehicles.**

- (3) **Maintenance of essential utilities.**
- (4) **Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.**

208. 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 213.e(3) below.) 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 213.b below). 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 213.e(1) below.)

209. 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:

a. 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 218.b below.) 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. See paragraphs 210 and 211 below.

b. 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, and detail associated training requirements:

(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) **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 213.e(1) below for further information.

(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.

(4) Marking and lighting of vehicles in accordance with AC 150/5210-5, Painting, Marking, and Lighting of Vehicles Used on an Airport.

(5) Description of proper vehicle operations on various areas under normal, lost communications, and emergency conditions.

(6) Required escorts.

(7) Training requirements for vehicle drivers to ensure compliance with the airport operator's vehicle rules and regulations. Specific training should be provided to those vehicle operators providing escorts. See AC 150/5210-20, Ground Vehicle Operations on Airports, for information on training and records maintenance requirements.

(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.

(9) Two-way radio communication procedures.

(a) 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:

(i) Airport operations

(ii) ATCT

(iii) Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.

(iv) 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.

(b) 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.

(c) 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.

(d) Proper radio usage, including read back requirements.

(e) Proper phraseology, including the International Phonetic Alphabet.

(f) 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.

(10) Maintenance of the secured area of the airport, including:

(a) 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.

(b) Badging requirements.

(c) 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.

210. Wildlife Management. The CSPP and SPCD must be in accordance with the airport operator’s wildlife hazard management plan, if applicable. See also 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:

a. Trash. Food scraps must be collected from construction personnel activity.

b. Standing Water.

c. 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 States 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.

d. Poorly Maintained Fencing and Gates. See 209.b(10)(a) above.

e. 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.

211. 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) 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.

212. 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.

213. 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.

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

b. 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 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 207.a(1) above regarding issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

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

d. 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:

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

e. Notification to the FAA.

(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 1, Related Reading Material, to download the form. Further guidance is available on the FAA web site at oeaaa.faa.gov.

(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 1, Related Reading Material to download the form.

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

(a) Airport owned/FAA maintained. If construction operations require a shutdown of more than 24 hours, 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.

(b) FAA owned.

(i) General. 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. (Impacts to FAA equipment covered by a Reimbursable Agreement (RA) do not have to be reported by the airport operator.)

(ii) 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. In addition, provide seven days notice to schedule the actual shutdown.

214. Inspection Requirements.

a. 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 3, Safety and Phasing Plan Checklist. See also AC 150/5200-18, Airport Safety Self-Inspection.

b. 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.

215. 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

216. 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.

217. 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).

218. Runway and Taxiway Visual Aids. 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 remain in place and operational. The CSPP must address the following, as appropriate:

a. 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, or other wind currents and constructed of materials that would minimize damage to an aircraft in the event of inadvertent contact.

b. Markings. Markings must be in compliance with the standards of AC 150/5340-1, Standards for Airport Markings. 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 218.b(1)(b) below.)

(1) Closed Runways and Taxiways.

(a) **Permanently Closed Runways.** For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place Xs at each end and at 1,000-foot (300 m) intervals.

(b) **Temporarily Closed Runways.** For runways that have been temporarily closed, place an X at the each end of the runway directly on or as near as practicable to the runway designation numbers. Figure 2-1 illustrates.



Figure 2-1 Markings for a Temporarily Closed Runway

(c) **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 207.a(1) above for the difference between partially closed runways and runways with displaced thresholds.

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

(ii) **Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar 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.

(d) Taxiways.

(i) Permanently Closed Taxiways. AC 150/5300-13 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. Figure 2-2 illustrates.

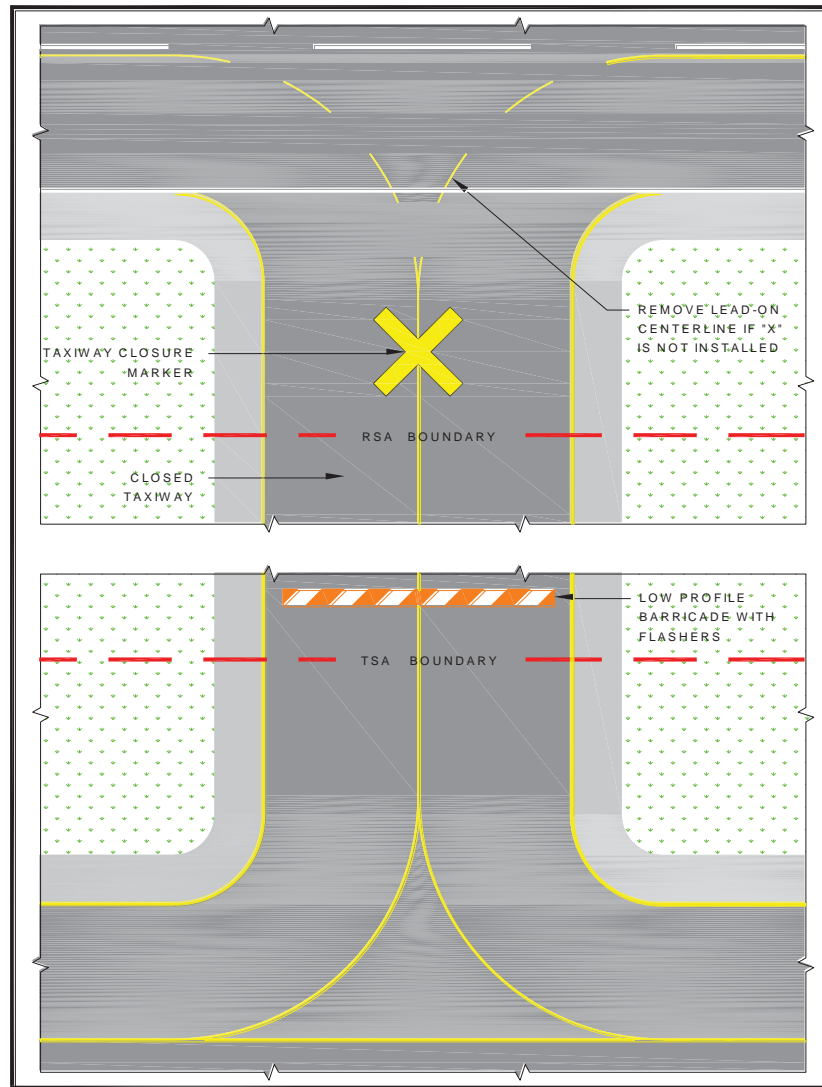


Figure 2-2 Taxiway Closure

(ii) 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, leading to the closed section. 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.

(e) Temporarily Closed Airport. When the airport is closed temporarily, mark all the runways as closed.

(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.

(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.

(4) If it is not possible to install threshold bars, chevrons, and arrows on the pavement, temporary outboard markings may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimension along the runway direction must be the same as if installed on the pavement. The lateral dimension must be at least one-half that of on-pavement markings. 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.

(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.

c. Lighting and Visual NAVAIDs. This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting must be in conformance with AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and AC 150/5345-50, Specification for Portable Runway and Taxiway Lights. When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. 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.

(1) Permanently Closed Runways and Taxiways. For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

(2) **Temporarily Closed Runways.** If available, use a lighted X, both at night and during the day, placed at each end of the runway facing the approach. 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 2-3 shows a lighted X by day. Figure 2-4 shows a lighted X at night.



Figure 2-3 Lighted X in Daytime



Figure 2-4 Lighted X at Night

(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

(a) **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 fixture in such a way as to prevent light leakage.

(b) **Displaced Thresholds.** Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light in the opposite direction. Centerline lights are blanked out in the direction of approach if the displacement is 700 ft or less. If the displacement is over 700 ft, place the centerline lights out of service. See AC 150/5340-30 for details on lighting displaced thresholds.

(c) 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.

(d) A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 218.b(1)(c) above. 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.

(e) Temporary threshold lights and 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 in (7.6 cm) above ground. 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.

(f) 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.

(g) Reconfigure yellow lenses (caution zone), as necessary. If the runway has centerline lights, reconfigure the red lenses, as necessary, or place the centerline lights out of service.

(h) Relocate the visual glide slope indicator (VGSI), such as VASI and 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.

(i) Issue a NOTAM to inform pilots of temporary lighting conditions.

(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 such a way as to prevent light leakage.

d. 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. Any time a sign does not serve its normal function; 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.

219. 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.

220. Hazard Marking, Lighting and Signing.

a. Hazard Marking and Lighting Prevents Pilots from entering areas closed to aircraft, and prevents 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.

b. Equipment.

(1) 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 vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 ft. 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) 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 ft. 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.

(3) Supplement barricades with signs (for example “No Entry,” “No Vehicles”) as necessary.

(4) Air Operations Area – General. Barricades are not permitted in any active safety area. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, 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 in (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 in 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, or 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 in (7.6 cm) above the ground. Figure 2-5 and Figure 2-6 show sample barricades with proper coloring and flags.



Figure 2-5 Interlocking Barricades



Figure 2-6 Low Profile Barricades

(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.

(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.

(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.

221. Protection of Runway and Taxiway Safety Areas. Runway and taxiway safety areas, Obstacle Free zones (OFZ), object free areas (OFA), 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 213.e above.) 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.

a. 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:

(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. See AC 150/5300-13 for guidance on the use of declared distances.

(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.

(3) **The CSPP and SPCD must provide procedures** for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

(4) **Excavations.**

(a) Open trenches or excavations are not permitted within the RSA while the runway is open. If possible, backfill trenches before the runway is opened. If the runway must be opened before excavations are backfilled, 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.

(b) 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.

(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.

b. 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.

c. Taxiway Safety Area (TSA). 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.) Construction activities within the TSA are subject to the following conditions:

(1) 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 (see AC 150/5300-13, Table 4-1).

(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.

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

(4) Excavations.

(a) Open trenches or excavations are not permitted within the TSA while the taxiway is open. If possible, backfill trenches before the taxiway is opened. If the taxiway must be opened before excavations are backfilled, 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.

(b) 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.

(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 fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

d. 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.

(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.

(2) Offset taxiway pavement markings may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting or reflectors are required.

(3) Construction activity may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:

- (a) Appropriate NOTAMs are issued.
- (b) Marking and lighting meeting the provisions of paragraphs 218 and 220 above are implemented.
- (c) Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). In these situations, flaggers must be used to direct construction equipment, and wing walkers will be necessary to guide aircraft. Wing walkers should be airline/aviation personnel rather than construction workers. 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 pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.

e. 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.

f. Runway Approach/Departure Areas and Clearways. All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in Appendix 2, "Threshold Siting Requirements," of 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.

(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) Caution regarding partial runway closures. When filing a NOTAM for a partial runway closure, clearly state to OCC personnel 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).

(3) Caution regarding 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, 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.

222. Other Limitations on Construction. The CSPP must specify any other limitations on construction, including but not limited to:

a. Prohibitions.

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

(2) No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.

(3) No use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.

See AC 150/5370-10.

(4) **No use of flare pots** within the AOA.

b. Restrictions.

(1) **Construction suspension required during specific airport operations.**

(2) **Areas that cannot be worked on simultaneously.**

(3) **Day or night construction restrictions.**

(4) **Seasonal construction restrictions.**

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Chapter 3. Guidelines for Writing a CSPP

301. General Requirements. The CSPP is a standalone document written to correspond with the subjects outlined in Chapter 2, Section 1, paragraph 204. The CSPP is organized by numbered sections corresponding to each subject listed in Chapter 2, Section 1, paragraph 204, and described in detail in Chapter 2, Section 2. Each section number and title in the CSPP matches the corresponding subject outlined in Chapter 2, paragraph 204 (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.

302. 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 Instrument Landing System (ILS) cables during trenching operations could be considered FAA ATO coordination (Section 1. Coordination, paragraph 205.c), an area and operation affected by the construction activity (Section 3. Areas and Operations Affected by the Construction Activity, paragraph 207.a(4)), a protection of a NAVAID (Section 4. Protection of Navigational Aids (NAVAIDs), paragraph 208), or a notification to the FAA of construction activities (Section 9. Notification of Construction Activities, paragraph 210.e(3)(b)). However, it is more specifically an underground utility requirement (Section 11. Underground Utilities, paragraph 215). The procedure for protecting underground ILS cables during trenching operations should therefore be described in Section 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 Section 11: “*ILS cables shall be identified and protected as described in Section 11*” or “*See Section 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.

303. 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.

304. 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.

305. 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.

306. Coordination. Include in this section a detailed description of conferences and meetings both before and during the project. Include appropriate information from AC 150/5300-9. Discuss coordination procedures and schedules for each required FAA ATO airway facility shutdown and restart and all required flight inspections.

307. 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 308 below, as appropriate.

308. 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. Tables and charts such as the following may be helpful in highlighting issues to be addressed.

Table 3-1 Sample Operations Effects

| Project | Runway 15-33 Reconstruction | |
|----------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------|
| Phase | Phase II: Reconstruct Runway 15 End | |
| Scope of Work | Reconstruct 1,000 ft of north end of Runway 15-33 with Portland Cement Concrete (PCC). | |
| Operational Requirements | Normal (Existing) | Phase II (Anticipated) |
| Runway 15 Average Aircraft Operations | Carrier: 52 /day GA: 26 /day Military: 11 /day | Carrier: 52 / day GA: 20 / day Military: 0 /day |
| Runway 33 Average Aircraft Operations | Carrier: 40 /day GA: 18 /day Military: 10 /day | Carrier: 20 /day GA: 5 /day Military: 0 /day |
| Runway 15-33 ARC | C-IV | C-IV |
| Runway 15 Approach Visibility Minimums | ¾ mile | 1 mile |
| Runway 33 Approach Visibility Minimums | ¾ mile | 1 mile |
| Runway 15 Declared Distances | TORA: 7,820 | TORA: 6,420 |
| | TODA: 7,820 | TODA: 6,420 |
| | ASDA: 7,820 | ASDA: 6,420 |
| | LDA: 7,820 | LDA: 6,420 |
| Runway 33 Declared Distances | TORA: 8,320 | TORA: 6,920 |
| | TODA: 8,320 | TODA: 6,920 |
| | ASDA: 8,320 | ASDA: 6,920 |
| | LDA: 7,820 | LDA: 6,420 |
| Runway 15 Approach Procedures | ILS | LOC only |
| | RNAV | N/A |
| | VOR | N/A |
| Runway 33 Approach Procedures | ILS | Visual only |
| | RNAV | N/A |
| | VOR | N/A |
| Runway 15 NAVAIDs | ILS/DME, MALSR, RVR | LOC/DME, PAPI (temp), RVR |

| | | |
|---------------------------|----------------------------------------------|-----------------------------------------------------|
| Runway 33 NAVAIDs | ILS/DME, MALSF, PAPI, RVR | MALSF, PAPI, RVR |
| Taxiway G ADG | IV | IV (N/A between T/W H and R/W 15 end) |
| Taxiway E ADG | IV | IV |
| ATCT (hours open) | 06:00 – 24:00 local | 06:00 – 24:00 local |
| ARFF Index | D | D |
| Special Conditions | Air National Guard (ANG) military operations | Military operations relocated to alternate ANG Base |
| | Airline XYZ requires VGSI | Airline XYZ requires VGSI |

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

| Runway | Aircraft Approach Category* A, B, C, or D | Airplane Design Group* I, II, III, or IV | RSA Width in Feet Divided by 2* |
|--------|----------------------------------------------|---------------------------------------------|------------------------------------|
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

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

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

| Runway End Number | Airplane Design Group* I, II, III, or IV | Aircraft Approach Category* A, B, C, or D | Minimum Safety Area Prior to the Threshold* | Minimum 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.

309. Navigation Aid (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 306 above 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 314 for the issuance of NOTAMs as required. Include a reference to paragraph 316 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 319. Attach drawings to graphically indicate the affected NAVAIDS and the corresponding critical areas.

310. 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:

a. 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 321 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 311 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 312 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

b. 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 Hazardous Material (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.

c. 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 Common Traffic Advisory Frequencies (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 be identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

d. 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.

311. 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 310 for security (wildlife) fence integrity maintenance as required.

312. Foreign Object Debris (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 315 for inspection requirements as required.

313. Hazardous Materials (HAZMAT) Management. Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Material Safety Data Sheet (MSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be

identified. Include a reference to paragraph 310 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, AC 150/5320-15.

314. 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. 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 310. 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.

315. Inspection Requirements. Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) 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.

316. 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 314 above for notification of utility owners of accidental utility disruption as required.

317. Penalties. Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, Vehicle/Pedestrian Deviations (VPD), and others.

318. 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 310 above for compliance with airport safety and security measures and for radio communications as required. Include a reference to paragraph 319 below for emergency notification of all involved parties, including police/security, ARFF, and medical services.

319. 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.

320. 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 Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

321. 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 314 above. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

322. 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: Airport Design as required. Include a reference to paragraph 310 above for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 310 above for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 321 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 adequate Runway Safety Area, include a reference to paragraphs 314 and 319 above. 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: Airport Design as required. Include a reference to paragraph 323 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.

323. 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 307 above for project phasing requirements based on construction limitations as required.

Appendix 1. 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/>.

| AC | 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 Winter Safety and Operations |
| | 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 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 150/5310-24 | Airport Foreign Object Debris Management |
| | Guidance for developing and managing an airport foreign object debris (FOD) program |
| AC 150/5220-4 | Water Supply Systems for Aircraft Fire and Rescue Protection. |
| | Guidance on selecting a water source and meeting standards for a distribution system to support aircraft rescue and fire fighting service operations on airports. |
| 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 markings used on airport runways, taxiways, and aprons. |
| 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 | Title and Description |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 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 |
| AC 150/5370-10 | Standards for Specifying Construction of Airports |
| | Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction. |
| 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 |

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

| | |
|------------------------|---------------------------|
| 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/>.

Appendix 2. Definition of Terms

| Term | Definition |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 oeaaa.faa.gov .) The form may be downloaded at http://www.faa.gov/airports/resources/forms/ , or filed electronically at: https://oeaaa.faa.gov . |
| 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/ . |
| AC | Advisory Circular |
| ACRC | Aircraft Reference Code |
| 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. Any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runways, taxiways, or aprons. |
| ARFF | Aircraft Rescue and Fire Fighting |
| ARP | FAA Office of Airports |
| ASDA | Accelerate-Stop Distance Available |
| 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 the authority of 14 CFR Part 139, Certification of Airports. |
| CFR | Code of Federal Regulations |
| Construction | The presence and movement 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. |

| Term | Definition |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |
| FOD | Foreign Object Debris |
| HAZMAT | Hazardous Materials |
| 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. |
| NOTAM | Notices to Airmen |
| Obstruction | Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C. |
| 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 |
| P&R | Planning and Requirements Group |

| Term | Definition |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PAPI | Precision Approach Path Indicators |
| PFC | Passenger Facility Charge |
| PLASI | Pulse Light Approach Slope Indicators |
| Project Proposal Summary | A clear and concise description of the proposed project or change that is the object of Safety Risk Management. |
| 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. |
| SIDA | Security Identification Display Area |
| SMS | Safety Management System |
| 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 |
| 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 Transportation Security Administration |
| UNICOM | A radio communications system of a type used at small airports. |
| VASI | Visual Approach Slope Indicators |

| Term | Definition |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VGSI | Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicators (PAPI), visual approach slope indicators (VASI), and pulse light approach slope indicators (PLASI). |
| VFR | Visual Flight Rules |
| VOR | VHF Omnidirectional Radio Range |
| VPD | Vehicle / Pedestrian Deviation |

Appendix 3. Safety and Phasing Plan Checklist

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

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

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

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

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

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

| Coordination | Reference | Addressed | | | Remarks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------|--------------------------------|--------------------------------|---------|
| Penalties | | | | | |
| Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed. | 216 | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |
| Special Conditions | | | | | |
| Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed. | 217 | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |
| 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. | 218.a | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |
| Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified. | 218.a, 218.c, 219, 220.b(4) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |
| The requirement for markings to be in compliance with AC 150/5340-1, Standards for Airport Markings is specified. | 218.b | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |
| The requirement for lighting to conform to AC 150/5340-30, Design and Installation Details for Airport Visual Aids, AC 150/5345-50, Specification for Portable Runway and Taxiway Lights , and AC 150/5345-53 Airport Lighting Certification Program, is specified. | 218.b(1)(f) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |
| The use of a lighted X is specified where appropriate. | 218.b(1)(b), 218.b(3) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |
| The requirement for signs to conform to AC 150/5345-44, Specification for Runway and Taxiway Signs, AC 50/5340-18, Standards for Airport Sign Systems, and AC 150/5345-53, Airport Lighting Certification Program, is specified. | 218.c | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |
| 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. | 219 | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |
| 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. | 220.a | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA | |

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

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

Appendix 4. Construction Project Daily Safety Inspection Checklist

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

Potentially Hazardous Conditions

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

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

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

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