



MIAMI-DADE AVIATION DEPARTMENT

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VOLUME II DIVISION I SPECIFICATIONS

MIAMI OPA-LOCKA EXECUTIVE AIRPORT RUNWAY 9L-27R REHABILITATION

ISSUED FOR BID

MDAD Project No. X009A
FAA AIP # 3-12-0047-019-2021
CONTRACT # E16-MDAD-03, SO-08

Prepared by

ATKINS
Member of the SNC-Lavalin Group

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END OF SECTION

SECTION 011000
SUMMARY OF WORK

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Title of Work, and type of Contract.
- B. Project information.
- C. Work covered by Contract Documents.
- D. Phased construction.
- E. Work by MDAD.
- F. Work under separate contracts.
- G. Future work.
- H. Purchase contracts.
- I. MDAD-furnished products.
- J. Contractor-furnished, MDAD-installed products.
- K. Access to site.
- L. Coordination with occupants/tenants.
- M. Work restrictions.
- N. Specification and Drawing conventions.
- O. Miscellaneous provisions.

1.02 RELATED REQUIREMENTS

- A. Advertisement for Bids
- B. Instructions to Bidders.
- C. Bid Forms
- D. General Conditions
- E. Special Provisions
- F. Technical Specifications

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of this Contract comprises rehabilitation of runway 9L-27R, located at Opa-Locka Executive Airport, for the Miami-Dade Aviation Department, the Owner.
- B. This project covers the three (3) main runway rehabilitation work areas below.
 - 1. RW 9L (west end) full-depth reconstruction. Demo and replace existing concrete pavement with an asphalt section.
 - 2. RW 9L-27R Middle Section. Variable depth mill and overlay existing asphalt pavement.
 - 3. RW 27R (east end) full-depth reconstruction. Demo and replace existing concrete pavement with an asphalt section
- C. The work under this contract includes the project elements below and indicated in detail on the CSPP, Section 3 - Phasing.
 - 1- Pavement Rehabilitation
 - 2- Airfield Lighting and Signage
 - 3- Pavement Marking
 - 4- NAVAIDS

1.04 CONTRACT METHOD

- A. Construct the Work under unit and lump sum prices contract.

1.05 WORK BY OTHERS

- A. Work of the Project which will be executed by others is designated N.I.C. on the Plans.

1.06 FUTURE WORK

- A. The Project does not near -term designed future improvements to be performed concurrently.

1.07 WORK SEQUENCE

- A. Construct Work in stages to accommodate MDAD use of premises during construction. Coordinate Progress Schedule and coordinate with MDAD Occupancy during construction.
- B. Required phases:
 - 1. Phase 1: Reconstruction of both ends of Runway 9L-27R, TW N1 (West), TW N8 (East), TW N-East, and restore, resurface, rehabilitate the middle portion of the runway.
Phase 1 includes:
 - RW 9L-27R, full length reconstruction/mill and overlay
 - TW N1 reconstruction up to RW 9L-27R ROFA
 - TW J (+/- 120'), TW G (+/- 70'), TW F (+/- 120') and TW C (120') full depth transition
 - TW H and TW E full depth up to TW N TOFA
 - TW N8 full length reconstruction
 - TW N-East (+/- 500') between TW N8 (Sta 959+00 and Sta 954+00)
 - Commissioning of RW 9L-27R in coordination with the FAA – Contractor must have all elements necessary for the commissioning completed 30 calendar days before Phase 1 completion date.

- Flight checks by the FAA for the commissioning

Runway 9L-27R is to remain closed in Phase 1
Runway 12-30 is to remain open in Phase 1
TW T1 and TW T2 are to remain open in Phase 1

2. Phase 2: Reconstruction of TW N1 (north) and TW N-west

3. Phase 2a: **Work performed concurrent with Phase 1**

Work is not permitted within RW 12-30 safety area (RSA) and it is restricted within the ROFA

Phase 2a includes:

- TW N1 reconstruction between RW 9L-27R ROFA and TW N.
- TW N-West reconstruction between +/- Sta 901+00 and Sta 906+00.

TW T1 and TW T2 are closed in Phase 2a and remain closed through Phase 2b.
Aircraft to depart and exit from TW T3. Aircraft will need to back taxi when the full length of the runway is used.

Runway 9L-27R is closed in Phase 2a.
Runway 12-30 is open in Phase 2a.

4. Phase 2b: TW N1(south of the ROFA) and TW N-West unrestricted reconstruction is permitted within the RW 12-30 RSA, and ROFA closed runway.

Work is not permitted within RW 9L-27R safety area (RSA) and the ROFA, active runway.

Runway 9L-27R is open in Phase 2b
Runway 12-30 is closed in Phase 2b

1.08 CONTRACTOR USE OF PREMISES

- A. The MDAD shall have the right of unlimited access to the premises.
- B. Contractor shall limit use of premises to allow:
1. MDAD/tenant occupancy
 2. Work by other contractors.
 3. Public (Airport Tenants) usage.
 4. Others such as Fire Department (ARFF), FAA, airlines and other operators or agents.
- C. Coordinate use of premises under direction of MDAD and/or the Field Representative that is also referenced throughout the Contract Documents also as the Owner's Authorized Representative (OAR).
- D. Assume full responsibility for protection and safekeeping of project under this Contract

- E. Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

1.09 MDAD OCCUPANCY

- A. MDAD/tenant will occupy premises during entire construction period for conduct of its normal operations. Cooperate with MDAD in scheduling operations to minimize conflict and to facilitate MDAD usage.

1.10 PARTIAL MDAD OCCUPANCY

- A. Schedule and substantially complete designated portions of Work for MDAD occupancy prior to Substantial Completion of entire Work:

Designated areas, meeting the mandatory maximum construction duration for each phase set by Section 1.07 above:

- B. MDAD/tenant will occupy designated areas for the purpose of carrying out necessary maintenance, aircraft parking and other aircraft operations essential to the Airport.
- C. Execute Certificate of **Substantial Completion** for each designated portion of Work prior to MDAD occupancy. Contractor shall allow:
 - 1. Access for MDAD personnel.
 - 2. Use of parking facilities.
 - 3. Operation of all systems.

The Certificate of **Substantial Completion** as defined in the Contract Documents will only be executed after all the work performed under all of the construction phases has been sufficiently completed in accordance with the Contract Documents. The warranty period starts after the date of this final Substantial Completion date and not the date of any of the Partial Substantial Completion certificates executed for occupancy of the facilities completed during each phase. The final substantial completion certificate date will be after the final pavement marking for the aircraft parking position, taxilanes, and all other elements shown in the plan and specification is completed.

1.11 MDAD FURNISHED DOCUMENTS

- A. MDAD Responsibilities:
 - 1. Furnish Contractor with three copies of the black line Plans, and three copies of the Project Manual. Additional copies will be made available to the Contractor at the cost of reproduction.

1.12 MDAD FURNISHED PRODUCTS – NOT USED

1.13 REQUIRED PERMITS

Listed below are the permits required under this Contract:

- A. Miami-Dade County Department of Regulatory and Economic Resources (R.E.R.)
 - i. Electrical
 - ii. Structural
- B. Miami-Dade County R.E.R.- DERM Class VI Permit
- C. U.S. EPA
- D. SFWMD
- E. Florida DEP
- F. MDAD Hot Work Permit
- G. FAA

1.14 AUTHORIZATION TO PULL A PERMIT

- A. The MDAD, at its option, may authorize the Contractor to pull the Building Permit from the Planning, Development, and Regulation Department, prior to the Notice to Proceed.
- B. A copy of the Authorization to Pull a Permit form is appended to this Section.

1.15 NOT USED

1.16 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Not restricted.
 - 1. Weekend Hours: Not restricted.
 - 2. Hours for Utility Shutdowns: 48 hours
 - 3. Hours for **Core Drilling** or **noisy activity**: 48 hours
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to MDAD occupancy with MDAD.
 - 1. Notify **MDAD** not less than 2 days in advance of proposed disruptive operations.
 - 2. Obtain **MDAD's** written permission before proceeding with disruptive operations.

- D. Restricted Substances: Use of tobacco products and other controlled substances **on Project site** is not permitted.

1.17 MISCELLANEOUS PROVISIONS

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

PART 4 - PAYMENT

Unless otherwise specified, the cost of work specified in the various sections of Division 1, will not be paid for separately but the cost therefor shall be considered incidental to and included in the bid prices of the various Contract items.

APPENDIX: Authorization to Pull a Permit Form

END OF SECTION

MIAMI-DADE AVIATION DEPARTMENT

AUTHORIZATION TO PULL A PERMIT

Date: _____

Contract: _____ (Title)

Contract No.: _____

To: _____
(Contractor Name)

(Address)

You are hereby authorized to pull the required Building Permit from the Miami-Dade County Planning, Development, and Regulation Department. Enclosed is a check issued to the Miami-Dade County Planning, Development, and Regulation Department in the amount of \$ _____ representing the required permit fee.

NOTE: This Authorization to Pull a Permit IS NOT a Notice-to-Proceed.

Authorized by: _____
(Assistant Director for Facilities)

SECTION 011210
HOT WORK OPERATIONS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Before initiating hot work, the Contractor shall submit the Hot Work permit application. Hot Work includes, but is not limited to, work above and below ground, involving open flames or work producing heat and/or sparks (including, but not limited to, brazing, cutting, grinding, soldering or thawing materials, torch applied products, installation and welding).

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

- 3.01 All tradesmen operating on airport property whose work entails open flame cutting, welding or similar hot work shall not proceed with such operations until the safety of the work area has been approved by the Airport Fire Division and a "Hot Work Permit" obtained. The provisions of this directive shall apply to any operation involving open flames or producing heat and/or sparks.

- 3.02 Follow the MDAD Facilities Procedure contained in Procedure FD5-047-P using the Hot Work Permit form FD5-047 current issues. Both are located in the MDAD Local Area Network (LAN), H drive/Facilities/Procedures and Forms. Form FD5-047 is also available in the next Section 011210-01 following this Section.

Appendix: 011210-01 Hot Work Procedure FD5-047-P
011210-02 Hot Work Permit. FD5-047

END OF SECTION

HOT WORK

PURPOSE

To provide direction on obtaining authorization and performing precautionary tasks prior to performance of Hot Work on MDAD facilities.

DEFINITION

Hot Work Work, above and below ground, involving open flames or work producing heat and/or sparks (including, but not limited to, brazing, cutting, grinding, soldering or thawing materials, torch applied products, installation and welding).

INSTRUCTION

1. A Hot Work Permit (Facilities Division Form FD5-047):
 - Must be completed, submitted for approval, and fully executed whenever Hot Work is to be performed at an MDAD site.
 - Satisfies the requirements of the South Florida Fire Prevention Code which is referenced by and included in the General Conditions of the Contract.
 - Requires an individual to perform fire watch activities.
 - Is granted for a maximum period of twenty-four (24) hours. Hot Work in excess of this period shall be reauthorized by applying for a new permit.
 - Is good for one location only.
 - Must be logged and filed by the CIS Consultant as a Hot Work activity record.
2. Project Managers are responsible for advising and directing the A/E Consultant and Contractor on the issuance and use of Hot Work Permits.
3. The General Contractor is responsible for preparing the Hot Work Permit, which includes performing and checking off (or marking as non-applicable) all of the precautionary items on the form and signing it before requesting its authorization.
4. The Project Manager shall notify and coordinate with adjacent airport tenants and MDAD Operations if fumes or other effects of the operation will impact airport operations.
5. The CIS Consultant (or A/E performing work site services) shall be the management representative designated by MDAD to authorize the Hot Work Permit.
6. The CIS Consultant shall fax copies of the executed Hot Work Permit and provide telephone notification of the work to be performed as indicated on the form.
7. The Contractor or subcontractor shall exhibit a copy of the approved Hot Work Permit at the work site in a conspicuous place near to the actual hot work.

8. Where sprinklers and hose streams are not under the control and maintenance of the Contractor, the condition of operability shall be verified with MDAD Maintenance prior to performing the Hot Work.
9. The Contractor or subcontractor shall designate an individual to perform fire watch activities and brief and train him/her on the fire watch responsibility: guarding against fire while actual work is in process and for a minimum of thirty (30) minutes after the completion of the work. Fire watch precautions must be taken on both sides of any penetration which is being worked on or through.

The individual performing fire watch activities may be the helper of the Hot Worker and may be responsible for additional non-conflicting duties as appropriate. Any such additional duties must be in the immediate vicinity and in view of the Hot Work.

10. The individual performing fire watch activities shall sign off on the Hot Work Permit when the period of observation is over.
11. The issuance of a Hot Work Permit does not relieve the Contractor or subcontractor of its responsibility under the Contract for the means, methods, or safety of operations authorized by the permit, nor does it assign any of these responsibilities to MDAD or its consultants.
12. Hot Work Permits may be revoked for any reason at the discretion of the CIS Consultant.
13. The CIS Consultant shall verify, collect, and file the Hot Work Permit after final sign-off by the individual performing fire watch activities.

ASSOCIATED FORM

1. Facilities Division Form FD5-047 Hot Work Permit

MIAMI-DADE AVIATION DEPARTMENT

CONTROL No. _____

HOT WORK PERMIT

A Hot Work Permit is required for any operation that involves open flames or produces heat and/or sparks.
This includes, but is not limited to, Brazing, Cutting, Grinding, Flame-Soldering, Pipe Thawing, Torch-Applied Roofing, and Welding.

PROJECT NAME: _____ PROJECT No: _____

MDAD WORK ORDER No: _____ CONTRACTOR JOB No: _____ DATE WORK TO BE DONE: _____

PERFORMING CONTRACTOR: _____ SUPERVISOR: ☐ GC ☐ SUB PHONE No: _____

WORK TO BE DONE BY: EMPLOYEE: _____ : _____ FIRE WATCH: _____

HOT WORK is to be performed at one location per permit.

FACILITY, BUILDING, and FLOOR: _____

NATURE OF JOB: _____

SPECIAL PRECAUTIONS: _____

REQUIRED PRECAUTIONS CHECKLIST
General Contractor or designee to verify that each precaution
has been taken or to indicate that it is Not Applicable (NA).

- ☐ Available sprinklers, hose streams, and extinguishers are in service/operable.
- ☐ Hot Work equipment is in good repair.
- ☐ Entrances to work area have been posted with NO SMOKING signs.
- ☐ No welding or open flames within 100 feet of aircraft or a flammable spill.
- ☐ Work area enclosed to contain sparks and prevent vision flash burn.
- ☐ Ventilation is adequate to remove smoke/vapor from work area.

Requirements within fifty feet (fifteen meters) of work:

- ☐ Flammable liquids, dust, lint, and oily deposits have been removed.
- ☐ Explosive atmosphere in area has been eliminated.
- ☐ Floors have been cleaned of debris.
- ☐ Combustible floors have been wet down, covered with damp sand, or covered with fire-resistant sheets.
- ☐ Other combustibles have been removed, where possible, or protected with fire-resistant tarpaulins or metal shields.
- ☐ All wall and floor openings have been covered.
- ☐ Fire-resistant tarpaulins have been spread beneath work to collect sparks.

For work on walls or ceilings:

- ☐ Construction is noncombustible and without combustible covering or insulation.
- ☐ Combustible materials or items on other side of walls have been moved away.
- ☐ When welding, cutting, or heating is performed on walls, floors, or ceiling, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the opposite side as are taken on the side on which the work is being performed.

For work on enclosed equipment (tanks, ducts, etc.):

- ☐ Enclosed equipment has been cleaned of all combustibles.
- ☐ Containers have been purged of flammable liquids/vapors.

Fire Watch / Hot Work area monitoring:

- ☐ Fire Watch will be provided during and for thirty minutes after work, including any coffee or meal breaks.
- ☐ Fire Watch is supplied with suitable extinguishers/a charged small hose.
- ☐ Fire Watch is trained in use of this equipment and in sounding alarm.

I VERIFY that the above named location has been examined, that the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and I request authorization to perform this work.

SIGNED _____

Printed Name _____ Date _____

General Contractor Firm _____ Phone Number _____

AUTHORIZATION:

SIGNED _____

Printed Name _____ Date _____

A/E Consultant/CIS Firm Name _____ Phone Number _____

WORK PERFORMED:

START: _____ END: _____

PERMIT EXPIRES (Good for one day only):

DATE: _____ TIME: _____

FINAL CHECK:

The work area and all adjacent areas to which sparks and heat might be spread were inspected during the fire watch period and for at least thirty minutes after the work was completed and no fire conditions were found.

SIGNED _____

Fire Watch _____ Date _____

Printed Name: _____

NOTIFICATION:

- Post a copy of approved Permit at the Hot Work site.
- Fax a copy of approved permit to:
 1. Airside Ops (General Aviation Center) at (305) 869-5858.
 2. Risk Management at (305) 876-7162.
 3. Life Safety Bureau at (305) 869-1589.
 4. Maintenance at (305) 869-1633.On weekends and after hours use (305) 876-0193.
- A/E Field Rep to log and file copy signed by Fire Watch.

IN CASE OF FIRE --- CALL (305) 876-7070

FD5-047 08/02

SECTION 012100

ALLOWANCES

PART 1 - GENERAL

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.
 - 2. Unit-cost allowances.
 - 3. Quantity allowances.
 - 4. Contingency allowances.
- C. Related Requirements:
 - 1. Section 012200 - Unit Prices for procedures for using unit prices, including adjustment of quantity allowances when applicable.
 - 2. Section 014000 - Contract Quality Control for procedures governing the use of allowances for field testing by an independent testing agency.

1.3 DEFINITIONS

- A. Allowance is a quantity of work or dollar amount established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.4 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect/Engineer of the date when final selection, or purchase and delivery of each product or system described by an allowance must be completed by MDAD to avoid delaying the Work.
- B. At Engineer's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Engineer from the designated supplier.

1.5 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.6 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.7 LUMP-SUM ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by MDAD or selected by Engineer under allowance and shall include **taxes**, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by MDAD or selected by Engineer under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to MDAD, after installation has been completed and accepted.
 - 1. If requested by Engineer, retain and prepare unused material for storage by MDAD. Deliver unused material to MDAD's storage space as directed.

1.8 UNIT-COST ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by MDAD or selected by Engineer under allowance and shall include **taxes**, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by MDAD or selected by Engineer under allowance, shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to MDAD, after installation has been completed and accepted.
 - 1. If requested by Engineer, retain and prepare unused material for storage by MDAD. Deliver unused material to MDAD's storage space as directed.

1.9 QUANTITY ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by MDAD or selected by Engineer under allowance and shall include **taxes**, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by MDAD or selected by Engineer under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to MDAD, after installation has been completed and accepted.
 - 1. If requested by Engineer, retain and prepare unused material for storage by MDAD. Deliver unused material to MDAD's storage space as directed.

1.10 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Engineer for MDAD's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by MDAD under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation , **taxes**, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to MDAD by Change Order.

1.11 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
 - 3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.

4. MDAD reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
 2. No change to Contractor's indirect expense is permitted for selection of higher-priced or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

(NOT USED)

END OF SECTION 012100

SECTION 012200

UNIT PRICES

1.01 REQUIREMENTS INCLUDED

- A. Section includes administrative and procedural requirements for unit prices.

1.02 RELATED REQUIREMENTS

- A. Section 012100 - Allowances for procedures for using unit prices to adjust quantity allowances.
- B. Section 012600 - Contract Modification Procedures for procedures for submitting and handling Change Orders.
- C. Section 014000 - Contract Quality Control for field testing by an independent testing agency.

1.03 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.04 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
 - 1. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
 - 2. MDAD reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at MDAD's expense, by an independent surveyor acceptable to Contractor.
 - 3. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SCHEDULE OF UNIT PRICES

Refer to the SCHEDULE OF PRICES BID FORM under the General Conditions and Bid forms package.

END OF SECTION

SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 012100 - Allowances for products selected under an allowance.
 - 2. Section 012300 - Alternates for products selected under an alternate.
 - 3. Section 016000 - Material and Equipment for requirements for submitting comparable product submittals for products by listed manufacturers.
 - 4. Section 10-J - General Conditions Documents

1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor that are not required in order to meet other Project requirements are not allowed.

1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use form provided by MDAD.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by MDAD and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size,

- durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
- d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of Architect/Engineers and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from MDAD.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect/Engineer's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within **seven (7)** days of receipt of a request for substitution. Architect/Engineer will notify Contractor **through Construction Manager** of acceptance or rejection of proposed substitution within **15** days of receipt of request, or **seven(7)** days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect/Engineer's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect/Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.5 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.6 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than **15** > days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect/Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect/Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Not used
 - c. Substitution request is fully documented and properly submitted.
 - d. Requested substitution will not adversely affect Contractor's construction schedule.
 - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - f. Requested substitution is compatible with other portions of the Work.
 - g. Requested substitution has been coordinated with other portions of the Work.
 - h. Requested substitution provides specified warranty.
 - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Not allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 RELATED REQUIREMENTS

- A. Section 012500 - Substitution Procedures for administrative procedures and handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Architect/Engineer will issue **through Construction Manager** supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on form provided by MDAD.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Engineer or Construction Manager will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Engineer or Construction Manager are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within **time specified in Proposal Request or 20 days, when not otherwise specified**, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.

- d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms provided by MDAD.
 - B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Engineer& Construction Manager.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Section 012500 - Substitution Procedures if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form provided by MDAD.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 012100 - Allowances for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit-Price Adjustment: See Section 012200 - Unit Prices for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Change Proposal Request, Engineer or Construction Manager will issue a Change Order for signatures of Owner and Contractor on form provided by MDAD.

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Engineer or Construction Manager may issue a Construction Change Directive on form provided by MDAD. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.8 WORK CHANGE DIRECTIVE

- A. Work Change Directive: Engineer or Construction Manager may issue a work Change Directive on form provided by MDAD. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 REEQUIREMENTS INCLUDED

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 RELATED REQUIREMENTS

- A. Section 012100 - Allowances for procedural requirements governing the handling and processing of allowances.
- B. Section 012200 - Unit Prices for administrative requirements governing the use of unit prices.
- C. Section 013126 - Construction Progress Documentation for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect/Engineer at earliest possible date, but no later than fifteen (15) days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect/Engineer.

- c. Architect/Engineer's Project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
2. Arrange schedule of values consistent with format of form provided by MDAD.
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of **five (5)** percent of the Contract Sum.
4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.
5. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
6. Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
7. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect/Engineer and paid for by MDAD.
 - 1. Submit draft copy of Application for Payment **seven (7)** days prior to due date for review by Architect/Engineer.
- B. Application for Payment Forms: Use form provided by MDAD for Applications for Payment.
- C. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. **Architect/Engineer** will return incomplete applications without action.
 - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 - 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 - 4. Indicate separate amounts for work being carried out under MDAD-requested project acceleration.
- D. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 - 1. Provide certificate of insurance, evidence of transfer of title to MDAD, and consent of surety to payment for stored materials.
 - 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 - 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

- E. Transmittal: Submit **three (3)** signed and notarized original copies of each Application for Payment to **Architect/Engineer** by a method ensuring receipt **within 24 hours**. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from subcontractor.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. MDAD reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to MDAD.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Products list (preliminary if not final).
 5. Sustainable design action plans, including preliminary project materials cost data.
 6. Schedule of unit prices.
 7. Submittal schedule (preliminary if not final).
 8. List of Contractor's staff assignments.
 9. List of Contractor's principal consultants.
 10. Copies of building permits.
 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 12. Initial progress report.
 13. Report of preconstruction conference.
 14. Certificates of insurance and insurance policies.
 15. Performance and payment bonds.
 16. Data needed to acquire MDAD's insurance.
- H. Application for Payment at Substantial Completion: After Architect/Engineer issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for MDAD occupancy of designated portions of the Work.
- I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. Close out forms required by MDAD.
 5. Evidence that claims have been settled.
 6. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when MDAD took possession of and assumed responsibility for corresponding elements of the Work.
 7. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 012973
SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 REQUIREMENT INCLUDED

- A. Procedures for preparation and submittal of Schedule of Values.

1.02 RELATED REQUIREMENTS

- A. General Conditions Article 10 - Partial Payments to Contractor
- B. Section 011000 - Summary of Work.
- C. Section 012900 - Payment Procedures.
- D. Section 013300 - Submittals.

1.03 FORMAT

- A. Type Schedule on County provided forms or in County approved format.
- B. Follow Table of Contents of Project Manual for listing component parts. Identify each line item by number and title of major Specifications section. Field Representative will provide minimum requirements.
- C. Follow procedures specified in Sections 013300, 013216 and 013216-04 , 013216-05, 013216-06.

1.04 CONTENT

- A. List installed value of each major item of work and each subcontracted item of work as a separate line item to serve as a basis for computing values for Progress Payments. Round off values to nearest dollar.
- B. Coordinate listings with Progress Schedule.
- C. For items on which payments will be requested for stored products, list sub-values for cost of stored products with taxes paid.
- D. Submit a sub-schedule for each separate stage of work specified in Section 011000.
- E. The sum of values listed shall equal total Contract or lump sum price items.

1.05 SUBMITTALS

- A. Submit Preliminary Schedule of Values within fifteen (15) days after the tentative award of the Contract.
- B. Submit finalized Schedule of Values within ten (10) days from the approval date of the Overall Construction Progress Schedule.
- C. Submit three (3) copies of Schedule as required by the General Conditions.
- D. Transmit under the Field Representative accepted transmittal letter. Identify project by title, and project number.

1.06 SUBSTANTIATING DATA

- A. When the Field Representative requires substantiating information, submit data justifying line item amounts in question.

1.07 ACTION

- A. No payment will be made for work performed on a lump sum contract or a lump sum item until the appropriate Schedule of Values is approved by MDAD.
- B. The equitable value of work deleted from a lump sum contract or lump sum item shall be determined from the approved Schedule of Values.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013100
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.2 RELATED REQUIREMENTS

- A. Section 011200 - Multiple Contract Summary for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
- B. Section 013126 - Progress Schedules for preparing and submitting Contractor's construction schedule.
- C. Section 017300 - Execution for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
- D. Section 017700 - Closeout Procedures for coordinating closeout of the Contract.
- E. Section 019113 - General Commissioning Requirements for coordinating the Work with MDAD's Commissioning Authority.

1.3 DEFINITIONS

- A. BIM: Building Information Modeling.
- B. RFI: Request for Information. Request from MDAD, Construction Manager, Architect/Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within **15** days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities, list addresses and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
1. Post copies of list in project meeting room, in temporary field office, **via email** and in prominent location in **each** built facility. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.

- C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for MDAD and separate contractors if coordination of their Work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities **and scheduled activities of other contractors** to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
 - 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.

- g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect/Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor-control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect/Engineer will review coordination drawings to confirm that in general the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect/Engineer determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect/Engineer will so inform Contractor, who shall make suitable modifications and resubmit.
 10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 - Submittals.
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
 2. File Preparation Format: **DWG Latest Version** , operating in **Microsoft Windows** operating system.
 3. File Submittal Format: Submit or post coordination drawing files using **format same as file preparation format PDF format**.
 4. BIM File Incorporation: **Develop and incorporate** coordination drawing files into BIM established for Project.
 - a. **Perform** three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect/Engineer.
 5. Architect/Engineer will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect/Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings are available in **AutoCad and BIM**.
 - c. Contractor shall execute a data licensing agreement in the form of **Agreement form acceptable to MDAD and Architect/Engineer**.

1.7 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect/Engineer will return without response those RFIs submitted to Architect/Engineer by other entities controlled by Contractor.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Architect/Engineer and Construction Manager.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Form provided by MDAD.
1. Attachments shall be electronic files in PDF format.
- D. Architect/Engineer's **and Construction Manager's** Action: Architect/Engineer **and Construction Manager** will review each RFI, determine action required, and respond. Allow **seven** (7) working days for Architect/Engineer's response for each RFI. RFIs received by Architect/Engineer **or Construction Manager** after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.

- c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect/Engineer's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect/Engineer's action may include a request for additional information, in which case Architect/Engineer's time for response will date from time of receipt by Architect/Engineer or Construction Manager of additional information.
 3. Architect/Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 - Contract Modification Procedures.
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect/Engineer and Construction Manager in writing within **10** days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Log shall include:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect/Engineer and Construction Manager.
 4. RFI number including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect/Engineer's and Construction Manager's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.
- F. On receipt of Architect/Engineer's and Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect/Engineer and Construction Manager within seven (7) days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Not Used
- B. Use of Architect/Engineer's Digital Data Files: Digital data files of Architect/Engineer's BIM model CAD drawings will be provided by Architect/Engineer for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project record Drawings.
 2. Architect/Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 3. Digital Drawing Software Program: Contract Drawings are available in BIM/AutoCad latest version.
 4. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to MDAD and Architect/Engineer.
 - a. Subcontractors, and other parties granted access by Contractor to Architect/Engineer's digital data files shall execute a data licensing agreement in the form of Agreement acceptable to MDAD and Architect/Engineer.
 5. Not used
 6. The following digital data files will be furnished for each appropriate discipline:
 - a. Floor plans.
 - b. Reflected ceiling plans.
 - c. Airfield details, sections, and plans.
- C. Web-Based Project Software: Use MDAD's web-based Project software site for purposes of hosting and managing Project communication and documentation until Final Completion.
1. Web-based Project software site includes, at a minimum, the following features:
 - a. Compilation of Project data, including Contractor, subcontractors, Architect/Engineer, Architect/Engineer's consultants, MDAD, and other entities involved in Project. Include names of individuals and contact information.
 - b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
 - c. Document workflow planning, allowing customization of workflow between project entities.
 - d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
 - e. Track status of each Project communication in real time, and log time and date when responses are provided.
 - f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
 - g. Processing and tracking of payment applications.
 - h. Processing and tracking of contract modifications.
 - i. Creating and distributing meeting minutes.
 - j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
 - k. Management of construction progress photographs.
 - l. Mobile device compatibility, including smartphones and tablets.

2. Provide up to seven (7) web-based Project software user licenses for use of MDAD, MDAD's Commissioning Authority, Construction Manager, Architect/Engineer, and Architect/Engineer's consultants. Provide eight (8) hours of software training at Architect/Engineer's office for web-based Project software users.
 3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect/Engineer. Provide data in locked format to prevent further changes.
 4. Provide one of the following web-based Project software packages under their current published licensing agreements:
 - a. Autodesk
 - b. Corecon Technologies, Inc.
 - c. Meridian Systems; Prolog.
 - d. Newforma, Inc.
 - e. Procore Technologies, Inc.
 - f. Viewpoint, Inc.; Viewpoint for Project Collaboration.
- D. PDF Document Preparation: Where PDFs are required to be submitted to Architect/Engineer, prepare as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

- A. General: Construction Manager will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify MDAD and Architect/Engineer of scheduled meeting dates and times a minimum of 10 working days prior to meeting.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including MDAD, Construction Manager, and Architect/Engineer, within three (3) days of the meeting.
- B. Preconstruction Conference: Construction Manager will schedule and conduct a preconstruction conference before starting construction, at a time convenient to MDAD and Architect/Engineer, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of MDAD, MDAD's Commissioning Authority, Construction Manager, Architect/Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Sustainable design requirements.
 - o. Preparation of Record Documents.
 - p. Use of the premises
 - q. Work restrictions.
 - r. Working hours.
 - s. MDAD's occupancy requirements.
 - t. Responsibility for temporary facilities and controls.
 - u. Procedures for moisture and mold control.
 - v. Procedures for disruptions and shutdowns.
 - w. Construction waste management and recycling.
 - x. Parking availability.
 - y. Office, work, and storage areas.
 - z. Equipment deliveries and priorities.
 - aa. First aid.
 - bb. Security.
 - cc. Progress cleaning.
 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Sustainable Design Requirements Coordination Conference: Construction Manager will schedule and conduct a sustainable design coordination conference before starting construction, at a time convenient to MDAD, Architect/Engineer, and Contractor.

1. Attendees: Authorized representatives of MDAD, MDAD's Commissioning Authority, Construction Manager, Architect/Engineer, and their consultants; Contractor and its superintendent and sustainable design coordinator; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect meeting sustainable design requirements, including the following:
 - a. Sustainable design Project checklist.
 - b. General requirements for sustainable design-related procurement and documentation.
 - c. Project closeout requirements and sustainable design certification procedures.
 - d. Role of sustainable design coordinator.
 - e. Construction waste management.
 - f. Construction operations and sustainable design requirements and restrictions.
 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- D. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect/Engineer, Construction Manager, and MDAD's Commissioning Authority of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Sustainable design requirements.
 - i. Review of mockups.
 - j. Possible conflicts.
 - k. Compatibility requirements.
 - l. Time schedules.
 - m. Weather limitations.
 - n. Manufacturer's written instructions.
 - o. Warranty requirements.
 - p. Compatibility of materials.

- q. Acceptability of substrates.
 - r. Temporary facilities and controls.
 - s. Space and access limitations.
 - t. Regulations of authorities having jurisdiction.
 - u. Testing and inspecting requirements.
 - v. Installation procedures.
 - w. Coordination with other work.
 - x. Required performance results.
 - y. Protection of adjacent work.
 - z. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- E. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to MDAD and Architect/Engineer, but no later than **90** days prior to the scheduled date of Substantial Completion.
- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 - 2. Attendees: Authorized representatives of MDAD, MDAD's Commissioning Authority, Construction Manager, Architect/Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Procedures for completing and archiving web-based Project software site data files.
 - d. Submittal of written warranties.
 - e. Requirements for completing sustainable design documentation.
 - f. Requirements for preparing operations and maintenance data.
 - g. Requirements for delivery of material samples, attic stock, and spare parts.
 - h. Requirements for demonstration and training.
 - i. Preparation of Contractor's punch list.
 - j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - k. Submittal procedures.

- l. Coordination of separate contracts.
 - m. MDAD's partial occupancy requirements.
 - n. Installation of MDAD's furniture, fixtures, and equipment.
 - o. Responsibility for removing temporary facilities and controls.
4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- F. Progress Meetings: **Construction Manager will conduct** progress meetings at **weekly** intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of MDAD, MDAD's Commissioning Authority, Construction Manager, and Architect/Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Status of sustainable design documentation.
 - 6) Deliveries.
 - 7) Off-site fabrication.
 - 8) Access.
 - 9) Site use.
 - 10) Temporary facilities and controls.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Status of RFIs.

- 16) Status of Proposal Requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- G. Coordination Meetings: **Construction Manager will conduct** Project coordination meetings at **monthly** intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of MDAD, MDAD's Commissioning Authority, Construction Manager, and Architect/Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.
 - 6) Off-site fabrication.

- 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Work hours.
 - 11) Hazards and risks.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Status of RFIs.
 - 15) Proposal Requests.
 - 16) Change Orders.
 - 17) Pending changes.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013113
COORDINATION

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Coordination of Work of Contract.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of Work.
- B. Section 017329 - Cutting and Patching.
- C. Section 013119 - Project Meetings.
- D. Section 016000 - Product Requirements: Product option and substitutions.
- E. Section 017700 - Contract Closeout Procedures: Closeout submittals.

1.03 DESCRIPTION

- A. Coordinate scheduling, submittals, and work of the various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.
- B. Coordinate sequence of Work to accommodate Owner occupancy as specified in General Conditions and Section 011000.

1.04 MEETINGS

- A. In addition to progress meetings specified in Section 013119 hold coordination meetings and preinstallation conferences with personnel and subcontractors to assure coordination of Work.
- B. Attend all commissioning meetings with appropriate personnel and subcontractors.

1.05 COORDINATION OF SUBMITTALS

- A. Schedule and coordinate submittals.
- B. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to and placing in service, such equipment.
- C. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and effect on work of other Sections.

1.06 COORDINATION OF SPACE

NOT USED

1.07 COORDINATION OF CONTRACT CLOSEOUT

- A. Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion.
- B. After Owner occupancy of premises, coordinate access to site by various sections for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- C. Assemble and coordinate closeout submittals specified in Section 017700.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 013119

PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Contractor participation in pre-construction conferences.
- B. Contractor administration of progress meetings and pre-installation conferences.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of Work.
- B. Section 013300 - Submittals
- C. Section 013216 - Progress Schedules
- D. Section 013323 - Shop Drawings, Product Data and Samples.
- E. Section 017700 - Contract Closeout Procedures
- F. Section 017839 - Project Record Documents.

1.03 PRE-CONSTRUCTION CONFERENCES

- A. Field Representative will hold a pre-construction conference. (See General Conditions.)

1.04 PROGRESS MEETINGS (See General Conditions)

- A. Schedule and administer Project meetings throughout progress of the work at weekly intervals as well as any called meeting and pre-activity conferences.
- B. Attendance: Job superintendents, major subcontractors and suppliers; MDAD, Architect/Engineer and Field Representative as appropriate to agenda topics for each meeting.
- C. Agenda will include review of Work progress, status of progress schedule and adjustments thereto, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions and other items affecting progress or work.

1.05 PRE-INSTALLATION CONFERENCES

- A. When required in individual specification Section, Contractor will convene a pre-installation conference prior to commencing work of the Section.
- B. Require attendance of entities directly affecting, or affected by, work of the Section.

- C. Review conditions of installation, preparation and installation procedures and coordination with related work.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013216

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 REQUIREMENT INCLUDED

Procedures for preparation and submittal of Construction Progress Schedules and periodic updating.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of work.
- B. Section 012900 - Applications for Payment.
- C. Section 013300 - Submittals.
- D. Section 013216-04 - Construction Schedules
- E. Section 013323 - Shop Drawings, Product Data and Samples
- F. Section 012973 - Schedule of Values

1.03 FORMAT

Prepare the progress schedule in the form of a network analysis system using a computerized critical path method (CPM) format Section 013216-04.

1.04 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by major Specification section number.
- C. Provide activity code identity for each stage of Work identified in Section 011000.
- D. Show accumulated percentage of completion of each item, and total percentage of work completed, as of the first day of each month.
- E. Provide schedule of Shop Drawings submittals within 30 days from the Notice to Proceed.
- F. Provide submittal dates for shop drawings, product data and samples, including MDAD furnished products and products specified under Allowances, and dates reviewed submittals will be required from Consultant. Show decision dates for selection of finishes.

- G. Show total monetary value for each work activity by trade. Amounts to be consistent with the unit bid price items and the approved Schedule of Values.
- H. Coordinate content with Section 012973 - Schedule of Values.
- I. Changes in scope requiring a Change Order or Work Order must be identified in the schedule by an activity code approved by the MDAD.

1.05 REVISIONS TO SCHEDULES

- A. Indicate schedule and quantity progress of each activity to date of submittal and projected completion date of each activity.
- B. Identify activities modified since previous submittal, major changes in scope and other identifiables.
- C. Provide narrative report to define problem areas, anticipated delays and impact on schedule. Report corrective action taken or proposed, and its effect including the effect of changes on schedules of separate contracts, if any.
- D. Free floats in the approved construction progress schedules are owned by MDAD.

1.06 PROCEDURES

- A. Follow procedures outlined in Section 013300.
- B. Prepare and submit progress schedules in accordance with the provisions of Section **013216-04**.
- C. Contractor is solely responsible for the preparation, revision and updating of the overall project schedule and the near-term schedule in the form and content prescribed in **013216-04**.
- D. The timely execution or performance of all construction related activities and the duration and sequencing of those activities in accordance with the approved project schedule(s) is the Contractor's responsibility.
- E. Submit revised progress schedules with each partial payment certificate.
- F. Transmit on County approved forms.
- G. Submit the number of copies that Contractor requires, plus four (4) copies that will be retained by Architect/Engineer, Field Representative, and MDAD.
- I. Submit two (2) copies of electronic pdf files of the schedule with each schedule submission.

1.07 DISTRIBUTION

- A. Distribute copies of reviewed schedules to job site file, subcontractors, suppliers and other concerned entities.

- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in Schedules.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013216-04

CONSTRUCTION SCHEDULES (COMPUTERIZED CPM FORMAT)
UNIT PRICE CONTRACTS

PART 1 GENERAL

1.01 REQUIREMENT INCLUDED

- A. Procedures for preparation and submittal of construction progress schedules and periodic updating.

1.02 RELATED REQUIREMENT

- A. Section 011000 - Summary of Work.
- B. Section 012900 - Applications for Payment
- C. Section 013300 - Submittals.
- D. Section 013216 - Construction Schedules.
- E. Section 013216-06 - Construction Scheduling Management System
- F. Section 013216-05 – Time Impact Analysis Summary Sheet
- G. Section 013323 - Shop Drawings
- H. Section 012973 - Schedule of Values

1.03 GENERAL

- A. The Contractor's and/or Subcontractor's timely execution or performance of all construction related activities shall be in strict compliance with the approved Overall Project Schedule. Means and methods of construction in accordance with the Contract Documents shall remain the sole responsibility of the Contractor.
- B. The construction of the project shall be planned and recorded utilizing Primavera Project Planner computer software (Version P6 EPPM or greater). It shall be used for coordination, monitoring, and payment of all work under the Contract including all activities of the Contractor, subcontractors, vendors, and suppliers.

1.04 OVERALL PROJECT SCHEDULE

The overall project schedule shall be in the form of a time scaled precedence diagram and associated computer analysis and shall consist of detailed activities and their restraining relationships as required to complete the project from Notice to Proceed through completion of the Work and shall indicate the following:

CONSTRUCTION SCHEDULES (COMPUTERIZED CPM FORMAT)
UNIT PRICE CONTRACTS

- A. Beginning and end date duration in workdays for each activity. (Activities in occupied areas and activities requiring premium time shall be differentiated from each other and from the balance of project activities).
- B. Beginning and end date and total duration in workdays for each Area or portion thereof.
- C. Significant milestones, including, but not limited to those indicated in Section 011000 "Summary of Work".
- D. Identity of contractor, and subcontractor for each work activity.
- E. Specific location of each work activity per the Architect/Engineer's phasing drawings or alternative location drawings approved by the MDAD.
- F. Total monetary value, by bid item and associated quantity for each activity.
- G. Detailed schedule of all "utility shut-downs" which would impact on MDAD, F.I.S., airlines, tenants, and other building operations or functions including, but not limited to power, telephone telecommunication systems, FAA facilities, domestic and fire hydrant water systems, and sanitary sewer systems.
- H. Sequence and interdependence of all activities required for complete performance of all items of work under this contract.
- I. All network restraints (restraining ties between activities which restrict the start or finish or another activity).
- J. Shop drawing submittals by the Contractor, reviews by the Architect/Engineer.
- K. Fabrication and delivery activities for all equipment, including that furnished by the MDAD, and materials to be installed during the project.
- L. Dates for ordering long lead items (materials, equipment, or specialty shop fabricated work).
- M. Appropriate advance notice to tenant(s) is required prior to start of work in occupied or used tenant spaces.
- N. When all permits will be required and when they will be in hand.
- O. The value of stored materials shall be tracked by bid item and associated quantity for payment purposes.
- P. Establish cost categories to track stored material and bid item quantity adjustments.

The Contractor shall also provide the following information: workdays per week, holidays, number of shifts per day, number of hours per shift, number of prime time work hours, proposed schedule of "utility shut-downs", Special Equipment or Machinery to be used, and list of work activities which must be performed during restricted or special working hours.

The precedence diagram shall show the sequence and interdependence of all activities required for complete performance of all items of work under this contract, including shop drawing submittals and approvals and fabrication and delivery activities.

Long-term construction activities shall be broken down into recognizable smaller activities so that no activity will be longer than 15 workdays.

The MDAD reserves the right to selectively limit the number of activities in the schedule.

The schedule shall be sufficiently detailed to track the progress of each activity and the project, as a whole, on a daily basis. The activities shall be clearly described so that the work is readily identifiable. The progress of each activity is to be reasonable and based on the amount of bid item quantities involved. When added together, the dollar value of all activities shall equal the Contract.

The overall project schedule shall be prepared and submitted to the Field Representative within forty-five (45) calendar days from the effective date of the Notice to Proceed.

The precedence diagram submitted by the Contractor shall be drawn in the format approved by the MDAD and shall be accompanied by a computer generated and plotted schedule utilizing Primavera Project Planner scheduling software. The Contractor shall exercise sufficient care to produce clear, legible, and accurate diagrams. The Contractor shall group activities related to specific physical areas on the diagram for ease of understanding and simplification.

The MDAD will review the overall project schedule for compliance with the Contract requirements as to staging, phasing, and the time of completion. Such review and acceptance of these schedules does not imply either the Architect/Engineer's, the Field Representative's or the MDAD's endorsement and/or responsibility of each and every activity duration or sequence of activities.

The overall project schedule shall be updated monthly. This monthly update shall generate a report that will indicate the remaining duration along with schedule and percent complete for each activity. This report together with the monthly sorts, organized by bid items, will act as the basis for the Contractor's requests for partial payment and shall be submitted with it.

The duration of the overall project schedule shall agree with the duration of the Contract as stipulated in the Bid Form, or as modified by the Contract provisions described in these Contract Documents.

1.05 NEAR TERM SCHEDULE

The near term project schedule shall delineate, in the same detail as required for the overall project schedule, the work anticipated for the first ninety (90) calendar days after Notice to Proceed (NTP), with the balance of project duration, including all milestones, shown in summary form. The near term project schedule shall be prepared and submitted to the Field Representative prior to the Notice to Proceed.

1.06 CONSTRUCTION PROGRESS REPORT

As part of the monthly updating process, the Contractor shall prepare a construction progress report describing the physical progress during the report period, plans for the forthcoming report period, actions to correct any negative float predictions, and potential delays and problems and their estimated impact on performance, and the overall project completion date.

- A. Clearly describe all approved revisions to the accepted overall project schedule for that period.
- B. Report actual progress by updating the mathematical analysis for the accepted overall project schedule.
- C. Show tasks/activities, or portions of activities completed during the reporting period, and actual quantities installed.
- D. State the percentage of work actually completed as of the report date, and the progress along the critical path in terms of days ahead of or days behind the allowable dates.
- E. Report progress along other paths with negative float, if the work is behind schedule.
- F. Include a narrative report which describes, but is not necessarily limited to:
 - 1. Description of the problem areas, current and anticipated;
 - 2. List of delaying factors and their impact;
 - 3. Explanation of corrective actions taken or proposed.
- G. Describe plans/actions for the next report period.

1.07 SCHEDULE REVISIONS

The overall project schedule may be revised from time to time as conditions may require, and as approved by the MDAD provided, however, that nothing in this Article shall be construed to authorize or approve any extension of time or increase in Contract price, it being expressly understood and agreed that time extensions or increase in contract price, if any, may only be granted in accordance with the applicable requirements of the Contract Documents. Any further revisions to the overall project schedule durations, restrictions, lags or any other logic or cost related components of the schedule must be accepted, in writing, by the MDAD.

The Contractor may make only those revisions to the construction schedule as are accepted in advance by the MDAD. In the event of a revision, the Contractor shall make certain that not more than one activity shall have the same activity identification number. The activity numbers of deleted activities shall not be used again.

Changes to the Contract by Work Order or Change Order are to be included in the overall project schedule. The new activities and logic are to be reviewed and accepted by the MDAD prior to being incorporated into the accepted overall project schedule.

Once the changes are accepted, the Contractor's schedule revisions shall be incorporated into the previously accepted overall project schedule with the same force as the original schedule. It is

understood that should the Contractor fall behind in the schedule and not be entitled to any time extension other than the extension already reflected, the Contractor shall submit his plan for bringing his work back up to schedule and shall implement the plan. If other measures are not sufficient to make up the lag, the Contractor's plan and implementation thereof shall include increasing the number of workers, shifts, days of work, and/or instituting or increasing overtime, all at no additional cost to the MDAD.

1.08 DUTIES

The Field Representative or the MDAD's scheduling representative will perform those duties assigned by the MDAD. They will be available to offer suggestions in regard to the interrelation of project activities, and schedule content and format, help identify predecessor activities which relate to other construction projects and other MDAD, airlines, tenant, building, and inter-project activities. The Contractor shall perform those respective duties set forth in this Provision and Section 013126-06 - Construction Scheduling Management System. The Contractor shall make decisions with regard to the interrelation of project activities, and schedule content and format, and shall identify predecessor activities which relate to each activity.

1.09 SCHEDULE SUBMITTALS

To facilitate and enhance the use of Contractor provided scheduling and cost related information required by the Contract Documents, the Contractor shall utilize Primavera Project Planner Software and provide the following:

- A. Initial Baseline Schedule Submittals. The near term schedule submittal (activities for first 90 days) shall be submitted prior to the NTP. The overall project schedule submittal (all activities required for the entire contract) shall be submitted within 45 calendar days after NTP. Submit a hard copy of the near term and overall project schedules with detailed predecessor and successor analysis, and cost and resource tabular reports.
- B. Monthly Update Submittals. Contractor may use the near term schedule to fulfill the scheduling requirements of the Contract for the initial monthly update. Starting at the second monthly update and continuing for the remainder of the Project, the Contractor shall use the overall project schedule to fulfill the scheduling requirements of the Contract.
- C. Submit computer flash drives with each of the above submittals, containing the files used to generate the above reports, the near term schedule and the current overall project schedule.

Contractor shall conform to the standard schedule, cost and resource report formats supplied by the MDAD.

1.10 REPORTS, SORTS AND ELECTRONIC PDF FILES

Unless indicated otherwise, all reports and computer sorts shall depict all activities and their durations required to complete the entire project.

Each budget report shall be accompanied by a separate detailed cost report, which shall break down each activity into total material and labor costs. Labor costs for each activity shall be further broken down into total regular time and total premium time amounts.

The initial, and monthly schedules, reports, and sorts shall be consistent with the accepted overall project schedule.

Each request for payment must be accompanied by the updated report of both time and costs, together with all required sorts and electronic pdf file copies, based on the monthly update of the approved Overall Project Schedule. Requests for payment will not be processed unless properly submitted as specified.

All costs and time associated with the preparation and distribution of schedules, reports, sorts, and other supportive information required by this Article for the entire Project shall be deemed incidental to and included in the Contract Bid Price Item(s).

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

PART 4 FORMS

Copies of the time impact analysis forms to be filed by the Contractor in submitting a claim involving a request for time extension follow in Section 013216-05 as:

APPENDICES

Section 013216-05-1, Time Impact Analysis Summary Sheet
Section 013216-05-2, Time Impact Analysis Detail Sheet

END OF SECTION

**TIME IMPACT ANALYSIS SUMMARY SHEET
(TIA)**

Contract No: _____ Page ____ of ____
Contract Project Title: _____
Contractor Company Name: _____
Title of Event Delayed: _____
Event Reference Number: _____

Event References (drawings, transmittals, work orders, change orders, correspondence, etc.):

(continue on separate attachment if required)

Date of Approved Updated Schedule Used for Analysis:
Schedule File Name:

Detailed Description of Cause of Delay:

(continue on separate attachment if required)

Detailed Description of Work Delayed:

(continue on separate attachment if required)

Event Reference Number: _____ Contract No: _____ Page ____ of ____

[illegible]MDAD PROJECT X009A
ISSUED FOR BID

SECTION 013216-06

CONSTRUCTION SCHEDULING MANAGEMENT SYSTEM

PART 1 GENERAL

1.01 REQUIREMENT INCLUDED

- A. Procedures for the construction scheduling Management System.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of Work.
- B. Section 013216 - Progress Schedules.
- C. Not used
- D. Not used
- E. Section 013216-04 - Progress Schedules (Computerized Project Planner Format) Unit Price Contracts

1.03 The Contractor and all subcontractors shall participate in the Construction Scheduling Management System as provided for in these Specifications.

1.04 There shall be regular Scheduling Coordination meetings, which will generally be a part of the weekly construction coordination meetings. The first such Scheduling Coordination meeting shall be two weeks after the date of Notice to Proceed and each subsequent Scheduling Coordination meeting shall be every two weeks thereafter. The Field Representative may schedule additional Scheduling Coordination meetings. Unless otherwise directed by the Field Representative, the Scheduling Coordination meetings shall be held at the job site and shall be attended by the Contractor and all subcontractors. The Contractor and subcontractors shall be represented at each Scheduling Coordination meeting by a person or persons authorized to make decisions and commitments regarding schedules, crew sizes, sequence(s) of events and similar scheduling matters on behalf of said Contractor or subcontractor. The Field Representative may authorize specified subcontractors not to attend one or more of the Scheduling Coordination meeting.

1.05 The Scheduling Coordination meeting shall be a forum to establish the true state of completion of the project, to update the status of the delivery of material and equipment items and to prepare or revise the detailed Near Term Progress Schedule.

1.06 After each Scheduling Coordination meeting, the Field Representative or the MDAD's scheduling representative will prepare and distribute a report including the following: (A) a copy of the latest approved Near Term Progress Schedule; (B) a status review of the project; (C) a written analysis of problem areas and proposed solutions thereto; (D) the trend chart showing the trends of the completion dates of significant segments of the project; and (E) a listing of the more critical activities on which work should be accomplished before the next Scheduling Coordination meeting.

CONSTRUCTION SCHEDULING MANAGEMENT SYSTEM

- 1.07 The Contractor shall provide all schedules required under this Article. The Field Representative or the MDAD's scheduling representative may, from time to time, propose revisions to the Overall Project Schedule and Near Term Schedules to reflect the current status of the project. Draft revisions shall be circulated to all parties for review and comment. When approved the MDAD, the revised overall project schedule and the Near Term Schedules shall become effective.
- 1.08 In the event any activity is behind schedule and, unless a time extension is claimed and granted in accordance with the applicable requirements of the General Conditions, the Contractor shall reschedule each such activity so as not to delay the Contract completion. If such rescheduling is not accomplished within a reasonable time, the Contractor, the Field Representative, and the MDAD's scheduling representative (if other than the Field Representative) shall meet to develop a program to bring each such activity back on schedule. Said program may include any or all of the following:
- A. Carrying out the activity with the crew size shown on the Overall Project Schedule, using overtime/prime time work to complete or bring current the activity.
 - B. Increasing the crew size(s) and/or number of shifts to a level sufficient to complete or bring current the activity.
 - C. Any combination of activities which will complete or bring current the activity.
- Unless a claim for time extension, additional compensation or for any other relief under the Contract is processed in accordance with the provisions of applicable requirements of the General Conditions, the Contractor shall perform the work under the aforesaid program at no additional cost to the MDAD.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 013233
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section includes administrative and procedural requirements for the following:
1. Preconstruction photographs.
 2. Periodic construction photographs.
 3. Final completion construction photographs.
 4. Preconstruction video recordings.
 5. Periodic construction video recordings.
 6. Construction webcam.

1.2 RELATED REQUIREMENTS

- A. Section 017700 - Contract Closeout Procedures for submitting photographic documentation as Project Record Documents at Project closeout.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each **photograph and video recording**. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within **three (3)** days of taking photographs.
1. Submit photos **on CD-ROM or thumb-drive** or by uploading to web-based project software site. Include copy of key plan indicating each photograph's location and direction.
 2. Identification: Provide the following information with each image description **in file metadata tag or in web-based project software site**:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect/Engineer and Construction Manager.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of location, vantage point, and direction.
 - g. Unique sequential identifier keyed to accompanying key plan.
- C. Printed Photographs: Submit **two (2)** sets of prints of each photographic view within **seven (7)** days of taking photographs.

1. Format: 8" x 10" (203-mm x 254-mm) smooth-surface matte prints on single-weight, paper; enclosed back to back in clear plastic sleeves punched for three-ring binder. Include copy of key plan indicating each photograph's location and direction. Provide one binder for each set of prints.
 2. Identification: On back of each print, label with the following information:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect/Engineer and Construction Manager.
 - d. Name of Contractor.
 - e. Date photograph was taken if not date stamped by camera.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.
- D. Video Recordings: Submit video recordings within **seven (7) days** of recording.
1. Submit video recordings **on CD-ROM or thumb drive or by uploading to web-based project software site**. Include copy of key plan indicating each video's location and direction.
 2. Identification: With each submittal, provide the following information **in file metadata tag or on web-based project software site**:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Architect/Engineer **and Construction Manager**.
 - d. Name of Contractor.
 - e. Date video recording was recorded.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 3. Transcript: Prepared on 8-1/2" x 11" (215-mm x 280-mm) paper, punched and bound in three-ring binders. Provide label on front and spine. Include a cover sheet with label information. Include name of Project and date of video recording on each page.
- E. Time-Lapse Video: Submit time-lapse sequence video recordings **simultaneously with recording within (30) days of recording**.
1. Submit time-lapse sequence video recordings **bi-monthly on CD-ROM or thumb drive or by uploading to web-based project software site**.
 2. Identification: For each recording, provide the following information **in file metadata tag or on web-based project software site**:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect/Engineer **and Construction Manager**.
 - d. Name of Contractor.
 - e. Date(s) and time(s) video recording was recorded.

- f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.4 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.
- B. Construction Webcam Service Provider: A firm specializing in providing photographic equipment, web-based software, and related services for construction projects, with record of providing satisfactory services similar to those required for Project.

1.5 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of **12** megapixels, and at an image resolution of not less than **3200 by 2400** pixels, and with vibration-reduction technology. Use flash in low light levels or backlit conditions.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of **12** megapixels and capable of recording in full high-definition mode **with vibration-reduction technology**. Provide supplemental lighting in low light levels or backlit conditions.
- C. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- D. Metadata: Record accurate date and time **and GPS location data** from camera.
- E. File Names: Name media files with **date Project area** and sequential numbering suffix.

1.6 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs with maximum depth of field and in focus.
 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Preconstruction Photographs: Before **starting construction**, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by **Architect/Engineer** or **Construction Manager**.
 1. Flag **excavation areas** and/or **construction limits** before taking construction photographs.
 2. Take as a minimum **20** twenty photographs to show existing conditions adjacent to property before starting the Work.

3. Take as a minimum **20** twenty photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- D. Periodic Construction Photographs: Take a minimum of **50** fifty photographs **weekly** coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Time-Lapse Sequence Construction Photographs: Take minimum of **50** photographs as indicated, to show status of construction and progress since last photographs were taken.
1. Frequency: Take photographs **weekly, on the same day each week**
 2. Vantage Points: Following suggestions by **Architect/Engineer** and /or **Construction Manager** and Contractor, photographer to select vantage points. During each of the following construction phases, take not less than **two** (2) of the required shots from same vantage point each time to create a time-lapse sequence as follows:
 - a. Commencement of the Work, through completion of subgrade construction.
 - b. Above-grade work
 - c. Select vantage points based on current field conditions
- F. Final Completion Construction Photographs: Take **50** photographs after date of Substantial Completion for submission as Project Record Documents. **Architect** and /or **Construction Manager** will inform photographer of desired vantage points.
- G. Additional Photographs: Architect/Engineer or **Construction Manager** may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum or in the allowance for construction photographs.
1. Three days' notice will be given, where feasible.
 2. In emergency situations, take additional photographs within 24 hours of request.
 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.
 - f. MDAD's request for special publicity photographs.

1.7 CONSTRUCTION VIDEO RECORDINGS

-
- A. Video Recording Photographer: Engage a qualified videographer to record construction video recordings.
- B. Narration: Describe scenes on video recording by **dubbing audio narration off-site after** video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.
1. Confirm date and time at beginning and end of recording.
 2. Begin each video recording with name of Project, Contractor's name, videographer's name, and Project location.
- C. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video recording opposite the corresponding narration segment.
- D. Preconstruction Video Recording: Before starting **construction**, record video recording of Project site and surrounding properties from different vantage points, as directed by **Architect/Engineer** and /or **Construction Manager**.
1. Flag **excavation areas** and/or **construction limits** before recording construction video recordings.
 2. Show existing conditions adjacent to Project site before starting the Work.
 3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of **construction**.
 4. Show protection efforts by Contractor.
- E. Periodic Construction Video Recordings: Record video recording **weekly coinciding with the cutoff date associated with each Application for Payment**. Select vantage points to show status of construction and progress since last video recordings were recorded. Minimum recording time shall be **30 minutes(s)**.
- F. Time-Lapse Sequence Construction Video Recordings: Record video recording to show status of construction and progress.
1. Frequency: During each of the following construction phases, set up video recorder to automatically record one frame of video recording every **five** minutes, from same vantage point each time, to create a time-lapse sequence of **30 minutes** in length as follows:
 - a. Commencement of the Work, through completion of subgrade construction.
 - b. Above grade work.
 - c. Construction phases: Phase 1 and Phase 2
 2. Timer: Provide timer to automatically start and stop video recorder so recording occurs only during **daylight** and **construction work** hours.
 3. Vantage Points: Following suggestions by **Architect/Engineer** and /or **Construction Manager** and Contractor, photographer shall select vantage points.

1.8 CONSTRUCTION WEBCAM

- A. Webcam: Provide **two** fixed-location camera(s) with weatherproof housing, mounted to provide unobstructed view of construction site from location approved by Architect/Engineer, with the following characteristics:
 - 1. Static view
 - 2. Capable of producing minimum **12** megapixel images.
 - 3. Provide power supply, active high-speed data connection to service provider's network, and static public IP address for each camera.
- B. Live Streaming Images: Provide web-accessible image of current site image, updated at **15** minute intervals **during daytime operation when construction is underway**.
- C. Web-Based Interface: Provide online interface to allow viewing of each high-definition digital still image captured and stored during construction, from the Internet.
 - 1. Access Control: Provide password-protected access for Project team administered by Contractor, providing current image access and archival image access by date and time, with images downloadable to viewer's device.
 - 2. Storage: Maintain images on the website for reference during entire construction period, and for not less than 30 days after final completion. Provide sufficient memory on remote server to store all Project images.
 - 3. Online Interface: Provide website interface with Project and client information and logos; calendar-based navigation interface for selecting images; pan and zoom capability within high-definition images.
 - 4. Forward and Reverse: Provide capability to browse through images, moving forward and backward in time by individual image and by day.
 - 5. Slideshow: Provide capability to automatically display current images from sites when there are three or more cameras used.
 - 6. Time-Lapse: Provide capability for online display of project time-lapse.
 - 7. Dashboard: Provide capability to view thumbnails of all cameras on one screen.
 - 8. Weather: Provide corresponding weather data for each image captured.
 - 9. Provide public viewer open access **to most recent Project camera image**.
- D. Maintain cameras and web-based access in good working order according to web-based construction photographic documentation service provider's written instructions until final completion. Provide for service of cameras and related networking devices and software.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

SECTION 013300
SUBMITTALS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures.
- B. Construction Progress Schedules.
- C. Schedule of Values.
- D. Shop Drawings.
- E. Product Data.
- F. Samples.
- G. Manufacturers' Instructions.
- H. Manufacturers' Certificates.
- I. Progress Photographs

1.02 RELATED REQUIREMENTS

- A. General Conditions - Definitions, basic responsibilities of entities, and Article 4.8 Substitution
- B. Section 011000 - Summary of Work.
- C. Section 012900 - Applications for Payment.
- D. Section 013113 - Coordination
- E. Section 013216 - Construction Schedules
- F. Section 013216-01 - Not used
- G. Section 013216-04 - Construction Schedules (Computerized Project Planner Format) Unit Prices
- H. Section 013323 - Shop Drawings, Product Data and Samples.
- I. Section 012973 - Schedule of Values.

- J. Section 014000 - Contract Quality Control.
- K. Section 016000 - Material and Equipment.
- L. Section 017700 - Contract Closeout Procedures.
- M. Section 017823 - Not used
- N. Section 017900 - Not used
- O. Section 019113 - Commissioning Requirements

1.03 PROCEDURES

- A. Deliver submittals to the Field Representative.
- B. Identify Project, Project Number, dates of previous submittals, Contractor, subcontractors, suppliers; identify pertinent drawings by sheet and detail number, and Specification Section number, as appropriate, Identify deviations from Contract Documents. Provide space for Contractor and Architect/Engineer review stamps.
- C. Before commencing any work, prepare and submit to the Field Representative the initial Progress Schedule and Schedule of Values in triplicate. After review by Architect/Engineer revise and resubmit as required for approval by the Architect/Engineer and MDAD. Submit revised Progress Schedule with each application for partial payment, reflecting changes since previous submittal.
- D. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.
- E. After Architect/Engineer review of submittal, revise and resubmit as required, identifying changes made since previous submittal.
- F. Distribute copies of reviewed submittals to concerned parties. Instruct recipients to promptly report any inability to comply with provisions.
- G. No partial payment will be processed without a current approved Near Term and Overall Progress Schedule and an approved Schedule of Values.

1.04 CONSTRUCTION PROGRESS SCHEDULE

- A. Submit progress schedule in the form and procedure specified in Sections 013216 and **013216-04**.
- B. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. This is to include the commissioning

activities, such as, but not limited to, pre-functional testing, functional testing, and training. Show projected percentage of completion for each item of work as of time of each Application for Progress Payment.

- C. Show submittal dates required for shop drawings, product data and samples and product delivery dates, including those furnished by MDAD.

1.05 SCHEDULE OF VALUES

- A. Submit typed preliminary Schedule of Values on MDAD provided forms.
- B. Submit typed Schedule of Values on MDAD provided forms.
- C. Format: Identify each line item with number and title of the major Specification Sections or major components of this item.
- D. Include specified Allowances, if any, in each line item amount.
- E. Include in each line item a directly proportional amount of Contractor's overhead and profit.
- F. Provide a sub-schedule for each separate stage of work specified in Section 011000.
- G. Revise Schedule of Values to list Change Orders and Work Orders, for each Application of Partial Payment.

1.06 SHOP DRAWINGS

- A. Prior to the submission of any shop drawing, but not later than 30 days from the effective date of the Notice to Proceed, the Contractor shall prepare and submit to the Field Representative, a Schedule of Shop Drawing submittals stating when each shop drawing or sample will be provided ~~for~~ to the Field Representative for review.
- B. The Contractor shall be responsible for the preparation of detailed shop drawings necessary for the fabrication, erection, and construction of all parts of the work in conformity with the requirements of the Contract Documents.
- C. Submit shop drawings per the schedule of shop drawing submittals, inserted in one loose leaf binder, with tabs and index to the Field Representative. All individual submittal sheets inserted in said binder must be clearly marked and referenced to proper paragraph and subparagraph of specifications. Cross out any items on sheets which constitute information not pertaining to equipment specified. Clearly mark all components that are provided as "optional" by manufacturer. Shop drawings shall be approved by Contractor prior to submittal to the Field Representative. Shop drawings will be reviewed by the Architect/Engineer. After Architect-Engineer approval, reproduce and distribute in accordance with

requirements in Section 013323.

- D. All submissions of shop drawings, brochures and catalog cuts shall be accompanied by a transmittal letter listing the drawings submitted by number and title.
- E. When professional calculations and/or certification of performance criteria of materials, systems, and/or equipment is required, the Architect/Engineer is entitled to rely upon the accuracy and completeness of such calculations and certifications submitted by Contractor. Calculations, when required, shall be submitted in a neat, clear and in an easy to follow format. Such calculations and/or certifications shall be signed and sealed by a Professional Engineer registered in the State of Florida.
- F. Failure to comply with any of the above may result in the rejection of shop drawings.

1.07 PRODUCT DATA

- A. Submit not less than six copies, as approved by the Field Representative and required in Section 013323. Mark each copy to identify applicable products, models, options and other data; supplement manufacturers' standard data to provide information unique to the work.

1.08 MANUFACTURER'S INSTRUCTIONS

- A. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting and finishing, in quantities specified for product data.

1.09 SAMPLES

- A. Submit full range of manufacturers' standard colors, textures and patterns for Architect/Engineer's selection. Submit samples for selection of finishes within 30 days after Award of Contract. All color and finish selections must be submitted by the Contractor in a single submission, properly labeled and identified.
- B. Submit sample to illustrate functional characteristics of the product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work.
- C. Include identification on each sample, giving full information.
- D. Submit the number specified in respective Specification section; one will be retained by Architect/Engineer. Reviewed samples which may be used in the work are indicated in the Specification Section.

1.10 FIELD SAMPLES

- A. Provide field samples of finishes at project as required by individual Specifications section. Install sample complete and finished. Acceptable samples in place may be retained in completed work.

1.11 PROGRESS PHOTOGRAPHS

Provide project progress visuals in the form of photographs or video for all construction activities following the guidelines described on Section 013233 – PHOTOGRAPHIC DOCUMENTATION

A. STILL PHOTOGRAPHS (Film or Digital)

1. Each photograph shall show an information box in the lower right hand corner approximately 1-1/2" high box shall be incorporated into the print by a computerized process and shall not be pasted to the finished print.

The following information shall be typed, not handwritten, in the box:

[MDAD Project Manager's Name]
[Miami-Dade Aviation Department]
CONTRACT No. [_____]]
Architect/Engineer's Name: _____
Field Representative's Name: _____
Contractor's Name: _____
View No. _____ Date: _____

(Information regarding view such as location, direction of sight and significant points of interest).

The Contractor shall notify the Field Representative 24 hours in advance of taking any photographs.

B. VIDEO

1. Before construction begins at any site and at frequent intervals during the construction at any phase or site of the work, the Contractor shall take digital video recording of the existing condition and of the work as it progresses. Audio description, in the English language, describing the views (location, angle, date, time of day, type of construction, etc.) shall be incorporated into the video. Digital videos shall be submitted on computer USB flash drives.
2. Location and frequency of taking these videos shall be as directed by the Field Representative.

- 3. A copy of each video properly identified with a typewritten label properly affixed to the computer USB flash drive and accompanied by a typewritten sheet describing the views shall be submitted to the Field Representative, promptly after videoing. The Contractor shall notify the Field Representative 24 hours in advance of making any videos of the site or of the work.
- C. Any and all still photography and videos taken of the construction area are MDAD's property and shall not be released to any source whatsoever without the prior written permission from MDAD. This provision shall prevail for the duration of the contract and indefinitely thereafter.

1.12 SUBMITTAL REQUIREMENTS FOR COMMISSIONING

- A. The Contractor shall submit, to the Field Representative, specific additional information needed about each piece of equipment or system to be commissioned that is requested in writing by the Project Manager. The data request(s) may be made prior to normal submittals.
- B. The Contractor shall notify the Field Representative of all new design intent or operating parameter changes, added control strategies and sequences of operation, or other changes that may affect commissioned systems.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 013323
SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures for submittal.
- B. Schedule of submittals.

1.02 RELATED REQUIREMENTS

- A. General Conditions - Definitions, basic responsibilities of entities, and Article 4.8 Substitution
- B. Section 013113 - Coordination.
- C. Section 013300 - Submittals.
- D. Section 014000 - Contract Quality Control: Mockups and samples for testing.
- E. Section 016000 - Material and Equipment: Product options.
- F. Section 017839 - Project Record Documents.

1.03 SHOP DRAWINGS

- A. "Shop Drawings" are defined as drawings, diagrams, illustrations, schedules, catalog cuts, performance charts, brochures, and other data prepared by the Contractor or any subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the work shall be fabricated and/or installed.
- B. Shop drawings provided by the Contractor with each submittal shall be original drawings, sharp, clear and distinct. When requested by the Contractor, the Engineer may authorize the submission of electronic PDF and CAD files.
- C. Each shop drawing shall be clear, thoroughly detailed, and shall have listed on it all Contract references, drawing number(s), specification section number(s), plus shop drawing numbers of related work by subcontractors, if applicable.
- D. Identify field dimensions; show relation to adjacent or critical features or work or products.
- E. Minimum Sheet Size: 8 ½" x 11".
- F. The Contractor shall submit a minimum of six (6) copies of "catalog cuts", "brochures" or "photographs." Additional copies shall be supplied when required by the Field

Representative. When requested by the Contractor, the Engineer may authorize the submission of a single copy of electronic files.

- G. Shop drawings shall be complete in every detail, including a location plan relating the work to space identification such as station, offset, and column numbers, floor level, etc. Materials, gauges, method of fastening, size and spacing of fastenings, connections with other work, cutting, fitting, drilling, and any and all other necessary information per usual trade practice or as required for any specific purpose must be clearly shown.
- H. Each shop drawing shall contain a title block with the following information provided:
 - 1. Number and title of drawing, including MDAD Contract title and Number
 - 2. Date of drawing and revisions
 - 3. Name of Contractor and Subcontractor (if any) submitting drawings
 - 4. Name of Project, Building or Facility
 - 5. Specification Section title and number
 - 6. Contractor's Stamp of approval, signed by the Contractor or his checker
 - 7. Space above the title block for Architect/Engineer's action stamp
 - 8. Submittal or resubmittal number (whether first, second, third, etc.)
 - 9. Date of submittal.

The Contractor, when requested by the Field Representative in writing, shall submit such additional shop drawings as may be required by the Architect/Engineer.

1.04 PRODUCT DATA

- A. Submit only pages that are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.
- B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work. Delete information not applicable.
- C. Not Used
- D. All products requiring compliance with the Buy American Clause shall bear a stamp or marking attesting to their place of origin and the Contractor shall provide written certification of compliance with the Buy American Clause from the product manufacturer and/or supplier, submitted with the product shop drawings and as may also be required in other submittals by the Contract Documents.
 - 1. If at any time MDAD determines that a product is not in compliance with the Buy American Clause, MDAD shall be entitled to replace such product with a buy American compliant product. The Contractor shall be responsible for all labor, materials and consequential costs associated with such replacement.

1.05 SAMPLES

- A. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures and patterns, for selection. All color and finish schedules must be submitted by the Contractor in a single submission properly identified and labeled.
- B. Submit samples to illustrate functional characteristics of products, including parts and attachments.
- C. Approved samples which may be used in the work are indicated in the Specification section.
- D. Label each sample with identification required for transmittal letter.
- E. Provide field samples of finishes at Project, at location acceptable to the Field Representative, as required by individual Specifications section. Install each sample complete and finished. Acceptable finishes in place may be retained in completed work.

1.06 CONTRACTOR REVIEW

- A. The Contractor shall check and approve all shop drawings to make sure that they conform to the Plans, Technical Specifications, and other Contract requirements, and shall correct all shop drawings found to be inaccurate or otherwise in error, prior to submittal to the Field Representative. The Contractor shall verify all field dimensions and criteria and shall be responsible for the coordination of work by all Subcontractors. The Contractor, by approving and submitting shop drawings, represents that he has determined and verified the accuracy of all field measurements and quantities, field construction criteria, materials, catalog numbers, and similar data, and that he has reviewed and coordinated the information in the shop drawings with the requirements of the work and the Contract Documents.
- B. Review manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
- C. Coordinate submittals with requirements of work and Contract Documents.
- D. The Contractor or the Contractor's checker shall sign, in the proper block, each sheet of shop drawings and data, and each sample label to certify compliance with requirements of Contract Documents. Shop drawings submitted without such stamp and signature of approval will be returned to the Contractor unchecked and will require a re-submission. In such event, it will be deemed that the Contractor has not complied with the requirements of this Section and shall bear the risks of delays as if no drawings or details had been submitted.
- E. Notify Architect/Engineer through the Field Representative in writing at time of submittal, of any deviation(s) from requirements of Contract Documents.
- F. Do not order material, fabricate products or begin work that requires submittals until return of submittal with Architect/Engineer acceptance.

1.07 SUBMITTAL REQUIREMENTS

- A. Transmit submittals in accordance with approved Progress Schedule and in such sequence so as to avoid delay in the work or work of other contracts. Submit copy of shop drawings transmittal letter and requests for substitutions, if any, to the Field Representative.
- B. Provide space on each submittal for Contractor and Architect/Engineer action stamps.
- C. Apply Contractor's approval stamp, signed or initialed, certifying to review, verification of products, field dimensions and field construction criteria and coordination of information with requirements of work and Contract Documents.
- D. Coordinate submittals into logical groupings to facilitate interrelation of the several items:
 - 1. Finishes that involve Architect/Engineer's selection of color, textures or patterns.
 - 2. Associated items that require correlation for efficient function or for installation.
- E. Submit number of copies the Contractor requires, plus six (6) copies of black line copies of shop drawings that will be retained by Architect/Engineer, Field Representative, and MDAD. When requested by the Contractor, the Engineer may authorize the use of different media (electronic, bond paper, etc.) and number of copies.
- F. Submit number of copies of product data and manufacturer's instructions Contractor requires, plus six (6) copies that will be retained by Architect/Engineer, Field Representative, and MDAD. When requested by the Contractor, the Engineer may authorize the use of different media (electronic, bond paper, etc.) and number of copies.
- G. Submit number of samples specified in individual Specification sections.
- H. Submit Contractor's approved transmittal letter. Identify project by MDAD contract title and number. Identify work and product by Specifications section and Article number.

1.08 RESUBMITTALS

- A. Make resubmittals under procedures specified for initial submittals; clearly identify changes made since previous submittal.

1.09 ARCHITECT/ENGINEER AND FIELD REPRESENTATIVE

- A. The Architect/Engineer will review shop drawings and samples and indicate whatever action he/she is taking, within 14 calendar days from the date of its receipt at the Architect/Engineer's office, so as to minimize delay. The Architect/Engineer's review will be only for conformance with the design concept of the Contract and with the information given in the Contract Documents. The Architect/Engineer's approval of a separate item shall not constitute approval of an assembly in which the item functions. The Field Representative

will return the shop drawings or otherwise approved media shop drawings to the Contractor for his use and distribution.

- B. The Architect/Engineer's approval of shop drawings or samples shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Architect/Engineer through the Field Representative in writing of such deviation at the time of submission and the Architect/Engineer has given written approval to the specific deviation, nor shall the Architect/Engineer's approval relieve the Contractor from responsibility for errors or omissions in the shop drawings, product data sheets or samples.

1.10 DISTRIBUTION

- A. Distribute shop drawings, copies of product data and samples, which bear Architect/Engineer stamp of approval, to job site file, Record Documents file, sub-contractors, suppliers, **other affected contractors** and other entities requiring information.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 013516
ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section includes special procedures for alteration work.

1.2 DEFINITIONS

- A. Alteration Work: This term includes remodeling, renovation, repair, and maintenance work performed within existing spaces or on existing surfaces as part of the Project.
- B. Consolidate: To strengthen loose or deteriorated materials in place.
- C. Design Reference Sample: A sample that represents the Engineer's prebid selection of work to be matched; it may be existing work or work specially produced for the Project.
- D. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.
- E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Engineer.
- F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.
- G. Repair: To correct damage and defects, retaining existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.
- H. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.
- I. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.
- J. Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.
- K. Retain: To keep existing items that are not to be removed or dismantled.
- L. Strip: To remove existing finish down to base material unless otherwise indicated.

1.3 COORDINATION

- A. Alteration Work Sub-schedule: A construction schedule coordinating the sequencing and scheduling of alteration work for entire Project, including each activity to be performed, and based on Contractor's Construction Schedule. Secure time commitments for performing critical construction activities from separate entities responsible for alteration work.
1. Schedule construction operations in sequence required to obtain best Work results.
 2. Coordinate sequence of alteration work activities to accommodate the following:
 - a. MDAD's continuing occupancy of portions of existing building.
 - b. MDAD 's partial occupancy of completed Work.
 - c. Other known work in progress.
 - d. Tests and inspections.
 3. Detail sequence of alteration work, with start and end dates.
 4. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.
 5. Use of elevator and stairs.
 6. Equipment Data: List gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use in existing structure. Do not use such equipment without certification from Contractor's professional engineer that the structure can support the imposed loadings without damage.
- B. Pedestrian and Vehicular Circulation: Coordinate alteration work with circulation patterns within Project building(s) and site. Some work is near circulation patterns **and adjacent to restricted areas** (runway, taxiways). Circulation patterns cannot be closed off entirely and in places can be only temporarily redirected around small areas of work. Access to restricted areas may not be obstructed. Plan and execute the Work accordingly.

1.4 PROJECT MEETINGS FOR ALTERATION WORK

- A. Preliminary Conference for Alteration Work: Before starting alteration work, **Construction Manager will conduct** conference at **Project site** construction office.
1. Attendees: In addition to representatives of MDAD, **Construction Manager**, Architect/Engineer, and Contractor, **MDAD's insurer**, testing service representative, specialists, and chemical-cleaner manufacturer(s) shall be represented at the meeting.
 2. Agenda: Discuss items of significance that could affect progress of alteration work, including review of the following:
 - a. Alteration Work Sub-schedule: Discuss and finalize; verify availability of materials, specialists' personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Fire-prevention plan.

-
- c. Governing regulations.
 - d. Areas where existing construction is to remain and the required protection.
 - e. Hauling routes.
 - f. Sequence of alteration work operations.
 - g. Storage, protection, and accounting for salvaged and specially fabricated items.
 - h. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
 - i. Qualifications of personnel assigned to alteration work and assigned duties.
 - j. Requirements for extent and quality of work, tolerances, and required clearances.
 - k. Embedded work such as flashings and lintels, special details, collection of waste, protection of occupants and the public, and condition of other construction that affects the Work or will affect the work.
3. Reporting: **Construction Manager will record** conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.
- B. Coordination Meetings: Conduct coordination meetings specifically for alteration work at **weekly** intervals. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of MDAD, **Construction Manager**, Architect /Engineer and Contractor, each specialist, supplier, installer, and other entity concerned with progress or involved in planning, coordination, or performance of alteration work activities shall be represented at these meetings. All participants at conference shall be familiar with Project and authorized to conclude matters relating to alteration work.
 2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of alteration work. Include topics for discussion as appropriate to status of Project.
 - a. Alteration Work Subschedule: Review progress since last coordination meeting. Determine whether each schedule item is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited with retention of quality; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities are completed within the Contract Time.
 - b. Schedule Updating: Revise Contractor's Alteration Work Subschedule after each coordination meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each entity present, including review items listed in the "Preliminary Conference for Alteration Work" Paragraph in this article and the following:
 - 1) Interface requirements of alteration work with other Project Work.
-

- 2) Status of submittals for alteration work.
- 3) Access to alteration work locations.
- 4) Effectiveness of fire-prevention plan.
- 5) Quality and work standards of alteration work.
- 6) Change Orders for alteration work.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.5 MATERIALS OWNERSHIP

- A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to MDAD that may be encountered or uncovered during the Work, regardless of whether they were previously documented, remain MDAD 's property.
 1. Carefully dismantle and salvage each item or object in a manner to prevent damage and protect it from damage, then promptly deliver it to MDAD where directed **at Project site** on the location disclosed during the pre-construction meeting.

1.6 INFORMATIONAL SUBMITTALS

- A. Alteration Work Subschedule:
 1. Submit alteration work subschedule within **30** days of date established for **commencement of alteration work**
- B. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements that are to remain, including finish surfaces, that might be misconstrued as damage caused by Contractor's alteration work operations.
- C. Alteration Work Program: Submit **30 days** before work begins.
- D. Fire-Prevention Plan: Submit **30 days** before work begins.

1.7 QUALITY ASSURANCE

- A. Specialist Qualifications: An experienced firm regularly engaged in specialty work similar in nature, materials, design, and extent to alteration work as specified in each Section and that has completed a minimum of **five (5)** recent projects with a record of successful in-service performance that demonstrates the firm's qualifications to perform this work.
 1. Field Supervisor Qualifications: Full-time supervisors experienced in specialty work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on-site when specialty work begins and during its progress.

Supervisors shall not be changed during Project except for causes beyond the control of the specialist firm.

a. Construct new mockups of required work whenever a supervisor is replaced.

B. Title X Requirement: Each firm conducting activities that disturb painted surfaces shall be a "Lead-Safe Certified Firm" according to 40 CFR 745, Subpart E, and use only workers that are trained in lead-safe work practices.

C. Alteration Work Program: Prepare a written plan for alteration work for whole Project, including each phase or process and protection of surrounding materials during operations. Show compliance with indicated methods and procedures specified in this and other Sections. Coordinate this whole-Project alteration work program with specific requirements of programs required in other alteration work Sections.

1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.

D. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-control devices during each phase or process. Coordinate plan with MDAD 's fire-protection equipment and requirements. Include fire-watch personnel's training, duties, and authority to enforce fire safety.

E. Safety and Health Standard: Comply with ANSI/ASSE A10.6.

1.8 STORAGE AND HANDLING OF SALVAGED MATERIALS

A. Salvaged Materials:

1. Clean loose dirt and debris from salvaged items unless more extensive cleaning is indicated.
2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.
3. Store items in a secure area until delivery to MDAD.
4. Transport items to MDAD 's storage area **designated by MDAD**
5. Protect items from damage during transport and storage.

B. Salvaged Materials for Reinstallation:

1. Repair and clean items for reuse as indicated.
2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.

3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make items functional for use indicated.
- C. Existing Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect/Engineer, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after alteration and other construction work in the vicinity is complete.
- D. Storage: Catalog and store items within a weathertight enclosure where they are protected from moisture, weather, condensation, and freezing temperatures.
1. Identify each item for reinstallation with a nonpermanent mark to document its original location. Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
 2. Secure stored materials to protect from theft.
 3. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5 deg F (3 deg C) or more above the dew point.
- E. Storage Space:
1. MDAD will arrange for limited on-site location(s) for free storage of salvaged material. This storage space **includes** security for stored material.
 2. Arrange for off-site locations for storage and protection of salvaged material that cannot be stored and protected on-site.

1.9 FIELD CONDITIONS

- A. Survey of Existing Conditions: Record existing conditions that affect the Work by use of **measured drawings, preconstruction photographs and preconstruction video recordings**.
1. Comply with requirements specified in Section 013233 - Photographic Documentation.
- B. Discrepancies: Notify Architect/Engineer of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.
- C. MDAD's Removals: Before beginning alteration work, verify in correspondence with MDAD that the **items have been removed**.
- D. Size Limitations in Existing Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes

that clear surfaces within existing spaces, areas, rooms, and openings, including temporary protection, by **12 inches** or more.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from alteration work.
 - 1. Use only proven protection methods, appropriate to each area and surface being protected.
 - 2. Provide temporary barricades, barriers, and directional signage to exclude the public from areas where alteration work is being performed.
 - 3. Erect temporary barriers to form and maintain fire-egress routes.
 - 4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during alteration work.
 - 5. Contain dust and debris generated by alteration work and prevent it from reaching the public or adjacent surfaces.
 - 6. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
 - 7. Protect floors and other surfaces along hauling routes from damage, wear, and staining.
 - 8. Provide supplemental sound-control treatment to isolate demolition work from other areas of the building.
- B. Temporary Protection of Materials to Remain:
 - 1. Protect existing materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
 - 2. Do not attach temporary protection to existing surfaces except as indicated as part of the alteration work program.
- C. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
- D. Utility and Communications Services:
 - 1. Notify MDAD, Engineer, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by alteration work before commencing operations.

2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for alteration work.
 3. Maintain existing services unless otherwise indicated; keep in service and protect against damage during operations. Provide temporary services during interruptions to existing utilities.
- E. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect/Engineer immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is functioning properly.
1. Prevent solids such as adhesive or mortar residue or other debris from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from alteration work.
 2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.
- F. Existing Roofing: Not use

3.2 PROTECTION FROM FIRE

- A. General: Follow fire-prevention plan and the following:
1. Comply with NFPA 241 requirements unless otherwise indicated. **Perform duties titled " MDAD's Responsibility for Fire Protection."**
 2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.
 - a. If combustible material cannot be removed, provide fire blankets to cover such materials.
- B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including welding, torch-cutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:
1. Obtain MDAD's approval for operations involving use of welding or other high-heat equipment. **Use of open-flame equipment is not permitted.** Notify MDAD **at least 72 hours** before each occurrence, indicating location of such work.
 2. As far as practicable, restrict heat-generating equipment to shop areas or outside the building.
 3. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
 4. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.

5. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
6. Fire Watch: Before working with heat-generating equipment or combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241, and as follows:
 - a. Train each fire watch in the proper operation of fire-control equipment and alarms.
 - b. Prohibit fire-watch personnel from other work that would be a distraction from fire-watch duties.
 - c. Cease work with heat-generating equipment whenever fire-watch personnel are not present.
 - d. Have fire-watch personnel perform final fire-safety inspection each day beginning no sooner than **30 minutes** after conclusion of work **in each area** to detect hidden or smoldering fires and to ensure that proper fire prevention is maintained.
 - e. Maintain fire-watch personnel at **each area of** Project site until **60 minutes** after conclusion of daily work.
- C. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire-extinguisher and blanket use.
- D. Sprinklers: Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to sprinklers, shield them temporarily with guards.
 1. Remove temporary guards at the end of work shifts, whenever operations are paused, and when nearby work is complete.

3.3 PROTECTION DURING APPLICATION OF CHEMICALS

- A. Protect motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm or spillage resulting from applications of chemicals and adhesives.
- B. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in alteration work program. Use covering materials and masking agents that are waterproof and UV resistant and that will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials.

- C. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.
- D. Neutralize alkaline and acid wastes and legally dispose of off MDAD's property.
- E. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil contamination, soil erosion, undermining of paving and foundations, damage to landscaping, or water penetration into building interior.

3.4 GENERAL ALTERATION WORK

- A. Have specialty work performed only by qualified specialists.
- B. Ensure that supervisory personnel are present when work begins and during its progress.
- C. Record existing work before each procedure (preconstruction), and record progress during the work. Use digital preconstruction documentation **photographs** and/or **video recordings**. Comply with requirements in Section 013233 - Photographic Documentation.
- D. Perform surveys of Project site as the Work progresses to detect hazards resulting from alterations.
- E. Notify Architect/Engineer of visible changes in the integrity of material or components whether from environmental causes including biological attack, UV degradation, freezing, or thawing or from structural defects including cracks, movement, or distortion.
 - 1. Do not proceed with the work in question until directed by Architect/Engineer.

END OF SECTION 013516

SECTION 014000
CONTRACT QUALITY CONTROL

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Quality control of products and workmanship.
- B. Mix design.
- C. Manufacturer's instructions.
- D. Manufacturer's certificates and field services.
- E. Equipment operations.
- F. Mockups.

1.02 RELATED REQUIREMENTS

- A. Section 014219 - Reference Standards.
- B. Section 013300 - Submittals.
- C. Section 013323 - Shop Drawings, Product Data and Samples.
- D. Section 014516.13 - Contractor Quality Control Program.
- E. Section 014529 - Project Testing Laboratory Services.
- F. Individual Technical Specification Sections

1.03 DESCRIPTION

- A. Maintain quality control over supervision, subcontractors, suppliers, manufacturers, products, services, workmanship and site conditions, to produce work in accordance with Contract Documents.
- B. Section includes administrative and procedural requirements for quality assurance and quality control.
- C. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect/Engineer, MDAD, Commissioning Authority, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.04 FIELD QUALITY CONTROL TESTS

- A. Quality Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements.

1.05 DELEGATED DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect/Engineer.

1.06 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect/Engineer for direction before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect/Engineer for a decision before proceeding.

1.07 WORKMANSHIP

- A. Comply with industry standards of the region except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Provide suitably qualified personnel to produce work of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration and racking.

- D. Provide finishes to match approved samples.

1.07 MANUFACTURER'S INSTRUCTIONS

- A. Require compliance with instructions in full detail, including each step in sequence.
- B. Should instructions conflict with Contract Documents, request written clarification from Architect/Engineer through the Field Representative before proceeding.

1.08 MANUFACTURER'S CERTIFICATES

- A. When required in individual Specifications section, submit manufacturer's certificate, in duplicate, certifying that products meet or exceed specified requirements, executed by responsible officer.

1.09 MANUFACTURER'S FIELD SERVICES

- A. When required in individual Specification section, have **manufacturer** provide qualified representative to observe field conditions, conditions of surfaces and installation, quality of workmanship, and applications, and to make written report of observations and recommendations to Field Representative.

1.11 MOCKUPS

- A. Not used

1.12 ACTION SUBMITTALS

- A. Not used .
- B. Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.13 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.

- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
 - 2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- F. Reports: Prepare and submit certified written reports and documents as specified.
- G. Permits, Licenses, and Certificates: For MDAD's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.14 CONTRACTOR'S QUALITY CONTROL PLAN

- A. Quality Control Plan, General: Submit quality-control plan within **ten**(10) days of **Notice to Proceed**, and not less than **five** (5) days prior to preconstruction conference. Submit in format acceptable to MDAD. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's Construction Schedule.

- B. Quality Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Refer to Appendix for Contractor Qualification Statement
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
 - 2. MDAD performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by Commissioning Authority.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect/Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.15 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, telephone number, and email address of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.

1.16 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. When testing is complete, remove test specimens and test assemblies,; do not reuse products on Project.
- K. Mockups: Not used .
- L. Integrated Exterior Mockups: Not used

1.17 QUALITY CONTROL

- A. MDAD Responsibilities: Where quality-control services are indicated as MDAD's responsibility, MDAD will engage a qualified testing agency to perform these services.

1. MDAD will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to MDAD are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Engage a qualified testing agency to perform quality-control services.
 - a. Contractor shall not employ same entity engaged by MDAD, unless agreed to in writing by MDAD.
 3. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspection will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect/Engineer, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect/Engineer, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform duties of Contractor.
- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 – Submittals.

- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. Associated Contractor Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Delivery of samples to testing agencies.
 - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 7. Security and protection for samples and for testing and inspection equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update as the Work progresses.
 - 1. Distribution: Distribute schedule to MDAD, Architect/Engineer, Construction Manager testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.18 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: MDAD will engage a qualified testing agency and special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of MDAD, as indicated in the Statement of Special Inspections attached to this Section, and as follows:
 - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 - 2. Notifying Architect/Engineer, **Construction Manager** and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect/Engineer and Commissioning Authority through Construction Manager, with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected work.
 7. Requirements for special tests and inspections to be defined during pre-construction activities.
- B. Special Tests and Inspections: Conducted by a qualified testing agency or special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections and in the Statement of Special Inspections attached to this Section, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect/ Engineer , Commissioning Authority, Construction Manager and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect/Engineer and Commissioning Authority through Construction Manager with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected work.
 7. Requirements for special test and inspections are to be defined during pre-construction activities.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 014101
POSTING OF NOTICES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Schedule of Wage Rates and Benefits **Miami-Dade County** or **U.S. Department of Labor**.
- B. Non-Discrimination Clause and Contractor's Commitments under Section 202 of Executive Order No. 11246.

1.02 SCHEDULE OF WAGE RATES AND BENEFITS

The Contractor, and each subcontractor under him, shall post in a conspicuous place on the site (1) the schedule of the specified overall hourly rate for each applicable classification; (2) the amount of liquidated damages for any failure to pay such rates; and (3) the name and address of the responsible official in Miami-Dade County or the U.S. Department of Labor (whichever is applicable) to whom complaints should be given.

Copy of this Notice will be provided to the Contractor by MDAD.

1.03 NON-DISCRIMINATION CLAUSE

The Contractor shall post the non-discrimination clause as required by Executive Order 11246. The following is a copy of the required notice:

"Equal Employment Opportunity is the Law--Discrimination is Prohibited by the Civil Rights Act of 1964 and by Executive Order No. 11246

Title VII of the Civil Rights Act of 1964--Administered by:

The Equal Employment Opportunity Commission

Prohibits discrimination because of Race, Color, Religion, Sex, or National Origin by Employers with 25 or more employees, by Labor Organizations with a hiring hall of 25 or more members, by Employment Agencies, and by Joint Labor-Management Committees for Apprenticeship or Training.

**ANY PERSON - Who believes he or she has been discriminated against
SHOULD CONTACT the:**

The Equal Employment Opportunity Commission
131 M Street, NE
Washington, DC 20507

1.04 Executive Order No. 11246--Administered by:

The Office of Federal Contract Compliance Programs

Prohibits discrimination because of Race, Color, Religion, Sex, or National Origin, and requires affirmative action to ensure equality of opportunity in all aspects of employment.

By all Federal Government Contractors and Subcontractors, and by Contractors Performing Work Under a Federal Assisted Construction Contract, regardless of the number of employees in either case.

ANY PERSON - Who believes he or she has been discriminated against
SHOULD CONTACT:

The Office of Federal Contract Compliance Programs
U.S. Department of Labor
Frances Perkins Building
200 Constitution Ave., NW
Washington, DC 20210

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 014103
EXISTING UTILITIES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Before performing any utility modifications, utility shutdowns, or any hot work on an existing utility or performing any excavation, drilling holes, performing any vibro-flotation (vibro-compaction) work, hot work on any underground utility, the Contractor shall contact MDAD and all concerned utilities. This includes all airfield and NAVAID's above and below ground conduits, cables/wires and equipment.
- B. Contractor shall complete the Underground Utilities Clearance Sign-Off Sheet appended to this Section and submit it to the Architect/Engineer and to MDAD Facilities Management through the Field Representative.
- C. Before any shut down of an existing active utility, the Contractor shall complete the Shut Down Request form appended to this Section and submit it to MDAD Facilities Management through the Field Representative in accordance with the form's instructions.
- D. Before initiating hot work, the Contractor shall submit the Hot Work permit application. Hot Work includes, but is not limited to, brazing, cutting, grinding, soldering, or thawing of utility pipes, torch applied roofing, and welding.

1.02 RELATED REQUIREMENTS

- A. Section 011200 - Hot Work Operations
- B. Section 011200-01 - Hot Work Permit
- C. Section 011200-02 – Hot work Permit Application Form

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

- 3.01 The Contractor shall comply with the Provisions of the Underground Facility Damage Prevention and Safety Act - Chapter 556, Florida Statutes.
- 3.02 Prior to performing any excavation or digging, the Contractor shall give 48 hours notice to each owner of the underground utility facilities. Notifying SUNSHINE STATE ONE CALL OF FLORIDA, INC. does not satisfy this requirement.

- 3.03 There is a rebuttable presumption of negligence under the above referenced Statutes on the part of the Contractor, if the Contractor fails to call the underground utility owner and receive authorization before digging, or if the Contractor calls but fails to wait the required 48 hours.
- 3.04 During the 48 hour period, the underground utility owner shall go to the site and flag its facility.
- 3.05 Violation of the above referenced statute can be cause for civil fines and criminal offenses as delineated in the above referenced statutes.

Appendices: FD5-048-P Undergound Utilities Clearance
Underground Utilities Clearance Sign Off Sheet.
Underground Utilities Clearance Sign Off Sheet, requirements and procedures
Shut-Down Request Form.

END OF SECTION

SIGN-OFF SHEET
MIAMI-DADE AVIATION DEPARTMENT UNDERGROUND UTILITIES CLEARANCE
PLEASE READ FIRST:

1. THE LOCATION OF THE PROPOSED WORK MUST BE MARKED IN THE FIELD IN WHITE PAINT BY THE CONTRACTOR REQUESTING SIGN OFF.
2. CONTRACTOR IS TO CONTACT THE BELOW GROUPS TO SIGN-OFF.
3. DRAWINGS OF PROPOSED PROJECT ARE TO BE SUBMITTED WITH TICKET NUMBER AT TIME OF CLEARANCE REQUEST AND ANY OTHER DRAWINGS AVAILABLE.
4. LAST SIGNATURE TO BE OBTAINED IS THAT OF MDAD UTILITY COORDINATOR. MDAD COORDINATOR WILL THEN VERIFY THAT ALL SIGNATURES HAVE BEEN OBTAINED. MDAD COORDINATOR WILL NOT BE RESPONSIBLE FOR AREAS CLEARED BY OTHER ENTITIES.
5. AS PER GENERAL CONDITION 6.2 THE CONTRACTOR IS **SOLELY** RESPONSIBLE FOR LOCATING ALL UTILITIES AS WELL AS ANY AND ALL DAMAGES. USE EXTREME CAUTION AND DIG AT YOUR OWN RISK. GPR AND SOFT DIG ARE RECOMMENDED.
6. **STEP-1** Contact M.D.A.D. Station-5 for a work order # 305-876-7311 (Trade Code 053) **Work Order #**

STEP-2 Request that MDAD PM call in a work order for utility coordinator: 305-876-7311

WORK ORDER NUMBER: _____

CONTACT: SUNSHINE STATE ONE CALL OF FLORIDA INC:
(1-800-432-4770) OR (1-800-638-4097) Provide Printout from Sunshine.

STEP-3 Provide Information below:

MDAD P.M.: _____ REQUESTOR NAME: _____
CONTRACTOR: _____ Office: _____ Fax: _____
LOCATION SITE Circle One: Attach Map or Drawing
OTHER: _____
PLEASE ATTACH THE "ONE CALL TICKET No: _____

STEP-4 Area must be marked in White Paint by contractor/requestor for locator. **OBTAIN ALL SIGNATURES REQUIRED:**
(Separate forms accepted)

FPL LOCATOR

BOB GARDNER: robert_w_gardner@fpl.com; Office: 305-345-3229 Fax: 305-869-1435

ROBERT SULLIVAN: robert_sullivan@fpl.com; Office: 305-345-2154 Fax: 305-869-1435

NAME OF COMPANY/ORGANIZATION: _____ DATE _____ SIGNATURE _____

Comments: _____

FAA

ANDRES ORRETT: andres.orrett@faa.gov; Office: 305-869-5349 Fax: 305-869-5390

NAME OF COMPANY/ORGANIZATION: _____ DATE _____ SIGNATURE _____

Comments: _____

BLACK BOX – COMMUNICATIONS

bbns-miami-administration@blackbox.com; Fax: 305-869-8940 Attn: Cable Facilities Dept.: 305-876-8416 or 305-876-8406

NAME OF COMPANY/ORGANIZATION: _____ DATE _____ SIGNATURE _____

Comments: _____

MDAD IRRIGATION

FRANK CONTRERAS: fcontreras@miami-airport.com; Cell: 305-796-7746 Office: 305-869-4760 Fax: 305-869-1295

NAME OF COMPANY/ORGANIZATION: _____ DATE _____ SIGNATURE _____

Comments: _____

MDAD UTILITIES

FRED HERBERT (or his assignee): fhherbert@miami-airport.com; Office: 305-876-7542

NAME OF COMPANY/ORGANIZATION: _____ DATE _____ SIGNATURE _____

Comments: _____

STEP- 5 E-Mail Completed packet to below Coordinator for verification:

MDAD UTILITY COORDINATOR

GRISSEL AGHA-LONG: glong@miami-airport.com Office: 305-869-3874

Grisel Agha-Long, Miami-Dade Aviation Department DATE _____ SIGNATURE _____

Comments: _____

Updated 12/30/20

MDAD UNDERGROUND UTILITIES CLEARANCE

Requirements for filling out sign-off sheet and procedures.

CONTRACTOR/REQUESTOR IS TO:

Contact MDAD Utilities Coordinator to obtain direction and the MDAD Sign-off Sheet.

CALL/CONTACT:

a) Sunshine State one call of Florida, Inc. (Former U.N.C.L.E.) b) All companies/organizations (persons) which are on the MDAD Sign-off Sheet. c) Obtain Sign-off/Names of contract personnel for all utilities. Copies to be submitted to MDAD for their records.

Be prepared to submit to these companies drawings/maps of the work area.

Mark in field the location of the proposed work site.

Prepare a set of copies of all papers/maps regarding the project (for MDAD records).

Call the MDAD Utilities Coordinator for final appointment and last signature.

NOTICE TO CONTRACTORS

MDAD's **utilities clearance coordination is not an underground utilities locating** service for **contractors working for Miami-Dade County Airports**. MDAD's **Utilities clearance coordination** is a free service provided to contractors working for MDAD, for the purpose of protecting our utilities including damage prevention.

If utilities shown on contractors' drawings cannot be located by the contractor, then the contractor is responsible for finding the utility by other means, like hiring. A locator with high tech equipment like GPR (ground penetrating radar).

Contractors are responsible for making all the necessary phone calls to obtain the clearance associated with their projects. The accuracy of clearances and signatures from other agencies or groups is the contractor's responsibility.

MDAD is not responsible for any and all claims, disputes, or other matters arising between contractors related to the execution or progress of their work, or their interpretation of the available plans and information. MDAD is not responsible for the verification or reliability of existing utilities information nor from information furnished by other agencies.

MDAD Utilities Clearance coordination service is limited to sites within Miami-Dade County Airports only. Utilities clearance requests inside buildings are NOT PERMITTED due to interference. All clearance and associated coordination are good for a two (2) week period only.

SHUT-DOWN REQUEST FORM

MDAD PROJECT MANAGER: _____

TODAY'S DATE: _____

TELEPHONE NO.: _____

SHUT-DOWN DATE: _____

NOTE: RETURN COMPLETED FORM TO MDAD MAINTENANCE ENGINEERING AT BLDG. 3020.

REQUESTED BY: _____

(SUBMIT NO LESS THAN 5 WORKING DAYS PRIOR TO REQUESTED SHUT-DOWN DATE)

MAINTENANCE FAX NO. 876-0347

1) PROJECT NAME: _____

2) LOCATION OF WORK/FLOOR: _____

3) A/E NAME & TELEPHONE NUMBER: _____

4) A/E PROJECT MANAGER: _____

5) ENGINEERING CONSULT NAME & TEL #: _____

6) G.C. NAME & TELEPHONE NUMBER: _____

7) G.C. PROJECT MANAGER: _____

8) SUB-CONTRACTOR'S NAME & TEL #: _____

9) SUB-CONTRACTOR'S PROJ. MGR.: _____

10) SYSTEM TO BE SHUT-DOWN: _____

11) REASON FOR SHUT-DOWN: _____

12) AREAS AFFECTED BY SHUT-DOWN: _____

13) OTHER SYSTEMS AFFECTED: _____

14) DURATION OF SHUT-DOWN REQUESTED: _____

NOTE: ATTACH PLAN OR IF REQUESTED BY MAINTENANCE ENGINEERING, SUPPLY PLANS FOR REVIEW MEETING AT FIELD OFFICE.

UNDERGROUND UTILITIES CLEARANCE

PURPOSE

To provide direction on obtaining clearance to perform excavations/underground work on MDAD facilities.

INSTRUCTION

1. When there is a need to excavate, trench, drill, or perform any underground job six inches or more below the ground surface, the Contractor must obtain clearance from local utilities and authorization from the MDAD Utilities Coordinator. To document this process, an Underground Utilities Clearance Sign-Off Sheet (available from the MDAD Utilities Coordinator) must be completed.
2. The Contractor must clearly mark the proposed excavation site prior to initiating the notification process.
3. At least forty-eight hours prior to the excavation, the Contractor must contact Sunshine State One Call of Florida at 800-432-4770 (or 800-638-4097). The Contractor must provide the following information:
 - Location of excavation
 - Type of excavation
 - Dimensions of excavation (including depth)
 - Start date and duration of excavation
 - Contractor data
4. Sunshine State One Call will:
 - Assign a Location Request Ticket Number to the work.
 - Issue a Location Request Ticket which the Contractor must retain and post at the excavation site. The ticket is good for fourteen (14) calendar days.
 - Notify member agencies/utilities of the scheduled excavation.
5. Agencies/utilities notified by Sunshine State One Call that have underground lines, tanks, or other equipment in the affected area shall meet with the Contractor to discuss the excavation or simply mark the location of their underground equipment.
6. The Contractor shall complete the top part of a Utilities Clearance Sign-Off Sheet, providing the Project Name and Number, and the work site/location. The Contractor shall attach drawings and maps indicating the proposed work.
7. The Contractor must obtain signatures on the sign-off sheet from the following agencies:
 - Florida Power and Light Locator Service (MIA only)

- Federal Aviation Administration
 - MDAD Telecommunications (MIA only)
 - Blackbox-Communication (MIA only)
 - MDAD Irrigation
8. The completed form must be faxed to the MDAD Utilities Coordinator (fax number on form). Drawings and maps of the proposed excavation area must be submitted to the Utilities Coordinator with the hard copy of the form.
9. The MDAD Utilities Coordinator shall:
- Review the clearance sheet and attachments.
 - Meet with the Contractor, as necessary, to discuss the excavation
 - Perform a site inspection, if required, no more than two days before the excavation is to commence.
 - Sign and date the clearance sheet, providing additional direction in the comments section as needed.
 - Fax the signed clearance sheet to the Contractor.
 - Meet the Contractor and person who will be doing/superintending the excavation at the site for a site review. Utilities Coordinator will indicate areas where excavation must be performed with a hand shovel.
10. Clearances are good for fourteen (14) calendar days.

ASSOCIATED FORM

1. Appendix to Technical Specification 014103, Existing Utilities Underground Utilities Clearance Sign-Off Sheet

Procedure FD5-048-P [11/06]

SECTION 014200
REFERENCE STANDARDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Applicability of Reference Standards.
- B. Provision of Reference Standards at site.
- C. Acronyms used in Contract Documents for Reference Standards. Source of Reference Standards.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is that in effect as of the Advertisement date, except when a specific date is specified.
- C. When required by individual Specifications section, obtain copy of standard. Maintain copy at jobsite during submittals, planning and progress of the specific work, until Substantial Completion.

1.03 SCHEDULE OF REFERENCES

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
 - 1. AABC - Associated Air Balance Council; www.aabc.com.
 - 2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
 - 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
 - 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
 - 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
 - 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
 - 7. ABMA - American Boiler Manufacturers Association; www.abma.com.
 - 8. ACI - American Concrete Institute; (Formerly: ACI International); www.abma.com.
 - 9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.

10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
11. AGA - American Gas Association; www.aga.org.
12. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
13. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
14. AI - Asphalt Institute; www.asphaltinstitute.org.
15. AIA - American Institute of Architects (The); www.aia.org.
16. AISC - American Institute of Steel Construction; www.aisc.org.
17. AISI - American Iron and Steel Institute; www.steel.org.
18. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
19. ANSI - American National Standards Institute; www.ansi.org.
20. APA - Architectural Precast Association; www.archprecast.org.
21. API - American Petroleum Institute; www.api.org.
22. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
23. ARI - American Refrigeration Institute; (See AHRI).
24. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
25. ASCE - American Society of Civil Engineers; www.asce.org.
26. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
27. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
28. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
29. ASSE - American Society of Safety Engineers (The); www.asse.org.
30. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
31. ASTM - ASTM International; www.astm.org.
32. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
33. AWEA - American Wind Energy Association; www.awea.org.
34. AWI - Architectural Woodwork Institute; www.awinet.org.
35. AWS - American Welding Society; www.aws.org.
36. AWWA - American Water Works Association; www.awwa.org.
37. BHMA - Builders Hardware Manufacturers Association; .buildershardware.com.
38. BICSI - BICSI, Inc.; www.bicsi.org.
39. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
40. CDA - Copper Development Association; www.copper.org.
41. CEA - Consumer Electronics Association; www.ce.org.
42. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
43. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
44. CGA - Compressed Gas Association; www.cganet.com.
45. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
46. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
47. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
48. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
49. CPA - Composite Panel Association; www.pbmdf.com.
50. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
51. CRRC - Cool Roof Rating Council; www.coolroofs.org.
52. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.

53. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
54. CSI - Construction Specifications Institute (The); www.csinet.org.
55. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
56. CWC - Composite Wood Council; (See CPA).
57. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
58. DHI - Door and Hardware Institute; www.dhi.org.
59. ECA - Electronic Components Association; (See ECIA).
60. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
61. ECIA - Electronic Components Industry Association; www.eciaonline.org.
62. EIA - Electronic Industries Alliance; (See TIA).
63. EIMA - EIFS Industry Members Association; www.eima.com.
64. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
65. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
66. EVO - Efficiency Valuation Organization; www.evo-world.org.
67. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
68. FM Approvals - FM Approvals LLC; www.fmglobal.com.
69. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
70. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarooft.com.
71. FSA - Fluid Sealing Association; www.fluidsealing.com.
72. GA - Gypsum Association; www.gypsum.org.
73. GANA - Glass Association of North America; www.glasswebsite.com.
74. GS - Green Seal; www.greenseal.org.
75. HI - Hydraulic Institute; www.pumps.org.
76. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
77. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
78. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
79. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
80. ICBO - International Conference of Building Officials; (See ICC).
81. ICC - International Code Council; www.iccsafe.org.
82. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
83. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
84. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
85. IEC - International Electrotechnical Commission; <http://www.iec.ch>.
86. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
87. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
88. IESNA - Illuminating Engineering Society of North America; (See IES).
89. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
90. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
91. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
92. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.

93. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
94. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
95. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
96. ISO - International Organization for Standardization; www.iso.org.
97. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
98. ITU - International Telecommunication Union; www.itu.int/home.
99. LMA - Laminating Materials Association; (See CPA).
100. LPI - Lightning Protection Institute; www.lightning.org.
101. MBMA - Metal Building Manufacturers Association; www.mbma.com.
102. MCA - Metal Construction Association; www.metalconstruction.org.
103. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
104. MHIA - Material Handling Industry of America; www.mhia.org.
105. MIA - Marble Institute of America; www.marble-institute.com.
106. MPPA - Molding & Millwork Producers Association; www.wmmpa.com.
107. MPI - Master Painters Institute; www.paintinfo.com.
108. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
109. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
110. NADCA - National Air Duct Cleaners Association; www.nadca.com.
111. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
112. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
113. NBI - New Buildings Institute; www.newbuildings.org.
114. NCMA - National Concrete Masonry Association; www.ncma.org.
115. NEBB - National Environmental Balancing Bureau; www.nebb.org.
116. NECA - National Electrical Contractors Association; www.necanet.org.
117. NEMA - National Electrical Manufacturers Association; www.nema.org.
118. NETA - InterNational Electrical Testing Association; www.netaworld.org.
119. NFPA - National Fire Protection Association; www.nfpa.org.
120. NFPA - NFPA International; (See NFPA).
121. NFRC - National Fenestration Rating Council; www.nfrc.org.
122. NHLA - National Hardwood Lumber Association; www.nhla.com.
123. NLGA - National Lumber Grades Authority; www.nlga.org.
124. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
125. NRCA - National Roofing Contractors Association; www.nrca.net.
126. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
127. NSF - NSF International; www.nsf.org.
128. NSPE - National Society of Professional Engineers; www.nspe.org.
129. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
130. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
131. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
132. PDI - Plumbing & Drainage Institute; www.pdionline.org.
133. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
134. RFCI - Resilient Floor Covering Institute; www.rfci.com.
135. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.

136. SDI - Steel Deck Institute; www.sdi.org.
137. SDI - Steel Door Institute; www.steeldoor.org.
138. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
139. SIA - Security Industry Association; www.siaonline.org.
140. SJI - Steel Joist Institute; www.steeljoist.org.
141. SMA - Screen Manufacturers Association; www.smainfo.org.
142. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
143. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
144. SPIB - Southern Pine Inspection Bureau; www.spib.org.
145. SPRI - Single Ply Roofing Industry; www.spri.org.
146. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
147. SSINA - Specialty Steel Industry of North America; www.ssina.com.
148. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
149. STI - Steel Tank Institute; www.steeltank.com.
150. SWI - Steel Window Institute; www.steelwindows.com.
151. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
152. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
153. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
154. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
155. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
156. TMS - The Masonry Society; www.masonrysociety.org.
157. UL - Underwriters Laboratories Inc.; www.ul.com.
158. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
159. USGBC - U.S. Green Building Council; www.usgbc.org.
160. WASTEC - Waste Equipment Technology Association; www.wastec.org.
161. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
162. WDMA - Window & Door Manufacturers Association; www.wdma.com.
163. WI - Woodwork Institute; www.wicnet.org.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 014516.13

CONTRACTOR QUALITY CONTROL PROGRAM

PART 1 - GENERAL

1.01 SCOPE

- A. The Contractor shall establish, provide, and maintain an effective Quality Control Program, conforming to MDAD's Airfield Construction Projects Schedule of Materials, Tests and Certifications, that details the methods and procedures that will be taken to assure that all materials and completed construction required by this Contract conform to the Plans, Technical Specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the Technical Specifications, the Contractor shall assume full responsibility for the quality of all work.
- B. The intent of this section is to provide a minimum framework for the Contractor to establish a necessary level of control that will:
 - 1. Adequately provide for the production of acceptable quality materials and workmanship.
 - 2. Provide sufficient information to assure the Architect/Engineer, the Field Representative, and the Owner that the specification requirements will be met.
 - 3. Allow the Contractor as much latitude as possible to develop its own standard of control.
- C. The Contractor shall be prepared to discuss and present, at the preconstruction conference, its written Quality Control Program. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the Quality Control Program has been reviewed and accepted by both the Architect/Engineer and the Field Representative. The Contractor shall make all adjustments to the Quality Control Program deemed necessary by either the Architect/Engineer or the Field Representative. No partial payment will be made for materials subject to specific quality control requirements until the Quality Control Program has been reviewed and accepted.

The quality control requirements contained in this section and elsewhere in the Contract Technical Specifications are in addition to and separate from the testing requirements that are the responsibility of the Project Testing laboratory as specified elsewhere in the Contract Documents.

1.02 DESCRIPTION OF PROGRAM.

- A. The Contractor shall describe the Quality Control Program in a written document that shall be reviewed prior to the start of any production, construction, or fabrication. The written Quality Control Program shall be submitted to the Field Representative at least ten (10) calendar days before the pre-construction conference

The Quality Control Program shall describe how the Contractor will perform inspection and testing of all items of work required by the Technical Specifications, including those

CONTRACTOR QUALITY CONTROL PROGRAM

performed by subcontractors and vendors. This Quality Control Program shall ensure conformance to applicable Specifications and Plans with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control Program shall include surveillance and tests required by the Technical Specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of quality control.

- B. The Quality Control Program shall be organized to address, as a minimum, the following items:
 - 1. Quality control organization
 - 2. Project progress schedule
 - 3. Submittal schedule
 - 4. Inspection requirements
 - 5. Quality control testing plan
 - 6. Quality control testing laboratory
 - 7. Documentation of quality control activities and
 - 8. Requirements for corrective action when quality control and/or acceptance criteria are not met
- C. The Contractor is encouraged to add any additional elements to the Quality Control Program that it deems necessary to adequately control all production and/or construction processes required by this contract.

1.03 QUALITY CONTROL ORGANIZATION.

- A. The Contractor's Quality Control Program shall be implemented by the establishment of separate quality control organization. Such organization may be internal to the Contractor's company, an outside organization contracted by the Contractor, or a combination of both. An organizational chart shall be developed to show all quality control personnel, including personnel provided by any outside organization, and how these personnel integrate with other management/production and construction functions and personnel.
- B. The organizational chart shall identify all quality control staff by name and function, experience qualifications, certifications and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. If necessary, different technicians can be utilized for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the Quality Control Program, the personnel assigned shall be subject to the qualification requirements of paragraph C.1 and C.2 below. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.
- C. The quality control organization shall consist of the following minimum personnel:
 - 1. Quality Control (QC) Program Administrator. A QC Program Administrator shall be assigned to this project to the extent and in a manner necessary to effectively implement and manage the Contractor's QC Program the QC Program Administrator shall be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The

CONTRACTOR QUALITY CONTROL PROGRAM

QC Program Administrator shall have a minimum of 5 years of experience in industrial or airport construction and shall have had prior quality control experience on a project of comparable size and scope as the Contract.

In addition, the QC Program Administrator shall have at least 2 years of demonstrable experience in the design , , construction supervision, or in the government inspection of relevant technical specifications items. as well as certification at Level III by the National Institute for Certification in Engineering Technologies for relevant technical specifications items. The QC Program Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the Plans and Specifications. The QC Program Administrator shall report directly to an officer of the Contractor having full decision-making authority for the Project.

2. Quality Control Technicians. A sufficient number of quality control technicians necessary to monitor each of the following aspects of construction shall be provided:
 - a. Structural concrete and masonry
 - b. Soil material
 - c. Pavement
 - d. Electrical (Airfield Lighting and NAVAIDs systems)
 - e. Other aspects as selected by Contractor or directed by the Engineer to meet the scope of work.

Unless otherwise approved by the Engineer, these personnel shall be engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II or higher construction materials technician or highway construction technician and shall have a minimum of 2 years of experience in their area of expertise. Certification at an equivalent level, by a State of Florida or nationally recognized organization will be acceptable in lieu of NICET certification.

The quality control technicians shall report directly to the Program Administrator and shall perform the following functions:

- a. Inspection of all materials, construction, plant, and equipment for conformance to the specifications, and as required by Section 1.06 below.
 - b. Performance of all quality control tests as required by the technical specifications and Section 1.07 below.
3. Staffing Levels. The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

1.04 PROJECT PROGRESS SCHEDULE.

- A. The Contractor shall submit a coordinated construction schedule for all work activities. The schedule shall be prepared as specified in the Contract Documents.
- B. The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a weekly basis, or as otherwise specified in the Contract Documents. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the Contract.

1.05 SUBMITTALS SCHEDULE.

- A. The Contractor shall submit a detailed listing of all submittals (e.g., job mix formula, mix designs, material certifications) and shop drawings required by the Technical Specifications. The listing can be developed in a spreadsheet format and shall include:
 - 1. Specification Section number
 - 2. Section description
 - 3. Description of submittal
 - 4. Specification paragraph requiring submittal and
 - 5. Scheduled date of submittal.

1.06 INSPECTION REQUIREMENTS.

- A. Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by Section 1.08 below.
- B. Each item of work and its substrate or surroundings shall be inspected preparatory to, during the progress of the work, and afterward to ensure that the Contract Documents are being followed, that the work is good quality, and so that defects are discovered and corrected as the work proceeds. Inspections shall be performed weekly, daily, or continuously, depending on the speed, quantity, and complexity of each aspect of the work, until each aspect of the work is complete.

1.07 QUALITY CONTROL TESTING PLAN.

- A. As a part of the overall Quality Control Program, the Contractor shall implement a Quality Control Testing Plan, as required by the Technical Specifications. The testing plan shall include the minimum tests and test frequencies required by each Technical Specification Item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.
- B. The testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:
 - 1. Specification section number (e.g., P-401)
 - 2. Section description (e.g., Plant Mix Bituminous Pavements)
 - 3. Test type (e.g., gradation, grade, asphalt content)
 - 4. Test standard (e.g., ASTM, AASHTO or USCE, etc., test number, as applicable)

CONTRACTOR QUALITY CONTROL PROGRAM

- 5. Test frequency (e.g., as required by Technical Specifications or minimum frequency when requirements are not stated)
 - 6. Responsibility (e.g., plant technician) and
 - 7. Control requirements (e.g., target, permissible deviations).
- C. The testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples in accordance with ASTM D 3665. The Field Representative and/or the Project Testing Laboratory shall be provided the opportunity to witness quality control sampling and testing.
- D. All quality control test results shall be documented by the Contractor as required by Section 1.08 below.

1.08 DOCUMENTATION.

- A. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.
- B. These records must cover both conforming and defective or deficient features and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the Contractor's QC Program Administrator. Except as otherwise provided herein, such records shall be made available to the Field Representative upon request.
- C. Specific Contractor quality control records required for the Contract shall include, but are not necessarily limited to, the following records:
- 1. Daily Inspection Reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations on a form acceptable to the Field Representative. These technician's daily reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following:
 - a. Technical Specification item number and description
 - b. Compliance with approved submittals
 - c. Proper storage of materials and equipment
 - d. Proper operation of all equipment
 - e. Adherence to Plans and Technical Specifications
 - f. Review of quality control tests and
 - g. Safety inspection.

The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

CONTRACTOR QUALITY CONTROL PROGRAM

The daily inspection reports shall be signed by the responsible quality control technician and the Program Administrator. The Field Representative shall be provided at least one copy of each daily inspection report on the workday following the day of record.

2. Daily Test Reports. The Contractor shall be responsible for establishing a system which will record all quality control test results. Daily test reports shall document the following information:
 - a. Technical Specification item number and description
 - b. Test designation
 - c. Location
 - d. Date of test
 - e. Control requirements
 - f. Test results
 - g. Causes for rejection
 - h. Recommended remedial actions and
 - i. Retests.
 - j. Occurrences of interest.

Test results from each day's work period shall be submitted to the Field Representative prior to the start of the next day's work period. When required by the Specifications, the Contractor shall maintain statistical quality control charts. The daily test reports shall be signed by the responsible quality control technician and the Program Administrator.

1.09 CORRECTIVE ACTION REQUIREMENTS.

- A. The Quality Control Program shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the Technical Specifications.
- B. The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.
- C. When applicable or required by the Technical Specifications, the Contractor shall establish and utilize statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

1.10 OBSERVATION BY THE FIELD REPRESENTATIVE.

- A. All items of material and equipment shall be subject to observation by the Field Representative at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable Specifications and Plans. In addition, all items of materials, equipment and work in place shall be subject to

observation by the Field Representative and/or the Project Testing Laboratory at the site for the same purpose.

- B. Observation by the Field Representative does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

1.11 NONCOMPLIANCE.

- A. The Field Representative will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Field Representative or its authorized representative to the Contractor or its authorized representative at the site of the work, shall be considered sufficient notice.
- B. In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Field Representative, the Field Representative may:
 - 1. Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.
 - 2. Order the Contractor to stop operations until appropriate corrective actions are taken.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 014529

PROJECT TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. MDAD provided Project Testing Laboratory Services per Technical Spec P-401, Section 401-6.2 - Testing Laboratory
- B. Contractor provided testing facilities for the Project Testing Laboratory's use.

1.02 RELATED REQUIREMENTS

- A. General Conditions: Inspections, testing and approvals.
- B. Section 017839 - Project Record Documents.
- C. Section P-152 - Excavation and Embankment.
- D. Section P-153 - Controlled Low Strength Material (CLSM)
- E. Section P-160 - Excavation/Disposal of Contaminated Soils/Groundwater
- F. Section P-211 - Limerock Base Course
- G. Section P-401 – Plant Mix Bituminous Pavements
- H. Section P-403 – Hot Mix Asphalt (HMA) Pavements
- I. Section P-603 – Emulsified Asphalt Tack Coat
- J. Section P-605 – Joint Sealant for Pavements
- K. Section P-609 – Bituminous Single Surface Treatment (SST)
- L. Section P-610 – Structural Portland Cement Concrete
- M. Section P-620 – Runway and Taxiway Markings

1.03 REFERENCES

- A. ASTM C1077 Standard Practice for Laboratories Testing Concrete and Concrete Aggregates and Criteria for Laboratory Evaluation.
- B. ASTM D3666 - Practice for Evaluating and Qualifying Agencies Testing and Inspecting Bituminous Paving Materials.

- C. ASTM D3740 - Practice for Evaluation of Agencies Engaged in testing and/or Inspection on Soil and Rock as used in Engineering Design and Construction.
- D. ASTM E329 - Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as used in Construction.

1.04 SELECTION AND PAYMENT

- A. MDAD will employ and pay for services of an independent testing laboratory (Project Testing Laboratory) to perform specified Quality Assurance testing.

1.05 LABORATORY REPORTS

- A. After each inspection and test the Project Testing Laboratory will forward copies of all reports directly to MDAD.

1.06 LIMITS ON PROJECT TESTING LABORATORY AUTHORITY

- A. Project Testing Laboratory may not release, revoke, alter or enlarge on requirements of Contract Documents.
- B. Project Testing Laboratory may not approve or accept any portion of the work.
- C. Project Testing Laboratory may not assume any duties of the Architect/Engineer, the Field Representative or the Contractor.
- D. Project Testing Laboratory has no authority to stop work.

1.07 CONTRACTOR RESPONSIBILITIES

- A. Make available to Project Testing Laboratory at designated location adequate samples of materials proposed to be used that require testing, together with proposed mix designs.
- B. Cooperate with laboratory personnel and provide access to work and to manufacturer's facilities.
- C. Provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.
- D. Notify the Field Representative, MDAD and laboratory 48 hours prior to expected time for operations requiring inspection and testing services.
- E. Costs of all testing except for retesting due to failure, will be paid by MDAD. Failed tests will be retested at Contractor's expense.
- F. Arrange with Project Testing Laboratory and pay for additional samples and tests required by Contractor beyond specified requirements.

1.08 RETESTING

MDAD retains the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. Either the Architect/Engineer or the Field Representative shall have the right to reject material which, when retested, does not meet the requirements of the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 014530
METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN
SPECIFICATION LIMIT (PWL)

PART 1 - GENERAL

Refer to FAA AC No. 150/5370-10H. Section 110 Method of Estimating Percentage of Material Within Specification Limits (PWL). When in conflict, FAA Section takes precedence over Section 014530.

1.01 SCOPE

For pavement structures produced under Sections P-401, P-501 and when the Technical Specifications provide for material to be sampled and tested on a statistical basis, the material will be evaluated for acceptance in accordance with this section. All test results for a lot will be analyzed statistically, using procedures to determine the total estimated percent of the lot that is within specification limits. This concept, termed percent within limits (PWL), is a statistically based evaluation method, whereby the PWL is computed on a lot basis, using the average (\bar{X}) and standard deviation (S_n) of the specified number (n) of subplot tests for the lot and the specification tolerance limits (L for lower and U for upper) for the particular acceptance parameter. From these values, the respective Quality index(s) (Q_L for Lower Quality Index and/or Q_U for Upper Quality Index) is computed and the PWL for the specified n is determined from Table 1.

1.02 METHOD FOR COMPUTING PWL

The computational sequence for computing the PWL is as follows:

- A. Divide the lot into "n" sublots in accordance with the acceptance requirements of the Technical Specification.
- B. Locate the sampling position within the subplot in accordance with the random sampling requirements of the Technical Specification.
- C. Make a measurement at each location or take a test sample and make the measurement on the test sample in accordance with the testing requirements of the Technical Specification.
- D. Average all subplot values within the lot to find \bar{X} by using the following formula:

$$\bar{X} = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

Where:

\bar{X} = Average of all subplot values within a lot

x_1, x_2 = Individual subplot values

n = Number of sublots

- E. Find the standard deviation S_n by use of the following formula:

$$S_n = [(d_1^2 + d_2^2 + d_3^2 + \dots + d_n^2) / (n-1)]^{1/2}$$

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL
WITHIN SPECIFICATION LIMITS (PWL)

Where:

S_n = standard deviation of the number of subplot values in the set

d_1, d_2 = deviations of the individual subplot values $x_1, x_2 \dots$ from the average value X

that is: $d_1 = (x_1 - X), d_2 = (x_2 - X) \dots d_n = (x_n - X)$

n = number of sublots

- F. For single sided specification limits (i.e., L only), compute the Lower Quality Index Q_L by use of the following formula:

$$Q_L = (X - L) / S_n$$

Where:

L = specification lower tolerance limit

Estimate the percentage of material within limits (PWL) by entering Table 1 with Q_L , using the column appropriate to the total number (n) of measurements. If the value of Q_L falls between values shown on the table, use the next higher value of PWL.

- G. For double sided specification limits (i.e. L and U), compute the Quality Indexes Q_L and Q_U by use of the following formulas:

$$Q_L = (X - L) / S_n \quad \text{and} \quad Q_U = (U - X) / S_n$$

Where:

L and U = specification lower and upper tolerance limits respectively

Estimate the percentage of material between the lower (L) and upper (U) tolerance limits (PWL) by entering Table 1 separately with Q_L and Q_U , using the column appropriate to the total number (n) of measurements, and determining the percent of material above P_L and percent of material below P_U for each tolerance limit. If the values of Q_L fall between values shown on the table, use the next higher value of P_L or P_U . Determine the PWL by use of the following formula:

$$PWL = (P_U + P_L) - 100$$

Where:

P_L = percent within lower specification limit

P_U = percent within upper specification limit

EXAMPLE OF PWL CALCULATION

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATION LIMITS (PWL)

Project: Example Project
Test Item: Item P-401, Lot A.

a. PWL Determination for Mat Density.

1. Density of four random cores taken from Lot A.

A-1 96.60
A-2 97.55
A-3 99.30
A-4 98.35

$$n = 4$$

2. Calculate average density for the lot.

$$X = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

$$X = (96.60 + 97.55 + 99.30 + 98.35) / 4$$

$$X = 97.95 \text{ percent density}$$

3. Calculate the standard deviation for the lot.

$$s_n = [[(96.60 - 97.95)^2 + (97.55 - 97.95)^2 + (99.30 - 97.95)^2 + (98.35 - 97.95)^2] / (4 - 1)]^{1/2}$$

$$s_n = [(1.82 + 0.16 + 1.82 + 0.16) / 3]^{1/2}$$

$$s_n = 1.15$$

4. Calculate the Lower Quality Index Q_L for the lot. ($L=96.3$)

$$Q_L = (X - L) / S_n$$

$$Q_L = (97.95 - 96.30) / 1.15$$

$$Q_L = 1.4384$$

5. Determine PWL by entering Table 1 with $Q_L = 1.44$ and $n = 4$.

$$PWL = 98$$

b. PWL Determination for Air Voids.

1. Air Voids of four random samples taken from Lot A.

A-1 5.00
A-2 3.74

A-3 2.30

A-4 3.25

2. Calculate the average air voids for the lot.

$$X = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

$$X = (5.00 + 3.74 + 2.30 + 3.25) / 4$$

$$X = 3.57 \text{ percent}$$

3. Calculate the standard deviation S_n for the lot.

$$S_n = [(3.57 - 5.00)^2 + (3.57 - 3.74)^2 + (3.57 - 2.30)^2 + (3.57 - 3.25)^2] / (4 - 1)]^{1/2}$$

$$S_n = [(2.04 + 0.03 + 1.62 + 0.10) / 3]^{1/2}$$

$$S_n = 1.12$$

4. Calculate the Lower Quality Index Q_L for the lot. ($L = 2.0$)

$$Q_L = (X - L) / S_n$$

$$Q_L = (3.57 - 2.00) / 1.12$$

$$Q_L = 1.4018$$

5. Determine P_L by entering Table 1 with $Q_L = 1.40$ and $n = 4$.

$$P_L = 97$$

6. Calculate the Upper Quality Index Q_U for the lot. ($U = 5.0$)

$$Q_U = (U - X) / S_n$$

$$Q_U = (5.00 - 3.57) / 1.12$$

$$Q_U = 1.2768$$

7. Determine P_U by entering Table 1 with $Q_U = 1.277$ and $n = 4$.

$$P_U = 93$$

8. Calculate Air Voids PWL

$$PWL = (P_L + P_U) - 100$$

$$PWL = (97 + 93) - 100 = 90$$

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL
WITHIN SPECIFICATION LIMITS (PWL)

TABLE 1. TABLE FOR ESTIMATING PERCENT OF LOT WITHIN

Percent Within Limits (P _L and P _U)	Positive Values of Q (Q _L and Q _U)					
	n=3	n=4	n=5	n=6	n=7	n=8
99	1.1541	1.4700	1.6714	1.8008	1.8888	1.9520
98	1.1524	1.4400	1.6016	1.6982	1.7612	1.8053
97	1.1496	1.4100	1.5427	1.6181	1.6661	1.6993
96	1.1456	1.3800	1.4897	1.5497	1.5871	1.6127
95	1.1405	1.3500	1.4407	1.4887	1.5181	1.5381
94	1.1342	1.3200	1.3946	1.4329	1.4561	1.4716
93	1.1269	1.2900	1.3508	1.3810	1.3991	1.4112
92	1.1184	1.2600	1.3088	1.3323	1.3461	1.3554
91	1.1089	1.2300	1.2683	1.2860	1.2964	1.3032
90	1.0982	1.2000	1.2290	1.2419	1.2492	1.2541
89	1.0864	1.1700	1.1909	1.1995	1.2043	1.2075
88	1.0736	1.1400	1.1537	1.1587	1.1613	1.1630
87	1.0597	1.1100	1.1173	1.1191	1.1199	1.1204
86	1.0448	1.0800	1.0817	1.0808	1.0800	1.0794
85	1.0288	1.0500	1.0467	1.0435	1.0413	1.0399
84	1.0119	1.0200	1.0124	1.0071	1.0037	1.0015
83	0.9939	0.9900	0.9785	0.9715	0.9672	0.9643
82	0.9749	0.9600	0.9452	0.9367	0.9325	0.9281
81	0.9550	0.9300	0.9123	0.9025	0.8966	0.8928
80	0.9342	0.9000	0.8799	0.8690	0.8625	0.8583
79	0.9124	0.8700	0.8478	0.8360	0.8291	0.8245
78	0.8897	0.8400	0.8160	0.8036	0.7962	0.7915
77	0.8662	0.8100	0.7846	0.7716	0.7640	0.7590
76	0.8417	0.7800	0.7535	0.7401	0.7322	0.7271
75	0.8165	0.7500	0.7226	0.7089	0.7009	0.6958
74	0.7904	0.7200	0.6921	0.6781	0.6701	0.6649
73	0.7636	0.6900	0.6617	0.6477	0.6396	0.6344
72	0.7360	0.6600	0.6316	0.6176	0.6095	0.6044
71	0.7077	0.6300	0.6016	0.5878	0.5798	0.5747

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL
WITHIN SPECIFICATION LIMITS (PWL)

TABLE 1. TABLE FOR ESTIMATING PERCENT OF LOT WITHIN

Percent Within Limits (P _L and P _U)	Positive Values of Q (Q _L and Q _U)					
	n=3	n=4	n=5	n=6	n=7	n=8
70	0.6787	0.6000	0.5719	0.5583	0.5504	0.5454
69	0.6490	0.5700	0.5423	0.5290	0.5213	0.5164
68	0.6187	0.5400	0.5129	0.4999	0.4924	0.4877
67	0.5878	0.5100	0.4836	0.4710	0.4638	0.4592
66	0.5563	0.4800	0.4545	0.4424	0.4354	0.4310
65	0.5242	0.4500	0.4255	0.4139	0.4073	0.4031
64	0.4916	0.4200	0.3967	0.3856	0.3793	0.3753
63	0.4586	0.3900	0.3679	0.3575	0.3515	0.3477
62	0.4251	0.3600	0.3392	0.3295	0.3239	0.3203
61	0.3911	0.3300	0.3107	0.3016	0.2964	0.2931
60	0.3568	0.3000	0.2822	0.2738	0.2691	0.2660
59	0.3222	0.2700	0.2537	0.2461	0.2418	0.2391
58	0.2872	0.2400	0.2254	0.2186	0.2147	0.2122
57	0.2519	0.2100	0.1971	0.1911	0.1877	0.1855
56	0.2164	0.1800	0.1688	0.1636	0.1607	0.1592
55	0.1806	0.1500	0.1408	0.1363	0.1338	0.1322
54	0.1447	0.1200	0.1125	0.1090	0.1070	0.1057
53	0.1087	0.0900	0.0843	0.0817	0.0802	0.0792
52	0.0725	0.0600	0.0562	0.0544	0.0534	0.0528
51	0.0363	0.0300	0.0281	0.0272	0.0267	0.0264
50	0.0	0.0	0.0	0.0	0.0	0.0
49	-0.0363	-0.0300	-0.0281	-0.0272	-0.0267	-0.0264
48	-0.0725	-0.0600	-0.0562	-0.0544	-0.0534	-0.0528
47	-0.1087	-0.0900	-0.0843	-0.0817	-0.0802	-0.0792
46	-0.1447	-0.1200	-0.1125	-0.1090	-0.1070	-0.1057
45	-0.1806	-0.1500	-0.1408	-0.1363	-0.1338	-0.1322
44	-0.2164	-0.1800	-0.1688	-0.1636	-0.1607	-0.1592
43	-0.2519	-0.2100	-0.1971	-0.1911	-0.1877	-0.1855
42	-0.2872	-0.2400	-0.2254	-0.2186	-0.2147	-0.2122
41	-0.3222	-0.2700	-0.2537	-0.2461	-0.2418	-0.2391

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL
WITHIN SPECIFICATION LIMITS (PWL)

TABLE 1. TABLE FOR ESTIMATING PERCENT OF LOT WITHIN

Percent Within Limits (P _L and P _U)	Positive Values of Q (Q _L and Q _U)					
	n=3	n=4	n=5	n=6	n=7	n=8
40	-0.3568	-0.3000	-0.2822	-0.2738	-0.2691	-0.2660
39	-0.3911	-0.3300	-0.3107	-0.3016	-0.2964	-0.2931
38	-0.4251	-0.3600	-0.3392	-0.3295	-0.3239	-0.3203
37	-0.4586	-0.3900	-0.3679	-0.3575	-0.3515	-0.3477
36	-0.4916	-0.4200	-0.3967	-0.3856	-0.3793	-0.3753
35	-0.5242	-0.4500	-0.4255	-0.4139	-0.4073	-0.4031
34	-0.5563	-0.4800	-0.4545	-0.4424	-0.4354	-0.4310
33	-0.5878	-0.5100	-0.4836	-0.4710	-0.4638	-0.4592
32	-0.6187	-0.5400	-0.5129	-0.4999	-0.4924	-0.4877
31	-0.6490	-0.5700	-0.5423	-0.5290	-0.5213	-0.5164
30	-0.6787	-0.6000	-0.5719	-0.5583	-0.5504	-0.5454
29	-0.7077	-0.6300	-0.6016	-0.5878	-0.5798	-0.5747
28	-0.7360	-0.6600	-0.6316	-0.6176	-0.6095	-0.6044
27	-0.7636	-0.6900	-0.6617	-0.6477	-0.6396	-0.6344
26	-0.7904	-0.7200	-0.6921	-0.6781	-0.6701	-0.6649
25	-0.8165	-0.7500	-0.7226	-0.7089	-0.7009	-0.6958
24	-0.8417	-0.7800	-0.7535	-0.7401	-0.7322	-0.7271
23	-0.8662	-0.8100	-0.7846	-0.7716	-0.7640	-0.7590
22	-0.8897	-0.8400	-0.8160	-0.8036	-0.7962	-0.7915
21	-0.9124	-0.8700	-0.8478	-0.8360	-0.8291	-0.8245
20	-0.9342	-0.9000	-0.8799	-0.8690	-0.8625	-0.8583
19	-0.9550	-0.9300	-0.9123	-0.9025	-0.8966	-0.8928
18	-0.9749	-0.9600	-0.9452	-0.9367	-0.9325	-0.9281
17	-0.9939	-0.9900	-0.9785	-0.9715	-0.9672	-0.9643
16	-1.0119	-1.0200	-1.0124	-1.0071	-1.0037	-1.0015
15	-1.0288	-1.0500	-1.0467	-1.0435	-1.0413	-1.0399
14	-1.0448	-1.0800	-1.0817	-1.0808	-1.0800	-1.0794
13	-1.0597	-1.1100	-1.1173	-1.1191	-1.1199	-1.1204
12	-1.0736	-1.1400	-1.1537	-1.1587	-1.1613	-1.1630
11	-1.0864	-1.1700	-1.1909	-1.1995	-1.2043	-1.2075

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL
WITHIN SPECIFICATION LIMITS (PWL)

TABLE 1. TABLE FOR ESTIMATING PERCENT OF LOT WITHIN

Percent Within Limits (P _L and P _U)	Positive Values of Q (Q _L and Q _U)					
	n=3	n=4	n=5	n=6	n=7	n=8
10	-1.0982	-1.2000	-1.2290	-1.2419	-1.2492	-1.2541
9	-1.1089	-1.2300	-1.2683	-1.2860	-1.2964	-1.3032
8	-1.1184	-1.2600	-1.3088	-1.3323	-1.3461	-1.3554
7	-1.1269	-1.2900	-1.3508	-1.3810	-1.3991	-1.4112
6	-1.1342	-1.3200	-1.3946	-1.4329	-1.4561	-1.4716
5	-1.1405	-1.3500	-1.4407	-1.4887	-1.5181	-1.5381
4	-1.1456	-1.3800	-1.4897	-1.5497	-1.5871	-1.6127
3	-1.1496	-1.4100	-1.5427	-1.6181	-1.6661	-1.6993
2	-1.1524	-1.4400	-1.6016	-1.6982	-1.7612	-1.8053
1	-1.1541	-1.4700	-1.6714	-1.8008	-1.8888	-1.9520

END OF SECTION

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL
 WITHIN SPECIFICATION LIMITS (PWL)

REVISION DATE: 07/2021
 SUBMITTAL DATE: FEBRUARY 2023

014530 - 8 of 8

MDAD PROJECT X009A
 ISSUED FOR BID

SECTION 015000

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 011000 - Summary for work restrictions and limitations on utility interruptions.
 - 2. Section 011200 – Multiple Contract Summary for responsibilities for temporary facilities and controls for projects utilizing multiple contracts.

1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, **MDAD's construction forces**, Engineer, **occupants of Project**, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: MDAD will pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.
- E. Water and Sewer Service from Existing System: Water from MDAD's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- F. Electric Power Service from Existing System: Electric power from MDAD's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- G. Sewer, Water, and Electric Power Service: Use charges are specified in Section 011200 - Multiple Contract Summary.

1.3 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Implementation and Termination Schedule: Within **(15)** days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- D. Not used
- E. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- F. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold.
- G. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste-handling procedures.
 - 5. Other dust-control measures.

1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the Florida Building Code - Accessibility.

1.5 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before MDAD's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top rails , with galvanized barbed-wire top strand.
- B. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete bases for supporting posts.
- C. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain link fence, sized to height of fence, in color selected by Architect/Engineer from manufacturer's standard colors.
- D. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- E. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats minimum 36 by 60 inches (914 by 1524 mm).
- F. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Common-Use Field Office: Of sufficient size to accommodate needs of MDAD, Engineer, Construction Manager, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
 - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.

2. Conference room of sufficient size to accommodate meetings of **(10)** ten individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- (1.2-m-) square tack and marker boards.
 3. Drinking water and private toilet.
 4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F (20 to 22 deg C).
 5. Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height.
- D. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
1. Store combustible materials apart from building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment:
1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 2. Permanent HVAC System: If MDAD authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of **(8)** eight at each return-air grille in system and remove at end of construction **and clean HVAC system as required in Section 017700 – Contract Closeout Procedures.**
- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as MDAD's property.

3.2 INSTALLATION, GENERAL

- A. Locate facilities where directed by MDAD.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed.

3.3 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, MDAD, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to **municipal system** as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Water Service: Connect to MDAD's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to MDAD. At Substantial Completion, restore these facilities to condition existing before initial use.
- E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Toilets: Use of MDAD's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to MDAD. At Substantial Completion, restore these facilities to condition existing before initial use.
- F. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
 - 1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.
- G. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
 - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed **according to coordination drawings**.

- a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- H. Electric Power Service: Connect to MDAD's existing electric power service. Maintain equipment in a condition acceptable to MDAD.
- I. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 1. Install electric power service **overhead** unless otherwise indicated.
 2. Connect temporary service to MDAD's existing power source, as directed by MDAD.
- J. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- K. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install **WiFi cell phone access equipment and one** land-based telephone line(s) for each field office.
 1. Provide additional telephone lines for the following:
 - a. Provide (1) **one** telephone line(s) for MDAD's use.
 2. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect/Engineer's office.
 - f. Construction Manager's home office.
 - g. Engineers' offices.
 - h. MDAD's office.
 - i. Principal subcontractors' field and home offices.

3.4 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
 - 1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 - 2. Maintain support facilities until Architect/Engineer schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to MDAD.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas [as indicated] [within construction limits indicated] on Drawings.
 - 1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
 - 1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 - 2. Prepare subgrade and install subbase and base for temporary roads and paved areas [according to Section 312000 - Earth Moving].
 - 3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
 - 4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according [to Section 321216 - Asphalt Paving].
- D. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- E. Parking: Use designated areas of MDAD's existing parking areas for construction personnel.
- F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

- G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
 - 1. Identification Signs: Provide Project identification signs as indicated on Drawings.
 - 2. Maintain and touch up signs so they are legible at all times.
- H. Waste Disposal Facilities: Comply with requirements specified in Section 017419 - Construction Waste Management and Disposal.
- I. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 - Execution.
- J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered tools and equipment and not temporary facilities.
- K. Temporary Elevator Use: Temporary use of new elevators is not permitted.
- L. Existing Elevator Use: Use of MDAD's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to MDAD. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
 - 1. Do not load elevators beyond their rated weight capacity.
 - 2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- M. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- N. Existing Stair Usage: Use of MDAD's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to MDAD. At Substantial Completion, restore stairs to condition existing before initial use.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.
- O. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Section 011000 - Summary.
- C. Temporary Erosion and Sedimentation Control: Comply with [requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and] requirements specified [in Section 311000 - Site Clearing].
- D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to [erosion- and sedimentation-control Drawings] [requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent].
 - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
 - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- F. Not used
- G. Not used
- H. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
- I. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
 - 1. Extent of Fence: As indicated on Drawings.

2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to MDAD.
- J. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- K. Barricades, Warning Signs, and Lights: Comply with requirements of MDAD Landside Operations, MDAD Airside Operations and authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- L. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- M. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction and requirements indicated on Drawings.
1. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
 2. Paint and maintain appearance of walkway for duration of the Work.
- N. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- O. Temporary Partitions: Not used
- P. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.6 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
 - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 - 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
 - 3. Indicate methods to be used to avoid trapping water in finished work.
- B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
 - 1. Protect porous materials from water damage.
 - 2. Protect stored and installed material from flowing or standing water.
 - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 - 4. Remove standing water from decks.
 - 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
 - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 - 2. Keep interior spaces reasonably clean and protected from water damage.
 - 3. Periodically collect and remove waste containing cellulose or other organic matter.
 - 4. Discard or replace water-damaged material.
 - 5. Do not install material that is wet.
 - 6. Discard and replace stored or installed material that begins to grow mold.
 - 7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.
- D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
 - 1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 - 2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
 - 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

- a. Hygroscopic materials that may support mold growth, including gypsum-based products, that become wet during the course of construction and remain wet for **(48)** forty-eight hours are considered defective and require replacing.
- b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for **(48)** forty-eight hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect/Engineer.
- c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within **(48)** forty-eight hours.

3.7 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 1. Materials and facilities that constitute temporary facilities are property of Contractor. MDAD reserves right to take possession of Project identification signs.
 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 – Contract Closeout Procedures.

END OF SECTION 015000

SECTION 015060
CONTRACTOR OVERHEAD

PART 1 - GENERAL

1.01 DESCRIPTION

The work specified in this Section shall consist of all Overhead as defined in the General Conditions.

1.02 METHOD OF MEASUREMENT

Measurement of Overhead for payment shall be on a calendar day basis.

1.03 BASIS OF PAYMENT

Payment for Overhead shall be made at the contract unit price.

Payment will be made under:

Item No. 1 - Contractor Overhead - Per Calendar Day

1.04 PARTIAL PAYMENTS

Partial payments for Overhead will be made in accordance with the Contract Documents. The standard retainage, as specified in the General Conditions, will be applied.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 015113
TEMPORARY ELECTRICITY

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Temporary electrical services.
- B. Operation and Maintenance.
- C. Removal.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of work.
- B. Section 015126 - Temporary Lighting.
- C. Section 015400 - Field Representative's Office and Testing Laboratories.

1.03 SERVICE REQUIREMENTS

- A. Power Source: Owner's existing service; connect at indicated location , or as directed by the Field Representative.
- B. Service: Provide temporary service compatible with servicing utility company and adequate to accommodate maximum construction and temporary lighting at any time, plus continuous operation of Owner's facilities. Contractor is responsible to make determination prior to submitting bids.

1.04 DISTRIBUTION

- A. Weatherproof distribution boxes with volt, and phase power outlet and volt outlets consisting of 100 ampere fused switches with equipment ground, spaced so that a 100 foot extension cord will reach all areas of the building.
- B. Wiring, connections and protection for temporary lighting, warning and marker lights.
- C. Wiring, connections and protection for temporary and permanent equipment for environmental control, for temporary use of electrically operated equipment and for testing.

1.05 USE OF EXISTING SYSTEM

- A. Monitor usage, prevent interference with Owner's normal requirements.

1.06 CONTRACTOR RESPONSIBILITIES

- A. Obtain permit and pay for inspections.

- B. Obtain and pay for temporary easement across property other than that of County.
- C. Pay for installation, operation, maintenance and removal of system and restoration of existing and permanent equipment.
- D. Contractor shall pay costs of energy consumed for operation of on or off-site batch and mixing plants.
- E. Contractor shall pay costs of energy consumed for construction operations.

1.07 OWNER RESPONSIBILITIES – Not used

PART 2 - PRODUCTS

2.01 MATERIALS

- A. May be new or used, adequate to the purpose and meeting the Florida Building Code requirements.
- B. Devices and Equipment: Standard devices, meeting UL requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install initial service at time of site mobilization.
- B. Comply with requirements of the Contract Documents.
- C. Modify and extend system as work progresses.
- D. Comply with Florida Building Code.

3.02 OPERATION AND MAINTENANCE

- A. Maintain system to provide continuous service, including prompt restoration of interruptions to Owner's system when temporary service is connected.

3.03 REMOVAL

- A. Remove temporary material and equipment prior to final Completion.
- B. Restore existing and permanent facilities used for temporary purposes to original condition.

END OF SECTION

SECTION 015126
TEMPORARY LIGHTING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Temporary lighting.
- B. Operation and Maintenance.
- C. Removal.
- D. Cleaning.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of work.
- B. Section 015113 - Temporary Electricity.
- C. Section 015400 - Field Representative's Office and Testing Laboratories.
- D. Section 017423 - Final Cleaning.
- E. Individual Sections: Lighting required for work.

1.03 SERVICE REQUIREMENTS

- A. Temporary lighting for field offices, storage, shop, work and other construction areas, and circulation areas for personnel.
- B. Provide lighting per FAA and Miami-Dade County standards for all construction areas. No non-cut off type luminaries shall be allowed to be aimed in the direction of aircraft movement area.
- C. Lighting required for maintenance and protection of airside and landside traffic.
- D. Maintenance of Traffic on Airfield reference MOT and Airfield Lighting/electrical plans.

1.04 USE OF EXISTING SYSTEM

- A. Do not use existing system for temporary lighting.

1.05 COSTS

- A. Obtain permits and pay for inspections.
- B. Pay for installation, operation, maintenance and removal lighting.

- C. Costs of Electricity used for lighting: As specified in Section - 015113.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. May be new or used, adequate to the purpose.
- B. Receptacles, Fixtures, Controls: Standard products, meeting UL standards.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Locate fixtures in areas of work adequate to carry out all tasks in a safe and workmanlike manner and to adequately inspect work effort.
- B. Modify, supplement and extend lighting as work progresses.

3.02 OPERATION AND MAINTENANCE

- A. Maintain lighting. Promptly replace worn or defective parts.

3.03 REMOVAL

- A. Remove temporary material and equipment when permanent system is operational
- B. Restore existing and permanent lighting used during construction to original condition. Replace defective fixtures, bulbs and other component parts.

3.04 CLEANING

- A. Clean existing and permanent fixtures used during construction under provisions of Section 017423.

END OF SECTION

SECTION 015133
TEMPORARY TELEPHONE

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Temporary telephone service.
- B. Maintenance.
- C. Removal.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of work.
- B. Section 015400 - Field Representative's Office and Testing Laboratories.

1.03 SERVICE REQUIREMENTS

- A. Telephone Service Company located at Miami Opa-Locka Executive Airport
- B. Minimum: Direct (1) line service to field office for construction use, plus (2) private lines to **Field Representative's field office.**

1.04 USE OF EXISTING SYSTEM

- A. Do not use existing telephone system.

1.05 COSTS

- A. Pay costs of installation, maintenance and removal of service.
- B. Pay charges for basic services; entity incurring toll charges will reimburse Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. May be new or used, adequate to the purpose.

2.02 EQUIPMENT

- A. Products of local service company or specialty devices compatible with service company requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install service at time of site mobilization.
- B. Modify and extend service as work progresses.

3.02 MAINTENANCE

- A. Maintain system to provide uninterrupted service.

3.03 REMOVAL

- A. Remove temporary system at Final Completion, or when field office is no longer needed.

END OF SECTION

SECTION 015136
TEMPORARY WATER

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Temporary water service.
- B. Maintenance.
- C. Removal.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of Work.
- B. Section 015219 - Temporary Sanitary Facilities.
- C. Section 015400 - Field Representative's Office and Testing Laboratories.

1.03 SERVICE REQUIREMENTS

- A. Water Quality: Potable.
- B. Source: Arrange with authorities and connect to public utility.

1.04 DISTRIBUTION – Not used

1.05 USE OF EXISTING SYSTEMS

- A. Existing system may be used for temporary water. Monitor usage to prevent interference with MDAD's normal requirements.

1.06 COSTS

- A. Obtain permits and pay for inspections.
- B. Obtain and pay for temporary easements across property other than that of County.
- C. Pay costs of installation, operation, maintenance and removal of system and restoration of existing and permanent equipment.
- D. Pay costs of water consumed

PART 2 - PRODUCTS

2.01 MATERIALS

- A. May be new or used, adequate to the purpose.
- B. Drinking Water Dispensers: Standard products.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install initial service at time of job mobilization.
- B. Modify and extend service as work progresses.
- C. Size piping to supply construction needs and temporary fire protection.
- D. Provide pumps, pressure tanks, automatic controls, and storage tanks as necessary to pressurize system.
- E. Disinfect piping used for drinking water.
- F. Install backflow preventer valves at all connections to the system.

3.02 MAINTENANCE

- A. Maintain system to provide continuous service with adequate pressure to outlets including County's system when temporary service is connected.
- B. Maintain connections, pipes, fittings, and fixtures and conserve use of all utilities. Failure to stop leaks or other waste of water will be cause for revocation of permit for the use of said water from the airport system.

3.03 REMOVAL

- A. Remove temporary system when permanent system is operational.
- B. Restore existing and permanent facilities used for temporary purposes during construction to original condition.

END OF SECTION

SECTION 015219

TEMPORARY SANITARY FACILITIES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Temporary Sanitary Facilities.
- B. Maintenance, Service.
- C. Removal.
- D. Cleaning.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of work.
- B. Section 015136 - Temporary Water
- C. Section 015400 - Field Representative's Offices and Testing Laboratories.
- D. Section 017423 - Final Cleaning.

1.03 TEMPORARY FACILITIES

- B. Do not use existing sanitary facilities.
- C. Temporary Sanitary Facilities shall comply with the requirements of the State and County health standards.
- D. Permanent sanitary facilities shall not be used for temporary purposes unless specific arrangements are made with the Owner.

1.04 COSTS

- A. Obtain permits and pay for inspections.
- B. Obtain and pay for temporary easements across property other than that of County
- C. Pay service charges for connection and use of temporary sewerage utilities. Owner will pay charges for permanent utilities upon acceptance of Project.
- D. Pay costs of installation, maintenance and removal of service.
- E. Cost for Water: Specified in Section 015136.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. May be new or used as may be dictated by all governing codes, adequate to the purpose, which will not create unsanitary conditions.

2.02 TOILET FACILITIES

- A. Enclosed portable self-contained units or temporary water closets and urinals, secluded from public view. Provide separate facilities for male and female personnel.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide facilities at time of site mobilization.
- B. Modify and extend service as work progresses.
- C. Do not require any worker to work in surroundings or under conditions which are unsanitary, hazardous, or dangerous to his/her health or safety.

3.02 MAINTENANCE, SERVICE

- A. Clean areas of facilities **daily**, maintain in sanitary condition.
- B. Provide toilet paper, paper towels and soap in suitable dispensers.

3.03 REMOVAL

- A. Remove portable units when other facilities are available.
- B. Remove temporary fixtures when permanent facilities are operational.

3.04 CLEANING

- A. Clean areas of use as specified in Section 017423, disinfect fixtures, repair or replace damaged fixtures, accessories and surfaces.
- B. Restore existing and permanent area and facilities used to original condition.

END OF SECTION

SECTION 015400

FIELD REPRESENTATIVE'S OFFICE AND TESTING LABORATORIES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Field Representative's Office.
- B. Testing Laboratories.
- C. Maintenance and Janitorial Services and Cleaning.
- D. Removal.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of Work.
- B. Sections 015113 thru 015219 - Temporary Utilities.
- C. Section 017413 - Construction Cleaning.
- D. Section 016000 - Material and Equipment.
- E. Section 017423 - Final Cleaning.
- F. Section P-401 - Plant Mix Bituminous Pavement
- G. Section P-501 - Portland Cement Concrete Pavement

1.03 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, vehicle circulation, and parking area.
- B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.04 QUALITY ASSURANCE

- A. Electrical Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.05 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before MDAD's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

- 2.01 Temporary construction trailers used for office personnel with more than one desk for support staff of designers, auditors, purchasing agents, computer operators etc. shall comply with the Florida Building Code - Accessibility for buildings, and associated local permitting and inspection regulations. Evidence that the building itself has been approved by the state and is not subject to the locally adopted building codes must be provided to and approved by Miami-Dade County Department of Regulatory and Economic Resources (R.E.R.).

PART 3 - EXECUTION

3.01 FIELD REPRESENTATIVE'S OFFICE

- A. Provide, furnish, and maintain a Field Office for exclusive use by MDAD's designated Field Representatives. The field office shall be an approved leased space, building or mobile trailer erected at a location selected by MDAD and shall be separate from any buildings or space used by the Contractor. MDAD may approve an equivalent facility provided it meets the minimum specified requirements. Separate space for sole use of the Field Representative with separate entrance door with new lock and five (5) keys.
- B. Area: Minimum 1440 sq.ft. with minimum dimension 24x60 ft. and separate office of 150 sq.ft. Provide a separate room approximately 300sq.ft. for project meetings, furnished with a conference table, folding chairs and a tack board.
- C. Windows: Minimum one weatherproof window in each room, minimum total area of ten percent (10%) of floor area, Each window shall have a minimum area of 8 sq.ft, with operable sash and insect screens. Locate to provide views of construction area.
- D. Electrical Distribution Panel: 3 circuits minimum, 120/240 volt single phase power with at least 100-150amp, 60hz service.
- E. Minimum 120/240 volt duplex convenience outlets, spaced at 12' intervals, with a minimum of one per wall in each room.
- F. Switch controlled LED light fixtures, capable of maintaining minimum illumination of 20 foot-candles at desk height.
- G. Telephone: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install Wi-Fi cell phone access equipment **and one** land-based telephone line(s) for each field office.

At each telephone, post a list of important telephone numbers.

1. Police and fire departments.
 2. Ambulance service.
 3. MDAD Landside Operations.
 4. MDAD Airside Operations.
 5. Contractor's home office.
 6. Contractor's emergency after-hours telephone number.
 7. Architect's office.
 8. Construction Manager's home office.
 9. Engineers' offices.
 10. MDAD's Project Manager.
 11. Principal subcontractor's field and home offices.
- H. Sanitary Facilities, cold water fountain or water cooler (maintain adequate water supply), private lavatory-toilet facilities with mirror, toilet and towel paper dispensers, soap and waste receptacle. Provide a 10.1 cu ft top-freezer refrigerator, a 1.1 cu ft microwave and a combination espresso and coffee maker.
- I. Heating and Cooling: Adequate equipment to maintain an ambient air temperature of 70 degrees Fahrenheit plus or minus 5 degrees.
- I. Furnishings:
1. 4 standard size desk with six drawers and a swivel arm desk chair. 2 executive high backs, w2 managerial midbacks, plus 6 guest chairs with arms.
 2. 1 plan table: 40 x 80x 42inches, sloping 4 inches two equipment drawers and shelves below, and 3 - 30 inch high drafting stools.
 3. 1 conference table to seat 12 people, 15 folding chairs.
 4. 2 plan rack(s) to hold a minimum of 12 sticks of project drawings.
 5. 2 standard four-drawer legal-size metal filing cabinets with file separators and locks provided with not less than 2 keys.
 6. 2 hours fireproof, four-drawers legal size filing cabinet with lock and not less than 2 keys.
 7. 10 Lin. Ft. of 12" bookshelves in main space and eight Lin. Ft. of 2-tier shelving in office.
 8. 6 straight chairs.
 9. One waste basket per desk and table, plus two extra.
 10. One tack board, 36 in. x 48 in.

11. Whiteboard: White dry erase board, minimum size 4ft by 5ft.

12. One copy/scanner machine, with at least the following features:

- (a) Capable of normal use of 5000 copies per month.
- (b) Plain paper, dry toner type.
- (c) Capable of reduction enlargement from all standard paper size.
- (c) Capable of color printing, copying, and scanning.
- (d) Standard paper sizes up to and including 11" by 17"
- (e) Network capability and connection to allow for printing, scan and fax services from computers.
- (f) All paper and required accessories for the length of the project.

13. Computer

- a. Three (3) Dell brand or compatible, Intel Core i7 computers, 2.60 or greater GHz hard drive, 512 megabytes of random access memory, 16 megabyte video; One (1) CD Rewriteable 8x4x32 drive, One (1) serial mouse and keyboard, video camera and headset per computer. Include service and upgrades for the length of the project.
- b. Six (6) Dell brand or equivalent twenty-one inch (21") or larger IPS LED FHD monitors.
- c. One (1) HP brand, or compatible, All-In-One Printer. Include all paper, ink, required accessories and regular maintenance for the length of the project.
- d. Three (3) Canon or better laser printers. Include all paper, toner, required accessories and regular maintenance for the length of the project.
- e. Software: Windows NT 4.0 or Windows 10, Microsoft Office Suite (Professional), AutoCAD Civil 3D – 2023 version, Symantec, latest Adobe Acrobat DC, latest WinZip, latest Primavera P6, Antivirus software and Photo editing and management software.
- f. Two (2) latest model Apple iPad Pro 12.9-inches tablets with (1) Terabyte of memory
- g. Four (4) Terabyte capacity external hard drive or comparable cloud service for storage
- h. Internet modem and wireless router with ready-share capabilities to connect the external drive and devices.

- i. Data backup system
- j. Contractor shall immediately replace all equipment that is not operating to the satisfaction of the Engineer.

14. Field Equipment

- a. One (1) Canon PowerShot SX740 Camera or approved equal
- b. One (1) Measuring Wheel
- c. Two (2) Flashlights
- d. One (1) Infrared Thermometer

All equipment shall be turned over to the County at Contract closeout.

3.02 TESTING LABORATORIES

- A. Provide laboratories and laboratory equipment as specified in Technical Specification as applicable.

3.03 STORAGE AREAS AND SHEDS

- A. Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products under provisions of Section 016000.

3.04 PARKING FACILITIES

- A. Provide well drained, graded paved or at least well compacted gravel surface for use by the Field Representative's and Owner's staff. Provide not less than 8 parking spaces.

3.05 MAINTENANCE AND CLEANING

- A. Daily janitorial service for offices; periodic cleaning and maintenance for storage areas. Weekly trash collection.
- B. Maintain approach walks free of mud and water.
- C. The Contractor assumes full responsibility for all costs associated with equipment and services provided for the Field Representative's office (including costs for equipment and/or services which are provided by the Contractor, but which are not specifically required by this Article).

3.06 REMOVAL

- A. At final completion of work or earlier if agreed by Owner and Field Representative, remove buildings, foundations, utility services and debris. Restore area.

END OF SECTION

SECTION 015500

CONTRACTOR'S ACCESS AND EMPLOYEES' PARKING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Contractor's Access
- B. Contractor's Employees Parking

1.02 CONTRACTOR'S ACCESS

- A. Access to and egress from the site will be gained only via routes and through gates as shown on the Plans. Access shall be permitted only during periods of time specified in the Contract Documents. Equipment weight and height limits will be strictly enforced.

1.03 CONTRACTOR'S EMPLOYEES' PARKING

- A. Automobiles of all construction workers on the project shall be parked in an area designated for this purpose by the Miami-Dade Aviation Department in the location indicated on the Plans. No construction workers' vehicles will be allowed on the construction site. The Contractor shall furnish transportation for construction workers from the designated parking area to the construction site.
- B. Maintain areas free of debris and rubbish. Maintain site in a clean and orderly condition.
- C. If the Contractor fails to maintain levels of cleanliness satisfactory to the Field Representative, then the Owner shall have the right to cause such areas to be cleaned by others. The costs to the Owner for such cleaning, plus 25% for administration, shall be the obligation of the Contractor and shall be deducted from any money due the Contractor hereunder.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 015600
BARRIERS AND ENCLOSURES

PART 1 - GENERAL

1.01 REQUIREMENT INCLUDED

- A. Barriers.
- B. Protected Walkways – Not used
- C. Security Fencing
- D. Tree and Plant Protection - Not used
- E. Weather Closures
- F. Partition and Ceiling Enclosures – Not used
- G. Maintenance
- H. Removal
- I. Site Restoration

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of work.
- B. Section 015700 - Maintenance of Air Operations Area Traffic.
- C. Section 015710 - Maintenance of Airport Landside Traffic.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. May be new or used as may be dictated by all governing codes, adequate to the purpose, which will not create hazardous conditions.

2.02 FENCING MATERIALS

- A. TSA Approved AOA Security Materials and details shown in the plans.

2.03 ENCLOSURE MATERIALS

- A. For Weather Protection
- B. Not used

PART 3 - EXECUTION

3.01 BARRIERS AND PROTECTED WALKWAYS

- A. Provide to prevent public entry, provide for Owner's use of site, and to protect existing facilities and adjacent properties from damage.
- B. Not used
- C. Pay costs of installation, maintenance and removal and restoration to existing condition.

3.02 TREE AND PLANT PROTECTION

- A. Not used

3.03 WEATHER CLOSURES

- A. Provide as needed protection elements to maintain specified working conditions to protect products and finished work from inclement weather.

3.04 PARTITIONS AND CEILING ENCLOSURES

- A. Not used

3.05 MAINTENANCE

- A. Maintain during progress of work.
- B. Relocate and extend during successive stages of construction.

3.06 REMOVAL

- A. Remove temporary materials, equipment and construction at Final Acceptance; repair damage caused by installation or use of barricades and enclosures.

3.07 SITE RESTORATION

- A. Restore site and existing facilities used during construction to original condition.

END OF SECTION

SECTION 015610

DEWATERING PERMITS

PART 1 - GENERAL

1.01 REQUIREMENT INCLUDED

- A. Dewatering of excavations and disposal of water in accordance with Technical Specifications and applicable permits.

1.02 RELATED REQUIREMENTS

- A. General Conditions
- B. Section P-152 - Excavation and Embankment
- C. Section P-160 - Excavation/Disposal of Contaminated Soils/Groundwater
- D. Section P-701 - Trenching, Backfilling and Jacking

PART 2 - PRODUCTS

- A. Not Used.

PART 3 - EXECUTION

3.01 PERMITTING PROCESS

- A. Every Contractor whose work extends to, or below the ground water table shall, as required by the approved Dewatering Master Plan Permit also called Master Water Use Permit (MWUP), apply to and obtain from the permitting agencies (DERM and SFWMD) a Site Specific Dewatering Permit.
- B. The procedure to apply for the Site Specific Dewatering Permit shall be as directed by the Miami-Dade Aviation Department Environmental Engineering Division.
- C. The Bidders and the Contractor are advised that it might take up to 120 days from the date the application for the Site Specific Dewatering Permit submittal to the date of the permit's issuance (or the issuance of the letter(s) of exemption) by the permitting agencies; such time has been included in the Contract Time and the Bidders and the Contractor are required to take such time into consideration during the bid preparation and the execution of the work. No extension of contract time will be allowed for this permitting time; however, a non-compensable excusable delay will be granted for the amount of days in excess of the above prescribed 120 days whenever the permitting process takes longer, due to no fault of the Contractor, than the above assumed 120 days.
- D. A copy of the Site Specific Dewatering Permit, or the equivalent letter of Exemption, shall be delivered to the Field Representative prior to the start of any work necessitating dewatering.

- E. In addition to the above provisions, the following procedure, have been established by DERM that must be followed by all contractors in the processing and acquisition of dewatering permits:
1. All proposals for dewatering at MIA, regardless of site location, pumping duration, or point of discharge, shall be submitted for review, to the Water Control Section, through the Airports Program, Pollution Prevention Division (which will coordinate the review process within DERM).
 2. Proposals shall include laboratory results of appropriate analyses performed on groundwater samples obtained from the location proposed for dewatering. Prior to any sampling, the Contractor shall contact DERM, Airports Program at (305) 372-6812 for further information regarding analytical parameters.
 3. Proposals shall include a site specific scaled drawing which depicts, as a minimum, the sampling location, the proposed dewatering location, the immediate and ultimate point of discharge of the effluent, and any structures or topography which may provide an acceptable frame-of-reference for the sampling and dewatering locations.
 4. In addition to the general permit conditions required for a Class II Permit for dewatering, and the requirements of Section P-160 of the Specifications, the expected flow rate and pumping duration shall be included in the proposal so that an overall groundwater volume may be determined.
 5. In general, discharge of the effluent from the dewatering activities directly to the aquifer or to land surface shall not be permitted. However, if discharge to surface waters is impractical due to the site location, and the area is proven to be free of soil and groundwater contamination, then discharge directly to the aquifer or to land surface may be considered.
- 3.02 Dewatering of excavation shall be performed in accordance with the applicable provisions of the MWUP, the Site Specific Dewatering Permit and the following:
- A. The Contractor shall commence filling the waterbodies at the terminus of the waterbody and proceed in a unidirectional manner. It is the intent to minimize any adverse impacts on fish, wildlife, natural environmental values, and water quality and allow an opportunity for mobile fauna to migrate to open unfilled waters.
 - B. The Contractor shall institute necessary measures during construction to reduce erosion, turbidity, nutrient loading and sedimentation in the receiving stormwater facilities. Turbidity shall not exceed 29 Nephelometric Turbidity Units above the natural background values.
 - C. The Contractor shall be responsible for the maintenance of existing stormwater facilities within the construction limits, including any stormwater discharge offsite that traverses the construction limits.
- 3.03 When construction begins, and until construction is completed, the Contractor shall file monthly report indicating the quantity of water pumped each day. If no pumping occurs in a particular day, show "O" or "none" on the report. A sample copy of this monthly report will be provided to the

Contractor by the Field Representative or the Miami-Dade Aviation Department Environmental Engineering Department.

- A. Additional reports forms may be required to be filed in the event that a remedial action program (RAP) has to be implemented.
- B. As required by the various permitting agencies, additional tests may have to be performed once the dewatering operations has begun.
- C. Copies of reports filed with the permitting agencies, as indicated on items 3.03 A, B and C above are to be forwarded to the Miami-Dade Aviation Department and the Architect/Engineer of the MWUP. Originals shall be transmitted to the permitting agencies.

END OF SECTION

SECTION 015640

SOIL EXCAVATION PROCEDURES

PART 1 - GENERAL

1.01 REQUIREMENT INCLUDED

- A. Soil excavation and the procedure for the handling and disposal of clean, contaminated or hazardous excavated material.

1.02 RELATED REQUIREMENTS

- A. Section P-152 - Excavation and Embankment.
- B. Section P-160 - Excavation/Disposal of Contaminated Soils/Groundwater.
- C. Section P-701 - Trenching, Backfilling and Jacking.

Section L-110 – Airport Underground Electrical Ductbanks and Conduits PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 MDAD Environmental and Civil Engineering Division has instituted the following procedures to be followed by the Contractor during the excavation, hauling, reuse or disposal of excavated materials.

- A. The Contractor shall prepare and submit a Soil Notification Form (SNF) to the Field Representative 96 hours prior to excavation; the Field Representative will in turn transmit this SNF within 24 hours from receiving it to the MDAD Civil and Environmental Engineering Division (MDAD CEED).
- B. The MDAD CEED will schedule an Environmental Oversight Manager (EOM) to observe the excavation and to classify the soils.
- C. The Contractor shall as directed stockpile the excavated soil at the site or haul the excavated soil to the off-site Staging Area specified in the Plans and Specifications. MDAD EED will also appoint a Staging Area Manager (SAM). SAM is also responsible for surveillance of Miami Dade Aviation Properties and notifies MDAD EED of any unreported excavation activities.
- D. The EOM will sample the stockpiled soils for final disposition.
- E. The EOM will forward the sampling results to the MDAD CEED; MDAD CEED will review these reports and provides the SAM with disposition data.
- F. The following disposition procedure shall be followed:
 - 1. Clean Soil Material:

The Contractor shall, as directed by the Field Representative, reuse the soil at the job

site, transport and stockpile the material at MDAD stockpile areas located within 5 miles from the work site or becomes the Contractor's property for removal and disposal off the airport site.

2. Contaminated Soil Material:

The Contractor shall, as directed by the Field Representative, haul and dispose of the material off the airport site in accordance with the provisions of MDAD Specifications Section P-160 or to remain in place for later remediation by MDAD.

- G. SAM will prepare a monthly summary report for MDAD CEED; a copy of this report affecting the Contractor's work may be available for the Contractor's information and inspection at MDAD CEED.

3.02 FORMS

A copy of the forms to be filed by the Contractor and by the EOM and SAM are appended to this Section:

- A. Soil Excavation and Notification Form (to be filled and filed by the Contractor).
- B. MDAD Soil Staging Area Delivery Application (to be filed by the Contractor, EOM and SAM).

Appendices: Forms listed in 3.02 A and 3.02 B above.

END OF SECTION

MIAMI-DADE AVIATION DEPARTMENT
SOIL EXCAVATION NOTIFICATION FORM

PROJECT NAME: _____

PROJECT LOCATION: _____

CONTRACTOR: _____

CONTACT PERSON: _____ PHONE: _____

MDAD/DAC PROJECT MGR.: _____ PHONE: _____

FIELD REPRESENTATIVE: _____

SCOPE OF WORK TO BE PERFORMED: _____

ESTIMATED DIMENSIONS OF EXCAVATION: _____

LENGTH: _____

WIDTH: _____

DEPTH: _____

PROJECT START DATE: _____

PERSON COMPLETING FORM: _____

SIGNATURE: _____

DATE: _____

This form shall be filled by the Contractor and filed with the Field Representative within 96 hours prior to excavation.

MDAD SOIL STAGING AREA DELIVERY APPLICATION

1. Contractor: _____ Contact Person: _____ Phone: _____

2. Origin of Soil: _____

3. Requesting Agency (i.e, Field Representative): _____ Contact Person: _____ Phone: _____

4. Estimated Volume of Soil: _____ Proposed Delivery Date: _____

5. SOIL CHARACTERIZATION STATUS (Check all that apply)

☐ Laboratory analytical results indicated that soil is "non-hazardous" (attach copies of analytical results)

☐ Soil approved as non-hazardous" per MDAD Environmental Engineering Division.

☐ Authorizing MDAD Manager (print/type): _____

Signature: _____ Date: _____

☐ Soil not yet characterized.

Comments: _____

DO NOT WRITE BELOW THIS LINE

6. ☐ Approved ☐ Disapproved By: _____

Comments: _____ Date: _____

Delivery Date(s): _____ Amount Delivered: _____

Delivery Location: _____

Removed to: _____

Note: Contractor to fill lines 1, 2, 3 and 4. EOM to fill line 5. SAM to fill line 6.

SECTION 015700

MAINTENANCE OF AIRCRAFT OPERATING AREA TRAFFIC

1.01 DESCRIPTION

Refer to CSPP. In case of conflict between this section and the CSPP the most stringent condition applies.

The work under this Section consists of furnishing all measures required to maintain the safe and orderly movement of Aircraft operating Area (AOA) traffic in and around the construction areas as shown on the Plans and as described in these Technical Specifications.

1.02 GENERAL

This Section covers the Contractor's responsibilities for maintaining the optimum level of safety and the operating efficiency of the airport during construction. These responsibilities are based on criteria contained in the latest edition of Federal Aviation Administration Advisory Circular AC 150/5370-2, Operation Safety on Airport with Emphasis on Safety During Construction, or AC 150/5370-2G, and in The Airport Height Zoning Ordinance (County Code Article XXXVII, Sections 33-330 to 33-350). The Contractor shall be responsible for all activities, under his control, as specified in the above referenced Advisory Circulars, the Zoning Ordinance and in other referenced documents. In certain cases where the obstacle clearance criteria utilized for this project may differ from that described herein, these variances will be depicted on the Plans.

1.03 RELATED SPECIFICATIONS AND PROVISIONS

The Contract Documents contain several other provisions relating to safety for which Contractor adherence is required. The requirements of Chapter 25 of the Miami-Dade County Code and the related Miami-Dade Aviation Department Operational Directive MIA 19 dated June 17, 1980 shall apply to the work under this Contract.

1.04 OBSTACLE CLEARANCE DURING CONSTRUCTION - RUNWAYS

A. Two sets of criteria shall apply to construction activities within the proximity of active runways; one for use in daytime in visual approach conditions, and the other for use at all other times.

B. VISUAL APPROACH CONDITIONS DURING DAYTIME

1. During the period from 30 minutes after sunrise until 30 minutes before sunset, when the Airport's reported ceiling is at least 3,000 feet and visibility is at least 3 statute miles, the more restrictive dimensional and obstruction clearance criteria of the latest version of AC 150/5370-2- shall be utilized except as otherwise shown on the Plans and specified herein. The imaginary surfaces for runway approach/departure protection prescribed by the latest version of AC 150/5300-13 shall be relocated from the landing thresholds to the ends of the full strength pavement (runway ends), unless the work requires threshold displacement or work is required in proximity of existing displaced thresholds.

2. Not used.
3. No construction activity, personnel, equipment or materials shall be permitted within 250 feet of the centerline of any active runway or above the height restrictions described herein at any time. Contours describing allowable heights and distances when construction activities are in proximity to runways during visual approach conditions during daytime (visual approach contours) are shown on the Plans.
4. Construction may be permitted within the above specified 250 feet of the runway centerline on a case-by-case basis with the written approval of MDAD.

C. INSTRUMENT APPROACH CONDITIONS AT TIMES OTHER THAN DAYTIME

At all times other than daytime, described in Paragraph 1.04.B above, (i.e. when the reported ceiling is less than 3,000 feet and/or the visibility is less than 3 statute miles and in the period from 30 minutes before sunset until 30 minutes after sunrise), the dimensional and height restriction criteria of the **Miami – Opa Locka Executive** Airport Height Zoning Ordinance shall apply. No construction activity, personnel, equipment or materials shall penetrate these imaginary surfaces. Contours describing allowable heights and distances when construction activities are in proximity to runways during instrument approach conditions and at nighttime (instrument approach contours) are shown on the Plans.

1.05 OBSTACLE CLEARANCES DURING CONSTRUCTION - TAXIWAYS, TAXILANES AND APRONS

Construction activity, personnel, equipment or materials shall not be permitted within 160 feet of the centerline of an active taxiway or an active taxilane, unless otherwise shown on the Plans.

1.06 TRENCHES, EXCAVATIONS AND STOCKPILED MATERIAL

- A. Open trenches or excavations exceeding 3 inches in depth and 3 inches in width shall not be permitted within 250 feet of the centerline of an active runway or within 107 feet of the center line of active taxiways and taxilanes unless otherwise shown on the Plans.
- B. Coverings for open trenches or excavations shall be utilized by the Contractor to restore operations in the areas prescribed in 1.06.A above. Covering shall be of sufficient strength to support the weight of the heaviest aircraft operating on the runway or taxiway and the safe passage of ARFF equipment. Each covering shall be installed only as approved by the Architect/Engineer
- C. Construction contractor must prominently identify the limits of open trenches or 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.
- D. Stockpiled material shall be secured against displacement by aircraft engine and propeller blast and ambient winds. Stockpiled materials, equipment and personnel shall not be allowed within the runway, taxiway and taxilane obstacle clearance areas as described in this Article. Contractor to provide dust control for material stockpiles.

PART 2 - PRODUCTS

2.01 MARKING AND LIGHTING OF CONSTRUCTION AREAS

Refer to CSPP, MOT Plans and details.

- A. The Contractor shall install lighting, marking, signs, the correct types of barricades in accordance with the design, and other measures to delineate closed and hazardous areas during construction. The guidance and procedures provided by the current version of FAA Advisory Circular AC 150/5370-2 shall be utilized as depicted on the Plans. Steady burning red obstruction lights may be required in certain instances to supplement lighted barricades or highlight hazardous or potentially dangerous objects. The location of these lights shall be as shown on Plans or as directed by the Field Representative. Obstruction lights, barricades, and signs shall not be located within runway, taxiway and taxilane obstacle clearance areas.
- B. **TEMPORARY MARKER LIGHTS.** The Contractor shall install, operate and maintain temporary marker lights in the locations shown on the Plans. The Contractor shall furnish portable base mounted light fixtures, red and blue lenses, battery and solar temporary marker lights mounted on frangible mounts supported by barricades; and any other materials necessary to install, operate and maintain the temporary marker lights.
- C. The Contractor shall also furnish and install the following if a hard wired temporary lighting system is required:
 - 1. Heat shrinkable sleeves, tape and incidentals,
 - 2. wattage as specified for the lamps in an A/C circuit,
 - 3. All necessary wiring, power, connections, etc. to operate lights on an A/C circuit,
 - 4. Required staples to keep cable and wire securely fastened to pavement.
 - 5. Pavement sealant to seal pavements, when wiring is installed recessed in saw kerfs
- D. Yellow flashing lights mounted on top of the various types of barricades are not considered marker lights.
- E. The Safety, Security and Traffic Control requirements as defined in the Drawings, Specifications, and CSPP for all landside and airside MOT/phasing. Safety and Security Traffic Control shall include the provision of all guards and/or flagmen, temporary markings, barricades, closure markers, signs, flags, etc. required by the Drawings, Specifications, and CSPP for all landside and airside MOT/phasing.
- F. The Safety Plan Compliance Document (SPCD) requirements as defined in the Technical Specifications, Construction Safety and Phasing Plan (CSPP), and FAA AC 150/5370-2G. The SPCD shall include a statement certifying the Contractor has reviewed and will comply with the information described in the CSPP. The SPCD shall also provide supplemental information to the CSPP as defined in AC 150/5370-2G. **The SPCD shall be submitted and approved by Owner prior to Mobilization on site**

2.02 BARREL BARRICADES.

- A. The Contractor shall install and maintain barrel barricades in the locations shown on the Plans, in accordance with the approved layout for each construction area, and as directed by the Field Representative. Barrel barricades shall be in accordance with the details shown on the Plans including barrels, lights, ropes, flags and incidentals. Barrels shall be weighted immediately upon installation, as necessary to prevent displacement by aircraft engine blast and by ambient wind. Barrel barricade lines shall be inspected each day and repaired or replaced as necessary to meet the requirements of the approved layout plan.

2.03 TEMPORARY CONCRETE BARRIERS

- A. Temporary concrete barriers for traffic control and protection shall be New Jersey type precast concrete barriers conforming to the requirements of ASTM C825.
- B. Temporary concrete barrier sections shall be capable of being interlocked and shall be provided with warning flags, steady burning lights and/or flashing lights as required and shall be provided with grooves to allow flow of surface drainage.
- C. The temporary concrete barriers need not be new, but shall be structurally sound, of a quality and type meeting the requirements of these specifications and shall be subject to the Engineer's approval.
- D. Temporary concrete barriers shall, at the conclusion of the construction or when no longer needed, be relocated or removed and disposed of as the case may be.

2.05 PLASTIC BARRICADES

Plastic barricades, meeting the following requirements, shall only be used when specifically shown on the Plans or ordered by the Field Representative.

- A. Plastic barricades shall consist of a molded plastic I-beam section suspended, by means of a toggle system, from a molded plastic cone.

The assembly shall be designed to remain usable following vehicular impact.

- (1) The plastic barricade (I-beam section and cones) shall be manufactured from high density Polyethylene compounded with Ultraviolet Stabilizer to protect it against ultraviolet exposure and outdoor weathering
- (2) The cone shall consist of a stem and a base. The base shall be hollow and so manufactured as to allow for external and internal ballasting (using water, sand or other suitable material), to provide a ballast weight of approximately 20 lbs.
- (3) The dimensions of the various elements of the plastic barricade system shall be as follows:

<u>Cones</u>	
Overall Height	45"
Base Dimension	18" x 18" x 4"
Weight (unballasted)	7 3/4 lbs.
Outside diameter stem	
Top	3 1/4"
Bottom	6 "
Wall Thickness	1/8" +/- 1/32"
<u>I-Beam Section</u>	
Depth (reflective areas)	8"
Lengths (as ordered by the Field Representative)	36" or 48"
Wall Thickness	1/8"
Weight	1.2 lbs. per foot

- B. The plastic barricade assembly shall be equal to MAXICADE System as manufactured by Glasdon - Traffic Services Incorporated (distributed locally by Saft T Store, West Palm Beach, Telephone: 1-407-793-5817) or approved equal.

- C. The I-beam section shall be capable of being mounted (using a flexible toggle system) on the plastic cones. The cones shall be designed to support the I-beam sections and also to support traffic lights.
- D. The plastic barricade assembly shall be impregnated with traffic orange color. White reflective sheeting shall be applied to the I-beam section to form a series of alternating 6 inch wide stripes, traffic orange and reflective white, at 45° angle.

2.06 PLASTIC PROTECTIVE BARRIERS (WATER FILLED)

42" high or low profile water filled plastic protective barriers shall be manufactured by "Yodock Barrier", "Guardian Safety Barrier" or approved equal.

The plastic protective barrier shall meet the following and shall be:

- A. Color impregnated with the colors shown on the plans or as approved by the Engineer.
- B. Resistant to damage caused by ultraviolet rays.
- C. Manufactured with internally molded baffles (to maintain its shape), be properly sealed, is leakproof, provided with drain plugs and underside grooves to allow flow of surface drainage.
- D. Barrier sections shall, when installed in a row, be interlocked in an approved manner; end-to-end length of each installed section shall be not less than 72 inches; each water filled section shall weigh not less than 1650 pounds unless otherwise shown.
- E. Provided with securely mounted warning flags, steady burning lights and/or flashing lights as required.

The plastic protective barrier shall, at the conclusion of the construction or when no longer needed, be relocated or removed and disposed of as the case may be.

2.07 PORTABLE LIGHTED CLOSED RUNWAY MARKER

The Contractor shall procure two (2) each Portable Lighted Closed Runway Markers (PLCRM) to indicate to inbound aircraft that the marked runway is closed. The contractor shall fuel, operate, maintain, and repair the 2 PLCRM during the project duration. These 2 PLCRM shall become property of MDAD at the closure of the contract. Technical specifications for the PLCRM follow:

- 1) The Portable Lighted Closed Runway Markers (PLCRM) must be designed to form a lighted "X" which contains twenty-one (21) 90 watt par 38, 10 degree weather proof outdoor standard base clear Halogen spot bulbs with one (1) bulb located in the center and five (5) bulbs located in each of the four (4) legs. All X panel bulbs, light sockets, wiring and connections must be enclosed in a weather resistant housing.
- 2) The lighted X formed, when opened and operating, shall be 20 feet and 6 inches (20'-6") each continuous leg and 14 feet and 6 inches (14'-6") on the peripheral.
- 3) The PLCRM must collapse for transport and storage so that all parts are inside the trailer frame dimensions to prevent damage.
- 4) Illumination of the PLCRM shall be workable in a continuous or flashing mode, and shall be controlled by SOLID STATE FLASHER. Mechanical flashers are not acceptable.
- 5) A photocell must be used to reduce the voltage to 75 volts for nighttime operations.
- 6) Flash intervals time shall be:

- a. Bright mode-Approximately 2.5 seconds on and 2.5 seconds off
- b. Dim mode- Approximately 2.5 seconds on and 2.5 seconds off
- 7) A radio interference filter shall be installed with an operation frequency of 50 HZ
- 8) The PLCRM shall have at least two (2) lights (mounted on the backside of the upper portion of the top of the legs of the "X") on the backside of the "X" to indicate power is being supplied to the PLCRM and to indicate that more than one (1) bulb has become operative.
- 9) The PLCRM shall be designed so it can be used while still attached to the tow vehicle or have the means to stand alone.
- 10) The PLCRM shall be able to withstand winds of 40 MPH while in operational mode. This must be documented
- 11) The PLCRM shall be discernible from a distance of 3 to 5 miles VFR daytime and a minimum of 6 miles VFR nighttime. These distances shall be determined from an aircraft using a bran receiver. Documents substantiating these field tests by an independent third party must accompany the specifications.
- 12) Set up time for the PLCRM shall be capable of being accomplished by one person in two (2) minutes or less. This means the PLCRM can be raised and operating within this time frame.
- 13) The PLCRM shall have the fuel capacity to run at FULL LOAD for a minimum of 120 hours without refueling.
- 14) The PLCRM shall have capability of being hard wired for the convenience of operating without the use of a generator time power.
- 15) All electrical components shall be UL listed.

Lighted "X" Support Frame (Angle Mechanism) - The angle mechanism shall be constructed of 2" square-tubing. The angle mechanism shall be capable of tilting 3 degrees from vertical and have trailer adjustments to accommodate this angle no matter what the degree of the runway. The angle mechanism shall be operated by an electric actuator that will both raise and lower the mechanism with power from the generator. The actuator must be approved by the manufacturer for this application. The actuator shall have the following: 3,000 pound static, capacity, solenoid brake, weather proof, spur gear reduction, 30% Duty cycle motor operating.

Lighted "X" Assembly - The PLCRM legs shall be constructed from aluminum. A locking system shall be installed to secure the legs from expanding when the PLCRM is in the transport mode.

Trailer

- 1) The trailer frame shall be constructed from 2" square tubing.
- 2) Trailer dimension: 7 feet and 6 inch (7'-6") wide by 10 feet (10') long.
- 3) Trailer floor shall be expanded steel to serve as a work platform for personnel.
- 4) A 1500# axle with built-in independent Henschen type suspension or equal. axle springs, shackles, or shock absorbers are not acceptable.
- 5) 4.80x 12" tubeless 4-ply tires, 12" wheels and fenders.
- 6) 2" FAS-LOC coupling rated at 3500# GVW, with safety chains.
- 7) A 2" ball shall be mounted at the rear of the trailer to facilitate towing of a second PLCRM.

- 8) Provisions to accommodate safety chains shall be mounted at the rear of the trailer.
- 9) D.O.T approved brake, tail, and turn signal lights and reflectors shall be provided.
- 10) Five (5) 2000 lb. jack stand located at each corner and tongue.

Paint-Powder Coating

The entire PLCRM unit shall be powder coated gloss to a 1.8 mil minimum dry film thickness. Powder shall be outdoor rated, UV resistant, polyester TGIC with the following characteristics:

- H-2H Pencil hardness. ASTM-D522
- 160 In-lb Gardner direct & reverse impact ASTM-D2794 Modified
- Flex over % dia. needed without fracture.

Diesel Powered Generator

- Rated Watts — Minimum 2,700
- Voltage - 120
- Amperage — 29.2/14.6
- Fuel Capacity — 30 Gallons
- Run Time — 120 hours
- Must comply with Mil Specification W-F 800 for the use of . alternative fuels (CF-I, CF-2, Jet-A.)
- Starting System — 12 V DC Electric & Recoil Rope
- Electric outlets:
 - 2-120V (15A) w/GFI
 - 1-120V (30A) w/ twist lock
- Other Features
 - Low Oil Pressure Safety Protection System
 - Running Time Meter o Circuit Breaker Protection
 - Anti —Vibration Rubber Mounts
 - Dry Air Cleaner
 - 12V Battery Charging System

Generator shall be approved by the manufacturer for this application.

A. Protective Cover

Total Weight: 18 OZ P.S.Y. with: 61" Yam: Polyester Count: 20x20
Denier: IOOODx IOOOD Grab Tensile (FS 5100): 400K 338 Tongue Tear
(FS 5134): 77x77 Adhesion (FS5970): 1000 cycles Low Temperature: 40
degrees Continuous: 180 degrees Intermittent; 200 degree Finish:
Matte Treatments: Anti-mildew UV. Pigmented Put
up: 75 yards

B. Warranty

Cover Period: The complete PLCRM Shall is covered by the manufacture for a minimum of one (1) year and the warranty shall cover repairs to correct any PLCRM defects related to materials or workmanship occurring during the Warranty Period.

PART 3 - EXECUTION

3.01 LOOSE MATERIALS AND DEBRIS

- A. Loose materials shall be removed from the active portion of the AOA, placed in protected areas or otherwise secured to prevent dispersal into active portions of the AOA. The AOA is defined as all areas used or intended to be used for aircraft operations including active runways, aprons, taxiways, taxilanes, etc. Debris shall be promptly removed from the AOA. The Contractor shall exercise care in the transportation of materials within the AOA. Materials tracked or spilled in the AOA shall be removed immediately. When hauling, loading, grading, or when any of the Contractor's activities are likely to cause the deposit of loose materials in the AOA, it shall be immediately removed using powered vacuum sweepers which shall continuously patrol the affected areas. The sweepers shall be supplemented by hand sweepers, loaders, trucks, etc., as necessary.

3.02 VEHICLES AND MOBILE EQUIPMENT

- A. All Contractor vehicles and mobile equipment operating in the AOA shall be identified by three foot (3') square orange and white flags whenever such vehicle and equipment is operating on or about the AOA. In addition, such vehicles and equipment shall have the Contractor's name clearly affixed on each side of such vehicles and equipment, all in accordance with current MDAD requirements. During the hours between 30 minutes before sunset and 30 minutes after sunrise and at all times when visibility is impaired, vehicles and mobile equipment shall also be equipped with a revolving yellow beacon light mounted on the top of the vehicle or equipment. Beacon lights shall provide:
1. Three hundred sixty-degree azimuth coverage.
 2. Effective intensity in the horizontal plane not less than 40 or more than 400 candelas.
 3. Beam spread measured to 1/10 peak intensity extending from 10 degrees to 15 degrees above the horizontal.
 4. Sixty to ninety flashes per minute.
- B. All Contractor vehicles and mobile equipment not individually authorized by the MDAD for independent operation in the AOA shall be operated under escort while in the AOA. The escort vehicle and its driver must be authorized by the MDAD for escort duty and for operation within the AOA. If access to the construction, staging or storage sites requires the crossing of an active runway or taxiway, all vehicles shall be escorted across said runway or taxiway by either a MDAD escort vehicle or a vehicle equipped with a VHF-AM Transceiver specifically authorized by MDAD to cross these operational pavements. No crossing of active taxiways or runways by vehicles so equipped shall be made without first obtaining specific clearance from the FAA Air Traffic Control Tower.
- C. No crane shall be allowed on the work site until the equipment and its intended operation is approved by MDAD Airside Operations, or the Airport Manager, in accordance with the requirements of General Condition Article 4.14. The Contractor shall provide MDAD Airside Operations with not less than 24-hour advance written notice requesting crane access

to the AOA. This request shall utilize the standardized MDAD "Request for Crane Clearance to Miami OpaLocka Executive Airport".

- D. When access is approved by MDAD, the tip of the crane boom shall be identified by the orange and white flag mentioned above and, if appropriate, by red obstruction lights.

3.03 CLOSURES

- A. Prior to the commencement of any demolition or other work which will cause an interruption or modification to existing aircraft operations, the Contractor shall confer with, and obtain written authorization from the Field Representative.
- B. When the Contractor's operations require the closure of any runway, taxiway, apron, roadway, service gate, walkway, etc., the Contractor shall notify the Field Representative not less than 48 hours prior to the closure. No runway, taxiway, apron, roadway, service gate, walkway, etc., shall be closed without prior written authorization from the Field Representative.
- C. If the Contractor requires access to operational areas not delineated on the Construction Safety Plan Drawing(s), the Contractor shall participate in negotiations leading to the imposition of restrictions on airport operations in the affected areas; the Contractor shall strictly abide by all conditions imposed by MDAD relating to its entry and use of such areas and the Contractor shall not enter these areas until temporary, conditional entry clearance is granted by MDAD.
- D. Trenching, excavation and other work requiring temporary runway or taxiway closure shall be limited by the Contractor to that amount of work that can be completed within the hours of minimal operation. All ditches, excavations, etc., shall be restored prior to the end of the work period and affected pavements returned to service. This work shall be scheduled during hours of minimal operations. Unless otherwise noted in the Contract Documents, hours of minimal operation shall be defined as the hours between 11:00 P.M. and 7:00 A.M. daily. All other hours are considered hours of normal operation.
- E. The Contractor may be required to pursue affected portions of the work on a continuous 24 hour per day basis during construction of the various phases and subphases shown on the Plans and described in the Contract Documents (such as when runways or taxiways, aprons, service or access roadways, or service gates are closed for operation or when hazards of any kind arise).

3.04 LIGHTS, LIGHT LINES, SIGNS AND PAVEMENT MARKINGS

- A. Red and blue lens, ground-mounted, taxiway marker lights, pavement markings, signs, lighted barricades and other measures shall be installed and maintained (except as provided herein below) on a 24-hour basis by the Contractor to delineate construction areas available to the Contractor and limits of aircraft operational areas. At the conclusion of each working day, the Contractor shall verify that the temporary lighting systems are in proper operation condition. Any necessary maintenance repairs shall be performed by the Contractor prior to leaving the site. The detailed layout of marking, lights, signs and barricades and other measures for each construction area are shown on the Plans. The actual field installation of markings, lighting, barricades, signs, and other measures and attendant operational procedures shall be inspected by MDAD Airside Operations and any necessary changes or modifications will be promptly implemented by the Contractor as directed. The revised installation will be reinspected and approved by the Field Representative and MDAD Airside Operations before the Contractor may commence any construction or any other work which revises operational procedures in each affected area.
- B. The Contractor shall provide all materials for installing pavement marking, marker lights, and lighted barricades. The MDAD Maintenance Division will provide, when so prescribed in the Contract Documents, certain materials to the Contractor for its use in establishing the temporary light lines designated on the Construction Safety Plan Drawings. The Contractor

- shall be responsible for the installation of these materials and the return to MDAD of all these equipment and materials in good repair and working order, in a condition satisfactory to and acceptable to MDAD.
- C. Connections to power supply for all temporary lighting systems shall be performed by the Contractor under the direction of the MDAD Maintenance Division.
 - D. Maintenance of all temporary lighting systems shall be performed by the Contractor except that nighttime trouble shooting of temporary lighting connected to any airfield lighting system will be provided by the MDAD Maintenance Division.
 - E. The Contractor shall install the temporary marker lights in the locations shown on the Plans or as directed by the Field Representative; provide cable connections to existing circuits and decommission or mask existing lights as shown on the Plans. If no existing taxiway circuits are available, the Contractor shall provide and install a constant current transformer including connections and cable runs as necessary to energize the temporary light units. All cable runs installed across pavement shall be made along existing pavement joints. Saw kerfs shall be sealed, using approved suitable sealant, after cable installation. The Contractor shall demonstrate the functional integrity of the temporary marker light system by field test before the system is approved by Field Representative for operational use.
 - F. The Contractor shall maintain the temporary marker light system in full operational capability during the term of use. Each day at the close of the work shift, the Contractor shall test and repair the system as necessary to restore full operational capability. The Contractor shall provide 24-hour, 7 day per week maintenance service. Trained maintenance technicians shall be available and "On Call" at all times; the Contractor shall provide the Field Representative with address and telephone numbers of the technicians so that they may be contacted at any time.
 - G. The Contractor shall relocate and modify the temporary lighting systems as required to accommodate the progress of the construction.
 - H. Upon completion of the work within an AOA, and when the temporary marker lights are no longer needed, the Contractor shall remove all such temporary installation and restore the site prior to opening it to aircraft traffic.

3.05 OPERATIONS SAFETY INSPECTION

- A. The entire work site shall be inspected daily and more frequently if construction activities are of a nature that debris may be expected to accumulate on AOA pavements. Special inspections shall be conducted for each work area prior to return to service for aircraft operation. The purpose of these inspections is to ascertain that areas returned to aircraft service are in satisfactory condition and that the overall work site and its activities are within the safety criteria set forth in these Contract Documents. Inspections shall be conducted jointly by representatives of the Contractor, the MDAD **Airside Operations Division, Airport Manager**, the Field Representative and the affected airlines. These inspections shall cover the several safety items noted in and referred by this Article. The report of such inspections shall be filed utilizing the Pre-operation and Preconstruction checklist forms, a copy of which is appended to this Section.
- B. Any violations of the Safety Criteria found during these inspections shall be rectified immediately. If a violation cannot be corrected on an immediate basis by the Contractor, the Contractor shall immediately notify the Field Representative. No area shall be approved for aircraft operations while it is in violation unless specifically authorized by MDAD Airside Operations, Airport Manager, the Field Representative and the designated airline representative.

3.06 OPERATIONAL EMERGENCIES

- A. During periods of severe weather conditions or other operational emergencies, the Owner may direct the Contractor to relinquish areas under construction and to prepare the areas for aircraft operations. In this event the Field Representative will so direct the Contractor to evacuate the area and the Field Representative will specify the limits of the area to be evacuated, the term of evacuation and the conditions governing the restoration work necessary to prepare the area for aircraft operation. The Contractor shall promptly and fully comply with the Field Representative's directive. Should the directive entail extra work under the Contract, as determined by the Field Representative, the Contractor will be reimbursed for such extra work in accordance with the provisions of the applicable Allowance Account item. Should the directive entail a delay in the completion of the Contract or any defined subdivision of the contract, as determined by the Field Representative, such delay shall be considered a Non-Compensable Excusable Delay in accordance with the requirements-of the General Conditions.

3.07 FINAL CLEANUP

- A. After work in any work area has been completed and before opening it to traffic, the Contractor shall remove all temporary traffic control devices, temporary pavements, and other temporary work and devices installed for traffic control. The Contractor shall restore the site to its original condition or to the revised condition shown on the Plans.

4.01 METHOD OF MEASUREMENT

- A. Maintenance of Aircraft operating Area Traffic will be paid for on a lump sum basis wherein no measurement will be made.
- B. There will be no separate measurement and payment for striping (unless included in the P-620 technical specification) nor for extra work associated with the evacuation of work areas for operational emergencies. Payment for this work will be made under other Sections of the Contract as applicable.

5.01 BASIS OF PAYMENT

- A. Payment for the quantity determined as described in Article 4.01 above shall be made at the **lump sum price bid for the item Maintenance of Aircraft operating Area Traffic** which payment shall constitute full compensation for furnishing all labor, materials, equipment and incidentals required to complete the work under this Section. Furnishing, installing and maintaining yellow flashing lights shall be considered incidental to and included in the unit prices bid for the various barriers and barricades items.
- B. No separate measurement or payment for the cost of removing and/or relocating the various maintenance of traffic devices, but the cost therefore shall be deemed included in the **lump sum price bid**.
- C. The lump sum price bid for the items under this section shall include the cost of maintaining the various devices including replacing exhausted batteries, defective lamps, painting, etc. as required to maintain the various devices in good operational condition.
- D. Payment shall be made under:

Item 15700-1 **Maintenance of Aircraft Operating Area Traffic - per lump sum**

END OF SECTION

PREOPERATION CHECKLIST

Miami Opa-Locka Executive Airport

NOTE: Inspection is to be made and all corrective work completed by Contractor at the completion of each work area. Perform special inspections for work areas to be released before the completion of the work area.

<u>ITEMS</u>	<u>OK (Check)</u>	<u>REMARKS/EXCEPTIONS</u>
Operational pavements sound, to grade & free of dust, dirt & debris.	_____	_____
Operational pavement shoulders graded, lips removed, surface bonded or paved (no potential for blast erosion).	_____	_____
Striping, marking, signs, barriers, and lighting on operational pavements operable and in correct location.	_____	_____
Water filled plastic protective barriers are actually full of water and are sealed and in leakproof condition.	_____	_____
Safety areas and obstacle-free zones cleared and graded. No open trenches or holes.	_____	_____
Construction barricades and barriers secured in correct location and associated warning flags and lighting systems operable and in correct location.	_____	_____
Aircraft parking area cleared.	_____	_____
All equipment, vehicles, materials, etc., removed from areas in service or being returned to service.	_____	_____
All proper Authorities notified of hazards, fire route changes, utilities left inoperable, pavements closed, etc. list.	_____	_____
Work Area Inspected: _____		
Remarks: _____		

The inspection covered by this report was made on _____ at _____AM/PM		
By _____ and by _____		
(Contractor) Signature (Operations) Signature		
and by _____ and by _____		
(Airlines) Signature (Architect/Engineer) Signature		
For work involved in the construction of Contract No. _____		
at _____ Airport.		
[Name of Airport]		

PRECONSTRUCTION CHECKLIST

Miami Opa-Locka Executive Airport

NOTE: Inspection is to be made and all corrective work completed by Contractor before work can begin in any Work Area.

<u>ITEMS</u>	<u>OK (Check)</u>	<u>REMARKS/EXCEPTIONS</u>
Striping, lights, markings, barricades and all other required traffic control devices in proper place, secured against displacement, and operable.	_____	_____
Obstacle free areas and operational pavements ready for use.	_____	_____
All equipment, vehicles, materials, etc., in Marked work area	_____	_____
All equipment properly marked and, if necessary, lighted.	_____	_____
All proper authorities notified of hazards, fire route changes, utilities left inoperable, pavements closed, etc. list.	_____	_____
Work Area Inspected: Remarks:	_____	_____
The inspection covered by this report was made on Date _____ Time _____		
By _____ , and by _____ , (Contractor Signature) (Operations Signature)		
and by _____ , and by _____ (Airlines Signature) (Field Representative Signature)		
For work involved in the construction of Contract No. _____ at [Name of Airport]		



Notice

This document and its contents have been prepared and are intended solely as information for MIAMI DADE AVIATION DEPARTMENT (MDAD) and use in relation to **CSPP, Issued for Bid (IFB)**

Atkins North America, Inc. assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 45 pages including the cover.

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Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	75% CSPP DRAFT Issued for MDAD Review	JLD	JV	CAO	CAO	4/22/2022
2.0	75% CSPP BC Issued for FAA Review	JLD	CAO	CAO	MR-MDAD	7/7/2022
3.0	100% CSPP BC Issued for FAA Review	JLD	CAO	CAO	MR-MDAD	7/25/2022
4.0	Bid CSPP BC Issued for FAA Review	JLD	CAO	CAO	MR-MDAD	9/06/2022
5.0	IFB CSPP MDAD Comments 1-10-23	JLD	CAO	CAO	MR-MDAD	2/23/2023

Client signoff

Client	MIAMI DADE AVIATION DEPARTMENT (MDAD)
Project	MIAMI-OPA LOCKA EXECUTIVE AIRPORT (OPF) - Runway 09L-27R Rehabilitation
Job number	ATKINS Project No. 100075217
Client signature/date	

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1. Background

Refer to Table 4-2 for Abbreviations / Acronyms used in the CSPP.

1.1. Project Overview

Miami-Opa Locka Executive Airport (OPF) is a public airport located in Miami-Dade County, Florida, and is owned and operated by Miami-Dade Aviation Department, MDAD. This project is the rehabilitation of Runway 09L-27R comprised of the project elements in Section 3.1.1. Refer to **Figure 1-1** below.

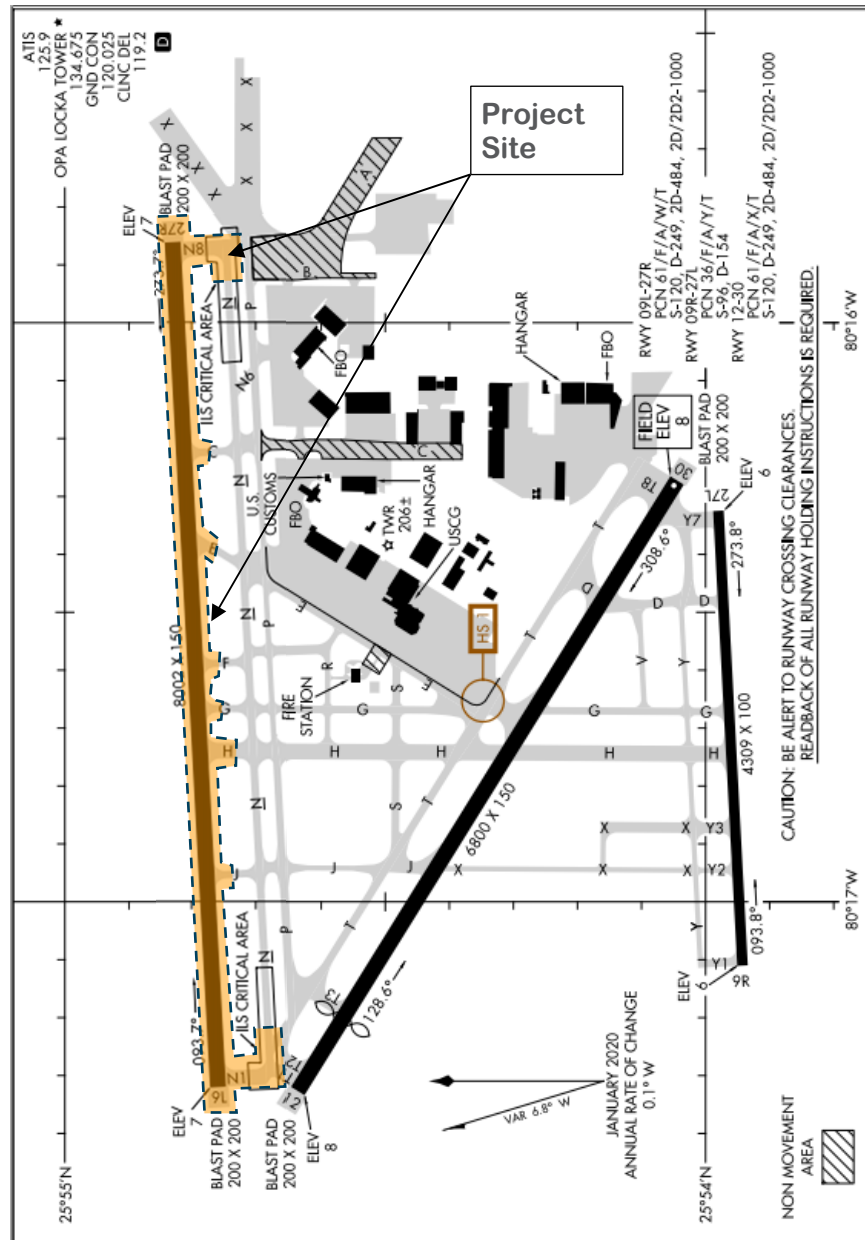


Figure 1-1 - OPF Airport Facility Diagram

1.2. Project Roles

MDAD has selected Atkins North America, Inc. (Atkins) as the lead designer for the project. The Atkins Team performs design project management, coordination, civil/site engineering, electrical engineering, cost estimating, survey, and geotechnical investigation.

The Team members are listed in **Table 1-1**.

Table 1-1 - The ATKINS Team Responsibilities

Firm	Responsibility
Atkins	Prime / Civil Design and Surveying / NAVAIDs
Botas Engineering	Structural Design
Terracon	Geotechnical
Gartek Engineering	Airfield Electrical
MSA	Environmental
ARA	Pavement Inspection

1.3. Construction Safety

FAA Advisory Circular (AC) 150/5370-2G Operational Safety on Airports During Construction – or latest version provides guidance to help airport operators implement procedures to increase safety during construction. The Construction Safety and Phasing Plan (CSPP) is one of two primary tools outlined in the AC to help airport operators ensure safety compliance during construction. The Safety Plan Compliance Document (SPCD) is the second tool. This CSPP was developed concurrently with the project drawings for the Runway 9L-27R Rehabilitation projects. The contractor and the entire project team must reference the CSPP and SPCD throughout the project's construction.

The contractor shall achieve the following general safety objectives to maximize safety and minimize time and economic loss to the aviation community, construction contractors, and others directly or indirectly affected by the project. The contractor is responsible for controlling its operations and the operations of subcontractors (at all levels) and suppliers as they comply with the requirements of this document and as listed below:

- Maximize the safety of aircraft operations
- Keep the airport operational for all users
- Provide for aircraft operational safety
- Maintain airfield operations within agreed parameters
- Minimize delays to aircraft operations
- Minimize delays to construction operations
- Minimize airport operation and construction activity conflict

NOTE TO READER:

Sections 2 through 20 below include in the title as reference the FAA AC paragraph number in parenthesis, e.g. (3.6). These paragraphs are found in FAA AC 150/5370-2G Operational Safety on Airports During Construction, under Chapter 3. Guidelines For Writing a CSPP.

2. Coordination (3.6)

This section requires the following of FAA AC 150/5370-12B, Quality Management for Federally Funded Airport Construction Projects. The project team must conduct meetings to ensure the Sponsor, the Engineer, the Contractor, and other interested parties are aware of the design, safety, and construction requirements and understand their responsibilities and the technical and legal requirements of the contract. Refer to paragraph 1.1.2 and Chapter 2 for the Predesign, Prebid, and Preconstruction Conferences.

- a. **Predesign Conference:** A pre-design conference was held on 5/4/2021 Topics covered include the project's overall scope, team roles, schedule, review of program elements, and various coordination topics. Attendees representing MDAD and Design Team were present.
- b. **Design Review Meetings:** Multiple design review and coordination meetings have occurred on the project including subsequent to the 30 percent on 1/21/2022, 75 percent on 5/11/2022 and 100% percent design submissions on 07/27/2022. Attendees representing MDAD, Design Team, and other affected parties (as needed) have been present at these meetings.
- c. **Pre-Bid Conference:** MDAD conducted a pre-bid conference on **TBD** for this project to help clarify and explain construction methods, procedures, and safety measures required by the contract. The participants will include prospective bidders and subcontractors.
- d. **Pre-Construction Conference:** MDAD conducted a pre-construction conference prior to issuance of construction Notice to Proceed on **TBD**. Topics covered include the project's overall scope, team roles, schedule, review of program elements, and various coordination topics. Attendees representing MDAD and Design Team were present.
- e. **Contractor Progress Meetings:** Weekly or by-weekly construction progress meetings will be held throughout the project. At a minimum, required attendees will include MDAD staff, construction observation staff, the project superintendent and foreman of the prime contractor, and the project foreman for each major subcontractor, with work occurring during the current period. At the weekly construction progress meetings, construction phasing and safety will be a standing agenda item. The contractor must include in the contractor's SPCD the details of these meetings.
- f. **Daily Coordination:** When construction activities are performed on this project, the prime contractor must have a foreman on-site or immediately available as the person authorized to make decisions regarding the operations and safety of all personnel employed by the contractor and subcontractors. Each day the designated foreman must meet with Airport Operations Manager on duty or MDAD's representative to coordinate activities for that day's work.
- g. **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. The Contractor's SPCD must also be updated to address any scope changes which impact the CSPP.

2.1. FAA Air Traffic Organization (ATO) Coordination:

The project has been fully coordinated with the FAA ATO. No modifications are anticipated to impact FAA-owned equipment except checking the equipment calibration due to minor grading changes. MDAD will continue to coordinate with the ATO and keep them informed of the project's progress.

3. Phasing (3.7)

3.1. Phase elements

3.1.1. Project Elements

The section below provides an overall summary of the Runway 09L-27R Rehabilitation project elements. **Figure 3-1, Figure 3-2, and Figure 3-3** illustrate the three (3) main runway rehabilitation work areas:

1. RW 9L (west end) full-depth reconstruction. Demo and replace existing concrete pavement with an asphalt section.
2. RW 9L-27R Middle Section. Variable depth mill and overlay existing asphalt pavement.
3. RW 27R (east end) full-depth reconstruction. Demo and replace existing concrete pavement with an asphalt section



Figure 3-1 - RW 9L (west end) – Full-Depth Reconstruction

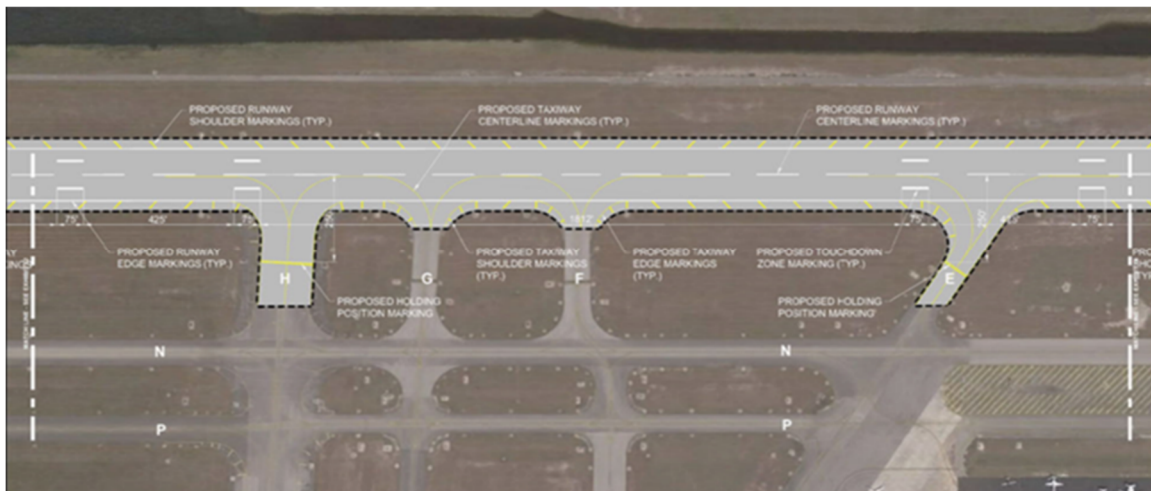


Figure 3-2 - RW 9L-27R Middle Section – Mill & Overlay



Figure 3-3 - RW 27R (east end) – Full-Depth Reconstruction

3.1.1.1. Pavement Rehabilitation

- a. RW 9L (+/- 500 feet), parallel Taxiway N (+/- 500 feet), and connector N1 (west): Replace the existing PCCP (rigid pavements) with asphalt (flexible pavements) pavement.
- b. Runway 09L-27R Middle Section: Mill and overlay variable deep the existing asphalt pavement.
- c. RW 27R (+/- 500 feet), parallel Taxiway N (+/- 500 feet), and connector N8 (west): Replace the existing PCCP (ridge) with asphalt (flexible) pavement.
- d. Taxiways H and E: Mill and overlay variable deep and length the existing asphalt pavement to Taxiway N OFA.
- e. Taxiways J, G, F, and C: Mill and overlay variable deep and length the existing asphalt pavement to transition and tie into the runway's new grades.
- f. Runway Shoulders: Mill and overlay to transition cross slope
- g. Blast Pad: Mill and overlay to match higher runway centerline

3.1.1.2. Airfield Lighting and Signage

- a. Re-use existing LED fixtures (runway and taxiway systems)
- b. Re-establish taxiway edge lights system in new taxiway shoulders (taxiway systems)
- c. Replace all existing 2-inch conduits
- d. Replace all existing Transformers
- e. Replace all existing circuits
- f. Replace existing light base cans to match new finished grade

3.1.1.3. Pavement Marking

- a. Entire Runway: Center, Edge, Touchdown, and Threshold (Aiming)
- b. Entire Runway Shoulders
- c. Blast Pad: RW 9L and RW 27R

3.1.1.4. NAVAIDS:

- a. Summary of existing NAVAIDS and changes:
 - a. RW 9L ILS (GS & LOC) – No Changes but recommissioning by the FAA may be required due to new pavement and revised surfaces in the ILS Critical Area.
 - b. RW 09L MALSR. The project will install a MALSR threshold in the blast pad for future upgrade the MALSR system.

- c. RW 09L VGSI – VASI to PAPI (4-box) Conversion
- d. RW 27R ILS (GS & LOC) – No Changes but recommissioning by the FAA may be required due to new pavement and revised surfaces in the ILS Critical Area.
- e. RW 27R MALS without RAIL. A replacement MALS threshold bar will be installed in the blast pad.
- f. RW 27R VGSI – VASI to PAPI (4-box) Conversion
- g. Tower Controls will be implemented as necessary, including the PAPI' pushbuttons updating in the ATC.
- h. Both RW 09L and 27R do not have REIL or ODAL system as there is an existing MALSR or MALS system in operation.
- b. Other Adjustments, revisions, modifications, coordination, etc, NAVAIDs scope is not included.

3.1.2. Overall Phasing Concept

The Runway 9L-27R construction project has been separated into two (2) distinct phases described in **Table 3-1** and illustrated in **Figure 3-4**.

Table 3-1 - Construction Sequence Work Areas

Phase	Location
Phase 1	<p>Reconstruction of both ends of Runway 9L-27R, TW N1 (west), TW N8 (east), TW N-East, and restore, resurface, rehabilitate the middle portion of the runway.</p> <p>Phase 1 Includes:</p> <ul style="list-style-type: none"> • RW 9L-27R, full length reconstruction/mill and overlay • TW N1 reconstruction up to RW 9L-27R ROFA • TW J (+/-120'), TW G (+/-70'), TW F (+/-120'), and TW C (120') full depth transition • TW H and TW E full depth up to TW N TOFA • TW N8 full length reconstruction • TW N-East (+/- 500') between TW N8 (Sta 959+00) and Sta 954+00 • Commissioning of RW 9L-27R in coordination with the FAA – Contractor must have all elements necessary for the commissioning completed 30 calendar days before Phase 1 completion date. • Flight checks by the FAA for the commissioning <p>Runway 9L-27R is to remain closed in Phase 1 Runway 12-30 is to remain open in Phase 1 TWT1 and TW T2 are to remain open in Phase 1</p>
Phase 2	Reconstruction of TW N1 (north) and TW N-West.
Phase 2a	<p>Work performed concurrent with Phase 1</p> <p>Work is not permitted within RW 12-30 safety area (RSA) and it is restricted within the ROFA</p> <p>Phase 2a Includes:</p> <ul style="list-style-type: none"> • TW N1 reconstruction between RW 9L-27R ROFA and TW N.. • TW N-West reconstruction between +/- Sta 901+00 and Sta 906+00. <p>TW T1 and TW T2 are closed in Phase 2a and remain closed through Phase 2b. Aircraft to depart and exit from TW T3. Aircraft will need to back taxi when the full length of the runway is used.</p>

Phase 2b	Runway 9L-27R is close in Phase 2a Runway 12-30 is open in Phase 2a.
	TW N1(south of the ROFA) and TW N-West unrestricted reconstruction is permitted within the RW 12-30 RSA, and ROFA closed runway.
	Work is not permitted within RW 9L-27R safety area (RSA) and the ROFA, active runway.
	Runway 9L-27R is open in Phase 2b Runway 12-30 is close in Phase 2b.

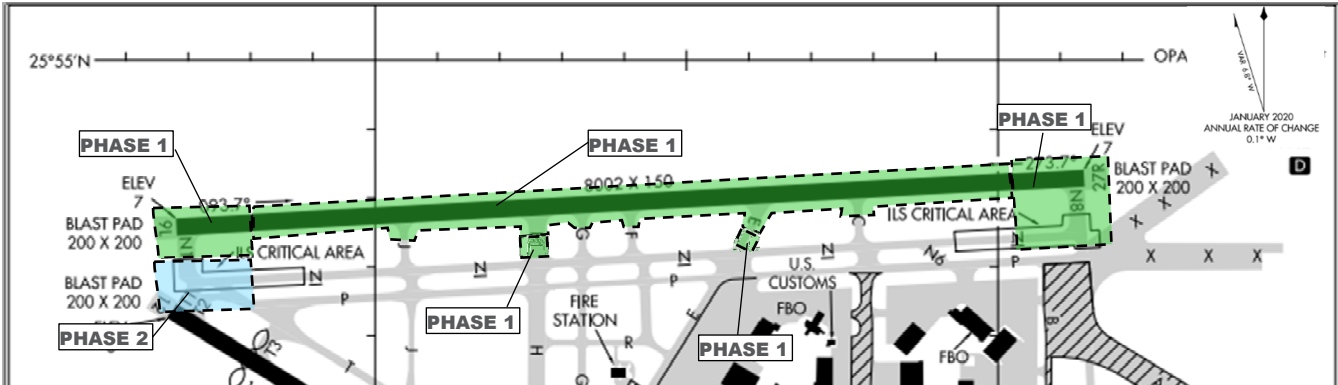


Figure 3-4 - Overall Work Area and Phasing Illustration

3.1.3. Locations, Durations, and Sequence of the Work

The project is comprised of separate, distinct, and sequential phases of work. Each phase consists of a work area with unique construction access, traffic control, and sequencing requirements. Refer to **Figure 3-5**.

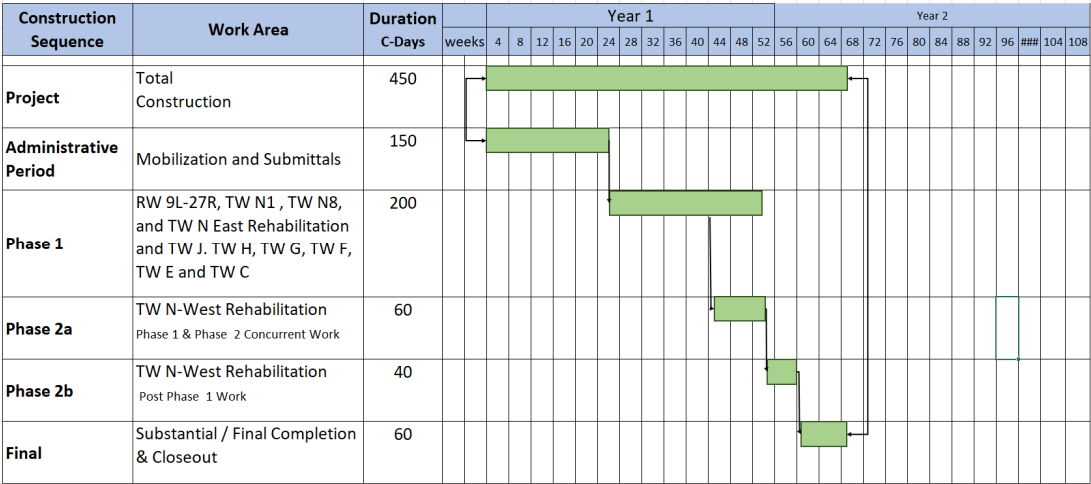


Figure 3-5 - Locations, Durations, and Sequence Illustration

3.1.4. Phasing and Sequencing Considerations

The OPF airport is one of Florida's busiest general aviation airports, with an important projection of operations in the upcoming years. The airport serves corporate, recreational, flight training, and governmental agency activities such

as the Coast Guard. Its location provides fast and easy access to the Florida Keys and Miami with three FBO facilities: Signature Flight, Fontainebleau Aviation and Atlantic Aviation. The airport has three active runways, the longest of which is 9L-27R, having an available length of 8,002 feet. The phasing and construction sequence must minimize the closure of Runway 9L-27R to address the crucial operational demand for Runway 9L-27R. Only one runway will close for construction at a time.

3.2. Construction Phasing and Safety Drawings.

Table 3-2 - Safety and Security Plans

Drawing Sheet No.	Drawing Title
G002	GENERAL NOTES, LEGEND, AND ABBREVIATIONS
G003	PART 77 HEIGHT RESTRICTIONS RW 12-30 & RW 9L-27R
G004	RW 12 & RW 9L PART 77 HEIGHT RESTRICTIONS
G005	RW 12 APPROACH SURFACE RESTRICTIONS
G006	RW 30 DEPARTURE SURFACE RESTRICTIONS
G007	RW 9L APPROACH SURFACE RESTRICTIONS
G008	RW 27R DEPARTURE SURFACE RESTRICTIONS
G009	RW 12 AND RW 9L OFZ RESTRICTIONS
G340	PROJECT LAYOUT, STAGING, STORAGE AND ACCESS, HAUL ROUTE PLAN
G400	PHASING PLAN
G401	PHASE 1 DETAIL PLAN - TW N1 CLOSURE
G402	PHASE 1 DETAIL PLAN - TW J & TW H & TW G & TW F- CLOSURE
G403	PHASE 1 DETAIL PLAN - TW E & TW C CLOSURE
G404	PHASE 1 DETAIL PLAN - TW N-EAST & N8 CLOSURE
G405	PHASE 2A DETAIL PLAN – TW N-WEST CLOSURE
G406	PHASE 2B DETAIL PLAN – RW 12-30 CLOSURE
G407	RW 12-30 CLOSURE DETAIL PLAN
G410	PHASING NOTES AND DETAILS

The individual Safety Phasing Plan (G400 series) illustrate the areas and elements in Table 4.1 affected by the construction. These plans also address the elements below for each phase.

- Areas closed to aircraft operations.
- Duration of closures.
- ARFF access routes.
- Construction staging, disposal, and cleanout areas.
- Construction access and haul routes.
- Impacts to NAVAIDs.
- Lighting, marking, and signing changes.
- Required hazard marking, lighting, and signing.

- i. Work zone lighting for nighttime construction (if applicable)
- j. Lead times for required notifications
- k. Temporary changes to air traffic control procedures

- Nonapplicable elements include the following
- a. Taxi routes and/or areas of reduced TSA and TOFA to reflect reduced ADG use
 - b. Reduced RSA and ROFA to reflect reduced ADG use.
 - c. Available runway length
 - d. Declared distances (if applicable).
 - e. Maintenance of essential utilities and underground infrastructure
 - f. Approach/departure surfaces affected by height of temporary objects

4. Areas and Operations Affected by the Construction Activity (3.8)

4.1. Protected Surfaces

4.1.1. Approach and Departure Surfaces per FAA 5300-13B, 3.6

4.1.1.1. Approach Surfaces (per FAA 5300-13B, 3.6.1)

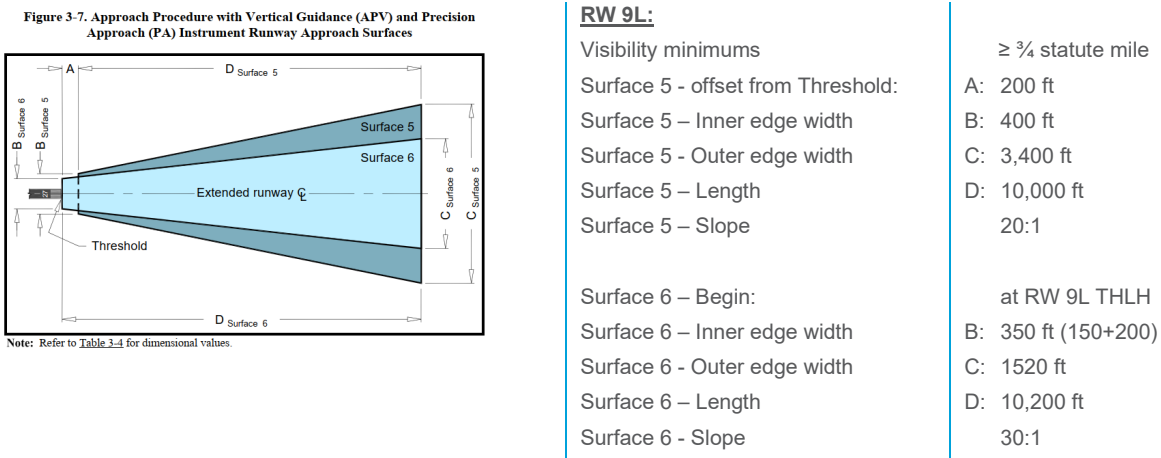
The approach surfaces below are separate and distinct from those defined in 14 CFR Part 77. The Part 77 approach surface is also addressed in the CSPP and shown in the plans.

The RW 9L and RW 12 approach surfaces are protected for instrument aircraft operations that are clear of obstacles when active.

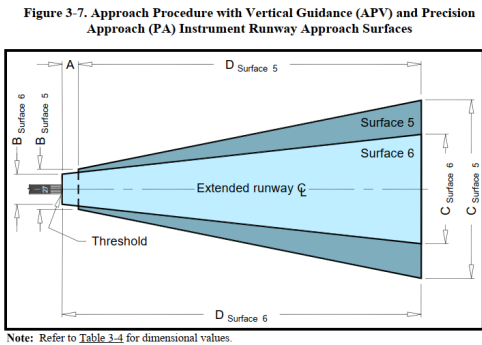
The shape and dimensions of the approach surfaces are defined in FAA 5300-13B Table 3-4 APV and PA Instrument Runway Approach Surfaces. See the data and illustrations below for RW 9L and RW 12.

A nominal 15 feet high-construction equipment vehicle was used to analyze the haul road within the departure surface limits.

Refer to sheet G005 for RW 12 Approach Surface Restrictions and G007 RW 9L Approach Surface Restrictions



The Part 77 approach surface follows the RPZ shape with a 50:1 slope. Refer to Section 4.1.5 RPZ.



RW 12:	
Visibility minimums	≥ ¾ statute mile
Surface 5 - offset from Threshold:	A: 200 ft
Surface 5 – Inner edge width	B: 400 ft
Surface 5 - Outer edge width	C: 3,400 ft
Surface 5 – Length	D: 10,000 ft
Surface 5 – Slope	34:1 (to match ALP)
Surface 6 – Begin (Displaced TH):	at RW 12 THLH
Surface 6 – Inner edge width	B: 350 ft (150+200)
Surface 6 - Outer edge width	C: 1520 ft
Surface 6 – Length	D: 10,200 ft
Surface 6 - Slope	34:1

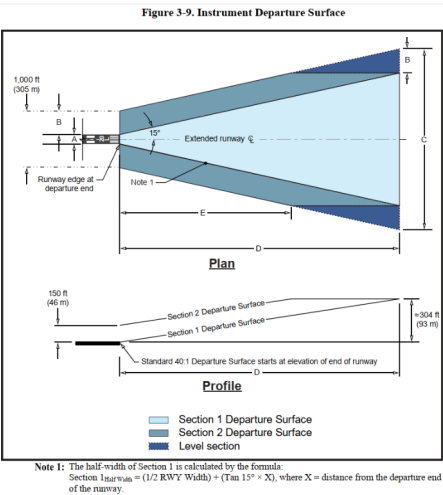
4.1.1.2. Departure Surfaces (per FAA 5300-13B, 3.6.2)

The standard instrument departure procedures are used in the published Terminal Procedures Publication (TPP) to avoid obstacles during the initial climb when taking off.

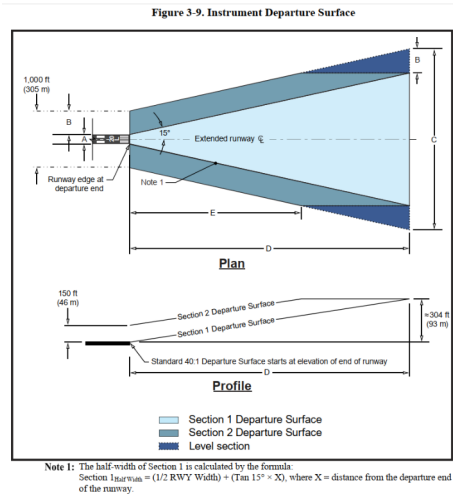
The CSPP and phasing plans were developed using the standards below that differ from the values in the OPF's ALP.

A nominal 15 feet high-construction equipment vehicle was used to analyze the haul road within the departure surface limits.

Refer to sheet G006 RW 30 Departure Surface Restrictions and G008 RW 27R Departure Surface Restrictions.



RW 12 for RW 30 Departures:	
Section 1:	9.6' AMSL
Begins: departure end of runway (DER) elevation-RW 12 displaced threshold.	A: 150'
Width: usable runway width	B: 500ft (+425')
Section 2 width 500 feet from either side of the RW 12 C/L	+150 ft: 159.6' AMSL +303.8 ft: 314' AMSL
Section 2 lateral incline:	40:1
Maximum Height:	C: 12180
Departures Surface (Section 1 and Section 2).	
Per 3.6.2.3, all obstacles that penetrates the 40:1 departure surface must be evaluate through the OE/AAA process.	



RW 9L for RW 27R Departures:

Begins: departure end of runway (DER) elevation-RW 9L threshold.

Width: usable runway width

Section 2 width 500 feet from either side of the RW 19L2 C/L

Section 2 lateral incline:

Maximum Height:

Departures Surface (Section 1 and Section 2).

Per 3.6.2.3, all obstacles that penetrates the 40:1 departure surface must be evaluate through the OE/AAA process.

7.2' AMSL

A: 150'

B: 500ft (+425')

+150 ft: 157.2' AMSL

+303.8 ft: 311' AMSL

40:1

4.1.2. Runway Safety Area (RSA) per FAA 5300-13B, 3.10.

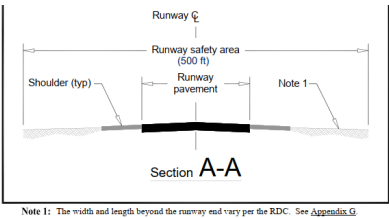
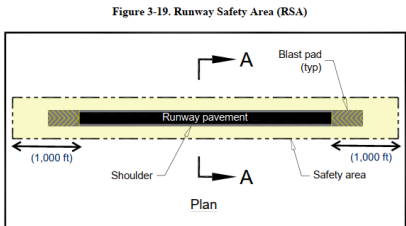
As stated in FAA's AC, The RSA enhances the safety of aircraft that undershoot, overrun, or veer off the runway and provides greater accessibility for ARFF equipment during such incidents. The construction analysis and evaluation used the RSA standard dimensions in FAA 5300-13B, Table G-9 Runway Design Standards Matrix, C/D/E-III, and Table G-10. Runway Design Standards Matrix, C/D/E-IV sets Refer to Table 4-3 - Runway Safety Area Data. These tables define the length and width required for RW 9L-27R and RW 12-30.

For ACC-ADG aircraft C-III, D-IV, and D-V, the length and width of the RSA are 1,000 ft beyond the runway ends and 500 ft centered on the runway centerline. The 1,000 ft before the landing threshold can be reduced to 600 ft when the runway end is equipped with electronic or visual vertical guidance.

Electronic Vertical Guidance: ILS, GLS, LPV, LNAV/VNAV, and Required Navigation Performance (RNP).

Visual Vertical Guidance: PAPI or VASI

The graphic below illustrates the RSA and Table 4-3 - Runway Safety Area Data, provide the values used.



FAA AC 150/5370-2G Operational Safety on Airports During Construction, paragraph 2.22.1.1 states:

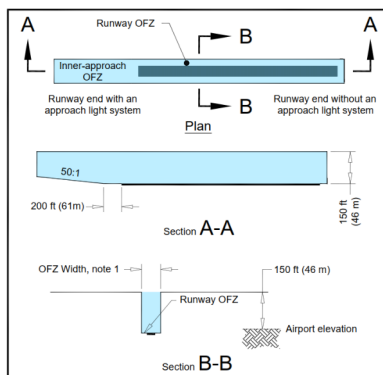
No construction may occur within the existing RSA while the runway is open for aircraft operations.

4.1.3. Obstacle Free Zone (OFZ) per FAA 5300-13B, 3.11:

The RW 9L and RW 12 OFZ must be kept clear of obstacles when active. Except for elements approved by the FAA aircraft and other object penetrations are not permitted in the OFZ. The analyzes of the construction has found that encroachment of the OFZ is not anticipated. The OFZ components include:

1. ROFZ (Runway OFZ):

Figure 3-20. Obstacle Free Zone (OFZ) for Visual Runways and Runways with Not Lower Than 3/4 Statute Mile (1.2 km) Approach Visibility Minimums



Note 1: Refer to paragraphs 3.11.2, 3.11.3, and 3.11.4 for dimensional values.

RW 9L:

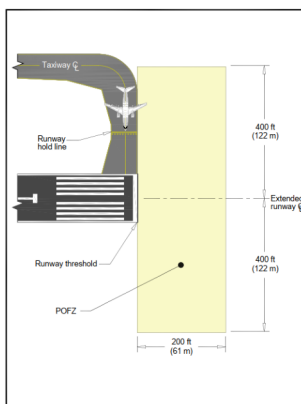
RW Length (LDA)	8,002 ft	
ROFZ Length:	8,402 ft	200 ft beyond each end of the runway
ROFZ Width:	400 ft	
ROFZ Height:	150 ft	

RW 12:

RW Length (LDA)	5,987 ft	
ROFZ Length:	6,387 ft	200 ft beyond each end of the runway
ROFZ Width:	400 ft	
ROFZ Height:	150 ft	

2. POFZ (Precision Obstacle Free Zone)

Figure 3-24. Precision Obstacle Free Zone (POFZ) - No Displaced Threshold



RW 9L:

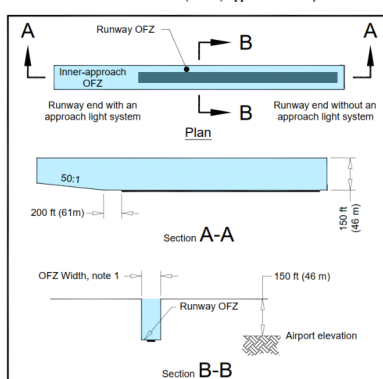
POFZ Length	200 ft beyond the TH
POFZ Width	800 ft

RW 12:

POFZ Length	200 ft beyond the Displaced TH
POFZ Width	800 ft

3. IA-OFZ (inner-approach OFZ)

Figure 3-20. Obstacle Free Zone (OFZ) for Visual Runways and Runways with Not Lower Than 3/4 Statute Mile (1.2 km) Approach Visibility Minimums



Note 1: Refer to paragraphs 3.11.2, 3.11.3, and 3.11.4 for dimensional values.

RW 9L:

IA-OFZ Begins:	200 ft beyond RW 9L TH
IA-OFZ Length:	1,234 ft - 200 ft beyond the last ALS light
IA-OFZ Width:	400 ft
IA-OFZ Slope	50:1

RW 12:

IA-OFZ Begins:	200 ft beyond RW 12 Displaced TH
IA-OFZ Length:	1,404 ft - 200 ft beyond the last ALS light
IA-OFZ Width:	400 ft
IA-OFZ Slope	50:1

4. IT-OFZ (inner-transitional OFZ)

Not applicable to RW 9L and RW 12 because the approach visibility minimums are not less than 3/4 statute mile.

Refer to sheet G009 RW 12 and RW 9L OFZ Restrictions.

4.1.4. Runway Object Free Area (ROFA) per FAA 5300-13B. 3.12

The ROFA is a clear area limited to equipment necessary for air and ground navigation that provides wingtip protection during an aircraft excursion from the runway. Limited and controlled construction activities within the ROFA are not expected to impact runway safety.

For ACC-ADG aircraft C-III, D-IV, and D-V, the length and width of the ROFA are 1,000 ft beyond the runway ends and 800 ft centered on the runway centerline. Similar to the RAS, the 1,000 ft before the landing threshold can be reduced to 600 ft when the runway end is equipped with electronic or visual vertical guidance described in Section 4.1.2 RSA.

Table 4-3 - Runway Safety Area Data, provides further information.

FAA AC 150/5370-2G Operational Safety on Airports During Construction, paragraph 2.22.2 states:

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 for approval.

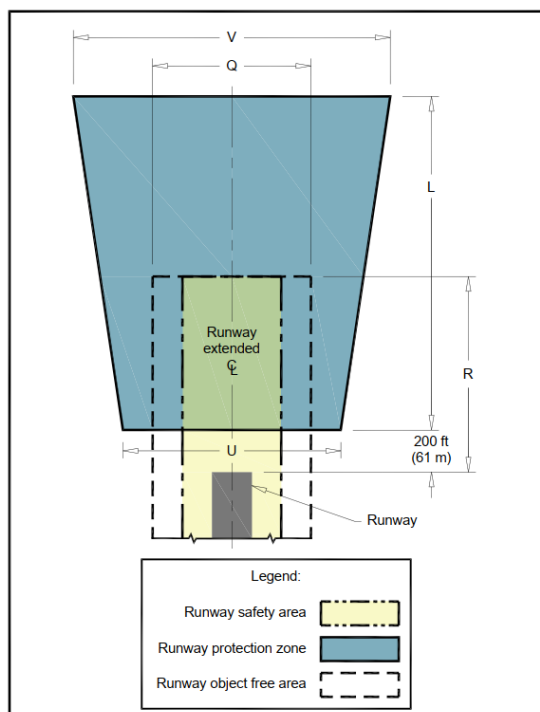
4.1.5. Runway Protection Zone (RPZ) per FAA 5300-13B, 3.13:.

The RPZ surface is controlled by MDAD to clear the area of incompatible objects and activities. Limited and controlled construction activity is not expected to impact the safety in this area.

The RPZ begins at:

Approach RPZ: 200 ft from TH
Departure RPZ: 200 ft beyond RW end, or
200 ft beyond TORA

Figure 3-26. Runway Protection Zone (RPZ), Runway Object Free Area (ROFA), and Runway Safety Area (RSA)



RW 9L:

RPZ Begins: 200 ft from RW 9LTH
Approach Runway Protection Zone
Inner edge width: U: 1,000 ft
Outer edge width: V: 1,510 ft
Length: L: 1,700 ft

RW 12:

RPZ Begins: 200 ft from RW 12 Displaced TH
Approach Runway Protection Zone
Inner edge width: U: 1,000 ft
Outer edge width: V: 1,510 ft
Length: L: 1,700 ft

4.1.6. Summary of Protected Surfaces Impacts

Surface	Phase 1:	Phase 2a:	Phase 2b
RW 9L Approach (3.6.1)	RW Close	RW Close	No Const. Permitted
RW 12 Approach (3.6.1)	No Const. Permitted	No Const. Permitted	RW Close
RW 27R Departure (3.6.2)	RW Close	RW Close	No Const. Permitted
RW 30 Departure (3.6.2)	No Const. Permitted	No Const. Permitted	RW Close
RW 9L Approach Part 77	RW Close	RW Close	Penetrations
RW 12 Approach Part 77	Penetrations	Penetrations	RW Close
RW 27R Departure Part 77	RW Close	RW Close	Penetrations
RW 30 Departure Part 77	Penetrations	Penetrations	RW Close
RW 9L-27R RSA	RW Close	RW Close	No Const. Permitted
RW 9L RSA	RW Close	RW Close	No Const. Permitted
RW 12-30 RSA	No Const. Permitted	No Const. Permitted	RW Close
RW 12 RSA	No Const. Permitted	No Const. Permitted	RW Close
RW 9L OFZ	RW Close	RW Close	No Const. Permitted
RW 12-30 OFZ	No Const. Permitted	No Const. Permitted	RW Close
RW 12 OFZ	No Const. Permitted	No Const. Permitted	RW Close
RW 9L-27R ROFA	RW Close	RW Close	Controlled Const.
RW 9L ROFA	RW Close	RW Close	Controlled Const.
RW 12-30 ROFA	Controlled Const.	Controlled Const.	RW Close
RW 12 ROFA	Controlled Const.	Controlled Const.	RW Close
RW 9L Approach RPZ	RW Close	RW Close	Penetrations
RW 12 Approach RPZ	Penetrations	Penetrations	RW Close
RW 27R Departure RPZ	RW Close	RW Close	Penetrations
RW 30 Departure RPZ	Penetrations	Penetrations	RW Close

4.2. Identification of Affected Areas

Contained within **Table 4.1** below are the anticipated work area restrictions and operational impacts on the Airport during the project. Consequences will vary based on everyday operations of an area, contractor work plan, and duration of work. The contractor will be required to coordinate with Airport Operations as detailed in this document before impacting operations on the airport.

The entire work area is in the Air Operations Area (AOA). Work inside the AOA will require contractors to be badged following Airport requirements.

Table 4-1 - Summary of Work Area Restrictions and Operational Effects

Airfield Element	Normal (Existing)	Phase 1	Phase 2a	Phase 2b
Remarks				
Runway 9L-27R	Active	Closed	Closed	Active
RDC APRC DPRC	Table 4-3	Closed	Closed	Active
NAVAIDs				

Airfield Element	Normal (Existing)	Phase 1	Phase 2a	Phase 2b
Remarks				
GS	Table 5-1	Turned OFF	Turned OFF	RW 9L GS OFF
LOC	Active	Both LOCs Turned OFF	Both LOCs Turned OFF	Active
Visual Aids				
VGSI (FAA)	Active	Turned OFF	Turned OFF	Active
RW Lighting	Active	Turned OFF	Turned OFF	Active
TW Lighting	Active	Turned OFF	Turned OFF	Active
Ent/Ext TW N1	Active	Closed	Closed	Closed
Parallel TW N	Active	Closed East of N6	Closed West of J	Closed West of J
Ent/Ext TW J	Active	Closed	Closed	Active
Ent/Ext TW H	Active	Closed	Closed	Active
Ent/Ext TW G	Active	Closed	Closed	Active
Ent/Ext TW F	Active	Closed	Closed	Active
Ent/Ext TW E		Closed	Closed	Active
Ent/Ext TW C	Active	Closed	Closed	Active
Ent/Ext TW N8	Active	Closed	Closed	Active
Runway 12-30	Active	Active	Active	Closed
RDC APRC DPRC	Table 4-3	Active	Active	Closed
Visual & NAVAIDs	Table 5-1	Active	Active	Turned OFF
Ent/Ext TW T1	Active	Active	Closed	Closed
Ent/Ext TW T2	Active	Active	Closed	Closed
Parallel TW T	Active	Active	Closed North of T3	Closed North of T3
Ent/Ext TW T3	Active	Active	Active	Closed
Parallel TW P	Active	Active	Active	Active
Ent/Ext TW J	Active	Active	Active	Closed
Ent/Ext TW H	Active	Active	Active	Closed
Ent/Ext TW G	Active	Active	Active	Closed
Ent/Ext TW D	Active	Active	Active	Closed
Ent/Ext TW T8	Active	Active	Active	Closed
Ent/Ext TW Y7	Active	Active	Active	Closed

Table 4-2 - Abbreviations / Acronyms

AAC:	Aircraft Approach Category	LDA:	Landing Distance Available	RPZ:	Runway Protection Zone
ADG:	Airplane Design Group	LOC:	localizer	RSA:	Runway Safety Area
ALS:	Approach Lighting System	MALS:	Medium Intensity ALS	RW:	Runway
APRC:	Approach Reference Code	MALSR:	Medium Intensity ALS with Runway Alignment	SWY:	Stopway
ARC:	Airport Reference Code	OCS:	Obstacle Clearance Surface	TDG:	Taxiway Design Group

ATC-F:	Air Traffic Control Facilities	OFA:	Object Free Area	TH:	Threshold
ATCT:	Airport Traffic Control Tower	OFZ:	Obstacle Free Zone	TL:	Taxilane
DME:	Distance Measuring Equip.	PAPI:	Precision Approach Path Indicator	TODA:	Takeoff Distance Available
DPRC:	Departure Reference Code	RAIL:	Runway Alignment Indicator Lights	TOFA:	Taxiway Object Free Area
DRC:	Departure Reference Code	RDC:	Runway Design Code	TORA:	Takeoff Run Available
GS:	Glideslope	REIL:	Runway End Identifying Lights	TSA:	Taxiway/Taxilane Safety Area
HIRL:	High Intensity Runway Lights	RETL:	Runway End & Threshold Lights	TW:	Taxiway
IA-OFZ	inner-approach OFZ	ROFA:	Runway Object Free Area	VGSI:	Visual Glide Slope Indicator
ILS:	Instrument Landing System				

Notes:

APRC and DPRC per AC 153/5300-13A, Paragraph 323

RDC per AC 153/5300-13A, Paragraph 105.c

4.2.1. Runway Safety Areas

The contractor shall not enter the safety area of any active runway without prior coordination and approval of Airport Operations. Runway safety area dimensions are shown in **Table 4-3** below and **Table 4-2** for abbreviations.

Table 4-3 - Runway Safety Area Data

Runway	RW Length (ft)	AAC	ADG	Approach Visibility RVR (ft)	RSA Length (ft)	RSA Width (ft)	ROFA Length (ft)	ROFA Width (ft)
					Dept/TH		Dept/TH	
RW 9L 737-BBJ Alternate	8002	C	III	4000	1000/600 ¹¹	500	1000/600 ¹¹	800
RW 9L	8002				1000	500	1000	800
RDC		D	IV	4000				
RW 9L APRC		D	VI	4000				
RW 9L DPRC		D	VI	N/A				
RW 27R	8002				1000	500	1000	800
RW 27R RDC		D	IV	4000				
RW 27R APRC		D	VI	4000				
RW 27R DPRC		D	VI	N/A				
RW 12								
RW 12	6800				1000	500	1000	800
RW 12 RDC		D	IV	4000				

Runway	RW Length (ft)	AAC	ADG	Approach Visibility RVR (ft)	RSA Length (ft)	RSA Width (ft)	ROFA Length (ft)	ROFA Width (ft)
					Dept/TH		Dept/TH	
RW 12 APCR		D	IV	2400				
RW 12		D	V	N/A				
RW-30	6800				1000	500	1000	800
RW-30 RDC		D	IV	Visual				
RW-30 APCR		D	IV	Visual				
RW-30 DPRC		D	V	N/A				

Notes:

AAC D: Approach speed 141 knots or more but less than 166 knots
 ADG IV: 118' - 171' Wingspan
 ADG V: 171' - 214' Wingspan
 ADG VI: 214' - 262' Wingspan

Note 11: This value only applies if that runway end is equipped with electronic or visual vertical guidance. ILS, GLS, LPV, LNAV/VNAV, and RNP lines of minima provide electronic vertical guidance. A PAPI or VASI provides visual vertical guidance. If there is no such guidance for that runway, use the value for "length beyond departure end."

4.3. Mitigation of effects

The mitigation Items below are incorporated.

- 1- Closing RW 9L-27R full length for the entire construction of Phase 1 and Phase 2a (concurrent construction) significantly reduces the construction period
- 2- The Contractor will be required to have all necessary equipment, material and labor on-site before closing RW 9L-27R for construction to avoid extending the runway closure period and delays.
- 3- RW 12-30 will remain opened during the Phase 1 and Phase 2a construction period to mitigate operational impacts.
- 4- RW 12-30 is closed for a short period of time in Phase 2b for the TW N-West reconstruction within the RSA and protected surfaces.

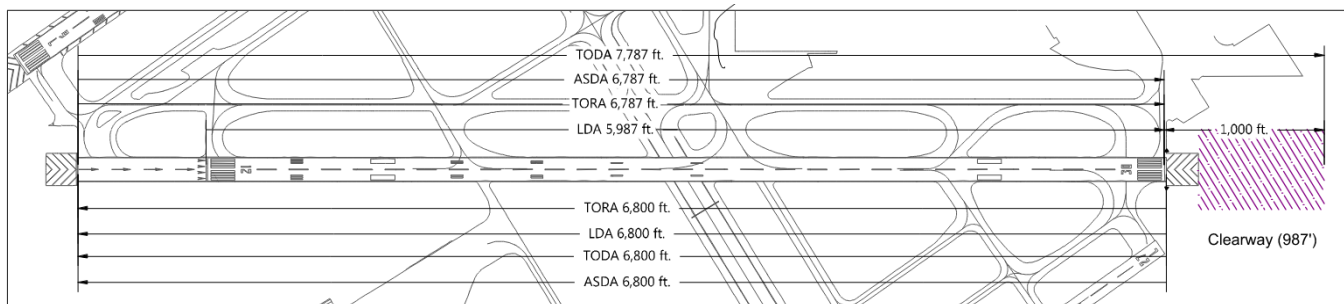
4.4. Declared Distance

The existing declared distances for RW 9L-27R and RW 12-30 in Table 4-3 – Runway Length Declared Distance below are not modified during construction. In Phase 1, the entire length of RW 9L-27R is closed, and in Phase 2b, the entire length of RW 12-30 is also closed. **Table 4-3** – Runway Length Declared Distance summarizes the declared distance and **Figure 4-1** - Runway 12-30 Declared Distance illustrate the existing operation conditions with RW 12 displaced threshold.

Table 4-4 – Runway Length Declared Distance

RUNWAY	9L	27R	12	30
ITEM				
Take Off Run Available (TORA)	8,002	8,002	6,787	6,800
Take Off Distance Available (TODA)	8,002	8,002	7,787	6,800
Accelerate Stop Distance Available (ASDA)	8,002	8,002	6,787	6,800
Landing Distance Available (LDA)	8,002	8,002	5,987	6,800

Figure 4-1 - Runway 12-30 Declared Distance



5. Protection of Navigation Aids (NAVAIDs) (3.9)

Aircraft navigational aids (NAVAIDs) provide pilots with visual and electronic information to operate and land aircraft at the airport. The Construction activities can negatively impact the functionality and serviceability of NAVAIDs. The contractor must coordinate their work effort and limit their operations so that NAVAIDs are not affected. All the Runway 9L-27R NAVAIDs will be disable/ turned-off during the construction. The entire closure simplifies and mitigates potential impacts during construction due to human error

The contractor must verify that the NAVAIDs are turned OFF by ATCT and MDAD whenever the runway is closed for construction. Refer to **Table 5-1** for Runway 9L-27R and Runway 12-30 Visual and NAVAIDs.

Table 5-1 - Visual and NAVAIDs.

Runway	RW Lighting	RW Marking	Visual Approach Aids	Instrument Approach Aids
RW 9L	HIRL	Precision	MALSR, VASI-4VL	ILS
RW 27R	HIRL	Precision	MALS, VASI-4VL	ILS / DME
RW 12	HIRL	Precision	MALSR, PAPI-P4L	ILS / DME
RW 30	HIRL	Non-Precision	PAPI-P4L	None

The individual Safety Phasing Plan (G400 series) and Table 4.1 address the NAVAIDs elements below for each phase. However, they are not critical since Runway 9L-27R will be closed for construction.

- NAVAIDs Critical areas
- Effects of construction on the NAVAIDs

- c. Unanticipated power outages,
- d. Protection of NAVAID facilities
- e. Separation between construction and each NAVAID

The contractor will be required to limit operations so that material, equipment, and personnel do not enter NAVAID critical areas or disturb power to NAVAID facilities without prior coordination with Airport Operations and FAA Tech Ops personnel. If necessity is determined, the contractor must provide at least 72-hour notice to Airport Operations and FAA Tech Ops personnel before disturbing the power supply or removing a NAVAID from service.

Contacts:

The contractor must ensure that he has the necessary contact information for FAA Tech Ops Office, including his name, phone number, and email, during the construction and coordination stages. Refer to **Table 6-1 - Contact Information**.

6. Contractor Access (3.10)

6.1. Location of Stockpiled Construction Materials

The contractor is limited to the placement of stockpiled materials at the staging area shown in the plans. The material must be constrained to prevent movement resulting from aircraft blasts or winds greater than 10 knots. The contractor must take immediate corrective action to avoid penalties.

The contractor shall not place stockpiles or store materials and fuel in any active runway approach protection area. The dimensions of the runway approach protection area are shown in the Drawings.

6.1.1. Height Restrictions

Stockpiles have height limits that meet the FAR Part 77 Approach Surface requirements. However, stockpiles more than 12 feet above ground elevation are not permitted. In addition, stockpiles must not be within:

- 400-ft of an active runway centerline.
- 160-ft from an active taxiway centerline.
- 138-ft from an active taxilane centerline.
- 100-ft from potential aircraft jetblast.

6.1.2. Wildlife Attractant.

Contractor to manage stockpiles so that they do not attract wildlife (Refer to Section 7 Wildlife Management).

6.1.3. Foreign Object Debris (FOD).

Contractor to manage stockpiles so that they do not create FOD (Refer to Section 8 Foreign Object Debris (FOD) Management).

To avoid FOD, the Contractor must perform as a minimal, the following to the satisfaction of MDAD:

- Cover and secure all stockpiles, material, and other potential FOD items at MDAD-approved locations.

6.1.4. Marking and Lighting of Stockpiles

Unless otherwise directed by Operations, the contractor will not be required to mark or light material stockpiles. The contractor must comply with MDAD's standard 12 ft. maximum height and place material stockpiles only at designated and approved locations to prevent them from becoming an obstacle.

6.2. Vehicle and Pedestrian Operations.

The project documents include several requirements for vehicle and pedestrian safety as summarized below.

6.2.1. Access and Haul Routes

The contractor's access and hauling operations are strictly limited to the haul routes as shown in the plans. The contractor is responsible for any improvements and maintenance to haul routes to perform construction activities efficiently. Following completion of construction, the contractor is required to restore haul routes to original conditions.

6.2.2. Contractor Vehicle Marking and Lighting

Each Contractor licensed vehicle must display a company name/logo on both sides of sufficient size to be recognizable to personnel in the control tower. Signs must be a minimum of 200 square inches and are subject to approval by MDAD. Each vehicle used inside the AOA must also have an identification tag issued by MDAD. Specialized construction equipment does not require signs or identification tags. Each contractor's licensed vehicle must have a yellow/amber rotating beacon affixed to the uppermost part of the vehicle. The light must be visible day and night, including from the air. Specialized construction equipment does not require rotating beacon lights. The contractor's sole responsibility is vehicle marking and lighting, and the Airport does not provide it.

6.2.3. Airport Rules for Ground Vehicle Operations

The Contractor shall follow all the rules of operation implemented by MDAD for driving on the Airport's AOA, including, but not limited to the following:

- All employees driving jobsite motor vehicles shall have a valid driver's license for the state which the employee resides and for the class vehicle driven.
- Speed limit on site shall not to exceed 5 mph unless otherwise posted.
- Proof of adequate company insurance as specified in the Contract must be present for each vehicle.
- Block or chock vehicle wheels when parked on inclines.
- All vehicles must be shut off when unoccupied.
- The Contractor and all Subcontractors are responsible for the stability of any material hauled.
- Drivers are required to observe the "Right-Of-Way" Rule. Yield to other drivers whose driving actions demand the right of way.
- Contractor's personnel operating vehicles on the AOA shall complete a driver training class presented by the Airport and successfully pass the Airport's written driving test.
- No person shall operate motorized vehicles or equipment of any kind on the airport unless in possession of valid operator's license as required by the State of Florida for the type of vehicle being operated.
- No person shall operate a motor vehicle or other motorized equipment of any kind on the airport in a reckless or negligent manner or without caution or in any manner that endangers or is likely to endanger persons or property, or in excess of the posted speed limit.
- No person shall fail to give pedestrians and aircraft the right-of-way over vehicular traffic. All ground vehicles shall pass to the rear of taxiing aircraft giving adequate time for aircraft movement to avoid jet blast.
- No person operating a motor vehicle on the airport shall fail to give proper signals or fail to observe the directions of posted traffic signs or traffic lanes.
- No person under the influence of alcohol or drugs shall operate a motor vehicle on the airport.
- Contractor will not be allowed to operate motor vehicles outside of the designated work areas as identified by barricades inclusive of the Airport Perimeter Road. To drive from one work area to another Contractor

shall use the approved haul route to the desired work area. No crossing of active taxiways is permitted with the exception of a designated haul route crossing that includes a flagman and all other requirements set in the safety and phasing plans. No crossing of active runways is permitted.

- Driving privileges to operate in areas controlled by the ATCT (movement areas) are limited to vehicles with an operational necessity and who have been pre-approved by the OWNER and have received appropriate non-movement driver training.
- The Airport shall have the authority to tow or otherwise move motor vehicles that are parked by their owners or operators on the airport in violation of the regulations of the airport, at the operator's expense and without liability for damage that may result in the course of or by reason of such moving.
- Other restrictions as defined by the latest version of the MDAD Airport Security Procedures for Contractors shall be followed.

6.2.4. Radio Communications

6.2.4.1. Two-Way Radio Communications

Contractors may utilize two-way radios on the project if they do not interfere with existing Airport and FAA communication equipment and frequencies.

6.2.4.2. Air Traffic Control Tower (ATCT) radio communication:

Vehicle operations on the movement area require contact with ATCT Ground Control or Ramp Control Tower. Ground Control directs all aircraft and vehicle movement on the airport movement area. If and when authorized by MDAD, Ground Control must be contacted via the ground frequency before entering the movement area. Refer to Table 6-1 - Contact Information.

6.2.4.3. Personnel required to communicate with ATCT:

All communications with ATCT Ground Control will be made by Airport staff or designated contractor personnel with movement training. Contractor will be responsible for escorting its personnel with properly trained and authorized individuals. Once the haul route is defined and approved, the contractor may access the phased work area without deviating from the delineated route.

6.2.4.4. Training:

Training will be provided to contractor's designated personnel during the meeting to secure badging for contractor's personnel. During training designated personnel will be instructed on proper communication protocol, procedures if radios become disabled, etc.

6.2.4.5. Procedure for communicating

- Radio types:
 - Two-way radio capable of communicating on the Airport's frequencies, provided by the contractor.
 - The contractor must submit for review proposed non-airport radios for MDAD's approval that he intends to use for internal communication under section 6.2.4.1.
- Light signals: Only when two-way radios are disabled.

Notes: Frequencies and phone numbers: in **Table 6-1** to be verified and confirmed by the contractor at the preconstruction conference and during the construction and coordination stages.

Table 6-1 - Contact Information

Contact	Name	Phone Number	Email
Airport Dispatch (Emergencies)	Elvin Hernandez	305) 869-1662 (Office) (305) 794-8984 (Cell)	ehernandez@flymia.com

<u>Contact</u>	<u>Name</u>	<u>Phone Number</u>	<u>Email</u>
Airport Operations -Day Shift / Evening Shift	Elvin Hernandez Ramp 50	305) 869-1662 (Office) (305) 794-8984 (Cell) (305) 439-2696	ehernandez@flymia.com
Airport Environmental (Hazmat Issues)	Gustavo Leal	305) 876-7796	gleal@flymia.com
Airport Engineering:	Ernesto Beltre	(305) 876-0787	ebeltre@flymia.com
FAA	Bryan Wells	(305) 869-1601	opf@rvainc.com
FAA Tech Ops personnel.	FAA on Duty	(305) 869-5351	
FAA ATO/Tech Ops	Jose Hernandez	(305) 869-5302	Jose.hernandez@faa.gov
ARFF	Y. Patrick Mardice	(786) 336-6594 (Office) (786) 393-4870 (Cell)	mardice@miamidade.gov
ATCT managers on duty	Bryan Wells	(305) 869-1601	opf@rvainc.com
Ground Control Frequency:		120.025 MHz.	

6.2.5. Airport Security

The Miami-Opa Locka Executive Airport (OPF) maintains an active security program, and as a commercial service, airport security is of primary importance. The project will take place within proximity of the Airport's Security Identification Display Area (SIDA) and the entire project work areas are within the AOA. The Contractor shall designate personnel to attend airport security training and be badged as discussed below. It is the Contractor's responsibility to maintain a safe and secure work area/s. The Contractor is to notify MDAD immediately if a breach in security accidentally occurs.

Work within the SIDA requires specific security protocol to be followed. General project security requirements include the following:

Important information: The Contractor's personnel/employee working on the project are required to obtain from MDAD the General Aviation identification badges specifically for Opa-Locka Airport.

- The project plans show the entry point(s), barricades, Contractor's staging area, employee's private vehicle parking area, and work area. The Contractor shall provide security for these areas. The Contractor is to provide to the Airport, for review and approval, all security measures, barricades, and other means to secure scheduled openings between the secure and non-secure areas before creating the opening. The Airport provides security oversight and patrols of the Airport, but the Contractor should not rely on the patrols to provide full-time security.
- No contractor employee may tamper or interfere with, compromise, modify, attempt to circumvent, or cause a person to tamper or interfere with, compromise, modify, or attempt to circumvent any security system, measure, or procedure implemented at the Airport.
- Each contractor employee must immediately notify the Airport when security-related facilities and equipment within the contractor's area are malfunctioning or no longer adequate to perform the control function.
- No contractor employee may enter, or be present within, a secured area, SIDA, AOA, or Sterile Area without complying with the systems, measures, or procedures being applied to control access to, or presence, or movement in, such areas.

TSA requirements: The Transportation Security Administration (TSA) through several Transportation Security Regulations (TSR) has the regulatory power to assess fines for breaches of airport security. The TSA may test the Contractors security means and methods for compliance with applicable security codes and regulations

throughout the course of the project. Accordingly, if the Contractor is found culpable for security breaches, fines assessed to the Airport will be collected from the Contractor.

6.2.5.1. Security Badging Requirements

The Contractor will be required to obtain security badging in accordance with the latest version of the MDAD Airport Security Procedures for Contractors and Airport Operations. Refer to MIA Web Site: [Airport ID Badging Information - Miami International Airport \(miami-airport.com\)](https://www.miami-airport.com)

6.2.5.2. Maintenance of the Secured Area of the Airport

Main access into the AOA shall be via the gates identified in the plans. Access will not be allowed at any other point.

7. Wildlife Management (3.11)

The Contractor will be expected to take steps to 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:

- Refer to the Miami Opa-Locka Executive Airport Wildlife Hazard Assessment, dated April 2015 to added to the Bid Documents.

7.1. Trash:

Food scraps must be collected from construction personnel activity.

7.2. Standing Water:

Any activity taking place that creates a standing body of water must be remedied immediately.

7.3. Tall Grass and Seeds:

The specification directs the contractor to immediately after completing the earthwork to sod to cover the exposed soil surface to mitigate dust and erosion issues. The use of seeds is not permitted.

The specifications also require the contractor to mow the turf areas as needed to keep the grass short within tolerance.

7.4. Poorly Maintained Fencing and Gates:

The Contractor must maintain Airport security during construction. Periodic perimeter fence inspections are conducted by the Airport to ensure the fence is secured. These inspections also include identifying any animal digs that are located under the fence and ensuring that perimeter gates and drainage grates are tightly secured to prevent animal access.

7.5. Disruption of Existing Wildlife Habitat:

The Contractor personnel should immediately notify MDAD or its representative of a wildlife sighting.

See FAA AC 150/5200-33C, *Hazardous Wildlife Attractants on or Near Airports*, or latest version and FAA CERTALERT 98-05, *Grasses Attractive to Hazardous Wildlife*, for more information related to wildlife management.

8. Foreign Object Debris (FOD) Management (3.12)

Foreign object debris at airports includes any object found in an inappropriate location that can damage aircraft, equipment, or airport personnel. On construction sites FOD typically is comprised of, but not limited to, loose gravel, blowing sand, wire bristles from sweeper heads, food wrappers, and material packaging. The presence of FOD in an airport's AOA poses a significant threat to the safety of air travel. FOD has the potential to damage aircraft during critical phases of flight, which can lead to catastrophic loss of life and airframe, and at the very least increased maintenance and operating costs. The Contractor is required to maintain an immediate response time, 24 hours a day and 7 days a week, to address FOD issues identified by Airport Operations.

The Contractor and its subcontractors shall take appropriate steps to prevent FOD within the AOA such as:

8.1. Training:

The Contractor shall provide training to all employees working within the AOA on effective FOD management. Training shall include description and consequences of FOD, FOD awareness, and housekeeping procedures.

8.2. Housekeeping:

Preventing FOD from occurring is the most effective form of FOD management. The Contractor must monitor construction activities and proactively develop a plan to prevent FOD from occurring. Typical FOD prevention measures include the use of covered trash containers, covered loads, zero tolerance of littering, and tying down items which may be easily wind-blown.

8.3. Ground vehicle tire inspections:

Prior to entering and crossing active airfield pavement the Contractor must perform a vehicle tire check for any loose rocks that may be in the tread. Tires covered in mud must be cleaned prior to crossing active pavement to prevent tracking of dirt.

8.4. Pavement sweeps:

Prior to opening sections of pavement within a work area to aircraft traffic, the Contractor will be required to sweep the entire pavement surface (including paved shoulders). Metal bristled brooms are known to create FOD, and the Contractor will be required to clean all bristles from the pavement. Compressed air and vacuums can be used to clean pavement surfaces as well.

8.5. FOD Inspections:

Refer to Section below for FOD inspection requirements.

9. HAZMAT Management (3.13)

HAZMAT procedures shall be developed by the Contractor prior to the issuance of the notice-to-proceed for construction including but not limited to fuel storage and spill prevention and containment procedures. For minimal requirements and guidelines refer to MDAD's standard P-160 Technical Specification and General Conditions.

10. Notification of Construction Activities (3.14)

At various stages throughout the project's construction, it will become necessary to provide formal notification of construction activities. MDAD will establish proper procedures for the project that the contractor must follow to ensure appropriate communication. Persons who have questions concerning policies, procedures, or requirements of the Airport Security Program, should contact Airport Operations. Persons who observe a security violation, suspicious act, or any serious act that may endanger persons or property should contact Airport Operations immediately.

10.1. Maintenance of a list of responsible representatives/ points of contact.

At the pre-construction meeting, all parties will identify their main point of contact for coordination during construction. The Contractor will also be responsible for maintaining an approved list of representatives' contact information. Refer to **Table 6.1** Contact Information

10.2. NOTAM.

The Contractor shall coordinate with MDAD personnel for the issuance of NOTAMs related to the project construction. MDAD and FAA will generate, and issue approved NOTAMs based on the Contractor construction schedule and planned facility impacts. The Contractor must provide at least a 72-hour notice when a NOTAM is expected to be necessary.

10.3. Emergency notification procedures.

The Contractor shall develop an Emergency Action Plan, as detailed in MDAD's Construction Safety Manual included in Appendix X.

10.4. Coordination with ARFF Personnel.

This project is not expected to impact ARFF emergency routes. However, ARFF staff will be notified when rerouting, blocking, and restoration of emergency access routes are required.

10.5. Notification to the FAA

Before the Contractor uses cranes, tall equipment, or other items on or near the airport, they must submit a new Form 7460-1 to FAA through MDAD planning for airspace review and approval. FAA review process can take up to 90 calendar days, so the Contractor shall plan accordingly.

11. Inspection Requirements (3.15)

11.1. Daily (or more frequent) inspections.

During construction, there will be several routine inspections conducted by the contractor, Airport and/or their agent(s) including but not limited to:

- **FOD Inspection:** The Contractor shall keep the project site and vehicles clean, employing a "clean as you go" approach throughout the project.
- **Airport Operations Daily Inspection:** Operations Officers conduct airfield inspections at least 3 times a day. These inspections include an inspection of all airfield-paved areas and safety areas to ensure compliance with FAR Part 139.327.

11.2. Final inspections

Final Inspections include but not limited to the following:

- **Contractor Inspection:** Prior to opening work areas and pavement to aircraft operations the contractor must coordinate with MDAD for inspection of work area. Pavements must be free of all dirt, sand, gravel, wire bristles or any other objects that could cause damage to aircraft engines. All soil areas must be free of dirt clods, ruts, or surface irregularities that could damage an aircraft should it leave the pavement. Daily inspections must be completed to assure all traffic control devices are in proper location and working order.
- **Substantial Completion and Final Inspections:** When the Contractor believes the work to be essentially complete they shall notify the Representative and prepare for a substantial completion inspection in

accordance with the contract documents. Representatives of the Contractor, MDAD designated Representatives and Design Team will walk the project to generate a punch list of outstanding items to be corrected. Once the Contractor believes the punch list to be complete it will notify the Representative and a final inspection will be completed for acceptance of the project.

11.3. Additional Inspections:

The Contractor will be required to coordinate various inspections as required by agencies having jurisdiction (AHJs) such as FAA Technical Operations, TSA, etc.

12. Underground Utilities (3.16)

The contract drawings contain existing and proposed underground utilities in the project area. These drawings are based on the best available record data and survey information. However, they are not guaranteed to be accurate, and it is the contractor's responsibility to verify utility locations. The contractor must submit an existing utility as-built CAD files with all survey and Subsurface Utility Engineering (SUE) and other investigation efforts to verify the utilities shown in the plans and new utilities found by the contractor.

Before starting work, the contractor shall notify all local utility providers believed to have lines in the area, including MDAD, and the FAA, to request utility locates and provide them with a planned schedule for construction. Before performing any excavation work, the contractor shall identify and mark all utilities.

If any utilities are hit during construction, whether damaged or not, the contractor shall notify the Field Representative, MDAD, and the Utility Owner immediately. The contractor shall repair any damage to the utility line at no cost to the owner.

The identification and location of all the utilities within the work area is of the utmost importance to avoid server service interruption and damage to systems that impact airport operations.

13. Penalties (3.17)

The following penalties can be administered by the Airport, FAA, and/or TSA as allowed per the requirements of the Construction Safety and Phasing Plan:

13.1. • Vehicle Operations:

Stiff penalties exist to punish those who violate airport driving regulations. Prosecution can be a fine, imprisonment, lease violation or impoundment of vehicle. Refer to Web Site: [Airside Operations - Miami International Airport \(miami-airport.com\)](https://www.miami-airport.com) for the latest Safety Violation Notice (SVN) and Civil Violation in the training manual.

13.2. • Security Violations:

Individuals who violate Airport Security rules may be subject to prosecution. Penalties may be a fine, imprisonment, lease violation or impoundment of vehicle. For additional information refer to Web Site: [Airside Operations - Miami International Airport \(miami-airport.com\)](https://www.miami-airport.com) and [Airport ID Badging Information - Miami International Airport \(miami-airport.com\)](https://www.miami-airport.com)

13.3. • FOD:

The airport has a zero-tolerance approach to FOD, and the contractor may be subject to fines from MDAD, FAA, or other agencies for failure to properly manage FOD during construction activities.

14. Special Conditions (3.18)

All contractor operations shall comply with MDAD's Project Procedures for Construction Inspections Services (CIS) to be added to the Bid Documents.

15. Runway and Taxiway Visual Aids (3.19)

15.1. General.

All Airport markings, lighting, signs, and visual NAVAIDs directing aircraft to closed areas of the airport will be covered, removed, or disabled during construction. The Contractor must comply with lighting and signage construction phasing details and including, but not limited to, the following FAA ACs (latest version):

- AC 150/5345-44K - Specification for Runway and Taxiway Signs,
- AC 150/5340-18G - Standards for Airport Sign Systems
- AC 150/5345-53D - Airport Lighting Equipment Certification Program.

15.2. Markings.

Lighted runway closure "X's" will be installed on Runway 9L-27R for the duration of approved runway closure or as directed by Airport Operations. Only Lighted runway closure "X" are required. Surface Closed runway marker X's along the runways for long-term closures will not be necessary.

The awarded Contractor will be responsible for the purchase/procurement of two (2) lighted Runway Closure Markers (RCMs) to be used during the project's duration. The RCMs shall be fueled and maintained by the Contractor, and upon completion, both RCNs will be turned over to MDAD-OPF Airside Operations with proper documentation and required maintenance. MDAD to provide the specifics for the RCMs.

15.3. Lighting and Visual NAVAIDs.

When needed and authorized, the contractor will turn off Runway 9L-27R, Runway 12-30, and associated taxiways lighting and signage circuits for the duration of the closures. Edge lights and signs on the closed portions of runways and taxiways will be covered or de-energized during applicable phases. PAPI's and VASIs on all Runways will be turned off or covered during runway closures. The FAA or MDAD will deactivate runway approach lighting systems and other ILS equipment during the same Phase. All equipment shutdowns or de-energizing must be coordinated and approved by MDAD and the FAA.

15.4. Signs, temporary, including orange construction signs, and permanent signs.

Non-applicable signs shall be covered or de-energized during approved runway and taxiway closures in each phase. Unless otherwise determined by Airport Operations, signs will not be covered for short-term closures.

16. Marking and Signs for Access Routes (3.20)

The contractor shall furnish and install signs at highly visible locations near the entrance to work areas to warn workers of jet blast and propeller wash hazards. The Contractor must submit the proposed sign plan for review and approval.

The project's construction access routes shall be marked following the contract documents subject to approval. The contractor may elect to place a sign to direct construction traffic to the project site.

The contractor must comply with the construction phasing plans, pavement markings, and signage standards to include, but not limited to, FAA AC 150/5340-18 and, to the extent applicable, the MUTCD and FDOT specifications.

17. Hazard Marking and Lighting (3.21)

17.1. Purpose.

It is imperative that the contractor implements and maintains all markings and lighting in the specification, plans, and as directed by Airport Operations. The Contractor must submit for the review of the Engineer and MDAD a proposed Hazard Marking and Lighting Plan. Element of the plan includes, but is not limited to:

- 1- When and where each of the markings, lighting equipment, and other devices are used.
- 2- Company individual and alternates responsible for maintenance of hazard marking, lighting equipment and all other devices.
- 3- Full contact information for responsible company's designees. This information shall also be added the project's personnel contact data base. Refer to the Notification of Construction Activities section above.
- 4- Drawings and graphics to illustrate and implement the proposed plan.

17.2. Equipment

Low profile barricades with orange/white reflective tape and flashing red lights are to be used for all airfield pavement closures. Barricade spacing may be made smaller to fit pavement widths but may not exceed 7 feet or as directed by Operations.

18. Work Zone Lighting for Nighttime Construction (3.22)

The contractor must provide a safe and efficient lighting level of the nighttime work-areas lighting. The drawings and specification set the minimal requirements of the lighting equipment capable of adequately illuminating the construction work-area (minimum foot candles of illumination). The construction lighting plan for each construction phase must be submitted by the contractor for review and approval by the Engineer before initiating the work. flood lights Portable plants system is anticipated to be used following the height restrictions in the plans.

19. Protection of Runway and Taxiway Safety Areas (3.23)

19.1. Protection of RW 9L-27R and RW 12-30

19.1.1. Runway Safety Area (RSA).

All work areas that impact the RSA will not be initiated until the runway is closed.

19.1.2. Runway Object Free Area (ROFA).

Except for the TW N1 and TW N-West SW corner work area when RW 9L-27R is closed, the Contractor will perform the RW 9L-27R rehabilitation outside Runway 12-30 RSA and ROFA. The phasing mitigates the TW N1/TW N-West work RSA encroachment by closing RW 12-30 during the construction of the following work stage. However, some work within the ROFA is anticipated. While RW 9L-27R is closed, the TW H and TW E construction within the RSA and ROFA is scheduled to stop at the TW N TOFA, which mitigates all impacts to TW N and RW 9L-27R operations when re-opens. TW J, TW G, TW F, and TW C transitions within RW 9L-27R RSA will perform while the runway is closed.

19.1.3. Obstacle Free Zone (OFZ).

Refer to ROFA section above.

19.1.4. Runway approach/departure surfaces.

This project may impact the runway departure surfaces. Refer to plans for location and restriction

19.2. Protection of Taxiways

19.2.1. Taxiway Safety Area (TSA).

The phasing plans provide details for any adjustments that may be necessary to the Taxiways

19.2.1.1. TSA Width

Temporary modifications to the TSA during construction are not anticipated. Changes are not required to allow continued operation of smaller aircraft.

19.2.2. Taxiway Object Free Area (TOFA).

Modifications to the TOFA during construction are not anticipated. When the necessity is determined during the project implementation, The Engineer, in collaboration with MDAD, will develop appropriate details for continued aircraft operations while construction occurs within the TOFA.

19.3. Open Trenches and Excavations.

All trenches and excavations must be backfilled before opening the runway and taxiways for aircraft use within the Runway Safety Area (RSA) and Taxiway Object Free Area (TOFA) when required by the Airport.

Unless expressly authorized by MDAD, no work is allowed inside the RSA, ROFA, and TOFA while opened to traffic.

Open trenches and excavations are permitted only in approved locations. All trenches and excavations must be backfilled or protected as approved by operation at the end of each shift. Before opening an area to traffic, the trench backfill must meet the project's and FAA's RSA, ROFA, TSA, and TOFA grading standards to the satisfaction of Airport Operation.

The contractor must install signs, lights, barricades, and other methods appropriate to provide safety throughout the construction. The Contractor must submit a trench protection plan for review and approval of the Engineer and MDAD.

20. Other Limitations on Construction (3.24)

20.1. Prohibitions.

- The contractor shall not fuel in the runway approach protection area of any active runway. Runway approach protection area dimensions are shown in Drawings.
- The use of open flame welding or torches is prohibited
- No debris burning will be allowed
- The use of flare pots is prohibited within the AOA.
- The use of electrical blasting caps is prohibited on or within 1000 ft. of the airport property.

20.2. Restrictions.

- Contractor may not use tall equipment (cranes, concrete pumps, etc.) unless a 7460-1 determination letter is issued by the FAA for such equipment.
- Stockpiled material shall be constrained in a manner to prevent movement resulting from aircraft blast or wind conditions.
- Material should not be stored near aircraft turning areas or movement areas.

21. Safety Plan Compliance Document (SPCD)

This CSPP is part of the project Contract. The contractor shall be responsible for meeting all the requirements contained in this CSPP, including the conditions shown in the Safety and Phasing drawings and all other Contract Documents. In addition, the contractor shall submit a Safety Plan Compliance Document (SPCD) document to MDAD for approval before the Notice to Proceed (NTP). The SPCD shall conform to the requirements found in AC 150/5370-2G (or the latest version) Operational Safety During Construction on Airports. In particular, paragraphs 1.3.2 Prepare a Safety Plan Compliance Document (SPCD), 1.4.3 Define Construction Contractor's Responsibilities, 2.4.2 and all other SPCD requirements in the AC, Contract Documents. and MDAD Operations.

As informed in the AC, the SPCD should not restate nor propose differences to provisions already addressed in the CSPP. The SPCD developed by the contractor must indicate how he will comply with the CSPP and provide details that cannot be determined before the contract award.

Appendices

Appendix A. - Safety and Security Plans

Safety, Phasing, Layout and Access Plans per Table 3-2

Drawing Sheet No.	Drawing Title
G002	GENERAL NOTES, LEGEND, AND ABBREVIATIONS
G003	PART 77 HEIGHT RESTRICTIONS RW 12-30 & RW 9L-27R
G004	RW 12 & RW 9L PART 77 HEIGHT RESTRICTIONS
G005	RW 12 APPROACH SURFACE RESTRICTIONS
G006	RW 30 DEPARTURE SURFACE RESTRICTIONS
G007	RW 9L APPROACH SURFACE RESTRICTIONS
G008	RW 27R DEPARTURE SURFACE RESTRICTIONS
G009	RW 12 AND RW 9L OFZ RESTRICTIONS
G340	PROJECT LAYOUT, STAGING, STORAGE AND ACCESS, HAUL ROUTE PLAN
G400	PHASING PLAN
G401	PHASE 1 DETAIL PLAN - TW N1 CLOSURE
G402	PHASE 1 DETAIL PLAN - TW J & TW H & TW G & TW F- CLOSURE
G403	PHASE 1 DETAIL PLAN - TW E & TW C CLOSURE
G404	PHASE 1 DETAIL PLAN - TW N-EAST & N8 CLOSURE
G405	PHASE 2A DETAIL PLAN – TW N-WEST CLOSURE
G406	PHASE 2B DETAIL PLAN – RW 12-30 CLOSURE
G407	RW 12-30 CLOSURE DETAIL PLAN
G410	PHASING NOTES AND DETAILS

AE	ARCHITECT/ENGINEER
AOA	AIRSIDE OPERATIONS AREA
AR	APRON RUNOFF
ARFF	AIRCRAFT RESCUE AND FIRE FIGHTING
B/L	BASELINE
CI	CAST IRON
CO	CLEANOUT
DERM	DIVISION OF ENVIRONMENTAL RESOURCES MANAGEMENT
DIP	DUCTILE IRON PIPE
DP	DIGITAL PRINT
EED	ENVIRONMENTAL ENGINEERING DIVISION
EOW	EDGE OF WATER
FAA	FEDERAL AVIATION ADMINISTRATION
FPL	FLORIDA POWER & LIGHT COMPANY
FOD	FOREIGN OBJECT DEBRIS
GS	GLIDE SLOPE CRITICAL AREA
LDA	LANDING DISTANCE AVAILABLE
LHA	LAMP HOUSING ASSEMBLY
MALS	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM
MDAD	MIAMI-DADE COUNTY AVIATION DEPARTMENT
MH	MANHOLE
MOT	MAINTENANCE OF TRAFFIC
NFAC	NO FURTHER ACTION WITH CONDITIONS
NFFA	NATIONAL FIRE PROTECTION ASSOCIATION
A.A.A.	OWNERS AUTHORIZED REPRESENTATIVE (SYNONYMOUS WITH RPR)
PC	POLLUTION CONTROL
RCP	REINFORCED CONCRETE PIPE
RER/DERM	REGULATION AND ECONOMIC RESOURCES, DIVISION OF ENVIRONMENTAL RESOURCES MANAGEMENT
RGS	RIGID GALVANIZED STEEL
RPR	RESIDENT PROJECT REPRESENTATIVE
ROFA	RUNWAY OBJECT FREE AREA
RSA	RUNWAY SAFETY AREA
TOFA	TAXIWAY OBJECT FREE AREA
TORA	TAKE-OFF RUN AVAILABLE
TSA	TAXIWAY SAFETY AREA
SD	STORM DRAIN
SFWMD	SOUTH FLORIDA WATER MANAGEMENT DISTRICT
W/	WITH
W/O	WITHOUT
WM	WATER MAIN

1. CONSTRUCTION LIMITS - ALL CONTRACTOR VEHICLES AND TRAFFIC SHALL REMAIN WITHIN THE LIMITS OF CONSTRUCTION AREAS, STAGING AREAS AND HAUL ROUTES AS SHOWN ON THE PLANS OR AS AUTHORIZED BY MDAD.
2. THE LOCATION AND SIZE OF ALL EXISTING UTILITIES AND TOPOGRAPHY HAVE BEEN PREPARED FROM THE MOST RELIABLE INFORMATION AVAILABLE TO THE ENGINEER. THIS INFORMATION IS NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ANY EXISTING UTILITIES IN COORDINATION WITH MDAD AND ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DRAINAGE CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY MDAD IMMEDIATELY IF ANY DISCREPANCIES ARE FOUND WITH THE INFORMATION SHOWN IN THE PLANS.
3. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE PROTECTION OF ALL DRAINAGE STRUCTURES DURING CONSTRUCTION.
4. ARFF ACCESS SHALL BE MAINTAINED AT ALL TIMES IN ACCORDANCE WITH NFPA 101.
5. THE LIMITS OF CONSTRUCTION, MATERIAL STORAGE AREAS, EQUIPMENT STORAGE AREAS, PARKING AREAS AND OTHER AREAS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION SHALL BE MARKED BY THE CONTRACTOR AND APPROVED BY MDAD. THE CONTRACTOR SHALL ERECT AND MAINTAIN SIGNAGE AND WARNING DEVICES, VISIBLE FOR BOTH DAY/NIGHT USE, TO DELINEATE THE PERIMETER OF ALL SUCH AREAS.
6. HURRICANES AND OTHER DISASTERS - THE CONTRACTOR SHALL BE FAMILIAR WITH AND ABIDE BY MDAD'S HURRICANE PROCEDURES MANUAL AVAILABLE FROM MDAD.
7. CONTRACTOR WILL BE RESPONSIBLE TO COORDINATE WITH OPF AIRSIDE OPERATIONS FOR TRAINING ON HOW TO COMMUNICATE WITH OPF TOWER WHEN ACCESSING THE AOA AREAS. ALL CONTRACTOR VEHICLES SHALL BE EQUIPPED WITH YELLOW FLASHING BEACON, CHECKERED FLAGS, COMPANY DECALS ON DOORS AND VHF RADIOS. CONTRACTOR SHALL DESIGNATE A PERSON AND TWO BACKUP PEOPLE WHO CAN BE CONTACTED 24 HOURS A DAY IN THE EVENT OF AN EMERGENCY. THESE PEOPLE SHALL BE AUTHORIZED TO MAKE FIELD DECISIONS ON THE COMPANY'S BEHALF.

1. PRIOR TO PERFORMING ANY EXCAVATION THE CONTRACTOR SHALL FOLLOW THE INSTRUCTIONS CONTAINED IN DIVISION 1 SECTION 01100 "EXISTING UTILITIES" AND COMPLETE MDAD UNDERGROUND UTILITIES CLEARANCE FORM THAT REQUIRES NOTIFICATION AND SIGN OFF FROM THE FOLLOWING COMPANIES:

MDAD UTILITIES COORD. (GRISEL AGHA-LONG)	305-869-3874
MDAD UTILITIES (FRED HERBERT)	305-876-7542
FAA (ANDRES ORRETT)	305-869-5349
SUNSHINE STATE ONE CALL CENTER OF FLORIDA	800-432-4770
BLACK BOX COMMUNICATIONS	305-876-8416
FPL (BOB GARDNER)	305-345-3229
FPL (ROBERT SULLIVAN)	305-345-2154
MDAD IRRIGATION (FRANK CONTRERAS)	O:305-869-4760
	M:305-796-7746
FLORIDA CITY GAS	305-835-3650

2. THE CONTRACTOR SHALL REPAIR ANY UNDERGROUND UTILITY DAMAGED, CAUSED BY HIS ACTIONS, WITH NO ADDITIONAL COMPENSATION.
3. UTILITY CLEARANCE ACTIVITIES PERFORMED BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT WITH NO ADDITIONAL COMPENSATION.
4. THE TEMPORARY DRAINAGE PLAN SHALL INCLUDE A CONTINGENCY PLAN THAT INDICATES HOW THE CONTRACTOR WILL ALLOW FOR THE INCREASED FLOW RATES DURING A STORM EVENT.
5. STANDING WATER AREAS ARE NOT PERMITTED.
6. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING AIRFIELD LIGHTNING AND UTILITY SYSTEMS PRIOR TO CONSTRUCTION AND NOTIFY MDAD IMMEDIATELY IF ANY DISCREPANCIES ARE FOUND WITH THE INFORMATION SHOWN IN THE PLANS.
7. THE TEMPORARY CONSTRUCTION AIRFIELD LIGHTNING AND UTILITY PLAN SHALL INCLUDE ALL NECESSARY MEASURES TO MAINTAIN THE AIRFIELD LIGHTNING AND UTILITIES IN SERVICES AT ALL TIME
8. THROUGHOUT THE COURSE OF THE CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS AND UNINTERRUPTED ELECTRICAL SERVICE INCLUDING NECESSARY TEMPORARY PROVISIONS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POSITIVE STORMWATER DRAINAGE FLOW DURING AND AFTER THE CONSTRUCTION ACTIVITIES START AND END. WHILE THE CONSTRUCTION IS ONGOING THE CONTRACTOR SHALL CLEAN ALL DEBRIS FROM EXISTING DRAINAGE INLETS AND MANHOLES WHICH ARE LOCATED WITHIN THE PROJECT LIMITS AND WILL REMAIN OPERATIONAL.

1. ALL HAZARDOUS AND NON-HAZARDOUS WASTE LIKE PAINTS, CONSTRUCTION MATERIALS, ETC. MUST BE REMOVED ON A DAILY BASIS FROM THE SITE AND DISPOSED OF PROPERLY UPON THE COMPLETION OF THE PROJECT.
2. ASPHALT MILLINGS, REMOVAL, AND DEMOLITION PRODUCT WILL NOT BE REUSED, DEMOLISHED AND RECLAIMED ASPHALT SHALL NOT BE STORED ON OPEN GROUND AND SHALL BE IMMEDIATELY PROPERLY DISPOSED AT A LICENSED FACILITY. MANIFESTS DOCUMENTING DISPOSAL SHALL BE PROVIDED TO DERM-RER FOLLOWING DISPOSAL.

1. THE CONTRACTOR SHALL FOLLOW ALL THE SAFETY AND SECURITY REQUIREMENTS OF THE CONTRACT.
2. STOCKPILE, EROSION AND DUST CONTROL - STOCKPILED MATERIAL AND DUST CONTROL SHALL BE TREATED IN SUCH A MANNER AS TO PREVENT MOVEMENT RESULTING FROM AIRCRAFT BLAST OR WIND CONDITIONS IN EXCESS OF 10 KNOTS AND SHALL ONLY BE PLACED IN APPROVED AREAS. DEBRIS, WASTE AND LOOSE MATERIAL SHALL NOT BE ALLOWED.
3. MAINTENANCE OF TRAFFIC DEVICES - ALL BARRICADE LIGHTING, TEMPORARY SIGNAGE AND SIGNAGE LIGHTING COVERS SHALL BE VERIFIED BY THE CONTRACTOR FOR PROPER OPERATION EACH DAY. IN ADDITION, THE CONTRACTOR SHALL IMMEDIATELY REPLACE ANY BARRICADES, LIGHTS OR FLAGS WHICH IN THE OPINION OF MDAD IS NOT ADEQUATE.
4. ACCESS ROUTES - THE CONTRACTOR SHALL RESTORE ACCESS ROUTE PAVEMENTS BOTH ON AND OFF AIRPORT PROPERTY, AIRSIDE ACCESS GATE PAVEMENTS AND EQUIPMENT, TO THEIR ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COMPENSATION AT THE CONCLUSION OF PAVING AND HAULING OPERATIONS.
5. ACCESS TO THE SITE - CONTRACTOR'S ACCESS TO THE SITE SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE MDAD REPRESENTATIVE. THE CONTRACTOR IS RESPONSIBLE FOR THE IMMEDIATE CLEANUP OF ANY DEBRIS DEPOSITED ALONG ANY ACCESS ROAD AS A RESULT OF THE CONSTRUCTION TRAFFIC. DIRECTIONAL SIGNAGE AT THE ACCESS GATE AND ALONG THE DELIVERY ROUTE TO THE STORAGE AREA OR WORK SITE SHALL NOT BE PERMITTED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE OFF-SITE HAUL ROUTES (STATE HIGHWAYS, COUNTY ROADS, OR CITY STREETS) WITH THE APPROPRIATE OWNER HAVING JURISDICTION OVER THE AFFECTED ROUTE.
6. CONTRACTOR SHALL HAVE A BROOM TRUCK TO CLEAN ANY AIRCRAFT PAVEMENT PRIOR TO REOPENING TO MDAD OPERATIONS' SATISFACTION AND REQUIREMENTS.
7. CONSTRUCTION AREA LIMITS - THE CONTRACTOR'S STAGING, PARKING AREA AND OTHER AREAS REQUIRED FOR THE CONTRACTOR'S EXCLUSIVE USE DURING CONSTRUCTION SHALL BE MARKED BY THE CONTRACTOR AND APPROVED BY MDAD. THE CONTRACTOR SHALL ERECT AND MAINTAIN SUITABLE FENCING, SIGNAGE AND WARNING DEVICES VISIBLE FOR BOTH DAY/NIGHT USE TO DELINEATE THE PERIMETER OF ALL STAGING AND PARKING AREAS. HOWEVER, THE CONTRACTOR IS RESPONSIBLE FOR SECURING ALL EQUIPMENT AND MATERIALS. MDAD IS NOT RESPONSIBLE FOR EQUIPMENT OR MATERIALS DAMAGED AND/OR STOLEN FROM THE CONTRACTOR'S STAGING AREA.
8. ACCESS ROUTE - THE CONTRACTOR SHALL RESTORE ACCESS ROUTE PAVEMENT BOTH ON AND OFF AIRPORT PROPERTY, AIRSIDE ACCESS GATE PAVEMENTS AND EQUIPMENT, TO ITS ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COMPENSATION AT THE CONCLUSION OF PAVING AND HAULING OPERATIONS.

1. ALL HAZARDOUS AND NON-HAZARDOUS WASTE, IF ENCOUNTERED, MUST BE REMOVED FROM THE SITE OF THE PROJECT AND DISPOSED OF PROPERLY UPON THE COMPLETION OF THE PROJECT. COORDINATION WITH RER/DERM REGARDING TESTING, ABATEMENT AND DISPOSAL PROCEDURES MUST BE COMPLETED THROUGH MDAD.
2. BURROWING OWL NESTS - ANY ACTIVE NESTS ENCOUNTERED WITHIN THE CONSTRUCTION SITE DURING BREEDING SEASON (FEBRUARY - JULY) CANNOT BE DISTURBED. SEE SPECIAL PROVISIONS OF THE CONTRACT.
3. IF CONTAMINATED SOIL (ODORS, STAINING, ETC.) OR GROUNDWATER (ODORS, SHEEN, GLOBULES OR FREE-FLOATING PRODUCTS) ARE DISCOVERED DURING EXCAVATION OR/AND DEWATERING, DERM (AIRPORTS AND CONTRACTS SECTION 305-372-6885) AND MDAD MUST BE NOTIFIED IMMEDIATELY. AT THAT TIME, CONTAMINATED SOIL AND GROUNDWATER SHOULD BE HANDLED AS PER MDAD SPECIFICATION P-160. FURTHERMORE, FREE FLOATING PRODUCTS AND SOIL SATURATED WITH PRODUCT SHOULD BE REMOVED, PROPERLY DISPOSED (CLASS 1 LINED LANDFILL OR THERMAL TREATMENT FACILITY) AND DOCUMENTED. SOIL SHOULD BE STOCKPILED ON AN IMPERVIOUS SURFACE, COVERED WITH VISQUEEN, BERMED, SAMPLED AND DISPOSED. MANIFEST SHOULD BE PROVIDED FOR THE FREE PRODUCT AND SOIL DISPOSAL.
4. SOIL REUSE/TRANSPORTATION OFF-SITE OFF OR WITHIN OFF AT ANOTHER LOCATION IS SUBJECT TO DERM APPROVAL. SOIL-TAKEN OFF-SITE (OPF) MUST BE PROVEN TO MEET DERM'S CLEAN SOIL CRITERIA REVISED MAY 12th, 2003 AS PER THE SOIL REUSE GUIDELINES DATED MAY 12th, 2003. IF APPLICABLE, PLEASE SUBMIT A REQUEST IN WRITTEN TO RELOCATE AND REUSE THESE SOILS DIRECTLY TO BECKY VARLEY (BECKY.VARLEY@MIAMIDADE.GOV) WITH THE SAMPLE DATA AND PROPOSED LOCATION OF REUSE.

1. ALL DEWATERING ACTIVITIES SHALL ADHERE TO GUIDELINES AND CONDITIONS ESTABLISHED IN DIVISION 01561 DEWATERING PERMITS.
2. THE CONTRACTOR SHALL PROVIDE A SITE SPECIFIC DEWATERING PLAN THAT INCORPORATES THE LATEST GUIDELINES FOR DEWATERING OPERATIONS AS ESTABLISHED BY THE EED AND THE APPLICABLE REGULATORY AGENCIES.
3. IF DEWATERING IS WARRANTED, A CLASS V DEWATERING PERMIT SHALL BE OBTAINED FROM THE RER/DERM. THE CONTRACTOR SHALL SUBMIT MONTHLY PUMPAGE REPORTS AND A COPY OF THE PERMIT TO THE ENVIRONMENTAL ENGINEERING SECTION. MONTHLY REPORTS MUST CONTINUE FOR THE DURATION OF THE PERMIT (EVEN IF PUMPAGE IS 0 GPM) OR FOR THE LENGTH OF THE DEWATERING ACTIVITIES. COMPLETION OF DEWATERING ACTIVITIES SHALL BE DOCUMENTED.
4. THE APPROVED DEWATERING PLAN IS TO BE SUBMITTED BY THE CONTRACTOR TO SFWMD AS APPLICABLE FOR APPROVAL PRIOR TO THE COMMENCEMENT OF ANY DEWATERING OPERATIONS AT LEAST ONE WEEK IN ADVANCE.
5. THE CONTRACTOR IS REQUIRED TO COORDINATE ALL DEWATERING OPERATIONS WITH MDAD, EED, AND RER/DERM. NO DEWATERING OPERATIONS SHALL BEGIN UNTIL ALL THE NECESSARY PERMITS HAVE BEEN APPROVED.
6. ANY DEWATERING PROCEDURES MANDATED BY RER-DERM SHALL BE INCLUDED IN THE CONTRACT BID ITEMS PRICE. NO ADDITIONAL PAYMENTS SHALL BE MADE FOR DEWATERING OPERATIONS OR SITE SPECIFIC DEWATERING PLAN.
7. THE SITE SPECIFIC DEWATERING PLAN SHALL BE PREPARED BY AN ENVIRONMENTAL CONSULTING FIRM APPROVED BY MDAD.
8. IF DEWATERING IS PERFORMED AND ANY FUEL IS ENCOUNTERED DURING CONSTRUCTION, FUEL MUST BE RETURNED TO MDAD FOR DISPOSAL.

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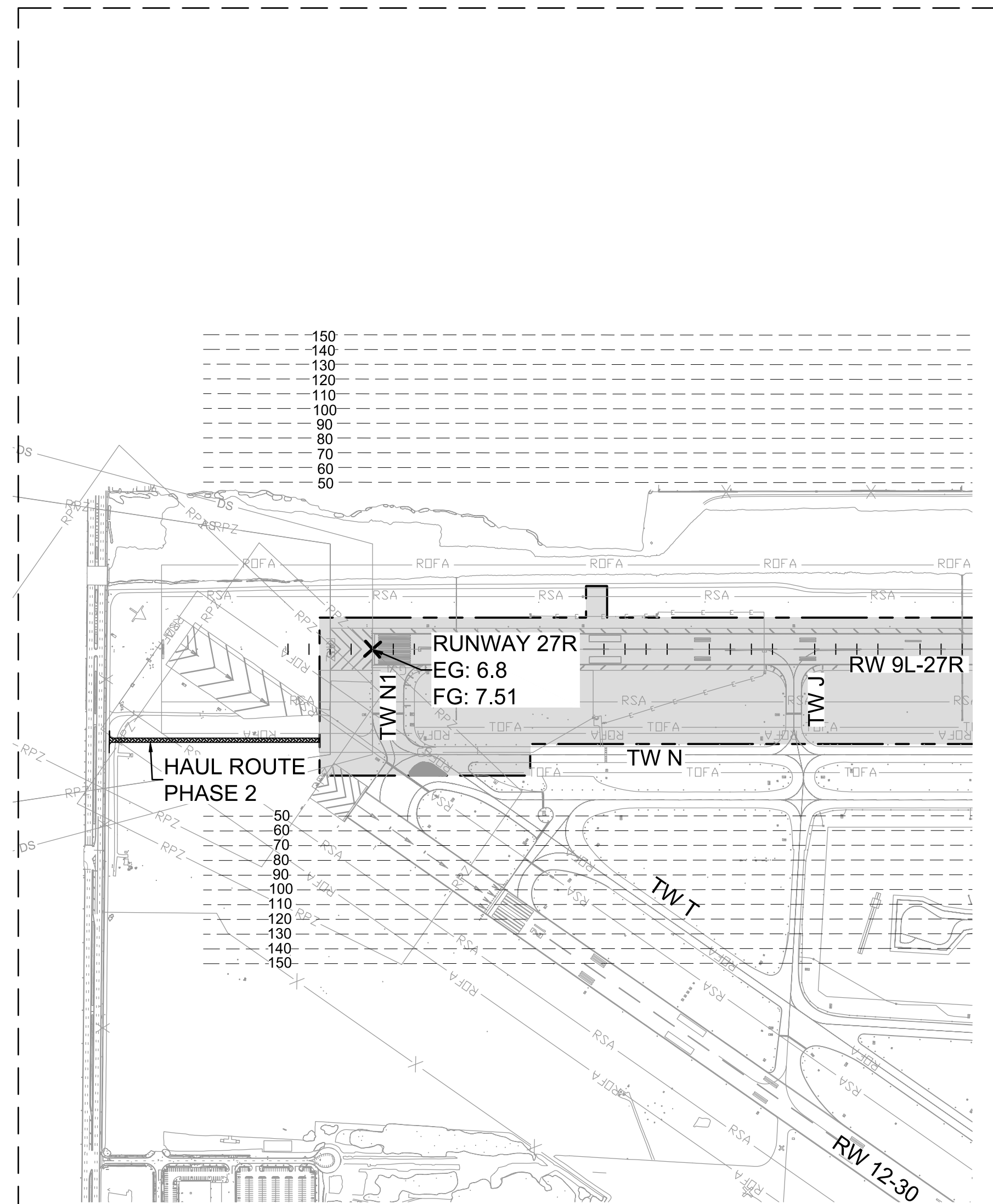
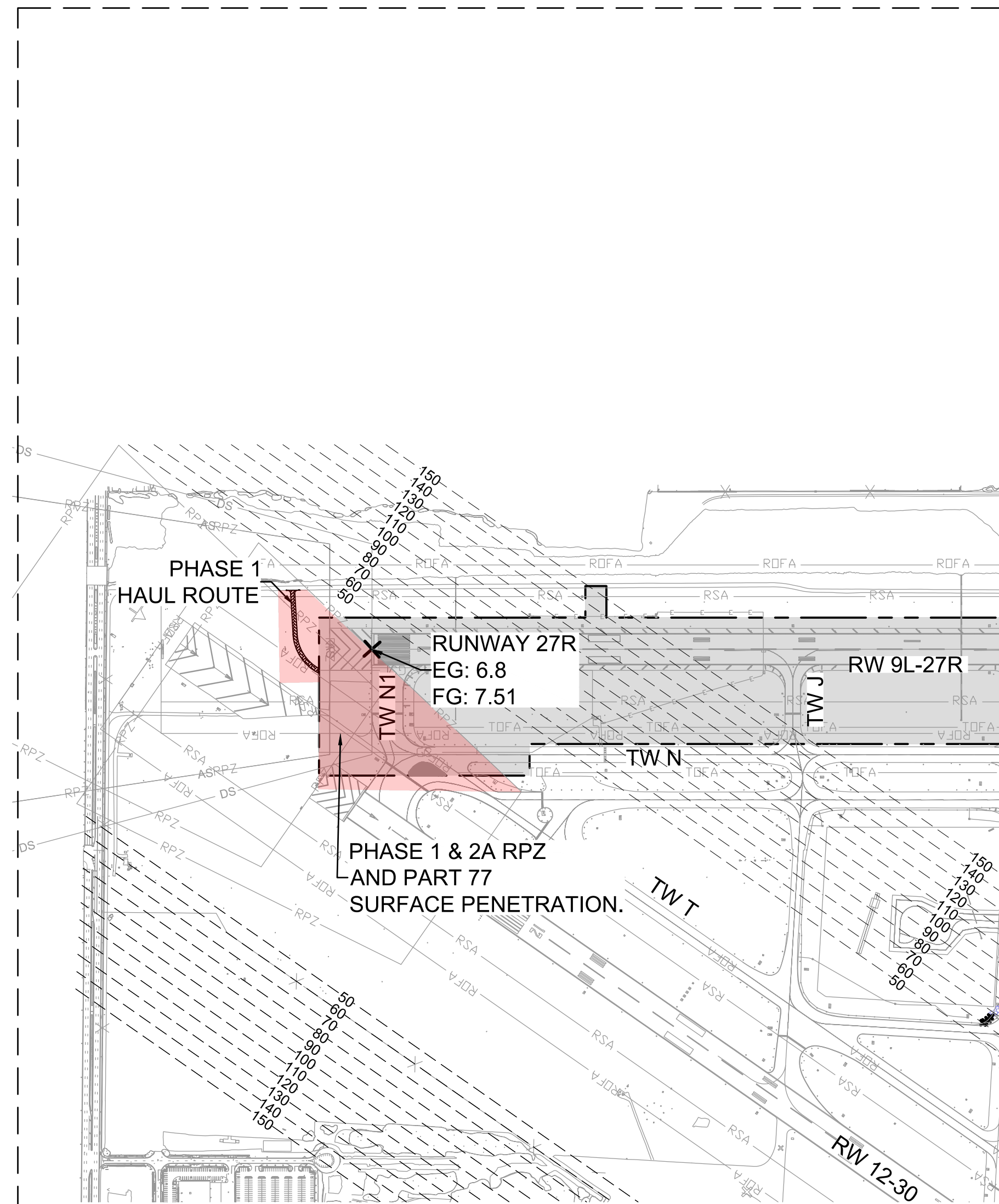
RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)




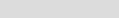
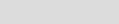

SEAL

LATOSHA L. SIGLER
REG No.: P.E. 78738
CIVIL ENGINEER

DATE	02/2023
JOB	100075217
DRAWN	DMA
DESIGN	JSP
CHECK	CAO
DC NO.	
SHEET	

G002



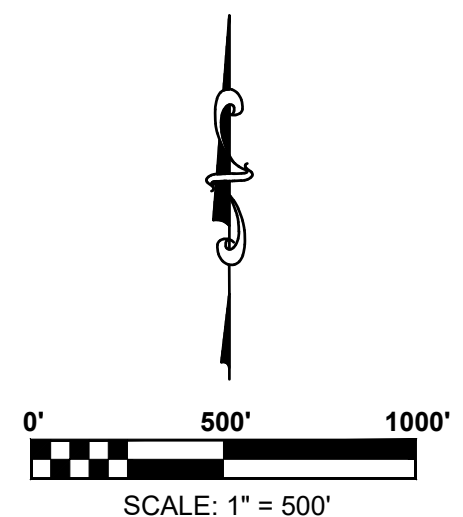
- | | |
|---|--|
|  | <p>D</p> |
|  | <p>APPROXIMATE LIMITS OF WORK</p> |
|  | <p>APPROXIMATE LIMITS OF STAGING AREA</p> |
|  | <p>CONSTRUCTION EQUIPMENT HEIGHT
LIMIT CONTOURS AS PER FAA PART 77
MSL (SEE NOTE 4 BELOW).</p> |
|  | <p>APPROACH SURFACE</p> |
|  | <p>DEPARTURE SURFACE</p> |

NOTES

1. IN NO EVENT SHALL CONSTRUCTION EQUIPMENT PENETRATE THE HEIGHT LIMITS SHOWN ON THIS SHEET WITHOUT SPECIFIC AUTHORIZATION FROM MDAD AND FAA. THE CONTRACTOR SHALL SUBMIT A COMPLETED FAA FORM 7460-1 TO MDAD AT LEAST FORTY-FIVE (45) DAYS PRIOR TO THE START OF CONSTRUCTION. MDAD WILL COORDINATE THE SUBMITTAL OF FAA FORM 7460-1 TO THE FAA REGIONAL OFFICE.
2. CONTRACTOR'S ACCESS TO AIRSIDE SHALL BE VIA THE DESIGNATED SECURITY GATES WITH PRIOR AIRSIDE OPERATIONS AND SECURITY APPROVALS. CONTRACTOR SHALL COMPLETE AND OBTAIN APPROVAL OF MDAD AIRSIDE OPERATIONS ADVANCE NOTIFICATION REQUEST/CONSTRUCTION CONTROL FORM.
3. HORIZONTAL CONTROL SHOWN HEREIN IS BASED ON STATE PLANE FLORIDA, EAST ZONE NORTH AMERICAN DATUM OF 1983 (2011 ADJUSTMENT NAD83(2011). SEE SURVEY CONTROL PLAN SHEET G300.
4. HEIGHTS SHOWN HEREIN REFER TO FEET ABOVE MEAN SEA LEVEL (MSL) BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVDD88). TO CONVERT TO NGVD29 ADD 1.54'.
5. THE CONTRACTOR MUST COORDINATE WITH MDAD THE HEIGHT OF ALL CONSTRUCTION EQUIPMENT 60 CALENDAR DAYS BEFORE BRINGING THE EQUIPMENT TO THE AIRPORT. THE ALLOWABLE HEIGHT IN THE PROJECT SITE IS SET BY FAAS DETERMINATION LETTER AND ASSOCIATED GRAPHICS IN THE CSDP. FOR EQUIPMENT HIGHER THAN APPROVED BY MDAD AND THE FAA IN THE CSDP, THE CONTRACTOR MUST REQUEST A NEW AERONAUTICAL STUDY OF POTENTIAL OBSTRUCTIONS, SUCH AS TALL EQUIPMENT (CRANES, CONCRETE PUMPS, OTHER), STOCKPILES, AND HAIL ROUTES, TO BE PROCESSED BY THE FAA. THE COMPLETE AIRSPACE DATA FOR THE AERONAUTICAL STUDY MUST BE SUBMITTAL TO THE NO LATER THAN 60 CALENDAR DAYS BEFORE NEEDING THE EQUIPMENT ON SITE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE MDAD'S AND THE FAA'S APPROVAL TO AVOID ALL CONSTRUCTION PROGRESS DELAYS. AT MDAD'S DISCRETION, MDAD MAY GRANT PERMISSION TO USE CRANES AND ALL CONSTRUCTION EQUIPMENT AFTER APPROVAL BY THE FAA IS RECEIVED. ONCE APPROVED, ALL BOOMS AND OTHER EQUIPMENT EXTENSIONS MUST BE LOWERED TO A MINIMAL HEIGHT POSSIBLE WHEN NOT IN USE. AT ALL TIMES, THE CONTRACTOR MUST HAVE ALL THE EQUIPMENT LIGHTING AND HAVE FLAGS WITH 360-DEGREE OBSTRUCTION LIGHTS. MDAD MAY REQUEST ANY ADDITIONAL VISUAL AID ON THE EQUIPMENT REQUIRED FOR OPERATIONAL SAFETY.
6. THE MAXIMUM ALLOWABLE HEIGHT OF STOCKPILES, TRAILERS, OTHER FACILITIES OR CONSTRUCTION EQUIPMENT OPERATING IN THE STAGING AREA IS 40 FT.

PHASING NOTES

PHASE 1 AND PHASE 2A CONDITIONS:
RW 9L-27R CLOSE
RW 12-30 OPEN



OPF - RW 9L-27R
REHAB

MIAMI-DADE
COUNTY AVIATION
DEPARTMENT-MDAD



MDAD PROJECT MANAGER
MIGUEL J. RIERA, (305) 876-0596

[illegible]

MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

EAL

ATOSHA L. SIGLER
EG No.: P.E. 78738
CIVIL ENGINEER

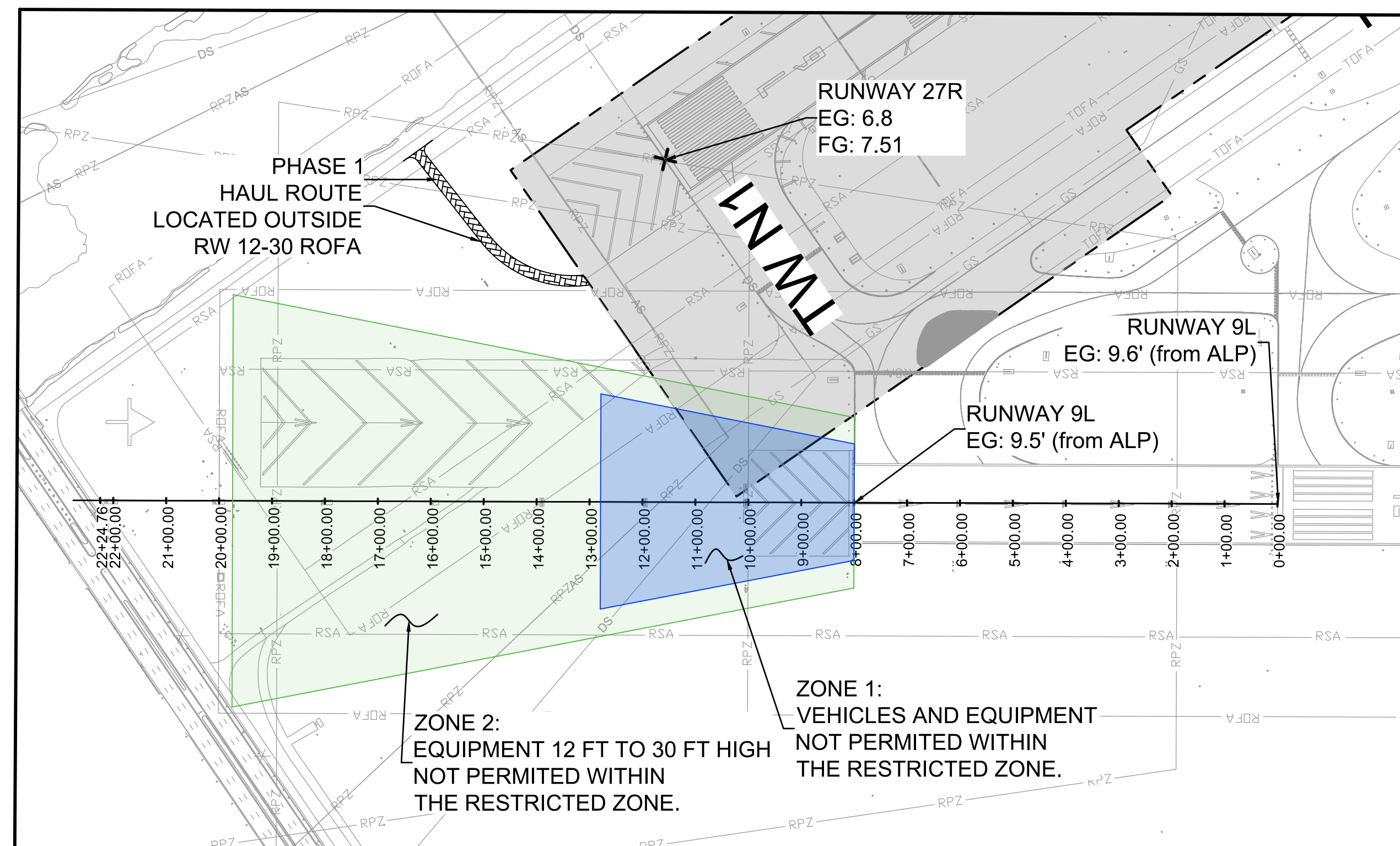
RAWING TITLE
PART 77 HEIGHT
RESTRICTIONS
RW 12 AND
RW 9L

DATE	02/2023
DOB	100075217
DRAWN	DMA
DESIGN	JSP
CHECK	CAO
C NO.	
HEET	

G004

PLOT DATE: 2/24/2023 4:36 PM
FILE NAME: c:\pw_work\atknaf01\wsatkins_mart3719\d0107600\G003 - Part 77 Height Restrictions_1_2476_8903.s□□.dwg

ISSUED FOR BID - NOT FOR CONSTRUCTION



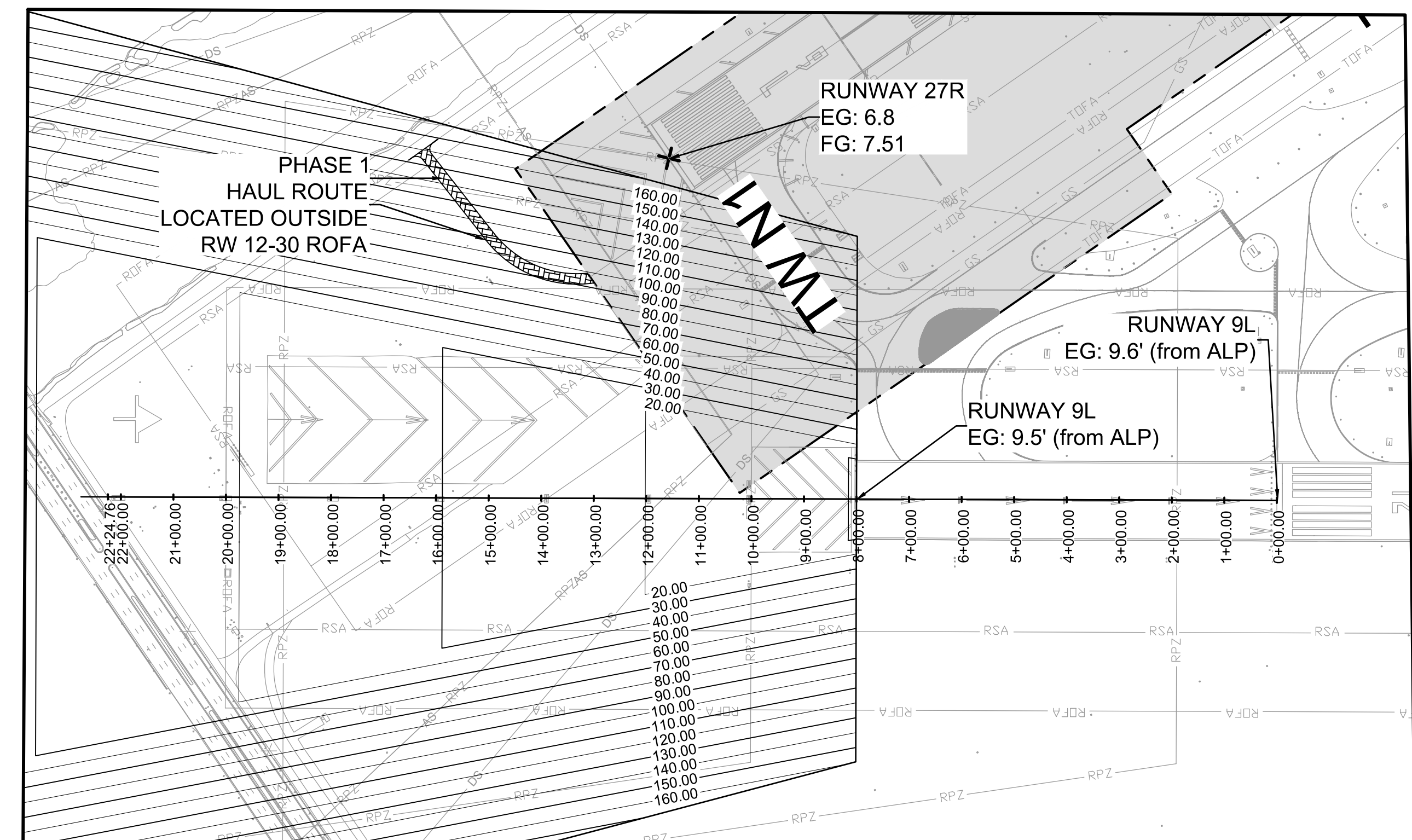
RW 30 DEPARTURE SURFACE
PHASE 1 □ 2A RESTRICTED CONSTRUCTION
ZONE

SCALE: 1:200

RW 30 DEPARTURE
SURFACE LIMITS

ZONE 1 LIMIT COORDINATES	
NORTHING	EASTING
574781.93	889151.41
573974.06	890032.38
573698.58	889865.14
574117.32	888744.19

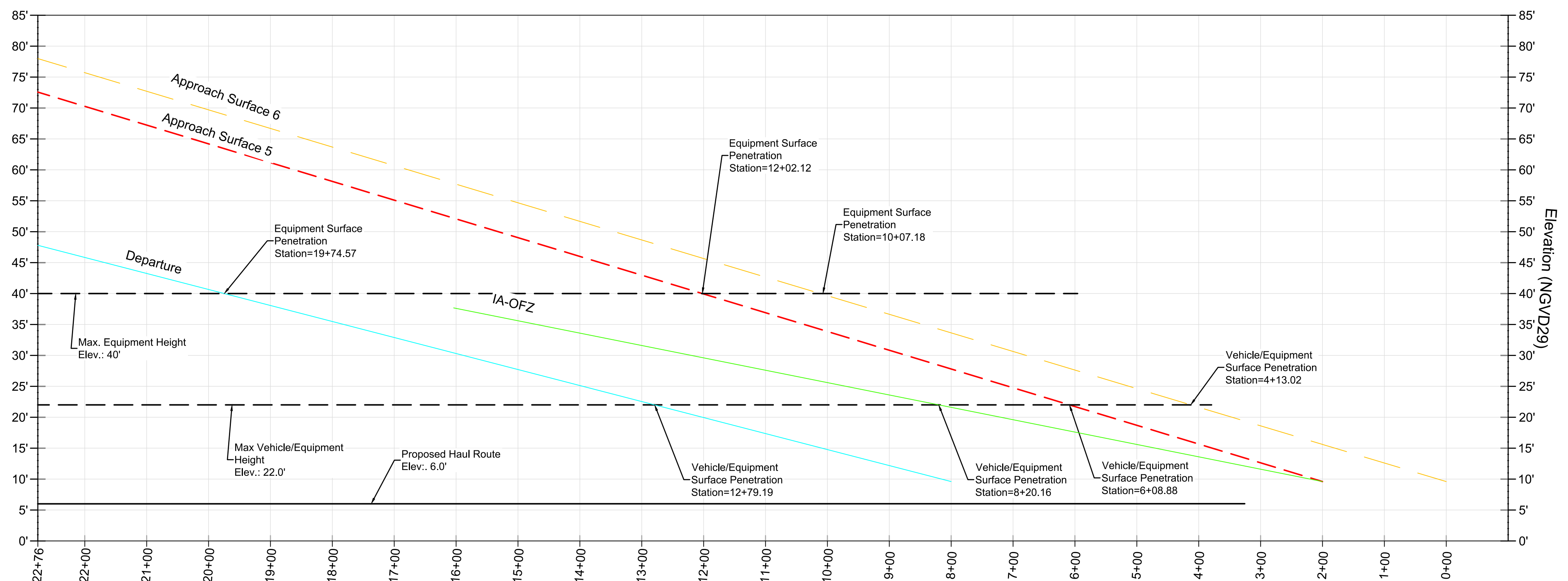
ZONE 2 LIMIT COORDINATES	
NORTHING	EASTING
574261.16	889646.41
573974.06	890032.38
573743.54	889891.14
573914.34	889433.91

RW 30 DEPARTURE SURFACE
ELEVATIONS (AMSL)

SCALE: 1:200

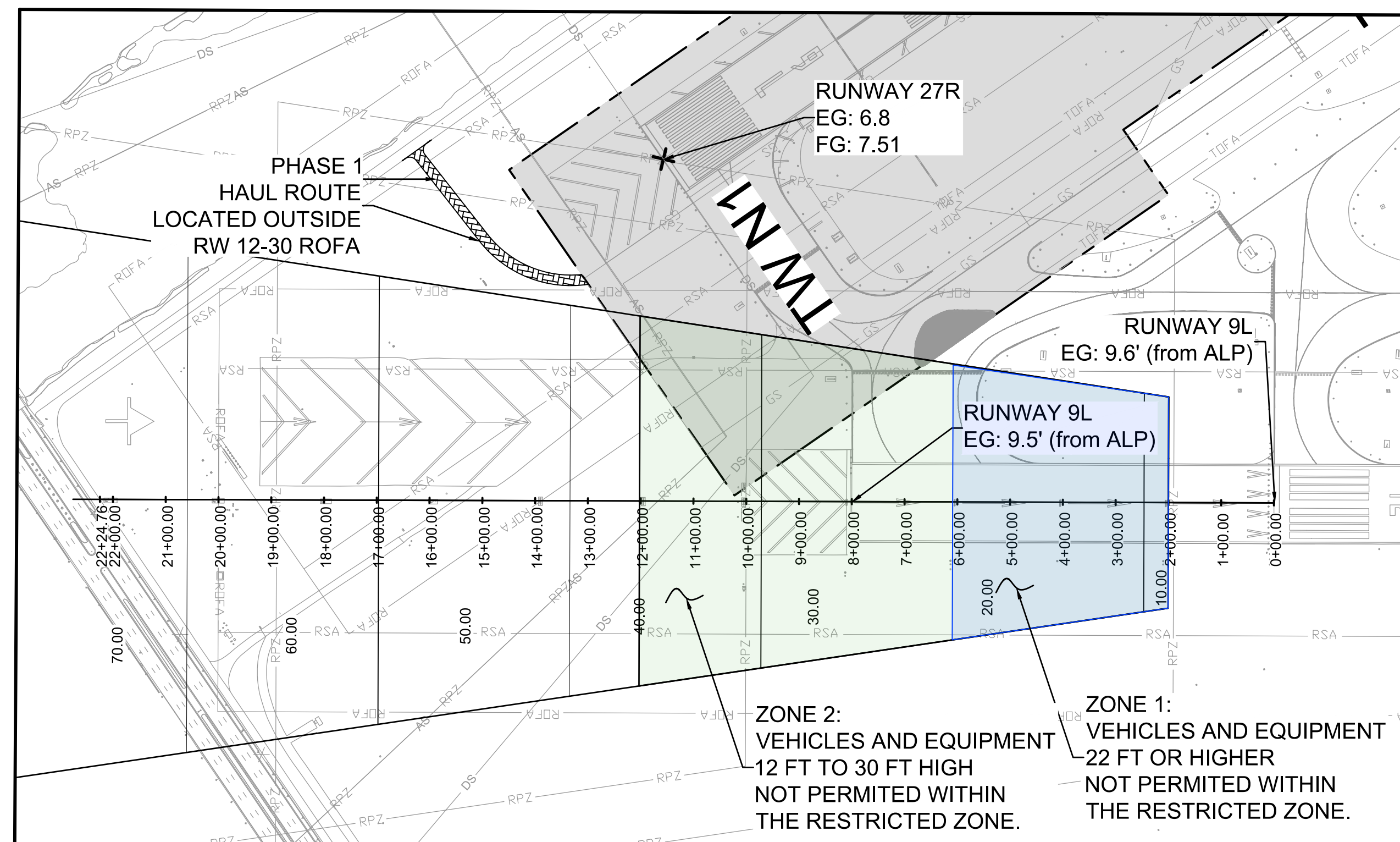
PHASING AND MOT NOTES

1. THE CONSTRUCTION DOES NOT PENETRATE THE RW 30 DEPARTURE SURFACE. HOWEVER, THE CONTRACTOR MUST BE AWARE OF THE RESTRICTED LIMITS TO AVOID ALL ENCROACHMENTS.
2. FOR THE MOST PART, THE RW 30 DEPARTURE SURFACE IS CO-LOCATED WITH THE RSA IN PROXIMITY TO THE CONSTRUCTION SITE. THE CONTRACTOR MUST NOT ENTER THE RSA AT ANY TIME.

RW 12-30 SURFACES PENETRATION
PROFILE

SCALE: 1:120

[illegible]

RW 12 APPROACH
SURFACE 5 LIMITS

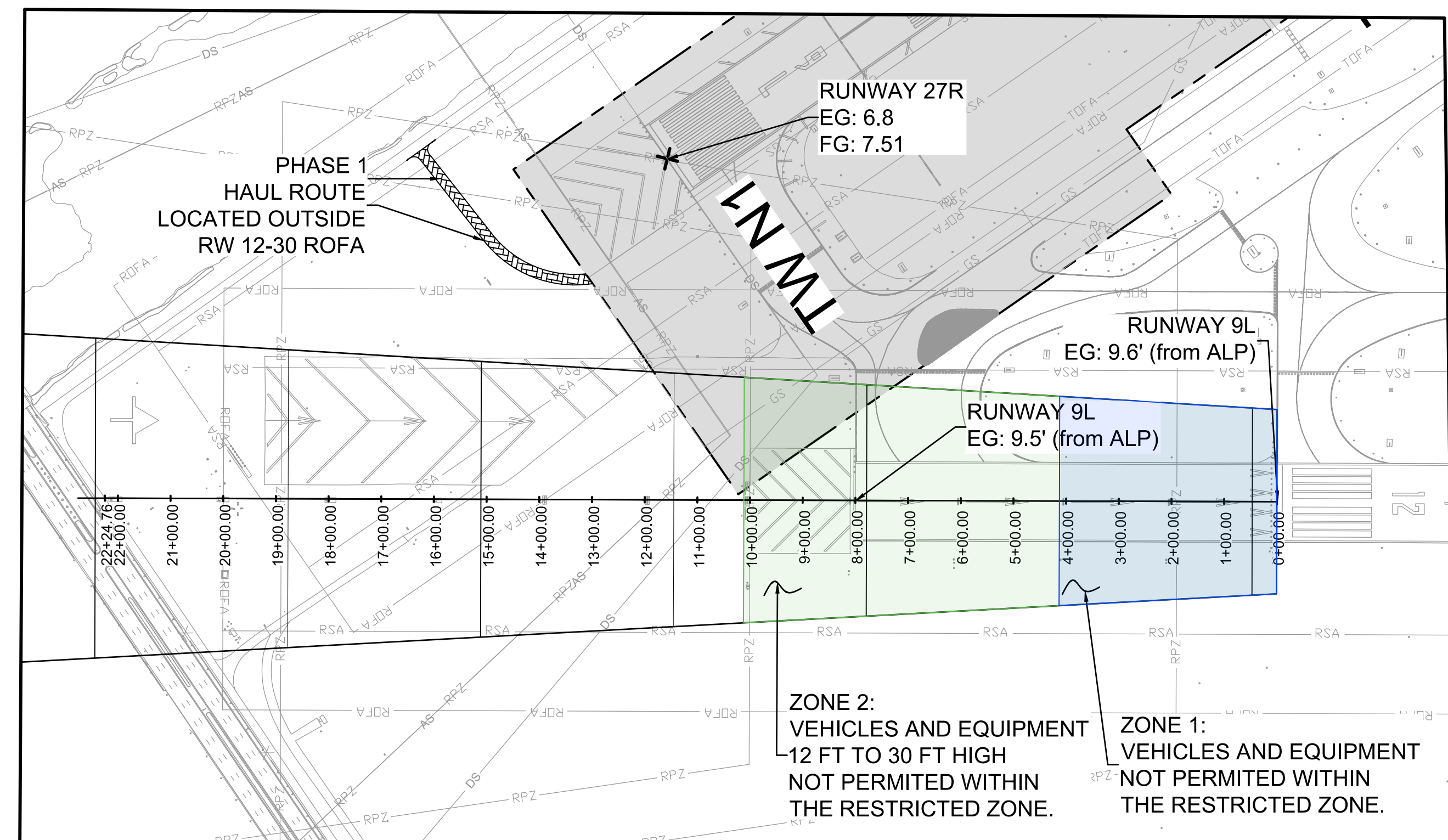
ZONE 1 LIMIT COORDINATES	
NORTHING	EASTING
574781.93	889151.41
573974.06	890032.38
573698.58	889865.14
574117.32	888744.19

ZONE 2 LIMIT COORDINATES	
NORTHING	EASTING
574261.16	889646.41
573974.06	890032.38
573743.54	889891.14
573914.34	889433.91

RW 12 APPROACH
SURFACE 6 LIMITS

ZONE 1 LIMIT COORDINATES	
NORTHING	EASTING
573567.92	890721.76
573269.49	890538.91
573803.69	890382.27
573464.9	890174.68

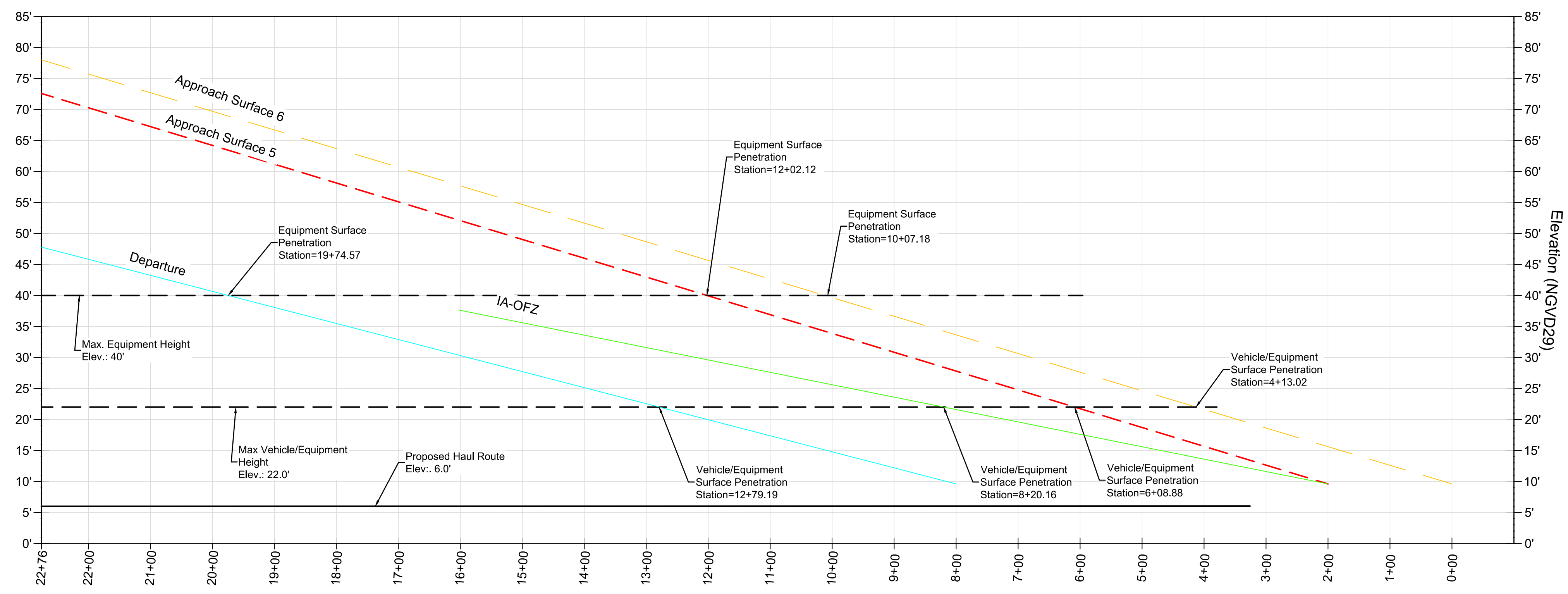
ZONE 2 LIMIT COORDINATES	
NORTHING	EASTING
573567.92	890721.76
573269.49	890538.91
574145.94	889889.45
573748.56	889645.97



RW 12 APPROACH SURFACE 6
PHASE 1 □ 2A RESTRICTED CONSTRUCTION
ZONE AND ELEVATIONS (AMSL)

□ □ □ □ □ □ □ □ **D M** □ □ □ □ □ □ □ □

- 1 THE PORTION OF THE CONSTRUCTION LOCATED WITHIN THE RW 12 APPROACH SURFACE 5 AND 6 RESTRICTED LIMITS MUST BE PERFORMED IN PHASE 2B WHEN RW 12-30 IS CLOSED. THE CONTRACTOR MUST BE AWARE OF THE RESTRICTED LIMITS TO AVOID ALL OTHER ENCROACHMENTS.
- 2 MOST OF THE RW 12 APPROACH SURFACE 5 AND 6 ARE CO-LOCATED WITH THE RSA IN PROXIMITY TO THE CONSTRUCTION SITE. THE CONTRACTOR MUST NOT ENTER THE RSA AT ANY TIME.

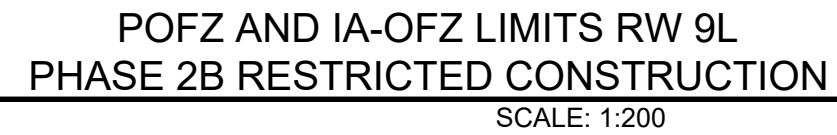
RW 12-30 SURFACES PENETRATION
PROFILE

SCALE: 1:120

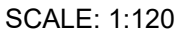
[illegible]



1. THE CONSTRUCTION DOES NOT PENETRATE THE RW 12 OFZ SURFACE. HOWEVER, THE CONTRACTOR MUST BE AWARE OF THE RESTRICTED LIMITS TO AVOID ALL ENCROACHMENTS.
2. FOR THE MOST PART, THE RW 12 OFZ SURFACE IS CO-LOCATED WITH THE RSA IN PROXIMITY TO THE CONSTRUCTION SITE. THE CONTRACTOR MUST NOT ENTER THE RSA AT ANY TIME.



1. THE CONSTRUCTION DOES NOT PENETRATE THE RW 9L OF SURFACE. HOWEVER, THE CONTRACTOR MUST BE AWARE OF THE RESTRICTED LIMITS TO AVOID ALL ENCROACHMENTS.
2. FOR THE MOST PART, THE RW 12 OFZ SURFACE IS CO-LOCATED WITH THE RSA. THE CONTRACTOR MUST NOT ENTER THE RSA AT ANY TIME.



RW 9L

IA-OFZ	
NORTHING	EASTING
574691.90	888536.92
574292.61	888560.63
574364.82	889792.54
574764.11	889768.82

NORTHING	EASTING
----------	---------

NORTHING	EASTING
574963.55	889756.96
574975.34	889956.55
574176.75	890004.04
574164.98	889804.38

RW 12

IA-OFZ	
NORTHING	EASTING
573693.73	890564.29
573352.66	890355.31
574427.25	889367.14
574086.18	889158.16

POFZ	
NORTHING	EASTING
573757.61	890839.12
573076.78	890419.03
573862.09	890668.58
573181.27	890248.49

OPF - RW 9L-27R
REHAB

MIAMI-DADE
COUNTY AVIATION
DEPARTMENT-MDAD



MIDAD PROJECT MANAGER
 MIGUEL J. RIERA, (305) 876-0596

[illegible]

MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

EAL

ATOSHA L. SIGLER
REG No.: P.E. 78738
CIVIL ENGINEER

RAWING TITLE

RW 12 9L OFZ
RESTRICTIONS

DATE 02/2023

OB 100075217

RAWN DM

DESIGN JSF

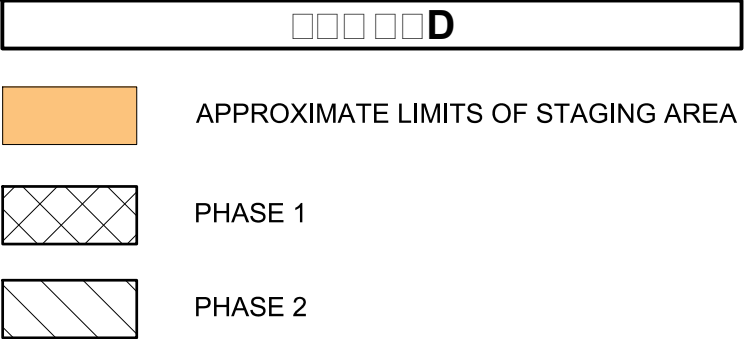
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G009

ISSUED FOR BID - NOT FOR CONSTRUCTION

PLOT DATE: 2/24/2023 4:39 PM
FILE NAME: c:\pw_work\alknaf01\swatkins_mart3719\40107600\G003 - Part 77 Height Restrictions_1_2476_8903.s□□.dwg



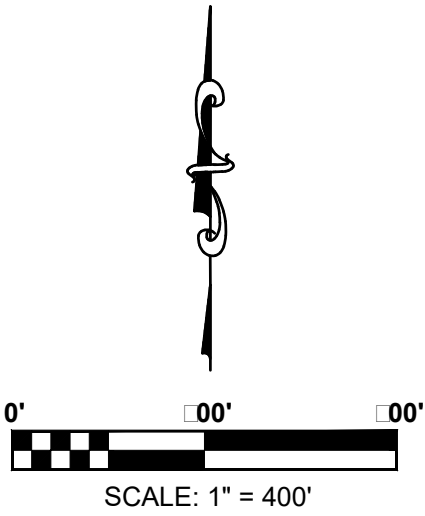
1. SEE SHEET G410 FOR PHASING, SUPPLEMENTAL DETAILS AND SAFETY NOTES AND ADDITIONAL REQUIREMENTS
2. THE CONTRACTOR IS RESPONSIBLE FOR MINIMIZING IMPACT TO AIRPORT OPERATIONS WHILE MAINTAINING A MAXIMUM LEVEL OF SAFETY. CONTRACTOR MUST CEASE ALL WORK IMMEDIATELY AND RESTORE AND CORRECT CONDITIONS THAT ARE IMPACTING OPERATION TO THE SATISFACTION OF THE AIRPORT

- MOT PLAN: PRIOR TO STARTING WORK A MOT PLAN SHALL BE PREPARED AND SUBMITTED FOR APPROVAL A DETAILED PHASING PLAN SHOWING PROPOSED WORK LIMITS, HAUL ROUTES, BARRICADES, MARKINGS, STAGING AND STORAGE AREAS, AS WELL AS WORKING HOURS, CONTACT NAMES AND PHONE NUMBERS.
- IF CONTRACTOR WANTS TO MODIFY APPROVED MOT, THE CONTRACTOR SHALL PREPARED AND SUBMIT FOR APPROVAL A DETAILED MOT.

- PHASE 1 - ALL RUNWAY 09L-27R NAVAIDS SYSTEM WILL BE SHUT DOWN DURING THIS PHASE. ALL SYSTEMS TESTED AND FLIGHT CHECKED AT CONCLUSION OF PHASE 1, EXCEPT FOR RUNWAY 09L GLIDE SLOPE SYSTEM.
- PHASE 2 - RUNWAY 09L GLIDE SLOPE SYSTEM SHUT DOWN. SYSTEM WILL BE TESTED AND FLIGHT CHECKED BY THE FAA AT THE CONCLUSION OF PHASE.

[illegible]

1. THE CONTRACTOR MUST COMPLETE ALL RW 9L-27R ELEMENTS NO LATER THAN 30 CALENDAR DAYS BEFORE PHASE 1 SUBSTANTIAL COMPLETION ACCEPTANCE DATE TO ALLOW FOR A TIMELY COMMISSIONING OF THE RUNWAY BY THE FAA. THE COMMISSIONING PROCESS WILL SET THE SCHEDULE AND SEQUENCE OF THE WORK.



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FBPR CA NO. 24

[illegible]

MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

EAL

ATOSHA L. SIGLER
EG No.: P.E. 78738
CIVIL ENGINEER

DRAWING TITLE

PHASING PLAN

DATE	02/2023
DOB	100075217
DRAWN	DMA
DESIGN	JSP
CHECK	CAO
C NO.	
SHEET	

G400

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MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

SEAL

LATOSHA L. SIGLER
REG No.: P.E. 78738
CIVIL ENGINEER

DRAWING TITLE

PHASE 1 DETAIL PLAN

DATE	02/2023
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JOB	100075217
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DRAWN	DM
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DESIGN JSF

CHECK	CAC
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DC NO











SHEET

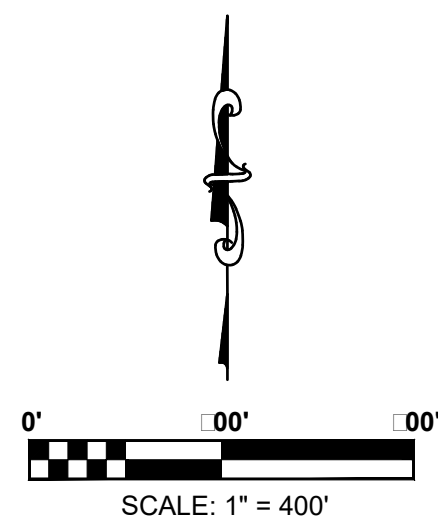
G403

ISSUED FOR BID - NOT FOR CONSTRUCTION



1. PHASE 1
RW 9L-27R: CLOSE
RW 12-30: OPEN

- | | |
|---|--|
|  | APPROXIMATE LIMITS OF STAGING AREA |
|  | PHASE 1 WORK AREA |
|  | LOW PROFILE BARRICADES SPACED 15-FEET
(SEE DETAIL SHEET G410) |
|  | PAVEMENT CENTERLINE BLACK-OUT |
|  | COVERED TAXIWAY SIGN.
(SEE NOTE 3) |
|  | COVERED/DISCONNECTED TAXIWAY
EDGE LIGHT. (SEE NOTE 3) |
|  | CONTRACTOR'S ACCESS/HAUL ROUTE |
|  | ARFF AND EMERGENCY ACCESS ROUTE |
|  | AIRCRAFT LANDING |
|  | AIRCRAFT TAKE-OFF |





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FBPR CA NO. 24

[illegible]

MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

L

OSHA L. SIGLER
No.: P.E. 78738
L ENGINEER

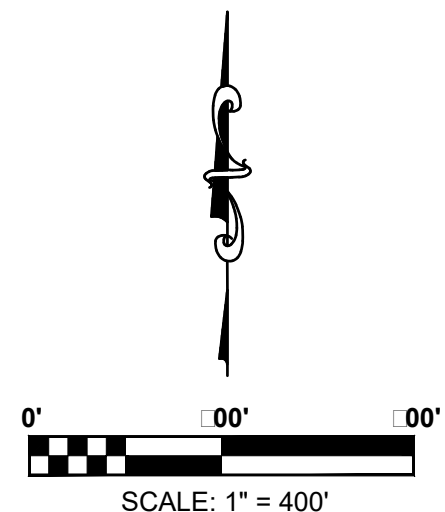
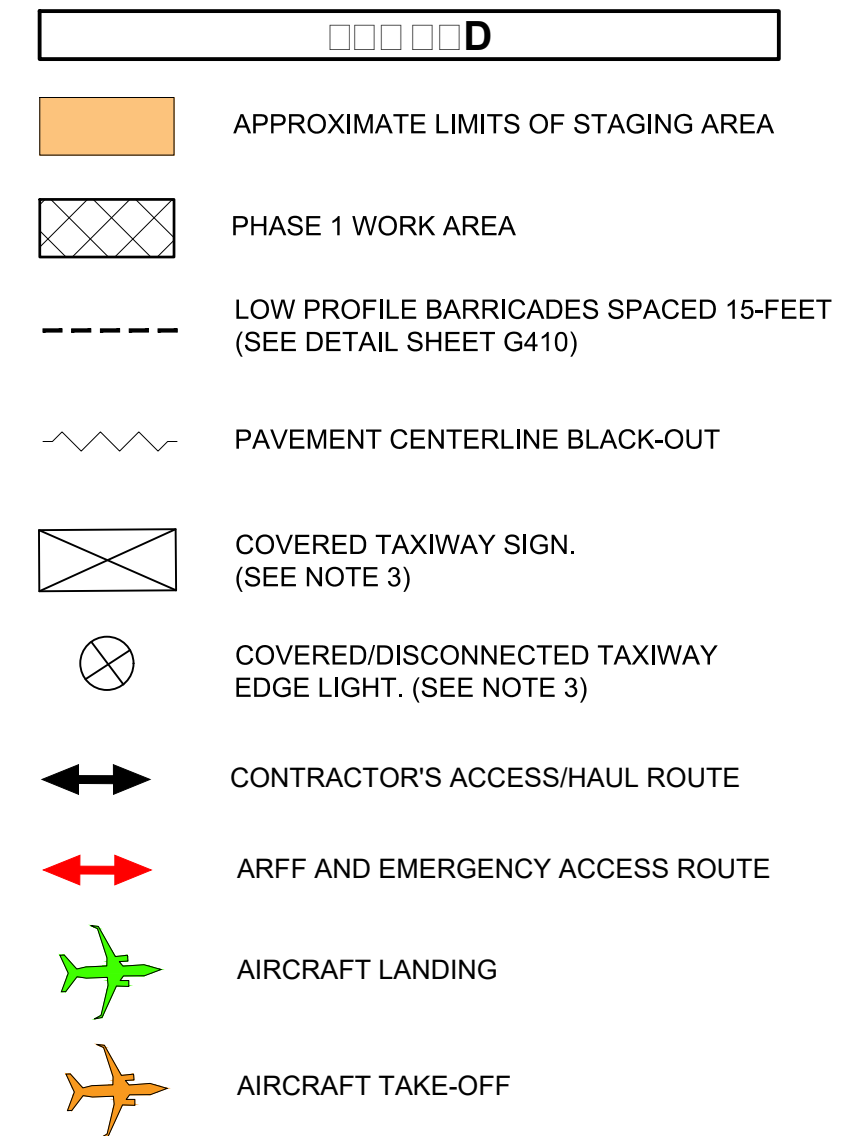
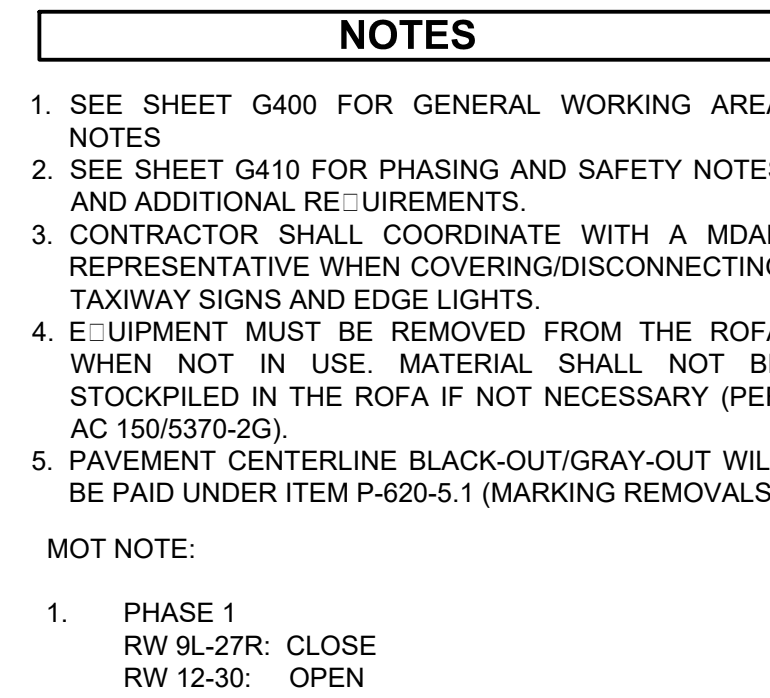
WORKING TITLE

PHASE 1 DETAIL PLAN

FE	02/2023
DI	100075217
AWN	DMA
SIGN	JSP
CECK	CAO
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ET	

G404

ISSUED FOR BID - NOT FOR CONSTRUCTION



PLOT DATE: 2/24/2023 5:01 PM
FILE NAME: C:\pw_work\atknaf01\wsatkins_mart3719\dms84208\G400 - Phasing Plan.dwg

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MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

SEAL

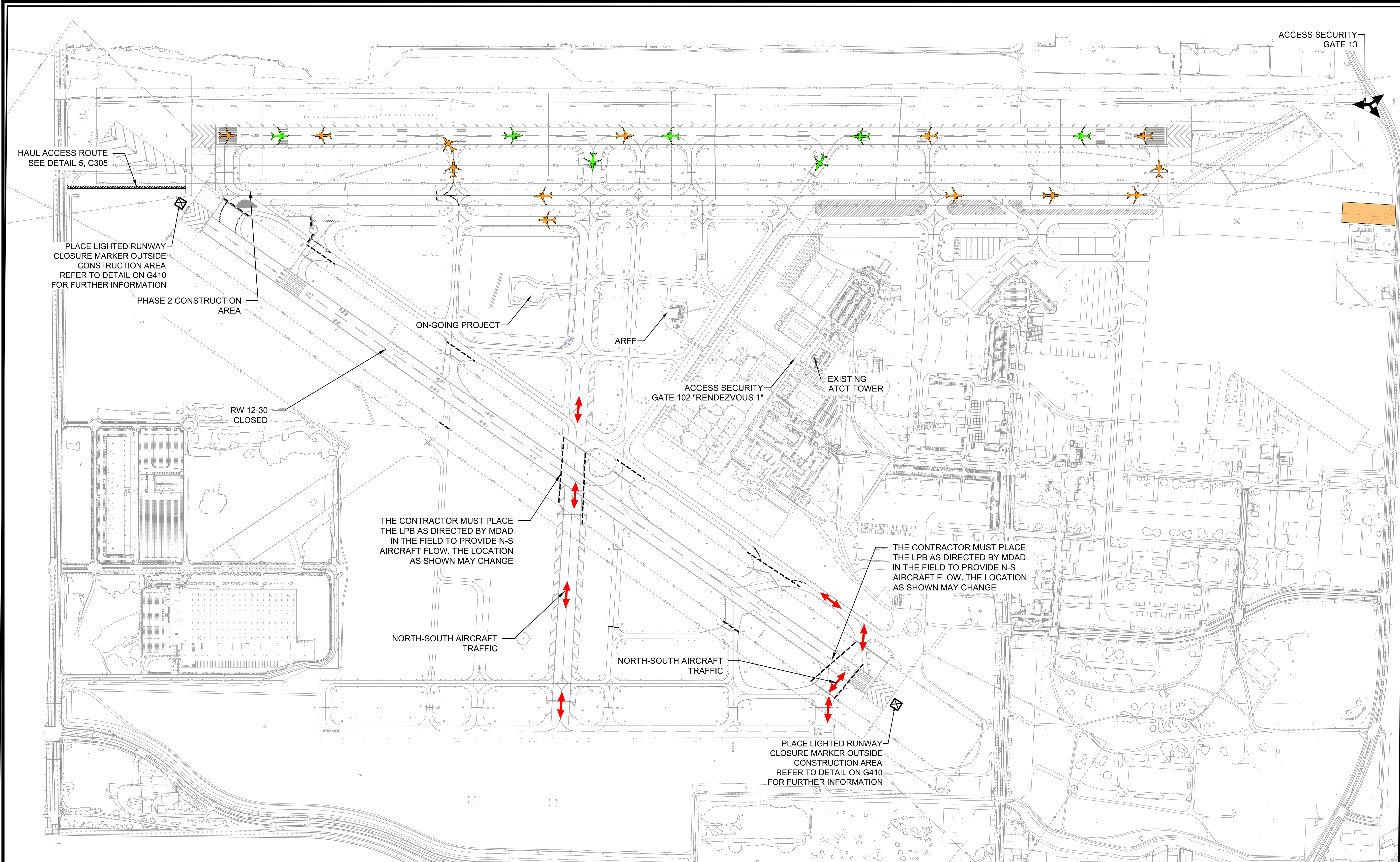
LATOSHA L. SIGLER
REG No.: P.E. 78738
CIVIL ENGINEER

DRAWING TITLE

RW 12-30
CLOSURE DETAIL
PLAN

DATE	02/2023
JOB	100075217
DRAWN	DMA
DESIGN	JSP
CHECK	CAO
DC NO.	
SHEET	

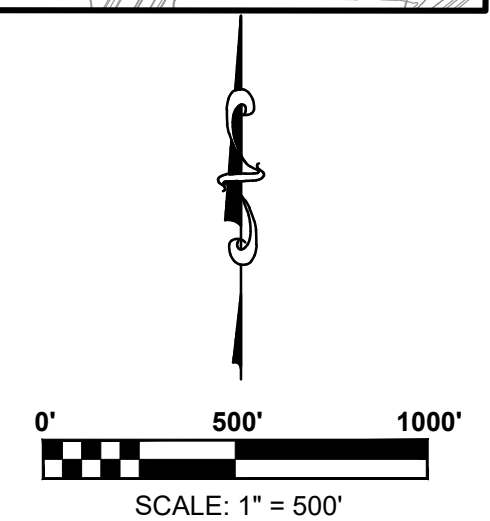
G407



MOT NOTE:

1. CONTRACTOR MUST INSTALL LPB, GREY-OUT CENTERLINES, AND COVER SIGNS AS DIRECTED BY MDAD FOR THE CLOSURE OF RW 12-30
2. PHASE 2B
RW 9L-27R: OPEN
RW 12-30: CLOSE

PLACE LIGHTED RUNWAY
CLOSURE MARKER OUTSIDE
CONSTRUCTION AREA
REFER TO DETAIL ON G410
FOR FURTHER INFORMATION



1. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL A TEMPORARY CONSTRUCTION DRAINAGE PLAN FOR EACH PHASE AND WORK AREA.
2. THE CONTRACTOR SHALL SUBMIT TO THE EOR FOR APPROVAL A TEMPORARY CONSTRUCTION AIRFIELD LIGHTNING AND UTILITY PLAN (INCLUDING THE MEANS AND METHODS) FOR EACH PHASE AND WORK AREA.
3. SEE GENERAL UTILITIES NOTES ON SHEET G002.

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR MINIMIZING THE IMPACT TO AIRPORT OPERATIONS WHILE MAINTAINING A MAXIMUM LEVEL OF SAFETY.
2. CONTRACTOR SHALL MAKE PROVISIONS TO ALLOW NECESSARY OPERATIONAL TRAFFIC, EMERGENCY RESPONSE, ETC. THROUGH THE WORK AREAS AT ALL TIME.
3. COMPLY WITH MDAD AIRFIELD OPERATING RULES.
4. PRIOR TO STARTING WORK, THE CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL A DETAILED MOT PLAN FOR EACH PHASE AND WORK AREA CHANGE SHOWING PROPOSED WORK LIMITS, HAUL ROUTES, BARRICADES, MARKINGS, STAGING AND STORAGE AREAS, AS WELL AS WORKING HOURS, CONTACT NAMES, PHONE NUMBERS AND ANY OTHER INFORMATION REQUIRED BY AIRSIDE OPERATIONS FOR THE APPROVAL OF THE MOT PLAN SUBMITTED BY THE CONTRACTOR.
5. ONLY MDAD/AIRSIDE OPERATIONS CAN AUTHORIZE THE CLOSURE OR OPENING OF ANY PART OF THE AIRCRAFT OPERATION AREAS.
6. CONSTRUCTION EQUIPMENT AND VEHICLES WITHIN AOA SHALL BE KEPT TO THE MINIMUM NECESSARY TO PERFORM THE WORK. WHEN NOT ACTIVELY ENGAGED FOR CONSTRUCTION ALL THE VEHICLES AND EQUIPMENTS SHALL BE REMOVED FROM THE AOA AREA.
7. UNLESS OTHERWISE REQUIRED BY AIRPORT OPERATIONS, THE WORK IS ANTICIPATED TO BE PERFORMED DURING DAYTIME HOURS REGARDLESS OF THE CLOSURE OF TAXIWAY H.
8. IF THE NEED TO WORK AT NIGHT IS IDENTIFIED, THE NIGHT TIME HOURS SHALL BE COORDINATED WITH MDAD/AIRSIDE OPERATIONS AND APPROVED PRIOR TO COMMENCEMENT OF WORK.
9. MDAD SHALL ADJUST THE SEQUENCE AND DURATION OF PHASES WITH WRITTEN NOTICES, WITHOUT ANY COMPENSATION TO THE CONTRACTOR.
10. ALL EQUIPMENT OPERATING WITHIN THE AOA SHALL HAVE A ORANGE AND WHITE CHECKERED FLAG AT ALL TIMES.

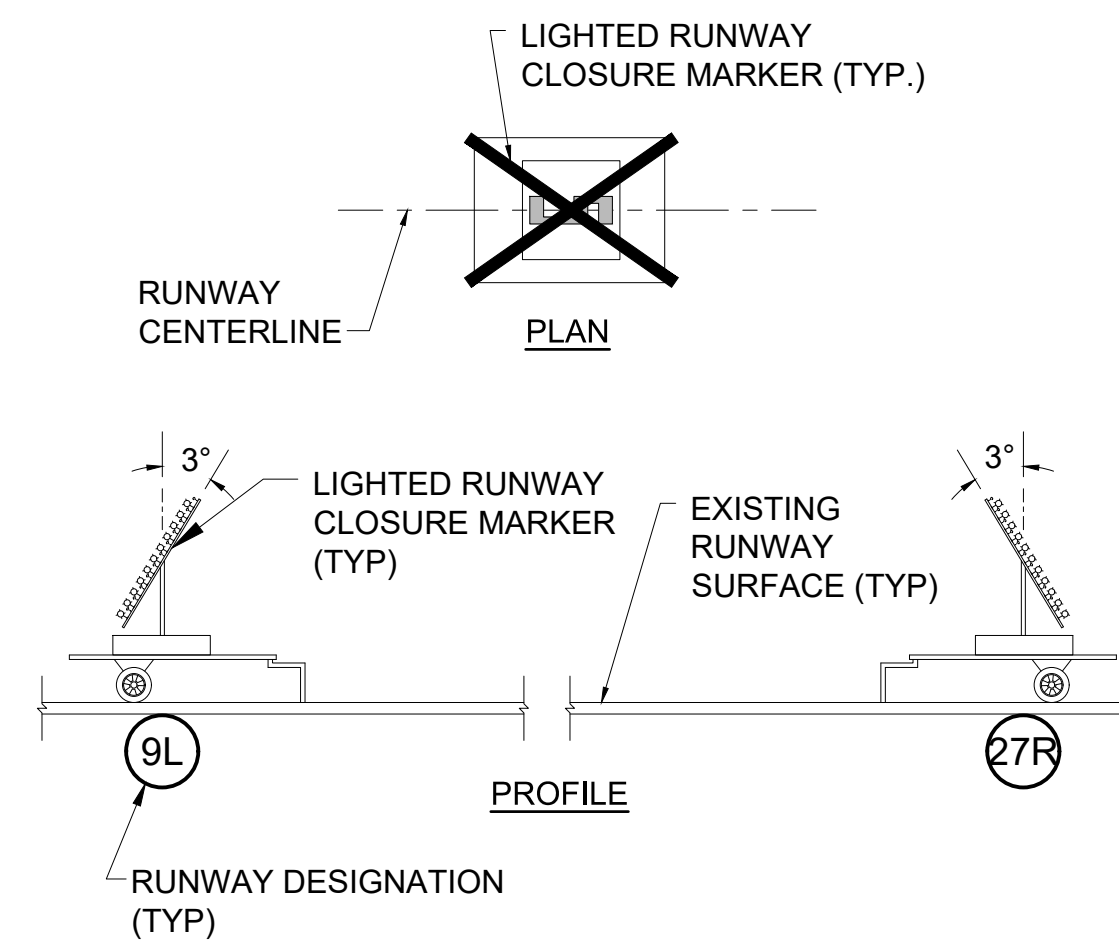


1. USE RED LIGHTS, STEADY-BURN MEETING THE LUMINANCE REQUIREMENTS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION COLLAPSIBLE BARRICADES WITH DIAGONAL, ALTERNATING ORANGE AND WHITE AND REFLECTIVE MARKERS TO SEPARATE ALL THE CONSTRUCTION MARKED AREAS FROM AIRCRAFT MOVEMENT AREAS. ALL BARRICADES TEMPORARY AND OTHER OBJECTS PLACED AND LEFT IN THE AREAS ASSOCIATED WITH ANY OPEN RUNWAYS, TAXIWAYS, OR TAXILANES MUST BE AS LOW AS POSSIBLE TO THE GROUND OF LOW MASS EASILY COLLAPSIBLE UPON CONTACT WITH ANY AIRCRAFT OR ANY OF ITS COMPONENTS AND STURDILY ATTACHED TO THE SURFACE TO PREVENT DISPLACEMENT FROM PROP WASH, JET BLAST, WIND VORTEX OR OTHER SURFACE WIND CURRENTS. IF AFFIXED TO THE SURFACE, THEY MUST BE FRANGIBLE AT GRADE LEVEL OR AS LOW AS POSSIBLE.
2. BARRICADES SHALL DELINEATE THE AREA TO BE PROTECTED AS SHOWN ON THE PHASING PLANS.
3. SPACE BARRICADES WITH A MAX GAP OF 8' END TO END ON TAXIWAYS AND RUNWAYS. 50' ON CENTER MAXIMUM GAP ON THE TURF AREAS OR AS APPROVED BY MDAD.
4. CONTRACTOR SHALL USE BARRICADES IN ACCORDANCE WITH FAA AC 150/5370-2 LATEST EDITION. CONSTRUCTED OF HIGH IMPACT, UV-RESISTANT POLYETHYLENE, WATER FILLED TYPE, AS MANUFACTURED BY OFF THE WALL (TYPE MULTI-BARRIER MODEL AR10X96) OR APPROVED EQUAL.

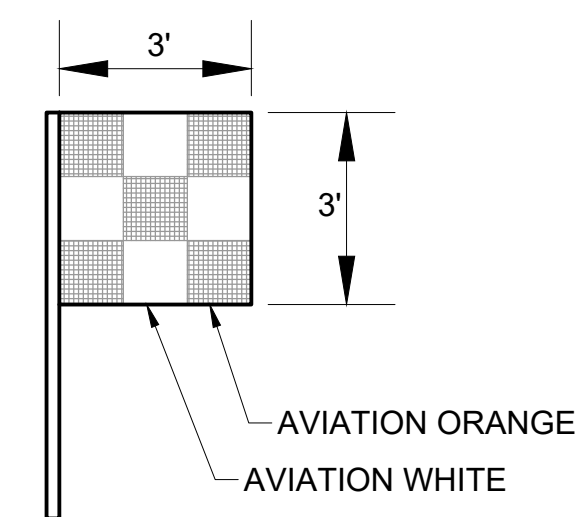


LIGHTED RUNWAY CLOSURE MARKER (PROVIDED BY CONTRACTOR)

1. TWO CLOSED RUNWAY MARKERS SIMILAR TO WHAT IS SHOWN WILL BE PROVIDED BY THE CONTRACTOR.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE MARKERS FOR THE DURATION OF THE PROJECT.
3. MARKERS SHALL BE PLACED ON BOTH ENDS OF THE RUNWAY, AND IN ACCORDANCE WITH FAA AC 150/5370-2G.
4. MARKERS SHALL BE PLACED IMMEDIATELY WHEN THE RUNWAY IS CLOSED. THE CONTRACTOR SHALL REMOVE THE MARKERS WHEN DIRECTED BY THE ENGINEER OR AIRPORT OPERATIONS, PRIOR TO REOPENING THE RUNWAY.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FUEL COSTS AND BATTERY OPERATIONS AND HAVE ADDITIONAL FUEL AVAILABLE TO ENSURE NO INTERRUPTION IN PERFORMANCE
6. ALL COSTS ASSOCIATED WITH THE USE OF MARKERS SHALL BE INCLUDED IN THE BID PRICE FOR TRAFFIC CONTROL.
7. THE CONTRACTOR SHALL ENSURE THAT THE RUNWAY LIGHTS ARE TURNED OFF EACH DAY DURING THE DURATION OF THE RUNWAY CLOSURE.



NOTE: ALL VEHICLES SHALL BE
EQUIPPED WITH A FLAG WHILE IN THE
AIR OPERATION AREA.



VEHICLE FLAG

[illegible]

Appendix B. FAA-7460 Determination Letter



Federal Aviation Administration

November 14, 2022

TO:
Miami-Dade County Aviation
Departm
Attn: Ammad Riaz
P.O. Box 025504
Miami, FL 33102
ebeltre@miami-airport.com

CC:
MIAMI-DADE COUNTY
MIAMI-DADE AVIATION
DEPARTMENT
P.O. BOX 025504
MIAMI, FL 33102-5504
ariaz@miami-airport.com

CC:
Miami-Dade County Aviation
Departm
Attn: Ammad Riaz
P.O. Box 025504
Miami, FL 33102
wso@miami-airport.com

RE: (See attached Table 1 for referenced case(s))
****FINAL DETERMINATION****

Table 1 - Letter Referenced Case(s)

ASN	Prior ASN	Location	Latitude (NAD83)	Longitude (NAD83)	AGL (Feet)	AMSL (Feet)
2022-ASO-7482-NRA		MIAMI,FL	25-54-46.88N	80-17-22.04W	22	26
2022-ASO-7483-NRA		MIAMI,FL	25-54-41.73N	80-17-21.74W	22	27
2022-ASO-7484-NRA		MIAMI,FL	25-54-40.28N	80-17-18.60W	22	27
2022-ASO-7485-NRA		MIAMI,FL	25-54-40.45N	80-17-12.87W	22	27
2022-ASO-7486-NRA		MIAMI,FL	25-54-42.15N	80-17-12.99W	22	25
2022-ASO-7487-NRA		MIAMI,FL	25-54-45.80N	80-15-57.53W	22	26
2022-ASO-7488-NRA		MIAMI,FL	25-54-43.77N	80-15-57.42W	22	27
2022-ASO-7489-NRA		MIAMI,FL	25-54-44.16N	80-15-48.60W	22	29
2022-ASO-7490-NRA		MIAMI,FL	25-54-51.37N	80-15-49.01W	22	26
2022-ASO-7491-NRA		MIAMI,FL	25-54-45.05N	80-15-30.41W	12	17
2022-ASO-7492-NRA		MIAMI,FL	25-54-45.05N	80-15-35.29W	12	17
2022-ASO-7493-NRA		MIAMI,FL	25-54-43.35N	80-15-35.30W	12	17
2022-ASO-7494-NRA		MIAMI,FL	25-54-43.33N	80-15-30.39W	12	17

If FDC NOTAMS ARE REQUIRED, the following Airport Operations Contact(s) (AOC) are approved to handle FDC NOTAM coordination.

The AOC must create and/or log into their OE/AAA account and select "Search Archives". The aeronautical study number (ASN) associated with the proposed obstruction is to be entered (see FAA determination letter for ASN). The NOTAM can be extended or cancelled through the AOC's account. If the AOC is having difficulty using the tool, please contact the OE/AAA support desk at 202-580-7500 or refer to the online instructions.

Name	Email	Phone
Ammad Riaz	ariaz@miami-airport.com	(305) 876-8076

Description: Proposed temporary equipment and staging for Rehab

We do not object with conditions to the construction described in this proposal provided:

You comply with the requirements set forth in FAA Advisory Circular 150/5370-2, "Operational Safety on Airports During Construction."

-Equipment for the entire scope of the project has multiple Part 77 surface penetrations as well as penetration to the VFR traffic pattern. If the runway is to remain open, NOTAMs are required to identify the equipment location, identify the revisions (if applicable) to the declared distances data due to the construction activity, and closure of and/or restrictive measures in place (by the ATM) for the overhead VFR pattern. Should the safety concerns be mitigated and/or the proposed location remain unchanged after further review, then the equipment shall be marked/lighted in accordance with AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport.

-No objection provided the runway is closed whenever people and/or equipment are within the runway safety area. A CSPP must be submitted to provide details as to how safety requirements will be met during construction in accordance with AC 150/5370-2G - Operational Safety on Airports During Construction.

-FPT reviewed this case at Miami-OPA Locka Exec. The Mobile Construction Equipment penetrates RWY27R Departure ICA surface (40:1) by 13ft requiring a climb gradient of 616ft/nm to 100ft NEH 12ft AMSL, RWY30 Departure ICA surface (40:1) by 2ft requiring a climb gradient of 220ft/nm to 100ft NEH 23ft AMSL. The equipment also penetrates runway 09L VGS surface, all vertically guided procedures (ILS, LPV, VNAV) N/A NEH 15ft AMSL. The equipment also penetrates runway 09L visibility surface (20:1 & 34:1) procedure visibility will not be less than 1SM and N/A at night unless lighted NEH 8ft AMSL -----
----- -IF FDC NOTAMS ARE REQUIRED. All requests for FDC NOTAM action must be made utilizing the users OE/AAA account. The Sponsor (or Sponsor's representative) is to log into their OE/AAA account and go to "Search Archives". The aeronautical study number (ASN) associated with the proposed obstruction is to be entered (see FAA determination letter for ASN). If the Sponsor (or Sponsor's representative) is having difficulty using the tool, please contact the OE/AAA support desk at 202-580-7500 or refer to the online instructions. Request must be initiated a minimum of 5 business days prior to conducting operations/construction to allow for processing and issuance of NOTAMS. The Sponsor (or Sponsor's representative) is responsible to verify NOTAMS are active prior to beginning operations.

-Responses made for these cases in OE/AAA was accomplished using positions shown on virtual imageries displayed in Google Earth and MapIt. Imageries from these virtual sources are often dated and may not include temporary or permanent obstacles in or around the environment of this project. VFR significant adverse effect per FAA Order 7400.2N paragraph 6-3-3/6-3-8. Penetrates RSA both ends of runway 09L/27R. FLL traffic pattern penetrations of 17'. Obstacles penetrate OPF CLASS D airspace which starts at ground level at these positions. No approaches or departures 09L/27R permitted while these positions are occupied. Must coordinate with OPF ATCT and MIA TRACON. NOTAM per FAA Order 7930.2S.

-

Your proposal impacts the following National Airspace System (NAS) equipment:

Determination: 2022-ASO-7482-NRA_ OPF, FL_ Mobile Construction Equipment_ Filed Location Point
No objection w/provision 1. Impact on OPF RW 9L MALSR The proposal has a physical effect on the RW 9L MALSR, as follows. a) The proposal penetrates the approach light plane given in the siting standard, Order 6850.2 for the Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) serving OPF RW 9L. No object is allowed to protrude above the approach light plane. The effect can be eliminated by lowering the proposal below the NEH of 8 ft. AMSL, according to site drawing data. b) Otherwise, if the mobile construction equipment cannot be lowered, controlled or verified to remain clear of the approach lights, then coordinate with the airport operator, the local FAA Tech OPS to shut down, NOTAM out, deactivate any remote control for the FAA-owned MALSR when the equipment is in use inside the MALSR visibility surface. 2. Impact on OPF RW 9L VASI At the filed height and location, the construction equipment

has no physical effect on the OPF RW 9L VASI. The equipment is located inside, but remains below the elevation of the 10° VASI OCS. 3. It is recommended that the construction equipment be made conspicuous by marking/flagging/lighting, due to its elevation inside the visibility surface of the RW 9L MALSR & VASI, as well as its penetration of the OPF RW 9L approach Surface.

The Airport sponsor shall notify the FAA's Air Traffic Organization (ATO) Planning and Requirements (P&R) Service Area office a minimum of 45 days prior to the "physical construction start date" for this project. Submit FAA Form entitled [Airport Sponsor Strategic Event Submission Form](#), including all date, time and/or duration changes via email to 9-AJV-SEC-ESA@faa.gov.

As a condition to this Determination, the structure is marked and/or lighted in accordance with (NAVAIDS and associated objects) Chapters 3, 4, and 5 of Advisory Circular 70/7460-1M, Obstruction Marking and Lighting.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

A separate plans and specification review letter has been issued for this project. The comments and questions in the letter must be addressed and any issues resolved prior to construction.

A separate notice to the FAA is required for any construction equipment, such as temporary cranes, whose working limits would exceed the height and lateral dimensions of your proposal.

This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

This determination expires on May 14, 2024 unless:

- (a) extended, revised or terminated by the issuing office.
- (b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for the completion of construction, or the date the FCC denies the application.

NOTE: Request for extension of the effective period of this determination must be obtained at least 15 days prior to expiration date specified in this letter.

If you have any questions concerning this determination contact Krystal Ritchey (407) 487-7233
krystal.ritchey@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical
Study Number 2022-ASO-7482-NRA.

Krystal Ritchey
ADO
Signature Control No: 553226987-561211100

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: Operational Safety on
Airports During Construction

Date: 12/13/2017

Initiated By: AAS-100

AC No: 150/5370-2G

Change:

1 **Purpose.**

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

2 **Cancellation.**

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

3 **Application.**

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

4 **Related Documents.**

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

5 **Principal Changes.**

The AC incorporates the following principal changes:

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

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

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

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

6 **Use of Metrics.**

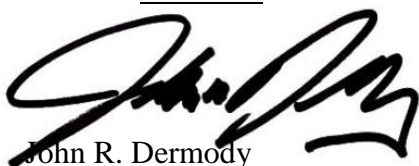
Throughout this AC, U.S. customary units are used followed with “soft” (rounded) conversion to metric units. The U.S. customary units govern.

7 **Where to Find this AC.**

You can view a list of all ACs at http://www.faa.gov/regulations_policies/advisory_circulars/. You can view the Federal Aviation Regulations at http://www.faa.gov/regulations_policies/faa_regulations/.

8 **Feedback on this AC.**

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



John R. Dermody
Director of Airport Safety and Standards

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CHAPTER 1. PLANNING AN AIRFIELD CONSTRUCTION PROJECT

1.1 Overview.

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

1.2 Plan for Safety.

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

1.2.1 Identify Affected Areas.

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

1.2.2 Describe Current Operations.

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

¹ Find Taxiway Design Group information in AC 150/5300-13, Airport Design.

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

1.2.3 Allow for Temporary Changes to Operations.

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

1.2.4 Take Required Measures to Revise Operations.

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

1.2.5 Manage Safety Risk.

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

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

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

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

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

1.3.1 List Requirements.

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

1.3.2 Prepare a Safety Plan Compliance Document (SPCD).

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

1.3.3 Assume Responsibility for the CSPP.

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

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

1.4.1 Establish a Safety Culture.

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

1.4.2 Assess Airport Operator's Responsibilities.

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

- 1.4.2.1 Develop a CSPP that complies with the safety guidelines of Chapter 2, Construction Safety and Phasing Plans, and Chapter 3, Guidelines for Writing a CSPP. The airport operator may develop the CSPP internally or have a consultant develop the CSPP for approval by the airport operator. For tenant sponsored projects, approve a CSPP developed by the tenant or its consultant.
- 1.4.2.2 Require, review and approve the SPCD by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.
- 1.4.2.3 Convene a preconstruction meeting with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See AC 150/5370-12, Quality Management for Federally Funded Airport Construction Projects. (Note “FAA” refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)
- 1.4.2.4 Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.
- 1.4.2.5 Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.
- 1.4.2.6 Notify users, ARFF personnel, and FAA ATO personnel of construction and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.
- 1.4.2.7 Ensure construction personnel know applicable airport procedures and changes to those procedures that may affect their work.
- 1.4.2.8 Ensure that all temporary construction signs are located per the scheduled list for each phase of the project.
- 1.4.2.9 Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.
- 1.4.2.10 Ensure vehicle and pedestrian operations addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.
- 1.4.2.11 At certificated airports, ensure each CSPP and SPCD is consistent with Part 139.

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

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

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

1.4.4 Define Tenant's Responsibilities.

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

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

CHAPTER 2. CONSTRUCTION SAFETY AND PHASING PLANS

2.1 Overview.

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

2.2 Assume Responsibility.

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

2.3 Submit the CSPP.

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

2.3.1 Submit an Outline/Draft.

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

2.3.2 Submit a CSPP.

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

2.3.3 Submit an SPCD.

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

2.3.4 Submit CSPP Revisions.

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

2.4 **Meet CSPP Requirements.**

2.4.1 To the extent possible, the CSPP should address the following as outlined in Chapter 3, Guidelines for Writing a CSPP. Details that cannot be determined at this stage are to be included in the SPCD.

1. Coordination.
 - a. Contractor progress meetings.
 - b. Scope or schedule changes.
 - c. FAA ATO coordination.
2. Phasing.
 - a. Phase elements.
 - b. Construction safety drawings.
3. Areas and operations affected by the construction activity.
 - a. Identification of affected areas.
 - b. Mitigation of effects.
4. Protection of navigation aids (NAVAIDs).
5. Contractor access.
 - a. Location of stockpiled construction materials.
 - b. Vehicle and pedestrian operations.
6. Wildlife management.
 - a. Trash.
 - b. Standing water.
 - c. Tall grass and seeds.
 - d. Poorly maintained fencing and gates.
 - e. Disruption of existing wildlife habitat.
7. Foreign Object Debris (FOD) management.
8. Hazardous materials (HAZMAT) management.
9. Notification of construction activities.

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

b. Restrictions.

2.4.2 The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, “I, (Name of Contractor), have read the (Title of Project) CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:”). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, “No supplemental information,” should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:

1. Coordination. Discuss details of proposed safety meetings with the airport operator and with contractor employees and subcontractors.
2. Phasing. Discuss proposed construction schedule elements, including:
 - a. Duration of each phase.
 - b. Daily start and finish of construction, including “night only” construction.
 - c. Duration of construction activities during:
 - i. Normal runway operations.
 - ii. Closed runway operations.
 - iii. Modified runway “Aircraft Reference Code” usage.
3. Areas and operations affected by the construction activity. These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.
4. Protection of NAVAIDs. Discuss specific methods proposed to protect operating NAVAIDs.
5. Contractor access. Provide the following:
 - a. Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).
 - b. Listing of individuals requiring driver training (for certificated airports and as requested).
 - c. Radio communications.
 - i. Types of radios and backup capabilities.
 - ii. Who will be monitoring radios.
 - iii. Who to contact if the ATCT cannot reach the contractor’s designated person by radio.

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

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

2.5 **Coordination.**

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

2.5.1 Progress Meetings.

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

2.5.2 Scope or Schedule Changes.

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

2.5.3 FAA ATO Coordination.

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

2.6 **Phasing.**

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

2.6.1 Phase Elements.

For each phase the CSPP should detail:

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

2.6.2 Construction Safety Drawings.

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

2.7 **Areas and Operations Affected by Construction Activity.**

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

2.7.1 Identification of Affected Areas.

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

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

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

2.7.1.1.1 Partially Closed Runways.

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

2.7.1.1.2 Displaced Thresholds.

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

2.7.1.2 Closing of aircraft rescue and fire fighting access routes.

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

2.7.1.4 Interruption of utilities, including water supplies for fire fighting.

2.7.1.5 Approach/departure surfaces affected by heights of objects.

2.7.1.6 Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.

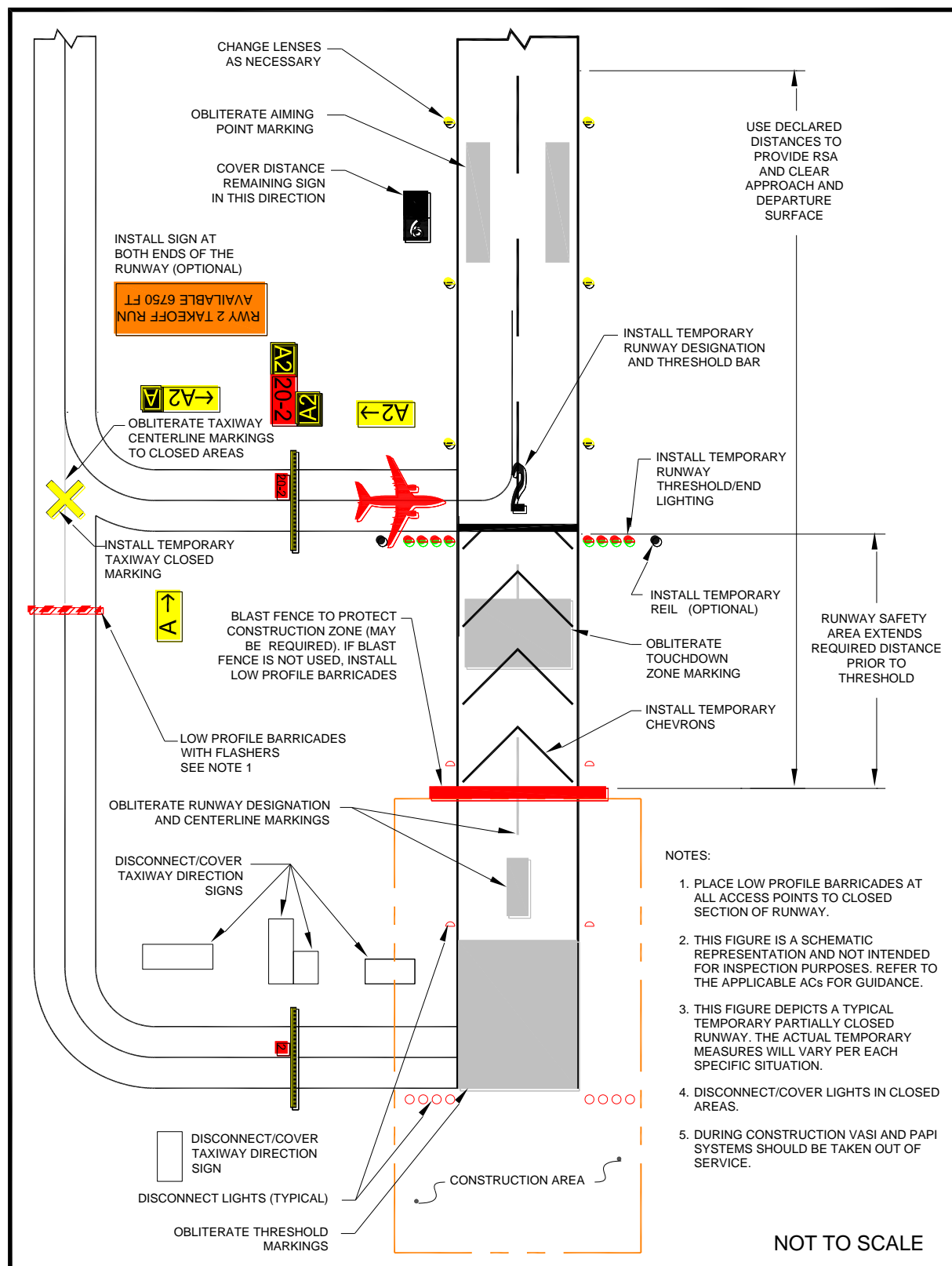
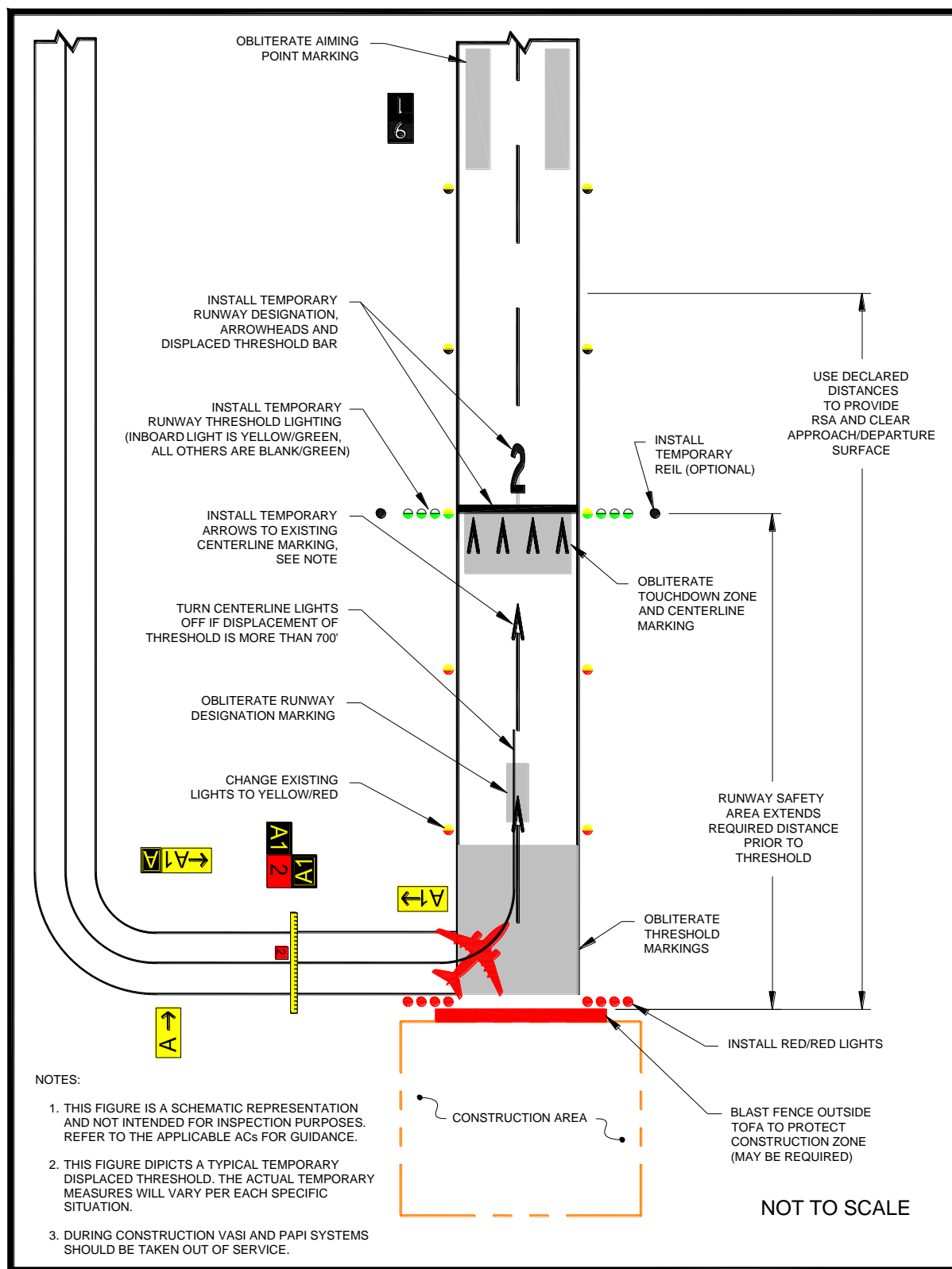
Figure 2-1. Temporary Partially Closed Runway

Figure 2-2. Temporary Displaced Threshold

Note: See paragraph 2.18.2.5.

2.7.2 Mitigation of Effects.

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

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

2.8 **Navigation Aid (NAVAID) Protection.**

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

2.9 **Contractor Access.**

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

2.9.1 Location of Stockpiled Construction Materials.

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

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

2.9.2 Vehicle and Pedestrian Operations.

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

2.9.2.1 **Construction Site Parking.**

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

2.9.2.2 **Construction Equipment Parking.**

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

2.9.2.3 **Access and Haul Roads.**

Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul

roads does not interfere with NAVAIDs or approach surfaces of operational runways. Address whether access gates will be blocked or inoperative or if a rally point will be blocked or inaccessible.

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

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

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

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

 1. Airport operations
 2. ATCT

3. Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.
4. Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and “shortened” runways on the ATIS frequency.

2.9.2.9.2 Areas Requiring Two-Way Radio Communication with the ATCT.

Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.

2.9.2.9.3 Frequencies to be Used.

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

2.9.2.9.4 Proper radio usage, including read back requirements.

2.9.2.9.5 Proper phraseology, including the International Phonetic Alphabet.

2.9.2.9.6 Light Gun Signals.

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

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

2.9.2.10.1 Fencing and Gates.

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit “piggybacking” behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-

00/52, *Recommended Security Guidelines for Airport Planning and Construction*, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

2.9.2.10.2 Badging Requirements.

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

2.10 **Wildlife Management.**

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

2.10.1 Trash.

Food scraps must be collected from construction personnel activity.

2.10.2 Standing Water.

2.10.3 Tall Grass and Seeds.

Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in AC 150/5370-10, *Standards for Specifying Construction of Airports*, Item T-901, Seeding. Contact the local office of the United 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.

2.10.4 Poorly Maintained Fencing and Gates.

See paragraph 2.9.2.10.1.

2.10.5 Disruption of Existing Wildlife Habitat.

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

2.11 Foreign Object Debris (FOD) Management.

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

2.12 Hazardous Materials (HAZMAT) Management.

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

2.13 Notification of Construction Activities.

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

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

2.13.2 NOTAMs.

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

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

2.13.4 Coordination with ARFF.

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

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

2.13.5 Notification to the FAA.

2.13.5.1 **Part 77.**

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

2.13.5.2 **Part 157.**

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

2.13.5.3 **NAVAIDs.**

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

2.13.5.3.1 Airport Owned/FAA Maintained.

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

2.13.5.3.2 FAA Owned.

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

2.14 **Inspection Requirements.**

2.14.1 Daily Inspections.

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

2.14.2 Interim Inspections.

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

2.14.3 Final Inspections.

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

2.15 Underground Utilities.

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

2.16 Penalties.

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

2.17 Special Conditions.

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

2.18 Runway and Taxiway Visual Aids.

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

2.18.1 General.

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

2.18.2 Markings.

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager,

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

2.18.2.1 Closed Runways and Taxiways.

2.18.2.1.1 Permanently Closed Runways.

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

2.18.2.1.2 Temporarily Closed Runways.

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

2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.

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

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

Figure 2-3. Markings for a Temporarily Closed Runway

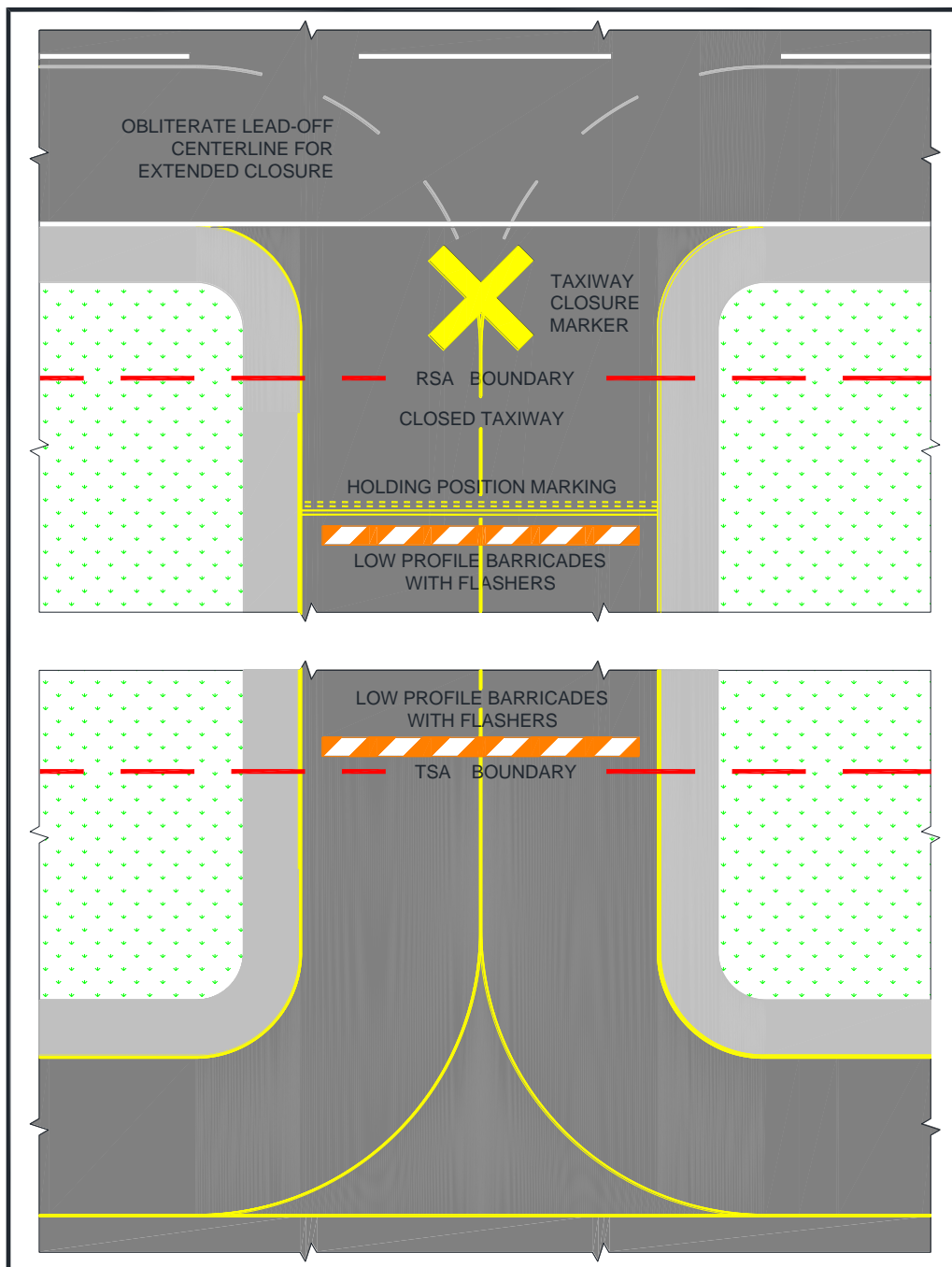


1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see [AC 150/5340-1](#)). Obliterate or cover markings prior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

2.18.2.1.4 Taxiways.

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

Figure 2-4. Temporary Taxiway Closure



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

2.18.2.1.5 Temporarily Closed Airport.

When the airport is closed temporarily, mark all the runways as closed.

- 2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.

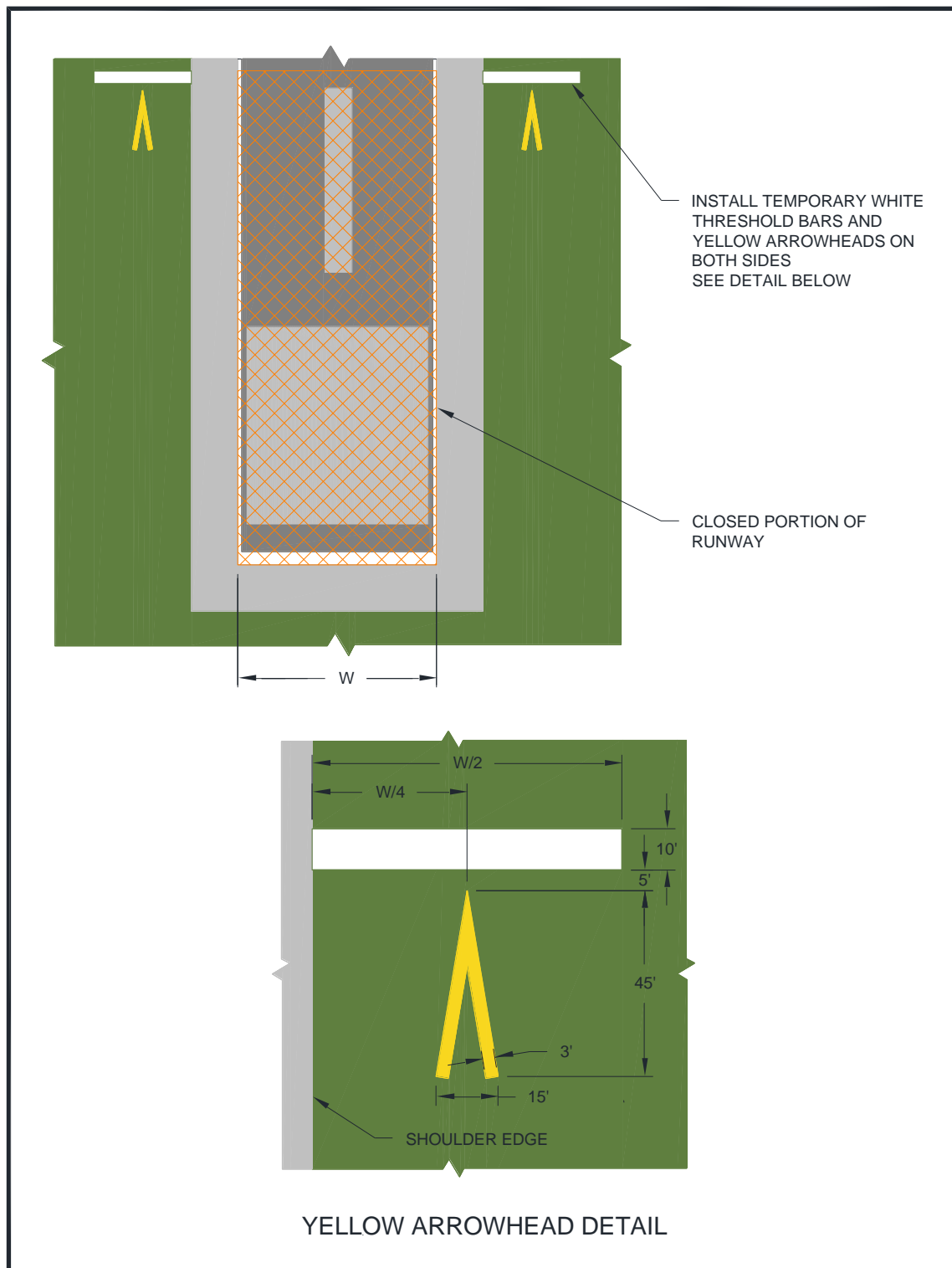
- 2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.

- 2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, “temporary outboard white threshold bars and yellow arrowheads”, see Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.

- 2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, “Runway and Taxiway Painting,” in AC 150/5370-10), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. AC

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

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



2.18.3 Lighting and Visual NAVAIDs.

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

2.18.3.1 **Permanently Closed Runways and Taxiways.**

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

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

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

Figure 2-6. Lighted X in Daytime**Figure 2-7. Lighted X at Night**

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

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

closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

2.18.3.3.1 Partially Closed Runways.

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

2.18.3.3.2 Temporary Displaced Thresholds.

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

2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.

2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39, *Specification for L-853, Runway and Taxiway Retroreflective Markers*.

2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See AC 150/5370-10.

2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may

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

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

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

2.18.4 Signs.

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

2.18.4.1 **Existing Signs.**

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

2.18.4.2 Temporary Signs.

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

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

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

2.18.4.2.1 Takeoff Run Available (TORA) signs.

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

2.18.4.2.2 Sign legends are shown in Figure F-1.

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

2.19 Marking and Signs for Access Routes.

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

2.20 **Hazard Marking, Lighting and Signing.**

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

2.20.2 Equipment.

2.20.2.1 **Barricades.**

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

2.20.2.2 **Lights.**

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

2.20.2.3 **Supplement Barricades with Signs (for example) As Necessary.**

Examples are “No Entry” and “No Vehicles.” Be aware of the increased effects of wind and jet blast on barricades with attached signs.

2.20.2.4 Air Operations Area – General.

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

Figure 2-8. Interlocking Barricades



Figure 2-9. Low Profile Barricades**2.20.2.5 Air Operations Area – Runway/Taxiway Intersections.**

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

2.20.2.6 Air Operations Area – Other.

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

2.20.2.7 Maintenance.

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

2.21 Work Zone Lighting for Nighttime Construction.

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

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

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

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

2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

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

2.22.1.4 Excavations.

2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.1.5 Erosion Control.

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

2.22.2 Runway Object Free Area (ROFA).

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

2.22.3 Taxiway Safety Area (TSA).

2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See AC 150/5300-13.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see AC 150/5300-13).

2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

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

2.22.3.4 **Excavations.**

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

2.22.3.5 **Erosion control.**

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

2.22.4 Taxiway Object Free Area (TOFA).

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

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

2.22.5 Obstacle Free Zone (OFZ).

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

2.22.6 Runway Approach/Departure Areas and Clearways.

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

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

2.22.6.2 **Caution About Partial Runway Closures.**

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

2.22.6.3 **Caution About Displaced Thresholds.**

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

2.23 **Other Limitations on Construction.**

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

2.23.1 Prohibitions.

- 2.23.1.1 No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.
- 2.23.1.2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.
- 2.23.1.3 No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See AC 150/5370-10.

2.23.2 Restrictions.

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

CHAPTER 3. GUIDELINES FOR WRITING A CSPP

3.1 General Requirements.

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

3.2 Applicability of Subjects.

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

3.3 Graphical Representations.

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

3.4 **Reference Documents.**

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

3.5 **Restrictions.**

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

3.6 **Coordination.**

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

3.7 **Phasing.**

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

3.8 **Areas and Operations Affected by Construction.**

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

3.9 **NAVAID Protection.**

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph 3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 3.14 for the

issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDS and the corresponding critical areas.

3.10 **Contractor Access.**

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

3.10.1 Location of Stockpiled Construction Materials.

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

3.10.2 Vehicle and Pedestrian Operations.

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

3.10.3 Two-Way Radio Communications.

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

signals, telephone numbers, others) must be included. All radio frequencies should be identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

3.10.4 **Airport Security.**

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

3.11 **Wildlife Management.**

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

3.12 **FOD Management.**

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

3.13 **HAZMAT Management.**

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

3.14 **Notification of Construction Activities.**

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

Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph 3.10. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

3.15 Inspection Requirements.

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

3.16 Underground Utilities.

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

3.17 Penalties.

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

3.18 Special Conditions.

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

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

3.19 Runway and Taxiway Visual Aids.

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

3.20 Marking and Signs for Access Routes.

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

3.21 Hazard Marking and Lighting.

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

3.22 Work Zone Lighting for Nighttime Construction.

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

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

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

3.24 **Other Limitations on Construction.**

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

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APPENDIX A. RELATED READING MATERIAL

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

Table A-1. FAA Publications

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

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

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

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

Table A-2. Code of Federal Regulation

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

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

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APPENDIX B. TERMS AND ACRONYMS**Table B-1. Terms and Acronyms**

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

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

Term	Definition
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See <u>AC 150/5300-13</u> for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to <u>AC 150/5300-13</u> for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with <u>AC 150/5300-13</u> .
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

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

APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST

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

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

Table C-1. CSPP Checklist

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

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

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

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Foreign Object Debris Management					
The airport operator’s FOD management procedures are addressed.	<u>2.11</u>				
Hazardous Materials Management					
The airport operator’s hazardous materials management procedures are addressed.	<u>2.12</u>				
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.	<u>2.13</u>				
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	<u>2.13.1</u>				
A list of local ATO/Technical Operations personnel is included.	<u>2.13.1</u>				
A list of ATCT managers on duty is included.	<u>2.13.1</u>				
A list of authorized representatives to the OCC is included.	<u>2.13.2</u>				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	<u>2.8, 2.13.2, 2.18.3.3.9</u>				
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	<u>2.13.2</u>				
Emergency notification procedures for medical, fire fighting, and police	<u>2.13.3</u>				

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

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

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	<u>2.20.1</u>				
The CSPP considers less obvious construction-related hazards.	<u>2.20.1</u>				
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	<u>2.20.2.1</u>				
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	<u>2.20.2.1</u>				
Red lights meeting the luminance requirements of the State Highway Department are specified.	<u>2.20.2.2</u>				
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	<u>2.20.2.3</u>				
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	<u>2.20.2.3</u>				
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	<u>2.20.2.5</u>				
Markings for temporary closures are specified.	<u>2.20.2.5</u>				
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	<u>2.20.2.7</u>				

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

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

APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

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

Table D-1. Potentially Hazardous Conditions

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

Item	Action Required (Describe)	No Action Required (Check)
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

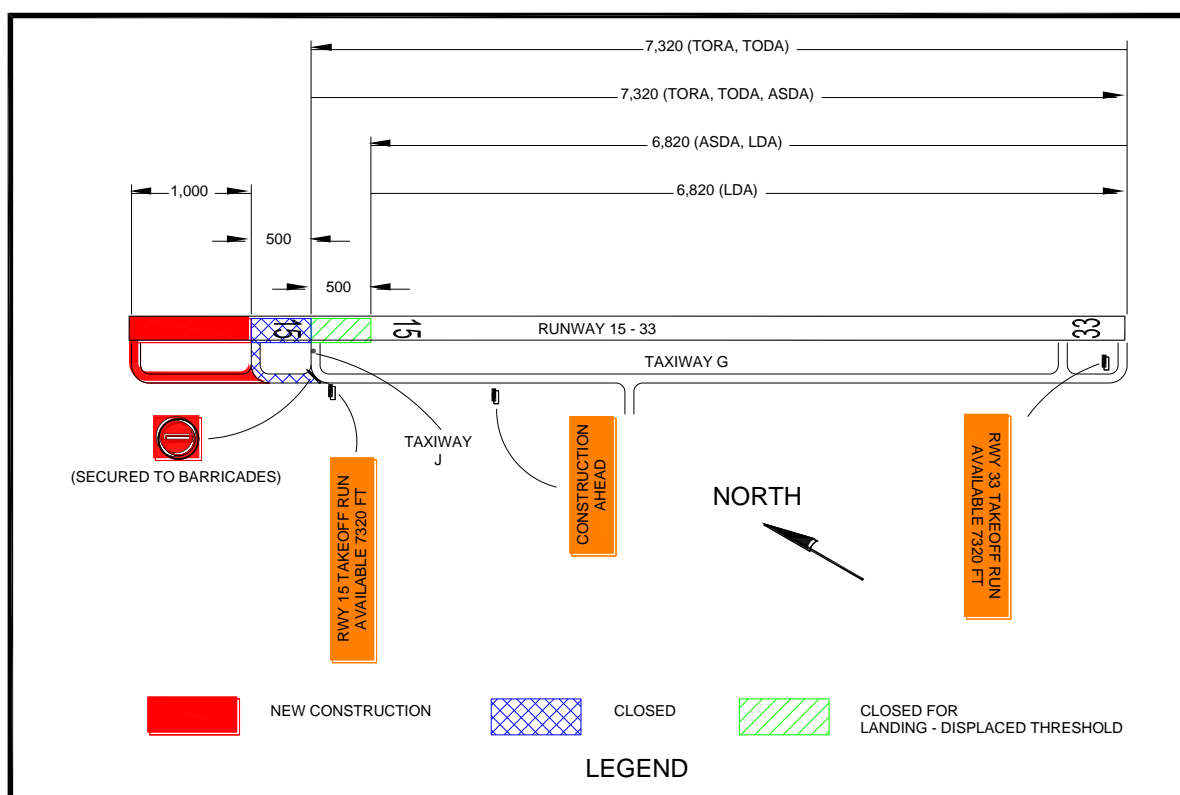
Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

Item	Action Required (Describe)	No Action Required (Check)
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE**E.1 Project Description.**

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

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

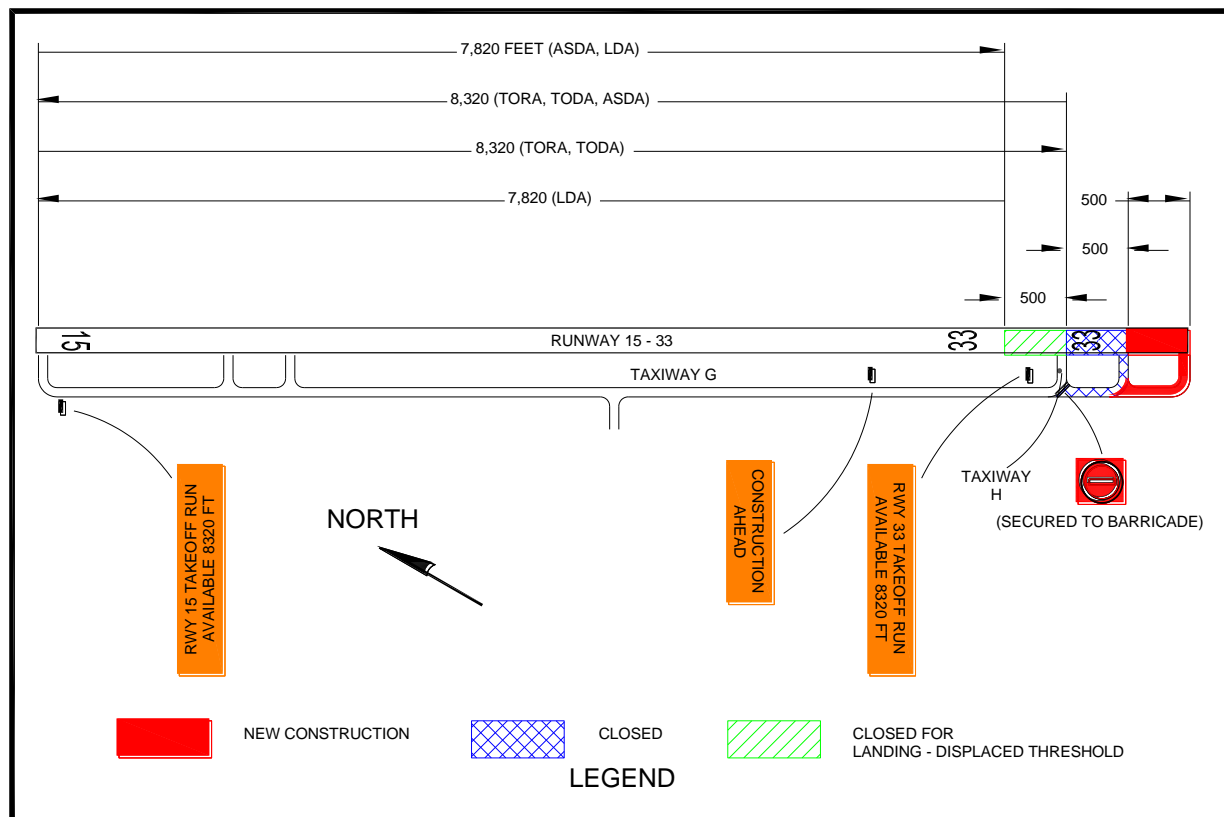
Figure E-1. Phase I Example

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

Note 2: Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet ($500/40 = 12.5$).

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

Figure E-2. Phase II Example



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

Note 2: Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet ($500/40 = 12.5$).

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

Figure E-3. Phase III Example

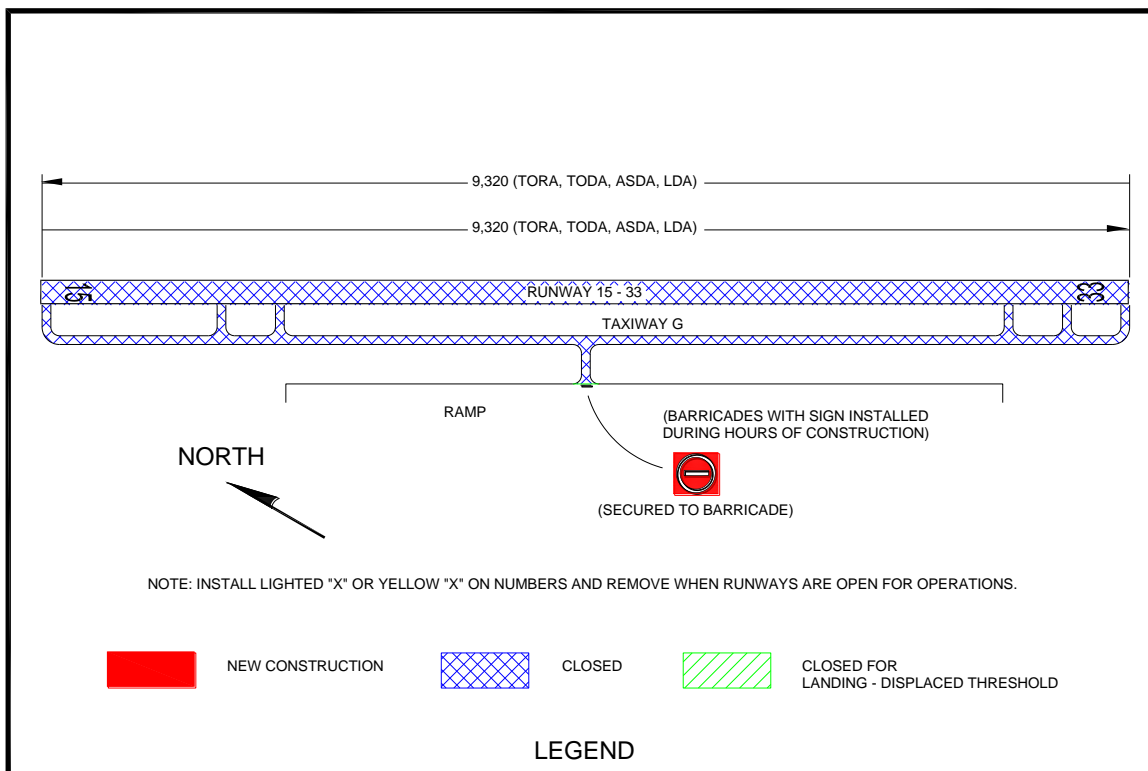


Table E-1. Operational Effects Table

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

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

Project		Runway 15-33 Extension and Repaving			
Phase		Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway
Runway 15 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	7,820	7,320	7,820	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 33 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	8,320	6,820	8,320	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 15 Approach Procedures		LOC only	LOC only	LOC only	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 33 Approach Procedures		ILS	ILS	ILS	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 15 NAVAIDs		LOC	LOC	LOC	LOC
Runway 33 NAVAIDs		ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR
Taxiway G ADG		IV	III	IV	IV
Taxiway G TDG		4	4	4	4
ATCT (hours open)		24 hours	24 hours	24 hours	0500 - 2000
ARFF Index		D	D	D	D

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

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

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

Table E-2. Runway and Taxiway Edge Protection

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

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

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

Table E-3. Protection Prior to Runway Threshold

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

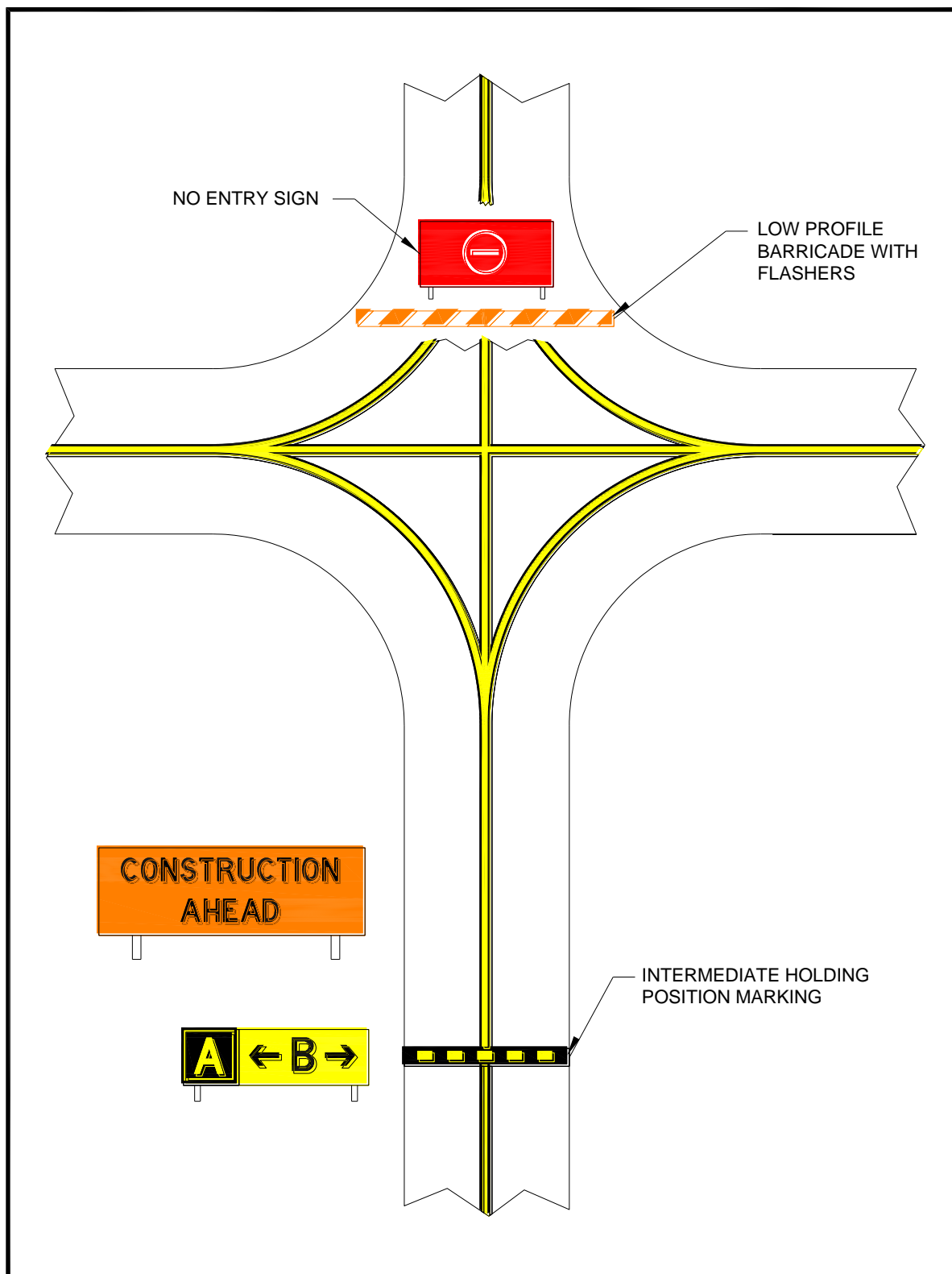
*See AC 150/5300-13 to complete the chart for a specific runway.

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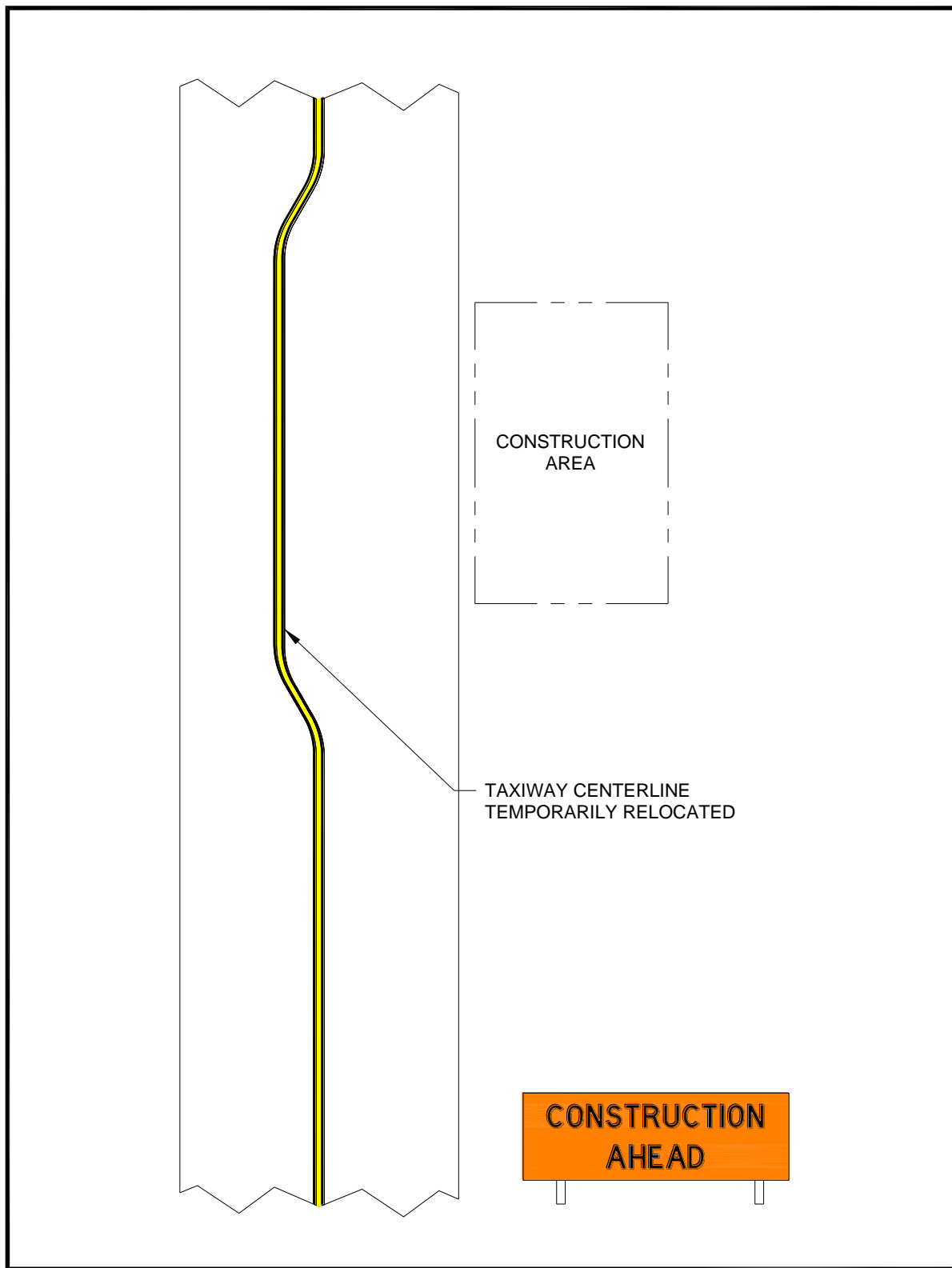
APPENDIX F. ORANGE CONSTRUCTION SIGNS

Figure F-1. Approved Sign Legends



Figure F-2. Orange Construction Sign Example 1

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

Figure F-3. Orange Construction Sign Example 2

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

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Advisory Circular Feedback

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

Subject: AC 150/5370-2G

Date: _____

Please check all appropriate line items:

- ☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.
- ☐ Recommend paragraph _____ on page _____ be changed as follows:
- _____
- _____
- _____
- ☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)
- _____
- _____
- _____
- ☐ Other comments:
- _____
- _____
- _____
- ☐ I would like to discuss the above. Please contact me at (phone number, email address).
- _____

Submitted by: _____

Date: _____

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SECTION 015710

MAINTENANCE OF AIRPORT LANDSIDE TRAFFIC

1.01 DESCRIPTION

- A. The work to be performed under this Section shall consist of all work and all measures to be employed to maintain the efficient and orderly movement of airport landside traffic in the area of construction as shown on the Plans and as described in this Section.

1.02 GENERAL

- A. The Contractor shall provide, install, and maintain the temporary traffic control devices, furnish flaggers, and perform all work required to conform to the provisions of this Section.
- B. The Contract Documents show the location of signs, lights, markings, delineators, special lighting, guardrails, barricades, temporary pavements, flagger stations, and other temporary devices and work required to control traffic at each work Sequence area.
- C. Before commencing work in any area, the Contractor shall install the temporary traffic control devices, stations, etc., at the work site, and he shall obtain the approval of the Field Representative before commencing any work that affects, in any way, the existing traffic flow. The on-site layout shall consist of a mockup of temporary pavements, covered signs and staked or marked locations of all proposed temporary traffic control devices. After obtaining Field Representative approval of the mockup, the Contractor shall implement the revised traffic movement by installation of the approved temporary traffic control devices, flaggers, etc.
- D. The revised traffic movement shall be observed, and the layout altered as necessary to achieve the efficient and orderly flow of traffic through the proposed construction area. Only after the layout has been so tested and approved will the Contractor be permitted to commence construction work in the area.

PART 2 - PRODUCTS

- 2.01 Traffic control devices, warning devices and barriers shall be as shown, and meeting the applicable requirements of the current edition of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction and the FHWA Manual or Uniform Traffic Control Devices (MUTCD); subject to the Field Representative's approval.

PART 3 - EXECUTION

3.01 MAINTENANCE OF TEMPORARY TRAFFIC CONTROL DEVICES, PAVEMENTS, AND FACILITIES

- A. The Contractor shall maintain all traffic control devices in proper repair and working order. The Contractor shall also maintain all pavements constructed or utilized for temporary traffic movement and shall maintain all other traffic service facilities such as guardrail, area lighting, etc., necessary for the efficient and orderly movement of traffic within the construction area.
- B. In the event of the Contractor's failure to properly maintain any of these devices, pavements or facilities, the County may cause such maintenance, as it deems necessary, to be performed by its own or another Contractor's forces and the costs of such maintenance shall be deducted from monies due the Contractor for work performed under this Contract.

3.02 INTERFERENCE WITH AIRPORT LANDSIDE TRAFFIC

- A. The Contractor shall conduct his work so as to cause no unnecessary interference with airport landside traffic and it shall comply with all requirements governing its employee parking, areas prohibited to his operation, and access routes to authorized work areas.
- B. The Contractor shall not permit its workers and equipment to interfere with the movement of airport landside traffic in those areas adjacent to its work areas. The Contractor shall not obstruct sight lines, create obstructions to lighting nor create hazards or nuisance by allowing spills or wind transported materials to accumulate in traffic areas.
- C. The Contractor shall maintain at the work site an approved powered rotary broom sweeper. The Contractor shall promptly remove any spills or wind-transported debris occurring on traveled roadways.

3.03 FINAL CLEANUP

- A. After work in any work area has been completed and before moving to a new work construction area, the Contractor shall remove all temporary traffic control devices, temporary pavements and other temporary work and devices installed for traffic control. The Contractor shall restore the site to its original condition or to the revised condition shown on the Plans.

3.04 OPERATIONAL EMERGENCIES

During periods of unusually heavy traffic movement or other traffic emergencies, the County may direct the Contractor to relinquish areas under construction and to restore the construction area to serve airport landside traffic. In this event, the Field Representative will so direct the Contractor to evacuate the area; and the Field Representative will specify the limits of the area to be evacuated, the term of the evacuation and the construction governing the restoration work to be performed. The Contractor shall promptly and fully comply with the Field Representative directive. Should the directive entail extra work under the Contract, and the Field Representative shall so determine, the Contractor will be reimbursed for such extra work in accordance with the applicable provisions of the General Conditions "Allowance Accounts". Should the directive entail a delay in the completion of the Contract or any defined subdivision of the Contract, and the Field Representative shall so determine, the delay will be considered as Non-Compensable Excusable Delay in accordance with the applicable provisions of the General Conditions.

PART 4 - METHOD OF MEASUREMENT

- 4.01 No separate measurement of Maintenance of Airport Landside Traffic, pavement striping, temporary pavement construction will be made.

PART 5 - BASIS OF PAYMENT

- 5.01 No separate payment will be made.

END OF SECTION

SECTION 015713

TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL

PART 1 - GENERAL

1.01 SCOPE

This Section consists of temporary control measures as shown on the Plans or as directed by the Field Representative during the life of the Contract to control water pollution, soil erosion, and siltation through the use of berms, dikes, dams, sediment basins, erosion control mats, geotextile fabric, gravel, hay bales, mulches, grasses, slope drains, rip rap, turbidity screens (barriers), and other erosion control devices or methods; and to control air pollution through the use of water sprinkling or other approved methods. The work shall be performed in accordance with these specifications and shall conform to the details shown on the Plans and as directed by the Field Representative.

- 1.02 The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this Contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.
- 1.03 Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.
- 1.04 Due to the unanticipated conditions, the Field Representative may direct the use of control features or methods other than those included in the Contract Documents. In such event this additional work will be paid for under the Allowance Account.
- 1.05 CONTROL OF CONTRACTOR'S OPERATIONS WHICH MAY RESULT IN WATER POLLUTION

The Contractor shall take sufficient precautions to prevent pollution of streams, canals, lakes, reservoirs, and other water impoundments, with fuels, oils, bitumens, calcium chloride, or other harmful materials. Also, the Contractor shall conduct and schedule operations so as to avoid or otherwise minimize pollution or siltation of such streams, etc., and to avoid interference with movement of migratory fish. No residue from dust collectors, stripping towers, or washers shall be dumped into any live stream.

Construction operations in rivers, streams, lakes, tidal waters, reservoirs, canals, and other impoundments shall be restricted to those areas where it is necessary to perform filling or excavation to accomplish the work shown in the Plans and to those areas which must be entered to construct temporary or permanent structures. As soon as conditions permit, rivers, streams, and impoundments shall be promptly cleared of all obstructions placed therein or caused by construction operations.

Frequent fording of live streams with construction equipment will not be permitted. Wherever an appreciable number of stream crossings are necessary at any one location, a temporary bridge or other structure shall be used.

Except as necessary for construction, excavated material shall not be deposited in rivers, streams, canals, or impoundments, or in a position close enough thereto, to be washed away by high water or runoff.

Where pumps are used to remove highly turbid waters from enclosed construction areas such as cofferdams, sheet piles, or forms, the water shall be treated as specified in Section P-160, or shall be discharged into sediment basins, or confined by an appropriate enclosure such as turbidity barriers prior to discharge into rivers, streams, canals or impoundments, in accordance with all applicable dewatering regulations.

The contractor shall not disturb lands or waters outside the limits of construction as staked, or shown on plans, except as may be found necessary and authorized by the Field Representative.

The location of, and method of operation in, borrow pits, material pits, stockpiles, and disposal areas furnished by the Contractor for waste material from the project (other than commercially operated sources) shall meet the approval of the Field Representative as being such that erosion during and after completion of the work will not result in probability of detrimental siltation or water pollution.

1.06 PRECONSTRUCTION CONFERENCE

At the preconstruction conference the Contractor shall present his proposed plans and schedules for construction of the project and the accomplishment of temporary and permanent erosion control work, all in accordance with the requirements of the Contract Documents. The schedule shall be based on an analysis of project conditions and shall be in written form. This schedule shall specifically indicate the proposed uses of temporary erosion control features, the sequence of clearing and grubbing, earthwork operations and construction of permanent erosion control features. It shall also include proposed methods to prevent pollution of streams, lakes, tidal waters, reservoirs, canals, and other impoundments, as the result of construction operations. The Contractor shall also outline his proposed methods of controlling erosion, dust control and preventing pollution on haul roads and in borrow pits, material pits, stockpiles, and a plan for disposal of waste materials from the project.

No work shall be started until the aforementioned plans, schedules and methods of operation have been accepted by the Field Representative and approved by MDAD. The Contractor shall be responsible for accomplishment of the work in accordance with the approved plans and schedules. The Owner may approve changes made necessary by unforeseen circumstances which are beyond the control of the Contractor.

1.07 PERMITS

No dewatering of construction areas or the discharge of waters into any waterbody as part of the work under this Contract will be permitted until MDAD submits the Notice of Intent (NOI) to the appropriate governmental agencies, as required by the National Pollution Discharge Elimination System (NPDES) storm discharge regulations under the Clean Water Act Amendments (ACT), obtain the applicable permits and comply with the requirements of this Section. The contractor shall execute the "Contractor Certification-NPDES General Permit to Storm Water Discharges From Construction Sites" to be incorporated in the NOI.

Upon conclusion of all construction runoff and the discharge of waters into any waterbodies as described above, the Contractor shall submit the Notice of Termination (NOT) to MDAD in accordance with the requirements of the NPDES.

PART 2 - PRODUCTS

- 2.01 No testing of materials used in construction of temporary erosion control features will be required except as specified for geotextile fabric unless such materials are to be incorporated into the completed Work. Acceptance will be on the basis of visual inspection by the Field Representative when no testing is required.

Materials used for the construction of temporary silt fence, and floating turbidity barrier not to be incorporated into the completed project may be new or used subject to the approval of the Field Representative.

2.02 GRASS

Grass which will not compete with the grass sown later for permanent cover shall be a quick-growing species (such as ryegrass, Japanese millet, or cereal grasses) suitable to the area providing a temporary cover. All grass shall be SOD meeting the requirements of technical specification Item T-904 Sodding and Item T-905 Topsoil as applicable.

2.03 MULCHES

Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials.

2.04 FERTILIZER

Fertilizer shall be a standard commercial grade and shall conform to all Federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

2.05 SLOPE DRAINS - NOT USED

2.06 GEOTEXTILE FABRIC

Geotextiles shall be woven or non-woven fabrics which allow the passage of water.

The geotextile fabric shall consist of long-chain polymeric filaments or yarns such as polypropylene, polyethylene, polyester, polyamides or polyvinylidenechloride formed into a stable network such that the filaments or yarns retain their relative position to each other. The base plastic shall contain stabilizers and/or inhibitors to make the filaments resistant to deterioration due to ultra-violet light, heat exposure and commonly encountered chemicals. The fabric shall be free of any treatment which may significantly alter its physical properties. The edges of the fabric shall be selvaged or otherwise finished to prevent the outer yarn from pulling away from the fabric.

The fabric shall be wrapped in a protective covering which is sufficient to protect it from sunlight, dirt and other debris during shipment, handling and storage.

In order to reduce overlaps, the geotextile fabric may be sewn together. The seams of the fabric shall be sewn with thread of a material meeting the chemical requirements given for the fabric. The minimum seam strength shall be 120 lbs. when tested in accordance with ASTM D1682.

2.07 OTHER

All other materials shall meet commercial grade standards and shall be approved by the Field Representative before being incorporated into the project.

PART 3 - EXECUTION

3.01 GENERAL

In the event of conflict between these requirements and pollution control laws, rules, or regulations of Federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The Contractor shall be responsible for full compliance with the applicable control pollution laws, rules or regulations.

3.02 AUTHORITY OF THE FIELD REPRESENTATIVE

The Field Representative may limit the surface areas of unprotected erodible earth exposed by clearing and grubbing, excavation or filling operations and may direct the Contractor to provide immediate permanent or temporary erosion or pollution control measures to prevent contamination of any river, stream, lake, tidal waters, reservoir, canal, or other impoundment or to prevent detrimental effects on property outside the airport limits and damage to the work. The limitation of area in which excavation and filling operations may be underway shall be commensurate with the Contractor's capability and progress in keeping the finish grading, grassing, sodding, and other such permanent erosion control measures current in accordance with the accepted plans and schedules.

Under no conditions shall the surface of erodible earth exposed by clearing and grubbing operations or by excavation and filling operations exceed 200,000 square feet without specific prior approval by the Field Representative. This limitation applies separately to clearing and grubbing operations and excavation and backfilling operations.

The Field Representative may increase or decrease the amount of surface area allowed to be exposed at any one time, on the basis of its analysis of conditions on the project.

3.03 CONSTRUCTION DETAILS

The Contractor shall incorporate all permanent erosion control features into the Project at the earliest practicable time as outlined in the accepted plans and schedules. Except where future construction operations will damage slopes, the Contractor shall perform the permanent sprigging and seeding or sodding and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary air pollution, erosion and water pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion is likely to be a problem, clearing and grubbing operations shall be scheduled and performed so that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise, temporary erosion control measures may be required between successive construction stages.

The Field Representative will limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, sprigging and seeding or sodding, and other such permanent control measures current in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.

In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or are ordered by the Field Representative, such work shall be performed by the Contractor at its own expense.

The erosion control features installed by the Contractor shall be acceptably maintained by the Contractor during the construction period.

Whenever construction equipment must cross watercourses or wetlands (swales) at frequent intervals, and such crossings will adversely affect the sediment levels, temporary structures should be provided.

Pollutants such as fuels, lubricants, bitumens, raw sewage, calcium chlorides, wash water from concrete mixing operations, and other harmful materials shall not be discharged into or near rivers, streams, canals and other impoundments or into natural or manmade channels leading thereto.

3.04 SCHEDULING OF SUCCESSIVE OPERATIONS

The Contractor shall schedule his operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations, and the duration of exposed, uncompleted construction to the elements shall be as short as practicable.

Clearing and grubbing shall be so scheduled and performed that grading operations can follow immediately thereafter, and grading operations shall be so scheduled and performed that permanent erosion control features can follow immediately thereafter if conditions on the project permit.

3.05 DETAILS FOR TEMPORARY EROSION CONTROL FEATURES

- A. General: Temporary pollution and erosion control features shall consist of, but not be limited to, temporary grassing, temporary sodding, temporary mulching, sand bagging, slope drains, sediment basins, berms, baled hay or straw, floating turbidity barrier, temporary rip rap and staked silt fence. Design details for some of these items may be found in the Water Quality Section of the current edition of the Florida DOT's Roadway and Traffic Design Standards. The Field Representative may approve use of temporary erosion control features or methods other than those included in the original Contract Documents and payment therefore will be made under the General Allowance Account.

- B. Temporary Grassing: Certain areas of sprigging and seeding constructed in accordance with Section T-903 may be designated by Architect/Engineer as temporary erosion control features. The Field Representative may approve that permanent type grass seed be omitted and the specified rate of spread for fertilizer used in conjunction with grassing operations be reduced when such work is designated as temporary erosion control feature.
- C. Temporary Sod: This work shall consist of furnishing and placing sod in accordance with Section T-904 within areas designated by the Architect/Engineer, in order to temporarily control erosion. If the sod is determined to be of a temporary nature, at the discretion of the Field Representative the requirements for fertilizer may be eliminated. The sod shall be kept in a moist condition in order to insure growth.
- D. Temporary Mulching: This work shall consist of furnishing and applying a two-inch to four-inch thick blanket of straw or hay mulch to designated areas and then mixing or forcing the mulch into the top two inches of the soil in order to temporarily control erosion. Only approved undecayed straw or hay, which can readily be cut into the soil shall be used. Other measures for temporary erosion control such as hydro-mulching, chemical adhesive soil stabilizers, etc., may be substituted for mulching with straw or hay if approved by the Field Representative. When permanent grassing operations begin, temporary mulch materials shall be plowed under in conjunction with preparation of the ground. Mulching shall not be used on surfaces to be subsequently paved.
- E. Sandbagging: This work shall consist of furnishing and placing sandbags in configurations, so as to control erosion and siltation.
- F. Slope Drains: NOT USED .
- G. Sediment Basins: Sediment basins shall be constructed in accordance with the details shown in the Plans, or as may be approved as suitable to adequately perform the intended function. Sediment basins shall be cleaned out as necessary in accordance with plan details or as directed by the Field Representative.
- H. Berms: This work shall consist of construction of temporary earth berms to divert the flow of water from an erodible surface.
- I. Baled Hay or Straw: This work shall consist of construction of baled hay or straw dams to protect against downstream accumulations of silt. The baled hay or straw dams shall be constructed in accordance with the details shown in the plans or as directed by the Field Representative. All baled hay or straw shall meet the requirements of Article 2.03 of this section 015713.
- J. The dam shall be placed so as to effectively control silt dispersion under conditions present on this project. Alternate solutions and usage of materials may be used if approved by the Field Representative.
- K. Temporary Silt Fences

1. Description: This work shall consist of furnishing, installing, maintaining, and removing temporary silt fences, consisting of geotextile fabric installation, installed in accordance with the manufacturer's written instructions, these specifications, and the details as shown on the plans or as directed by the Field Representative.
 2. Materials and Installation: The type and size of posts, wire mesh reinforcement (if required) and method of installation will be at the option of the Contractor. These options, in the opinion of the Field Representative, must be adequate to provide a reasonable assurance that a durable, effective installation of sediment control is accomplished.
 - a. Installation of all sediment control devices shall be done in a timely manner to insure the control of sediment and the protection of lakes, streams, bays or ocean waters, or any wetlands associated therewith and to any adjacent property outside the airport limits as may be required.
 - b. At sites where exposure to such sensitive areas are prevalent, installation of any sediment control device shall be completed prior to the commencement of any earthwork.
 - c. After installation of sediment control devices, the Contractor shall be required to repair portions of any devices damaged by his equipment and such repair will be at his expense.
 - d. Temporary silt fence shall be erected at upland locations across ditch lines and at temporary locations as shown on the plans or approved by the Field Representative where continuous construction activities change the natural contour and drainage runoff. The attachment to existing trees will not be permitted.
 3. Inspection and Maintenance: The Contractor shall inspect all temporary silt fences immediately after each rainfall, at the beginning and at the end of each working shift and at least once each non-workday. Any deficiencies shall be immediately corrected by the Contractor. In addition, the Contractor shall make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, additional silt fences shall be installed when directed by the Field Representative.
 - a. Sediment deposits shall be removed when the deposit reaches approximately one-half of the volume capacity of the temporary silt fence as directed by the Field Representative. Any sediment deposits remaining in place after the temporary silt fence is no longer required shall be legally disposed of by the Contractor away from the job site.
- L. Floating Turbidity Barriers: This work shall consist of the installation, maintenance, and removal of turbidity barriers to contain turbidity that may occur as the result of dredging, filling, or other construction activities which may cause turbidity to occur.
- M. Rip Rap: NOT USED

3.06 TEMPORARY AIR POLLUTION (DUST) CONTROL

Air pollution (dust) shall be controlled using water sprinkling methods. Water shall be clean, uncontaminated and obtained from sources approved by the Field Representative.

The use of calcium chlorides, salts or other chemicals to control air pollution (dust) is not permitted.

3.07 REMOVAL OF TEMPORARY EROSION CONTROL FEATURES

In general, any temporary erosion control features existing at the time of construction of the permanent erosion control features in an area of the project shall be removed or incorporated into the soil in such a manner that no detrimental effect to the work or the environment will result therefrom. The Field Representative may direct that temporary features be left in place.

3.08 MAINTENANCE OF EROSION CONTROL FEATURES

- A. General: The Contractor shall, at his expense, provide routine maintenance of permanent and temporary erosion control features until the project is completed and accepted. If such erosion control features must be reconstructed due to the Contractor's negligence or carelessness or, in the case of temporary erosion control features, failure by the Contractor to install permanent erosion control features as scheduled, such replacement shall be at the Contractor's expense. If reconstruction of permanent or temporary erosion control features is necessary due to factors beyond the control of the Contractor, payment for replacement will be made under the appropriate contract pay item or items.
- B. Mowing: The Field Representative may direct mowing of areas of permanent or temporary grass constructed on the project. The Contractor shall mow these designated areas within seven days of receiving such order. Mowing of slopes which are steeper than four horizontal to one vertical will not be required.

3.09 PROTECTION DURING SUSPENSION OF CONTRACT TIME

In the event that it is necessary that the construction operations be suspended for any appreciable length of time, the Contractor shall shape the top of the earthwork in such a manner as to permit runoff of rainwater and shall construct earth berms along the top edges of embankments to intercept runoff water. Temporary slope drains shall be provided to carry runoff from cuts and embankments which are located in the vicinity of rivers, streams, canals, lakes, and impoundments. The slope drains shall be located at intervals of approximately 300 feet or as shown on the Plans and shall be stabilized by paving or by covering with waterproof materials. Should such preventive measures fail, the Contractor shall immediately take such other action as necessary to effectively prevent erosion and siltation. The Field Representative may direct the Contractor to perform, during such suspensions of time, any other erosion control work deemed necessary, and payment for this work will be made under the General Allowance Account item.

PART 4 - METHOD OF MEASUREMENT

- 4.01 Temporary air and water pollution, soil erosion, and siltation control will be paid for on a lump sum basis; hence, no separate measurement will be made.

No measurement of payment will be made for mowing or water used in watering grassed areas or for dust control, but the cost therefor will be deemed incidental to and included in the lump sum price bid for this pay item.

PART 5 - BASIS OF PAYMENT

- 5.01 Temporary erosion and pollution control work required, which is not attributable to the Contractor's negligence, carelessness, or failure to install permanent erosion controls, and which falls within the specifications for temporary erosion control features as described herein, shall be paid for per lump sum.

In case of repeated failure on the part of the Contractor to control erosion, pollution, or siltation, the County reserves the right to employ outside assistance or to use the County's own forces to provide the necessary corrective measures. Any such costs incurred, including engineering costs, will be charged to the Contractor and appropriate deductions will be made from the monies due to the Contractor.

Payment for temporary erosion control items shall be made under:

Item 015713-1 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control –
Per Lump Sum

Temporary control features that are necessary or ordered by the Field Representative will not be paid separately: This pay item shall cover all items.

END OF SECTION

Appendix: Contractor Certification - NPDES General Permit for Storm Water Discharges.

CONTRACTOR CERTIFICATION

NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES

FROM

CONSTRUCTION SITE

PROJECT NO.

"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as a part of this certification."

Signature

Date

Name

Title

Name of Contracting Firm

Address of P.O. Box (Construction Site)

City

State

Zip Code

Telephone: _____

Area Code

Number

SECTION 015719

HANDLING OF INCIDENTAL FUEL SPILLAGE DURING CONSTRUCTION

PART 1 - GENERAL

1.01 SCOPE

- A. This section consists of procedures to be followed in handling material contaminated with petroleum fuel products (hydrocarbons including petroleum, petroleum derivatives, hydraulics and like products) caused by incidental spillage (including leaks) from the Contractor's equipment.
 - 1. Incidental spillage shall mean spillage of a quantity not greater than 25 gallons per incident, of vehicular or mechanical equipment fuel products, onto open ground and absorbed or not absorbed by the soils.
 - 2. Spillage or leakage of petroleum fuel products in quantities in excess of 25 gallons shall be immediately remediated by the Contractor using procedures as directed by MDAD Civil and Environmental Engineering. Whenever such spillage or leakage occur, the Contractor shall immediately notify the Field Representative and MDAD Civil and Environmental Engineering Division and shall employ the appropriate corrective actions as directed.
- B. The provisions of this Section are limited to incidental petroleum fuel spillage on ground surfaces and it excludes fuel spillage onto surface waters.
- C. Clean-ups are costly and delays progress. They can be avoided if leaks or spillages are eliminated and in case they occur, are managed efficiently and quickly.

1.02 APPLICABLE CODES

- A. Chapter 24 of the Metropolitan Miami-Dade County Code addresses the Environmental Protection Ordinance:
 - 1. Section 24-11(3), of the Miami-Dade County Code stipulates in essence that "it is unlawful to discharge industrial or other wastes to the waters of Miami-Dade County as such discharge may cause water pollution and constitute a nuisance and sanitary nuisance as defined in Sections 24-3(42), 24-3(58), 24-3(74) and/or 24-26 hereof."
 - 2. Section 24-14, of the Miami-Dade County Code, also stipulates that: "No person shall cause, or allow to be caused any nuisance or sanitary nuisance as defined in Sections 24-3(42), 24-3(58) and/or 24-26 hereof".
 - 3. The above rules apply to all discharges intentional or accidental.
- B. Leaks and spillages may occur when using mechanical equipment. Equipment generated or lubricated with petroleum products, are prone to leaks or spillages, therefore proper

HANDLING OF INCIDENTAL FUEL SPILLAGE DURING CONSTRUCTION

management of "spillage incidents" is essential.

PART 2 - PRODUCTS

2.01 ABSORBENT MATERIALS

Equip crews or machinery with the most efficient type of petroleum absorbent materials. These materials are available at petroleum equipment suppliers and must be readily accessible so that spillages can be contained and prevented from becoming greater incidents.

Fiber material, sand or cat litter may be used as an absorbent material. Sufficient quantity of absorbent material capable of absorbing up to 25 gallons of petroleum fuel products shall be stocked at the job site at all times.

PART 3 - EXECUTION

3.01 PROCEDURES

- A. Personnel handling waste materials must have a minimum of 40 hours training as defined in 29 CFR 1910.120 and in accordance with certified OSHA course.
- B. The following steps must be adhered to when handling spillages. They also serve as a guide in preventing a minor incident from turning into a major event.
- C. Perform work as specified herein and in accordance with the applicable provisions of MDAD Standard Technical Specifications Section P-160 except that no payment will be made to the Contractor for the cost of handling and disposing of leaks, spillages and materials contaminated by such leaks or spillages.
- D. The steps outlined below are minimum requirements and are merely guidance. They do not constitute a complete compliance procedure.

1. STEP

If a fuel contamination to open ground has been discovered, check for the origin of that leak or spillage. Then stop the spillage or leak or positively contain it and then use absorbents to collect the discharged liquid.

Immediately notify the Miami-Dade Aviation Department Civil and Environmental Engineering at (305) 876-8310.

2. STEP 2

Sand may be used to absorb ground surface spills while absorbent materials may be used to absorb ground spills as well as surface water spills.

Once absorption of spilled fuels is complete, the impacted (contaminated) absorbent materials shall be stored in 55-gallon steel drums (100-150 lbs.).

If leaked or spilled fuel has been absorbed into the soils, excavate and containerize the impacted (contaminated) soils. Soils may be stored in 55-gallon steel drums.

3. STEP 3

The contaminated materials must be collected, containerized and otherwise properly stored and labeled prior to transport to a pre-approved storage, disposal or treatment facility.

All drums used to store impacted (contaminated) absorbent material and/or contaminated soils shall be properly sealed and labeled with the following information:

Name of company (Contractor):

Contract or Project No.:

Location of origin:

Type of contents:

Type of contaminant:

Quantity: (e.g. 1 of 1)

Date:

Containerized by:

Labeled by:

The procedure for the proper handling and disposal of contaminated soils and absorbent materials is readily available through the Florida Department of Transportation (FDOT) and the Miami-Dade County Department of Environmental Resources Management (DERM).

END OF SECTION

SECTION 015800

CONSTRUCTION IDENTIFICATION SIGNS

PART 1 - GENERAL

1.01 REQUIREMENT INCLUDED

- A. Furnish, erect and remove one construction identification sign in accordance with the contract documents and as directed by the Field Representative.

PART 2 - PRODUCTS

- 2.01
 - A. Sign Face: 4' x 8', 7/8 Inch thick (min.); exterior plywood. All edge sealed.
 - B. Supports: Pressure treated posts - min. size 4" x 4".
 - C. Hardware: Galvanized steel.
 - D. Paint: Background and lettering - Exterior grade, latex, gloss paint. Colors as directed.

PART 3 - EXECUTION

- 3.1
 - A. Install where shown; minimum post embedment 36".
 - B. Thoroughly compact backfill in post holes.
 - C. Legend as per appended sheet.
 - D. Sign size, lettering types and sizes, colors, etc. as shown. Architect/Engineer to obtain this information from MDAD Project Manager
 - E. At final completion, remove sign and restore site to original or proposed condition.

AVIATION - THE ECONOMIC FOUNDATION OF MIAMI-DADE COUNTY

MIAMI OPA-LOCKA EXECUTIVE AIRPORT
RUNWAY 9L-27R REHABILITATION
MDAD PROJECT No. X009A
FAA AIP #3-12-0047-021-2021

Work on this contract comprises rehabilitation of runway 9L-27R, Located at the Opa-Locka Executive Airport for the Miami-Dade Aviation Department, in addition to pavement rehabilitation work includes, airfield lighting and signage, pavement markings and NAVAID's.

Daniella Levine Cava
Mayor

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Juan Carlos Bermudez
District 12
René Garcia
District 13

Geri Bonzon-Keenan
County Attorney
Ralph Cutié
Aviation Director

[Insert MIA Logo here. See following page.]



END OF SECTION

SECTION 016000

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Products.
- B. Transportation and Handling.
- C. Storage and Protection.
- D. Product Options.
- E. Product List.
- F. Substitutions.
- G. Product Demonstrations

1.02 RELATED REQUIREMENTS

- A. General Conditions.
- B. Section 011000 - Summary of Work.
- C. Section 014200 - Reference Standards.
- D. Section 014000 - Contract Quality Control. Submittal of manufacturer's certificates.
- E. Section 017836 - Warranties and Guarantees.
- F. Section 019113 - Commissioning Requirements

1.03 PRODUCTS

- A. Products include material, equipment and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Specification section shall be the same and shall be inter-changeable.

1.04 ACTION SUBMITTALS

- A. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify basis-of-design product or fabrication or installation method

to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect/Engineer's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within **seven** days of receipt of a comparable product request. Architect/Engineer will notify Contractor through Construction Manager of approval or rejection of proposed comparable product request within **15** days of receipt of request, or **seven** days of receipt of additional information or documentation, whichever is later.
 - a. Form of Architect/Engineer's Approval of Submittal: As specified in Section 013300 - Submittals.
 - b. Use product specified if Architect/Engineer does not issue a decision on use of a comparable product request within time allocated.

- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 - Submittals. Show compliance with requirements.

1.05 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect/Engineer will determine which products shall be used.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.
 3. See individual identification sections in Divisions 21, 22, 23, and 26 for additional

identification requirements.

1.06 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to MDAD.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for MDAD.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 - 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 - Contract Closeout Procedures.

1.07 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage. Deliver materials to job site in manufacturer's original unopened containers clearly labeled with manufacturer's name, brand designation and reference specification.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage. Handle products in such a manner as to prevent breakage of containers and damage of any kind.
- C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged. Damage sustained by products in transit to job site shall be repaired to the satisfaction of the Field Representative. If damage sustained while transporting products to job site is non-repairable, the products shall be replaced with new ones at no cost to MDAD.

1.08 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Exposed metal surfaces, not provided with manufacturer specific storage instructions, shall be protected with a light oil or silicone coating to prevent rust while in storage. Store sensitive products in weather tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.

- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- C. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged and are maintained under required conditions.

1.09 ENCLOSED STORAGE

- A. Store products, subject to damage by the elements, in substantial weather tight enclosures.
- B. Maintain temperature and humidity within ranges stated in manufacturer's instructions.
- C. Provide humidity control and ventilation for sensitive products as required by manufacturer's instructions.
- D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

1.10 EXTERIOR STORAGE

- A. Provide substantial platforms, blocking, or skids, to support fabricated products above ground; slope to provide drainage. Protect products from soiling, staining, and corrosion.
- B. For products subject to discoloration or deterioration from exposure to the elements, cover with impervious sheet material. Provide ventilation to avoid condensation.
- C. Store loose granular materials on clean, solid surfaces such as pavement, or on rigid sheet materials, to prevent mixing with foreign matter.
- D. Provide surface drainage to prevent erosion and ponding of water.
- E. Prevent mixing of refuse or chemically injurious materials or liquids.

1.11 MAINTENANCE OF STORAGE

- A. Periodically inspect stored products on a scheduled basis. Maintain a log of inspections, make available to Field Representative on request.
- B. Verify that storage facilities comply with manufacturer's product storage requirements.
- C. Verify that stored products exposed to the elements are not adversely affected; that any weathering of finishes is acceptable under requirements of Contract Documents.

1.12 MAINTENANCE OF EQUIPMENT STORAGE

- A. For mechanical and electrical equipment in long-term storage, provide manufacturer's

- service instructions to accompany each item, with notice of enclosed instructions shown on exterior of package.
- B. Service equipment on a regularly scheduled basis, maintaining a log of services; submit as a record document.

PART 2 – PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. MDAD reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect/Engineer will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - a. Submit additional documentation required by Architect/Engineer through Construction Manager in order to establish equivalency of proposed products. Evaluation of "or equal" product status is by the Architect/Engineer whose determination is final.
- B. Product Selection Procedures:
1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole product may be indicated by the phrase: "Subject to compliance with requirements, provide the following: ..."
 2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase: "Subject to compliance with requirements, provide products by the following: ..."
 3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with

requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

- a. Limited list of products may be indicated by the phrase: "Subject to compliance with requirements, provide one of the following: ..."
 4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, which complies with requirements.
 - a. Non-limited list of products is indicated by the phrase: "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following: ..."
 5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, provide products by one of the following: ..."
 6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, which complies with requirements.
 - a. Non-limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following: ..."
 7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
 - a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 - Substitution Procedures for substitutions for convenience.
- C. Visual Matching Specification: Where Specifications require "match Architect/Engineer's sample," provide a product that complies with requirements and matches Architect/Engineer's sample. Architect/Engineer's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 - Substitution Procedures for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by

Architect/Engineer from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect/Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT OPTIONS/SUBSTITUTIONS

- A. Product Options/Substitutions shall be in accordance with the requirements of the General Conditions.

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 017113

MOBILIZATION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The work specified in this Section shall consist of the preparatory work and operations in mobilizing for beginning work on the Project, including, but not limited to, the following:
1. The costs of bonds and any required insurance, and any other preconstruction expense necessary for the start of the work, excluding the cost of construction materials.
 2. The costs of operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site; and
 3. The costs for the establishment of temporary offices, shops, buildings, construction identification signs, safety equipment and first aid supplies, sanitary and other facilities, as required by the Contract Documents, and any Federal, State and/or local laws and regulations.
- B. The Contractor shall prepare and submit to the Field Representative detailed itemized cost breakdown of this item, at the preconstruction conference.

1.02 METHOD OF MEASUREMENT

Measurement of Mobilization for payment shall be the work under this Section completed and accepted in accordance with the Plans and these Specifications.

1.03 BASIS OF PAYMENT

Payment for the work measured as described shall be made at the contract lump sum price bid for Mobilization which price and payment shall be full compensation for mobilizing for beginning work on the Project, furnishing all materials, equipment, labor, processes, tools and incidental costs required to complete the work under this Section.

Payment will be made under:

Item No. 17113-1

Mobilization - Per Lump Sum

1.04 PARTIAL PAYMENTS

Partial payments for Mobilization will be made in accordance with the following schedule during the progress of construction on this project.

Percent of Original Contract Amount Earned	Allowable Percent of the Lump Sum Price for Mobilization*
5	25
10	50
25	75
50	100

Partial payments for the item "Mobilization" shall be made in accordance with the above schedule and the sum total of all the partial payments for the item Mobilization will be limited to 3% of the original Contract Amount for the Project. Any remaining amount will be paid upon completion of all work under the Project.

The standard retainage, as specified in General Conditions, will be applied to these allowances. Partial payments made on this item shall in no way act to preclude or limit any of the provisions for partial payments otherwise provided for by the Contract.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 017123

SURVEYING AND FIELD ENGINEERING

PART 1 - GENERAL

Under this Section, the Contractor shall do all necessary surveying required to construct all elements of the work as shown in the Contract Drawings and specified in the proposal and specifications. This shall include, but not be limited to, stakeout, layout and elevations for pavements, structures, forms and appurtenances as shown and required, consistent with the current practices and shall be performed by qualified personnel acceptable to the Engineer.

The pre-construction survey shall proceed immediately following the initial administrative notice to proceed of the Contract or as soon as authorized by the Owner and shall be expeditiously progressed to completion in a manner and at a rate satisfactory to the Engineer. The Contractor shall keep the Engineer fully informed as to the progress of the stakeout survey. All survey work shall be provided under the direction of a land surveyor licensed in the state of Florida.

1.01 REQUIREMENTS INCLUDED

- A. Surveying & Field Engineering services
- B. Surveys for Measurement and Payment.
- C. MDAD will arrange for site survey which will identify control points (monuments and benchmarks noted on the Plans). Contractor must confirm and accept.
- D. Contractor to provide all other surveys.

1.02 RELATED REQUIREMENTS

- A. Bidding and Contract Requirements.
- B. General Conditions.
- C. Section 011000 - Summary of Work.
- D. Section 017700 - Contract Closeout Procedures.

1.03 QUALITY CONTROL

- A. Land Surveyor: Registered in the State of Florida, and acceptable to the MDAD.
- B. Professional Engineer: Registered Professional Engineer of the discipline required for specific service on Project, licensed in the State of Florida.

1.04 SUBMITTALS

- A. Submit name, address and telephone number of Surveyor and Engineer before starting survey work.

SURVEYING AND FIELD ENGINEERING

- B. On request, submit documentation verifying accuracy of survey work.
- C. Submit certificate signed by Surveyor, Engineer certifying that all elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.

1.05 PROJECT RECORD DOCUMENTS

- A. The survey data shall comprise verifiable coordinates and elevations measured by a licensed surveyor, not modeled or extrapolated data.
- B. Maintain complete, accurate log of control and survey work as it progresses.
- C. On completion of foundation walls and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of construction and site work.
- D. All surveys of underground piping and utilities shall be performed prior to backfilling excavations.
- E. Submit Record Documents under provisions of Section 017700.
 - 1. Provide three (3) hard copies of surveys with each sheet signed and sealed by a Professional Land Surveyor licensed in the State of Florida.
 - 2. Provide AutoCAD and PDF electronic copies of surveys.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SURVEY REFERENCE POINTS

- A. Establish, maintain and protect survey control points prior to starting work, using base reference points as shown on Plans. Promptly notify Field Representative and MDAD of any discrepancies discovered.
- B. Promptly report to Field Representative the loss or destruction of any reference point or relocation required because of changes in grades or other reasons. Replace dislocated survey control points based on original survey control.

3.02 PREPARATION

- A. Establish a minimum of two permanent benchmarks on site, referenced to established control points. Record locations, with horizontal and vertical data, on Project Record Documents.
- B. Verify the accuracy of all lines and grades given on the Plans with existing lines and grades and immediately call all discrepancies to the Field Representative's attention, in writing, requesting determination before proceeding with the work. Perform all work in accordance with the lines and grades thus established and make good any work performed not in accordance therewith at no cost to the MDAD.

- C. Establish lines and levels, locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements, including pavements; stakes for grading, fill and topsoil placement; miscellaneous structures, drainage structures and utility locations, slopes and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Survey surface after milling and finished surface using 25' grids.
- D. Periodically verify layouts by same means.
- E. The Contractor shall trim trees, brush and other interfering objects, consistent with the Contract Drawings, from survey lines in advance of all survey work to permit accurate and unimpeded work by his stakeout survey crews.

3.03 PRE-CONSTRUCTION SURVEYS

The Contractor shall be required to survey and confirm existing field conditions prior to beginning construction in each work area. Confirmation of existing conditions shall include, but is not limited to, drainage structure locations, elevations and inverts, pipe inverts, existing ground elevations, elevations at the edge of pavements where the proposed work will tie into and pavement elevations 50-feet beyond the tie-in point, existing utility locations and elevations, and any other existing features and conditions that may impact the proposed construction. The contractor shall submit the pre-construction survey to the Engineer and notify the Engineer of any discrepancies that are found in the existing conditions compared to the information contained in the plans prior to beginning construction in each work area.

3.04 REQUIREMENTS

- A. The exact position of all work shall be established from control points, baseline transit points or other points of similar nature that are shown on the Contract Drawings and/or modified by the Engineer. Before any layout work is accomplished, the Contractor shall first verify that the control point data shown on the plans is accurate. Any error or apparent discrepancy or absence in or of data shown or required for accurately accomplishing the stakeout survey shall be immediately referred to the Engineer for interpretation or resolution before the control point(s) in question are used for survey and layout.
- B. The Contractor shall place two offset stakes or references at each joint corner for concrete pavement and at each intersection of the asphalt paving grid shown on the Pavement Elevation Plans and at such intermediate locations as the Engineer may direct. From computations and measurements made by the Contractor, these stakes shall be clearly and legibly marked with the correct northing and easting, and cut or fill so as to permit the establishment of the exact centerline location and elevation during construction. If markings become faded or blurred for any reason, the markings shall be restored by the Contractor at the request of the Engineer. The Contractor shall locate and place all cut, fill, slope, fine grade or other stakes and points, as the Engineer may direct, for the proper progress of the work. All control points shall be properly guarded and flagged for easy identification.

- C. Drainage structures shall be staked out by the Contractor at the locations and elevations shown on the Contract Drawings or specified by the Engineer.

Permanent survey marker locations shall be established and referenced by the Contractor.

- D. The Contractor shall be responsible for the accuracy of his work and shall maintain all reference points, stakes, etc., throughout the life of the work. Damaged or destroyed points, benchmarks or stakes, or any reference points made inaccessible by the progress of the construction, shall be replaced or transferred by the Contractor. Any of the above points which may be destroyed or damaged shall be transferred by the Contractor before they are damaged or destroyed. All control points shall be referenced by ties to acceptable objects and recorded. Any alterations or revisions in the ties shall be so noted and the information furnished to the Engineer immediately. All stakeout survey work shall be referenced to the centerlines shown on the Contract Drawings. All computations necessary to establish the exact position of the work from control points shall be made and preserved by the Contractor. All computations, survey notes and other records necessary to accomplish the work, shall be neatly made. Such computations, survey notes and other records shall be made available to the Engineer upon request and shall become the property of the Owner and delivered to the Engineer per phase with the record documents due not later than the date of acceptance of the Contract.
- E. The Contractor shall furnish, at his expense, all horizontal and vertical control, all staking and layout of construction work called for on the plans and the Engineer and Owner shall not be responsible for such work. However, the Owner and Engineer reserve the right to check all lines, grades, and measurements with their appointed surveyor. Should the Owner's surveyor detect errors in said lines, grades, and measurements, the Contractor shall pay for all subsequent surveying costs performed to verify correction of errors found in said lines, grades and measurements. Definition of an error shall be a discrepancy of 1/4-inch or more. In the case of a discrepancy between the technical specifications and this defined tolerance, this tolerance shall govern.
- F. Prior to the final cross-section survey of the work by the Contractor, the Contractor shall reestablish centerline or baseline points and stationing as required by the Engineer.
- G. During the progress of the construction work, the Contractor will be required to furnish all of the surveying and stakeout incidental to the proper location by line and grade for each phase of the work. For paving and any other operation requiring extreme accuracy, the Contractor will restake with pins or other acceptable hubs located directly adjacent to the work at a spacing directed by the Engineer.
- H. Any existing stakes, iron pins, survey monuments or other markers defining property lines which may be disturbed during construction shall be properly tied into fixed reference points before being disturbed and if directed by the Engineer, accurately reset in their proper position upon completion of the work at no cost to the Owner.
- I. Just prior to completion of the work, the Contractor shall reestablish, if necessary, and retie all control points as permanently as possible and to the satisfaction of the Engineer.

3.05 AS-BUILT SURVEYS

- A. The Contractor shall be required to submit cross sectional data in a digital terrain model (DTM) format to the Engineer at monthly intervals prior to the Contractor submittal of the monthly application for payment so that the Engineer can verify the quantities of various earthwork and materials volumes for payment. All cross-sectional data provided at any time will be in AutoCad Civil 3D, 2020 or higher format only. No other formats will be accepted. If the data is submitted in another format other than AutoCad, no earthwork or other materials volumes will be calculated and approved for payment. The earthwork shall include, but not be limited to, unclassified excavation, embankment, new or existing subbase courses, new or existing base courses, subgrade, topsoil, etc. The Contractor shall submit the surveying and stakeout data monthly prior to submittal of a monthly pay request to be reviewed by the Engineer for accuracy prior to approving the subsequent pay request.
- B. Construction Staking and Layout includes but is not limited to:
- Clearing and Grubbing perimeter staking.
 - Rough Grade slope stakes at 20 linear feet.
 - Drainage Swales slope stakes and flow line blue tops at 20 linear feet.
 - Subgrade blue tops at 20 linear feet for asphalt pavement and on each concrete panel corner for concrete and 20-foot offset distance (max.) for the following section locations:
 - a. Apron areas – provided on same grid shown in the airside pavement elevation plans
 - Base Course blue tops at 20 linear feet for asphalt pavement and on each concrete panel corner for concrete and 20-foot offset distance (max.) for the following section locations:
 - a. Apron areas – provided on same grid shown in the airside pavement elevation plans
 - Pavement areas:
 - a. Edge of Pavement hubs and tacks (for stringline by Contractor) at 20 linear feet for asphalt pavement and on each concrete panel corner for concrete
 - b. Between Lifts at 20 linear feet for the following section locations:
 - (1) Apron areas – provided on same grid shown in the airside pavement elevation plans
 - c. Shoulder and safety area blue tops at 20 linear feet and at all break points with maximum of 20-foot offsets
 - Fence lines at every post
 - Electrical and Communications System locations, lines and grades including but not limited to duct runs, connections, fixtures, signs, lights, VASI's, PAPI's, REIL's, Wind Cones, Distance Markers (signs), pull boxes and manholes.
 - Drain lines, cut stakes and alignment on 20 linear feet, inlet and

manholes.

- Painting and Striping layout (pinned with 1.5 inch PK nails) marked for paint Contractor. (All nails shall be removed after painting)
- Laser, or other automatic control devices, shall be checked with temporary control point or grade hub at a minimum of once per 400 feet per pass (i.e. paving lane).

3.06 AS-BUILT FIELD DATA

- A. The Contractor shall keep at the construction site a complete set of full-size prints issued for construction. During construction, these prints shall be marked to show all approved deviations from the construction drawings in the color red. The drawings shall show the following information but not be limited thereto:
- a. The location and description of any utility lines and other installations of any kind known to exist within the construction area.
 - b. Correct elevation or location of pavements, structures and utilities if any changes were made from the contract drawings.
 - c. Correct elevations if changes were made in site grading from the contract drawings.
 - d. Changes in details of design or additional information obtained from working drawings specified to be prepared or furnished by the Contractor.
 - e. Drainage structure rim and invert elevations.
 - f. Where contract drawings or specifications allow options, the option used shall be noted on the as-built drawings.
 - g. Any other change or modification from the original design.
- B. Marking of the as-built plans shall occur continuously during construction to keep them up to date with all known changes. The resulting field-marked prints shall be referred to and marked as "As-Built Field Data". They shall be made available for inspection by the Engineer and Owner whenever requested during construction and shall be jointly inspected for accuracy and completeness by the Engineer and a Contractor representative prior to submission of each pay application. Failure to keep the As-Built Field Data current shall be sufficient justification to withhold an additional retained percentage from the progress payment.
- C. The Contractor shall be required to submit the As-Built Field Data to the Engineer for review at the completion of construction and as a condition of final acceptance by the Owner. If the review by the Engineer of the as-built drawings reveals errors and/or omissions, they shall be returned to the Contractor for corrections.

3.07 MATERIALS

- A. All instruments, equipment, stakes, and any other material necessary to perform the work satisfactorily shall be provided by the Contractor.
- B. All stakes used shall be of a type approved by the Engineer. It shall be the Contractor's responsibility to always maintain these stakes in their proper position and location.

3.08 SURVEYS FOR MEASUREMENT AND PAYMENT

- A. When required in the Technical Specifications, perform surveys to determine quantities of **unit cost** work, including control surveys to establish measurement reference lines. Notify Field Representative prior to starting work.
- B. Contractor's engineer shall sign surveyor's field notes or keep duplicate field notes and shall calculate and certify quantities for payment purposes.

4.01 METHOD OF MEASUREMENT

- A. Project survey and stakeout will not be measured for payment.

5.01 BASIS OF PAYMENT

- A. No separate payment will be made for project survey and stakeout. Cost will be incidental to project.

END OF SECTION

SECTION 017133

PROTECTION OF WORK AND PROPERTY

PART 1 - GENERAL

1.01 REQUIREMENT INCLUDED

- A. Protection of products including MDAD-provided products, after installation.
- B. Protection of existing property and landscape.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of work
- B. Section 015600 - Barriers and Enclosures
- C. Section 016000 - Material and Equipment
- D. Section 017423 - Final Cleaning: Removal of temporary protection.
- E. Individual Sections: Specific protection for installed products.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 PROTECTION AFTER INSTALLATION

- A. Protect installed products and control traffic in immediate area to prevent damage from subsequent operations.
- B. Not used
- C. Not used .
- D. Not used
- E. Not used
- F. Restrict traffic of any kind across planted lawn and landscape areas.

3.02 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

- A. The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property markers until the Field Representative has witnessed or otherwise referenced their location and shall not move them until directed.

- B. The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in its manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the work is completed and accepted.
- C. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the nonexecution thereof by the Contractor, the Contractor shall restore, at its own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or it shall make good such damage or injury in an acceptable manner, at no additional cost to MDAD.

END OF SECTION

SECTION 017300

EXECUTION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Coordination of MDAD installed products.
 - 6. Progress cleaning.
 - 7. Starting and adjusting.
 - 8. Protection of installed construction.

1.2 RELATED REQUIREMENTS

- A. Section 011000 - Summary for limits on use of Project site.
- B. Section 013300 – Submittals for submitting surveys.
- C. Section 015500 – Temporary Facilities and Controls
- D. Section 017419 - Construction Waste Management and Disposal.
- E. Section 017700 – Contract Closeout Procedures for submitting final property survey with Project Record Documents, recording of MDAD accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 PREINSTALLATION MEETINGS

- A. Cutting and Patching Conference: Conduct conference at **Project site construction office**.
1. Prior to **submitting cutting and patching plan**, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:
 - a. Contractor's superintendent.
 - b. Trade supervisor responsible for cutting operations.
 - c. Trade supervisor(s) responsible for patching of each type of substrate.
 - d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affecting by cutting and patching operations.
 2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For **land surveyor** and **professional engineer**.
- B. Certificates: Submit certificate signed by **land surveyor** and **professional engineer** certifying that location and elevation of improvements comply with requirements.
- C. Cutting and Patching Plan: Submit plan describing procedures at least **(10)** tendays prior to the time cutting and patching will be performed. Include the following information:
1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 4. Dates: Indicate when cutting and patching will be performed.
 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

- a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
- D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- E. Certified Surveys: Submit **two (2)** copies signed by **land surveyor**.
- F. Final Property Survey: Submit **ten (10)** copies showing the Work performed and record survey data.

1.6 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, notify Architect/Engineer of locations and details of cutting and await directions from Architect/Engineer before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Plumbing piping systems.
 - f. Mechanical systems piping and ducts.
 - g. Control systems.
 - h. Communication systems.
 - i. Fire-detection and -alarm systems.

- j. Conveying systems.
 - k. Electrical wiring systems.
 - l. Operating systems of special construction.
3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. **Other construction elements include but are not limited to the following:**
- a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Exterior curtain-wall construction.
 - d. Sprayed fire-resistive material.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels, and equipment.
 - g. Noise- and vibration-control elements and systems.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect/Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
 - 1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect/Engineer for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, **mechanical and electrical systems**, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to **MDAD** that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect/Engineer according to requirements in Section 013100 - Project Management and Coordination.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer and **Construction Manager** promptly.
- B. General: Engage a **land surveyor** and **professional engineer** to lay out the Work using accepted surveying practices.
1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 2. Establish limits on use of Project site.
 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 4. Inform installers of lines and levels to which they must comply.
 5. Check the location, level and plumb, of every major element as the Work progresses.

6. Notify Architect/Engineer [and Construction Manager] when deviations from required lines and levels exceed allowable tolerances.
 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer **and Construction Manager**.

3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer **or Construction Manager**. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer **and Construction Manager** before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of **two (2)** permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final Property Survey: Engage a **land surveyor** to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by **land surveyor**, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
 - 2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of **96 inches** in occupied spaces and **90 inches** in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect/Engineer.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Repair or remove and replace damaged, defective, or nonconforming Work.
 - 1. Comply with Section 017700 - Closeout Procedures for repairing or removing and replacing defective Work.

3.6 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 - Summary.

- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to **prevent** interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply

final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 MDAD-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for MDAD's construction personnel.
- B. Coordination: Coordinate construction and operations of the Work with work performed by MDAD's construction personnel.
1. Construction Schedule: Inform MDAD of Contractor's preferred construction schedule for MDAD's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify MDAD if changes to schedule are required due to differences in actual construction progress.
 2. Preinstallation Conferences: Include MDAD's construction personnel at preinstallation conferences covering portions of the Work that are to receive MDAD's work. Attend preinstallation conferences conducted by MDAD's construction personnel if portions of the Work depend on MDAD's construction.

3.8 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.

- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in **Section 015000 - Temporary Facilities and Controls and Section 017419 - Construction Waste Management and Disposal**.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

- A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 - General Commissioning Requirements.
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

- E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000-Quality Requirements.

3.10 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017329
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 REQUIREMENT INCLUDED

- A. Requirements and limitations for cutting and patching of Work.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of Work.
- B. Section 016000 - Material and Equipment: Substitutions
- C. Individual Specifications Sections:
 - 1. Cutting and patching incidental to work of the Section.
 - 2. Advance notification to other Sections of openings required in work of these sections.
 - 3. Do not cut or drill into any prestressed concrete member.

1.03 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather-exposed or moisture-resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of MDAD or separate contractor.
- B. Include in request:
 - 1. Identification of Project.
 - 2. Location and description of affected work.
 - 3. Necessity for cutting or alteration
 - 4. Description of proposed work and products to be used.
 - 5. Alternatives to cutting and patching.
 - 6. Effect on work of MDAD or separate contractor.
 - 7. Written permission of affected separate contractor.
 - 8. Date and time work will be executed.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Those required for original installation.
- B. For any change in material, submit request for substitution under provisions of General Conditions.

PART 3 - EXECUTION

3.01 GENERAL

- A. Execute cutting, fitting and patching including excavation and fill, to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other work.
 - 2. Uncover work to install ill-timed work.
 - 3. Remove and replace defective and non-conforming work.
 - 4. Remove samples of installed work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical work.

3.02 INSPECTION

- A. Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- B. After uncovering, inspect conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

3.03 PREPARATION

- A. Provide supports to assure structural integrity of surroundings; devices and methods to protect other portions of Project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

3.04 PERFORMANCE

- A. Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.
- B. Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- C. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not allowed without prior approval.
- D. Restore work with new products in accordance with requirements of Contract Documents.
- E. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

END OF SECTION

SECTION 017413

CONSTRUCTION CLEANING

PART 1 - GENERAL

1.01 REQUIREMENT INCLUDED

- A. Cleaning and disposal of waste materials, debris and rubbish during construction.

1.02 RELATED REQUIREMENTS

- A. General Conditions: Cleaning Up.
- B. Section 017423 - Final Cleaning.
- C. Individual Specifications Sections: Specific cleaning for Product or work.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Provide covered containers for deposit of waste materials, debris and rubbish.

PART 3 - EXECUTION

3.01 CLEANING

- A. Maintain areas under Contractor's control (including employee parking and Contractor staging areas) free of waste materials, scraps, surplus material, debris and rubbish. Maintain site in a clean and orderly condition.
- B. Not used
- C. Not used
- D. Use power brooms to clean paved areas daily and immediately prior to opening any paved area to aircraft or vehicular traffic.
- E. Not used
- F. Not used
- G. Control cleaning operations so that dust and other particulates will not adhere to wet or newly coated surfaces.
- H. Responsibility for construction cleaning shall not be delegated to subcontractors performing construction work under this Contract.

3.02 DISPOSAL

- A. Remove waste materials, debris and rubbish from site bi-weekly and legally dispose of off-site in an authorized disposal area.

3.03 CONTRACTOR'S FAILURE TO CLEAN

- A. If the Contractor fails to maintain levels of cleanliness in work areas, satisfactory to the Field Representative, then the MDAD shall have the right to cause such areas to be cleaned by others. The costs to the MDAD for such cleaning, plus 25% for administration, shall be the obligation of the Contractor and shall be deducted from any money due the Contractor hereunder.

END OF SECTION

SECTION 017423

FINAL CLEANING

PART 1 – GENERAL

1.01 REQUIREMENT INCLUDED

- A. Final cleaning of project.

1.02 RELATED REQUIREMENTS

- A. Section 017413 - Construction Cleaning: Cleaning during construction.
- B. Section 017700 - Contract Closeout Procedures.
- C. Individual Specifications Sections: Specific cleaning for product or work.

1.03 DESCRIPTION

- A. Execute cleaning prior to inspection for Beneficial Occupancy or Substantial Completion of each designated portion of the Work.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS

- A. Use materials which will not create hazards to health or property, and which will not damage surfaces.
- B. Use only material and methods recommended by manufacturer of material being cleaned.

PART 3 - EXECUTION

3.01 CLEANING

- A. Upon completion of the work and before acceptance and final payment is made, remove from the Site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, etc. Repair or replace, in an acceptable manner, private or public property which may have been damaged or destroyed due to the Contractor's operations, except when such property is required to be altered or demolished under the Contract and leave the Site in a clean and orderly condition. Material cleared from the Site and deposited on adjacent property will not be considered as having been disposed of satisfactorily.
- B. All areas within and contiguous to the work under the Contract, including all exterior and interior surfaces and items where work has been performed, as well as all areas having been used for ingress and egress of materials and personnel or storage of materials, shall be turned over to the Owner in a neat and "polished" home-clean condition. "Broom-clean", as used in the construction industry, will not suffice.

- C. Not used .
- D. Not used
- E. All concrete walks, aprons, etc., including adjacent pavement shall be cleaned and free from building materials, containers, dust, dirt, sand, chips of roofing gravel, roofing materials, and all other incidental debris. Areas shall be well swept and, if directed by the Field Representative, shall be hosed down with clean water.
- F. All barricades, fences, Field Representative's office, construction offices, etc., field testing laboratories and all Contractor's tools, equipment, etc., shall be removed from the Airport Property.
- G. Not used
- H. Not used
- I. Not used
- J. Not used

END OF SECTION

SECTION 017500

MEASUREMENT OF QUANTITIES

PART 1 - GENERAL

- 1.01 All work completed under the Contract will be measured by the Field Representative, using United States Customary Units of Measurement. The Field Representative shall afford the Contractor an opportunity to witness or participate in the measurements and to review all calculations relating to final measurements.
- 1.02 The method of measurement and computations to be used in the determination of quantities of material furnished and of work performed under the Contract will be those methods generally recognized as conforming to good engineering practice.
- A. Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of **4 square feet or less**. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the Plans or ordered in writing by the Field Representative.
 - B. Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
 - C. Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, curbs and similar items shall be measured parallel to the base or foundation upon which such items are placed.
 - D. In computing volumes of excavation, the average end area method or other acceptable methods will be used.
- 1.03 The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inches.
- 1.04 The term "ton" will mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are measured or proportioned by weights shall be weighed on accurate, approved scales by competent, qualified personnel at locations designated by the Field Representative. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material be paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Field Representative directs, and each truck shall bear a plainly legible identification mark.
- 1.05 Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the Field Representative, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.
- 1.06 Bituminous materials will be measured by the gallon, at 60 F or it will be measured at other

temperatures and corrected to the volume at 60 F using ASTM D 1250 for cut-back asphalts, or the Asphalt Institute Manual MS-6, Table IV-3 for emulsified asphalts.

- 1.07 Net certified scale weights or weights based on certified volumes will be used as a basis of measurement, subject to correction when bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

1.08 METHOD OF MEASUREMENT

- A. When bituminous materials are shipped by truck or transport, net certified weight by volume, subject to correction for loss or foaming, may be used for computing quantities.
- B. Cement will be measured by the ton or hundredweight.
- C. Timber will be measured by the thousand feet board measure (M.F.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

1.09 SCALES

- A. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales.
- B. Scales shall be accurate within one-half percent of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of a Florida State certified scale technician before beginning work and at such other times as requested by the Field Representative. Scale weight unit intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one-tenth of 1 percent of the nominal rated capacity of the scale, but not less than 1 pound. The use of spring balances will not be permitted.
- C. Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the inspector can safely and conveniently view them.
- D. Scale installations shall have available ten standard 50-pound weights for testing the weighing equipment.
- E. Scales must be tested for accuracy, adjusted, sealed and serviced by an approved Florida State certified scale technician, as often as the Field Representative deems necessary, before use at a new site. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.
- F. Scales shall be State certified and shall meet the requirements of Article 7-18 of the 2021 FDOT Standard Specifications for Road and Bridge Construction.
- G. Scales "overweighing" (indicating more than correct weight) will not be permitted to operate, and all materials received subsequent to the last previous correct weighing-accuracy test will be reduced by the percentage of error in excess of one-half of 1 percent.

- H. In the event inspection reveals the scales have been "under weighing" (indicating less than correct weight), they shall be adjusted, and no additional payment to the Contractor will be allowed for materials previously weighed and recorded.
 - I. All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this Section, for the weighing of materials for proportioning or payment, shall be included in the contract unit prices for the various items of work in the Contract.
- 1.10 The term "lump sum" when used as an item of payment will mean complete payment for the work described for the item of work.
- When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.
- 1.11 When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe, conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 017700

CONTRACT CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 REQUIREMENT INCLUDED

- A. Administrative provisions for Substantial completion and for Final Acceptance.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary of work.
- B. Section 017423 - Final Cleaning.
- C. Section 017839 - Project Record Documents.
- D. Section 017836 - Warranties and Guarantees
- E. Section 019113 - Commissioning Requirements.
- F. Respective Technical/Specification Sections of Project Manual.

1.03 SUBSTANTIAL COMPLETION

- A. See General Conditions
- B. Commissioning must be complete, prior to Substantial Completion, unless otherwise approved.

1.04 COMMISSIONING COMPLETION

- A. Commissioning Completion is when all testing, adjusting, balancing, and commissioning responsibilities of the Contractor (except for seasonal or approved deferred testing and controls training) are completed. This includes for all systems, but is not limited to:
 - 1. Start-up and pre-functional checklist documentation completed and signed.
 - 2. Final approved Testing Adjusting and Balancing report submitted to FR.
 - 3. Completion of all functional testing, except as noted above.
 - 4. Required training of MDAD personnel completed and approved, except as noted above.
 - 5. Approved O&M manuals submitted to FR.
 - 6. All identified deficiencies have been corrected or are approved by the Owner to be excepted from this milestone.
- B. The CA will determine when commissioning, as described above, is complete and so advise the PM.

1.05 FINAL COMPLETION - See General Conditions

1.06 REINSPECTION FEES

- A. Should status of completion of work require reinspection by the Architect/Engineer and/or the Project Testing Laboratory, due to failure of work to comply with Contractor's claims on initial inspection, the MDAD will deduct the amount of the Architect/Engineer and/or the Project Testing Laboratory compensation for reinspection services from final payment to Contractor.

1.07 CLOSEOUT SUBMITTALS

- A. Evidence of Compliance with Requirements of Governing Authorities:
 - 1. Temporary Certificate of Occupancy at Substantial Completion
 - 2. Certificate of Occupancy
 - 3. Certificates of Final Inspection required for electrical systems at Substantial Completion.
- B. Project Record Documents: Under provisions of General Conditions - Article 8.D.
- C. Warranties and Guarantees: Under provisions of Section 017836 by Final Acceptance.
- D. The Contractor shall prepare and submit a final actual cost breakdown based on the following category descriptions:
 - 1. LANDSCAPING – Not Used
 - 2. BUILDINGS – Not Used
 - 4. (INTEGRATED) BUILDING EQUIPMENT – Not Used
 - 4. (PORTABLE) FURNITURE, MACHINERY & EQUIPMENT – Not used
 - 5. PAVED ROADS AND PARKING AREAS
All costs incident to the preparation, construction, and improvement of roadways and parking areas on the Airport.
 - 6. WATER AND SEWER SYSTEMS
The costs of constructing and equipping pumping stations, and sewer processing plants. Costs shall include cost of water meters and other fixed equipment.
 - 7. FIELD IMPROVEMENTS
All costs related to the purchase and construction of field lighting and runway lighting equipment, fencing, railroad spur tracks and other improvements not classified as land, paved areas, water systems, or buildings.
 - 8. RUNWAYS, APRONS AND TAXIWAYS
The costs of construction and improvements of runways, aprons and taxiways. The costs of aprons also include aircraft fueling system piping and related fittings located thereunder.

9. DEMOLITION/DECOMMISSIONING

Costs associated with partial or complete demolition of above listed items.

10. ENVIRONMENTAL CLEAN-UP

Costs associated with the removal, containment, and remuneration of contaminated soil, etc.

E. Itemized List for Spare Parts and Extra Stock, Keys and Keying Schedule: Under provisions of Technical Specifications Section for finish hardware by Substantial Completion.

F. Evidence of Payment and Release of Claims: In accordance with the General Conditions and Subcontractor's Affidavit(s) of Satisfaction and/or Consent of Surety to Final Payment.

1.08 STATEMENT OF ADJUSTMENT OF ACCOUNTS - CERTIFICATE OF FINAL ACCEPTANCE

A. MDAD will prepare Final Payment Certificate reflecting adjustment to Contract Amount indicating:

1. Original Contract Amount.
2. Change Orders.
3. Work Orders & Charges against Allowance Accounts.
4. Deductions for uncorrected or deficient work.
5. Deductions for liquidated damages.
6. Additions for compensable excusable delays.
7. Deductions for reinspection fees.
8. Other adjustments to Contract Amount.
9. Total Contract Amount as adjusted.

B. The Architect/Engineer will issue a final Change Order, if required, reflecting approved adjustments to Contract Amount not previously made by Change Orders.

1.09 BACKFLOW PREVENTER INSTALLATION REPORT

A. Not used .

1.10 APPLICATION FOR FINAL PAYMENT CERTIFICATE

A. Submit application for final Payment Certificate in accordance with provisions of General Conditions.

B. Final Payment will not be made until the Contract Closeout Procedures have been completed and executed as specified above.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 017836
WARRANTIES AND GUARANTEES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Preparation and submittal of warranties and guarantees.
- B. Schedule of submittals.

1.02 RELATED REQUIREMENTS

- A. Instruction to Bidders: Bid Bonds.
- B. Contractor's Performance and Payment Bonds.
- C. Section 017700 - Contract Closeout Procedures.
- D. Individual Technical Specifications Sections: Warranties and Guarantees required for specific products or work.

1.03 FORM OF SUBMITTALS

- A. Bind in commercial quality 8 ½ x 11 inch three-ring side binders, with hardback, cleanable, plastic covers. Binders are not to exceed 3" in width.
- B. Label cover of each binder with typed or printed title 'WARRANTIES AND GUARANTEES,' with Contract No. and Project Title; name, address and telephone number of Contractor. Identify volume number for multiple binders.
- C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified and the name of the product or work item.
- D. Separate each warranty or guaranty with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheet as necessary. List subcontractor, supplier and manufacturer, with name, address and telephone number of the responsible principal.
- E. Include a copy of the applicable warranty/guaranty in O & M manuals.

1.04 WARRANTY PERIOD AND PREPARATION OF SUBMITTALS

- A. Obtain warranties and guarantees, executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item of work. Date of beginning of time of warranty will be the date of Substantial Completion, or date of Beneficial Occupancy if equipment is put to use by the Owner at date of Beneficial

Occupancy. No warranty shall start prior to equipment being put into operation. It is not necessary that all warranties shall start at the same time.

- B. Equipment warranty period: Manufacturer's standard warranty, minimum one year from above date of beginning of warranty, except as stated elsewhere.
- C. Full service period: Installing contractor shall provide for full service and maintenance for a period of one year for the equipment/systems, except as stated elsewhere. If, within this period, any equipment proves defective, it shall be repaired or replaced at no additional cost to MDAD.
 - 1. The service and maintenance shall include monthly inspections and adjustments, based on an Owner approved monthly service schedule.
 - 2. Each service and maintenance trip to the project shall be coordinated and reported to MDAD Maintenance and have a separate written report so an accurate log can be kept on the operation and problems of the installation.
 - 3. Monthly service schedule, showing tasks and service timetable, shall be submitted to MDAD Maintenance (through the FR), for review and approval prior to substantial completion.
 - 4. Coordination with MDAD and distribution of monthly maintenance/service reports to PM, CA, and MDAD Maintenance shall be the responsibility of the General Contractor.
- D. Co-execute submittals when required.
- E. Retain warranties and guarantees until time specified for submittal.

1.05 TIME OF SUBMITTALS

- A. Make submittals per Section 017700 and General Conditions.
- B. For items of work when acceptance is delayed beyond date of Substantial Completion, as stated in Section 017700, submit within ten (10) days after acceptance, listing the date of acceptance as the beginning of the warranty or guaranty period.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 017839
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Maintenance of Record Documents and Samples.
- B. Submittal of Record Documents and Samples.

1.02 RELATED REQUIREMENTS

- A. Section 017123 - Field Engineering.
- B. Section 017829 - Not used
- C. Section 013323 - Shop Drawings, Product Data and Samples.
- D. Section 017700 - Contract Closeout Procedures.
- E. Individual Technical Specifications Sections: Manufacturer's certificates and certificates of inspection.

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Follow requirements of project General Conditions for Contract Documents at the Site.
- B. Store Record Documents and samples in Field Office apart from documents used for construction. Provide files, racks and secure storage for Record Documents and Samples.
- C. Label and file Record Documents and samples in accordance with Section number listings in Table of Contents of this Project Manual. Label each document 'PROJECT RECORD' in neat, large printed letters.
- D. Maintain Record Documents in clean, dry and legible conditions. Do not use Record Documents for construction purposes.
- E. Keep Record Documents and Samples available for inspection by MDAD and Consultant.

1.04 AS-BUILT INFORMATION

- A. Record information on a set of black line opaque drawings and in a copy of a Project Manual, provided by MDAD, as specified in the General Conditions.
- B. Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.

- C. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- D. Contract Drawings and approved Shop Drawings: Legibly mark each item to record actual construction, including:
 - 1. Measured depths of elements of foundation in relation to finish grade or first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
 - 4. Field changes of dimensions and details.
 - 5. Changes made by Addenda, Change Order(s) (if any) and Work Order(s) (if any).
 - 6. Details not on original Contract Drawings.
 - 7. References to related Shop Drawings and Modifications.
- E. Specifications: Legibly mark each item to record actual construction, including changes made by Addenda and Change Order.
- F. Other Documents: Maintain manufacturer's certification, inspection certifications, field test records, and other documents as determined by the Field Representative or required by individual Specification Sections.
- G. Record Product Data: Submit (2) paper copies and annotated PDF electronic files and directories of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- H. MDAD Maintenance Data Sheets: Complete the database sheets forms in the following sections and as otherwise available from MDAD, for the equipment installed under the Contract. Completed, typed forms shall be included in the appropriate O & M Manuals.

1.05 SUBMITTALS

- A. At Substantial Completion, deliver Record Documents and samples under provision of Section 017700, excluding as-built drawings/specifications as stated below.
- B. Transmit with cover letter in duplicate, listing: (1) Date; (2) Project Title and Number; (3) Contractor's name, address and telephone number; (4) Number and Title of each Record Document; (5) One pdf electronic file and two black line copies of all approved shop

drawings; (6) copy of approved shop drawing log; (7) Copy of the Field Representative review log attesting to its review of the As-Built Documents.

- C Submittal of as-built drawings/specifications shall be after resolution of the punch list items are complete. One original marked up set and one complete copy of each shall be provided.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 REQUIREMENT INCLUDED

- A. Procedures for preparation and submittal of Application for Payment.

1.02 RELATED REQUIREMENTS

- A. General Conditions

1.03 FORMAT

- A. Miami-Dade Aviation Department Form

1.04 PREPARATION OF APPLICATION

- A. Type required information or use media-driven printout.
- B. Execute certification by signature of authorized officer.
- C. Use data on Bid Form and approved Schedule of Values. Provide dollar value in each column for each line item for portion of Work performed and for stored products.
- D. List each authorized Change Order and an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
- E. Prepare Application for Final Payment as required in General Conditions.

1.05 SUBMITTAL PROCEDURES

- A. Submit three (3) copies of each Application for Payment at time stipulated in Agreement.
- B. Submit under transmittal letter.

1.06 SUBSTANTIATING DATA

- A. When Architect/Engineer requires substantiating information, submit data justifying line item amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 019113
COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Commissioning. Commissioning is a systematic process of to ensure that all building systems and equipment perform interactively according to the design intent and the MDAD's operational needs. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment startup, control system calibration, testing and balancing, performance testing, and training.

Commissioning shall:

1. Verify that applicable equipment and systems are installed according to the manufacturer's recommendations and industry accepted minimum standards and that they receive adequate operational checkout by installing contractors.
 2. Verify and document proper performance of equipment and systems.
 3. Verify that O&M documentation left on site is complete.
 4. Verify that the MDAD's operating personnel are adequately trained.
- B. The commissioning process does not take away from or reduce the responsibility of the system designers or installing contractors to provide a finished and fully functioning product.

C. DEFINITIONS

Acceptance Phase - Phase of construction after startup and initial checkout when functional performance tests, O&M documentation review, and training occur.

Approval - Acceptance that a piece of equipment or system has been properly installed and is functioning in the tested modes according to the Contract Documents.

Commissioning Agent (CA) – The MDAD assigned individual who coordinates the day-to-day commissioning activities, on behalf of the MDAD and the PM. The CA shall not take an oversight role on day-to-day construction activities.

Commissioning Plan - An overall plan, developed by the Contractor that provides the structure, schedule and coordination planning for the commissioning process.

Control system – A component of environmental, security, and fire systems for reporting/monitoring and issuing of commands to/from field devices.

Data logging - The monitoring and recording of flows, currents, status, pressures, etc., of equipment using stand-alone data recorders separate from the control system or the trending capabilities of control systems.

Deferred Functional Tests (DFTs) - Functional Tests that are performed, at the discretion of the CA, after Substantial Completion, due to partial occupancy, equipment, seasonal requirements, design, or other site conditions that disallow the test from being performed.

Deficiency - A condition in the installation or function of a component, piece of equipment, or system that is not in compliance with the Contract Documents.

Factory Testing - Testing of equipment on-site or at the factory, by factory personnel, with or without an MDAD's representative present.

Functional Test (FT) – Performance testing of the dynamic functions and operations of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is the dynamic testing of systems (rather than just components) under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint). Systems are tested under various modes, such as during low cooling loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems are run through all the control system's sequences of operation and components are verified to be responding as the sequences state. FTs are performed after prefunctional checklists and startup are complete.

Manual Test - Using hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the "observation").

Non-Compliance - See Deficiency.

Non-Conformance - See Deficiency.

Over-ridden Value - Riding over a sensor value in the equipment's controls to observe the response of the equipment's operation (e.g., changing the outside air temperature value from 50F to 75F to verify economizer operation). See also "Simulated Signal."

MDAD-Contracted Tests - Tests paid for by the MDAD. These tests will not be repeated during functional testing if successful and properly documented.

Phased Commissioning - Commissioning that is completed in phases (by floors, for example) due to the size of the structure or other scheduling issues.

Pre-functional Checklist - A list of items to inspect and elementary component tests to conduct to verify proper installation of equipment. Prefunctional checklists are primarily static inspections and procedures to prepare the equipment or system for initial operation (e.g., belt tension, oil levels, labels affixed, gages in place, sensors calibrated, etc.). However, some prefunctional checklist items entail simple testing of the function of a component, a piece of equipment or system (such as measuring the voltage imbalance on a three-phase motor). The word prefunctional refers to before functional testing. Prefunctional checklists augment and are combined with the manufacturer's start-up checklist. All Pre-functional Checklist items must be satisfactory prior to the FT.

Sampling - Functionally testing only a fraction of the total number of identical or near identical pieces of equipment. Refer to Paragraph 3.04 F for details.

Seasonal Functional Tests – Performance FTs that are deferred until the system(s) will experience conditions closer to their design conditions.

Simulated Condition - Condition that is created for the purpose of testing the response of a

system (e.g., raising/lowering the setpoint of a thermostat to see the response in a VAV box).

Simulated Signal - Disconnecting a sensor and using a signal generator to simulate a sensor value for the purpose of testing a full range of conditions.

Startup - The initial starting or activating of dynamic equipment, including executing prefunctional checklists.

Test Requirements - Requirements specifying what modes and functions, etc., shall be tested and the acceptable range of performance limits that must be met. The test requirements are specified in the Technical Specifications Sections of the Contract Documents.

Trending - Monitoring, using the building management system, whereby data gathered over a period of time is compiled for analysis.

Vendor - Supplier of equipment.

Warranty Period - Refer to Section 017836.

1.02 COORDINATION

- A. Project Commissioning Team. The members of the Project Commissioning Team will consist of the MDAD Commissioning Team (the assigned Commissioning Agent and any support personnel), the MDAD Project Manager (PM) or designee, the Field Representative, the General Contractor Subcontractors and/or Vendors as required, and the Architect/ Engineer (A/E).
- B. Management. The CA coordinates the commissioning activities through the FR. All members shall work together to fulfill their contracted responsibilities and meet the objectives of the Contract Documents. Refer to Paragraph 1.06 for additional management details.
- C. Scheduling. The CA, through the FR, will provide sufficient notice to the Contractor for scheduling commissioning activities with respect to the MDAD participation. The Contractor will integrate all commissioning activities into the Overall Project Schedule. All parties will address scheduling problems and make necessary notifications in a timely manner in order to expedite the commissioning process.

1.03 COMMISSIONING PLAN

- A. The Contractor shall develop the Commissioning Plan which shall be included in the Project Schedule when approved by the MDAD. The following narrative provides a brief overview of the typical commissioning tasks during construction and the general order in which they occur.
 - 1. Commissioning during construction begins with an initial commissioning meeting conducted by the CA where the commissioning process is reviewed with the project commissioning team members.
 - 2. Additional meetings will be required throughout construction, scheduled by the CA, through the FR, with necessary parties attending, to plan, scope, coordinate, schedule future activities and resolve problems.
 - 3. Equipment documentation is submitted to the CA, through the FR, during normal submittals, including detailed start-up procedures.
 - 4. The Prefunctional Checklists are to be completed by the Contractor (or its

- subcontractors), during the startup process.
5. In general, the checkout and performance verification proceeds from simple to complex; from component level to equipment to systems and intersystem levels with Prefunctional Checklists being completed before functional testing.
6. Items of non-compliance in material, installation, or setup are corrected at no expense to the MDAD.
7. The Contractor ensures that the Subcontractors' Prefunctional Checklists are executed and documented, and that startup and initial checkout are performed. The CA documents that the checklists and startup were completed according to the approved plans. This may include the CA witnessing start-up of selected equipment. Any testing failure is to be corrected at no additional cost to the MDAD, and a re-test performed, observed, and documented.
8. The A/E, Field Representative, and Subcontractors review and finalize the specific equipment and system functional performance test procedures. The forms are approved by the CA.
9. The procedures are executed by the Subcontractors, under the direction of the Field Representative, and documented by the CA.
10. The CA reviews the O&M documentation for completeness.
11. Commissioning is completed before Substantial Completion.
12. The CA reviews, pre-approves, and coordinates the training provided by the Subcontractors/Contractor and verifies that it was completed.
13. Deferred testing is conducted, as specified or required.

1.04 RELATED REQUIREMENTS

A.	Section 013113	Coordination
B.	Section 013300	Submittals
C.	Section 013126, 013216-04	Project Schedules
D.	Section 017700	Contract Closeout Procedures
E.	Section 017839	Project Record Documents
F.	Section 017836	Warranties and Guarantees
G.	Section 110800	Not used
H.	Section 110800-01	Not used
I.	Section 110800-02	Not used
J.	Section 130800	Not used
K.	Section 130800-01	Not used
L.	Section 130800-02	Not used
M.	Section 140800	Not used
N.	Section 140800-01	Not used

O.	Section 140800-02	Not used
P.	Section 210800	Not used
Q.	Section 210800-01	Not used
R.	Section 210800-02	Not used
S.	Section 220800	Not used
T.	Section 220800-01	Not used
U.	Section 220800-02	Not used
V.	Section 230800	Not used
W.	Section 230800-01	Not used
X.	Section 230800-02	Not used
Y.	Section 230593	Not used
Z.	Section 0250800	Not used
AA.	Section 0250800-01	Not used
AB.	Section 0250800-02	Not used
AC.	Section 260800	Not used
AD.	Section 260800-01	Not used
AE.	Section 260800-02	Not used
AF.	Section 280800	Not used
AG.	Section 280800-01	Not used
AH.	Section 280800-02	Not used
AI.	Section 320800	Not used
AJ.	Section 320800-01	Not used
AK.	Section 320800-02	Not used
AL.	Section 430800	Not used
AM.	Not used	
AN.	Section 430800-02	Not used

1.05 RESPONSIBILITIES

- A. The general responsibilities of various parties in the commissioning process are provided in this sub-section. The specific responsibilities are in the Technical Specifications.
- B. All Parties
 - 1. Follow the commissioning plan.
 - 2. Attend initial commissioning meeting, and additional meetings as necessary.
- C. Contractor
 - 1. Construction and Acceptance Phase
 - a. Facilitate the coordination of the commissioning and incorporate commissioning activities (the Commissioning Plan) into the Overall Project Schedule (OPS).
 - b. Include the cost of commissioning in the total contract price.
 - c. Ensure that all Subcontractors and Vendors execute their commissioning responsibilities according to the Contract Documents and the OPS.
 - d. Provide copies of all submittals as required in Section 01300 including all changes thereto.
 - e. A representative shall attend an initial commissioning meeting and all other necessary meetings to facilitate the commissioning process and provide the initial and updated commissioning schedules.
 - f. No later than 60 days prior to startup of the first piece of major equipment, meet with the CA, Field Representative, A/E, and PM/MDAD to finalize the detailed commissioning procedures/ schedule.
 - g. Coordinate the training of MDAD personnel.
 - h. Prepare O&M manuals, according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built/as-tested conditions.
 - 2. Warranty Period
 - a. Ensure that Subcontractors execute seasonal or deferred functional performance testing, witnessed by the CA, according to the specifications.
 - b. Ensure that Subcontractors correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.
 - c. Perform all guarantee work for materials furnished under the contract for the time specified in the Contract, including all warranties and curing all latent defects within the time period provided in Section 95.11(3)(c), Florida Statutes.
- D. Vendors/Subcontractors
 - 1. Provide all requested submittal data, including detailed start-up procedures and specific responsibilities of the MDAD to keep warranties in force.
 - 2. Assist in equipment testing per agreements with Subcontractors and/or Contractor.
 - 3. Include cost of all special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing, operating, and maintaining equipment according to these Contract Documents in the base bid price to the Contractor.
 - 4. Analyze specified products and verify that the A/E has specified the newest, most current

- equipment reasonable for this project's scope and budget.
5. Provide requested information regarding equipment sequence of operation and testing procedures.
 6. Review test procedures for equipment installed by factory representatives.

1.06 EQUIPMENT/SYSTEMS TO BE COMMISSIONED

- A. The following equipment/systems will be commissioned in this project, as indicated by "X."
1. ☐ Chiller(s) and chiller loop (with chiller pumps)
 2. ☐ Cooling tower(s) and condenser water system (with pumps and water treatment system)
 3. ☐ Primary chilled water system (with Bridge-Tender system and primary chilled water pumps)
 4. ☐ Secondary chilled water system (with Bridge-Tender system and secondary chilled water pumps)
 5. ☐ Air Handling Units (with supply, return and outside air duct, variable air volume boxes, air distribution, and temperature control system)
 6. ☐ Exhaust air systems (including fans, ductwork and interconnection with air handling/supply systems)
 7. ☐ Supply or make-up air systems (including fans, ductwork and interconnection with air handling and/or exhaust systems)
 8. ☐ Specialty air removal/ventilation systems (including fans, ductwork and interconnection with air handling/supply systems)
 9. ☐ Smoke control systems (including fans, ductwork and interconnection with air handling/supply systems -in conjunction with Fire Department)
 10. ☐ Equipment vibration monitoring systems (including sensors, transmitters and software)
 11. ☐ Refrigerant monitoring systems (including sensors, transmitters and exhaust/ventilation systems)
 12. ☐ Thermal storage systems (including ice tanks, glycol chillers, pumps, heat exchangers, piping and controls)
 13. ☐ Preconditioned air system (including chillers, ice equipment, air handling units, piping and controls)
 14. ☐ Compressed air system for building/equipment/systems control (including compressors, receivers, piping, and air dryers)
 15. ☐ Potable water system (including backflow preventers, fixtures, piping and water heaters)
 16. ☐ Sanitary drainage/sewer system
 17. ☐ Storm drainage system
 18. ☐ Fire protection system (in conjunction with Fire Department)
 19. ☐ Fire alarm/detection system (in conjunction with Fire Department)
 20. ☐ Jet fuel system (in conjunction with MDAD Environmental)
 21. ☐ Emergency power system (including emergency generator, automatic transfer switch and fuel oil system)
 22. ☐ 400 hertz system
 23. ☒ Lighting systems (exterior and/or airfield)
 24. ☒ Switchgear, transformers, panelboards and/or motor control centers
 25. ☒ Lightning protection and/or surge suppression system
 26. ☐ Public address, closed circuit TV, flight information display and/or telephone systems
 27. ☐ Doors security system

- 28. ____ Kitchen, cooking, and/or food preparation systems
- 29. ____ Escalator and/or elevator systems
- 30. ____ Automatic people mover system and/or moving walkways
- 31. ____ Baggage conveyor, make-up and claim systems
- 32. ____ Passenger loading bridges
- 33. ____ Doors and hardware
- 34. ____ Irrigation system
- 35. ____ Walk-in coolers and/or freezers
- 36. ____ HVAC, Test, Adjust, and Balance
- 37. X NAVAID's System

PART 2 - PRODUCTS

2.01 TEST EQUIPMENT

- A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Contractor for the equipment being tested. This includes, but is not limited to, two-way radios, meters, and data recorders.
- B. Special equipment, tools, and instruments required for testing equipment according to these Contract Documents shall be included in the Contractor's base bid price and shall be turned over to the MDAD at Project close-out.
- C. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance within the tolerances specified in the Specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration within the past year to an accuracy of 0.5 degree F and a resolution of + or - 0.1 degree F. Pressure sensors shall have an accuracy of + or - 2.0% of the value range being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

PART 3 - EXECUTION

3.01 MEETINGS

- A. Initial Meeting. Within 10 days of the Notice to Proceed (NTP), the CA, through the FR, will schedule, plan and conduct an initial commissioning meeting. The Contractor and its responsible parties are required to attend.
- B. Miscellaneous Meetings. Other meetings will be planned and conducted by the CA as construction progresses. These meetings will cover coordination, deficiency resolution, and planning issues. These meetings will be held at least monthly, until the final 3 months of construction, when they may be held as frequently as one per week.

3.02 START-UP, PREFUNCTIONAL CHECKLISTS, AND INITIAL CHECKOUT

- A. The following procedures apply to all equipment/systems to be commissioned, according to Paragraph 1.06 Equipment/Systems to be commissioned.
- B. General. Prefunctional checklists are important to verify that the equipment and systems are fully connected and operational. It ensures that functional performance testing (in-depth

system checkout) may proceed without unnecessary delays. Each piece of equipment shall receive full prefunctional checkout. No sampling strategies shall be used. The prefunctional testing for a given system must be successfully completed prior to formal functional performance testing of equipment or subsystems of the given system.

C. Start-up and Prefunctional Checkout Plan. The CA shall assist the project commissioning team members responsible for startup of any equipment. The primary role of the CA in this process is to ensure that there is written documentation that each of the manufacturer-recommended procedures has been completed. Parties responsible for prefunctional checklists and startup shall be identified in the commissioning scoping meeting and on the checklist forms. Parties responsible for executing functional performance tests are identified in the testing requirements in the Technical Specifications.

1. The prefunctional checklists are provided in the Technical Specifications. These checklists indicate required procedures to be executed as part of startup and initial checkout of the systems and the party responsible for their execution.
2. The Contractor shall determine which trade is responsible for executing and documenting each of the line item tasks and transmit the checklists to the responsible Subcontractors. Each form may have more than one trade responsible for its execution.
3. The subcontractor responsible for the purchase of the equipment shall develop the full start-up plan by combining the manufacturer's detailed start-up and checkout procedures and the prefunctional checklists.
4. The subcontractor shall submit the full startup plan to the Contractor for review and approval by the CA.
5. The CA will review and approve the procedures and the documentation format for (noting any procedures that need to be added). The CA will return the procedures and the documentation format to the Contractor, through the FR.
6. The Contractor will transmit the full start-up plan to the Subcontractors for their review and use.

D. Sensor and Actuator Calibration. All field-installed temperature, relative humidity, CO, CO₂, refrigerant, O₂, and/or pressure sensors and gages, and all actuators (dampers and valves) on all equipment shall be calibrated. Verify that all locations are appropriate and away from causes of erratic operation. Submit to the FR calibration methods and results. All test instruments shall have had a certified calibration within the last 12 months, and comply with all local, state and/or federal requirements/certifications, as required. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.

All procedures used shall be fully documented on the prefunctional checklists, as an attachment, or other suitable forms, clearly referencing the procedures followed, and stating the initial, intermediate, and final results.

E. Execution of Prefunctional Checklists and Startup.

1. Four weeks prior to the scheduled startup, the Subcontractors and Vendors shall coordinate startup and checkout with the Field Representative, A/E, Contractor, PM and CA. The execution of the prefunctional checklists, startup, and checkout shall be directed and performed by the Subcontractor or Vendor. Signatures are required of the applicable Subcontractors for verification of completion of their work.
2. The PM, CA, Field Representative, and A/E as necessary, shall observe, at minimum, the procedures for each piece of primary equipment, unless there are multiple units, in which case a sampling strategy may be used. In no case will the number of units witnessed be

- less than four on any one building, nor less than 20% of the total number of identical units.
3. For lower-level components of equipment, (e.g., sensors, controllers), the CA shall observe a sampling of the prefunctional and start-up procedures.
 4. The Subcontractors and Vendors shall execute startup and provide the CA and A/E, through the FR, with a signed and dated copy of the completed start-up and prefunctional tests and checklists.
 5. Only individuals of the Contractor (technicians, engineers, tradesmen, vendors, etc.) who have direct knowledge and witnessed that a line item task on the prefunctional checklist was actually performed shall check off that item. It is not acceptable for witnessing supervisors to fill out these forms.

F. Deficiencies, Non-Conformance, and Approval in Checklists and Startup.

1. The Contractor shall ensure that the Subcontractors clearly list any outstanding items of the initial start-up and prefunctional procedures that were not completed successfully, on an attached sheet. The form and any outstanding deficiencies shall be provided, through the FR, to the CA within two days of test completion.
2. The CA will review the report and issue either a non-compliance report or an approval form, through the FR, to the Contractor. The installing Subcontractors or vendors shall correct all areas that are deficient or incomplete in the checklists and tests in a timely manner, shall notify the FR as soon as outstanding items have been corrected, and resubmit an updated start-up report with a Statement of Correction on the original non-compliance report. When satisfactorily completed, the CA will recommend approval of the execution of the checklists and startup of each system.
3. Items left incomplete, which later cause deficiencies or delays during functional testing may result in back charges to the Contractor. Refer to Paragraph 3.05, herein, for details.

3.03 PHASED COMMISSIONING

- A. The project may require startup and initial checkout to be executed in phases. Phasing shall be coordinated with the PM, CA, A/E, and Contractor and reflected in the Overall Project Schedule and commissioning schedule by the Contractor.

3.04 FUNCTIONAL TESTING

- A. The functional testing shall demonstrate that each system is operating according to the documented design intent and Contract Documents. Functional testing facilitates bringing the systems from a state of individual substantial completion to full dynamic operation. Additionally, during the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.
- B. Coordination and Scheduling. The Contractor shall provide sufficient notice, regarding their completion schedule for the prefunctional checklists and startup of all equipment and systems to allow the functional performance testing to be scheduled. The Commissioning Team shall oversee, witness, and document the functional testing of all equipment and systems. The Contractor/Subcontractors shall execute the tests. Functional testing shall be conducted after pre-functional testing and startup has been satisfactorily completed. The control system shall be sufficiently tested and approved by the CA before it is used, to verify performance of other components or systems. The air balancing and water balancing shall be completed before functional testing of air-related or water-related equipment or systems. Testing proceeds from components to sub- systems to systems. When the proper performance of all interacting individual systems has been achieved, the interface or coordinated responses between systems

shall be checked.

- C. Development of Test Procedures. Before test procedures are finalized, the Contractor shall provide to the A/E and the CA all requested documentation and a current list of changes affecting equipment or systems, including an updated points list, program code, control sequences, and testing parameters. Using the testing parameters and requirements in the Technical Specifications, the A/E shall update/develop specific test procedures and forms to verify and document proper operation of each piece of equipment and system. Each Subcontractor or Vendor, as appropriate, shall provide assistance to the A/E in developing the final procedures (answering questions about equipment, operation, sequences, etc.). Prior to finalization, the A/E shall provide a copy of the test procedures to the Contractor who shall review the tests for feasibility, safety, equipment, and warranty protection. The final test forms shall be submitted to the CA for review and approval.
- D. Test Methods.
1. Functional testing and verification may be achieved by manual testing or by monitoring the performance and analyzing the results using the control system's trend log capabilities or by stand-alone data loggers. The CA may substitute specified methods or require an additional method to be executed, other than what was specified, with the approval of the Contractor, A/E, and PM. The CA will determine which method is most appropriate for tests that do not have a method specified.
 2. Simulated Conditions. Simulating conditions (not by an overridden value) shall be allowed, though timing the testing to experience actual conditions is encouraged wherever practical.
 3. Overridden Values. Overriding sensor values to simulate a condition, such as overriding the outside air temperature reading in a control system to be something other than it really is, is allowed, but shall be used with caution and avoided when possible. Sensors, transducers and devices shall have been calibrated before simulating conditions or overriding values.
 4. Simulated Signals. Using a signal generator which creates a simulated signal to test and calibrate transducers and DDC constants is generally recommended overusing the sensor to act as the signal generator via simulated conditions or overridden values.
 5. Altering Setpoints. Rather than overriding sensor values, and when simulating conditions is difficult, altering setpoints to test a sequence is acceptable.
 6. Indirect Indicators. Relying on indirect indicators for responses or performance shall be allowed only after visually and directly verifying and documenting, over the range of the test parameters, that the indirect readings through the control system represent actual conditions and responses.
 7. Setup. Each function and test shall be performed under conditions that simulate actual conditions as closely as is practically possible. The Subcontractor(s) executing the test shall provide all necessary materials, system modifications, etc., to produce the necessary flows, pressures, temperatures, etc., necessary to execute the test according to the specified conditions. At completion of the test, the Subcontractor(s) shall return all affected equipment and systems to their approved operating settings.
 8. Sampling. Multiple identical pieces of non-life-safety or otherwise non-critical equipment may be functionally tested using a sampling strategy, when requested by the Contractor and approved by the CA. Significant application differences and significant sequence of operation differences in otherwise identical equipment invalidates their common identity. A small size or capacity difference, alone, does not constitute a difference. No sampling by Subcontractors shall be allowed in pre-functional checklist execution.
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A common sampling strategy is the xx% Sampling yy% Failure Rule. It is defined by the following example.

xx = the percent of the group of identical equipment to be included in each sample.

yy = the percent of the sample that if failing, will require another sample to be tested.

The example below describes a 20% Sampling, 10% Failure Rule.

- a. Randomly test at least 20% of each group of identical equipment. In no case test less than three units in each group. This 20%, or three, constitute the “first sample.”
- b. If 10% of the units in the first sample fail the functional performance tests, test another 20% of the group (the second sample).
- c. If 10% of the units in the second sample fail, test all remaining units in the whole group.
- d. If at any point frequent failures are occurring and testing is becoming more time consuming than verification, the CA may stop the testing and require the responsible Subcontractor to perform and document a checkout of the remaining units, prior to continuing with functionally testing the remaining units.

E. Test Equipment. Refer to Part 2 for test equipment requirements.

F. Problem Solving. The burden of responsibility to solve, correct, and retest malfunctions/failures is with the Contractor, with A/E approval as required.

3.05 DOCUMENTATION, NON-CONFORMANCE, AND APPROVAL OF TESTS

A. Documentation. The CA shall witness and verify/approve the documentation of the results of all functional performance tests.

B. Non-Conformance.

1. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CA. In such cases the deficiency and resolution will be documented on the procedure form or on an attached sheet.
2. As tests progress and a deficiency is identified, the CA shall discuss the issue with the Commissioning Team, and the Contractor.

a. When there is no dispute on the deficiency and the Contractor accepts responsibility to correct it:

- 1) The CA will document the deficiency and the Contractor’s response and intentions. After the day’s work, the CA will submit the non-compliance reports to the PM. The Contractor corrects the deficiency, signs the statement of correction at the bottom of the non-compliance form certifying that the equipment is ready to be retested and sends it back to the CA.
- 2) The Contractor shall reschedule the test; and the test repeated.

b. If there is a dispute about a deficiency, regarding whether or not it is a deficiency:

- 1) The dispute shall be documented on the non-compliance form with the

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- Contractor's response.
- 2) Resolutions are made at the lowest management level possible. Other parties are brought into the discussions as needed. Final interpretive authority is with the A/E. Final acceptance authority is with the Project Manager.
 - 3) The CA documents the resolution process.
 - 4) Once the interpretation and resolution have been decided, the Contractor corrects the deficiency, signs the statement of correction on the non-compliance form and provides it to the PM, through the Field Representative. The Contractor shall reschedule the test and the test repeated until satisfactory performance is achieved.
3. Cost of retesting a pre-functional or functional test shall be the Contractor's.
4. The Contractor shall submit, in writing to the FR, at least as often as commissioning meetings are being scheduled, the status of each outstanding discrepancy identified during commissioning. Discussion shall cover explanations of any disagreement and proposals for their resolutions.
- a. The CA retains the original non-conformance forms until the end of the project.
 - b. Retesting shall not be considered a justified reason for a claim of delay or for a time extension by the Contractor.
- C. Failure Due to Manufacturer Defect. If 10%, or three, whichever is greater, of identical pieces (size alone does not constitute a difference) of equipment fail to perform to the Contract Documents (mechanically or substantively) due to a manufacturing defect not allowing it to meet its submitted performance specification, all identical units may be considered unacceptable by the A/E or PM. In such case, the Contractor shall provide the MDAD with the following:
1. Within one week of notification from the Field Representative, the Contractor or manufacturer's representative shall examine all other identical units making a record of the findings. The findings shall be provided to the Field Representative within two weeks of the original notice.
 2. Within two weeks of the original notification, the Contractor or manufacturer shall provide a signed and dated, written explanation of the problem, cause of failures, etc., and all proposed solutions. The proposed solutions shall not significantly exceed the specification requirements of the original installation.
 3. The A/E will determine whether a replacement of all identical units or a repair is acceptable.
 4. Two examples, where applicable, of the proposed solution shall be installed by the Contractor and the A/E shall be allowed to test the installations for up to one week, upon which the A/E will decide whether to accept the solution.
 5. Upon acceptance, the Contractor and/or manufacturer shall replace or repair all identical items, at their expense. The replacement/repair work shall proceed with reasonable speed beginning within one week from when parts can be obtained.
- D. Approval. The CA notes each satisfactorily demonstrated function on the test form. Final approval of the functional test is made after review by the CA and PM, following recommendations by the A/E and Contractor.

3.06 DEFERRED TESTING

- A. Unforeseen Deferred Tests. If any check or test cannot be completed due to the project

completion level, required occupancy condition or other deficiency, execution of checklists and functional testing may be delayed upon approval of the PM. These tests will be conducted in the same manner as the seasonal tests as soon as possible. Services of necessary parties will be negotiated.

- B. Seasonal Testing. During the warranty period, seasonal testing (tests delayed until weather conditions are closer to the system's design) specified in Section 230800 shall be completed as part of this contract. The CA shall coordinate this activity, through the PM. Tests will be executed, documented and deficiencies corrected by the appropriate Subcontractors, with the CA witnessing. Any final adjustments to the O&M manuals and as-builts due to the testing shall be made by the Contractor.

3.07 TRAINING OF MDAD PERSONNEL

- A. The Contractor shall provide training coordination, scheduling of subcontractors, and ensure that training is completed. All training shall be coordinated, through the Field Representative, with the PM.
- B. The Contractor shall ensure that each Subcontractor and Vendor (mechanical, plumbing, fire, electrical, specialty, etc.) shall have the following responsibilities:
1. Provide, through the Field Representative, the PM with a training plan sixty days before the planned training covering the following elements:
 - a. Equipment
 - b. Intended audience
 - c. Location of training
 - d. Objectives
 - e. Subjects covered (description, duration of discussion, special methods, etc.)
 - f. Duration of training on each subject
 - g. Instructor for each subject
 - h. Methods (classroom lecture, manufacturer's quality video, site walk-through, actual operational demonstrations, written handouts, etc.).
 2. Provide designated MDAD personnel with comprehensive orientation and training in the understanding of the systems and the operation and maintenance of each piece of equipment that makes up the system.
 3. Training shall normally start with classroom sessions followed by hands-on demonstration/training on each piece of equipment.
 4. During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system shall be repaired or adjusted as necessary and the demonstration repeated at another scheduled time, if necessary.
 5. The appropriate trade or manufacturer's representative shall provide the instructions on each major piece of equipment. Practical building operating expertise as well as in-depth knowledge of all modes of operation of the specific piece of equipment are required. More than one party may be required to execute the training.
 6. The controls contractor shall attend sessions other than the controls training, as specified, to discuss the interaction of the controls system as it relates to the equipment being discussed.
 7. The training sessions shall follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for

reference.

8. Training shall include:

- a. Use of the printed installation, operation and maintenance instruction material included in the O&M manuals.
- b. A review of the written O&M instructions emphasizing safe and proper operating requirements, preventative maintenance, special tools needed and spare parts inventory suggestions. The training shall include start-up, operation in all modes possible, shutdown, seasonal changeover and any emergency procedures.
- c. Discussion of relevant health and safety issues and concerns.
- d. Discussion of warranties and guarantees.
- e. Common troubleshooting problems and solutions.
- f. Explanatory information included in the O&M manuals.
- g. Discussion of any peculiarities of equipment installation or operation.
- h. Classroom sessions shall include the use of overhead projections, slides, video/audio-taped material as might be appropriate.
- i. Hands-on training shall include start-up, operation in all modes possible, including manual, shut-down, alarms, power failure and any emergency procedures, and preventative maintenance for all pieces of equipment.

9. The contractor shall fully explain and demonstrate the operation, function and overrides of any local packaged controls, not controlled by the central control system.

- C. Training shall occur after functional testing is complete, unless approved otherwise by the Project Manager.
- D. Videorecording of the training sessions will be provided by the Contractor and added to the O&M manuals. In addition, factory training videos identifying key troubleshooting, repair, service and/or replacement techniques shall be provided and reviewed with the MDAD.
- E. The responsible design or systems engineer shall at the beginning of each training session present the overall system design concept and the design concept of each equipment section.

3.08 OPERATIONS AND MAINTENANCE MANUALS/DATA

- A. The commissioning process requires detailed O&M documentation as identified in this section and Technical Specifications.
- B. Contractor shall submit two draft copies of the complete operating and maintenance manual to the Field Representative for review by the Architect/Engineer and CA within 60 calendar days after review of equipment shop drawings. One copy will be returned to the Contractor within 30 days after receipt by the A/E.
- C. Contractor shall submit corrected final approved manuals prior to Substantial Completion. Prior to final submittal, the CA shall review the O&M manuals (in addition to the initial draft O & M manual), and documentation, with redline as-builts, for systems that were commissioned to verify compliance with the Specifications. The CA will communicate, through the Field Representative, deficiencies in the manuals to the Contractor, PM or A/E, as requested. Upon a successful review of the corrections, the CA will recommend approval and acceptance of these sections of the O&M manuals to the PM. The CA will also review each equipment warranty and verify that all requirements to keep the warranty valid are clearly stated. This work does not supersede the A/E's review of the O&M manuals according to the A/E's contract.

- D. The Contractor shall compile O&M manuals for every piece of equipment and building operating or electrical system being commissioned with the following format.
1. Quantity: 6 (Unless more are required by the Technical Specifications)
 2. Format: 8 ½" x 11" 3 ring loose-leaf binders, 3 inch maximum, and electronic format that is compatible with MDAD's system. Each binder shall be clearly labeled on the spine. Use as many binders as required. Do not overload binders. Dividers with permanently marked tabs of card stock shall separate each section and sub section. Tab labels shall not be handwritten. A separate manual or chapter shall be provided for each applicable system as follows:
 - a. Lighting Systems and Controls (interior, exterior and airfield).
 - b. Switchgear, Transformers, Panel boards, Motor Control Centers and Motor Starters.
 - c. Lightning Protection and Surge Suppression Systems.
 - d. NAVAID's system
 3. There shall be a title page and table of contents in the front of each binder for each binder's contents. In each binder, there shall be a main tab for each specification section. Behind the section number tab there shall be the equipment ID tag sub-tab for each piece of major equipment (or group, if small or numerous). These sub-tabs shall be similar to the specification number tabs but of a different color. Behind each equipment name tab shall be the following sections, in the given order, divided by a double weight colored sheet labeled with the title of the section.
 - a. Contractor. The first page behind the equipment tab shall contain the name, address and telephone number of the manufacturer and installing contractor and the 24-hour number for emergency service for all equipment in this section, identified by equipment.
 - b. Submittal and Product Data. This section shall include all approved submittal data, cut sheets, data base sheets and appropriate shop drawings. If submittal was not required for approval, descriptive product data shall be included.
 - c. Operation and Maintenance Instructions. These shall be the written manufacturer's data with the model and features of this installation clearly marked and edited to omit reference to products or data not applicable to this installation. This section shall include data on the following:
 - (1) Model number, serial number and nameplate data for each piece of equipment and any subcomponent.
 - (2) Installation, startup and break-in instructions.
 - (3) All starting, normal shutdown, emergency shutdown, manual operation and normal and emergency operating procedures and data, including any special limitations.
 - a) Step-by-step procedure for system start-up, including a pre-start checklist. Refer to controls and indicators by nomenclature consistent with that used on panels and in control diagrams.
 - b) Sequence of Operation, with detailed instruction in proper sequence, for each mode of operation (i.e., day-night; staging of equipment).
 - c) Emergency Operation: If some functions of the equipment can be

- operated while other functions are disabled, give instructions for operations under these conditions. Include here only those alternate methods of operations (from normal) which the operator can follow when there is a partial failure or malfunctioning of components, or other unusual condition.
- d) Shutdown Procedure: Include instructions for stopping and securing the equipment after operation. If a particular sequence is required, give step-by-step instructions in that order.
- (4) O&M and installation instructions that were shipped with the unit.
- (5) Preventative and corrective maintenance, with service procedures and schedules:
- a) Provide a schedule for preventive maintenance in a printed format and an electronic format compatible with MDAD's system. State, preferably in tabular form, the recommended frequency of performance for each preventive maintenance task, cleaning, inspection and scheduled overhauls.
- b) Cleaning: Provide instructions and schedules for all routine cleaning and inspection with recommended lubricants.
- c) Inspection: If periodic inspection of equipment is required for operation, cleaning or other reasons, indicate the items to be inspected and give the inspection criteria for: motors; controls; filters and any other maintenance items.
- d) Provide instructions for minor repairs or adjustments required for preventive maintenance routines. Identify test points and give values for each. Include sensor calibration requirements and methods by sensor type.
- e) Corrective maintenance instructions shall be predicated upon a logical effect-to-cause troubleshooting philosophy and a rapid replacement procedure to minimize equipment downtime.
- f) Troubleshooting: Troubleshooting tables, charts, or diagrams shall be used to present specified procedures. A guide to this type shall be a three-column chart. The columns shall be titled: Malfunction, Probable Cause and Recommended Action.
- g) Repair and Replacement: Indicate repair and replacement procedures most likely to be required in the maintenance of the equipment.
- (6) Safety Precautions: This subsection shall comprise a listing of safety precautions and instructions to be followed before, during and after making repairs, adjustments or routine maintenance.
- (7) Manufacturers' brochures (including controls): Manufacturers' descriptive literature covering devices and equipment used in the system, together with illustrations, exploded views and renewal parts lists. Manufacturers' standard brochures and parts list shall be corrected so that information applying to the actual installed equipment is clearly defined.
- (8) Supply any special tools required to service or maintain the equipment.
- (9) Performance data, ratings and curves.
- (10) Warranty and Guarantee, which clearly lists conditions to be maintained to keep warranty in effect and conditions that would affect the validity of the warranty.
- (11) Any service contracts issued.

- a. Supplemental Data. Prepare written text and/or special drawings to provide necessary

information, where manufacturer's standard printed data is not available and information is necessary for a proper understanding and operation and maintenance of equipment or systems, or where it is necessary to provide additional information to supplement data included in the manual or project documents.

- b. Control Diagrams/Drawings. Include the as-built control diagrams/drawings for the piece of equipment and its components, including full points list, full print out of all schedules and set points after testing and acceptance of the system, and copies of all checkout tests and calibrations performed by the Contractor (not commissioning tests).
- c. Specifications. This section is comprised of the component or system specification section copied and inserted complete with all addenda.
- d. System Description. This section shall include the individual equipment portion of the overall system Design Basis Narrative.

Controls, and Test, Adjust, and Balance (TAB) O&M Manuals. The controls contractor and TAB contractor have special O&M manual preparation requirements identified in Technical Specifications. The A/E shall coordinate those requirements with those of this section.

The A/E shall include in the beginning of the O&M manuals a separate section describing the systems including:

- a. The design intent narrative prepared by the A/E and provided as part of the bid documents, updated to as-built status by the A/E.
- b. Simplified professionally drawn single line system diagrams on 8 ½" x 11" or 11" x 17" sheets.

END OF SECTION

SECTION 02996

SITework COMMISSIONING

PART 1 GENERAL

1.01 DESCRIPTION

The purpose of this section is to specify Division 1 Pre-functional Checklist and Functional Test commissioning requirements.

1.02 SYSTEMS TO BE COMMISSIONED

A. Not used

PART 3 EXECUTION

3.01 PREFUNCTIONAL CHECKLISTS AND STARTUP

A. Refer to Section 02997.

3.03 FUNCTIONAL TESTS

A. Refer to Section 02998.

3.04 TRAINING OF OWNER PERSONNEL

A. Refer to Section 019113 for details.

END OF SECTION

SECTION 02997

SITework PREFUNCTIONAL CHECKLISTS

PART 1 GENERAL

- 1.01 This section contains Prefunctional Checklists.
- 1.02 It is the Contractors responsibility to ensure the checklists are properly completed. Those executing the checklists are only responsible to perform items that apply to the specific application at hand. These checklists do not take the place of the manufacturer's recommended checkout and start-up procedures or report.
- 1.03 Refer to Division 1 for additional requirements regarding prefunctional checklists, startup and initial checkout. Contractors assigned responsibility for sections of the checklist shall be responsible to see that their subcontractors complete the forms appropriately.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

- 3.01 Complete all Prefunctional Checklists in accordance with Section 019113.

Appendices: The checklist to be developed during commissioning.

END OF SECTION

SITE PREFUNCTIONAL CHECKLIST

REVISION DATE: 03/ 2002
SUBMITTAL DATE: FEBRUARY 2023

02997-1

MDAD PROJECT X009A
ISSUED FOR BID

SECTION 02998

SITework FUNCTIONAL TESTING REQUIREMENTS

PART 1 GENERAL

1.01 DESCRIPTION

- A. The general functional testing process, requirements and test method definitions are described in Division 1.

1.03 SEASONAL TESTING

- A. Certain pieces of equipment or system(s) may require seasonal testing, as identified on the Functional Testing forms.

PART 2 PRODUCTS

- 2.01 Not used.

PART 3 EXECUTION

- 3.01 Complete all Functional Tests in accordance with Section 019113.

Appendices: Functional Testing Forms to be developed during commissioning

END OF SECTION

SECTION 16996

ELECTRICAL SYSTEMS COMMISSIONING

PART 1 GENERAL

1.01 DESCRIPTION

- A. The purpose of this section is to specify Division 16 Pre-functional Checklist and Functional Test commissioning requirements.

1.02 SYSTEMS TO BE COMMISSIONED

- A. The following equipment/systems to be commissioned in this project.
1. Lighting systems (exterior Apron, Runway, Taxiway (airfield))
 2. Switchgear, transformers, panelboards and/or motor control centers
 3. Lightning protection and/or surge suppression system
 4. NAVAID'S system

PART 3 EXECUTION

3.01 PREFUNCTIONAL CHECKLISTS AND STARTUP

- A. Refer to Section 16997.

3.02 FUNCTIONAL TESTS

- A. Refer to Section 16998.

3.04 TRAINING OF OWNER PERSONNEL

- A. Refer to Section 019113 for details.

END OF SECTION

ELECTRICAL SYSTEM COMMISSIONING

SECTION 16997

ELECTRICAL SYSTEMS PREFUNCTIONAL CHECKLISTS

PART 1 GENERAL

- 1.01 This section contains Pre-functional Checklists.
- 1.02 It is the Contractors responsibility to ensure the checklists are properly completed. Those executing the checklists are only responsible to perform items that apply to the specific application at hand. These checklists do not take the place of the manufacturer's recommended checkout and start-up procedures or report.
- 1.03 Refer to Division 1 for additional requirements regarding pre-functional checklists, startup and initial checkout. Contractors assigned responsibility for sections of the checklist shall be responsible to see that their subcontractors complete the forms appropriately.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

- 3.01 Complete all Prefunctional Checklists in accordance with Section 019113.

Appendices: Section 16997-02 - PREFUNCTIONAL TEST CHECKLIST – Switchgear, Switchboards, Panel Boards, Motor Control Centers, Transformers (Switchgear)

END OF SECTION

PREFUNCTIONAL TEST CHECKLIST

Switchgear, Switchboards, Panel Boards, Motor Control Centers, Transformers (Swthgr)

Specification Section 16997-02

Project: _____

Project No: _____

Components included:

___ disconnects, ___ fuses, ___ meters, ___ other _____

Associated Checklists:

1. Submittal / Approvals

Submittal. The above equipment and systems integral to them are complete and ready for functional testing. The checklist items are complete and have been checked off only by parties having direct knowledge of the event, as marked below, respective to each responsible contractor. This prefunctional checklist is submitted for approval, subject to an attached list of outstanding items yet to be completed. A Statement of Correction will be submitted upon completion of any outstanding areas. None of the outstanding items preclude safe and reliable operation of the system. ___ List attached.

Electrical Contractor

Date

Controls Contractor

Date

General Contractor

Date

This checklist is to be completed prior to activation by MDAD.

- X This checklist does not take the place of the manufacturer's recommended checkout and startup procedures or report.
- X Contractors assigned responsibility for sections of the checklist shall be responsible to see that checklist items by their subcontractors are completed and checked off.

Approvals. This filled-out checklist has been reviewed. Its completion is approved.

Commissioning Authority/Agent

Date

Owner's Representative

Date

2. Requested documentation submitted

- a) Manufacturer's cut sheets: Yes / No - date to be submitted _____
 b) Performance data: Yes / No - date to be submitted _____
 c) Sequences and control strategies: Yes / No - date to be submitted _____
 d) O & M Manuals: Yes / No - date to be submitted _____
 e) Data base sheets: Yes / No - date to be submitted _____

3. Model Verification

Item	Specified	Submitted	Installed
Manufacturer			
Model			
Serial Number			
Voltage/Phase			
Equipment Rating (amps)			
Fuse Rating (amps)			

4. Installation Checks

a) General Installation

- i) Permanent labels affixed: Yes / No
 ii) Cabinets in place, no visible damage: Yes / No
 iii) Properly mounted on equipment pad and anchored: Yes / No
 iv) Interior clean and dry: Yes / No
 v) Units/equipment accessible for maintenance/replacement: Yes / No
 vi) Meter(s) installed per drawings: Yes / No
 vii) Disconnects installed and labeled: Yes / No
 viii) Disconnects are pad lockable in open position: Yes / No
 ix) Circuit breakers installed and labeled: N/A / Yes / No
 x) Fuses installed: N/A / Yes / No
 xi) Conduits installed and connected: Yes / No
 xii) Cable/conduit routing does not obstruct access: Yes / No
 xiii) As-built drawings updated: Yes / No

b) Switchgear (service entrance 1500kva and above) and Switchboards (service entrance less than 1500kva)

- i) Free standing metal enclosure: N/A / Yes / No
 ii) Copper buses: N/A / Yes / No
 iii) Penetration to FPL vault per code: N/A / Yes / No

c) Distribution Panel Boards and other Panel Boards

- i) Tin plated copper buses: N/A / Yes / No
 ii) Each circuit identified and labeled: N/A / Yes / No
 iii) Space for additional circuits exist: N/A / Yes / No

d) Motor Control Centers

- | | |
|---|----------------|
| i) Tin plated copper buses: | N/A / Yes / No |
| ii) Main breakers installed and labeled: | N/A / Yes / No |
| iii) Each circuit identified and labeled: | N/A / Yes / No |

e) Transformers

- | | |
|------------------------|----------------|
| i) Dry type installed: | N/A / Yes / No |
|------------------------|----------------|

f) Electrical and Controls

- | | |
|--|----------|
| i) Panel devices labeled and wiring tagged per drawings: | Yes / No |
| ii) I/O devices labeled and wiring tagged per drawings: | Yes / No |
| iii) Digital inputs and outputs operational: | Yes / No |
| iv) All electrical connections tight: | Yes / No |
| v) Proper grounding installed for components and unit: | Yes / No |
| vi) Safeties in place and operable: | Yes / No |
| vii) Sensors, transmitters, gages, etc., installed: | Yes / No |
| viii) Sensors calibrated (see below) : | Yes / No |
| ix) Control system interlocks hooked up and functional: | Yes / No |
| x) All control devices and wiring complete: | Yes / No |
| xi) Surge protection installed: | Yes / No |
| xii) Lightning protection installed: | Yes / No |

g) Final

- | | |
|--|----------|
| i) Startup report(s) completed with this checklist attached: | Yes / No |
| ii) Safeties and safe operating ranges for this equipment have been reviewed and accepted: | Yes / No |
| iii) Rooms ventilated properly: | Yes / No |
| iv) System is ready for functional testing: | Yes / No |

5. Operational Checks

- | | |
|--|----------------|
| a) Associated prefunctional checklists are completed and accepted: | N/A / Yes / No |
| b) Fuses are good: | Yes / No |
| c) Disconnect switch operates smoothly with full contact: | Yes / No |
| d) Resistance check(s) complete with results attached: | Yes / No |
| e) Specified point-to-point checks have been completed and documentation record submitted for this system: | N/A / Yes / No |

6. Sensor and/or Gage Calibration

All field-installed temperature sensors, [relative humidity sensors], meters and gages on this piece of equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.

All test instruments have had a certified calibration within the last 12 months: Y/N_____.

[illegible]

All sensors/gages are calibrated within required tolerances YES NO

PREFUNCTIONAL TEST CHECKLIST
SWITCHGEAR, SWITCHBOARDS, PANEL BOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS

REVISION DATE: 03/2002 MDAD PROJECT X009A
SUBMITTAL DATE: FEBRUARY 2023 16997-02 - 4 OF 4 ISSUED FOR BID

SECTION 16998

ELECTRICAL SYSTEMS FUNCTIONAL TESTING REQUIREMENTS

PART 1 GENERAL

1.01 DESCRIPTION

The general functional testing process, requirements and test method definitions are described in Division 1.

1.02 SEASONAL TESTING

- A. Certain pieces of equipment or system(s) may require seasonal testing, as identified on the Functional Testing forms.

PART 2 PRODUCTS

2.01 Not Used.

PART 3 EXECUTION

3.01 Complete all Functional Tests in accordance with Section 019113.

Appendices: Section 16998-01 - Functional Test Checklist, additional requirements to be development during commissioning.

END OF SECTION

FUNCTIONAL TEST CHECKLIST
Emergency Power System (Emgrpwr) - _____

Specification Section 16998-01

Project: _____

Project No: _____

Associated Equipment:

____ prime mover, ____ generator, ____ fuel system, ____ cooling system, ____ battery system, ____
exhaust system, ____ ATS, ____ UPS, ____ Other _____

Other Related Tests: _____

1. Participants

<u>Name</u>	<u>Firm</u>	<u>Participation</u>

Party filling out this form & witnessing _____ Date of test _____

Approvals. This filled-out checklist has been reviewed. Its completion is approved. Exceptions are noted below or attached.

General Contractor [Construction Manager]

Date

Commissioning Authority/Agent

Date

Owner's Representative

Date

2. Prerequisite Checklist

- a) The prefunctional checklist for this emergency power system is complete and approved: Yes / No
- b) Functional testing is complete and approved for the generator room exhaust system: Yes / No
- c) All A/E punchlist items for this and related equipment are corrected: Yes / No
- d) Sequence of operation is attached: Yes / No
- e) These functional test procedures reviewed and approved by installing contractor and applicable subcontractors: Yes / No

FUNCTIONAL TEST CHECKLIST
EMERGENCY POWER SYSTEM

3. Functional Testing Procedure

Step	Mode	Test Procedure	Expected Response	Pass (Y/N)
1	Incremental	Functional Test No. 1: a) Open main switchgear breakers. b) Perform test and record data. c) At end of test restore normal power and shut generator down through normal shutdown procedure.	Verify that: a) Power has been lost from each load served by the emergency power system. b) i) Frequency regulation from no load to full/rated load is less than or equal to 3 Hz; ii) voltage regulation from no load to full/rated load is within +/- 2 percent from rated voltage; iii) instantaneous voltage dip is less than 15 percent when full, 3-phase, load and rated power factor is applied to alternator. c) Power has been restored.	
2	Full	Functional Test No. 2: a) Open main switchgear breakers. b) Perform test and record data. c) At end of test restore normal power and shut generator down through normal shutdown procedure.	Verify that: a) Power has been lost from each load served by the emergency power system. b) i) Frequency regulation from no load to full/rated load is less than or equal to 3 Hz; ii) voltage regulation from no load to full/rated load is within +/- 2 percent from rated voltage; iii) instantaneous voltage dip is less than 15 percent when full, 3-phase, load and rated power factor is applied to alternator. c) Power has been restored	
3	Cold Start and ATS	Functional Test No. 3: a) Open main switchgear breakers or operate ATS test switch. b) Perform test and record data. c) At end of test restore normal power and shut generator down through normal shutdown procedure.	Verify that: a) Power has been lost from each load served by the emergency power system. b) i) Frequency regulation from no load to full/rated load is less than or equal to 3 Hz; ii) voltage regulation from no load to full/rated load is within +/- 2 percent from rated voltage; iii) instantaneous voltage dip is less than 15 percent when full, 3-phase, load and rated power factor is applied to alternator. c) Power has been restored.	
3a	Building	During 3 hour Cold Start and ATS	All function properly.	

FUNCTIONAL TEST CHECKLIST
EMERGENCY POWER SYSTEM

	Integrated Test	test, verify that proper power is delivered to each device listed in the emergency panel schedule(s) and that they function properly. Record information on Functional Test Record 3a.		
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Comments:

-- END OF SECTION --